Candidate Name Order Effects in New Hampshire:

Evidence from Primaries and from General Elections with Party Column Ballots

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Abstract

Research in a few U.S. states has shown that candidates listed first on ballots gain extra votes as a result. This study explored name order effects for the first time in New Hampshire, where such effects might be weak or entirely absent because of high political engagement and the use of party column ballots. In general elections (in 2012 and 2016) for federal offices and the governorship and in primaries (in 2000, 2002, and 2004), differences in the direction of primacy appeared in 86% of the 84 tests, including the 2016 presidential race. Donald Trump gained 1.7 percentage points from first listing, and Hillary Clinton gained 1.5. If name order effects at least this large occurred in Michigan, Wisconsin, and Florida, and if candidate name order had been rotated in those states, President Trump would have lost the election.

Keywords: name order effects, primacy effects, party column ballots, electoral integrity, 2016 U.S. presidential election.

In democratic nations, the integrity of the electoral process is essential to the functioning, stability, and legitimacy of government.[1] Especially recently, the legitimacy of the electoral process has been of great concern to Americans, and trust in that process has been a determinant of public acceptance of election winners.[2] Between 2006 and 2016, Americans became increasingly concerned about election fairness: the percentage of Americans who said they did not have confidence in the honesty of elections rose from 47% to 69%.[3] And in 2018, only 51% of Americans believed that their elections are fair and open.[4] This crisis of confidence in the integrity of U.S. elections has spurred research and media speculation about reforms that might bolster public confidence. This paper offers new evidence encouraging one such reform, showing that candidates listed first gain an electoral advantage, so rotation of candidate names across voters would enhance electoral fairness.

We begin below by outlining the findings of past studies of name order effects and highlighting the opportunity afforded by a 2006 court ruling to test for such effects in a new and interesting context, New Hampshire, which might be viewed as a "limiting case." We describe the results of analyses of the effect of name order in both primary and general elections in that state—including the 2016 presidential election—and discuss both the practical implications of the findings and their implications for theories of voter decision-making and behavior.

Past Studies of Candidate Name Order Effects

During the last 70 years, a sizeable number of studies have investigated name order effects in a wide array of elections across many countries. As we explain below, this work has

[1] Diamond 1999.
[2] Anderson et al. 2005.
[3] McCarthy and Clifton 2016.
[4] University of Virginia/Ipsos 2018.

been remarkably consistent in identifying primacy effects occurring in the vast majority of races examined: candidates received more votes when they were listed first than when they were listed later.[5] While reviewing the findings of some past studies, we highlight the fact that the strongest evidence of name order effects in the U.S. comes from the study of elections in a limited set of geographic areas. Therefore, our understanding of these effects can be significantly enhanced by exploring the generalizability of those published findings to new geographic regions.

Studies of candidate name order effects in U.S. general elections. Many studies suggest that primacy effects occur routinely in general elections in the U.S.[6] For example, Miller and Krosnick (1998) found that 86% of 196 name order effect tests in the three largest Ohio counties in 1992 manifested differences in the direction of primacy.[7] Statistically significant primacy effects appeared in 48% of races, and the significant effects averaged 2.33 percentage points; the maximum was 5.04 percentage points.[8] A sign test calculated using the data reported in Tables 1 and 2 in Miller and Krosnick's (1998) article indicates that the percentage of differences in the direction of primacy was significantly greater than the 50% that would be expected by chance alone $p<.001$).

In elections in Ohio, California, and North Dakota in 2000, Krosnick, Miller, and Tichy (2004) found that 129 of 170 tests of name order effects in two-candidate races (76%) manifested vote count differences in the direction of primacy, and 113 of the 136 candidates (83%) in races with more than two candidates manifested differences in the direction of primacy,

[5] For reviews, see Beazley 2013; Miller 2010.
[6] Bain and Hecock 1957; Blocksom 2008; Brockington 2003; Byrne and Pueschel 1974; Chen et al. 2014; Fillbrunn 2017; Ho and Imai 2008; Krosnick, Miller, and Tichy 2004; Miller and Krosnick 1998; Mueller 1969; 1970; Pasek et al. 2014; Scott 1972.
[7] Each two-candidate race yielded one name order test, and each race with more than two candidates yielded as many tests as there were candidates.
[8] Miller and Krosnick 1998, p. 308, 315.

yielding 79% of name order effects in the direction of primacy overall, which is significantly greater than 50% according to a sign test that we calculated ($p < .001$). Statistically significant or marginally significant primacy effects appeared in 24% of 306 tests, averaging 2.33 percentage points; the maximum was 9.45 percentage points.

Pasek et al. (2014) found that more than 93% of 402 candidates in California general elections held between 1976 and 2006 received more votes when listed first than when listed later, statistically significantly greater than 50% ($p < .001$). These primacy effects averaged about half a percentage point, with a maximum of about 4 percentage points.[9]

In statewide elections in North Dakota between 2000 and 2006, Chen et al. (2014) reported differences in the direction of primacy in 75% of 36 races, which is significantly larger than 50% ($p < .001$); the average effect in two candidate races was 1.17 percentage points, which was statistically significant; the maximum was about 5 percentage points.

Studying the vote shares of thousands of candidates in municipal general elections in Peoria, Illinois, between 1983 and 1999, Brockington (2003) found a statistically significant meta-analytic primacy effect, evidenced by a decrease of 0.68 percentage points for each shift of position away from being listed first.[10] Older studies of general elections produced similar evidence of primacy effects.[11]

Only one study of general elections failed to find evidence suggesting a tendency toward

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[9] Pasek et al. 2014, p. 425. Ho and Imai (2008) studied the same races as Pasek et al. (2014) but analyzed a data set that contained a substantial number of data entry errors (which Pasek et al. 2014 corrected) and did not control for party registration of the assembly districts (which Pasek et al. 2014 did), which is critically important, because with only 80 assembly districts in California and large numbers of candidates per race, unintentional confounds of party leanings of districts with name orders occurred and needed to be eliminated via statistical controls.

