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The Politics, Promise and Peril of Ranked Choice Voting

Editor
Caroline Tolbert

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Editorial

Editor's Introduction: The Promise and Peril of Ranked Choice Voting

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Abstract
Dissatisfaction with two-party politics is at an all-time high in the US. As extreme polarization and minority rule persist, a possibility of an electoral reform becomes increasingly more likely. This editor's introduction discusses the ranked choice voting (RCV) as an alternative to the current single-member geographic districts with winner-take-all plurality elections in the US. The articles for this thematic issue critically evaluate whether RCV lives up to its promise in improving democracy in the US. Like any rule or institutional change, it has benefits and drawbacks. The empirical and historical research presented here focuses on the implementation and use of RCV in the US compared to other countries. This thematic issue offers new insights into the promise and perils of RCV as a way to aggregate votes in elections that ensure that the winning candidate receives a majority of the votes cast.

Keywords
alternative vote; electoral system; democracy; multipartism; plurality elections; polarization; proportional representation; ranked choice voting; single transferable vote; two-party system

Issue
This editorial is part of the issue "The Politics, Promise and Peril of Ranked Choice Voting" edited by Caroline Tolbert (University of Iowa, USA).

1. Introduction

Dissatisfaction with two-party politics is at an all-time high in the US. A 2021 Gallup poll reports 62% of Americans believe the Democratic and Republican parties are doing such a poor job of representing their constituents and that a third party is needed (Jones, 2021). An equal number believe change to the 'fundamental design and structure' of the US government is necessary (Pew Research Center, 2018). Today 4 in 10 Americans do not identify with either of two parties, labeling themselves political independents (Gallup, 2021; although scholars find that many independents lean toward one of the two parties and in two-party elections vote like partisans; see Keith, Magleby, Nelson, Orr, & Westlye, 1992; Klar & Krupnikov, 2016). Because campaigns are more likely to mobilize voters who are registered with the parties (Hersh, 2015), political independents in plurality election systems are less likely to be contacted or to vote in elections. They also have lower political efficacy (Donovan & Bowler, 2004). Proportional electoral systems generally create more equitable outcomes between political parties and encourage wider social group representation.

The predominance of just two major political parties in the US is the result of election rules—single-member geographic districts with winner-take-all plurality elections. This means the candidate with the most votes in a district wins public office, even if that individual wins less than a majority (50%+1) of the votes cast. This is commonly referred to as Duverger's law, which holds that plurality rule elections within single-member districts tend to favor a two-party system (Duverger, 1954). If election rules change, outcomes may change the number of viable political parties. Electoral reform is possible if a majority of elected officials believe they will benefit under a new system (Boix, 1999; Drutman, 2020) or if reform is adopted directly by voters via an initiative or referendum (Bowler & Donovan, 2000). The latter is

how ranked choice voting (RCV) was adopted statewide in Maine and Alaska. The Framers of the US Constitution were silent on whether winner-take-all, pluralities or majorities should decide elections.

Some argue the main problem with the current system in the US is that it forces the entire spectrum of political opinions into just two camps. Pew's political typology has consistently identified at least nine distinct ideologies or groups using extensive nationwide polling (Pew Research Center, 2017). The ideological space between Democrat socialists like Bernie Sanders and President Joe Biden who represents the Democratic party's traditional moderate-liberal wing is one example. Likewise, there are large ideological gaps between right-wing populists like former President Donald Trump and mainline pro-business Republicans like Utah Senator Mitt Romney (Donovan & Redlawsk, 2018). But with simple-majority (i.e., plurality) election rules, individuals are forced to vote for one of the two party candidates (Democrats or Republicans) or essentially throw away their vote, as smaller parties almost never have enough votes to win office. If third parties do get even a small share of the vote, it can wreak havoc on the two-party system. Because of this, nearly one-third of US presidents since the Civil War were elected with less than 50% of the popular vote (Donovan & Bowler, 2004).

The US is at a tipping point because of extreme political polarization (Abramowitz, 2018). A July 7, 2020 Gallup poll found an 89-percentage-point difference between Republicans' and Democrats' ratings of then President Trump. This was the largest partisan gap Gallup ever measured for presidential approval in a single survey dating back to 1936. Political polarization in the US is acerbated by high residential partisan segregation, where most Democrats living in urban, suburban or rural areas (high, medium or low density) rarely interact with Republicans, and vice versa (Brown & Enos, 2021). The result is that there is nothing pulling candidates to the middle to appeal to a mixture of voters.

This severe polarization of US politics was not evident in the middle of the 20th century. Drutman (2020) argues that in the mid-1950s–mid-1990s the political system in the US had de-facto a four-party system with both Democrats and Republicans splitting into liberal and conservative wings. This de facto existence of four parties partially explains why the democratic system in the US worked sufficiently during that time. Today, however, toxic (affective, emotional, tribal) partisanship escalates the political divide (Mason, 2018). For some, the only way to de-escalate politics is to split up the two major parties and introduce more central parties to American politics, parties that can fill in the ideological vacuum in the middle of the political spectrum.

2. Ranked Choice Voting

One popular reform to give voters more choice of candidates and parties is RCV or instant run-off voting; in other countries this is offered referred to as the Alternative Vote. While Drutman (2020) advocates for RCV combined with multi-member districts to create a form of proportional representation (PR), growing local and statewide use of RCV with single member districts in the US offers one avenue for reform. RCV is similar to the Single Transferable Vote which allows voters to rank candidates on an election ballot in order of preference, rather than cast a single ballot for most preferred choice. Voters can choose third party or independent candidates and not risk throwing away their vote. RCV could reduce political polarization in America by giving candidates incentives to campaign for 2nd and 3rd place votes, and not alienate voters whose first choice is someone else (Grofman & Bowler, 1996). RCV may favor politicians that are more centrist because they can win with many second-place votes from both parties. The centrist candidates would then be able to mend the ideologically fractured country back together. RCV is designed to produce a majority winner within single or multi-member districts.

RCV can be seen as a compromise of the current plurality system in the US and pure PR systems found in other countries. RCV or instant run-off voting may be better than two-round elections for several reasons. First, the elections are more likely to result in a widely acceptable leader with a broader base of support (although this is not guaranteed; Richie, Oestericher, Otis, & Seitz-Brown, 2021). Second, voters do not need to make complicated strategic calculations, choose the lesser of two evils, or be concerned their votes might be wasted because they can express multiple preferences (but see Santucci, 2021, for possible limitations). RCV may save governments money to avoid fielding multiple elections (Drutman, 2020, pp. 182-183). The advantages of RCV can include higher youth participation (see Juelich & Coll, 2021) and representation for women in public office (Terrell, Lamendola, & Reilly, 2021). When survey respondents actually rank candidates, Coll (2021) finds most demographic groups, including racial and ethnic minorities, find ranking easy (see Donovan, Tolbert, & Gracey, 2019, and experimental research by Maloy & Ward, 2021). While RCV may result in higher involvement of constituencies in politics and elections, existing party elites may oppose reform if their candidates fail to consistently win under the new rules (Santucci, 2021). Yet Reilly (2021) shows how candidate and party endorsements influence voters' rankings in Australia and can, over time, promote reciprocal ranking exchanges between parties building support for the process and reducing negative campaigning (see Kropf, 2021 on slates of candidates).

3. Why Does Ranked Choice Voting Matter Now? Democratic Backsliding and Political Polarization

Why does RCV matter now? Because US political parties are more polarized. In the 2016 presidential election, Donald Trump won the Republican primaries with 38%

of the votes cast in the first 33 states to vote. In the end, he won 45% of the votes in Republican primaries (Richie et al., 2021). Because no candidate had more votes, he was the Republican party nominee. Under the Electoral College and plurality voting rules (two states allocate proportionally), Trump was elected president in 2016 despite winning 3 million votes fewer nationwide than his Democratic opponent. This is minority rule (Owen, 2020). This same outcome occurred in the 2000 presidential election when George W. Bush was elected president and lost the popular vote. In 2024 or 2028 another populist candidate outside of the mainstream—possibly with little previous experience in politics—might win just 40% support in state-by-state primaries. He or she might again fail to win a majority of the popular vote in the general election but could be elected president. If winning candidates continue to lose elections (defined by losing the popular vote), will the citizens still support the government?

Other states/countries learned the hard way and changed their election system after a war or an authoritarian leader. The US does not have safeguards to prevent candidates that don't win a majority of votes in an election from taking office as the parties lost their gatekeeping function after the 1972 election with the shift to binding primaries (Levitsky & Ziblatt, 2018, pp. 50–51). This becomes more of a concern when far-right factions (or in the future, far-left factions) take hold within one of the two mainstream political parties.

Warnings that the US could backslide toward an autocracy were driven in part by the Republican party's shift away from democratic norms and practices during President Trump's presidency (2016–2020). Backsliding is used to describe a crisis of democracies, as authoritarian leaders and military governments gain new ground globally. In 2021, Freedom House reported that scores of democratic freedoms dropped for the 15th straight year, as many countries restricted privacy rights to fight the pandemic (Coppedge et al., 2021; Pemstein et al., 2021). The Polity V score codes the characteristics of countries in the world on a comparative rating scale from autocracy to democracy. Covering 167 countries from 1800–2020 with a population of over half a million people, Polity measures six components such as qualities of executive recruitment, constraints on executive authority and political competition. Emphasis is placed on constraints of elites—how much the president is checked by parliament.

The Polity score measures government authority on a 21-point scale from −10 (hereditary monarchy) to +10 (consolidated democracy). These scores are often converted into three regime groups: 'autocracies' (−10 to −6), 'anocracies' (−5 to +5), and 'democracies' (+6 to +10). In 2020, the US dropped below the democracy threshold on the Polity scale to an anocracy/partial democracy (Center for Systemic Peace, n.d.). Factors that contributed to the drop included extreme political polarization and President Trump's unwillingness to cooperate with congressional oversight during the impeachment. Additional factors were Trump's challenge of the 2020 presidential election results, undermining public trust in democratic elections. The more rigorous V-Dem electoral democracy score ranges from 0 to 1. The US score dropped from .894 to .815 between 2016 and 2020 (Coppedge et al., 2021; Pemstein et al., 2021). While the US Polity or V-Dem scores may bounce back, the change signifies a perception of political instability or a tipping point. How much do election rules have to do with the quality of democracy?

4. Do Election Rules Matter?

Election rules matter—they are the rules of the game. Free, fair, and competitive elections are the minimum necessary condition for democracy. Electoral processes and rules, therefore, are the foundations of democratic regimes. When it comes to attempts at strengthening democracy in transitioning countries or nonconsolidated democracies, changes to electoral rules are often a main solution. The two main types of electoral systems—plurality (or a special case of it: majoritarian) and proportional—exist in different political environments and are designed to produce two different political outcomes. While plurality systems promote single-party governments with two major parties on the political spectrum, proportional systems encourage power-sharing by generating governments with multiple parties and party coalitions. As a result, majoritarian systems provide more democratic accountability and proportional systems provide more diversity and representation (Norris, 2004).

The observation that the simple plurality electoral systems tend to produce two-party systems was noted in Duverger's Law (Duverger, 1954, p. 217, as cited in Cox, 1997, p. 14). In contrast, Duverger's Hypothesis states that "the simple-majority system with second ballot and PR favors multipartyism" (Duverger, 1954, p. 239). Numerous studies of electoral systems provide empirical evidence to support these arguments (Boix, 1999). Interestingly, the US is the only example of the 'pure' Duverger's law existence in practice, because Britain, Canada, and India—countries with first-past-the-post elections—have small but persistent third or even fourth parties (Bowler, Grofman, & Blais, 2009; Grofman, Bowler, & Blais, 2009). Nevertheless, the electoral rules do matter for the number of parties in the parliament, party behavior, as well as voters' behavior. By adopting one or another electoral system states can 'control' the number of major parties in the political arena (Norris, 2004).

Norris (2004) finds that, in general, political parties in PR electoral systems appeal to a particular sector of the electorate, develop tight social networks and connections with their voters, and compete within a diverse and dispersed political spectrum, as each party occupies a particular sector of political ideology. PR systems are

associated with higher voter turnout and greater satisfaction with democracy (Karp, Banducci, & Bowler, 2003). In majoritarian systems, parties face higher electoral hurdles, appeal to diverse sectors of the electorate, concentrate on overreaching issues (efficient public services, economic growth, defense, etc.), and are usually located in the center of the political spectrum, as well as the center for social and ideological issues. Norris (2004) also finds that social cleavages are weaker in majoritarian systems.

If we compare the summary of the majoritarian systems provided by Norris (2004) with the political realities in the US, it becomes clear that the two-party system of the US is an outlier. With the increasing political polarization, the major parties in the US (at least the Republican party) are moving further away from the center of the ideological spectrum, reinforcing already strong social cleavages (Mason, 2018). These outcomes are not typical for majoritarian systems and, it can be argued, contribute to the current democratic struggles reflected in the recently released democratic indices, such as V-Dem and the Polity score.

5. Are Multiparty Systems Better?

While multiparty systems provide clear benefits, it is important to consider some of the potential drawbacks. The major issue with multiparty democracy, the issue that has been salient in Europe in recent years, is that multiparty systems allow extremist parties to enter the government. While this may be a negative consequence, Drutman (2020) argues that the representation of extremist parties is a good thing. It provides "a platform to vent and defuse grievances and let[s] other parties adjust in response" (p. 207). This representation may lead to more transparency in extremist party's actions, predictability, and accountability. It may limit the party's influence of otherwise marginalized segments of the society. This is a better outcome than when a "hardline minority fraction [that] redefined the modern Republican Party" (Drutman, 2020, p. 207) gains the control over the presidency or a branch of Congress.

When extremist parties enter governments, their size matters to the extent of the influence. As we saw in the US, the control of the Republican party, one of the two major parties, by a minority of the population translated into the minority control of American politics. With the multiparty system, minority control is close to impossible.

Even with the rise of the popularity of the far-right parties in Western Europe, most of them remain with a small representation in the parliaments. Sweden Democrats, a nationalist and right-wing populist political party in Sweden, is one of eight parties currently represented in the Riksdag during the 2018–2022 electoral period. In 2018 the party won 62 out of 349 seats (17.8%) in the parliament (Riksdagsförvaltningen, n.d.). This is the largest number of seats Sweden Democrats have won since they first entered the Riksdag in 2010 after overcoming the 4% electoral threshold. In Germany, the Alternative for Germany (AfD), a nationalist and right-wing populist political party, is third out of the six parliamentary groups in the Bundestag with 88 out of a total of 709 seats (12.4%; German Bundestag, n.d.). With the exception of Hungary and Poland, where nationalist parties hold the majority of the seats in the parliaments, and Switzerland where The Swiss People's Party is the largest in the Federal Assembly (although they do not have the majority of the seats), the rest of nationalist political parties in Europe represent the minority. The benefits of multiparty systems may outweigh potential drawbacks of the emergence of an extremist party.

6. Conclusions

By a different metric than Polity or V-Dem scores, US democracy exhibited resiliency in the 2020 presidential election with historic voter turnout breaking a 120-year record. Due to the coronavirus pandemic that increased efforts to avoid election day crowds, the mailbox became the ballot box. This milestone election saw nearly two-thirds of all votes cast early, roughly one-third of which were in-person at polling locations and two-thirds by mail. Research finds state election laws allowing mail/absentee voting, in person early voting and same-day registration, as well as updated election administration processes, can increase voter turnout, even for the most disadvantaged groups (Ritter & Tolbert, 2020). Yet a national law to protect voting access has proven difficult, even under unified party control of the presidency and congress. In 2021, the US House of Representatives passed historic legislation (HR 1, *For the People Act*) to protect voting rights nationwide, but it is unlikely to be adopted by the US Senate or to become law. Post the 2020 election multiple states adopted laws to restrict use of mail/absentee voting. The US has a patchwork of laws for voting access, with variation across the 50 states.

Most agree US democracy faces challenges. RCV is one reform of the election system that has been proposed to ensure winning candidates a majority of the popular vote. The articles for this thematic issue critically evaluate whether RCV lives up to its promise. Like any rule or institutional change, it has benefits and drawbacks. The empirical and historical research presented here focuses on the implementation and use of RCV in the US compared to other countries. They offer new insights into the promise and perils of RCV as a way to aggregate votes in elections that ensure that the winning candidate receives a majority of the votes cast.

Conflict of Interests

The authors declare no conflict of interests.

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Article

Ranked Choice Voting in Australia and America: Do Voters Follow Party Cues?

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Abstract
Ranked choice voting (RCV) is experiencing a surge of interest in the United States, highlighted by its 2018 use for Congressional elections in Maine, the first application of a ranked ballot for national-level elections in American history. A century ago, the same system was introduced in another federal, two-party continental-sized democracy: Australia. RCV's utility as a solution to inter-party coordination problems helps to explain its appeal in both countries, underscoring the potential benefits of a comparative analytical approach. This article examines this history of adoption and then turns to a comparison of recent RCV elections in Maine with state elections in New South Wales and Queensland, the two Australian states which share the same form of RCV as that used in the United States. This comparison shows how candidate and party endorsements influence voters' rankings and can, over time, promote reciprocal exchanges between parties and broader systemic support for RCV. Such cross-partisan support helps explain the stability of RCV in Australia, with implications for the system's prospects in the United States.

Keywords
Australia; democracy; elections; electoral system; preferential voting; ranked choice voting; United States of America

Issue
This article is part of the issue "The Politics, Promise and Peril of Ranked Choice Voting" edited by Caroline Tolbert (University of Iowa, USA).

1. Introduction

Ranked choice voting (RCV) is experiencing a surge of interest in the United States. Advocated as a means of delivering more majority-supported victors and addressing broader problems of polarization, incivility and vote-splitting under plurality rules, RCV has been adopted for mayoral and other local elections in major United States cities such as San Francisco, Oakland, Minneapolis, and Santa Fe. Most importantly for this article, after repeated initiative ballots and legal challenges, was RCV's adoption for United States Congressional elections in Maine, and its first use at the November 2018 mid-terms.

This historic first use of a ranked ballot for United States national elections invites comparison with other jurisdictions using RCV in similar partisan, large-scale contests. A particularly relevant comparative case is Australia—another continental-sized federal two-party democracy that has used RCV for state and national elections for over a century. Australia's extended use of RCV in both single-member majoritarian (in the federal House of Representatives and most state lower houses) and multi-member proportional (in the Senate and most state upper houses) forms has seen Australian politics develop distinctive adaptations to 'preferential voting,' as RCV is known locally. As this article will show, some of these are directly relevant to the United States, while others are unlikely to be part of the American RCV experience.

Key in both countries is how parties and candidates respond to the presence of a ranked ballot in terms of their campaign strategy. This article examines the process by which parties and candidates seek and reciprocally offer secondary rankings in their quest for electoral victory. In Australia, such 'preference swapping'

arrangements are usually made between parties which share some degree of ideological affinity, and communicated to voters via another distinctive Australian adaptation to RCV: 'how-to-vote' cards that detail each party's suggested ordering of rankings amongst all candidates standing for a seat. These are distributed outside polling booths by party operatives, seeking to ensure prospective voters cast a valid vote and follow the party's preference-swapping deals as closely as possible. By contrast, in the more recent and localized American use of RCV to date, such prompts and voter cues are more likely to be communicated at candidate debates or through the media.

How closely voters follow their favoured party's ranking cues can determine not just who wins and loses a seat, but also the extent to which RCV encourages broader campaign civility, moderation and collaboration (Donovan, Tolbert, & Gracey, 2016; Reilly, 2001). It is thus a key indicator of RCV's effectiveness as a political reform. This article examines this issue by comparing Maine with the two Australian states, New South Wales and Queensland, which share the same form of RCV. Candidates, parties and affiliated groups all influence voters' use of rankings. As I will show, the willingness of parties and candidates to advocate—or withhold—endorsements of secondary rankings for rivals can determine the outcomes of closely-fought contests such as Maine's 2nd Congressional District RCV election in 2018, and similar races which feature multiple candidates who share overlapping policy platforms and ideology.

2. Some Background

By requiring winners to obtain an absolute majority of the vote (either outright or after the distribution of preferences), RCV offers different routes to victory than plurality elections. While in practice most RCV contests are won by the same candidate who leads in the first-choice count, this is not always the case. At Australia's 2016 federal election, for instance, 11% of all seats were won by candidates who were not the first-round plurality leader, while (as discussed later in this article) Maine's first RCV election also saw such a 'leap-frog' (Maloy, 2019) or 'come-from-behind' (Reilly & Stewart, 2021) result. In such cases, RCV advantages candidates who can garner not only a competitive first-choice vote but also a healthy flow of second-choice votes from supporters of other candidates. This encourages broader pre-election appeals and party collaboration than would occur under otherwise-identical plurality voting procedures.

I have argued elsewhere that Australia's extensive and extended use of RCV is one reason that electoral competition there has remained largely centrist (Reilly, 2001, 2016, 2018), in contrast to the United States. Despite the different contexts, the fundamentals of single-member RCV are identical in both countries: Voters provide an ordinal ranking of candidates standing, and any candidate who wins an absolute majority of first-choice votes is elected immediately. If no candidate has an outright majority, the candidate with the lowest number of first-choice votes is eliminated from the count and their ballots transferred according to each voter's second (and, if necessary, later) rankings. This process continues until one candidate has gained a majority of votes left in the count, and is elected.

However, there are also some important differences between American and Australian practice. Most Australian jurisdictions compel voters to express a ranking for *all* candidates standing. Along with Australia's other forms of electoral compulsion—compulsory enrollment and compulsory voting—this 'compulsory preferential' form of RCV largely removes from parties the need to get out the vote, and ensures a much more reliable flow of preferences from minor parties back to one of the two major parties (Reilly & Maley, 2000).

By contrast, in San Francisco and some other United States RCV elections, electors are limited to a maximum of three preferences due to the configuration of voting machines, with the ballot based on machine-readable selections by column rather than the hand-written numerical rankings used in Australia. This enables 'overvotes' to be identified and corrected before they are lodged, making for much lower levels of invalid votes than at Australian elections, where numbering errors, blank ballots and protest votes are all a feature of the compulsory system (Kimball & Anthony, 2017).

Figure 1 illustrates these different ballot designs from three different RCV elections: the first from Maine, the second from a compulsory preferential Australian federal election, and the third from an optional preferential New South Wales state election. Maine's voters are instructed to rank a first choice, a second choice "and so on… continue to rank as many or as few candidates as you like." In New South Wales, the instructions are to number a first choice, with the rider that "you can show more choices, if you want to, by writing numbers in the other squares." By contrast, at Australian federal elections, voters are told explicitly to "number every box to make your vote count."

These differences reflect the history of RCV's adoption in each case. Australia borrowed liberally from the United States when choosing its national governing institutions at federation in 1901: dividing and sharing sovereignty between national and state governments via federalism, with a bicameral elected legislature featuring a popular House of Representatives and a Senate to represent State interests, a written constitution interpreted by the highest court in the land, and so on. But in contrast to the American experience, in Australia the drawbacks of plurality elections were highlighted in early constitutional debates and were soon manifested in elections to the new federal and state assemblies in the early decades of the 20th century.

In 1907, the state of Western Australia became the first jurisdiction to adopt RCV as a means to save the costs of a runoff election, promote more civic

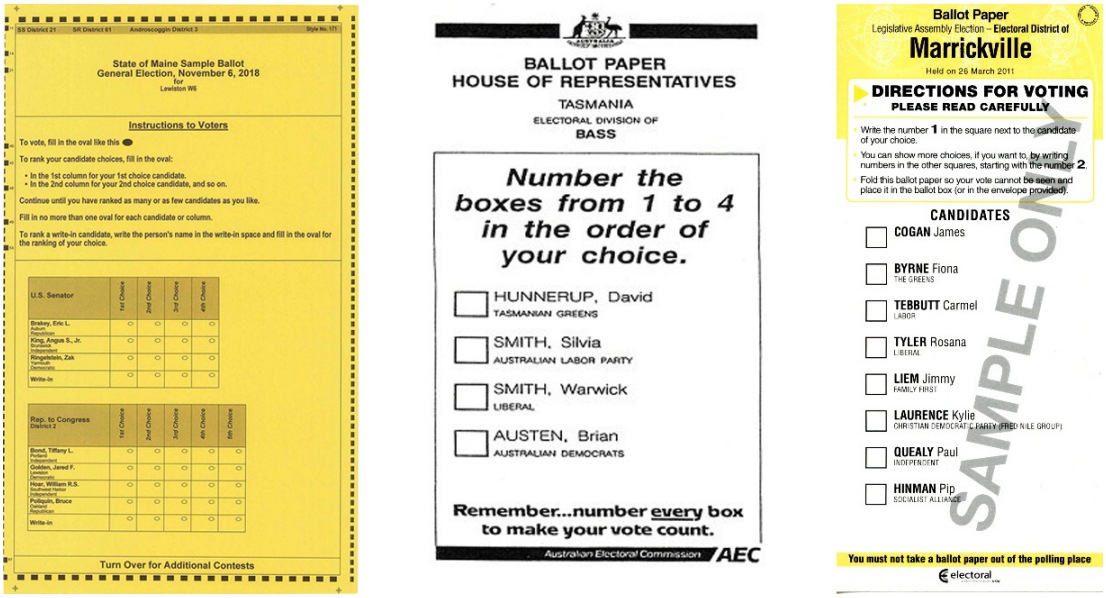

Figure 1. Three RCV ballot papers from Maine (Congressional), Australia (federal-level), and New South Wales (state-level).

engagement in the electoral process, and enable majority rather than plurality victors, as well as sparing Australian parties the need to run primary elections (Phillips, 2008, p. 44). However, the first state election held under RCV in 1908 was only partially successful in meeting these aims, as parties continued to present multiple candidates and many voters expressed only a first choice, making rankings ineffective (being counted in only eight of the 50 electorates, and changing the results in none). This undermined the aggregation potential of preferential voting, and made its operation in practice analogous to a plurality race.

In the United States, similar plurality-like outcomes were used to justify the repeal of RCV after its first wave of use in the early part of the 20th century. For instance, RCV rules for party primaries in Maryland, Indiana and Florida were all repealed in the 1930s, after successive elections in which relatively few voters expressed preferences beyond the first, delivering results indistinguishable from a plurality contest (Hughes & Santucci, 2017). In Australia, by contrast, the widespread non-use of preferences offered legislators the opportunity to make rankings mandatory, an idea that had been raised in earlier constitutional debates and presented political advantages for the dominant conservative side of politics in ensuring a degree of inter-party coordination. In 1911, before its second RCV election, Western Australia therefore made it compulsory for voters to express rankings for all candidates in order to effect a valid vote. Those who ranked only one or some candidates had their vote invalidated in most cases.

This change, little discussed at the time, proved to be highly consequential and was soon replicated by other states and the federal government. With party systems in an embryonic stage and the consequence of preference flows difficult to predict, the benefits of ensuring that these occurred by law if not voter choice proved particularly attractive to parties on the conservative side of politics, whose vote was often split between multiple rural and urban parties. Conservative interest in RCV peaked after a 1918 by-election was won by Labor with 35% of the vote despite the three non-Labor candidates collectively mustering 65%. The introduction of RCV with compulsory preference marking for national elections soon after sought to address these recurring coordination problems by allowing conservative urban and rural parties to cooperate, aggregating their votes to build majority victories over a plurality-leading Labor candidate (Graham, 1962).

On the face of it, this experience has some similarities with the more recent and episodic introduction of RCV for primary and city elections in the United States, where the emergence of third parties alongside ruling-party splits often made new reform alliances possible (Santucci, 2017). Upon closer examination, however, there are important differences. In Australia, with no primary elections (local branches pick candidates, but can be over-ruled by the national party executive), RCV was usually seen as a desirable end-point in itself, while in the United States it has often been seen as a stepping-stone towards broader reforms such as proportional representation (Amy, 2002; Drutman, 2019; Richie, 2004). Only in recent years, with RCV emerging as a viable reform for Congressional elections, have the virtues of majoritarian aggregation been championed (Diamond, 2017).

A possibly uncomfortable lesson for United States reformers from the Australian experience is that single-member RCV has never led to proportional representation. Instead, once single-member district elections changed from plurality to RCV, they stayed there. Indeed, once adopted federally, it took only a few decades for RCV to spread across the continent—from Western

Australia and Victoria (which had adopted the system in 1916) and then on to New South Wales (1928), South Australia (1936) and eventually Queensland (1962). By the early 1960s, single-member RCV was the law of the land for all lower houses save Tasmania, which uses a proportional form of RCV (Farrell & McAllister, 2006).

Key to this relatively smooth progression and adoption of RCV was the electoral interests of conservative parties, who found that compulsory preferential voting delivered a reliable flow of preferences from smaller parties to their right. By contrast, the Labor Party found themselves at an electoral disadvantage, and for many years sought to return to plurality voting or introduce optional preferences. By the 1980s, however, this began to change, as the rise of post-material and environmental politics saw Labor start to benefit from increasing flows of preferences from parties to their left, such as the Australian Democrats and later the Australian Greens. As Labor became the beneficiary of a system it had long opposed, it also became a strong supporter of compulsory rankings, from which it now greatly benefits. As Peter Brent (2018) has detailed, this structural advantage has been increasing for decades, with Labor increasingly advantaged by preference transfers compared to the centre-right Coalition (i.e., the Liberal and National Parties in a long-term alliance; see Figure 2).

Despite this partisan imbalance, RCV has to date retained the support of all the main Australian parties, albeit for different reasons. While the federal Coalition has over time become a net loser from RCV in electoral terms, they have so far continued to support the system in part because it helps maintain their long-standing coalition arrangement. In so-called 'three-corner' contests in which National, Liberal and Labor candidates as well as minor parties and independents stand, compulsory RCV helps avoid vote-splitting between different parties and affiliated groups from the political right, a concern today just as it was a century ago. Minor parties of the political left such as the Australian Greens also support RCV, seeing it as a means for them to wield influence on the major parties.

By lessening uncertainty for the major parties over the quantity and direction of rankings, compulsory preferential RCV also makes elections more predictable and reinforces the status quo. Recommendations from scholars to revert to optional preferential voting, as used in the United States and indeed all cases of RCV outside Australia, have to date attracted little enthusiasm (Farrell & McAllister, 2006, p. 179; Reilly & Maley, 2000, pp. 37–58). However, in late 2020, a Coalition-dominated parliamentary committee called for optional preferential voting to be introduced for future federal elections, signalling a potential change in this long-standing consensus (Reilly & Stewart, 2021).

By making lower house electoral politics a contest for the middle ground, RCV in Australia has also served as a prophylactic against political extremism. At times, the two major parties have even swapped preferences with each other to eliminate perceived systemic threats, such as the emergence of the far-right One Nation party in the late 1990s (Reilly, 2001, pp. 53–54). This stands in sharp contrast to the situation in the United States today, where voters often face polarized choices at both primary and general elections under plurality rules, forced to choose between relatively extreme candidates (Bartels, 2016), and where the two main parties face perverse incentives towards negative campaigning and other zero-sum strategies. By introducing some elements of a positive-sum game—whereby votes for a rival can still flow back to your party via transfers—RCV offers a potential circuit-breaker to this 'doom loop' (Drutman, 2019).

Supporting this contention, studies of RCV elections in San Francisco, Oakland, Minneapolis and other American cities have mostly affirmed that RCV elections are less negative and more cooperative than equivalent

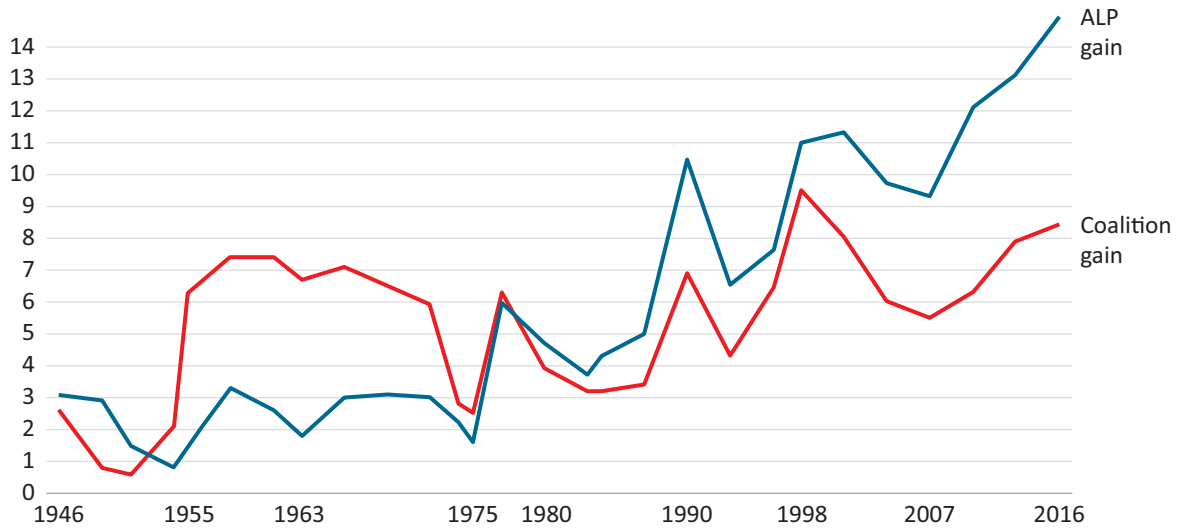

Figure 2. Major parties' gains from preferences at federal elections (%), 1946–2016. Source: Brent (2018).

contests held under plurality rules (Donovan et al., 2016). Opinion polls have also presented significant confirming evidence that RCV increases electoral moderation when compared to control cases using plurality voting (Fairvote, 2015). Despite this, court challenges and repeal movements remain a feature of RCV in the United States, even as burgeoning reform movements push for the system's nationwide adoption. As Santucci (2018, p. 4) notes:

> RCV in the U.S. has been repeal-prone. Recent enactments in Pierce County (WA) and Burlington (VT), for example, lasted just a few years each. Voters in Ann Arbor (MI) used RCV for only one election, in 1975….Passing RCV today far from guarantees its permanence.

The varying treatment of rankings—optional versus compulsory—offers one potential explanation for the relative stability of RCV in Australia compared to the United States. By ensuring a reliable flow of rankings from supporters of smaller parties to larger ones, Australia's system of mandatory rankings has seen most parties grow to support RCV, with the majors seeking to harvest minor party preferences, and the minors seeing it as a means to improve their influence on major parties. Both are underpinned by 'cross-house' preference deals, in which parties' varying focus on lower and upper houses creates an opportunity for arbitrage between the two (Sharman, Sayers, & Miragliotta, 2002). As a result, RCV retains broad political support in Australia, to the point where alternatives are seldom considered. In the United States, by contrast, opponents of RCV have been able to organise resistance based not just on political interest, but also by making claims about RCV's complexity, administrative efficiency, and constitutional fealty.

The historic first-use of RCV for national elections in Maine in 2018, discussed below, presented a key test case for many of these claims. As a full-blooded partisan contest, it also invites direct comparison with the Australian experience. But in order to compare like with like, such a comparison needs to be with cases of optional rather than compulsory rankings. Two Australian states, New South Wales and Queensland, use (or in the case of Queensland, used) such a system, where the decision to express secondary and later preferences is left up to the voter rather than compelled in electoral law. Their mass-level partisan elections to state legislatures also provide a much better framework for comparison with Maine than the mostly non-partisan city-level applications of RCV elsewhere in the United States.

The remainder of this article therefore compares the relationship between party cues and voter rankings from 2015 elections in both Australian states with Maine in 2018. Appeals for secondary preferences made a difference to electoral outcomes in all cases—changing the strategic incentives for candidates compared to a plurality contest, and the likely results, in a number of cases. However, this comparison also highlights the broader challenges of behavioral adaptation by voters and politicians facing a new and more complex voting system—as was the case in Maine in 2018—and the need for intra-party coordination in tight races involving both major and minor parties, as well as independents, under RCV.

3. Parties and Preferences at Recent Australian State Elections

As noted earlier, Australian parties typically distribute 'how to vote' pamphlets outside polling places to convey to intending voters a preferred preference ordering amongst the candidates standing. Examination of the relationship between such party cues and the actual rankings made by voters can quantify the extent to which voter behavior can be steered by such suggestions. Such appeals are usually made on the basis of reciprocity—that is, an expectation that an offer by one party to recommend their supporters provide lower-order rankings for a rival candidate will see that party or candidate do likewise with their own voters. In Australia, these 'preference-swapping' deals rely on a combination of ideological affinity between parties and naked political calculation, and are typically negotiated by party secretaries rather than individual candidates.

Ballot paper surveys conducted in 2015 at state elections in both New South Wales and Queensland (Green, 2018) show how such deals influence voters' choice of whether and who to rank under RCV. While overall most voters followed the 'how-to-vote' recommendations of their favored party, there was considerable partisan variation. In New South Wales, for instance, the proportion of single rankings by Labor voters reached 72% in the 21 electorates where this strategy was recommended by the Labor Party's campaign material, and fell sharply when Labor how-to-vote cards instead suggested a partial or full preference recommendations. The rate of both full and partial preferencing doubled in those electorates where this was recommended, compared to suggestions that a single preference only be marked. For instance, recommendations that Labor voters give their second preference to a Greens candidate in some seats resulted in a 20% increase in preference flows compared to the control cases of no recommendation.

A similar pattern was evident amongst Greens voters. In seats where the Greens recommended a single '1' vote for their candidate only, the rate of exhausted preferences was 53% and the flow of second preferences to Labor 31%. Where the Greens recommended a second preference for a third party, the flows were 28% to such third parties and 24% to Labor. Where the second preference recommendation was for Labor, its share lifted to 38%. Averaged across all electorates, the willingness of Greens voters to express a second preference increased by 10% simply as a result of this being suggested on their 'how-to-vote' cards.

These patterns were largely replicated in a similar ballot paper survey conducted at what was the last optional preferential election in Queensland, also held in 2015. There, where the Greens recommended a second preference for a third party, the flows were 43% exhausted, 28% to that third party, and 24% to Labor. Where the second preference recommendation was for Labor, flows to Labor jumped to 38%. Not only did Greens voters give second preferences at a much higher rate when they were asked to than when they were not, but an additional 15% of available preferences went to Labor candidates when this was suggested by the Greens to their supporters.

The varying approaches to such party recommendations appears to hinge on the marginality of the seat concerned. The tighter the contest, the more likely it is that parties will seek and voters offer preferences to rival but politically cognate or aligned candidates, and hence (in these examples) the stronger the coordination between Labor and Green parties and their preference flows. It was in this way—by asking for and receiving the preferences of Greens voters—that Labor won three seats from second place on preferences at the 2015 NSW election (Green, 2015).

In sum, preference endorsements matter in RCV elections, and they particularly matter in close contests. Under conditions of electoral uncertainty, where secondary preferences may be the difference between victory and defeat, it makes sense as an a priori electoral strategy to signal this willingness to one's supporters, if only for the potential opportunity to receive preference flows from rivals in return.

4. Parties and Preferences in Maine's Second Congressional District 2018

The Australian experience is pertinent to Maine's 2018 and 2020 RCV elections—especially the 2018 2nd Congressional District race, the only one of the state's RCV contests that has so far gone to preferences (as did the 2018 Democratic gubernatorial primaries). All other RCV races to date have been won by absolute majorities in the first round—resulting in the re-election of incumbent Senators Angus King (I) in 2018 and Susan Collins (R) in 2020, incumbent 1st District Representative Chellie Pingree (D) in both years, and incumbent 2nd District Representative Jared Golden (D) in 2020.

The 2018 contest for Maine's 2nd Congressional District was another story. The first round of counting produced no majority victor, with just 2,171 first-ranked votes separating the incumbent, Republican Bruce Poliquin (46.3%) from Democrat challenger Jared Golden (45.6%), with two independents splitting the remaining 8% of the vote between them. Winning an RCV election in such circumstances depends not just on having a strong first-preference vote, but on gaining transfers from excluded candidates. However, the candidates adopted very different strategies in this regard. At an October 2018 candidate debate in the lead-up to polling day, Golden and the two independents all publicly pledged that they would preference each other—thereby signalling to their supporters to do likewise. Republican incumbent Poliquin, by contrast, spurned the idea of giving or asking for any second or third choice votes. This was a folly, as second preference votes in such a close race could (and as it turned out, did) provide the margin of victory.

Post-election ballot analysis by Alvarez-Rivera (2018) showed that, as in Australia, most voters in the 2nd District followed their chosen party's signalling. About two-thirds of Republican voters cast a single ranking for Poliquin only, as he had effectively suggested, while for Democrats this pattern was reversed, with over 60% of Golden voters ranking at least one other candidate—and even higher preferencing rates by supporters of the two independents in the race, Tiffany Bond (73%) and William Hoar (69%). Consequently, in the second round of counting Golden received over twice as many preferences from these two excluded candidates as did Poliquin—45%, compared to 20.5%—with a further 34% expressing no preference between the two major party candidates, and thus exhausting. This difference effectively determined the final result, a come-from-behind win for Golden with a margin of just under 3,000 votes after the batch elimination of Bond and Hoar.

Poliquin's dismissal of the logic of RCV saw him become the district's first incumbent to lose re-election in more than a century. Having earlier claimed that the new system was unconstitutional, Poliquin filed a lawsuit to stop the Secretary of State's tabulation of ballots before a winner could be announced. Poliquin lost this case and then appealed to the First Circuit to halt the certification and stop Golden from being seated. After Poliquin was unable to prevent Golden from taking office, he withdrew his appeal. Once all lawsuits were dismissed and the count was completed, Golden was declared the winner with a 50.62% majority. At the final certification of results, outgoing Governor Paul LePage scrawled "stolen election" on the official papers (Fried & Glover, 2018), in reference to Golden's come-from-behind victory. But such 'leap-frog' results are a feature, not a bug, of RCV, which can penalise polarizing candidates "with a sizeable core of loyal supporters but little appeal beyond them" (Maloy, 2019, p. 115).

The Australian comparison strongly suggests that by ignoring the strategic imperatives inherent in RCV, and recommending a single vote only with no rankings, Maine's Republican Party effectively deprived themselves of the potential benefits of receiving reciprocal preference flows from excluded candidates. This may have made sense as a broad statement of opposition to RCV, but it was a self-defeating strategy in the 2018 2nd Congressional District race, which was known ahead of time to be a close contest. In safe seats where a candidate feels assured of winning, they have less incentive to reach out for second and later rankings. In tight

contests, by contrast, every vote counts, and preferences from other candidates' supporters could be the margin between victory and defeat.

What both the comparative evidence from relevant Australian elections and the particulars of Maine's 2nd Congressional District race suggest is that had Republicans appealed for such second-choice votes, the result may well have been different. Either of the two eliminated independents received sufficient first-choice votes to make this a viable strategy. Even the lowest placed independent candidate, William Hoar, who ran on a rural-focussed platform, received 6,875 votes, and could have been a viable candidate for such an appeal. As it was, the total number of exhausted votes (7,820) were more than twice the margin of victory. While Maloy (2019, p. 115) suggests that "political professionals do not have to experience a leap-frog defeat before they can grasp that the system makes it possible, and they tailor their approach to voters accordingly," this did not seem to occur to Maine's Republican Party operatives in 2018.

This unwillingness to adapt to the strategic logic of RCV was not the only reason for the outcome, of course. There were other factors at play: the falling popularity of the Republican candidate and indeed of the party brand in Maine, and counterfactuals such as how many votes Poliquin would have lost had he chosen to reach out to other candidates in this way (presumably some Republican voters would have been put off by such an approach). Nonetheless, with an eventual margin of just 3,809 votes, the decision by Poliquin and the Republican Party leadership to explicitly reject the idea of either giving or receiving second and later rankings was a flawed political strategy that resulted in the loss of a potentially winnable seat.

This reflected in part a broader opposition to the system—Maine's Republicans had opposed the introduction of RCV from the beginning, when reformers targeted state assembly and gubernatorial elections after repeated split-vote victories by Republican Paul LePage. Ideological opposition to RCV amongst some Republicans reflected broader partisan polarization and the battle over the system's adoption at the state level. But effecting a majority choice in a multi-candidate race under RCV entails a willingness to use rankings, and the divergent partisan responses to so doing appears to have been the difference between winning and losing Maine's 2018 2nd Congressional District. As Tiffany Bond, one of the two independent candidates whose voters' rankings ultimately determined the outcome, put it at the final candidate's debate: "You'd be foolish not to rank" (Starrs & Taylor, 2018).

5. Conclusion

A key message for Maine and other users of RCV in the United States from the century-long Australian experience is that rankings matter, and that party recommendations can greatly affect how voters choose to express them. Particularly in close contests, it is rational to campaign for and reciprocally offer second preferences. However, this assumes an adaptive capacity to a new electoral system which may not always be present.

What light can the comparative evidence from Australia shed on this process? First, parties can use rankings to solve coordination problems. In recent decades the left side of Australian politics has been more congested and thus requires greater coordination on preferences than the right. As a result, there is more preference-swapping activity between parties of the left and centre-left than on the right. This is compounded by the reality that conservative and single-issue voters in Australia are more likely truncate their rankings, while younger voters for progressive parties are more willing to express a range of preferences, but less likely to directly follow party instructions (Green, 2018). Third, and perhaps most importantly, we know that Australian parties and candidates strike deals to give and receive preferences more in marginal seats. When a race is tight, office-seeking candidates have a prospective incentive to make such deals before an election if they think it may benefit their prospects, regardless of whether it actually does in practice.

Another conclusion is the importance of communicating such deals to voters. In Australia, secondary rankings under RCV are driven by reciprocal signals that each party gives to their supporters. Communicating these deals to voters explicitly, via campaign material, markedly increases their potence. In the Australian state elections whose electoral system most resembles American RCV, preference flows between aligned Green and Labor candidates increased by between 10% and 20% in seats when recommended by the parties themselves. In close races, this can often be the difference between victory and defeat. Given the similarity of the two-party systems and broader social contexts, we could expect similar relationships to evolve over time in partisan RCV elections in the United States, with independents and smaller parties on the left sending preferences to Democrats and those on the right to Republicans.

However, as this article has highlighted, there are also systemic differences that are likely to limit the extent to which RCV in the United States tracks the Australian experience. Without equivalent side-benefits to those received by the major Australian parties in terms of coalition management or inter-party coordination, there is at present less incentive for the Democrat and Republican parties to champion RCV reforms for their political payoffs. American proponents have thus had to focus on broader systemic benefits such as RCV's ameliorative impacts on political polarization and campaign civility when making the case for reform. This is a much harder sell than the naked electoral benefits that accrue to Australia's major political parties from compulsory rankings at federal elections.

Such compulsion is absent both philosophically and in practice to American politics, making the kind of

cross-partisan commitment to RCV seen in Australia less likely to develop in the United States. The Australian experience does suggest that RCV offers a plausible means to address polarisation and other pathologies, and as such represents an achievable reform to plurality voting which can have far-reaching consequences. However, the distinctive Australian proclivity for compulsion, in both preference marking and voter attendance, is unlikely to be part of the American RCV experience.

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Conflict of Interests

The author declares no conflict of interests.

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Article

Using Campaign Communications to Analyze Civility in Ranked Choice Voting Elections

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Abstract
Theory suggests that ranked choice voting (RCV) may create a more civil campaign environment. As voters must rank candidates, the candidates have an incentive to work with each other more collaboratively. This study uses text analysis software (LIWC) to examine candidate tweets and newspaper articles in RCV versus specifically-chosen plurality cities for evidence of positivity or negativity. In quantitatively comparing the tweets, the results are mixed among the cities. Qualitatively, candidates seem to be more likely to engage each other in RCV cities than in plurality cities. Using LIWC to analyze newspaper articles for campaign tone, one can see that RCV city articles have significantly more positive than negative words. This is the first published study to use direct campaign communication data to study RCV elections and campaign civility. This research validates survey research indicating that citizens perceive RCV campaigns are more civil.

Keywords
civility; content analysis; Linguistic Inquiry and Word Count; ranked choice voting; sentiment analysis; text analysis; Twitter

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1. Introduction

For decades, scholars have decried the level of negativity in American politics (e.g., West, 2014). Scholars and good government groups have suggested that election system change has the potential to ease conflict and negativity (e.g., Horowitz, 1991; Reilly, 2002). One change that is discussed is adopting 'ranked choice voting' (RCV). RCV allows voters to rank their preferences for candidates in a contest on one ballot. If no candidate wins a majority of votes, then the candidate(s) with the lowest number of top votes is eliminated and those voters' second choice votes allocated among the remaining candidates. The process continues until there is a majority winner.

Why would RCV result in campaigns that are more civil? (That is, less negative and more positive?) Under an RCV system, there is an incentive for more positive campaigning since each ballot is not an 'all or nothing' battle, as in plurality systems. A candidate has much less incentive to 'go negative' for fear of offending a voter who might have given them a second-place vote (Donovan, Tolbert, & Gracey, 2016). The possibility of the second-place vote is also a reason for candidates to work together (Robb, 2011). Similarly, RCV also promotes more bargaining and accommodation across different groups (Reilly, 2002). Examining five country case studies, Reilly (2002) finds that candidates of differing ethnicities "reach out to ethnic groups other than their own" (p. 159) and moderate their positions on divisive issues. The logical result should be a more positive than negative campaign, characterized by bargaining and accommodation.

Other empirical research bears out this proposition. Donovan et al. (2016) conduct surveys among citizens in matched cities in the United States with and without RCV. They find that voters were less likely to perceive negativity and criticism in the local campaigns in RCV cities. Citizens also reported that they were more satisfied

with campaign conduct in RCV cities. Robb (2011) took a different approach, analyzing campaign mail in San Francisco local elections from 2002 when instant run-off voting (another name for RCV) began there, until 2008. Robb found that "a unique form of campaigning emerged in 2004 with Team ads. Team ads are candidates urging voters to choose them and rank others as well" (Robb, 2011, p. 110).

These advances in understanding the tone of the RCV campaigns are critically important to making policy decisions about the use of RCV over other electoral systems. Yet, survey research only reveals the perceptions of voters, and not what candidates are actually saying. Other than Robb's dissertation, there does not appear to be content-analytic work that measures whether RCV cities have more civil campaigns. In order to supplement prior work, this research analyzes a corpus of candidate tweets in three RCV cities and seven control cities—the same cities utilized by Donovan and colleagues (2016). While newspaper articles are not *candidate* communications, this research also analyzes newspaper content from the ten cities to explore the overall tone of the campaign, in order to validate the Twitter analysis.

To analyze tweets and newspaper articles, this work employs a text analysis software called Linguistic Inquiry and Word Count (LIWC) designed by Pennebaker and colleagues (Pennebaker, Chung, Ireland, Gonzales, & Booth, 2007). The software searches for words that Pennebaker and colleagues have categorized (and validated) as words indicating positive and negative emotions, as well as cognitive process words indicative of compromise (Pennebaker et al., 2007). The results of the city comparisons presented here are mixed, but lean toward support for the idea that campaigns are more positive in RCV cities.

2. Theory and Previous Literature

A key question with which political scientists grapple is that of election system design's effect on democracy (Horowitz, 1991). Scholars who examine preferential voting systems such as RCV find that the systems where voters may rank alternatives create more satisfaction with democracy among citizens (e.g., Donovan, Tolbert, & Gracey, 2019; Farrell & McAllister, 2006; but see Nielson, 2017). Scholars of democracy also consider civility and civic discourse "a fundamental tenet of democracy" (Herbst, 2010, p. 126) and suggest that incivility "can be used to distract, demotivate, and distance average citizens from engaging in fruitful and productive political conversations" (Bratslavsky, Carpenter, & Zompetti, 2020, p. 596). Accordingly, scholars have examined the effects of RCV on campaigns and the citizen-perceived tone of campaigns (Donovan et al., 2016; John & Douglas, 2017). Discourse that one might reasonably call 'civic' in a democracy is, of course, characterized by less negativity and more positivity. However, Eulau (1973) argues a "politics of civility" also includes "a broad range of potential behavioral patterns that can be expressed by such participles as persuading, soliciting, consulting, advising, bargaining, compromising, coalition-building, and so on'' (p. 368).

Theoretical reasoning for why the tone of the discourse may be more civil in RCV elections versus plurality elections is that candidates are campaigning not just for a first-place vote, but also for second, and, potentially, third-place votes—or more (Donovan et al., 2016; John & Douglas, 2017; Reilly, 2002). Candidates must appeal to, or at least not offend, those voters other than their core supporters. Thus, RCV reduces the incentive for negative campaigning and increases the incentive for positive campaigning as well as bargaining and cooperation among candidates. Reilly (2002) analyzes cases of societies divided by ethnic differences. He finds evidence that indicates RCV does create more bargaining and compromise among ethnic groups (Reilly, 2002).

Notably, Donovan and colleagues (2016) survey citizens in the 10 American cities considered in the present article. They controlled for various demographic and political factors, as well as how closely the citizens followed the campaigns and whether the candidate they supported won. Donovan and colleagues found:

> Respondents living in cities using preferential voting were significantly more likely to express higher levels of satisfaction with the conduct of local campaigns, they were less likely to say that local candidates criticized each other frequently, and they perceived their local election campaigns as less negative. (Donovan et al., 2016, p. 160)

However, they write that "the proposed causal mechanism here is the manner in which the electoral systems affect how candidates campaign" (Donovan et al., 2016, p. 159). They note, "they are not in a position to directly observe how the candidates conducted their campaigns" (p. 159). These results are still striking, yet some investigation as to the causal mechanism would increase confidence in already strong findings.

In contrast, Robb (2011) directly observed campaign mail. Robb content analyzed mass mailers distributed by candidates in the races using instant run-off voting. She supplemented her work with interviews with candidates, campaign consultants, and party officials. Mailers and phrases within them were classified for negativity and cooperation. Robb found that candidates utilized team ads (Robb, 2011). Team ads led to coordinated attacks, though the coordinated attacks were very limited. Robb's analysis indicated that campaigning was much less negative, and significantly more positive.

The present research fills a number of gaps aside from just being another test of the RCV civility theory. First, the work shows what the media environment is in the RCV and plurality cities beyond mailed advertisements. One should not automatically conclude that tweets or newspaper articles lead to opinion change, but

for the purposes of causal mechanism in Donovan et al. (2016), there is a need to measure the tone separate from what voters perceive. Second, does RCV promote civility in campaigns beyond those in San Francisco? Beyond 'positivity' or 'negativity,' is there evidence of bargaining and compromise in the tone of the campaigns, in particular, in candidate tweets? Finally, while scholars have looked to newspaper content to measure campaign tone in communities (Peterson & Djupe, 2005), no scholar has used Twitter to analyze campaign tone in the context of RCV and in local campaigns. Importantly, scholars such as Bratslavsky and colleagues (2020) call Twitter a part of an 'infrastructure of incivility' in examining Donald Trump's tweets. A bit older data (from 2013, as in this work) should minimize or remove the idea that candidates are only imitating Trump.

Obviously, Twitter has not been around as long as newspapers. Thus, scholars have been more likely to analyze newspaper coverage to measure the overall tone of campaigns, rather than tweets (e.g., Peterson & Djupe, 2005; Ridout & Franz, 2008). While civil campaigns may be a 'tenet of democracy,' scholars have long examined the effects of negative campaigns on political behavior and there is mixed evidence. Scholars such as Sigelman and Kugler (2003) analyzed newspaper content, calling it a 'social science-style' measure of campaign tone. Also, Ridout and Franz (2008) compared various methods of evaluating campaign tone and found newspaper content, political advertising, and citizen perceptions were all correlated, and substituting them for each other does not lead to differing conclusions about political behavior. Newspaper coverage then, provides a method to validate the Twitter methodology.

3. Analyzing Discourse

In order to analyze discourse, this article utilizes 'sentiment analysis.' 'Sentiment' is often considered to be conceptually different from public opinion. Pang and Lee (2008) argue that 'sentiment analysis' is "computational treatment of opinion, sentiment, and subjectivity in text" (p. 6). One computation method which was developed more than 30 years ago appears to be validated (using expert panels) and used in a variety of contexts. The LIWC software was developed by Pennebaker and colleagues (e.g., Pennebaker et al., 2007). The software uses a 'bag of words' approach—with a dictionary of words denoting certain emotions and cognitive processes. Pennebaker and colleagues note that "LIWC uses a word count strategy whereby it searches for over 2,300 words or word stems within any given text file. The search words have previously been categorized by independent judges into over 70 linguistic dimensions" (Pennebaker, Mehl, & Niederhoffer, 2003, p. 553).

LIWC analyzes the words chosen by individuals (or located in the text) rather than the integrative complexity of phrases and sentences, with the idea that "seemingly insignificant words that people use are particularly telling about their emotions, motives, and life circumstances" (Pennebaker & Lay, 2002, p. 273). For example, use of the word 'we' can indicate a sense of community, or a person in a close relationship. Table 1 indicates the 'emotions/sentiments' and 'cognitive processes' relevant to the RCV civility theory that are measured by the LIWC program, as well as examples of each.

Not only did/do Pennebaker and their teams validate the dictionaries, but so have other researchers. Young and Soroka (2012) created the *Lexicoder Sentiment Dictionary* (LSD), which they find is most closely related to human coding of the affective tone of *New York Times* articles compared to other dictionaries. However, Young and Soroka find that their dictionary (LSD), human coders, *and* LIWC correlate highly in coding positive and negative. "[LIWC] is one of the few to contain large positive and negative valence categories; it is also one of the only dictionaries making liberal use of truncation" (Young & Soroka, 2012, p. 218). They find that when a dictionary uses truncation (e.g., 'agreeab*' or 'battle*'), it improves the performance of the dictionary (see Table 1 for examples). Young and Soroka also provide evidence that indicates that LSD's dictionary is the state of the art when it comes to measuring positive and negative tone.

A difference between the LSD and LIWC is that LIWC analyzes not only whether the text contains positive and negative words, but also other emotion words (anger, anxiety). It also includes words that are indicative of cognitive process: social words, exclusiveness, inclusiveness, tentativeness and certainty (see Table 1). If the theory of RCV civility holds, when examining the body of tweets and newspaper content, one should observe more positive words and fewer negative words in RCV cities, and fewer anxiety and anger words. One should also observe cognitive process words denoting bargaining and compromise (more inclusiveness and less exclusiveness; more tentativeness and less uncertainty). In terms of 'reaching out,' there should be more social words in RCV than plurality communities. The way that these concepts are measured, however, does not exclude a result that the campaign tone is, for example, both more inclusive and more exclusive. While subtracting the results for the opposite concepts ('positive–negative' or 'inclusive–exclusive') would eliminate that possibility, the measure would mask a city that was simultaneously very positive and very negative.

Since it is analyzing word use, LIWC will capture the idea that political actors may engage in a complex mix of negative *and* positive over the course of a campaign. The software is designed to analyze individual-level differences in affect, but one can measure the discourse over the campaign as well. By combining tweets from all the candidates, one can measure the percentage of the words that are positive and those that are negative. One can do the same with each piece of newspaper content. For each affect and each cognitive process, LIWC outputs the percentage of words in the text that are coded in the dictionary as measuring the given concept.

Table 1. Conceptualizing and operationalizing 'civility.'

Emotion (Affect) Coding	Why Does Existence Measure Civil/Cooperative or Negative? (Conceptualization)	How Does LIWC Operationalize the Sentiment?
Positive Emotions	Examining whether or not the campaign is positive or negative, the use of 'positive' emotion terms is one important indicator.	Terms such as 'agreeab*,' 'freed,' 'bless' and 'grin'
Negative Emotions	Examining whether or not the campaign is positive or negative, the use of 'negative' emotion terms is one important indicator.	Terms such as 'maddening,' 'alone,' 'battl*'
Anger	According to the American Psychological Association (n.d.-a), 'anger' is "an emotion characterized by antagonism toward someone or something you feel has deliberately done you wrong." Young and Soroka (2012) combine 'anger' with 'negative.'	Terms such as 'assault,' 'mad,' 'cheat*,' etc.
Anxiety	According to the American Psychological Association (n.d.-b), "anxiety is an emotion characterized by feelings of tension, worried thoughts and physical changed like increased blood pressure." Young and Soroka (2012 combines 'anxiety' with 'negative.'	Terms such as 'craz*,' 'dread,' 'feared,' etc.
Cognitive Process Words		
Social	These words suggest that individuals are interacting—talking and sharing, suggesting cooperation.	Terms such as 'amigo,' meeting, they, themselves, emails, etc.
Inclusive	If the campaign is civil, one should expect them to use more 'inclusive' words.	Terms such as 'add,' 'open,' 'we,' 'with,' etc.
Exclusive	If the campaign is civil, one might expect them to use more 'exclusive' words.	Terms such as 'rather,' 'versus,' 'exclu*'
Tentativeness	Tentativeness may indicate a willingness to compromise and bargain.	Terms such as 'approximat*,' 'fuzz*,' 'dunno,' etc.
Certainty	Certainty may indicate less willingness to compromise and bargain.	Terms such as 'blatant*,' 'clear,' 'facts,' etc.