[10] Brockington (2003) did not report the statistical significance of effects for individual candidates or the maximum size of the differences in the direction of primacy effects.

[11] E.g., Byrne and Pueschel 1974; Mueller 1969, 1970; Scott 1972.

primacy effects, but those elections involved an unusual type of ballot: party column ballots, where all of the candidates from each party are listed in a single column for that party across all races, and the order of the columns is varied across voters. In two Colorado counties in 1984, Darcy (1986) found that only about half of candidates (12 out of 22) in two-candidate races manifested name order effects in the direction of primacy, not significantly greater than 50% ($p = .25$).[12] Because party column ballots make party affiliations especially salient and encourage straight-ticket voting, this failure to see a trend toward primacy effects might be viewed as consistent with theory and evidence that primacy effects are weaker when candidates' party affiliations are made salient.[13] Indeed, Darcy's (1986) study could perhaps be viewed as testing the impact of the order of parties rather than the order of candidate names, because some or many voters might not even have read the candidate names and instead might simply have read the party names at the tops of the columns.

In sum, nearly all studies conducted during the past six decades have documented strong trends toward primacy effects in many general elections in the U.S.

Studies of name order effects in primaries in the U.S. Studies of primary elections have also uncovered a great deal of evidence of primacy effects.[14] For example, Koppell and Steen (2004) found that being listed first yielded more votes for 89% of 180 candidates examined, significantly greater than 50% ($p < .001$). Those investigators also found statistically significant or marginally significant primacy effects in 21 of 79 races in New York City Democratic Party primaries in 1998, averaging 6.86 percentage points, with a maximum of 11.30

[12] This is based on numbers in Table 2 in Darcy 1986, p. 658-659.
[13] E.g., Miller and Krosnick 1998; Pasek et al. 2013.
[14] Brockington 2003; Brooks 1921; Edwards 2015; Grant 2017; Ho and Imai 2008; Koppell and Steen 2004; White 1950.

percentage points.[15] Grant (2017) found that 100% of candidates in Democratic and Republican primaries in Texas in 2014 manifested name order effects in the direction of primacy, and all primacy effects were statistically significant, averaging 5.32 percentage points, with a maximum of 10.48 percentage points.[16]

Brockington (2003) found statistically significant primacy effects for thousands of candidates in municipal primary elections in Illinois, averaging a decrease of 1.65 percentage points for each shift of position away from being listed first.[17]

Older studies of primaries also documented statistically significant primacy effects.[18]

Studies of name order effects abroad. Evidence of primacy effects also comes from studies conducted in countries outside the U.S.[19]

The Case of New Hampshire

Most of this past evidence of primacy effects in general elections in the U.S. comes from studies of a handful of states: California, Ohio, and North Dakota. Therefore, it is valuable to test the generalizability of those findings to other states. And New Hampshire offers a uniquely

[15] We calculated this based on Table 1 and Table 2 in Koppell and Steen 2004, p. 272-275.
[16] We calculated this based on Table 4 in Grant 2017, p. 422-423.
[17] Brockington (2003), p. 16. Brockington (2003) did not report the maximum size of the observed primacy effects.
[18] Brooks (1921) in the 1920 primary election in Pennsylvania; White (1950) in the 1948 Republican primary in the Ohio Senate; and Bain and Hecock (1957) in the 1948 Ohio and 1952 Michigan primaries.
[19] Including Australia (Hughes 1970; Kelly and McAllister 1984; King and Leigh 2009; Masterman 1964), Belgium (Geys and Heynedels 2003), Canada (Tessier and Blanchet 2018), Colombia (Gulzar and Ruiz 2018), Denmark (Blom-Hansen et al. 2016), Germany (Daubler and Rudolph 2018; Faas and Schoen 2006), Ireland (Reidy and Buckley 2015; Robson and Walsh 1974), Korea (Jun and Min 2017), Poland (Marcinkiewicz 2014), Spain (Lijphart and Pintor 1988), Slovakia (Spac 2016), Switzerland (Lutz 2010), the Netherlands (Bakker and Lijphart 1980), and the United Kingdom (Bagley 1966; Brook and Upton 1974; Kelly and McAllister 1984; Upton and Brook 1974, 1975). Of these international studies, only Hansen and Olsen's (2014) study of Afghanistan failed to find evidence of primacy effects.

valuable opportunity to do so, for a variety of reasons. Like California, Ohio, and North Dakota, New Hampshire has rotated candidate name order in general and primary elections in ways that constitute quasi-experiments that afford the opportunity to make strong causal inferences about the impact of name order.

In 1979, New Hampshire began rotating candidate name order in primary elections, pursuant to RSA 656:24:

> **656:24 Order of Names**: With the exception of the office of state representative, whenever there are 2 or more candidates for nomination to the same office, the names of such candidates shall be alternated on the state primary election ballots used so that each name shall appear thereon as nearly as may be an equal number of times at the top, at the bottom, and in each intermediate place, if any, of the list in which it belongs.