Note: * The stars in the table indicate that the words are stems and the program will search for the stems with differing suffixes. Source: Operationalizations from Pennebaker et al. (2007).

4. What Cities Are Analyzed?

This work is based on local mayor and city council elections held in Fall 2013. There are differences in electoral systems across cities, allowing one to take advantage of the natural variation to examine how plurality and RCV cities differ in campaign tone. Three cities utilizing RCV voting are matched with seven cities using plurality voting. In selecting cities, those with similar time frames for electing the same type of offices, and other electoral features are necessary (off-year election, open seats, competitive; see Table 2). Other considerations are city size, region, how the cities' citizens voted, and the racial composition of the voting age population. Each RCV city is matched with multiple plurality cities (see Table 2). The research design should minimize differences (other than electoral rules) and allow the scholar to analyze the differences in campaign content (see Table A-1 in the Supplementary File for information comparing the cities). This analysis is bivariate. As such, causal inference is limited even if the cities are perfectly matched. The lack of random sampling also limits causal inference. These cities are selected in order to complement the work of Donovan and colleagues (2016). Table 2 lists the selected

Table 2. Cities and elections for content analysis.

RCV Cities	Matched Plurality Cities
Minneapolis, MN	Boston, MA; Tulsa, OK; Seattle, WA
St. Paul, MN	Cedar Rapids, IA; Des Moines, IA
Cambridge, MA	Lowell, MA; Worcester, MA

cities. Table 3 lists details about the contests, including the specific contests analyzed herein.

Not all candidates tweet, though most of the 'viable' candidates in large cities do (see Tables A-2–A-11 in the Supplementary File). As one moves to examining city council races (and district ones such as St. Paul, Des Moines, and Cedar Rapids), even fewer candidates tweet—in Des Moines and Cedar Rapids, for the first district council member races, there are no candidate Twitter accounts. There were some for the at-large races, but very few. Thus, for the comparison of tweet tone, this analysis looks to Spokane, Washington and Madison, Wisconsin. While these were not chosen as 'control cities' in Donovan et al. (2016), they are similar on the many factors affecting the selection (see Table A-1 in the Supplementary File). One exception is that the Madison election in question was held in April, not late Fall, 2013. It should not significantly affect the analysis, but the reader should keep it in mind.

Plurality elections often have primaries or preliminary elections, so time periods for the searches are slightly different among the different cities (see Table 4). For cities holding preliminary/primary elections, the search was two months before the initial election through November when the general election was held. For those cities having only November elections, the search was one month before the 'traditional' time frame of 'after Labor Day' to factor in the idea that campaigns are beginning more and more early. The search continued through the end of November in order to capture any candidate tweets that might reflect a 'sore loser effect.' If the RCV civility holds, one should expect it to continue to hold even after a candidate has lost.

5. Twitter Analysis Methods

In locating tweets to observe, one can argue it is most consistent with RCV civility theory to analyze the messages that *candidates* communicate. The probability of locating all the tweets issued by candidates is much higher than finding all tweets about the 'Tulsa election,' given that there could be a variety of hashtags. However, it is entirely possible that candidates use Twitter with the same pattern one might observe with negative campaign ads: A primary source of negativity is so-called 'outside money' or non-candidate funds (e.g., Magleby, Monson,

Table 3. Legal-institutional environment of each election analyzed.

City	Type of Election	Number of Candidates for First or Primary Election	Number of Candidates for General/ Run-Off Election
Minneapolis, MN	Mayor	NA	35
Boston, MA	Mayor	12	2
Tulsa, OK	Mayor	3	2
Seattle, WA	Mayor	9	2
St. Paul, MN	City Council Ward 1	NA	7
Cedar Rapids, IA	City Council Ward I (At-Large also available)	7	4
Des Moines, IA	City Council Ward I (one At-Large seat also available)	5/3	2/2
Cambridge, MA	City Council At-Large (nine seats available)	NA	25
Lowell, MA	City Council At-Large (nine sets available)	22	18
Worcester, MA	City Council At-Large (six seats available; candidates also run for mayor unless they specify they want to be removed from the mayoral ballot; must win seat on city council and mayor to be mayor)	NA	12
Added Cities			
Madison, WI	City Council District I	NA	2
Spokane, WA	City Council Ward II	NA	2

Table 4. Time frame of election campaign in each city.

City	Date of First/Primary Election	Date of Second/Run-Off Election
Minneapolis, MN	NA	November 5, 2013
Boston, MA	September 24, 2011	November 5, 2013
Tulsa, OK	June 11, 2013	November 12, 2013
Seattle, WA	August 6, 2013	November 5, 2013
St. Paul, MN	NA	November 5, 2013
Cedar Rapids, IA	November 5, 2013	December 3, 2013
Des Moines, IA	November 5, 2013	December 3, 2013
Cambridge, MA	NA	November 5, 2013
Lowell, MA	September 24, 2013	November 5, 2013
Worcester, MA	No preliminary election held in 2013 (see Kotsopoulos, 2013)	November 5, 2013
Cities Added to the Analysis		
Madison, WI	NA	November 5, 2013
Spokane, WA	NA	April 2, 2013

& Patterson, 2007). Perhaps there are non-candidate tweets that are far more negative about opponents than the candidate tweets (letting interest groups or others do the heavy lifting so voters will not attribute negativity to the candidate). Locating tweets for analysis by searching for candidate does not allow one to analyze what outside groups are communicating, but it does not miss what the candidates are tweeting. This is a potential weakness in the study design that should be minimized by doing the second portion of the analysis, examining newspaper content.

This research used Twitonomy.com—an analytics engine that connects to Twitter, and allows one to obtain all the tweets communicated by a given candidate in a given time frame. In order to provide a sense of how much the candidates tweet generally, this research also collected information on how much the candidates tweeted during the year (see Tables A2-A11 in the Supplementary File).

One must remember that tweets have unusual symbols that appear as words, but are not. This should not affect the overall results, but only the number of words used to calculate the percentage of words which fit each category. For example, RT=re-tweet where a person repeats/copies a message sent by another person. The @ symbol refers to a particular person's user name or 'handle' (e.g., @betsyhodges is Betsy Hodge's handle). Often tweets are followed by websites referring to an article, a picture or a video. Thus, the percentage of words may seem very small.

The files analyzed include all tweets and retweets. While it is possible the candidates did not author their own tweets, the tweets are tweeted in their names, and they are responsible for the words. Also, the goal of this work is not to analyze the personality of the candidates, but to understand the tone of the messages tweeted as a part of the campaign. Minimal text pre-processing is done herein, relying on stems with '*' to catch the key words. The number sign (#) is a hashtag which indicates the subject of the tweet. Hashtags often have substantive meanings (e.g., #mplsmayor—here the subject of the tweet is the mayor's contest in Minneapolis). In order to preserve reliability, this research does not assume what the candidates meant when they combined words in hashtags, so words in hashtags are not separated. For each type of contest and type of electoral system, individual tweets are not analyzed. Rather, the tweets are aggregated. Not only is each tweet too short to provide a reliable measurement, but also, the idea is to understand the overall tone of discourse, even if some candidates tweet more than others (individual candidate tweets are processed and results found in the Supplementary File, Tables A-12–A-19).

6. Twitter Analysis Results

6.1. Quantitative Results

First, the reader will see the results of examining the tweets from candidates in the cities where the mayoral election was the focus (Minneapolis, Boston, Tulsa, and Seattle). Table 5 compares the RCV and plurality cities in terms of percentage of the words tweeted that indicate the concept. Table 5 shows that words in campaign tweets indicate considerably more positivity than negativity for every city. Mayoral RCV tweets do not, on average, contain a higher percentage of positive words than plurality cities. The analysis also indicates more anger and anxiety in mayoral RCV cities, though the percentages are very low. In terms of the cognitive process words indicating bargaining and compromise, the results are quite mixed—mayoral RCV tweets indicate

Table 5. Tweet word comparisons of RCV and plurality mayoral races.

Affective	Positive	Negative	Anger	Anxiety	
RCV	4.75%	0.80%	0.26%	0.10%	
Plurality	5.44%	0.50%	0.19%	0.06%	
Cognitive Process	**Tentative**	**Certainty**	**Social**	**Inclusive**	**Exclusive**
RCV	1.14%	1.06%	7.50%	2.84%	1.24%
Plurality	0.76%	0.73%	7.68%	2.66%	0.76%

Notes: Categories are percent of total words across all candidate tweets; statistical significance is not computed because the percentages represent the corpus of tweets.

more tentative words *and* more certain words. Mayoral RCV tweets have, on average, more inclusive *and* more exclusive words and fewer social words. These results provide little support for the hypotheses and the theory of RCV civility.

Table 6 presents the results of the city council tweets analysis. Plurality city tweets have more positive words and fewer negative words. RCV city council tweet words are more tentative but also more certain; more inclusive but also more exclusive. Finally, candidates use more social words in plurality cities. Again, this is not strong evidence to support the RCV civility hypothesis.

6.2. Tweet Examples

The mixed findings for the quantitative analysis might be an artifact of measurement, or perhaps occur because tweets have differing uses. Tweets are often used to announce events, thank supporters, and even thank those who hold candidate forums—and it is highly likely that both RCV and plurality candidates do those sorts of things. A more qualitative approach, that is, reading the tweets, may provide additional insights. Perhaps, as with campaign mailers (Robb, 2011), there could be teamwork among candidates or other activities.

In Minneapolis (RCV), many of the candidates referenced each other. An especially popular tweet and re-tweet (RT) was the report of someone's votes for the tweeting candidate and other candidates as well (so for example, a person would report they were voting for Hodges and two others, and Hodges would retweet it). In the tweets, one candidate might thank a debate-sponsoring organization, but also reference several other candidate handles in the tweet. Betsy Hodges even tweeted that she liked "Winton's comments on pedestrian improvements." Cam Winton reported that he would vote for himself and others. Tweets also encouraged the voters to come to an event or to make a certain candidate their first choice. Note the examples in Box 1; it is not that negative tweets do not exist. Rather, the examples appear rather subtle as in the Cherryhomes tweet referring to a 'spat' during one of the debates between Winton and Andrews.

In Boston, a plurality city, when the candidates mentioned each other, there was negativity and attacking, but many positive tweets about upcoming events. Marty Walsh only briefly mentioned John R. Connolly (see Box 1). The same appeared to be the case in Tulsa between the two finalists. In Seattle, in examining the two finalists, Michael McGinn never mentioned Ed Murray in his tweets. Most of the tweets regarded issues and events in Seattle. The failure to engage the other candidate—in either a negative or a positive tone is especially notable. It could indicate: 1) There was little to no bargaining or accommodation, and/or 2) Perhaps the candidates asked some other group to do 'heavy lifting' where negativity was concerned or an interested party/interest group did the heavy lifting without the candidate asking. In Tulsa, there were three handles for Dewey Bartlett. One was so negative, that the research assumed it was not Bartlett. For example, a tweet *after* the election read: "@MayorTaylor that was such an asswhipping…. does it still sting a little?"

Table 6. Tweet word comparisons of RCV and plurality city council races.

Affective	Positive	Negative	Anger	Anxiety	
RCV	4.76%	0.74%	0.24%	0.10%	
Plurality	5.29%	0.63%	0.18%	0.06%	
Cognitive	**Tentative**	**Certainty**	**Social**	**Inclusive**	**Exclusive**
RCV	1.10%	0.99%	7.46%	2.84%	1.15%
Plurality	0.76%	0.74%	7.59%	2.64%	0.77%

Notes: Categories are percent of total words across all candidate tweets; statistical significance is not computed because the percentages represent the corpus of tweets.

Box 1. Tweet examples from RCV mayor's race and plurality mayor's races.

RCV (Minneapolis)

Hodges Tweets

Minneapolis! Come join Betsy, her supporters and her staff for an event at @612Brew at 4:00PM today 2 watch the election results! #mplsmayor

RT @wr3n: Good luck to my 3 picks 4 #mplsmayor. @betsyhodges @swoodruffmpls @Don__Samuels

RT @MackenzieNEmpls: Very happy for a transportation equity question. Liking Winton's comments on pedestrian improvements. #transportationf…

Andrews Tweets

@MayoralForum @5hauser Thank *you*—good to talk w/u all @CherryhomesMpls, @betsyhodges, @Don__Samuels & @cam_winton #mplsmayor

Make calls for Mark! Everybody's doing it——everybody! #mplsmayor http://t.co/rKtrTEM2vg

http://t.co/grCzoJiUcV

Cherryhomes Tweets

RT @wccoradio: Hodges on who she would vote for: Cherryhomes and Cohen. #wccodebate

RT @StribRoper: #mplsmayor candidates discussed security in public housing yesterday. See their answers + a brief Andrew/Winton spat: http:…

RT @Mrao_Strib: In first 5m of debate, @cam_winton praises @betsyhodges' integrity,

Winton Tweet

RT @r_delong612: Excited to vote for @betsyhodges, @don_samuels, @cam_winton for #mplsmayor !

#nomoreflyers

Boston

Walsh Tweets

Fact check: John Connolly admitted to sending anonymous negative mailers in his City Council race. http://t.co/LxgOTNA5nz #bosmayor

Fact check: John Connolly's campaign is spending thousands on push polls to attack Marty Walsh. http://t.co/TIDxJ9cr48 #bosmayor

Earlier today, I responded to the negative attacks by the Connolly campaign http://t.co/d0Zklx3NaZ #bosmayor

Connolly Tweets

I'm asking @Marty_Walsh to join me in keeping outside special interest money out of the Final Election.

RT @paul_mcmorrow: #bosmayor started today just shy of $3M in outside union and super PAC money, now we're over $3.1M. 78%/18% pro Walsh/…

Seattle

Murray Tweets

@KIRO7Seattle reports on the McGinn's campaign's outrageous cyberbullying of a Planned Parenthood staffer.

Please join us at tomorrow's pride picnic! It'll be a good time with great people! https://t.co/KtFI4oRzYH

McGinn Tweets

No specific Walsh mentions

Come on down to the 2nd annual polish fest for pierogies, kielbasa & more! @PFSeattle @seattlecenter http://t.co/uuuliwlb1i

Box 1. (Cont.) Tweet examples from RCV mayor's race and plurality mayor's races.

Tulsa

Bartlett Tweets

A vote for Taylor is a vote for Bloomberg. Their liberal policies and values mirror each other. RT & share! http://t.co/iUFNe

TRICK or TREAT: @MayorTaylor has given thousands to @BarackObama. Spooky how liberal she is!

Taylor Tweets

Retweet if you're worried about crime ("Fortunately, we are addressing crime very, very well," Bartlett said) http://t.co/bjqEoFVo8H

Police slam Bartlett, says talk of layoffs hurts public safety #TulsaCrime #Tulsa http://t.co/oboRjak0ev

7. Newspaper Article Analysis Methods

Newspaper articles are considered because every city considered in this analysis has a local newspaper which covers the local elections. If there was more than one newspaper, the one with the largest circulation was chosen. Content of newspapers includes the articles, but also letters to the editor, on-line reporter blogs, and candidate Question & Answer articles—herein, for convenience, they are all referred to as 'articles' or 'content.' There may be those who argue that letters to the editor should not be included because those who write letters have stronger feelings than the typical citizen. They are included because they are a part of the overall tone of the discourse. Perhaps, those who write them are the most likely to be paying attention to the campaigns.

Every 'article' is a unit of analysis and is analyzed using the LIWC text analysis program. Unlike tweets, individual articles are long enough to provide a more reliable analysis, so the articles are not aggregated (articles averaged 595.5 words). In order to locate the articles, I used the Newsbank database, which provides complete, full-text newspaper content both on-line and in print from local sources. There were occasionally repeated articles (on-line and print versions), so the research eliminates the on-line version of the article. In locating newspaper articles, Newsbank did not contain *The Des Moines Register*, which was accessed via Proquest. Table 7 lists the newspapers, the time periods, and the search terms used to locate content.

8. Newspaper Article Analysis Results

This section first presents some overall information on the percentage of positive and negative words. Then it proceeds to quantitative comparisons of the RCV and plurality mayor and city council elections on both the affective sentiment words and the cognitive process words. A brief qualitative analysis will follow. The quantitative newspaper analysis is more supportive of the RCV civility theory.

Overall, using the LIWC analysis and subtracting negative percentage of negative words from positive percentage of words, close to 89 percent of RCV city newspaper articles have a greater number of positive words than negative ones, and about 80 percent of plurality cities'

Table 7. Newspaper content analysis parameters.

City	Time Frame	Newspaper	Search Terms
Minneapolis, MN	August 1, 2013–November 30, 2013	*Minneapolis Star-Tribune*	Minneapolis Mayor Election
Boston, MA	July 1, 2013–November 30, 2013	*Boston Globe*	Mayor, Election
Tulsa, OK	April 1, 2013–November 30, 2013	*Tulsa Journal-World*	Mayor, Election
Seattle, WA	June 1, 2013–November 30, 2013	*Seattle Times*	Mayor, Election
St. Paul, MN	August 1, 2013–November 30, 2013	*Minneapolis Star-Tribune*	St. Paul City Council, Election
Cedar Rapids, IA	August 1, 2013–December 30, 2013	*The Gazette*	City Council, Election
Des Moines, IA	August 1, 2013–November 30, 2013	*Des Moines Register*	City Council, Election
Cambridge, MA	July 1, 2013–November 30, 2013	*Cambridge Chronicle*	City Council, Election
Lowell, MA	July 1, 2013–November 30, 2013	*Lowell Sun*	City Council, Election
Worcester, MA	August 1, 2013–November 30, 2013	*Worcester Telegram and Gazette*	City Council, Election

content has more positive than negative. Conversely, 12 percent of RCV city articles have more negative than positive words where close to 20 percent of plurality city articles are more negative than positive (a statistically significant difference).

8.1. Quantitative Results

Table 8 analyzes the measures of affect and cognitive process predicted by the RCV civility theory. Table 8 demonstrates that articles in RCV cities use significantly more positive words and significantly fewer negative words, which supports the hypotheses predicted by the theory of RCV civility. Considering language of compromise, Table 8 demonstrates that RCV-city articles show both significantly more tentativeness in words and significantly more certainty in words. As with the Twitter results, the analysis indicates simultaneously more compromise and less compromise. RCV city articles show more inclusive words than plurality cities do, but the difference is not statistically significant. Exclusive word use is not different between the types of cities. Also, while more social words are used in RCV cities than the plurality cities, that difference does not achieve statistical significance (see Table A-21 in the Supplementary File for a breakdown of the cities in terms of percentage of positive and negative words).

8.2. Newspaper Qualitative Examples

This section provides examples of newspaper content focusing on the most positive and most negative articles in the mayoral contests as indicated by the LIWC analysis. One can see that many of the most negative are from opinion pieces—either letters to the editor, unsigned editorials or opinion columns written by public citizens rather than staff writers. There is no evidence either way about whether these letters and other opinion pieces were driven by the candidates, and among these articles, no qualitative evidence that there are differences between RCV and plurality cities—both are negative and positive. While Twitter content showed evidence of bargaining and accommodation, the newspaper articles did not indicate any of these themes or differences among cities.

The most positive Minnesota (RCV) article was published the day after the election; an unsigned editorial praising the choice of the electorate: "Hodges, 44, offered youthful vigor, gender diversity (she will be the city's second female mayor), fiscal discipline, and new approaches to improving schools and transit" ("Youth, diversity," 2013). The fact that the *most* positive article was written *after* Election Day is consistent with the measurement strategy of this work examining tone through the end of November.

In contrast, the most positive from Seattle (plurality) is actually a bit negative, but it would be overspeaking the evidence to say that it represents support for the idea that RCV campaigns are more civil than plurality ones. It came from a column published on September 3, 2013:

> It's an election year, so it's easy to be a little cynical about any gathering with an open mike and a politician looking over his notes. But it was impossible to feel jaded about the 2013 Mayor's Arts Awards, held under a glorious blue sky at Seattle Center on the eve of Bumbershoot. The event was a welcome reminder that Seattle is filled with good people doing good work—despite all the yammering and slamming that goes on around here. (Brodeur, 2013)

A letter to the editor proved to be the most negative article in Minneapolis (RCV) over the course of the election season. The writer argued with the *Star Tribune*'s endorsement of Betsy Hodges:

> Wherever it has been tried, the Democrats' expansion of the numbers of citizens dependent on

Table 8. Comparison of articles from RCV cities and plurality cities.

	RCV City Articles (n = 146)	Plurality City Articles (n = 848)
Affective Content		
Positivity	2.72%**	2.49%
Negativity	1.08%***	1.37%
Anger	0.26%*	0.31%
Anxiety	0.12%	0.12%
Cognitive Process Content		
Tentativeness	1.71%**	1.50%
Certainty	1.11%**	0.98%
Social	8.72%	8.40%
Inclusive	3.94%	3.82%
Exclusive	1.40%	1.41%

Notes: Difference of Means test conducted with a two-tailed test of significance; numbers in table are mean percentage of words which reflect the given language in each newspaper article; these means are not weighted by the number of words in each article; * $p < 0.1$; ** $p < 0.05$; *** $p < 0.001$.

> government has proven disastrous for our most economically and socially challenged. A conservative agenda focused on limited free markets, competitive tax rates, schools demanding superior performance from both teachers and students, and robust private support for families in need might not be more effective. But, given the lifelong hardships many of these folks may endure, perhaps it is time that we try a different approach here. (Reed, 2013)

In Seattle (plurality), a letter to the editor also provided the most negative article:

> Whether or not he wanted to do it, McGinn has deeply fractured the city. We now have neighborhoods at war with downtown, bicyclists at war with drivers and homeowners at war with apartment dwellers. Worse than that, we have a mayor at war with truth and common sense, and who has made absolutely no effort to bridge any gaps. (Pluckhahn, 2013)

A letter to the editor in Tulsa (plurality) indicated that the campaign had gone quite negative. The letter referred to a Facebook post by the wife of a candidate. The reader wrote:

> The Tulsa mayoral campaign has reached a new low. Recently, Victoria Bartlett, wife of Mayor Dewey Bartlett, used her personal Facebook page to toss insults at her opponent's family. Posting a picture making snide comments about Bill Lobeck, Kathy Taylor's husband, and the classic car he was driving in the annual BooHaHa Parade is tasteless and immature. (Yeakey, 2013)

9. Conclusions

The theory of RCV civility suggests that in comparison with contests using plurality elections, those contests using RCV will be more positive than negative, and more likely to feature bargaining and accommodation. LIWC analysis of newspaper content provides the strongest evidence for the idea that RCV campaigns are more civil, but not all the evidence presented here is quite as convincing. Tweets in RCV cities had fewer positive words than plurality cities and more negative words than plurality cities. RCV tweet words were also more inclusive and more exclusive; more tentative and more certain. On the other hand, the qualitative evidence from tweets seems to indicate that some candidates are reaching out to each other, as differing ethnic groups do in case studies of RCV countries (Reilly, 2002). Examples of newspaper content presented simply show that there is positive and negative in articles and campaigns, and do not herein support the theory or not. The mixed results suggest that scholars must do more research in this area.

This is the first published study to examine campaign content for evidence of civility themes in local elections featuring RCV compared to plurality elections. Even though the results of the study are mixed, they do complement the findings of Donovan and colleagues (2016). Automated analysis of the newspaper articles in the three RCV cities and seven plurality cities shows more positive and less negative content. In RCV communities, candidate tweets do show them campaigning for more than simply a first-place vote, which is consistent with the findings of Robb (2011). Scholars should expand on this work as more cities and localities use RCV—it would be ideal to randomly select cities, rather than the intentional matching used herein.

As noted, coding newspaper content for positivity and negativity is well-established. Using tweets for this purpose below the federal level is not—most studies of Twitter today focus on presidential or congressional candidate tweets. Donald Trump's use of Twitter is legendary (e.g., Bratslavsky et al., 2020). A limitation of the Twitter portion of this study was that not all candidates in small cities—sometimes none—have and use Twitter. It is unclear how many local candidates nationwide use Twitter (perhaps an avenue for future research). It is not clear that many individuals beyond elites use Twitter, even in 2021. Comparing recent Twitter use to 2013 indicates that growth is rather slow. A 2019 Pew Research Center study indicates that 22 percent of Americans use Twitter, compared to 2013 when 18 percent used Twitter (Duggan & Smith, 2013; Wojcik & Hughes, 2019). Wojcik and Hughes find that Twitter users "are younger, more likely to identify as Democrats, more highly educated and have higher incomes than U.S. adults overall" (Wojcik & Hughes, 2019). Their study shows that the top 10 percent of users create 80 percent of the content, which is not unlike what the present analysis found. This is a potential limitation of the study, but also an opportunity for future research: How do local candidates compare to recent national discourse?

Another limitation of the study is the measurement of civility using automated text coding, even though scholars' use of big data analysis methods is cutting-edge. The qualitative analysis of the tweets provides evidence that the candidates are less likely to engage each other via tweets in plurality cities, but the quantitative analysis is not as clear. Even though LIWC has been carefully validated by scholars, coding words may have limitations because some words are coded as positive, when those same words might be seen as negative in the community. Computer programs that analyze word use typically do not catch sarcasm. On the other hand, the program allows the researcher to process and analyze a large amount of text in a reliable (in the sense of measuring the same thing every time, repeatable) way.

The purpose of this article was a broad test using text analysis to test the theory of RCV civility. However, this research suggests a number of paths for future research. First, more detailed coding of tweets might include cases where one candidate mentions the other as a measure of civility. Another future research avenue

is the consideration of what happens after the election. Do we find that local meetings in RCV cities are more civil than those in plurality cities? This area of research is exciting and will continue to grow.

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Conflict of Interests

The author declares no conflict of interests.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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Article

Demographic Disparities Using Ranked-Choice Voting? Ranking Difficulty, Under-Voting, and the 2020 Democratic Primary

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Abstract
Ranked choice voting (RCV) has become increasingly popular in recent years, as more jurisdictions in the US adopt the voting system for local, state, and federal elections. Though previous studies have found potential benefits of RCV, some evidence suggests ranking multiple candidates instead of choosing one most preferred candidate may be difficult, with potential demographic disparities linked to age, gender, or racial or ethnic identity. Further, these difficulties have been assumed to cause individuals to improperly fill out RCV ballots, such as ranking too many or not enough candidates. This study seeks to answer three interrelated questions: 1) Which demographic groups find it difficult to rank candidates in RCV elections? 2) Who is more likely to cast under-voted ballots (not ranking all candidates)? 3) Is there a relationship between finding RCV voting difficult and the likelihood of casting an under-voted ballot? Using unique national survey data of 2020 Democratic primary candidate preferences, the results indicate most respondents find ranking candidates easy, but older, less interested, and more ideologically conservative individuals find it more difficult. In a hypothetical ranking of primary candidates, 12% of respondents under-voted (did not rank all options). Despite their perceived increased difficulty, older individuals were less likely to under-vote their ballot. No other demographic groups consistently experienced systematic differences in ranking difficulty or under-voting across a series of model specifications. These findings support previous evidence of older voters having increased difficulty, but challenge research assuming difficulty leads to under-voting, and that racial and ethnic groups are disadvantaged by RCV.

Keywords
Democratic primaries; elections; electoral systems; ethnic; race; ranked choice voting; United States of America

Issue
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1. Introduction

Ranked choice voting (RCV) has become increasingly popular in the US over the last two decades, as more cities and states adopt the preferential voting method into their election systems (Fortin, 2020). In 2018, Maine used RCV for all state and federal primary elections, as well as for Congressional general elections. Two years later, four states—Alaska, Hawaii, Kansas, and Wyoming—selected their 2020 presidential Democratic nominee using RCV. As of 2020, more than fifteen cities utilized RCV for local elections, including large population centers such as San Francisco, California and New York City, New York (FairVote, 2020).

Despite the spread of RCV, most US elections operate under plurality rules with no vote thresholds where candidates can win with less than a majority the of votes so long as they have the most (but see, for example, the 2020 Senate election in Georgia). Unlike plurality elections, RCV elections require winners to obtain a majority of the vote of the ballots cast to be crowned victor. RCV allows respondents to rank all candidate preferences at one time without requiring a second election be held should no majority be reached in the first round. RCV elections provide the opportunity for voters to rank the candidates from most to least preferred, and if the voters’ most preferred candidate receives the least votes, that candidate is removed, and all votes cast for them

go to the voters' respective second choices (cf. Grofman & Feld, 2004). Eligible ballots are recounted until one candidate receives a majority of the votes cast in a single round.

RCV elections have been found to have several benefits, from incentivizing less negative and more civil campaign environments (Donovan, Tolbert, & Gracey, 2016), to increasing mobilization efforts (Bowler, Donovan, & Brockington, 2003) and levels of voter satisfaction (Donovan et al., 2016; Farrell & McAllister, 2006). Research also suggest RCV elections increase the likelihood of the winner being the most preferred or less extreme candidate (Grofman & Feld, 2004; Horowitz, 2000). At the same time, however, some scholars argue that having to rank multiple candidates may be more cognitively and time demanding than simple, single-choice plurality elections, potentially resulting in increased rates of voters incorrectly filling out their ballot (e.g., Burnett & Kogan, 2014; Neely & Cook, 2008; Sinclair & Alvarez, 2004) or abstaining altogether (e.g., McDaniel, 2016). Further, because of the uneven distribution of political resources and knowledge in the electorate across demographic groups (e.g., Delli Carpini & Keeter, 1996; Verba, Schlozman, & Brady, 1995), scholars often assume that different patterns in under-/over-voting arise from difficulties in voting in RCV elections (Neely & Cook, 2008; Sinclair & Alvarez, 2004). Yet, most studies regarding under-/over-voting rely on inferences from aggregate data (e.g., Burnett & Kogan, 2014; Neely & Cook, 2008), and none have directly tested the link between demographic groups, ranking difficulty, and tendencies to under-vote using individual level data. Few published studies have even directly measured which demographic groups find RCV voting challenging (e.g., Donovan et al., 2019; Kimball & Kropf, 2016).

This study seeks to answer three interrelated questions: 1) Which voters find it difficult to rank candidates in RCV elections?; 2) Who is most likely to cast an under-voted ballot (not ranking all candidates)?; 3) Is there a relationship between finding RCV voting difficult and the likelihood of casting an under-voted ballot? Using a 1,000 people, nationally representative sample of likely 2020 Democratic primary voters, this study finds that 80% of respondents had no difficulty ranking candidates, with 51% saying the method was very easy. However, nearly 1/5 of respondents said ranking candidates was somewhat or very hard, with more difficulty ranking linked to older age, lower political interest, and possibly more conservative ideologies. Additional analyses find that differences are most pronounced regarding the extent to which voters found ranking to be easy, not difficult.

Just about 12% of respondents asked to rank a hypothetical ballot of 2020 primary candidates under-voted. Surprisingly, despite their increased difficulty ranking candidates, older respondents were actually less likely to under-vote than were younger individuals. This relationship remains even after controlling for difficulty ranking, which does little to affect the relationship between age and under-voting. No significant relationships regarding under-voting were uncovered comparing racial and ethnic groups and only weak evidence linking socioeconomic status to under-voting. This suggests under-voting may be a choice, not the result of difficulty in casting a ballot.

These findings support earlier studies finding old voters face more challenges ranking candidates (Donovan et al., 2019) and lower under-vote rates (Neely & Cook, 2008), as well as provide some evidence that ranking difficulty contributes to the tendency to cast incomplete ballots (Burnett & Kogan, 2014). At the same time, they challenge those who suggest RCV disadvantages racial and ethnic minorities (e.g., McDaniel, 2016), women (e.g., Sinclair & Alvarez, 2004), or those of lower socioeconomic status (e.g., Neely & Cook, 2008).

The remainder of this article is as follows. The next section outlines the literature related to RCV's effects on difficulty voting and how that translates into under-voted ballots. It is in this section that hypotheses are formulated. Following this, the article estimates and analyzes how difficult RCV ranking is and who finds it difficult. The rate at which under-voted ballots were cast is then examined, focusing on who is more likely to cast them and the role ranking difficulty plays in casting under-voted ballots. The article then closes with a summary of the findings and suggestions for future work.

2. Ranked-Choice Voting

This once popular progressive-era reform has seen a resurgence in support as of late (Amy, 1996; Fortin, 2020; Santucci, 2017). In 2008, five US cities used RCV for local elections. As of the 2018 midterm election, 15 cities and the state of Maine had incorporated RCV into their election systems. In 2020, four states went so far as to use RCV for determining the winner of their respective Democratic primaries. That same year, ballot measures in Alaska and Massachusetts proposed statewide use of RCV for state and federal elections, passing in Alaska but failing in Massachusetts. Beginning in 2021, the largest city in the US, New York City, will start using RCV for all city primary and special elections. According to FairVote (2020), there have been nearly 400 RCV elections in the US since 2004 and over 10 million adults live in jurisdictions that use or recently implemented RCV for some elections. Given growing popularity of RCV in the US, it is becoming more imperative that scholars and policy makers understand the consequences of replacing plurality or majority systems with preferential voting.

On the one hand, previous literature has documented the positive effects of RCV elections on campaigns and voters. Because elections can be decided based on a voter's second, third, or subsequent choices, candidates in RCV elections have an incentive to behave more civilly or risk offending other candidates' bases and losing prospective second and third place rankings. This incentive to campaign civilly has led candidates in RCV

elections to behave less negatively. Using text analysis, McGinn (2020) finds that candidates use less negative wording in their speeches when campaigning in RCV elections compared to those in plurality systems. RCV elections may be more civil, as voters in preferential election jurisdictions are more likely to perceive campaigns as less negative, perceive less candidate-to-candidate criticism, and be more satisfied with the campaigns than are those living in cities using plurality elections (Donovan et al., 2016).

It is not enough to just not offend your opponent's supporters; candidates must actively try to court them. This need to expand your base past core/likely supporters results in increased mobilization efforts in RCV elections (Bowler et al., 2003), though with mixed evidence of increased turnout effects (Kimball & Anthony, 2016; McDaniel, 2016; McGinn, 2020). RCV elections have also been found to be more likely to result in the most preferred candidate being named the winner (Grofman & Feld, 2004; Horowitz, 2000).

Notwithstanding the potential benefits of RCV, some scholars have also uncovered negative effects, primarily stemming from RCV's arguably increased difficulty compared to plurality or non-instant runoff methods. In non-preferential elections, voters only mark a single candidate. In preferential elections like RCV, voters are asked to rank several. Not only must voters possess knowledge about more candidates, but they must also be able to navigate more complex RCV ballots. Ranking multiple candidates using more complex ballots, especially in local or primary elections with less informational cues, may be taxing for American voters (Lau & Redlawsk, 2006), potentially resulting in voters not ranking enough candidates (under-voting) or ranking too many (over-voting).

One of the few studies to directly measure voters understanding of different election systems in the US indicates RCV elections may be more difficult than plurality elections, but not by large margins. Donovan et al. (2019) find that 87% of voters thought RCV elections were somewhat or very easy, significantly but only slightly lower than in plurality cities (93%). Other studies document similarly high rates of RCV comprehension or voting ease (Brischetto & Engstrom, 1997; Cole, Taebel, & Engstrom, 1990; Kimball & Kropf, 2016). However, there is some evidence to suggest that issues with voting may differ by demographic group. Donovan et al. (2019) find that older individuals are more likely to report difficulty voting but did not find differences based on gender or race/ethnicity. In contrast, Neely, Blash, and Cook (2006) find that African American and Latino individuals reported lower understanding of RCV instructions (but see Kimball & Kropf, 2016; Neely, Blash & Cook, 2006).

Ballot complexity or difficulty ranking candidates has been assumed to be the cause of voters incorrectly filling out their ballots by either not marking enough candidates (under-voting) or marking too many (over-voting). Looking at rates of under-voting in four San Francisco elections where voters could rank up to three candidates, Burnett and Kogan (2014) find that 27%–48% of ballots cast did not have three unique candidates marked (i.e., under-voted), with 5%–12% of ballots having incorrectly marked the same candidate more than once (see also Neely & McDaniel, 2015). The authors remark: "This likely reflects, at least in part, the reality that few voters possess enough information to rank more than a few of the candidates running, regardless of how many they are allowed to select" (Burnett & Kogan, 2014, p. 48). Citing differences in political knowledge between men and women, Sinclair and Alvarez (2004) find that Los Angeles precincts with greater proportions of women see more under- and over-votes. Again, drawing on a case study of San Francisco, Neely and Cook (2008) and Neely and McDaniel (2015) find more erroneous ballots in neighborhoods that were disproportionality older, arguing difficulties that come with old age hinder properly filling out the ballot. Neely and Cook (2008) also find that precincts with larger Black and Latino populations had greater rates of over-votes (i.e., more ballots cast with too many candidates) and lower rates of under-votes (i.e., fewer ballots cast that did not rank all options); though, some evidence suggests differences in racial and ethnic voting may be partially attributable to different election technologies (e.g., Knack & Kropf, 2003; Tomz & Van Houweling, 2003).

These studies have made significant advances in documenting the effects of RCV elections; however, there still exist gaps in the literature regarding RCV difficulty, under-/over-voting, and demographic disparities. First, most previous studies focus on one or a handful of election jurisdictions. As such, scholars know less about voting in RCV elections on a national scale. Second, more evidence and individual level data (as opposed to aggregate election results) is needed to link RCV difficulty to particular demographic groups. Few studies have documented significant differences in RCV difficulty among different demographic groups (e.g., Donovan et al., 2019; Kimball & Kropf, 2016) and none have directly linked increased difficulty ranking choices with an increased likelihood of under- or over-voting. Previous studies often rely on aggregate data to make inferences about individual voting behavior, assuming that the relationship between greater proportions of some demographic in a precinct being correlated with more under-/over-votes reflects increased difficulty voting among that demographic. Ecological fallacies and other issues suggest there is reason to believe under-votes are not cast out of ignorance or difficulty.

Though under-voting is often attributed to voter fatigue (Bullock & Dunn, 1996), ballot confusion (Kimball & Kropf, 2005), or voter ignorance (Wattenberg, McAllister, & Salvanto, 2000), under-voting can also reflect the true preferences of the voter, not any difficulties they may have encountered. For example, Alvarez, Hall, and Levin, (2018) find that under-voting rates were nearly identical between partisan RCV elections and

non-partisan ones. If RCV makes voting harder, then removing party labels should exacerbate that difficulty. The finding that voters were nearly as likely to under-vote with or without labels suggests that under-voting may not be as strongly tied to ranking difficulty as past scholars have assumed.

This study seeks to expand on previous works by examining whether and which voters find RCV elections difficult, who is likely to cast an under-voted ballot, and whether RCV difficulty contributes to the likelihood of casting such a ballot. In doing so, this study tests the often-made assumption that certain groups experience greater difficulty in RCV elections, and these difficulty disparities lead to greater rates of erroneous ballots.

Building on previous work, this study tests the following hypotheses:

H1: RCV difficulty and demographic hypotheses: Older, Black, Hispanic, and female respondents will have greater difficulty using RCV.

H2: RCV exhausted ballot hypothesis: Those who have greater difficulty with RCV will be more likely to cast under-voted ballots.

H3: RCV difficulty and demographic hypotheses: Older, Black, Hispanic, and female voters will be more likely to cast under-voted ballots.

3. Data

Data for this study are from a 1,000 people, nationally representative Internet survey of likely Democratic primary voters conducted approximately three months before primary elections began (November 2019). The survey was administered by YouGov, an internationally recognized survey firm that has frequently conducted political surveys (e.g., the Cooperative Congressional Election Studies). YouGov recruits respondents through their online, opt-in survey process that pays respondents for their time. The purpose of the study was to gauge likely Democratic primary voters' candidate preferences, their respective rankings, and their views on RCV. As such, the survey screened out respondents who were unlikely to vote in the primaries and any respondents who did not identify as Democrat or Independent. Census data is used to weight respondents so they represent the national electorate. Summary statistics for all variables used in this study can be found in Table A1 in Supplementary File A.

Two specific questions were asked in the survey. The first asks: "Imagine that the Democratic primary election were held in your state today and the candidates were only [randomized: Joe Biden, Pete Buttigieg, Kamala Harris, Bernie Sanders, and Elizabeth Warren]. How would you rank these candidates? Please drag your 1st-choice candidate into the box labeled Number 1, your 2nd choice in the box labeled Number 2, and so on" (see Table 3). The respondents were then presented with a randomized list of candidates where they would click and drag the candidate names to different rankings. This question is used to explore the rates of under-voting with RCV. The second question immediately follows: "How hard or easy was it to rank more than one choice in the previous question?" with responses from very easy to rank more than one choice, somewhat easy, neither hard nor easy, somewhat hard, and very hard to rank more than one choice (see Table 1). This question is used to measure how difficult respondents found ranking to be, coded so that 1 represents those answering very easy, to 5 for those answering very difficult.

This data provides several advantages to studying RCV. First, respondents were asked to rank the 2020 Democratic candidates in what was essentially an online RCV ballot, then immediately asked how difficult they found the process. As such, this study measures how difficult respondents found the actual process of ranking candidate using an RCV ballot, not more general questions about whether voters understood the system in their area (e.g., Donovan et al., 2019). Second, using RCV in federal general elections would usually involve ranking partisan/ideologically opposed candidates, presenting clearer options through the use of shortcuts (Lau & Redlawsk, 2006). Ranking candidates without partisan labels effectively renders partisanship a non-heuristic, as respondents cannot use partisan labels to differentiate candidates. Investigating difficulties with ranking more ideologically similar candidates with the same party provides a more restrictive test as partisan cues are absent.

At the same time, using this data has some limitations. First, likely primary voters vary from the general electorate in that they tend to be more interested, knowledgeable, and more partisan (Karpowitz & Pope, 2015; Redlawsk, Bowen, & Tolbert, 2008; see also Abramowitz, 2008). Second, the analyses only pertain to Democratic primary voters (i.e., no Republicans). Thus, while the results reported here are theoretically interesting, it is worth considering the extent to which the relationships uncovered can be generalized to the US population.

4. Difficulty of Ranked-Choice Voting

Table 1 displays the difficulty of ranking candidates, where voters were asked how hard or easy it was to rank more than one choice, with options ranging from very easy (1) to very hard (5). 68% of respondents said ranking candidates was easy or very easy, with nearly 2/3 of those citing 'very easy.' In contrast, just under 20% found ranking to be hard or very hard, with only 1/3 citing ranking difficult as very hard. The remaining 12% of respondents found ranking neither hard nor easy. Including those who said neither hard nor easy with the 68% that reported ranking as very/somewhat easy suggests 80% of respondents found RCV to not be difficult to use, comparable to previous studies (Donovan et al., 2019; Kimball & Kropf, 2016).

Table 1. Difficulty ranking candidates.

Difficulty ranking candidates	No.	%
Very easy to rank more than one choice	412	41.2
Somewhat easy to rank more than one choice	272	27.2
Neither hard nor easy to rank more than one choice	119	11.9
Somewhat hard to rank more than one choice	132	13.2
Very hard to rank more than one choice	65	6.5
Total	1,000	100.0

To examine the extent to which difficulty differs by demographic or political characteristics, Table 2 reports an ordered logistic regression model where the dependent variable is how difficult respondents found ranking candidates (1 = very easy, 5 = very hard). This study includes a continuous measure of Age (19–88), a variable denoting whether the respondent is a Female (1 = Female, 0 = Male); two variables for race, whether the respondent is Black (1 = Black, non-Hispanic, 0 = Not Black) or is another race besides white, non-Hispanic (Other: 1 = Other race, 0 = Not another race). White, non-Hispanic respondents are the reference (left out) group. Also included are two measures of socioeconomic status: Income (1 = Less than $10,000, 16 = Greater than $500,000) and Education (1 = High School graduate or less, 5 = Post-Graduate Degree). A variable denotes whether the respondent identifies as a Moderate Democrat (1 = Moderate Democrat, 0 = other) or Strong Democrat (1 = Strong Democrat, 0 = other) is included to control for partisan strength. Being as the sample only includes Democrats and Independents, the reference category consists of Independent-identifying respondents. A measure of Liberalism (1 = Conservative, 4 = Very Liberal) is included, as is a measure of Political Interest (1 = High Interest, 0 = Low Interest) and Importance of Religion (1 = Not at all important, 4 = Very important). Though almost every variable had 100% response rates, responses for Income, Ideology (Liberalism), and Political Interest dipped just slightly (89.4%, 96.2%, and 99.4%, respectively). The reported analyses code missing to the respective mean or median values to maintain statistical precision. Results are robust their exclusion unless otherwise noted (see Tables C3 and C4 in Supplementary File C). A breakdown of each variable by what percentage answered different rankings of RCV difficulty can be found in Table D1 in Supplementary File D. Lastly, to deal with heterogeneity and spatial dependence, the estimations are computed with robust standard errors clustered by state, but results are robust to the inclusion of state fixed effects (available at request).

Preliminary model checks indicated that the assumption of parallel odds may be violated. Analyses were re-estimated using multinomial regression and the only difference of note being female respondents report greater difficulty. However, this finding may not be unique to RCV elections and may also be evident in plurality elections (Donovan et al., 2019). Given results are nearly identical and that ordered logistic regression models are more straightforward, this study reports the ordered logistic model in the main text and the multinomial estimation in Table C1 of Supplementary File C. Results are also robust to collapsing the dependent variable into a three categorical variable of very/somewhat easy, neither, and very/somewhat hard, regardless of estimation strategy (see Table C2 and C7 in Supplementary File C). As an additional robustness check, Model 1 is re-estimated using ordinary least square regression and is presented in column 2 of Table 2. These results are also robust to separating the models in Table 2 and 3 so that each estimation strategy has one model with only socio-demographic factors followed by a second with socio-demographic and political factors. Results reported in Tables C5–C6 in Supplementary File C to save space. For interpretability of the ordered logistic coefficients and comparability to the ordinary least squares model, both models in Table 2 report odd-ratios, where ratios greater than one suggest greater odds of encountering difficulty (positive relationship) and those below one suggest lower odds (negative relationship). The values reported in Table 2 are odd-ratios, not unstandardized regression coefficients.

As can be seen in Table 2, there does exist some differences in who perceives RCV and ranking to be more or less difficult. In both models, older, less politically interested, and more ideologically conservative respondents are more likely to report greater difficulty voting, with similar odds-ratios across models.

To more clearly depict the relationships at hand, Figures 1 and 2 plot the predicted probability of answering ranking was very easy, easy, neither, hard, or very hard across these demographic and political characteristics. Figure 1 show older respondents are more likely to report difficulties ranking, in line with previous work (Donovan et al., 2019) and supporting the assumption that increased difficulty may cause greater voting errors in older communities (e.g., Neely & Cook, 2008; Neely & McDaniel, 2015). Respondents one standard deviation above the mean (49 years) are 15% less likely to report ranking being very easy than those one standard deviation below the mean (44% younger, 29% older). If the range is extended to two standard deviations above/below the mean, the youngest voters are nearly twice as likely to report ranking being very easy compared to the oldest (48% younger, 25% older). Younger and older respondents are no more or less likely to rank

Table 2. Who finds ranking difficult? (Odd-ratios).

	(1) Ordered Logistic Regression b/se	(2) Ordinary Least Squares Regression b/se
main		
Age	1.017*** (0.004)	1.010*** (0.003)
Female	1.184 (0.159)	1.120 (0.099)
Black	1.136 (0.270)	1.122 (0.185)
Hispanic	1.004 (0.192)	1.023 (0.142)
Other	1.429 (0.323)	1.223 (0.202)
Income	1.020 (0.025)	1.019 (0.016)
Education	0.991 (0.050)	0.975 (0.035)
Moderate Democrat	1.138 (0.224)	1.060 (0.153)
Strong Democrat	0.912 (0.124)	0.912 (0.074)
Liberalism	0.795** (0.077)	0.876* (0.059)
Political Interest	0.577*** (0.055)	0.709*** (0.044)
Importance of Religion	0.981 (0.067)	0.994 (0.045)
Observations	1,000	1,000

Notes: Coefficients converted into odds-ratios for comparability and interpretability. See Supplementary File C for models reporting coefficients. Both models estimated with robust and clustered(state) standard errors. * = 0.1; ** = 0.05; *** = 0.01

voting as somewhat easy, while older voters are 5% more likely to report ranking as neither hard nor easy (10% younger, 15% older). Looking at how difficult they find the process, older voters are also twice as likely to say that ranking candidates was somewhat difficult (10% younger, 20% older) or very difficult (4% younger, 10% older), further emphasizing the differences across age groups.

At the same time, these results show the largest differences among age do not reflect difference in how difficult respondents find ranking to be, but the extent to which they find it easy. The largest differences in Figure 1 occur when comparing whether voters find voting very easy, with smaller differences for other difficulties. Further, looking at the bottom right panel in Figure 1, which predicts the level of difficulty (1 = very easy, 5 = very hard) across a range of ages using ordinary least squares, the results suggest that young respondents tend to find ranking very/somewhat easy (1.63), while older respondent find ranking to be somewhat easy (2.22), with a difference of roughly .60 (just over half a ranking level). This finding suggests that, though there are differences in ranking difficulty, they may not be drastic. Yet, it is worth re-mentioning that this survey was conducted over the internet where respondents ranked candidates using an online survey tool where they dragged and dropped candidate names into boxes representing their preferences, a process different than filling in bubbles in standard RCV ballots. Given the relationship between age and computer literacy, future researchers should consider the extent to which survey format may be inducing this relationship.

Perhaps due to the linkage between political interest and knowledge (Delli Carpini & Keeter, 1996), the most interested find RCV to be easier than the least interested (Figure 2). Those with high political interest are over ten percentage points more likely to find ranking very easy (24% low interest, 36% high). Only small and potentially indistinguishable differences arise when comparing the likelihood of answering somewhat easy or not easy nor

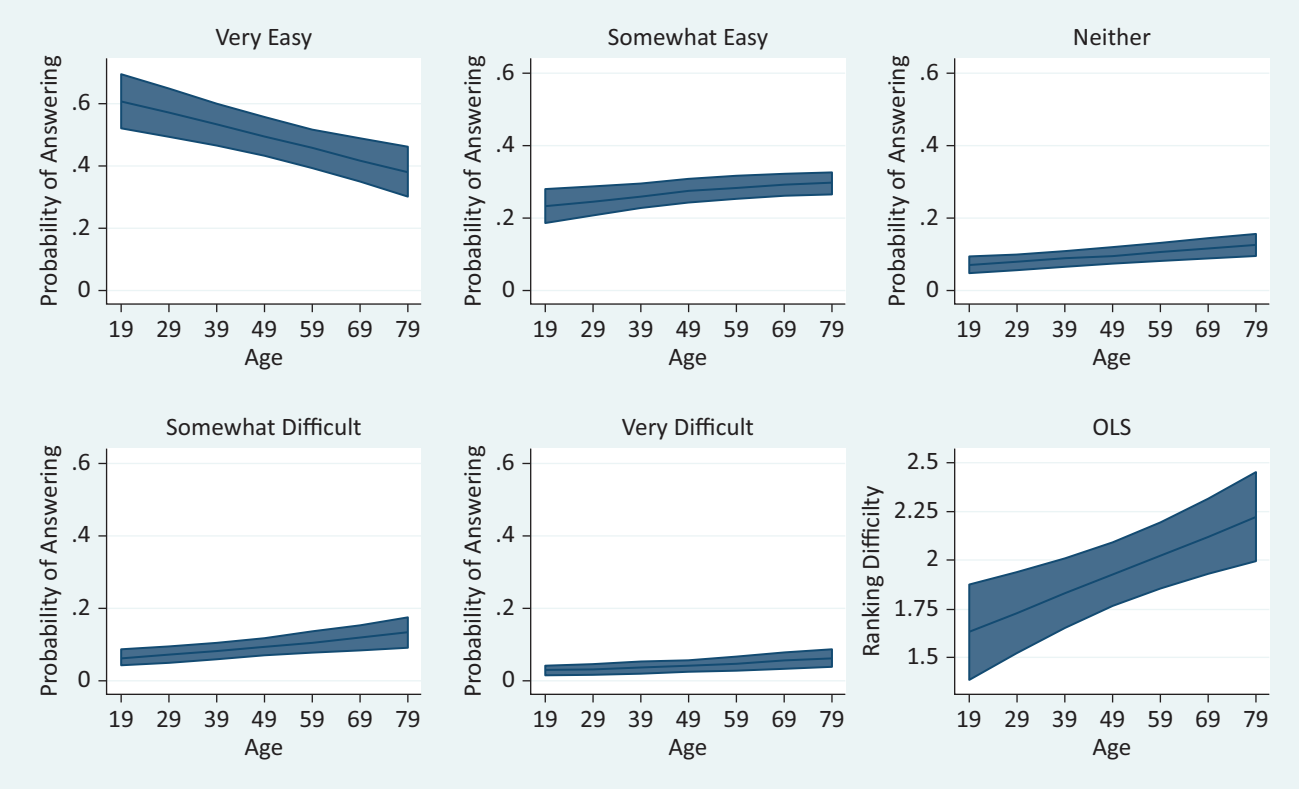

Figure 1. Effects of age in difficulty with ranking candidates. Notes: *N* = 1,000. OLS = Ordinary Least Squares regression. All other panels derived from ordered logistic regression estimates. Estimation of all coefficients calculated with all other variables held at their mean or respective values. Robust and clustered(state) standard errors employed. Source: Author's survey using the YouGov platform, in November 2019.

hard. There is some evidence to suggest less interested individuals also find ranking more difficult. Less interested respondents are 6% more likely to say ranking was somewhat easy (14% low interest, 20% high) and four percentage points more likely to say ranking was very difficult (7% low interest, 11% high).

Again, the biggest differences arose regarding who is more likely to cite ranking as very easy, with only slight differences in who finds rankings somewhat easy, neither, or very difficult, and moderate differences in finding RCV to be somewhat hard. Looking at the ordinary least squares results in the bottom right panel, the least interested are estimated to report ranking as somewhat easy/neither her nor easy (2.37), while the more interested are predicted to say it is somewhat easy (1.92). Once again, these results suggest that different groups may find ranking more difficult, but the biggest differences may lie in the extent to which respondents view RCV as easy. With that being said, these findings may not be unique to RCV elections. Donovan et al. (2019) also find that those with greater interest report better understanding of RCV elections. However, as did those in plurality and two-top primary elections. The authors did not report any differences in the effects of interest across election environment.

Interestingly, even after controlling for a host of other influences, ideological differences in ranking difficult are apparent (Figure D1 in Supplementary File D). Specifically, the most liberal respondents are 15% more likely to say ranking was very easy than were more conservative Democrats or Independents (41% very liberal, 26% conservative). Liberal respondents are also less likely to rank voting as somewhat or very hard, and only slight differences were uncovered in ranking somewhat easy or neither. Using ordinary least squares regression, the least liberal respondents are predicted to report ranking be somewhat easy (2.19), while the most liberal are more likely to report ranking being very/somewhat easy (1.79). It could be that more conservative Democrats and Independents have less familiarity with the progressive reform of RCV. However, it is probably more likely that the lack of partisan heuristics among (mostly) Democratic candidates forced respondents to rely on other candidate information (e.g., candidate positions [Abrajano, Nagler, & Alvarez, 2005]) when making their choices (Alvarez et al., 2018). Such information may be less readily available in the minds of more conservative respondents who may have less familiarity with the Democratic candidates. Again, the evidence presented here suggests the greatest differences occur when deciding whether ranking was very easy.

Taken together, these results challenge the assumption that higher rates of under-/over-voting among specific demographic groups (other than age) is attributable

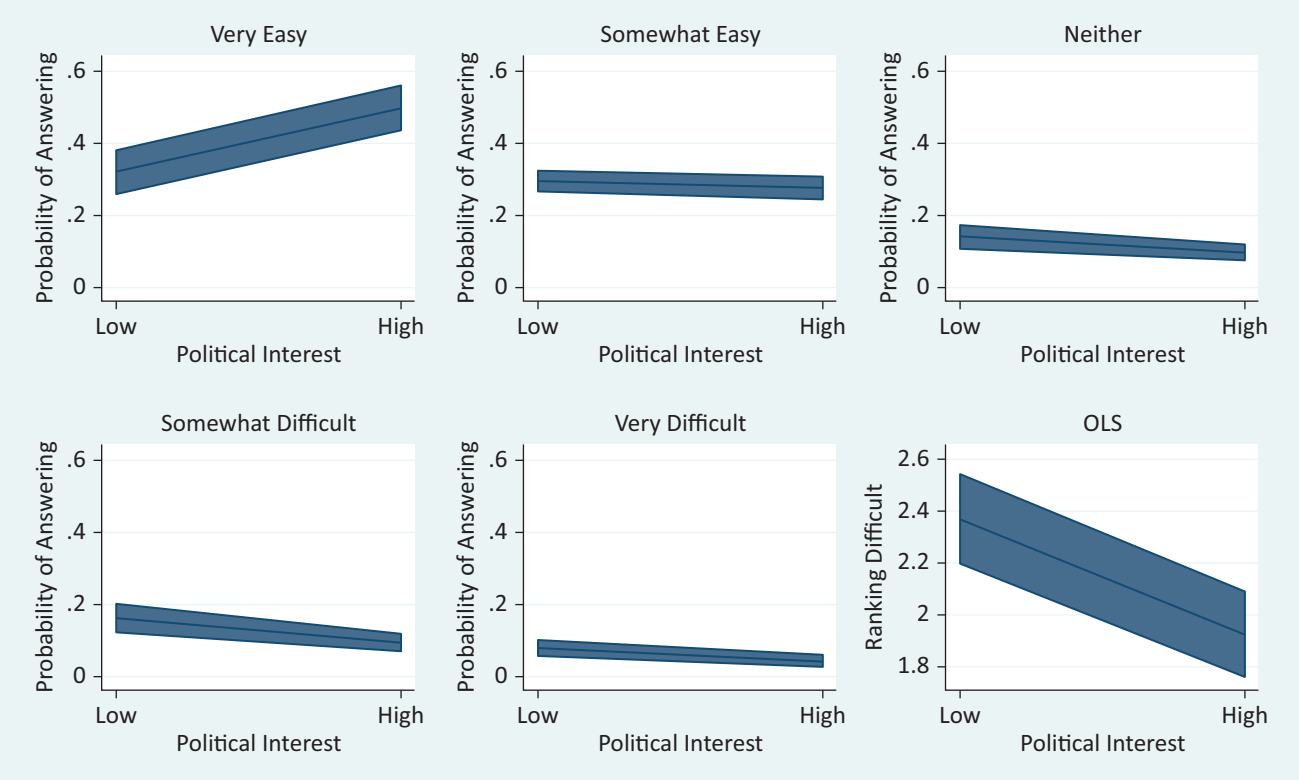

Figure 2. Effects of political interest on difficulty with ranking candidates. Notes: *N* = 1,000. OLS = Ordinary Least Squares regression. All other panels derived from ordered logistic regression estimates. Estimation of all coefficients calculated with all other variables held at their mean or respective values. Robust and clustered(state) standard errors employed. Source: Author's survey using the YouGov platform, in November 2019.

to increased difficulty they face in RCV elections. To more fully understand who casts under-voted ballots and whether difficulty plays a role in casting such ballots, the next section examines under-votes in a (semi-)hypothetical Democratic primary race.