This rotation requirement applied to presidential primaries until 2004, when it was stopped in order to reduce the cost of printing ballots.[20] Legislation enacted in 2015 re-established name order rotation in presidential primaries.[21]

Name order rotation in New Hampshire general elections began after the New Hampshire Supreme Court ruled in 2006 that the lack of rotation was unconstitutional (see also the recent Florida District Court ruling in Jacobson v. Lee).[22] Name and party column order was rotated in the 2006 and 2008 general elections across only 24 state Senate districts, meaning there was insufficient statistical power to detect any name order effects.[23] Legislation was enacted in 2010 that specified a party column rotation scheme for the 2010 election and set forth the procedure described below for subsequent elections.[24]

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[20] Chapter 319:143, NH Laws of 2003, www.gencourt.state.nh.us/legislation/2003/HB0004.html.
[21] Chapter 96, NH Laws of 2015, www.gencourt.state.nh.us/legislation/2015/HB0503.html.
[22] Supreme Court of New Hampshire 2006; The United States District Court, Northern District of Florida, Tallahassee Division 2019. The Florida court ruling in 2019 ordered that a single order based on the party of the candidates was unconstitutional.
[23] http://sos.nh.gov/WorkArea/DownloadAsset.aspx?id=3697.
[24] See the Online Supplement for more detail.

Since 2010, candidate name order has been rotated across New Hampshire's 323 towns, city wards, and unincorporated places (constituting what are called "voting places" in the state). Candidate names in general elections starting in 2012 were rotated by party column under the statute NH RSA 656:5.[25]

Studying the effect of name order on vote counts in New Hampshire is important, because there are reasons to expect that name order effects might be minimal or non-existent there. According to past research, primacy effects have been stronger in contests that received less media attention[26] and among less educated and less politically engaged voters.[27] But New Hampshire has unusually large amounts of media attention to candidates and unusually high voter engagement in politics, because that state hosts the nation's first primary during each presidential primary season. Candidates spend large amounts of time and money to campaign in the state, per capita. Therefore, New Hampshire voters have the opportunity to learn a great deal about the candidates before election day. Moreover, New Hampshire voters probably feel a great deal of responsibility for, and take great pride in, setting the stage for later primaries. So there is every reason to believe that voters there are especially aware of, knowledgeable about, and engaged with politics, which might, in theory, minimize name order effects.

Consistent with this logic, in the 2016 general election, turnout in New Hampshire was 72.5 percent, the third highest in all the states.[28] In contrast, the turnout rate for the 2016 general election was 64.2 percent in Ohio, 61.9 percent in North Dakota, and 58.4 percent in California, the states where quasi-experiments on name order were conducted in the past. Therefore, one

[25] See the Online Supplement for more detail.
[26] Miller and Krosnick 1998; Pasek et al. 2014; see Kim, Krosnick, and Casanto 2013.
[27] Blocksom 2008; Brockington 2003; Jun and Min 2017; see also Miller and Krosnick 1998.
[28] This is the turnout rate in the voting eligible population; http://www.electproject.org/2016g.

might expect that name order effects will be muted or non-existent in New Hampshire.[29]

Furthermore, the use of the party column format in New Hampshire might encourage voters to focus on parties rather than candidates, thereby minimizing order effects as well. For all of these reasons, an examination of the effect of candidate name order on vote counts in New Hampshire has value for both basic and applied research related to electoral processes and electoral reform. In the pages that follow, we describe our methodological approach and the results of analyses of the effect of name order in primary and general elections held in New Hampshire between 2000 and 2016.

Data

Primaries. We examined the 2000, 2002, and 2004 Democratic and Republican primaries for U.S. Senate, U.S. House of Representatives, and New Hampshire Governor.[30] In those years, candidates' names were rotated across the 323 voting places. The name orders for each party's primary were assigned to voting places by a computer program. The program first ordered voting places in descending order based on the number of registered voters affiliated with the party. Then the program rotated candidate names through the list of voting places so that each candidate would appear in each position on ballots administered to approximately the same number of registered voters. Then, if necessary, elections officials made minor swaps of voting places of nearly equal size (based on the number of registered voters in each voting place) so that no candidate would be listed first in a large share of any given city's wards (see the Online Supplement for more details about the name order procedure).

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[29] See, e.g., Gelman 2017.

[30] We could not analyze the 2000 primary for President because we could not obtain all the necessary data. We could not analyze the 2004 presidential primary because no name rotation was done that year. And we could not analyze the 2010 state-wide primaries because we could not obtain the ballots that were needed to determine which voters saw candidates in which order.

The datasets created for this investigation included the order in which each candidate appeared on the ballot in each voting place and the number of votes received by each candidate in each voting place. Data on candidate name order were obtained from Karen Ladd in the New Hampshire Secretary of State's office in the form of photocopies of town rotation order by party, office, and candidate, as well as by inspection of original official copies of actual ballots. Data were spot-checked between the two sources and revealed no discrepancies.

We examined three primaries held in 2000: two 2-candidate races (the Democratic primary for Governor and the Democratic primary for the 2nd Congressional District) and one 5-candidate race (the Republican primary for Governor). We analyzed seven primaries in 2002: four 2-candidate races (the Democratic primary for Governor and the Democratic primaries for the 1st and 2nd Congressional Districts, and the Republican primary for the 2nd Congressional District), one 3-candidate race (the Republican primary for U.S. Senate), one 6-candidate race (the Republican primary for Governor), and one 8-candidate race (the Republican primary for the 1st Congressional District).

We examined seven primaries held in 2004: five 2-candidate races (the Democratic and Republican primaries for Governor, and the Republican primary in the 1st Congressional District, and the Democratic and Republican primaries in the 2nd Congressional District), one 3-candidate race (the Republican primary for U.S. Senate), and one 4-candidate race (the Democratic primary for the 1st Congressional District; see the Online Supplement for more detailed descriptions of the data for these primaries).

General elections. We tested for name order effects in statewide general elections in 2012 and 2016 for U.S. President, U.S. Senate, U.S. House of Representatives, and New Hampshire Governor. In those elections, candidate names were rotated by party column under

the statute NH RSA 656:5.[31] The names of all candidates were arranged in three successive party columns, and each column contained the names of the candidates of one party (Democratic, Republican, or Other). The order of these party columns on the ballots was rotated using a computer program to ensure that each party column appeared an approximately equal number of times in the first, second, and third (last).[32]

Data were gathered for 13 candidates running in the 2012 general elections (four candidates for President, three for Governor, three for the 1st Congressional District representative, and three for the 2nd Congressional District representative) and for 20 candidates running in the 2016 general elections (five candidates for President, four for the U.S. Senate, three for Governor, five for the 1st Congressional District representative, and three for the 2nd Congressional District for representative).

We constructed general election datasets that included the following variables: (a) the order in which each candidate's name appeared in each voting place, (b) the number of votes received by each candidate in each voting place, and (c) the number of registered Democrats and the number of registered Republicans in each voting place. The latter two variables were downloaded from the website of the Secretary of State.[33]

To determine candidate name order in each voting place, two people independently examined sample ballots and coded the order of the party columns independently.[34] The coders agreed for 99% of the ballots in 2012 (a third coder resolved the disagreements) and for 100% of

[31] www.gencourt.state.nh.us/rsa/html/LXIII/656/656-5.htm.
[32] See the Online Supplement for more details.
[33] http://sos.nh.gov/Elections.aspx.
[34] We presumed the candidate name order is the same as the party column order. An alternative coding of candidate name orders on party column ballots was examined in the robustness section below.

the ballots in 2016 (see the Online Supplement for examples of the ballots and more detailed descriptions of the data).

Analysis Methods

The effect of name order on vote percentages was gauged separately for each candidate in each race.[35] Nine analyses were conducted for the 2000 primaries (four analyses for the 2-candidate races and five analyses for the 5-candidate race), 25 analyses were conducted for the 2002 primaries (eight analyses for the 2-candidate races for Democratic primary for Governor, the Democratic primaries for the 1st and 2nd Congressional Districts, and the Republican primary for the 2nd Congressional District, three analyses for the 3-candidate race for the Republican primary for U.S. Senate, six analyses for the 6-candidate race for the Republican primary for Governor, and eight analyses for the 8-candidate race for the Republican primary for the 1st Congressional District),[36] and 17 analyses were conducted for the 2004 primaries (10 for the 2-candidate races for the Democratic and Republican primaries for Governor, the Republican primary in the 1st Congressional District, and the Democratic and Republican primaries in the 2nd Congressional District, three for the 3-candidate race for the Republican primary for U.S. Senate, and four for the Democratic primary for the 1st Congressional District).

Thirteen analyses were conducted for the 2012 general election (four for the 4-candidate Presidential race, three for the 3-candidate Gubernatorial race, three for the 3-candidate 1st Congressional District race, and three for the 3-candidate 2nd Congressional District race), and 20 analyses were conducted for the 2016 general election (five for the 5-candidate race for

[35] Because some voters wrote in names of candidates not listed on the ballot, the name order effects for the two candidates in 2-candidate races were not perfect mirror images of one another.
[36] The Republican primary in the 1st Congressional District in 2002 included only 114 voting places. With 8 name orders divided among the 114 towns, this reduces the power to detect statistically significant effects in this race to an unreliable level.

President, four for the 4-candidate race for U.S. Senate, three each for the 3-candidate races for Governor and the 2nd Congressional District, five for the 5-candidate 1st Congressional District race, and three for the 2nd Congressional District).

Name order was coded 1 when the candidate was listed first on the ballot and 0 when the candidate was listed later.

We used two alternative statistical techniques to assess the robustness of our conclusions. First, we estimated the parameters of ordinary least squares (OLS) regression equations to assess the impact of name order on the percent of votes received by the candidate, controlling for the total number of votes cast in the race in each voting place (divided by 1000), as well as (for general elections) the percent of registered voters registered as Democrats and the percent of registered voters registered as Republicans in each voting place.[37]

Next, we examined the effect of name order using non-parametric randomization inference. Randomization inference is based on the seminal work by Sir R.A. Fisher (1935), who established the technique as a principled method for statistical inference in randomized experiments (see also Rosenbaum 2002a, 2002b, and 2002c), and it was used in a recent study of candidate name order effects (Ho and Imai 2006). An advantage of randomization inference is that it does not require any assumptions about the distributions of variables or large sample sizes or independent random sampling that are required for many other statistical tests. This makes randomization inference a highly credible and robust tool for hypothesis testing in causal inference in many settings (Rosenbaum 2002a, 2002b, and 2002c). We report the probabilities

[37] Some researchers have raised questions about the appropriateness of using OLS to test for name order effects (e.g. Alvarez et al. 2006; Ho and Imai 2008). However, other scholars have demonstrated that all methods, OLS and seemingly unrelated regression (SUR) included, produce comparable results (e.g., Pasek et al. 2014).

obtained from the randomization inference tests that measure the fraction of 10,000 re-randomizations that yielded differences equal to or larger than the observed effect estimates of name order effects.