5. Under-Voted Ballots

Under-voted ballots occur when voters do not rank as many candidates as there are rankings available. Under-voting has been found to be undergirded by voter fatigue (Bullock & Dunn, 1996), ballot confusion (Kimball & Kropf, 2005), and voter ignorance (Wattenberg et al., 2000). However, a voter may also under-vote because they would rather not vote than have their vote cast for a unpreferred candidate.

To examine the extent of under-voting and the role RCV difficulty plays across demographic groups, this study uses rankings from a truncated five-candidate race of 2020 Democratic primary candidates. The survey asked respondents to rank the following candidates from first(one) to last(five): Joe Biden, Pete Buttigieg, Kamala Harris, Bernie Sanders, and Elizabeth Warren (see Data section or Supplementary File B for question wording). The ballot allows up to five candidates and there are five candidates in the race, meaning that if any voter did not rank all five candidates, their ballot is under-voted. Table 3 shows each candidate and the number of votes cast for them by order of preference, as well as the number who did not rank the candidate when given the option. Those that skipped a candidate are essentially creating under-voted ballots. Because voters can

Table 3. Candidate rankings.

Ranking	Joe Biden	Pete Buttigieg	Kamala Harris	Bernie Sanders	Elizabeth Warren
1	311	73	96	190	305
2	166	103	189	224	273
3	117	233	213	165	189
4	149	241	252	129	119
5	189	255	155	227	44
Did not rank candidate	52	79	79	49	54

choose not to rank multiple candidates, the total number of exhaustible ballots is not simply the sum of all those who skipped. After removing double counts due to respondents skipping multiple candidates, the total number of ballots cast that did not fill all ranking options is 117, or 12% of the votes cast in the election—a rate similar to those found by Burnett and Kogan (2014) when voters only had to rank three candidates.

To determine who is more likely to cast under-voted ballots and whether difficulty ranking plays a key role, Table 4 displays two standard logistic regression results using the same model specification (covariates) as discussed above. Results are robust to alternative specifications except those relating to income and gender when omitting those who did not answer income or liberalism (see Supplementary File C). Model 1 regresses whether someone cast an under-voted ballot on a host of demographic and political variables. Model 2 repeats this process but includes how difficult the respondent found ranking to be to see if difficulty ranking mediates any relationships found in Model 1. Though not a perfect estimation strategy, if a coefficient is significant in Model 1, but not Model 2, this may suggest that systematic differences in difficulty ranking candidates may be influencing the relationship. Though, results are robust to the use of alternative mediating strategies, such as the causal step approach of Baron and Kenny (1986) or the non-parametric approach devised by Imai, Keele, Tingley, and Yamamoto (2011), available at request. Again, odds-ratios are reported in the table to allow for better comparison across models and covariates. Odds ratios above 1 denote a positive relationship (greater under-voting likelihood) and below 1 a negative relationship (lower under-voting likelihood).

Who is more likely to under-vote? Contrary to expectations given the results uncovered in the previous

Table 4. Who under-votes? (Odds-ratios).

	(1) Without Difficulty b/se	(2) With Difficulty b/se
Under-voted difficulty ranking candidates		1.543*** (0.115)
Age	0.986** (0.006)	0.980*** (0.007)
Female	1.380* (0.261)	1.313 (0.237)
Black	0.751 (0.250)	0.690 (0.224)
Hispanic	0.754 (0.206)	0.782 (0.210)
Other	1.133 (0.350)	1.053 (0.313)
Income	1.065** (0.029)	1.057** (0.029)
Education	0.919 (0.085)	0.936 (0.087)
Moderate Democrat	1.760* (0.530)	1.773* (0.559)
Strong Democrat	1.041 (0.279)	1.108 (0.290)
Liberalism	0.830 (0.120)	0.861 (0.134)
Political Interest	0.719*** (0.091)	0.820 (0.102)
Importance of Religion	1.057 (0.143)	1.055 (0.138)
Observations	1,000	1,000

Notes: Under-voting occurs when a respondent did not rank all candidate options available on the survey ballot. Logistic regression estimated with robust and clustered(state) standard errors. Odds-ratios shown for comparability across models. * = 0.1; ** = 0.05; *** = 0.01

section, Model 1 suggests that older individuals are less likely to under-vote, in line with previous work (Neely & Cook, 2008). Additionally, Model 1 suggests that more interested individuals are less likely to under-vote, while female (see also, Neely & Cook, 2008; Sinclair & Alvarez, 2004), more affluent and moderate partisans are more likely to not rank all the candidates. Moderate partisans may under-vote out of dislike for one of the more liberal candidates running in the election, not because of cognitive difficulties ranking. Additionally, it should be noted that gender, political interest, and income fail to reach statistical significance in several alternative specifications using multinominal regression (see Supplementary File C).

The left panel of Figure 3 plots the predicted probability of not ranking all candidates across different values of age (without controlling for ranking difficulty). As can be seen, older respondents are 11% less likely to cast an under-voted ballot than are the youngest voters (21% younger, 10% older), in line with aggregate analyses that have found lower under-vote rates in older precincts (e.g., Neely & Cook, 2018). Further, this relationship holds when controlling for difficulty (Model 2, right panel in Figure 3) and doing so only slightly affects the substantive relationship between age and casting under-votes (20% younger, 7% older). The evidence that controlling for difficulty has little effect on the relationship suggests that difficulty is not what is causing younger voters to not rank all candidates. Instead, it could be abstention related to candidate preferences (e.g., 'Bernie or Bust').

Considering the other significant findings, female respondents are 4% more likely to under-vote than male respondents (11% male, 15% female). This finding is eliminated after controlling for difficulty. More interested individuals are 4% less likely to under-vote (19% low interest, 15% high), while more affluent individuals are 6% more likely to under-vote, and moderate democrats are 7% more likely. The results for income and moderate democrat remain after controlling for difficulty ranking, while those for gender and interest are rendered insignificant. Considering these results, more interested individuals, as well as moderate Democrats, are unlikely to suffer from a lack of political knowledge regarding the 2020 Democratic candidates, leading to lower under-vote rates. Rather, it is likely a choice not to rank all the candidates. Finally, more affluent individuals may simply possess greater resources or a greater 'stake in the game' given the emphasis on taxing the rich among the 2020 Democratic primary candidates, leading to a choice to under-vote.

An important finding is that difficulty ranking is strongly linked to casting under-voted ballots (Model 2). Those who had the greatest difficulty ranking are nearly four times as likely to not fill out all rankings than were those who faced the least difficulty (Figure 4). Specifically, the likelihood of under-voting a ballot increases from 8% for those who had the least difficulty to, to 18% for those who found ranking neither hard nor easy, to nearly 34% for those who experienced the most difficulty. These results suggest that, for the 20% of the

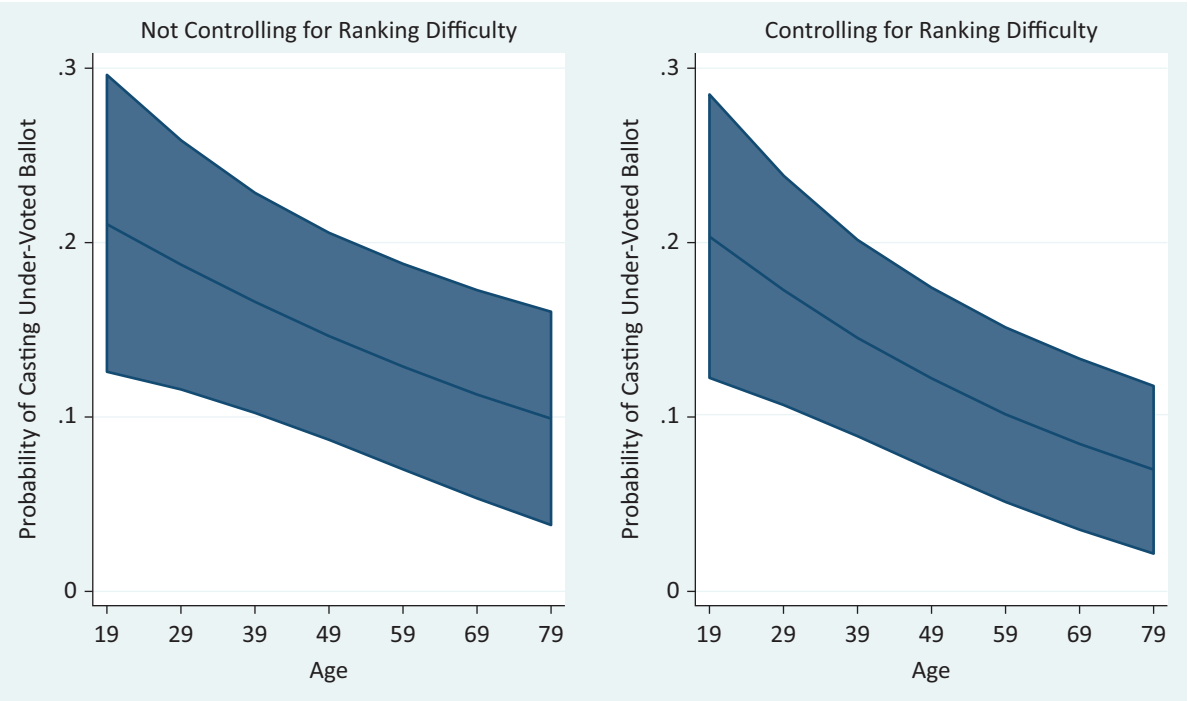

Figure 3. Effects of age on casting an under-voted ballot. Notes: *N* = 1,000. Under-voted ballots occur when a voter does not select a candidate for each ranking available. Estimation of logistic regression coefficients calculated with all other variables held at their mean or respective values. Robust and clustered(state) standard errors employed. Source: Author's survey using the YouGov platform, in November 2019.

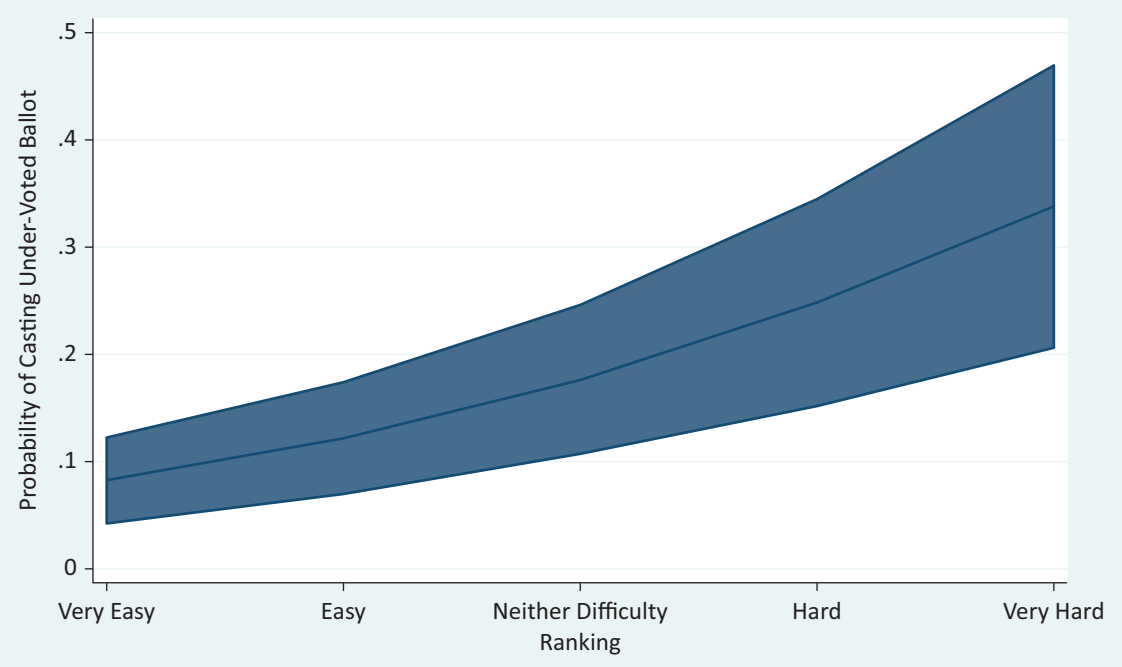

Figure 4. Effect of difficulty ranking candidates on casting an under-voted ballot. Notes: *N* = 1,000. Under-voted ballots occur when a voter does not select a candidate for each ranking available. Estimation of logistic regression coefficients calculated with all other variables held at their mean or respective values. Robust and clustered(state) standard errors employed. Source: Author's survey using the YouGov platform, in November 2019.

sample who had difficulty ranking candidates, that difficulty may have been a serious impediment potentially resulting in greater likelihood of not ranking all candidate options. Though not as stinging a rebuke as Burnett and Kogan (2014, p. 48), these results provide support for the assumption that high under-voting rates may be linked to greater difficulty ranking candidates.

6. Summary and Conclusion

This study tests the assumptions that certain demographic groups experience greater difficulty with RCV, that under-voting is a result of voters experiencing greater difficulty, and that patterns of under-voting reflect differences in how difficult voters find RCV to be across demographic groups. Using a nationally representative sample of likely Democratic primary voters (YouGov, N = 1,000), this article finds that a large majority of respondents found ranking to be easy. Greater difficulty ranking was found among older voters (also see Donovan et al., 2019), with some additional evidence that the less interested and more conservative may have also encountered greater difficulty. Where differences in difficulty were uncovered, evidence suggests they reflect differences in the extent to which voters found RCV to be easy, not hard, further suggesting that most voters find RCV easy. Additionally, little to no evidence of differences in difficulty were found among racial, ethnic, or socioeconomic groups, contrary to arguments made elsewhere.

Looking at under-voting (when a voter does not fill out all the rankings provided), this study finds that only 12% of voters under-voted, a rate similar to those uncovered in a previous study using ballots cast in an actual election (Burnett & Kogan, 2014). Contrary to expectations, the results show only mixed evidence of socioeconomic factors influencing under-voting, and no evidence of racial or ethnic differences. Only age and difficulty ranking candidates are significant predictors of under-voting across all model specifications, with younger respondents and those who experience greater difficulty being more likely to under-vote. Though younger voters were found to be more likely to under-vote, the lack of greater difficulty ranking for young people coupled with the inability of RCV difficulty to affect this relationship suggests youth under-voting may be caused by something other than the ranking process.

Taken together, these findings challenge the assumption that difficulty with RCV differs by demographic group (other than age) and that these differences in difficulty are the cause of different under-voting rates. Instead, the results suggest that difficulty is a contributing factor to under-voting but does not unduly burden voters based on most demographic characteristics, and that, for many voters, under-voting may be a choice. Still, questions remain, and future studies should consider exploring more thoroughly the relationships uncovered here.

First, a strength and limitation of this study is that the respondents are only likely Democratic primary voters. On the one hand, this provides a stronger test of the degree of difficulty voters find RCV to be by forcing them to rank candidates in an election without the use

of party labels as a heuristic. On the other hand, likely Democratic primary voters are unlikely to be representative of the average voter, limiting the generalizability of the study. Future works should consider ways to expand this study to the general electorate. Second, future studies should distinguish reasons for increased difficulty. It is likely less interested and more conservative individuals faced greater difficulty due to less knowledge regarding the many Democratic candidates. For older individuals, did age-related ailments make navigating the ballot more difficult or was something else at play? It is worth noting that additional analyses were conducted using generational cutoffs to predict ranking difficulty (available upon request). Some significant differences were uncovered depending on model specification, with the youngest generations seeing less difficulty, little differences uncovered for those in the middle, and the oldest generation seeing increased difficulty. Third, future studies should examine why the individual-level under-voting results reported here differ from aggregate results uncovered elsewhere. For example, this study finds no relationship between racial and ethnic minorities and under-voting and a positive relationship (greater under-voting) among richer respondents. At the same time, other work has found lower under-voting rates for precincts with greater proportions of non-white voters and lower under-voting rates in precincts with higher median income (e.g., Neely & Cook, 2008). Is it something about the area under study (i.e., usually San Francisco, CA), or perhaps these differences are accounted for by differences in voting technology across jurisdictions (e.g., Knack & Kropf, 2003)?

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Conflict of Interests

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Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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Article

The Impact of Input Rules and Ballot Options on Voting Error: An Experimental Analysis

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Abstract
When election reforms such as Ranked Choice Voting or the Alternative Vote are proposed to replace plurality voting, they offer lengthier instructions, more opportunities for political expression, and more opportunities for mistakes on the ballot. Observational studies of voting error rely on ecological inference from geographically aggregated data. Here we use an experimental approach instead, to examine the effect of two different ballot conditions at the individual level of analysis: the input rules that the voter must use and the number of ballot options presented for the voter's choice. This experiment randomly assigned three different input rules (single-mark, ranking, and grading) and two different candidate lists (with six and eight candidates) to over 6,000 online respondents in the USA, during the American presidential primary elections in 2020, simulating a single-winner presidential election. With more expressive input rules (ranking and grading), the distinction between minor mistakes and totally invalid votes—a distinction inapplicable to single-mark ballots—assumes new importance. Regression analysis indicates that more complicated input rules and more candidates on the ballot did not raise the probability that a voter would cast a void (uncountable) vote, despite raising the probability of at least one violation of voting instructions.

Keywords
American politics; election administration; election reform; Ranked Choice Voting; voting behavior; voting experiments

Issue
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1. Introduction

When voters, activists, and politicians consider the merits and demerits of election reform, it is natural for them to consult previous experience. They want to know about the past record not only of the status quo but also of any proposed changes of electoral rules or procedures. Innovative proposals, however, have little or no previous experience to recommend them. Unless they want to rule out innovation altogether, democratic societies must be prepared to substitute experiments for experience when issues of election reform are debated. Academic research can contribute experimental insights to reform debates when observations of past experience seem insufficient on their own.

Here we report results from an experiment designed to shed light on the problem of voting error in the American context. A standard preoccupation of anti-reform discourse in the USA is the danger of disoriented or confused voters. As cities and states around the country consider switching from plurality voting rules or two-round systems to Ranked Choice Voting (RCV), for example, a plausible suspicion suggests that significant numbers of voters would in effect get counted out by making more mistakes on more complicated ballots. RCV has an observable track record in the USA since the early

2000s (in addition to various short-lived applications in the early and middle decades of the twentieth century). Various non-ranking forms of voting—e.g., "range" (grading candidates with more than two possible scores) and "approval" (grading candidates with only two possible scores)—have seen only a handful of implementations in the last few years. Voting experiments can therefore shed light on common intuitions or suspicions about the likely effect of relatively novel reforms on voting error.

RCV and other ballot reforms are proposals for fundamentally changing input rules, or the structure that the ballot imposes on how voters insert their judgments into the count. Another issue that may complicate voters' task, and lead to more error, is the number of options on the ballot for any given contest. More complicated input rules and more options on the ballot could both theoretically exacerbate problems of voting error. Observational studies have difficulty confirming these relationships because real public elections never offer more than one ballot type or more than one list of candidates (or parties) for the same contest and the same voters. Our experimental analysis of this question is based on random assignment of different conditions in the two independent variables (input rules and ballot options) to examine their effects on the dependent variable (voting error). We find that, when over 6,000 subjects in four American states cast votes in a hypothetical election for US President in March 2020, just prior to the primaries conducted on "Super Tuesday" in multiple states, both factors had a minor impact on error. More complicated input rules and more plentiful ballot options both raised the likelihood that voters would make at least one mistake on their ballots. Yet the increase in minor mistakes did not result in more void (uncountable) ballots. Ballots that allow the ranking or grading of candidates offer more opportunities for political expression and, correspondingly, more opportunities for mistakes by voters—but not necessarily an increase in void votes or disfranchised voters.

Several challenges for conceptualization of the main variables—input rules, ballot options, and voting error—are addressed in Section 2. Next, we review observational and experimental literatures on issues related to voting error, in Section 3. Our hypotheses are presented in Section 4, and details of our experimental design and our analytic approach appear in Sections 5 and 6, respectively. Section 7 analyzes our results.

2. Conceptual Framework: Input Rules, Ballot Options, and Voting Error

Recent theoretical work on election reform has identified a dilemma for alternative types of input rules, featuring a potential zero-sum game between the qualities of expression and accessibility (Maloy, 2019, pp. 90–91). Do more expressive, and therefore more complicated, input rules inevitably produce more confused voters? Our primary intention is to examine this proposition through experimental treatments on input rules, with a secondary focus on the possibility that the number of options on the ballot may also be a significant factor inducing voting error. Before surveying prior observational and experimental evidence on these questions, several conceptual difficulties with our three main variables—input rules, ballot options, and voting error—require clarification.

2.1. Input Rules

Our primary explanatory variable for voting error is the input rule on the ballot. The Super Tuesday 2020 experiments randomly assigned three different types of input rule and recorded how voters used their ballots with each of the three: exclusive (or single-mark), ranking, and grading. Respectively, these three input rules were called Check, Rank, and Grade within the experiment.

Researchers in electoral studies are familiar with the two types of ballot structure studied by Rae (1967): categorical and ordinal. These correspond to the Check and Rank input rules in the experiments reported here. The Check ballot's input rule is categorical (or exclusive) because it requires the voter to indicate a single favorite candidate or party to the exclusion of all others. It presents an all-or-nothing choice. The Rank ballot is ordinal in the sense that it allows a hierarchy of preference to be indicated across multiple options on the ballot, in order from a first preference to a second preference to a third preference, and so on down the list.

RCV in the USA, similar to the Single Transferable Vote (STV) in Scotland and the Supplemental Vote (SV) in English cities (Lundberg, 2018), is one example of a recent reform that substitutes ranking for exclusive input rules. RCV is usually called the Alternative Vote (AV) outside the USA. Using this latter label, a public referendum in Great Britain in 2011 rejected AV as a replacement for plurality elections for the primary legislative assembly, the House of Commons. RCV (or AV), STV, and SV differ in certain respects, but what they have in common is a ranking input rule that allows voters to rank more than one candidate for the same office.

Yet the design of voting experiments today should go beyond Rae's binary classification of ballot types, which was based on observed variation in input rules in established democracies in the 1960s. Election reform now involves a wider range of input rules to choose from. For example, the Cumulative Vote uses an input rule that gives the voter multiple votes to distribute across as many or as few candidates as the voter chooses, provided that the ballot's budget of votes (the maximum number to be distributed in one contest) is not exceeded. The Approval Vote and the Range Vote (the latter is sometimes called the Evaluative Vote in Europe or the Grade Point Average [GPA] system in the USA) allow voters to grade as many or as few candidates as they choose on a certain numeric scale. Approval, by definition, offers only two possible levels of support ("approve" or "disapprove"), while the GPA family of input rules offers three

or more levels of support. Thus, after the commonly used exclusive type of ballot, there are not one but three additional types: ranking (Rae's "ordinal"), grading, and cumulative. These three types may be generally classified as multi-mark ballots (MMB) to distinguish them from the single-mark ballots (1MB) which employ exclusive input rules in most actual electoral systems, majoritarian and proportional alike (Maloy, 2019, pp. 86–89).

The Super Tuesday 2020 experiments included ranking and grading input rules, but not cumulative. The reason for the exclusion of cumulative ballots is that our experiments used real candidates' names for the American presidential contest, which is a single-winner election. Ranking has been used for both single-winner (RCV) and multi-winner (STV) contests, and grading input rules are usually proposed for single-winner contests. But cumulative input rules are usually proposed for elections in multi-seat districts. In voting experiments on multi-winner elections, cumulative input rules would certainly merit inclusion.

2.2. Ballot Options

Our second main variable of interest is ballot options. We use this term to refer to the number of options that are available on the ballot for the voter's consideration. While every competitive election must, by definition, have at least two options on the ballot, many elections have more than two. How many more may impact voters' behavior in general and voting error specifically, and our experimental design randomly assigned two unequal lists of candidates to different subjects voting for the same seat.

For single-winner elections in the USA, this variable could also be called "candidate supply," and perhaps with greater clarity. In electoral studies, however, it is well known that different countries' electoral systems may be more party-centric or more candidate-centric, depending on whether various institutional features incentivize (or require) voters to think more of parties or of individual candidates for office as the objects of their choice. Yet the number of options on the ballot may be an important factor in either case (cf. Seib, 2016). Since the term "candidate supply" might suggest the mistaken assumption that the variable under consideration here is only relevant to candidate-centric electoral systems (such as the USA's), we use "ballot options" instead.

2.3. Voting Error

The third key variable—our dependent variable—also presents a varied and potentially challenging conceptual terrain. Depending on the input rule in use, there can be more than one way for a voter to violate the instructions on the ballot, i.e., more than one type of error. Not every type of error has the same effect on how the ballot can be counted. Some errors limit the extent to which the voter's preferences can be incorporated into the count, while others require the ballot to be thrown out altogether.

In the analysis below, we observe the crucial distinction between a "mismarked" and a "void" ballot. The reason is that we are studying MMB voting in addition to 1MB voting, the latter kind of input rule being the status quo in the USA (and most other countries, regardless of district magnitude or allocation formula). As it turns out, the logical structure of 1MB input rules means that every mismarked ballot is by definition invalid. But the logical structures of ranking and grading input rules are different.

By allowing (and encouraging) voters to register judgments about more than one candidate, ranking and grading ballots create the possibility that an error made in how one candidate is marked does not necessarily preclude counting the mark made for another candidate. As we use the terms, a mismarked ballot is one that shows one or more violations of the instructions for a given input rule; a void ballot is one that is mismarked in a particular way, such that no quantitative contribution from that ballot can be used in the count. In other words, researchers interested in voting error with ranking and grading (and cumulative as well) ballots have an extra responsibility to distinguish clearly between invalidating errors and non-invalidating errors—whereas researchers who study voting error with exclusive ballots never encounter that necessity.

The terminology that has grown up around observational studies of voting error with exclusive ballots can still be useful to studies of MMB voting. In previous literature, the concept of "residual" votes includes three components: "under-votes" (i.e., blanks), (intentionally) "spoiled" votes, and (unintentionally) "invalid" votes (Herrnson, Hanmer, & Niemi, 2012, p. 722). Spoiled and invalid votes are two types of "over-vote," when a voter violates exclusive input rules by marking more than one candidate for the same contest. "Wrong" votes are valid votes cast for a candidate or party contrary to voters' intentions. Attempting to measure intentions independently of the ballots cast is another challenging territory, methodologically, and we do not address issues of intentionality—or of spoiled or wrong votes—in this study.

This terminology can be transferred to ranking and grading input rules, to some extent, but must also be expanded. Completely blank ballots cannot be counted under any input rule, of course. But the logical structure of both ranking and grading tolerates partial under-votes (also known as truncated votes), when the voter chooses to mark some options while leaving others blank. In Australia, most RCV (AV) and STV contests require voters to rank every option on the ballot, or else see their ballot voided. By contrast, most ranking systems in the rest of the world, including RCV cities and states in the USA, tolerate truncated votes. Our coding follows the norm outside Australia. Truncated votes are neither mismarked nor void; they are irrelevant to the analysis of voting error.

Ranking and grading can also be more tolerant of over-votes than exclusive input rules can be. One type of

over-vote which can apply to both ranking and grading is redundant marking, when one option on the ballot is marked with two distinct levels of support (e.g., ranked both second and third, or graded both B and C). This may be an invalidating error for that option, but other options may still receive valid levels of support on the same ballot. A second type of over-vote which applies only to ranking ballots is duplicate ranking, when the same ranking is applied to more than one option; a duplicate grade for more than one option does not violate the instructions on a grading ballot. Duplicate rankings may or may not cause difficulties for the count, again depending on how other options are ranked.

For ballots that are marked but cannot be counted at all for a given contest, we use the term "void votes." The emptiness of the vote, quantitatively, is its most important feature. Our theoretic assumption is that void ballots represent a more consequential form of voting error than mismarked ballots. Whereas the latter may result in an incomplete expression of a voter's political judgment, the former is tantamount to total disfranchisement for a given contest. We believe that this consideration explains why previous academic research on voting error has been principally concerned with void votes. After all, a totally invalidated ballot yields the same result as if the voter had stayed home altogether.

At the same time, mismarked ballots retain some normative interest because an incomplete expression of a voter's political judgments, compared to what was structurally possible on a ranking or grading ballot, may still be a matter of regret. We therefore use "void" and "mismarked" as two alternative specifications of voting error as our dependent variable, which are described in greater detail in Section 6.

A final challenge concerns how to conceptualize blank ballots (total under-votes) in terms of voting error. It is generally assumed that voters who leave their ballots blank do so intentionally, and this assumption seems especially secure in a controlled experiment with a small number of contests in which to vote. If a partial under-vote (blanks for some options) presents no error on a ranking or grading ballot, a total under-vote (blanks for all options) should not be construed as error either. To code blank votes as equivalent to void votes runs the risk of conflating deliberate choices with unintentional mistakes. We therefore exclude blank votes from our analysis. As a result, our term "void votes" is not equivalent to "residual votes," since the latter term conventionally includes blank votes.

In summary, *valid* votes in our study make a countable contribution for at least one candidate per contest; *mismarked* votes are marked in such a way that violates the instructions on the ballot in at least one respect, while still indicating a quantifiable preference for at least one candidate; and *void* votes are marked in such a way that no countable contribution can be registered for any candidate in a given contest.

3. Voting Error: Previous Research

Intuitions about the impact of input rules on voting error could in theory be tested against previous research observing rates of residual votes in real public elections. As we will now see, it has proved difficult to isolate input rules as a causal factor in voting error; hence the value of an experimental approach.

Observational studies of elections using ranking ballots in Great Britain reveal slightly higher levels of residual (also known as "rejected") votes compared to 1MB voting. Scotland's local council elections switched in 2007 from single-seat plurality to STV, which combines ranking input rules with multi-seat districts. The percentage of rejected votes associated with this change rose from 0.8 to 1.8. In Northern Ireland, having used STV for several decades, voters show a residual rate that ranges from 1 to 2 percent; in Ireland, with a century's experience with STV, it is consistently around 1 percent (Clark, 2013; Denver, Clark, & Bennie, 2009).