Results

Equivalence checks of name rotation. Given that name order was assigned sequentially, we first assessed whether the ordering procedure produced equivalent groups of voting places to receive different name orders.[38] The name order rotations in the 2000, 2002, and 2004 primaries yielded equivalent numbers of voters who saw each name order, as well as equivalent numbers of people registered to vote, registered as Democrats, registered as Republicans, or registered as neither a Democrat nor a Republican, and filed their application to register to vote with the government on Election Day rather than before. The name rotations in the 2012 and 2016 general elections yielded equivalent numbers of voters who saw each name order, as well as equivalent numbers of people registered to vote, registered as Democrats, registered as Republicans, or registered as neither a Democrat nor a Republican.[39]

Name order effects in the 2000, 2002, and 2004 primaries. Of the 51 analyses of primaries in 2000, 2002, and 2004, 90% showed differences in the direction of primacy, which is significantly greater than the 50% that would be expected by chance alone (a sign test yielded $p<.001$;column (3) in Table 1). Among those differences in the direction of primacy, 41% were statistically significant, ranging from .3 to 7.1 percentage points and averaging 2.8 percentage points, and 7% were marginally statistically significant, ranging from 1.7 to 7.1 percentage points and averaging 4.4 percentage points.

[38] See the Online Supplement.
[39] See the Online Supplement. The numbers of people who filed their application to register to vote with the government on Election Day were not available for the general elections.

Name order effects in the 2012 and 2016 general elections. Of the 33 candidates running in the 2012 and 2016 general elections, 79% manifested name order differences in the direction of primacy, again significantly greater than the 50% that would be expected by chance alone (a sign test yielded p<.001;column (3) in Table 1). Among the differences in the direction of primacy, 38% were statistically significant or marginally statistically significant, ranging from less than .01 to 2.1 percentage points and averaging 1.1 percentage points.

Of special interest, in 2016, both the Democratic and Republican presidential candidates received more votes when listed first than when listed later. Hillary Clinton manifested a marginally statistically significant primacy effect of 1.5 percentage points (p=.071), whereas Donald Trump manifested a statically significant primacy effect of 1.7 percentage points (p=.049). These effects were not significantly different from one another (b = .002, p = .83), and the pooled name order effect combining the data from both candidates was 1.6 percentage points (p=.028). Marginally significant primacy effects were also observed for two of the three non-major party presidential candidates: .12 and .04 percentage points for Jill Stein and Roque "Rocky" De La Fuente, respectively (p=.072, p=.082).

Randomization inference. The randomization inference analysis entails estimating the parameters of the regression equation 10,000 times and randomly assigning the name order variable for each candidate during each iteration, thus yielding a distribution of expected differences if name order has no effect. The observed effect can then be compared to that distribution to gauge the probability that that observed effect occurred by chance alone, yielding statistical significance tests different from those generated by OLS regression. The randomization inference tests of statistical significance (column (4) in Table 1) yielded comparable results to those from the OLS regressions (column (3) in Table 1).

Robustness checks for the 2000, 2002, and 2004 primaries. Additional analyses using three alternative specifications of name order yielded evidence of the robustness of the findings about the 2000, 2002, and 2004 primaries as described above. First, we re-analyzed the data using a linear specification of name order that was centered around zero. So for a 3-candidate race, order was coded as -1, 0, and 1 when candidates were listed first, second, and third, respectively. For a 4-candidate race, order was coded as -1.5, -0.5, 0.5, and 1.5 when candidates were listed first, second, third, and fourth, respectively. Second, we tested whether order had a non-linear effect on vote counts by squaring the centered linear variable and including it, along with the centered linear term, in an OLS model. Third, we represented name order as a series of dummy variables with being listed first as the omitted category (i.e., these dummy variables were coded 1 for voting places where the candidate was listed second and third, respectively, and 0 otherwise).[40]

Robustness checks for the 2012 and 206 general elections. Results similar to those reported above regarding the 2012 and 2016 general election were yielded by five robustness checks using four alternative specifications of name order. First, name order was coded linearly, centered around zero, coded -1, 0, and 1 when candidates were listed in the first, second, and third column, respectively. Second, we tested for non-linearity by adding a squared version of the linear predictor to the equation. Third, name order was represented by two dummy variables identifying instances when the candidate was listed second or third. Fourth, each voting place was weighted by one-half of the base-10 logarithm of the number of votes cast in the voting place.[41]

[40] See the Online Supplement.
[41] Grant 2017.

Fifth, in races that had more than one non-major party candidate, the names of the non-major party candidates were not coded identically and instead were coded differently from one another, treating names in a vertical column as in different positions rather than the same position. For example, consider the race in which the Democratic candidate was listed in the first column, three non-major party candidates (referred to as other party candidate A, B, and C) were listed in the second column, with candidate A's name listed at the top, candidate B's name in the middle, and candidate C's name at the bottom, and the Republican candidate was listed in the third column. In the analyses described above, the Democratic candidate was coded as being listed first, all three non-major party candidates (A, B, and C) were coded as being listed second, and the Republican candidate was coded as being listed third. In the alternative coding, the Democratic candidate was coded as being listed first, the three non-major party candidates—A, B, and C—were coded as being listed second, third, and fourth, respectively, and the Republican candidate was coded as being listed fifth.[42]

Discussion

This research demonstrates, for the first time, candidate name order effects in the state of New Hampshire. Across the 2000, 2002, and 2004 Democratic and Republican primaries and the 2012 and 2016 general elections, differences in the direction of primacy were overwhelmingly prevalent. Consistent with past research, when candidates were listed first on the ballot, they received more votes than when they were listed in other positions on the ballot. These findings are robust to a series of alternative specifications, as outlined in the supplementary materials.

These results are especially noteworthy given the electoral significance (for both candidates and voters) of New Hampshire—especially with regard to the presidential primaries.

[42] See the Online Supplement.

Although voters there are likely to be especially educated about candidates and engaged in politics, differences in the direction of primacy appeared, as documented in previous studies of other states. For example, 90% of the New Hampshire primary races manifested differences in the direction of primacy, consistent with Koppell and Steen's (2004) finding that 89% of the primary races they analyzed demonstrated primacy effects, and Grant's (2017) figure of 100%. Given New Hampshire's role in winnowing candidates early on in the presidential primary season, these results are particularly striking.

Likewise, the primacy effects in New Hampshire's 2016 presidential election (1.5 and 1.7 percentage points for Clinton and Trump) are nearly identical to some of the primacy effects documented in past studies of major party presidential candidates. For example, in the 1976 California general election for President, a statistically significant primacy effect of 1.8% occurred for Jimmy Carter, and a marginally statistically significant primacy effect of 1.5% occurred for Gerald Ford. In the 2000 California general election for President, a marginally statistically significant primacy effect of 1.7% appeared for George W. Bush.[43, 44]

Lack of information is unlikely to explain the sizable name order effects in the 2016 presidential race in New Hampshire, because the nation was presumably extremely knowledgeable about the major party candidates in that year. A more likely explanation is ambivalence. In fact, 2016 marked the year in which the American public gave the major party candidates for president the most negative ratings in the history of polling.[45] Voters loyal to

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[43] Pasek et al. 2014. Personal correspondence with Josh Pasek on August 16, 2019.
[44] Regarding the primacy effect for George W. Bush in the 2000 presidential race in California, Pasek et al. (2014) reported 1.7%, whereas Miller, Krosnick, and Tichy (2004, Table 4.2, p.67) reported 9.5%. The former was generated controlling for rates of registration of Democrats and Republicans in each assembly district, whereas the latter did not, so we rely on the former.
[45] E.g., Saad 2016.

Democratic candidates voiced reasons to hesitate about Secretary Clinton, and voters loyal to Republican candidates voiced reasons to hesitate about President Trump.[46] This ambivalence may have set the stage for unusually strong name order effects involving these candidates among highly informed and engaged voters, as in New Hampshire.

Implications for the electoral process and national politics. In this light, it is useful to reflect on the New Hampshire Supreme Court's decision in 2006 declaring that a single ordering of candidate names across all ballots was unconstitutional because it violated candidates' "equal right to be elected into office."[47] During the trial, the State's Attorney General argued that "New Hampshire voters are among the best informed, most discerning voters in the country and they are voters who participate in more elections than most other Americans. … [T]he possibility that [some] voters choose candidates based on ballot position is implausible."[48] The evidence reported in this paper challenges that claim and thereby lends credibility to the Court's verdict, as well as to the recent similar verdict in Florida.[49] The evidence from New Hampshire bolsters the confidence that the first-one-the-ballot advantage is generalizable to other states and lends support to court rulings of such.

The 2016 presidential election. The name order effects observed in the 2016 presidential election have profound implications. President Trump won by a margin of 77 electoral votes, with very slim margins of victory in four states: Michigan (margin of 0.22%, 16 electoral votes), Wisconsin (margin of 0.76%, 10 electoral votes), Florida (margin of 1.20%, 29 electoral votes), and Pennsylvania (margin of .72%, 20 electoral votes). In this light, it is

[46] Doherty, Kiley, and Johnson 2016.
[47] The Supreme Court of New Hampshire 2006, p.7.
[48] Attorney General of New Hampshire 2005, p. 25.
[49] The United States District Court, Northern District of Florida, Tallahassee Division 2019, p. 2.

interesting to consider the procedure for ordering of names on ballots in those states and what might have happened if name order had been rotated.

President Trump was listed first on all ballots in three of the states he won by a very small margin. In Michigan, the candidates of the party of the Secretary of State are listed first on the ballot, and that person was a Republican. In Wisconsin and Florida, the candidates of the party of the Governor are listed first, so President Trump was always listed first. And in Pennsylvania, the candidate of the party of the Governor is listed first, so Secretary Clinton was always listed first.[50]

If Michigan, Wisconsin, and Florida had rotated candidate name order across precincts, and if name order effects in those states were at least as large as those observed in the New Hampshire presidential race, the election outcome would have flipped. Such a flip requires only 39 electoral votes to shift from President Trump to Secretary Clinton, and 55 of President Trump's electoral votes were from Michigan (16), Wisconsin (10), and Florida (29). Had name order been rotated in Michigan, President Trump would not have been first in five-sixths of the precincts (because 6 candidates competed there), so he would have lost 1.4 percentage points as a result (assuming name order effects similar in size to that of New Hampshire). Secretary Clinton would have been listed first in one-sixth of the precincts, yielding a net gain of 0.3% for her. The net loss of 1.4% for President Trump and the net gain of 0.3% for Secretary Clinton would have changed the margin of victory by 1.7%, much more than President Trump's 0.22% margin of

[50] Two other states were won by slim margins. In Minnesota, where Secretary Clinton won 14 electoral votes by a very tight margin (margin of 1.52%, 10 electoral votes), President Trump was listed first on all ballots, because presidential candidates are listed there in reverse order of the numbers of votes cast for major party candidates in the previous (i.e., 2012) election. And in New Hampshire, Secretary Clinton won 4 electoral votes by a margin of .37%, where names were rotated.

victory, thereby flipping 16 electoral votes to Secretary Clinton.

Likewise, had name order been rotated in Wisconsin, President Trump would not have been first in six-sevenths of the precincts (because 7 candidates competed there), so he would have lost 1.3 percentage points as a result. Secretary Clinton would have been listed first in one-seventh of the precincts, yielding a net gain of 0.4% for her. The net loss of 1.5% for President Trump and the net gain of 0.2% for Secretary Clinton would have changed the margin of victory by 1.7%, much more than Trump's 0.76% margin of victory, thereby flipping ten electoral votes to Secretary Clinton.