In San Francisco, the first local elections with RCV from 2004 to 2006 produced residual rates slightly lower than previous elections with 1MB voting (Neely & Cook, 2008, pp. 538–541). Subsequent analysis of over-votes found considerable variation across plurality and RCV elections, with no clear advantage for one or the other, given the range of other factors that may affect voting error (Neely & McDaniel, 2015, pp. 10–12). Because of data limitations, separate rates of over-voting and under-voting are unknown for pre-RCV elections in San Francisco (see also Neely & Cook, 2008, p. 540). The conceptual difficulty with comparing over-votes under separate 1MB and RCV contests (i.e., different voting methods for different offices, a common feature of post-reform local governments in the USA) which occurred in the same year is that the numbers of candidates, not to mention the salience and visibility of the candidates and offices involved, may not be comparable.

In Minneapolis since 2009, residual votes in general and over-votes in particular have remained about the same with the shift from plurality to RCV elections (Kimball & Anthony, 2018, pp. 108–109).

In Maine in 2018, RCV was used for the first time for US House of Representatives elections. In District 1, the residual vote in 2018 was 2.3 percent; in 2016, prior to the switch to RCV, it had been 3.6 percent. In District 2, where a four-stage RCV count was needed to determine a winner in 2018, the residual vote was 2.1 percent; in 2016 in the same district, it had been 3.5 percent (calculations based on public records held by the Maine Bureau of Corporations, Elections, and Commissions). But the higher proportion of residual votes in 2016, a presidential year, was almost certainly the product of roll-off when some voters marked the presidential contest but left everything else blank.

Overall, it is not obvious that traditional voting in the USA affects voting error differently from RCV, in practice—contrary to the common-sense intuition about

the simplicity of 1MB input rules. Scotland has shown a more definite pattern toward greater ranking-based error, but the STV system there has the additional feature of applying to multi-winner elections. In other words, the switch from exclusive to ranking input rules was not the only thing that changed in Scotland in 2007, and therefore input rules cannot be isolated as the cause of increased error. Experimental data, though, could enable more controlled comparisons and more confident conclusions for this type of question.

Observational studies show similar levels of suggestiveness coupled with uncertainty in the evidence about which voters are more error-prone. With 1MB in the USA, studies tend to find higher residual rates in voting precincts containing higher numbers of Black residents and residents without high-school degrees (Kimball & Kropf, 2005, p. 522). But Black voters' higher residual rates are partly the result of deliberate choice in some contexts (Herron & Sekhon, 2005). Racial discrepancies in voting error have persisted with the switch to RCV ballots in Minneapolis (Kimball & Anthony, 2018, p. 109); in San Francisco, precincts with more Latino, elderly, and less educated residents have often shown higher residual rates as well (Neely & Cook, 2008; Neely & McDaniel, 2015). Observing which precincts show higher error rates, however, is not the same as identifying individual voters that make errors. We cannot observe error at the individual level of analysis in actual public elections because of the secret ballot. But we can use experiments to get at the individual level of analysis while preserving subjects' anonymity.

Among experimental as opposed to observational studies, a rich literature on alternative ballot types in Europe and Canada (e.g., Alos-Ferrer & Granic, 2012; Baujard, Igersheim, Lebon, Favrel, & Laslier, 2014; Blais, Heroux-Legault, Stephenson, Cross, & Gidengil, 2012; Farvaque, Jayet, & Ragot, 2011; Van der Straeten, Laslier, Sauger, & Blais, 2010) lays the foundation for offering different treatments on input rules in voting experiments. But these studies have not directly confronted the theoretic dilemma of expression and accessibility, and the related concept of voting error has barely featured there.

4. Hypotheses

The general hypothesis that our experiments on input rules were designed to test corresponds to commonsense intuitions about a zero-sum relation between expression and accessibility: More complicated rules produce more confused voters.

> H1: Fewer voters make mistakes (cast void votes) while using exclusive (1MB) input rules than while using the more complicated input rules of ranking and grading.

As we know, however, ballot structure and contest structure are bound together in relations of mutual influence. In the American context, it makes sense to hold district magnitude at a value of 1, since the vast majority of federal, state, and local elections are single-winner contests (e.g., for senator, representative, governor, or mayor). But another, overlooked aspect of contest structure may have a special relation to how complicated a ballot appears to a voter, or how disoriented a voter may become. This is the number of options on the ballot. It seems intuitive that a ballot with a larger number of options for the voter's choice would be more likely to induce error, particularly with distributive input rules that (as in both ranking and grading) allow voters to make marks for more than one candidate. Hence, after our general hypothesis, a secondary hypothesis:

> H2: While using ranking and grading input rules, fewer voters make mistakes (cast void votes) when confronting a smaller number of options on the ballot.

Experiments offer analytic leverage on our two hypotheses. Our general hypothesis requires us to analyze error rates across three different treatments, corresponding to the three main types of input rule for single-winner elections. Our special hypothesis requires us to vary the number of candidates presented to each subject, thereby introducing a second dimension of treatment.

5. Experimental Design

The analysis reported in this article is based on voting experiments conducted in four American states in March 2020. In partisan presidential primaries in the USA, states may choose their own date on which to hold such elections, and 14 out of 50 states chose 3 March 2020, also known as "Super Tuesday." Colorado, Tennessee, Texas, and Virginia were among the states voting in the "Super Tuesday" round of presidential nominating primaries, and we leveraged the public salience of those contests by inviting experimental subjects to vote on candidate lists that included real-world candidates for US President.

The Super Tuesday experiments were conducted online in the ten days prior to the actual voting. To be eligible to participate, subjects had to be of voting age (18 years or older) and had to be resident in one of the four selected states. Subjects were recruited by an outside contractor and paid a small consideration for their time, with most subjects taking five to ten minutes to complete the survey (see the Supplementary File for more technical details).

The Super Tuesday studies asked each subject to vote twice, once in a simulated Democratic Party presidential primary and once in a hypothetical "common ballot" contest featuring presidential candidates from multiple parties. A common ballot is an all-party ballot that may or may not function as a primary election. There are by definition no partisan primaries preceding it; as a result, there may be more than one candidate

bearing the same partisan affiliation on the common ballot. Among American states, the common ballot has been employed instead of partisan nominating primaries in Louisiana and Nebraska for over 50 years, and in California and Washington for over 10 years. In Nebraska, no party labels are attached to any candidates on the common ballot. In the other three states, where the common ballot serves as a primary election (also known as "jungle primary" or "top-two primary") to narrow down the second-round ballot to two leading candidates, it is customary for more than one Democrat and more than one Republican to appear on the common ballot for a particular office, in addition to independent and minor-party candidates. To clarify, then, the Super Tuesday experiments created a hypothetical common ballot for US President with at least two Democrats and at least two Republicans.

To maximize the participation of various types of partisan across the voting-age populations of these American states, subjects were allowed to opt out of voting in the Democratic Party primary (the first voting task) by answering a question about their interest in that intra-party contest. Those who opted out by denying any interest in the Democratic Party primary were immediately presented with the common ballot. Those who opted in also voted on the common ballot, but it was their second voting task after the Democratic Party primary. For this analysis, we are examining results only from the hypothetical common ballot—the one that all subjects participated in, regardless of their level of interest in the Democratic nomination.

Subjects were randomly assigned one of three input rules: Check (single-mark), Rank, or Grade. They were given a brief, two-sentence description of how the ballot works before being shown the instructions on the ballot itself.

The instructions for the Check ballot read as follows: 'Please indicate your favorite candidate by clicking the box containing their name, leaving all other options blank. Only one candidate can receive your vote.'

The instructions for the Rank ballot read as follows: 'Please select rankings for one or more of the candidates in your order of preference (first choice, second choice, third choice, etc.). You may choose to rank any number of candidates, including all or only one, but only one ranking can apply per candidate.'

The instructions for the Grade ballot read as follows: 'Please select a grade or score for each of the candidates with the level of support you wish to give: 4 for a grade of A, 3 for a B, 2 for a C, 1 for a D, or zero (0) for an F. You may choose to grade any number of candidates, but only one grade can apply per candidate.'

After randomly assigning one of these sets of instructions, the experiment did not constrain subjects' freedom to mark their ballots in any way. The purpose of this design choice was to simulate the freedom of real-world paper ballots. Computerized touch screens are used in some jurisdictions in the USA, but paper ballots remain the norm. There was one minor limitation imposed, for technical reasons, by the online survey platform. The number of available rankings on a Rank ballot was always limited to six, even when the list of eight candidates had been assigned to a particular subject. This kind of limitation also appears in real-world elections in some American jurisdictions that administer RCV elections, when the number of rankings must be capped because of the voting equipment in use. (Other jurisdictions have upgraded equipment to accept a maximum number of rankings which rarely, if ever, is exceeded by the number of candidates on the ballot.)

In addition, there was a second dimension of random assignment. Some subjects voted from a list of six presidential candidates, while others voted from a list of eight candidates. The list of six contained two actually declared Republicans (Donald Trump and William Weld) and four actually declared Democrats (Joe Biden, Mike Bloomberg, Bernie Sanders, and Elizabeth Warren). The list of eight added to the original six candidates one Green Party candidate (Howie Hawkins) and one Libertarian Party candidate (Lincoln Chafee). Figure 1 shows the eight-person common ballot with ranking input rules; Figure 2 shows the same with grading input rules.

Since Rank and Grade are the two MMB alternatives (treatments) to the 1MB status quo (control) in our voting experiments, it may be helpful to describe examples of how a ballot could be mismarked but still valid (not void) under each of these two input rules.

With ranking input rules, a hierarchic ordering of preferences is required: only one candidate per ranking and only one ranking per candidate. Accordingly, in Figure 2, if the voter ranks Bloomberg first and ranks both Sanders and Warren second, the ballot is mismarked but not invalidated. The vote for Bloomberg counts toward the first-round tally, but the second-choice votes for Sanders and Warren are ignored. On the other hand, if the voter ranks both Bloomberg and Warren first and ranks only Sanders second, this kind of mismarking voids the vote altogether. Nothing can be contributed to the first-round count from that voter's ballot because no single favorite (for a single-winner election) can be ascertained. This coding protocol reflects the standard approach to voiding ballots in American jurisdictions that administer RCV elections (see the Supplementary File for more details).

A similar possibility of mismarked but valid votes exists with the Grade ballot in our experiments. In Figure 1, a voter who tries to give a grade of both B and C to Sanders can contribute nothing to Sanders' total, but the same voter may still give any one grade to Warren. The instructions would then be violated in one instance, but the ballot would not be invalidated altogether. If the voter tries to give more than one level of support to every candidate on the ballot, only then is it effectively a null ballot under grading input rules.

Apart from the instructions, no other education or information about voting rules was supplied. In the four states covered in our sample, only Colorado has one or

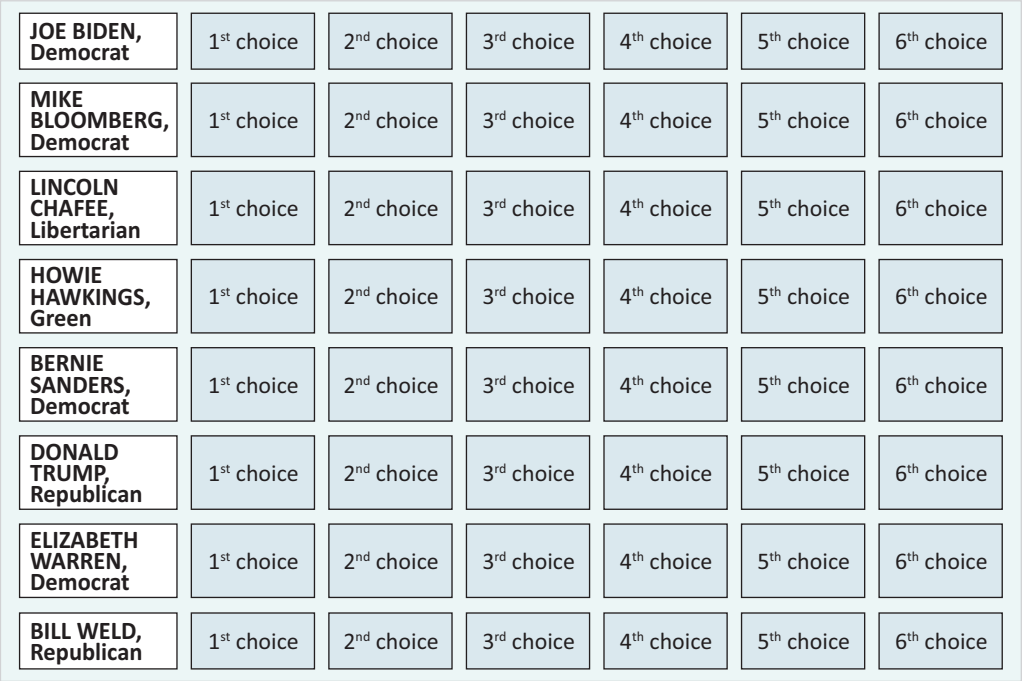

Figure 1. A Rank ballot with eight candidates.

Figure 2. A Grade ballot with eight candidates.

two small towns with any prior implementation of RCV elections. Our assumption, therefore, is that there was a low level of familiarity with RCV across all subjects in our sample.

Demographically, the random assignment of input rules produced roughly comparable treatment groups that were somewhat younger, more female, and Whiter than the American adult population. Table 1 shows summary demographic statistics for the three treatment groups, compared to the most recent estimates from the US Census Bureau. Table 2 shows the balance of covariates across treatment groups.

In summary, the experimental election that we are analyzing here offered 6,000 subjects in four American states a common ballot or "jungle primary" for US President. Each voter's ballot combined one of three randomly assigned input rules with one of two randomly assigned rosters of candidates. By collecting information

Table 1. Experimental sample compared with US Census estimates for 2018 (figures represent percentages).

		Check	Rank	Grade	Census
Age	18–24	15.2	14.2	13.6	12.1
	25–34	25.3	23.7	24.0	17.8
	35–44	21.5	21.2	22.6	16.4
	45–54	15.7	16.1	15.1	16.4
	55–64	13.8	13.1	14.1	16.7
	65+	8.5	11.7	10.7	20.6
Race	White	69.1	70.6	68.5	60.2
	Black	15.1	14.8	16.3	12.3
	Latino	10.4	8.9	9.5	18.2
	Asian	2.5	3.7	3.0	5.6
	Am. Ind.	0.9	0.8	1.0	0.7
	Other	2.0	1.3	1.7	3.0
Gender	Male	39.2	40.6	41.3	49.2
	Female	60.8	59.5	58.7	50.8

Table 2. Balance of covariates.

	(1) Check Ballot Assignment	(2) Rank Ballot Assignment	(3) Grade Ballot Assignment
Options	−0.0189	−0.0109	0.0297
	(0.0309)	(0.0310)	(0.0309)
Primary	0.0275	−0.0110	−0.0163
	(0.0562)	(0.0562)	(0.0561)
Age	−0.00473***	0.00272	0.00198
	(0.00181)	(0.00179)	(0.00179)
Female	0.0589	−0.00888	−0.0495
	(0.0553)	(0.0551)	(0.0549)
Education	0.00533	0.00869	−0.0139
	(0.0293)	(0.0293)	(0.0292)
Income	−0.0335	0.00406	0.0292
	(0.0267)	(0.0267)	(0.0266)
White	−0.161	0.311*	−0.126
	(0.167)	(0.182)	(0.169)
Black	−0.230	0.245	0.00689
	(0.178)	(0.192)	(0.179)
Hispanic	−0.0744	0.211	−0.117
	(0.186)	(0.200)	(0.188)
Asian	−0.480**	0.613***	−0.138
	(0.231)	(0.232)	(0.226)
CO	0.0403	−0.0212	−0.0194
	(0.0840)	(0.0839)	(0.0839)
TX	0.0455	−0.00772	−0.0378
	(0.0835)	(0.0833)	(0.0833)
VA	0.0574	−0.0188	−0.0386
	(0.0850)	(0.0849)	(0.0849)
Constant	−0.221	−1.047***	−0.835***
	(0.273)	(0.283)	(0.274)
Observations	6,290	6,290	6,290

Notes: * $p < .10$; ** $p < .05$; *** $p < .01$; Tennessee is the reference category for state dummy variables.

about errors that these subjects made on their ballots, therefore, we acquired experimental data that can be used to assess voters' proneness to make mistakes under different ballot conditions.

6. Models and Variables

Our statistical model for voting error employs two alternative specifications of the dependent variable, two independent variables (corresponding to input rules and ballot options), and several control variables suggested by previous studies of voting error in the USA. The unit of analysis in this study is the ballot image for the all-party US presidential contest. A ballot image shows the pattern of marks made by a single voter for a single contest.

Void is the first specification of the dependent variable, representing the most basic and consequential way that voters err: a marked but totally invalid ballot for any given contest, from which no quantitative contribution to the count can be taken. This variable takes a value of 1 if the voter marked the ballot in one of the following ways, depending on the input rule in use: for the Check ballot, more than one candidate was checked; for the Rank ballot, the highest ranking marked was given to more than one candidate; for the Grade ballot, either all candidates received the same score or all candidates were double-scored. If a ballot was left entirely blank, it was not coded as void.

Mismarked is the second specification of the dependent variable. This variable takes a value of 1 for a marked ballot that violated the instructions in at least one respect, regardless of whether a valid vote could still be read off the ballot. If a ballot was left entirely blank, it was not coded as mismarked.

Rank and *Grade* are independent variables measuring the type of input rule used for the hypothetical common ballot for US President. Since the voters using the Check ballot are the control group in our experiment, this variable takes a value of 0 for voters who used that input rule and a value of 1 for *Rank* or for *Grade*, otherwise. Our hypothesis about the effect of MMB rules on voting error (H1) leads us to expect that the regression coefficient for this variable should be significant and positively signed.

Options is the independent variable measuring whether the voter saw the six-candidate or the eight-candidate ballot for US President. This variable takes a value of 6 or 8. Our hypothesis about the effect of ballot options on voting error (H2) leads us to expect that the regression coefficient for this variable should be significant and positively signed.

Several control variables are suggested by previous studies' findings on the correlates of voting error in the USA. *Age* measures the voter's age, from 18 to 99, and previous research suggests that older voters may be more error-prone (positively signed coefficient). *Female* captures self-reported gender, and previous studies suggest that females' lower intensity of interest in politics in general may lead to more error (positively signed coefficient). *Education* and *Income* measure voters' self-reported levels of educational attainment and self-reported annual household income, respectively, on an ascending five-point scale; and previous research suggests that less educated and less wealthy voters may be more error-prone (negatively signed coefficients). Race is measured through a series of dummy variables for self-reported *White*, *Black*, *Asian*, and *Latino* subjects (with Other as the reference category). Previous research suggests that White voters may be less error-prone (negatively signed coefficient) while non-whites may be more so (positively signed coefficient).

Finally, we have included a control variable for *Second Vote*, reflecting a peculiarity of the structure of these experiments which may have affected voting error. Subjects who opted to vote first in a simulated Democratic Party primary were voting on the common (all-party) ballot for US President as their second election in the experiment, while those who opted out of the Democratic Party primary saw the common ballot as their first election. Those who cast the ballot being analyzed here as their second voting task, for whom the *Second Vote* variable takes a value of 1, may have been less prone to error (negatively signed coefficient) because they had already familiarized themselves with some of the candidates' names that appeared on the ballot being analyzed here. It is important to note, however, that these second-time voters in the experiment saw a different input rule for the common ballot from the one they had previously used for the Democratic primary. Therefore, any error-reducing effect could come from familiarity with the candidates but not from familiarity with the input rule.

7. Results

To test H1 and H2, we modeled the probability of either mismarking or casting a void ballot as a function of ballot type using logistical regression with state-based fixed effects. The results are presented in Table 3.

The model presented in column 1 (void votes) indicates no statistical difference in the probability of casting a void Rank or a void Check ballot. In column 2 (mismarked votes), by contrast, the coefficient of the variable *Rank* is statistically significant and positive, indicating a higher probability of casting a mismarked Rank ballot than a mismarked Check ballot. Interestingly, the coefficient for *Grade* in column 3 (void votes) is statistically significant at the 10-percent level, but with the opposite sign from what was expected. As with the Rank ballot, however, there was a higher probability of casting a Grade ballot with at least one error compared with the Check ballot, as indicated by the positive and statistically significant coefficient on *Grade* in column 4 (mismarked votes).

In three of the four models presented in Table 3, the variable *Options* is statistically significant and positive,

Table 3. Regression analysis of two types of voting error.

	Probability Void	Probability Mismarked	Probability Void	Probability Mismarked
Rank	−0.120	0.862***		
	(0.126)	(0.106)		
Grade			−0.247*	0.330***
			(0.129)	(0.114)
Options	0.0180	0.385***	0.258*	0.275**
	(0.146)	(0.117)	(0.151)	(0.132)
Age	−0.0246***	−0.0184***	−0.0299***	−0.0240***
	(0.00473)	(0.00363)	(0.00495)	(0.00427)
Female	−0.352***	−0.343***	−0.354***	−0.233**
	(0.127)	(0.103)	(0.130)	(0.115)
Education	−0.0685	−0.0446	−0.183***	−0.0553
	(0.0682)	(0.0552)	(0.0699)	(0.0618)
Income	−0.0530	0.00185	0.0207	0.127**
	(0.0634)	(0.0505)	(0.0640)	(0.0556)
White	0.0294	0.202	−0.0391	0.335
	(0.434)	(0.380)	(0.404)	(0.429)
Black	0.708	0.874**	0.361	0.908**
	(0.445)	(0.391)	(0.422)	(0.439)
Asian	0.854*	0.995**	0.822*	1.024**
	(0.506)	(0.436)	(0.487)	(0.496)
Latino	0.339	0.475	0.497	0.735
	(0.460)	(0.403)	(0.430)	(0.450)
Second Vote	−0.212	−0.112	−0.565***	0.0748
	(0.131)	(0.106)	(0.135)	(0.121)
Texas	0.284	0.166	−0.0734	0.195
	(0.189)	(0.160)	(0.204)	(0.175)
Virginia	0.0475	0.126	−0.0977	−0.142
	(0.200)	(0.164)	(0.208)	(0.186)
Colorado	−0.149	−0.110	−0.0805	−0.332*
	(0.207)	(0.169)	(0.206)	(0.194)
Constant	−1.253**	−2.048***	−0.592	−2.277***
	(0.496)	(0.433)	(0.474)	(0.490)
Observations	4, 183	4, 183	4, 199	4, 199

Notes: * $p < .10$; ** $p < .05$; *** $p < .01$.

indicating that a higher number of candidates on the ballot is associated with a higher probability of casting a mismarked Rank and Grade ballot, as well as a void Grade ballot. This lends partial support to H2, which predicted that the number of candidates would increase the probability of mismarking MMB ballots. The number of candidates was not significant in predicting a void Rank ballot.

To investigate further the relation between ballot type and the number of options supplied on the ballot in predicting the dependent variable, Figure 3 depicts the probability of casting a void Check, Rank, and Grade ballot conditional on the number of candidates. We find that the number of candidates did not generally affect the probability of a void ballot. However, the probability for Check ballots was statistically significantly higher than Rank ballots when there were eight candidates listed (p = 0.07).

Figure 4 depicts the probability of mismarking (rather than voiding) Check, Rank, and Grade ballots conditional on ballot options. There was a higher probability of mismarking a Rank ballot compared with a Check ballot regardless of the number of candidates. For ballots with eight candidates, however, the 11.15 percentage-point difference in the predicted probability between mismarked Rank and Check ballots is much larger than for six candidates, and statistically significant ($p < .01$). Given that the Rank ballot type in our experiments limited subjects to six rankings, even when eight candidates were on offer, it is likely that some subjects violated the instructions with duplicate sixth-choice rankings for

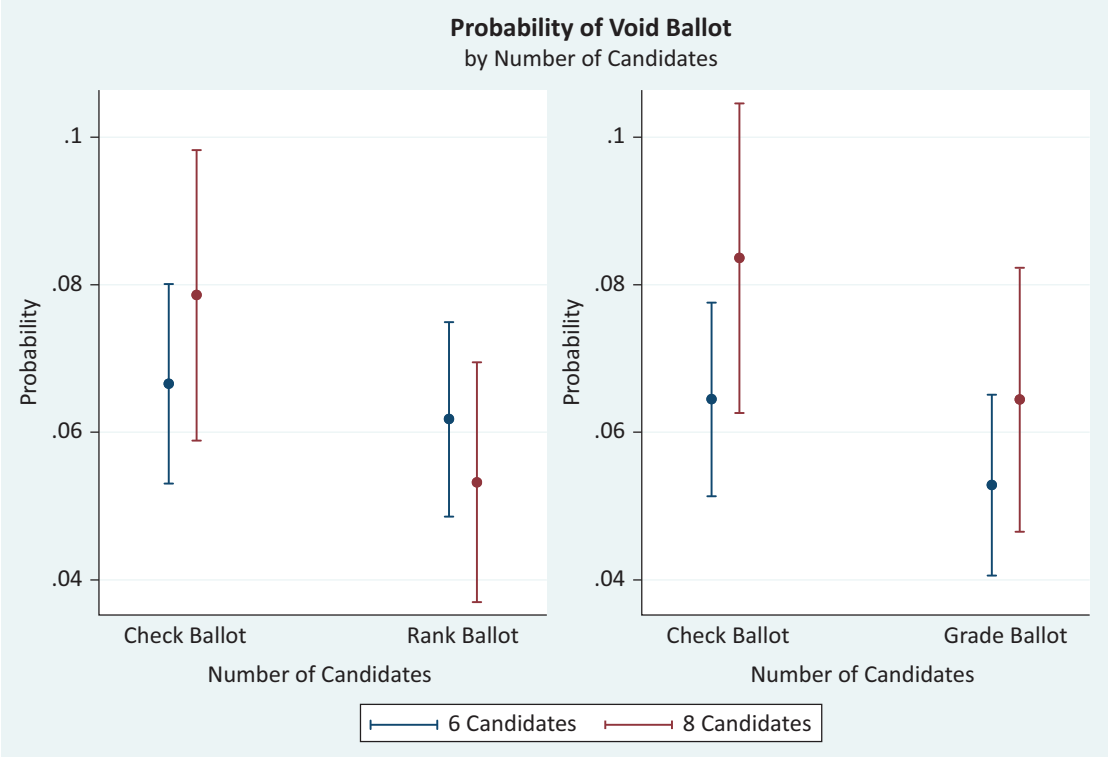

Figure 3. Probability of void ballot.

more than one candidate when they wished to indicate disapproval. This type of ballot image would be a prime example of a "mismarked" but not "void" vote. Differences in the probability of mismarking a Check and a Grade ballot were smaller, but the statistically significant coefficient on *Grade* in Table 1 appears to be driven primarily by ballots with eight candidates.

Though a larger number of candidates does generally increase the probability of mismarking a more complex ballot, the interactions plotted in Figure 3 suggest that

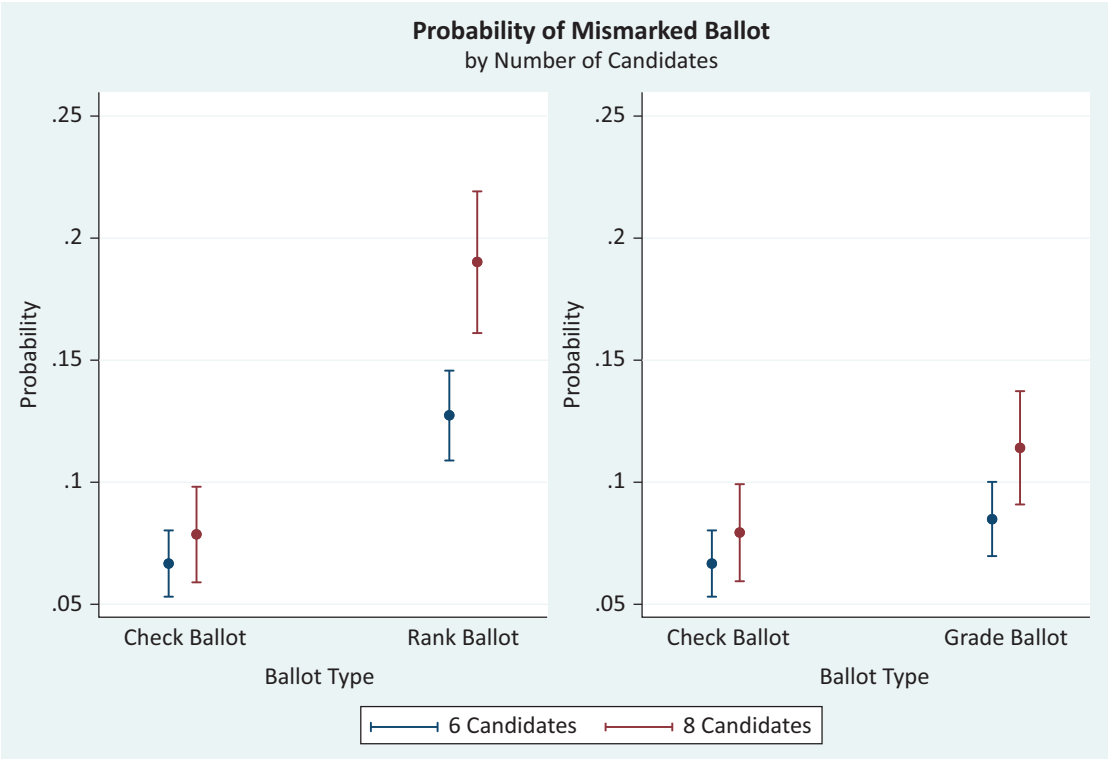

Figure 4. Probability of mismarked ballot.

the number of candidates on each ballot had little statistical or substantive impact on the probability of casting a void ballot.

We also would like to note the statistical significance of several control variables in Table 3. Contrary to conventional expectations about voting error, being female and being older were associated with a lower probability of casting either a mismarked or a void ballot in the Super Tuesday 2020 experiments. The result on age is consistent with an emerging literature that finds lower understanding of and satisfaction with RCV among older Americans (Donovan, Tolbert, & Gracey, 2019; McCarthy & Santucci, in press).

Results on racial variables raise questions for future study. Recent surveys in California cities found no significant racial discrepancies in self-reported understanding of RCV ballot instructions (Donovan et al., 2019). In the Super Tuesday experiments, however, respondents who identified as Asian were somewhat more likely to cast both mismarked and void ballots with the Rank input rule, while Black respondents were more likely to cast mismarked but not void ballots. Importantly, Black voters have been found more likely to make errors under 1MB when there is no Black candidate on the ballot (Herron & Sekhon, 2005). In this connection, we note that both Cory Booker and Kamala Harris had quit the US presidential race prior to Super Tuesday, leaving no Black candidates in the candidate lists of our experiments by the time they were launched.

8. Conclusion

The results of this experiment suggest that more complicated input rules do not have a significant impact on the casting of void (totally invalid) ballots, compared to the familiar all-or-nothing input rules of the 1MB status quo in the USA. But ranking and grading ballots did raise the probability that a voter in our experiments would commit at least one violation of the instructions. More opportunities for expression go hand-in-hand with more opportunities for error, though minor mistakes on the ranking and grading ballots tested here were usually compatible with counting the voter's support for at least one favored candidate.

The number of options presented on the ballot for the voter's choice also affected the likelihood of error, but again not as strongly as expected. Experimental subjects were somewhat more likely to make minor mistakes with all three ballot types when they had eight rather than six candidates to choose from, with the Rank ballot showing the biggest increase in mismarked ballots. The effects were weaker on void votes. Overall, both Rank and Grade ballots were voided less often than Check ballots, regardless of the number of candidates. In fact, the eight-candidate ballot (with a Green and a Libertarian added to the list) actually seemed to make experimental subjects using the Rank ballot less likely to submit void votes than the six-candidate list (with only Democratic and Republican candidates). The difference in ballot options captured by our experimental design, between six and eight candidates, was far from dramatic, and future studies should be designed to implement a wider range of treatments on ballot options. A range from three candidates to ten would be realistic for many sub-national elections in the USA, for American states that use a common (all-party) ballot in primary elections, and for some nominating contests for national offices. It would also be worthwhile, in an experimental setting, to address variation in ballot options in party-centric rather than candidate-centric contexts. Cross-national and cross-cultural comparisons are as yet poorly understood on the question of voting error.

In summary, we find support for our two hypotheses about voting error in the mismarking of ballots but not in the voiding thereof. This is to some extent a disappointing result for the intuition behind anti-reform arguments in the American context, since void ballots carry greater normative weight than mismarked ones. Effective disfranchisement (for a particular contest) is more serious than incomplete expression. The mismarking of ballots is still worrisome, but it can theoretically be alleviated by the actions of local election administrators and media prior to the implementation of new election reforms. Different treatments as to voter information were not part of this experimental analysis but should be considered a priority for future experimental research on election reform. The possibility that voting error can be reduced in the case of MMB input rules by familiarization and education may help to explain why, in the real world, observational studies of jurisdictions that switch to ranking ballots in the USA often show little or no increase in voting error.

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Conflict of Interests

The authors declare no conflict of interests.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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Article

Ranked Choice Voting and Youth Voter Turnout: The Roles of Campaign Civility and Candidate Contact

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Abstract
Ranked choice voting (RCV) has become increasing popular in the United States as more cities and states begin allowing voters to rank candidates in order of preference. This change in election system has been linked to increased campaign civility and mobilization, but with little evidence suggesting these benefits lead to increased voter turnout in the general population. This study argues that RCV elections may not increase overall voting but will increase youth voting. Considering young Americans, who have become increasingly pessimistic towards politics and are also heavily reliant on mobilization for participation, this study argues that increased campaign civility and mobilization may work to offset the negative feelings and lack of political engagement that plague young Americans. Using a matched study of individual level voter turnout for seven RCV and fourteen non-RCV local elections from 2013 and 2014, we find that there is no statistical difference in voting rates between RCV and plurality cities for the general public. Yet, in line with our hypotheses, younger voters are more likely to vote in RCV cities. Further, we find that increased contact in RCV elections accounts for a larger portion of the increased voter turnout compared to perceptions of campaign civility. Findings suggest RCV acts as a positive mobilizing force for youth voting through increasing campaign contact.

Keywords
campaign civility; mobilization; ranked choice voting; voter turnout; youth voting

Issue
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1. Introduction

United States federalism gives wide latitude to state and local governments for the administration of their elections. Because of this, the structure of elections can vary drastically across states, counties, and even cities. One such variation is whether elections are conducted under plurality, majority, or preferential voting rules. Most elections conducted in the United States operate under plurality or majority rules. For plurality elections, the candidate with the most votes wins. In majority elections, candidates must be awarded a majority of the votes cast in a single round. If no candidate meets the threshold, runoff elections are held at a later date, in which the top two candidates compete for a simple majority of votes. Preferential voting systems, on the other hand, require the winner receive a majority of votes while not requiring follow up elections. Instead, voters rank candidates for a single office in order of preference at a single time at the voting booth. If no candidate receives a majority, the least popular candidate is eliminated, and all votes cast for that candidate automatically go to the respective voter’s second choice (cf. Grofman & Feld, 2004). This continues until a candidate receives a majority of the votes cast in a round.

Preferential voting systems have been gaining popularity in recent years, including in the United States (Fortin, 2020), as more US cities and states reform their elections to incorporate systems such as ranked choice voting (RCV). In 2018, Maine used RCV for the first time for midterm elections. Yet, Maine is just one example of RCV in the United States. Five states used RCV for their Democratic primary, six use RCV for overseas voters, and several large cities utilize RCV for local elections (e.g., San Francisco, CA; St. Paul, MN). According to FairVote, a nonprofit, non-partisan RCV advocacy organization, approximately ten million voting age Americans reside in jurisdictions that have adopted RCV, and nearly four hundred RCV elections have been conducted as of September 2020 (FairVote, 2020).

Despite the increased popularity of preferential elections, few studies have investigated the effects of such systems on voter turnout comparatively, and even less so in the context of the United States. Previous studies have found that US elections conducted under preferential voting rules result in more civil campaigning (Donovan, Tolbert, & Gracey, 2016) and greater campaign mobilization efforts (Bowler, Donovan, & Brockington, 2003; Smith, 2016). However, only a handful of studies have tested whether this leads to increased voting. Of those that investigate turnout effects, most find no evidence of increased turnout (e.g., McDaniel, 2016), though none have investigated potentially differential affects based on age. Yet, age may be an important demographic worth directly assessing when investigating the participatory effects of preferential elections. Stark differences exist in perceptions of politics and reliance on mobilization efforts by age and generation, with younger, Millennial (born 1981–1996), and Generation Z (1997–2012) voters possessing more pessimistic political outlooks (Dermody & Hanmer-Lloyd, 2004; Lawless & Fox, 2015) and a larger reliance on campaign outreach (Dalton, 2015) while less likely to be contacted by campaigns (Nickerson, 2006; Rosenstone & Hansen, 2003). Because of these factors, it could be that the increased civility and mobilization may be more beneficial for young voters than their older counterparts. That is, preferential elections may offset the pessimistic perceptions of politics among young voters while increasing the chances of being contacted, resulting in increased youth voter turnout.

This study proposes that institutional changes to the electoral system as a result of replacing plurality and majority elections with preferential electoral systems should reduce the incivility of campaigns while increasing campaign contact. As such, switching to preferential elections should increase the rates of political participation among young voters who are particularly disaffected and less likely to be contacted by campaigns. To test whether preferential elections increase youth turnout, and whether increased civility or mobilization are key mechanisms through which preferential elections do so, we leverage the natural variation in electoral systems across cities in the United States. We compare voter turnout, perceptions of civility, and candidate contact efforts between preferential and plurality cities matched on key demographics to determine the extent to which preferential elections increase youth voting and whether civility or mobilization are key mechanisms of that increased turnout.

The remainder of this study will proceed as follows: First, we review the literature surrounding preferential voting. Then we discuss who young voters are and why we expect preferential voting to impact their voting behavior, after which we form our hypotheses regarding the mechanisms and effects of preferential elections. Data, method, and analyses follow. The article ends with a summary of the results.

2. Preferential Voting Systems: Function and Effects

Most research on preferential voting draws from European, African, and Asian politics, given the historically limited use of the process in the United States. Reilly (2002) uses case studies from 'divided societies' like Papua New Guinea, Northern Ireland, Sri Lanka, Estonia, and Fiji and compares them to 'non-divided' societies like Australia, parts of Europe and North America. Reilly finds preferential voting better represents the interests of a larger amount of people and leads these interests to becoming a part of major parties' platforms more often than plurality systems. In the context of divided or disaffected societies that Reilly investigates, this is an important electoral and democratic feature of preferential elections which allows those with less political power to become more involved and have more influence within the political process. By giving citizens the chance to rank candidates in order of preference, preferential voting may decrease the chances that one's vote becomes wasted, providing greater individual influence in elections and satisfaction with the process. Reilly's results echoed those of Horowitz (2000) who finds political systems that allow voters to cast multiple preferences promote bargaining, alliances, and inclusion among rival political groups and political elites, leading to better citizen representation.

Farrell and McAllister (2006) assess the satisfaction with democracy across 29 nations, mostly from western Europe with the addition of Australia, New Zealand, Taiwan, and the United States. Their survey results show that preferential voting systems promote a greater sense of fairness about the election and also increase the public's satisfaction with the democratic system as a whole. Farrell and McAllister (2006) also find that preferential elections work to bring together diverse and divided populations, create a more inclusive and cooperative government and party system, and help increase the public's perceptions of external efficacy of their government; giving modern support to the theories outlined by Reilly (2002) and Horowitz (2000). Greater campaign civility and citizen perceptions of fairness in preferential elections has also been observed at the local level in

the United States. Donovan et al. (2016) and John and Douglas (2017), find that voters in RCV cities rated campaigns as less negative, were more satisfied with campaign conduct, and perceived less criticizing between the candidates (but see Nielson, 2017). Related, using text analysis, a working paper by McGinn (2020) finds that candidate debates are more civil with less negativity under RCV elections. The theoretical story outlined in these articles suggests that preferential voting systems increase civility of campaigns, as candidates now have an incentive to campaign for second and third place and do so by actively not attacking their political opponents or risk alienating their opponents' supporters (see also Drutman, 2020).

Not only has research shown RCV elections to be more civil, but others have shown RCV candidates to engage in more campaign outreach efforts in an attempt to court new or non-supportive voters and expand their base. In support of this, Bowler et al. (2003) find that candidates in preferential voting systems were more likely to try to mobilize voters than those in plurality systems. A report by FairVote shows that citizens of RCV jurisdictions were more likely to be contacted by a campaign, and this contact was also more likely to include in-person contact (Smith, 2016), the most effective form of mobilization (Gerber & Green, 2000; Green, Gerber, & Nickerson, 2003a).

Despite the increased mobilization and campaign civility, few articles have demonstrated participatory effects of preferential elections. A working paper by McGinn (2020) suggests that preferential elections may increase voter turnout. In their unpublished study of RCV mobilization effects, Kimball and Anthony (2016) show that RCV does not increase voting but does retain voters between the primary and general elections. Still, others have charged RCV with potentially decreasing turnout or increasing the frequency of under/over votes. Ranking multiple candidates is more difficult and cognitively demanding than selecting only a single preference (Bowler & Farrell, 1995; Donovan et al., 2019; Kimball & Kropf, 2016). As such, people may abstain from voting or, when voting, accidentally over/under vote due to not understanding the ranking process. Using survey data, Donovan et al. (2019) find that voters in RCV cities perceived greater difficulty with the voting process than did their counterparts in plurality cities, though not by large margins. Burnett and Kogan (2015) use ballots cast in four California RCV elections and find that 8 to 12 percent of ballots marked the same candidate multiple times. Looking at aggregate turnout data in San Francisco mayoral elections from 1995 to 2011, McDaniel (2016) finds that Black and white individuals vote less in RCV elections.

The evidence presented thus far suggests that preferential elections are more likely to result in the preferred candidate being elected, are more civil, have greater candidate contact, but may not increase voting in the general public and potentially decrease voting for the certain subgroups. Do these results to extend to youth voters? Or will the increased campaign civility and candidate contact under preferential elections increase youth turnout, as we theorize?

3. Youth Participation and RVC

Scholars analyzing youth voter turnout in the United States and comparatively have generally agreed that the percentage of young individuals voting has been declining. In studying the period between 1972 (the first year that 18–20-year-olds could vote in the United States) and 2002, Levine and Lopez (2002) find that American youth participation in presidential elections declined in the aggregate by 13 to 15 percentage points. Franklin (2004) argues that lowering the voting age has had the effect of decreasing generational voting across multiple advanced democracies. Related, Holbein and Hillygus (2020, p.3) note that the turnout gap between generations has widened over time, particularly in the United States, with today's youths less likely to become voters compared to earlier generations. Confronted with low youth turnout rates, many argue that that younger generations abstain from voting due to being politically apathetic, lacking a sense of civic duty, being unaware of the political process, and most damningly, are ignorant and indifferent by choice (e.g., Putnam, 2000).

Other scholars argue today's youths are not voting at the same rates as older Americans or earlier cohorts because of perceptions of the political system being unresponsive or corrupt. The end of the 20th century gave rise to increased partisan loyalty and negative media influence that paved the road for increased polarization, Congressional gridlock, and negative partisanship (Abramowitz & Webster, 2016; Grossmann & Hopkins, 2016; Mason, 2018). Related, trust in the Government to do the right thing and approval of Congress have been declining rapidly in past decades and are at all-time lows (Pew Research Center, 2019). These stark change in political discourse, trust, and approval directly coincide temporally with the years in which Millennials began developing their political selves. This has resulted in today's youths maturing in an era of intense political polarization, dysfunction, and negativity, resulting in lower levels of political trust and efficacy that has bled over into decreased voting.

Dermody and Hanmer-Lloyd (2004) review evidence of declining political participation among British youths and determine that trust, distrust, and cynicism all feature strongly in determining political engagement. They advocate for youth targeted marketing campaigns that help to increase trust and reduce distrust, which, they argue, should increase the likelihood of youth voting. In the United States, Lawless and Fox (2015) find that the mean-spirited and dysfunctional nature and portrayal of the American political system has led to youths not believing in the ability of elected officials or government to be an effective entity for promoting positive change.

Young people identified dishonesty, self-centeredness, being argumentative, and being only out for themselves as the most common negative attributes about American politicians. They also find that the youth feel alienated from contemporary American politics. The authors suggest the prevalence of negative campaigning and lack of civil discourse may be especially destructive to youth participation in politics.

Not all scholars are satisfied with the conclusion that younger citizens simply abstain from political participation out of apathy or pessimism. Instead, others began investigating alternative explanations for the youth's apparent apathy. Looking at participation more broadly to include actions such as protesting and petition signing, Dalton (2015) finds that younger members of the electorate are participating, just doing so outside of the institutionalized ways that older generations have participated. Dalton argues older citizens are more likely to be 'duty-based citizens,' defined as one's participation being driven by a sense of needing to perform basic democratic and civic duties, while today's youths are more likely to be 'engaged citizens,' whose participation is based on activism, passion, and campaign mobilization (Dalton, 2008, 2015). Young people vote in elections not out of duty, but when they are engaged by the issues, campaigns, or candidates (Dalton, 2015; LaCombe & Juelich, 2019; Lawless & Fox, 2015; Sloam, 2014). This could be why mobilization and contact efforts can have such a large influence on young voters (Green & Gerber, 2001), and why youth turnout has declined as parties expend less efforts attracting young voters or engaging with the political issues that young voters support (Endres & Kelly, 2018; Green et al., 2003b). Because young voters are less likely to vote, candidates and campaigns view them as not worth mobilizing. Additionally, even if campaigns wanted to contact youth voters, their increased mobility and lower homeownership rates makes it more difficult to do so (Nickerson, 2006; Rosenstone & Hansen, 2003). This literature agrees that the youth see the electoral process as corrupt, non-responsive, and unproductive, but add that, as a result they focus their civic energies from voting to other means of participating absent proper mobilization.

Still, other scholars have turned their focus from internal feelings to political resources and external institutions. Younger Americans have lower levels of resources and voter habituation (Plutzer, 2002), and as such, may be more susceptible to the influences of changes in the electoral environment. In support of this assertion, Holbein and Hillygus (2020) test the effects of pre-registration, same-day registration, and other permissive electoral reforms on youth turnout, finding that young individuals are especially sensitive to changing costs to vote and are more likely to vote when the voting process, particularly registration, is made easier (see also Hanmer, 2009; Leighley & Nagler, 2013). Coming from the opposite angle, Juelich and Coll (2020) use an index of electoral reforms (Li, Pomante, & Schraufnagel, 2018) to estimate the effect of more restrictive environments on youth voting and find that younger Americans vote less when electoral reforms are designed in more restrictive ways. This third line of literature acknowledges that young voters have lower efficacy and resources, while demonstrating how altering the rules of the game can alter the extent to which those barriers hinder youth voting.

Although evidence for RCV turnout effects on the general public is mixed, we hypothesize that RCV elections should increase youth voting by decreasing the negativity of elections and increasing candidate contact—two issues that plague young voters more than their older counterparts—and also because youth behavior is influenced to a greater extent by changes in electoral environments than that of older individuals.

In this article we will propose the following hypotheses:

- Hypothesis 1: Younger voters in RCV cities will be more likely to vote than younger voters in plurality cities.
- Hypothesis 2: The effects of RCV will increase younger voter propensities more than older voter propensities.
- Hypothesis 3: Increased civility will account for part of the increase in youth voter turnout in RCV cities.
- Hypothesis 4: Increased mobilization will account for part of the increase in youth voter turnout in RCV cities.

To visually lay out our hypotheses, Figure 1 shows the expected relationship between electoral systems, civility and mobilization, and youth voter turnout. We expect that preferential voting elections will lead to increased campaign civility and mobilization, which will in turn lead to increased youth voter turnout; while first-past-the-post elections will have less civility and mobilization, and thus, lower youth turnout.

4. Data and Research Design

The data used in this study come from two surveys conducted immediately after the 2013 and 2014 November elections in several US cities. Following both elections, telephone interviews were conducted in English and Spanish through random digit dialing via landlines and cellphones by the Rutgers-Eagleton Institute of Politics. The survey was conducted on samples of registered voters in both RCV and plurality cities in the United States. Respondents were chosen randomly within each city, not based on RCV-plurality groupings (i.e., respondents from one city are independently drawn from respondents in other cities). In each survey-year, roughly 2,400 respondents were sampled for a total of roughly 4,800 respondents. Half of survey respondents reside in RCV cities, the other half in plurality cities. The cities and

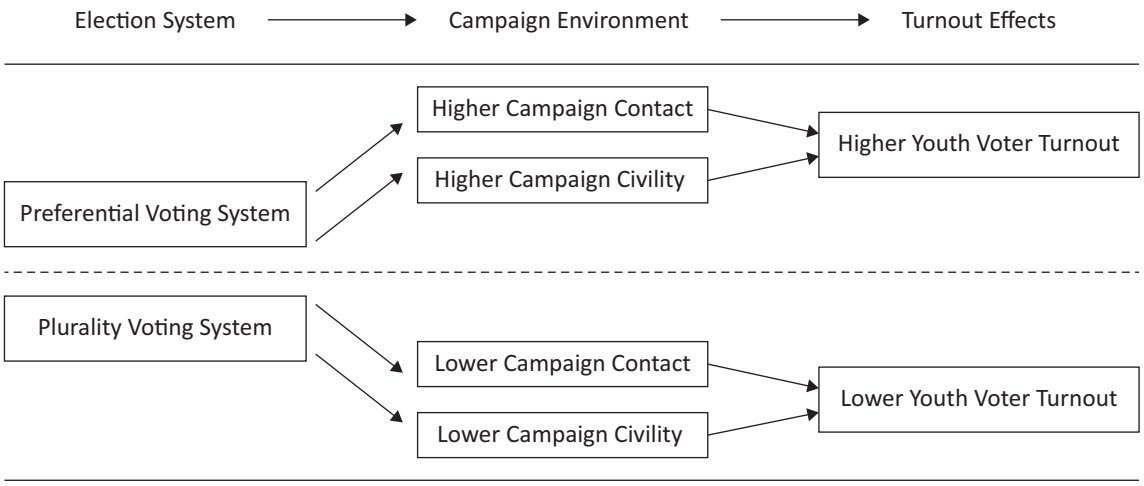

Figure 1. Theoretical diagram.

their RCV/plurality designation can be seen in Table 1. In parentheses beneath each city is the number of respondents from that city, as well as the city's population for comparability (for a more complete list of city demographics, see the Supplementary File, Appendix C, Table C3).

The chosen RCV cities represent some of the largest local election districts that used RCV in the United States (during the 2013–2014 elections, when data were collected), as well as some of the most frequently studied RCV jurisdictions (e.g., Burnett & Kogan, 2015; Donovan et al., 2016, 2019; McDaniel, 2016). To find comparable control cases, plurality cities were matched on population size, racial and ethnic composition, political characteristics, US region, and socio-economic conditions. Though there are undoubtedly some differences between the treatment and control cities, we believe that this approach can help mitigate concerns of non-comparability between treatment (RCV) and control (plurality) cities for three key reasons.

First, most RCV cities have multiple control cities, allowing for greater leverage in the control group. Second, with the exception of the two RCV cities in Minnesota, all RCV cities are in the same state as their plurality counterparts, with many in the same county. Though between-city differences may remain, most localities are operating under the same county and state level influences (e.g., county and state level participatory culture, election resources and regulations). As such, comparing voter turnout in RCV cities to plurality cities matched on important characteristics and that are operating in similar electoral environments helps control

Table 1. RCV cities and their plurality matches.

RCV Cities	Matched Plurality Cities			
Berkeley, CA (112, 116k)	Alameda, CA (101, 76k)			
Cambridge, MA (190, 107k)	Lowell, MA (99, 108k)	Worcester, MA (94, 119k)		
Minneapolis, MN (790, 394k)	Boston, MA (255, 640k)	Seattle, WA (249, 648k)	Tulsa, OK (261, 396k)	
Oakland, CA (670, 402k)	Anaheim, CA (99, 343k)	Santa Clara, CA (144, 120k)	Santa Ana, CA (99, 331k)	Stockton, CA (109, 297k)
San Francisco, CA (149, 829k)	San Jose, CA (197, 986k)			
San Leandro, CA (383, 87k)	Richmond, CA (338, 106k)			
St. Paul, MN (196, 292k)	Cedar Rapids, IA (106, 128k)	Des Moines, IA (90, 207k)		
Total RCV:2,490	Total Plurality: 2,241		Grand Total:4,731	

for unobserved factors influencing turnout. Taking this within-country (and usually within-state, if not within-county) approach provides a stronger set of control cases and claim to causality than would taking a cross-national approach where treatment and control cases may differ drastically on unobservable characteristics. Last, though the type of preferential voting differs by city, the data at hand do not allow us to differentiate by preferential style. However, this should not be an issue for our analyses, as increased civility and mobilization has been found across different preferential election types (e.g., Donovan et al., 2016; John & Douglas, 2017; Kimball & Kropf, 2016; McGinn, 2020; Smith, 2016). For brevity, we use RCV to denote preferential cities and plurality to denote plurality cities.

Using individual level data provides three advantages over aggregate data for this study. First, studies using aggregate data often assume that the presence of an electoral reform being correlated with increased proportions of demographic group participation means that individuals from that group are more likely to participate due to that reform. However, inferring individual behavior from aggregate patterns may result in an ecological fallacy; just because a group average may be higher or lower than others does not conclude that random individuals in that group are more or less likely to be affected. Second, using individual level data allows us to further control for individual factors that may affect whether someone decides to vote. When using aggregate data, researchers cannot control for individual differences in characteristics that may lead individuals of a demographic group to participate at different rates than members of a different demographic group or those in the same group. Third, being able to control for individual level differences helps mitigate concerns of non-comparability across treatment and control groups. Comparing individual level voting behavior in cities chosen to control for aggregate level factors while also controlling for individual level factors helps mitigate concerns of non-comparability across cases, even if the cities chosen are not perfect control cases.

With that being said, there are a few limitations to the data. First, the data is several years old at this point. Thus, it is worth considering the extent to which these findings can be generalized to today. Yet, it is still worth documenting whether RCV affects youth voting behavior and why, particularly considering its rising popularity. Second, the survey is of only registered voters and asks respondents to self-report voting. Potentially because of this, average voter turnout in the sample is substantially higher than would usually be expected, at 83 percent for the full sample, 85 percent for RCV cities, and 82 percent for plurality cities ($p = 0.002$). Turnout in these elections typically ranged 33 to 45 percent. While this turnout is substantially higher than expected, working with a sample with such high self-reported turnout may make finding any effects for RCV on youth voting more difficult due to high turnout rates essentially 'capping' potential effects. Thus, this higher-than-actual turnout may bias against finding any evidence of RCV effects. Third, only RCV cities from three states (California, Massachusetts, and Minnesota) were used as treatment groups, with the control groups intentionally being similar in political, demographic, and geographic features. Though the city-as-cases approach is beneficial in controlling for unobserved factors, it also limits the generalizability of this study.

5. Results

First, to evaluate the effect of RCV on overall turnout, we turn to Table 2. Table 2 reports a series of logistic regression models, where the dependent variable is whether the respondent voted in their local election. Respondents were asked: "Did you vote in the local election last Tuesday in [CITY]?" Possible answers were "no," "yes," "don't know," and "refused" (missing recoded to not having voted to retain statistical precision, results robust to alternative coding schemes, available at request). Each model includes two measures of socio-economic status: *Income* (1 = less than $10,000, 9 = greater than $150,000) and *Education* (1 = high school graduate or less, 4 = post-graduate degree); a variable denoting whether the respondent is a *Female* (1 = female, 0 = male); two variables for race, whether the respondent is *Black* (1 = Black, non-Hispanic, 0 = not Black) or is another race besides white or Black, non-Hispanic (*Other*, 1 = other race, 0 = not another race) with white, non-Hispanic respondents as the reference group; a variable denoting ethnicity (*Hispanic*, 1 = Hispanic, 0 = non-Hispanic); two measures for partisanship, whether the respondent identifies as a *Democrat* (1 = Democrat, 0 = other) or *Republican* (1 = Republican, 0 = other), with independents as the reference group; and a measure of interest in local politics (*Political Interest*, 1 = high interest, 0 = low interest). To deal with heterogeneity and spatial dependence, each estimation is computed with robust standard errors clustered by city. Results are robust to the inclusion of city fixed effects (available at request). Last, an indicator for which survey-year is included to control for potential differences across surveys and years.

Past the basic specifications, we alter each model to test our hypotheses. Models 2, 4, and 5 include an indicator for whether the respondent lives in a RCV jurisdiction (*RCV*, 1 = RCV city, 0 = plurality city). Models 1 and 2 include a covariate for *Age* (18–99) and *Age Squared* (324–9801). To more precisely test whether RCV elections encourage participation of today's youths, models 3 and 4 swap the covariates of age and age squared for an indicator variable of whether the respondent is above/below 35 and model 5 subsamples only those individuals below the age of 35 as a robustness check. We use 35 as the age cutoff to capture the generational effects that have altered today's youth participation (e.g., their increased political cynicism as a result of

the negative and hyper-partisan political circumstances during their upbringing, as discussed earlier), as well as to ensure a large enough group of young Americans to compare to older Americans. This age cutoff captures all those in the Millennial and Generation Z generations, with 'youths'/'young' used for brevity to refer to this group. Additional robustness checks using a continuous measure of age, using alternative generational cutoffs, and varying age categories all further support our findings (see Supplementary File, Appendix B, Tables B1 and B2, and Figure B1; summary statistics for all variables presented in this study are shown in the Supplementary File, Appendix C, Table C1).

Model 1 in Table 2 acts a baseline voter turnout model for reference. Model 2 tests whether rank choice voting elections increase turnout by including a covariate for whether the election is conducted using RCV. The coefficient is positive but insignificant at conventional

Table 2. Age, election type, and self-reported turnout.

	Model 1 Base model b/se	Model 2 RCV b/se	Model 3 Youth + RCV b/se	Model 4 Youth × RCV b/se	Model 5 Youth subsample b/se
Voted					
RCV		0.306	0.331	0.155	0.604**
		(0.220)	(0.222)	(0.218)	(0.291)
Youth			−1.117***	−1.334***	
			(0.123)	(0.136)	
Youth × RCV				0.445*	
				(0.230)	
Age	0.103***	0.102***			
	(0.009)	(0.010)			
Age Squared	−0.001***	−0.001***			
	(0.000)	(0.000)			
Education	0.299***	0.277***	0.284***	0.282***	0.195
	(0.055)	(0.054)	(0.054)	(0.055)	(0.162)
Female	0.096	0.098	0.085	0.087	0.190
	(0.104)	(0.103)	(0.107)	(0.107)	(0.184)
Income	0.038	0.041	0.031	0.033	0.055
	(0.033)	(0.032)	(0.032)	(0.032)	(0.049)
Employed	0.049	0.043	−0.060	−0.061	0.136
	(0.144)	(0.142)	(0.144)	(0.144)	(0.363)
Black	0.046	0.032	−0.038	−0.041	0.086
	(0.158)	(0.157)	(0.154)	(0.156)	(0.291)
Asian	−0.159	−0.168	−0.312**	−0.338**	−0.290
	(0.149)	(0.152)	(0.151)	(0.153)	(0.323)
Other	−0.274	−0.280	−0.351	−0.330	−0.852
	(0.257)	(0.253)	(0.229)	(0.230)	(0.555)
Hispanic	−0.163	−0.128	−0.261	−0.244	−0.295
	(0.311)	(0.308)	(0.293)	(0.295)	(0.407)
Democrat	0.141	0.125	0.186*	0.177	0.275
	(0.108)	(0.108)	(0.110)	(0.109)	(0.237)
Republican	0.036	0.065	0.125	0.120	0.309
	(0.200)	(0.200)	(0.208)	(0.209)	(0.537)
Political Interest	1.187***	1.208***	1.298***	1.305***	1.320***
	(0.110)	(0.111)	(0.114)	(0.113)	(0.238)
Constant	−3.998***	−4.078***	−0.586***	−0.507**	−2.041***
	(0.388)	(0.341)	(0.214)	(0.216)	(0.579)
Observations	4731	4731	4731	4731	473

Notes: Logistic regression with robust and clustered(city) standard errors; * 0.1 ** 0.05 ***0.01. Year fixed effects included but omitted for space.

levels, doing little to solve the debate over the participatory effects of rank choice voting.