And had name order been rotated in Florida, President Trump would not have been first in three-fourths of the precincts (because 4 candidates competed there), so he would have lost 1.3 percentage points as a result. Secretary Clinton would have been listed first in one-fourth of the precincts, yielding a net gain of 0.4% for her. The net loss of 1.3% for President Trump and the net gain of 0.4% for Secretary Clinton would have changed the margin of victory by 1.7%, more than President Trump's 1.20% margin of victory, thereby flipping 29 electoral votes to Clinton.

In sum, had name order been rotated in Michigan, Wisconsin, and Florida, and had the name order effect been as large or nearly so in those states as in New Hampshire, President Trump would have lost in these three states, and 55 of his electoral votes would have shifted from him to Secretary Clinton, thereby flipping the nationwide election outcome.

Is it reasonable to assume that the name order effect observed in New Hampshire might have been as large or larger in Michigan, Wisconsin, and Florida? One reason to believe this involves the level of education of voters in those states. Past research has shown that name order effects are greatest among the least educated voters. According to the 2016 exit polls, a smaller percentage of New Hampshire's voters obtained any education beyond completing high school

(13%) than in Michigan (20%), Wisconsin (20%) and Florida (18%). Likewise, more voters in New Hampshire had a college degree or more education (55%) than did so in Michigan (43%), Wisconsin (45%), and Florida (54%).[51] Thus, at least according to educational attainment, candidate name order effects are likely to have been larger in Michigan, Wisconsin, and Florida than in New Hampshire. So our simulation of election outcomes may involve a lower bound estimate of the size of name order effects, thus making reversal of the election outcome even more likely.

The 2016 presidential election is not the only one in recent history where the outcome may have changed if candidate name order had been rotated in certain states. In the 2000 presidential election between George W. Bush and Al Gore, Bush was listed ahead of Gore on every ballot in Florida and New Hampshire, where he won by just 0.009% (537 votes) and 1.27% (7,211 votes) over Gore, respectively. Had the 1.5% to 1.7% primacy effect observed in the 2016 presidential race in New Hampshire occurred in 2000 in Florida and New Hampshire and had candidate names been rotated, Gore would have carried both states. If Gore had won only one of those two states, he would have been elected President instead of Bush.

Conclusion

The present findings add importantly to the existing literature on the electoral advantage of being listed first, generalizing the past research in a limited set of geographic areas to a state where the name order effects might be weak or entirely absent. It has been demonstrated that primacy effects advantaged some candidates and disadvantaged others even in a highly politically engaged and informed state using a party column ballot, which increases the salience of party cues at the moment of voting. Because of the importance of races across the nation won

[51] https://www.cnn.com/election/2016/results/exit-polls/national/president.

by slim margins, the findings outlined here encourage elections officials and legislators to consider enhancing electoral fairness by rotating name order rather than using a single name order.

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Table 1: Name Order Effects of 2000-2004 Primary Candidates and 2012-2016 General Election Candidates in New Hampshire

Race	Candidate	Direction of Effect (1)	Effect (2)	p-value (3)	p-value from Randomization Inference (4)
2000 Primary, Governor, Democrat	Fernald	Recency	-.003	.884	.887
2000 Primary, Governor, Democrat	Shaheen	Recency	-.002	.909	.908
2000 Primary, Governor, Republican	Bramante	Primacy	.005*	.024	.026
2000 Primary, Governor, Republican	Howard	Primacy	.010	.417	.427
2000 Primary, Governor, Republican	Humphrey	Primacy	.019	.248	.256
2000 Primary, Governor, Republican	Marron	Primacy	.003*	.047	.047
2000 Primary. Governor, Republican	Squires	Primacy	.001	.936	.933
2000 Primary, CD 2, Democrat	Brannen	Primacy	.011	.558	.566
2000 Primary, CD 2, Democrat	Jackman	Primacy	.014	.447	.451
2002 Primary, Governor, Democrat	Fernald	Primacy	.023	.162	.157
2002 Primary, Governor, Democrat	Hollingworth	Primacy	.014	.380	.381
2002 Primary, Governor, Republican	Benson	Recency	-.003	.812	.822
2002 Primary, Governor, Republican	Hass	Primacy	.003*	.024	.043
2002, Primary Governor, Republican	Humphrey	Primacy	.013	.329	.329
2002 Primary, Governor, Republican	Keough	Primacy	.012	.430	.442
2002 Primary, Governor, Republican	Kingsbury	Primacy	.000	.659	.657
2002 Primary, Governor, Republican	Kroepel	Primacy	.001	.292	.277
2002 Primary, U.S. Senate, Republican	Smith	Primacy	.017+	.076	.076
2002 Primary, U.S. Senate, Republican	Stremsky	Recency	-.000	.895	.891

Race	Candidate	Direction of Effect (1)	Effect (2)	p-value (3)	p-value from Randomization Inference (4)
2002 Primary, U.S. Senate, Republican	Sununu	Recency	-.000	.967	.976
2002 Primary, CD 1, Democrat	Clark	Primacy	.016	.245	.257
2002 Primary, CD 1, Democrat	Dean	Primacy	.015	.260	.271
2002 Primary, CD 1, Republican	Barrows	Primacy	.007	.686	.689
2002 Primary, CD 1, Republican	Bevill	Primacy	.000	.984	.987
2002 Primary, CD 1, Republican	Bradley	Primacy	.028	.423	.423
2002 Primary, CD 1, Republican	Clark	Primacy	.036*	.041	.048
2002 Primary, CD 1, Republican	Hoffman	Primacy	.009**	.002	.002
2002 Primary, CD 1, Republican	Mahoney	Primacy	.045+	.057	.057
2002 Primary, CD 1, Republican	Stephen	Primacy	.041	.228	.232
2002 Primary, CD 1, Republican	Wendelboe	Primacy	.009	.555	.478
2002 Primary, CD 2, Democrat	Jackman	Primacy	.023*	.047	.044
2002 Primary, CD 2, Democrat	Swett	Primacy	.026*	.033	.033
2002 Primary, CD 2, Republican	Bass	Primacy	.006	.386	.405
2002 Primary, CD 2, Republican	Douglass	Primacy	.006	.360	.359
2004 Primary, Governor, Democrat	Lynch	Primacy	.022	.176	.178
2004 Primary, Governor, Democrat	McEachern	Primacy	.021	.207	.212
2004 Primary, Governor, Republican	Benson	Primacy	.030*	.035	.036
2004 Primary, Governor, Republican	Tarbell	Primacy	.029**	.009	.010

Race	Candidate	Direction of Effect (1)	Effect (2)	p-value (3)	p-value from Randomization Inference (4)
2004 Primary, U.S. Senate, Republican	Alciere	Primacy	.013***	.000	.000
2004, Primary U.S. Senate, Republican	Gregg	Primacy	.017*	.044	.034
2004, Primary U.S. Senate, Republican	Tipa	Primacy	.010*	.012	.010
2004 Primary, CD 1, Democrat	Bruce	Primacy	.046*	.041	.042
2004 Primary, CD 1, Democrat	Duffy	Primacy	.063*	.011	.010
2004 Primary, CD 1, Democrat	Liles	Primacy	.018**	.002	.002
2004 Primary, CD 1, Democrat	Nadeau	Primacy	.071+	.056	.056
2004 Primary, CD 1, Republican	Bevill	Primacy	.007	.338	.333
2004 Primary, CD 1, Republican	Bradley	Primacy	.005	.504	.507
2004 Primary, CD 2, Democrat	Hodes	Primacy	.071**	.001	.002
2004 Primary, CD 2, Democrat	Owen	Primacy	.066**	.002	.001
2004 Primary, CD 2, Republican	Bass	Primacy	.034*	.041	.043
2004 Primary, CD 2, Republican	Brady	Primacy	.033*	.043	.045
2012 General, President	Obama (Democrat)	Primacy	.000	.955	.958
2012 General, President	Romney (Republican)	Recency	-.002	.688	.723
2012 General, President	Johnson (Other)	Primacy	.000	.945	.981
2012 General, President	Goode (Other)	Primacy	.000	.917	.921
2012 General, Governor	Hassan (Democrat)	Primacy	.002	.720	.769
2012 General, Governor	Lamontagne (Republican)	Primacy	.006	.323	.394
2012 General, Governor	Babiarz (Other)	Recency	-.000	.924	.931

Race	Candidate	Direction of Effect (1)	Effect (2)	p-value (3)	p-value from Randomization Inference (4)
2012 General, CD1	Shea-Porter (Democrat)	Recency	-.003	.759	.760
2012 General, CD1	Guinta (Republican)	Recency	-.009	.258	.268
2012 General, CD1	Kelly (Other)	Recency	-.001	.624	.640
2012 General, CD2	Kuster (Democrat)	Primacy	.011^{+}	.072	.186
2012 General, CD2	Bass (Republican)	Primacy	.008	.177	.320
2012 General, CD2	Macia (Other)	Primacy	.000	.860	.915
2016 General, President	Clinton (Democrat)	Primacy	.015^{+}	.071	.075
2016 General, President	Trump (Republican)	Primacy	.017*	.049	.043
2016 General, President	Johnson (Other)	Recency	-.001	.629	.629
2016 General, President	Stein (Other)	Primacy	.001^{+}	.072	.072
2016 General, President	De La Fuente (Other)	Primacy	.000^{+}	.082	.079
2016 General, Governor	Ostern (Democrat)	Primacy	.014^{+}	.071	.070
2016 General, Governor	Sununu (Republican)	Primacy	.016*	.033	.027
2016 General, Governor	Abramson (Other)	Recency	.000	1.000	1.000
2016 General, U.S. Senate	Hassan (Democrat)	Primacy	.015*	.010	.010
2016 General, U.S. Senate	Ayotte (Republican)	Primacy	.012*	.026	.025
2016 General, U.S. Senate	Chabot (Other)	Recency	-.000	.830	.832
2016 General, U.S. Senate	Day (Other)	Primacy	.000	.815	.813
2016 General, CD1	Shea-Porter (Democrat)	Primacy	.007	.320	.319
2016 General, CD1	Guinta (Republican)	Primacy	.005	.499	.504

Race	Candidate	Direction of Effect (1)	Effect (2)	p-value (3)	p-value from Randomization Inference (4)
2016 General, CD1	Lombardo (Other)	Primacy	.001	.259	.253
2016 General, CD1	Kelly (Other)	Recency	-.000	.775	.772
2016 General, CD1	O'Connor (Other)	Recency	-.001	.878	.880
2016 General, CD2	Kuster (Democrat)	Primacy	.015	.101	.103
2016 General, CD2	Lawrence (Republican)	Primacy	.021**	.008	.008
2016 General, CD2	Babiarz (Other)	Recency	-.000	.894	.893

Note: Cell entries in column (2) are OLS regression coefficients (p-values in column (3)) predicting each candidate's vote share using whether the candidate was listed first and other predictors, including total votes cast (in all elections) and the percent of registered voters who were registered as Democrats and the percent of registered voters who were registered as Republicans in the general elections. Coefficients for other predictors are not shown.

***p<.001 **p<.01 *p<.05 +p<.10