Absent any general population effects, we move on to test our first hypothesis of RCV increasing youth voting. Model 3 in Table 2 changes the age covariates for an indicator whether the individual is under 35. Unsurprisingly, younger individuals are less likely to vote compared to older individuals (Franklin, 2004). When we interact whether the respondent is under 35 with whether they live in an RCV city (model 4), a different story emerges. Though younger individuals are less likely to vote in both RCV and non-RCV cities than older individuals, they are significantly more likely to vote in RCV cities compared to younger individuals in plurality elections. These results are graphically depicted in Figure 2, which is a coefficient plot displaying the probability of voting across election type and age group with confidence intervals varying from 90 to 99 percent levels. The probability of voting increases from 77 to 86 percent between non-RCV and RCV cities for young voters, a difference of nine percentage points. These results are further supported when we subsample only young voters (model 5). For older individuals, no statistically significant difference in voting propensities across election type is found. These results confirm hypotheses 1 and 2, that younger individuals will vote more in RCV elections than youths under plurality elections and gain a larger increase to voting in RCV elections than older individuals. With younger voters more likely to vote in RCV elections, but older individuals not affected, this evidence also suggests that RCV may work to lessen the age gap in voter turnout. But are more civil campaigns and greater candidate contact the forces that separate youths between RCV and plurality elections, as theorized here?

To determine the mediational impact of civil campaigning and candidate contact on the relationship between youth turnout and preferential voting systems, this study uses the causal steps approach popularized by Baron and Kenny (1986). The causal steps approach uses three equations to establish a mediating relationship. The first tests for a relationship between the independent variable and the dependent variable (direct effect) to determine if there exists a relationship to be mediated. This relationship was established in models 4 and 5 in Table 2. The second tests for a relationship between the independent variable and the mediator to establish a mediation pathway. The third equation reexamines the relationship between the independent and dependent variables while including the mediator variable, with differences in the effect of the independent variable assumed to be caused by the mediator variable (indirect effect). If the effect of the independent variable is decreased or rendered insignificant, the relationship is said to partially or fully mediated.

This study uses three proxy measures for campaign (in)civility—candidate-to-candidate criticism, dissatisfaction with the candidates, and campaign negativity—and one for campaign contact—whether the respondent was contacted by a campaign. To measure the degree of *Criticism* in the election, respondents were asked: "Thinking about the [CITY] election, how much time would you say the candidates spent criticizing their opponent?" The proposed answers were: "A great deal of time," "some of the time," "not too much," "not at all." The variable is coded so that higher values represent greater levels of criticism. For *Dissatisfaction*, respondents were asked: "How satisfied were you with the choices of candidates for mayor in this recent [CITY]

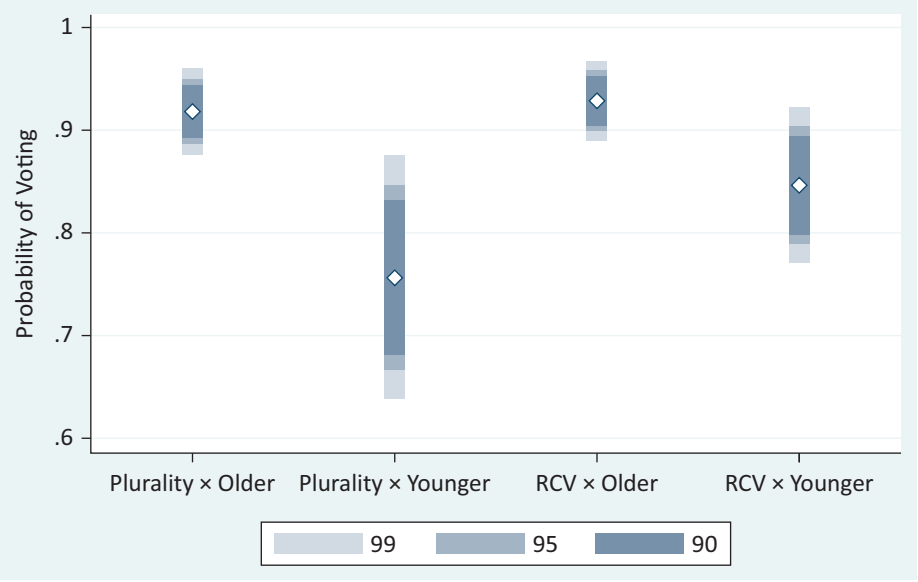

Figure 2. Effect of election type on self-reported voting. Notes: Estimations of logistic coefficients calculated with all other variables held at their means/respective values; robust and clustered(city) errors and year fixed effects employed; 90–99 percent confidence intervals shown.

election?" The proposed answers were: "Very satisfied," "fairly satisfied," "not very satisfied," "not at all satisfied." Voluntary answers were: "No opinion" and "refusal." The variable was reverse coded so that higher values represent greater *Dissatisfaction*.

The third measure of campaign civility—*Negativity*—is constructed from three related questions. Respondents were first asked: "Do you believe the campaigns this year were more negative, less negative, or about the same compared to other recent political contests?" The proposed answers were: "more," "less," and "about the same." Two follow-up questions were asked: "Was it a lot more negative, or just a little more negative?" and "Was it a lot less negative, or a just a little less negative?" Their options were: "a lot" and "a little." Respondents could also respond "don't know" and "refuse." Because few respondents reported the election being a lot less(more) negative, answers were coded into a single variable ranging from *Less Negative*, *About the Same*, *More Negative*, with higher values representing more negativity. Results are robust to using the five-point version that results from distinguishing between those who saw elections are somewhat and a lot less(more) negative (available upon request).

The measure of campaign contact is derived from a question that asked: "During the recent local election, did a candidate or anyone from a local city campaign contact you to persuade you how to vote either by phone, mail, in person or over the Internet?" Respondents could answer "yes" or "no," or volunteer "don't know" or "refusal." The question asks whether a candidate/campaign contacted the respondent by any of the above means to persuade them how to vote. To the extent that respondents were contacted for non-vote-persuasion reasons (e.g., direct mobilization without attempting to change the voters intended vote choice) and answered no on the contact question, this potentially biases the study against finding any effects of contact. Contacted voters are more likely to vote (Gerber & Green, 2000; Rosenstone & Hansen, 2003). If a voter is contacted for non-persuasion reasons, answered "no" for contact due to it asking about persuasion of vote choice, but still voted, the result will be an under-estimation of the effect of candidate contact on voter turnout.

Tables 3 and 4 show the results of the causal steps approach. In each table, the first model replicates model 4 from Table 2 for reference of the effect

Table 3. Age, election type, and self-reported turnout: The roles of civility and contact (1/2).

	1 Base model	2 Predicting perceived criticism	3 Predicting turnout controlling for perceived criticism	4 Predicting perceived dissatisfaction	5 Predicting turnout controlling for perceived dissatisfaction
	b/se	b/se	b/se	b/se	b/se
RCV	0.155 (0.218)	−0.431 (0.275)	0.245 (0.220)	−0.066 (0.333)	0.096 (0.217)
Youth	−1.334*** (0.136)	0.192 (0.135)	−1.323*** (0.151)	−0.178 (0.184)	−1.332*** (0.135)
Youth × RCV	0.445* (0.230)	0.224 (0.143)	0.503** (0.235)	0.281 (0.262)	0.487** (0.211)
Criticism of other candidates			0.134** (0.067)		
Satisfaction of campaign					−0.195*** (0.069)
Controls	√	√	√	√	√
Constant	−0.507** (0.216)		−0.635** (0.289)		0.095 (0.325)
Constant Cut 1		−0.655* (0.376)		−1.444*** (0.501)	
Constant Cut 2		0.490 (0.361)		1.070** (0.507)	
Constant Cut 3		2.058*** (0.489)		2.623*** (0.581)	
Observations	4731	4338	4338	4505	4505

Notes: Logistic (models 1, 3, and 5) and ordered logistic regression (models 2 and 4) with robust and clustered(city) standard errors. * 0.1 ** 0.05 ***0.01. Year/survey fixed effects employed. Control variables omitted to save space.

Table 4. Age, election type, and self-reported turnout: The roles of civility and contact (2/2).

	1 Base model	2 Predicting perceived negativity	3 Predicting turnout controlling for perceived negativity	4 Predicting mobilization	5 Predicting turnout controlling for mobilization
	b/se	b/se	b/se	b/se	b/se
main					
RCV	0.155 (0.218)	−1.040*** (0.339)	0.111 (0.203)	0.076 (0.237)	0.117 (0.190)
Youth	−1.334*** (0.136)	−0.367** (0.164)	−1.352*** (0.139)	−0.773*** (0.182)	−1.246*** (0.153)
Youth × RCV	0.445* (0.230)	0.708*** (0.207)	0.473** (0.237)	0.555** (0.243)	0.370 (0.237)
Campaign negativity			−0.184 (0.150)		
Contacted					0.939*** (0.154)
Controls	√	√	√	√	√
Constant	−0.507** (0.216)		−0.149 (0.416)	−0.798*** (0.247)	−0.822*** (0.194)
Constant Cut 1		−1.558*** (0.282)			
Constant Cut 2		1.749*** (0.326)			
Observations	4731	4731	4731	4689	4689

Notes: Logistic (models 1, 3, and 5) and ordered logistic regression (models 2 and 4) with robust and clustered(city) standard errors. * 0.1 ** 0.05 ***0.01. Year/survey fixed effects employed. Control variables omitted to save space.

of RCV on youth voting behavior. Following this, each subsequent model either tests whether RCV is related to the mediating variables (models 2 and 4 in both tables) or how the inclusion of the mediator affects the relationship between RCV and youth voting (models 3 and 5 in both tables). In the models predicting the relationship between RCV and the respondent's perception of candidate-candidate criticism, campaign negativity, and their dissatisfaction with candidates, ordered logistic regression is used given the dependent variables of *Criticism* and *Satisfaction* range from 1 to 4, and *Negativity* ranges from 1 to 3 (results robust to the use of ordinary least squares regression and multinomial logistic regression, available upon request). The models that predict turnout controlling for the different mediators use logistic regression, as does the model predicting candidate contact. Otherwise, all model specifications are the same as used in Table 2. For space concerns, control variables are omitted (see Tables B3.1 and B3.2 in Appendix B, Supplementary File).

Starting with Table 3, the interactions between residing in an RCV jurisdiction and being under the age of 35 are not significantly related to feelings of criticism (model 2) or dissatisfaction (model 4), suggesting younger voters do not perceive more criticism or dissatisfaction than older votes in RCV elections or younger voters in plurality areas, as well as suggesting a lack of a mediation pathway. Controlling for level of criticism (model 3) and dissatisfaction (model 5) increases the effects of RCV elections on youth voting, though by unsubstantial amounts.

The last measure of campaign civility, campaign negativity, is reported in models 2 and 3 in Table 4. Unlike the previous measures, the interaction term is statistically significant, suggesting a relationship between RCV elections, young or old voters, and perceptions of campaign negativity. Further analyses reveal that young voters do not change their perceptions of campaign negativity across election jurisdictions. However, older voters find RCV elections less negative, though by an unsubstantial amount, providing some evidence against the argument that the more civil nature of RCV elections may be attracting young voters (see Supplementary File, Appendix B, Figure B2). Does negativity moderate the relationship between election type, age, and voting? Model 3, which includes the interaction term and the measure of campaign negativity to predict voter turnout, suggests not. The covariate for negativity is statistically insignificant and the relationship between the interaction term and the dependent variable is strengthened.

Why is the relationship of interest related to campaign negativity, but negativity does not mediate the relationship? Further analyses reveal that negativity is not related to the likelihood one votes in the elections under study (see Supplementary File, Appendix B, Tables B4 and B5). The evidence presented thus far suggests that increased civility in RCV elections does not account for increased youth voting in RCV elections.

Besides campaign civility, RCV elections have also been found to have increased contact efforts (Bowler et al., 2003). Is this increased contact leading more youths to the polls in RCV localities? Model 4 in Table 4 suggests that there may be relationship between RCV elections, young or old voters, and increased campaign contact. Young voters are twelve percentage points more likely to be contacted if they reside in an RCV jurisdiction than youths in plurality areas, while no significant effect was found for older voters (see Supplementary File, Appendix B, Figure B3). Does this increased youth contact account for increased youth voting? Model 5 suggests that campaign contact may substantially reduce the relationship between RCV elections, young voters, and voter turnout. The interaction coefficient has decreased by nearly 17 percent and is now insignificant, while the contact covariate is statistically significant. This suggests that mobilization may account for a substantial portion of the increased youth turnout in RCV elections.

Though popular, the causal step approach has been criticized as a procedure for establishing mediation, partially due to its strong but untested assumptions and difficulties being extended to non-linear models (Imai, Keele, Tingley, & Yamamoto, 2011). As an additional robustness check, models were re-estimated using the non-parametric approach established by Imai and colleagues (e.g., Imai et al., 2011). This approach allows for the total effect of RCV to be decomposed into its direct ($X \rightarrow Y$) and indirect ($X \rightarrow$ mediator $\rightarrow Y$) effects, as well as sensitivity analyses to be conducted. Results (reported in the Supplementary File, Appendix B, Table B6 and Figure B4) support the conclusion that only candidate contact mediates the relationship between RCV elections and increased youth turnout. The inclusion of the candidate contact covariate renders the interaction insignificant and, according to the decomposed RCV total effect, the indirect effect of RCV through candidate contact is roughly 12 percent of the full effect.

As additional robustness checks, all models from Tables 3 and 4 (and Table B6 in Appendix B) were re-estimated subsampling only those respondents under the age of 35 (see the Supplementary File, Appendix B, Tables B7.1 and B8, and Figure B5). Results strongly support the evidence provided here. There is no relationship between young voters, RCV elections, and candidate criticism or dissatisfaction with the candidates. Additionally, there is no link between campaign negativity and RCV elections. However, young voters in RCV elections are more likely to be contacted by candidates or campaigns than youths in plurality elections. Controlling for candidate contact reduces the RCV coefficient by nearly a third, though it remains statistically significant ($p = 0.075$). Further analyses using the non-parametric approach suggest the indirect effect of RCV through contact accounts for nearly a quarter of the total effect of RCV elections on youth voting. These results underscore the importance of candidate contact on mobilizing young voters in RCV elections.

6. Summary and Conclusion

Current literature suggests that preferential elections are less negative, with candidates less likely to criticize their opponents, more likely to reach out to voters, and citizens more likely to approve of campaigns (Bowler et al., 2003; Donovan et al., 2016; McGinn, 2020). At the same time, younger citizens are less likely to participate in politics due to their pessimistic political attitude and low levels of engagement (Dalton, 2015; Lawless & Fox, 2015). Can RCV elections be the uplifting and mobilizing force young individuals need to push them into voting? The evidence presented here suggests so.

Comparing self-reported turnout between preferential and plurality cities matched on important demographics, we find strong evidence that younger individuals are more likely to vote in RCV cities compared to their younger counterparts in plurality cities. Further, the age gap in voting is much smaller in RCV cities, suggesting that RCV has the potential to decrease age inequality in the American electorate.

When it comes to why RCV elections motivate young voters to hit the booths, we find little support for any civility effects but strong support for potential mobilization effects. Little differences in perceived campaign civility were found, but young voters are significantly more likely to be contacted by a candidate/campaign than younger individuals in plurality cities. Further analyses reveal that candidate contact accounts for a substantial portion of the effect of RCV elections on youth voting, suggesting that increased candidate contact is a contributing factor behind increased youth voting in RCV elections. Last, it is worth mentioning that, across all models, the probability of older individuals voting rarely changes by more than a percentage point and is never statistically different from the probability of voting in plurality elections, providing further evidence that these effects may be more impactful on younger Americans.

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Conflict of Interests

The authors declare no conflict of interests.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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Article

Election Reform and Women's Representation: Ranked Choice Voting in the U.S.

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Abstract
Ranked choice voting first gained a foothold in the U.S. during the Progressive movement in the 20th century as calls for electoral reforms grew. Ranked choice voting was implemented in many cities across the U.S. in both single- and multi-seat districts. But, by the 1940s it became a victim of its own success, turning the tides of the hegemonic white male leadership in U.S. legislative bodies with the election of women. Since the 1990s, ranked choice voting has once again gained traction in the U.S., this time with the focus on implementing single seat ranked choice voting. This article will build on the existing literature by filling in the gaps on how ranked choice voting—in both forms—has impacted women's representation both historically and in currently elected bodies in the U.S.

Keywords
descriptive representation; electoral reform; fair representation voting; progressive movement; proportional representation; ranked choice voting; single transferable vote; women's representation

Issue
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1. Introduction: Electoral Systems Matter

At the start of the 20th century, reformers who made up the Progressive movement pushed against the status quo in American society. Along with advocating for child-labor laws and anti-monopoly legislation, the movement took on expanding the electorate and addressing the corruption rife within American politics. As many progressive reforms were adopted in the U.S., including the direct election of the U.S. Senate, open-primaries, home-rule municipal charters, and the expansion of suffrage to women, in response, reformers then looked to implement an electoral system that would address the widespread corruption within American politics (Novoselic, 2015).

Electoral reform groups at the time pointed to the U.S.' winner-take-all electoral system, which often resulted in plurality winners, party supermajorities, and the stranglehold of political machines and party bosses as a root cause of the obstacles facing the U.S. reform groups backed an electoral system that results in proportional representation for voters while preserving the one vote per person tenet; in particular the adoption of ranked choice voting with multi-seat districts, alternatively known as the single transferable vote or proportional ranked choice voting (Amy, 1996).

Proponents for replacing the winner-take-all electoral system with a proportional system included many women's suffrage organizations that looked to expand their electoral voice and improve women's representation after the passage of the 19th Amendment. The National League of Women Voters along with many local leagues across the country were drafted into the cause for single transferable voting during the 1920s (Barber, 2000, p. 45). Along with improving the electoral chances for independent candidates, single transferable voting circumvented the control political machines had

on local elections and elected officials; political machines that openly opposed extending women the right to vote just a few years prior (Barber, 2000, p. 44). This adversarial relationship encouraged many suffragists to focus their energy and influence on promoting reforms to undermine the power of political machines and party bosses. With growing support from the Progressive movement and expanding interest among women and other citizens typically excluded from elected office, ranked choice voting was primed to sweep the country in the first half of the 20th century.

Along with addressing the growing corruption in U.S. politics, jurisdictions using the single transferable vote also witnessed the growing elected representation of women, minority communities and third parties all of which remained largely stagnant nationally. Now, a century later, the U.S. continues to face the systemic underrepresentation of women and minority groups due in no small part to the continued use of an antiquated electoral system. The solution remains the same, ranked choice voting.

2. Literature Review

2.1. The Underrepresentation of Women in Government

The underrepresentation of women in government is well-documented by existing literature (Center for American Women and Politics, 2021; Dittmar, 2020; Lamendola & Terrell, 2020a). However, most scholars of American politics have tended to focus on the individual-level experiences of women as prospective candidates. Until recently, a leading explanation for the underrepresentation of women in government was that women were less likely to run for political office than men. The most prominent scholarship behind this explanation put forward the idea that women lack political ambition (Lawless & Fox, 2005).

In the study of gender dynamics in U.S. politics, scholars have found ample evidence that women and men have different experiences running for elected office, from the decision to run, to the dynamics on the campaign trail, to the votes cast on election day (Fox, 1997). And while more recent scholarship in the U.S. has remained overwhelmingly candidate-centered, some researchers have gone on to explore society's expectations of politicians and whether women face an unfair 'double-bind' as aspiring candidates (Teele, Kalla, & Rosenbluth, 2018). Other scholars have since explored whether gendered occupational pathways to power have an even larger role in determining who runs for office in the first place (Thomsen & King, 2020).

Scholars of comparative politics, on the other hand, have been more likely to research the structural and institutional factors of gender-based representation, including election system design, gender quotas, and the incumbency advantage (Piscopo, 2020; Piscopo, Krook, & Franceschet, 2012; Rule, 1987, 1994; Thomas & Wilcox, 2012). According to Wilma Rule (1987), election system design is one of the most significant predictors of women's recruitment and electoral success. Previous research conducted by our team further indicates that women's representation around the world varies considerably, depending on the election system used (Terrell & Reilly, 2020a).

Other research has been conducted on gender politics in the U.S. looking into the political party dynamics which accompany the rise in women candidates, emphasis placed on 'women's issues,' and the difference in legislation supported by women versus men legislators (Osborn, 2012; Wolbrecht, 2000). While the impact women have on U.S. political culture and the legislative landscape is an important topic for future studies, this article focuses on institutions and barriers women face running for office in the U.S. rather than the impact they may have once elected.

2.2. The Impact of Ranked Choice Voting on Representation

The existing literature on ranked choice voting tends to fall into one of three major categories: research on proportional ranked choice voting between the 1910s and 1960s (Amy, 1996; Burnham, 1997, 2013; Kolesar, 1996); the modern resurgence of single- and multi-seat ranked choice voting in the U.S. since the 1990s (Richie, 2004); and the prevalence of similar 'preferential' voting systems in different parts of the globe (Bennett & Lundie, 2007; Reilly, 2002; Schwindt-Bayer, Malecki, & Crisp, 2010).

Key findings from this literature include evidence that ranked choice voting promotes cooperation among rivals (Reilly, 2002), rewards campaign civility (Amy, 1996; Donovan, Tolbert, & Gracey, 2016; McGinn, 2020), promotes greater voter satisfaction (Donovan et al., 2016), and improves political legitimacy (Anest, 2009). Each of these elements is important for improving women's representation in the U.S., where negative campaigning might otherwise discourage women from running in the first place (John, Smith, & Zach, 2018; Lamendola & Terrell, 2020b).

While there is evidence of women and minorities achieving greater political representation when proportional ranked choice voting was in use throughout the early 1900s (Amy, 1996; Kolesar, 1996), less work has been done to assess how well women have fared in recent ranked choice elections. One of the most notable exceptions to this includes research by John et al. (2018), which found that representation increased for women—and minority women, in particular—in the single-winner ranked choice elections that took place in the California Bay Area in the 2000s.

2.3. Our Contributions to the Literature

While the first half of this article reviews the history of proportional ranked choice voting in the U.S. between

1915 and 1962, the second half of the article presents our original research on single- and multi-seat ranked choice voting since its resurgence after the turn of the century. The data tracks outcomes for women and men in 19 U.S. cities that used single- and multi-seat ranked choice voting between 2010 and 2019, building on previous research conducted by our team in 2016 on the emergence of single-seat ranked choice voting in the California Bay Area in the early 2000s.

2.3.1. A Note on the Terms Used in This Article

In the following article, unless otherwise noted, 'proportional ranked choice voting' specifically refers to a system in which voters rank candidates in order of preference and multiple winners are selected using a round-by-round vote-counting process. Elsewhere, this system may be referred to as the 'single transferable vote,' 'fair representation voting,' or simply 'proportional representation.'

Proportional ranked choice voting should not be conflated with the single-seat variant, in which voters rank candidates in order of preference and a round-by-round vote-counting process ensues until a candidate secures majority support and is determined the sole winner. Elsewhere, this system may be referred to as 'instant runoff voting,' 'the alternative vote,' or 'majority preferential voting.' Variations in ranked systems, also known as 'preferential voting' and 'transferable voting' systems more generally, may occur if a different number of candidates are ranked on a ballot or if another counting system is used to determine the winner.

2.4. Gaps in the Literature Not Covered

The existing literature on women's representation in American politics and the impact of ranked choice voting on minority representation is robust, but rarely overlaps. And while the following article outlines some of our findings and core arguments for adopting proportional ranked choice voting nationwide, we also recognize the natural limitations of applied research, and invite others to continue this work. One of the greatest barriers to this work has been the relative lack of data on representation at the local level, which makes it difficult to assess how large a role election system design has had on women's representation in ranked choice cities.

An important contribution to this work has come from the MGGG Redistricting Lab, which recently released a report (Benade, Buck, Duchin, Gold, & Weighill, in press) that presents a data-driven approach for assessing the likely impact of proportional ranked choice voting on minority representation—particularly in cities that have experienced Voting Rights Act legal challenges in the last decade. As we wait for more data to become available from the cities using single- and multi-seat ranked choice voting today, making use of predictive models like this may be a useful way of expanding the available literature, especially if they can be adapted to assess the impact of ranked choice elections on women candidates.

2.5. History of Ranked Choice Voting in the U.S.

Cities that adopted ranked choice voting in the early 20th century illustrated the effectiveness of the system for improving representation of minority groups, women, and small parties often shut out of government through the winner-take-all system previously in effect. Unfortunately, it is the successes of descriptive representation, negative reactions to the growing diversity in local government, and fears stoked by Cold War tensions that ultimately helped to "push repeal initiatives over the top" (Barber, 2000, p. 148).

The many successes of proportional ranked choice voting in the 20th century—removing corrupt party bosses from office, reducing the power political machines had over election outcomes, and improving descriptive representation—led to organized and divisive repeal campaigns across the U.S. Politicians and parties that saw their power and privilege decline during the proportional period preyed "upon two of the most basic fears of white, middle class Americans: Communists and African-Americans" and launched a series of successful repeal campaigns from New York to Ohio (Amy, 1996, p. 18). And, by 1962, Cambridge, Massachusetts remained the only jurisdiction continuing to use ranked choice voting in the U.S.

Despite the divisive repeal campaigns, women's representation and political power often grew during the tenure of proportional ranked choice voting in New York City and several Ohio cities. Even in cities that did not see a substantial uptick in women's elected representation, women's organizations, including local chapters of the League of Women Voters, were often the last-standing supporters of the proportional representation system. Historically, ranked choice voting in the U.S. has been supported by women fighting to correct the homogeneity of the elected officials and can be built upon in the present day to achieve gender balanced representation.

2.5.1. Proportional Representation Sweeps Ohio: 1915–1926

In 1912, the Ohio state legislature passed an amendment to the state's constitution allowing for "home rule," enabling cities to choose their form of government and electoral system (Supreme Court of Ohio, 1912). Following the amendment, several cities in Ohio implemented electoral reforms including the adoption of ranked choice voting in at-large and multi-seat districts by four cities.

Ashtabula adopted the single transferable vote in 1915, becoming not only the first city in Ohio to implement proportional representation but also the first city in the entirety of the U.S. (Barber, 1995, p. 83). Following the first election using single transferable voting in

Ashtabula, local reporters commented on the increased ideological, religious, and ethnic diversity of the winning candidates compared to previous city council elections. One such reporter noted: "The drys and the wets are represented; the Protestants and Catholics; the business, professional, and laboring men; Republicans, Democrats, Socialists; the English, Swedes, and Italians are represented" (Amy, 1993, p. 10). While not a highlighted part of the new diversity of Ashtabula's elected officials, proportional ranked choice voting also impacted women's representation in other cities that followed suit and adopted the electoral system.

Cleveland's adoption of the single transferable vote provides a clearer example of the impact the voting system could have on women's descriptive representation. Cleveland followed Ashtabula's example adopting proportional ranked choice voting in 1923. Women's representation on Cleveland's city council improved during the eight years single transferable voting was used. Between 1923 and 1931, eight women were elected to the council, while none were elected in the three elections prior to 1923 (Barber, 1995, p. 139). As women won the right to vote and political say grew, so too did their electoral representation under the new proportional system, a jump in representation not seen universally across the U.S.

In 1925, following a concerted and organized petition campaign led largely by the Woman's City Club, a reform charter was put on the ballot in Hamilton, Ohio. The overwhelming support for the measure resulted in the creation of the Hamilton Charter Commission which recommended the use of single transferable voting already being used in several Ohio cities (Barber, 2000, p. 107). In 1927, Hamilton had their first city-wide elections using the proportional representation system; an election noted for change, only two incumbent city council members won reelection (Barber, 1995, p. 215). The system addressed the incumbent advantage which often reinforces the homogeneity of elected officials and hurts the chances of political newcomers, more likely to be women.

As in many Ohio cities at the time, the single transferable vote resulted in many electoral firsts for traditionally underrepresented groups. In 1943, E. W. Frechtling became the first woman elected to the Hamilton city council. Although she ran in 1943 with her initials, in 1945 she won reelection with her full name Eleanore Frechtling listed on the ballot (Barber, 1995, p. 223).

Before the eventual repeal of single transferable voting in 1960, Hamilton saw three failed repeal attempts. The first two, in 1929 and 1933 were both spearheaded by the old Democratic Party machine which had dominated Hamilton elections prior to the implementation of ranked choice voting (Barber, 1995, p. 231). The 1944 repeal effort focused instead on World War II sentiments of patriotism, branding the single transferable vote as 'un-American.'

Despite the opposition, proponents of single transferable voting, once again led by the Woman's City Club, successfully made the case for the proportional voting system, arguing it allowed underrepresented groups to have fair representation on the council (Barber, 1995, p. 233). In 1960, with the majority of other Ohio cities having already repealed their proportional electoral systems and support from the AFL-CIO, which had opted to remain neutral during previous repeal attempts, Hamilton opponents to proportional representation successfully repealed the system.

In 1934, Toledo became the last Ohio city to adopt single transferable voting. Toledo is an often-overlooked example of early use of ranked choice voting due in part to the time lag between implementation and the resulting descriptive representation. No women were elected to the Toledo City Council during or before the implementation of single transferable voting, despite women's groups being some of the most vocal supporters of the system. It would not be until 1960 that a woman was finally elected to the council (Barber, 1995, p. 267). Despite women not seeing electoral advances in Toledo, proponents of the voting system were led largely by the Toleda League of Women Voters.

During the 15 years proportional representation was used in Toledo, opponents launched five repeal campaigns, finally succeeding in 1949 (Barber, 1995, p. 252). By the fifth repeal attempt, the Toledo League of Women Voters remained the sole organization continuing to support single transferable voting, arguing the proportional system was better at giving a voice and allowing the representation of un-represented groups including women and African-Americans.

2.5.2. Proportional Representation in New York City

Progressive reformers of the early 20th century were particularly interested in reforming rampant political corruption including party machine political dominance, and partisan skews found in many city councils at the time—political corruption perhaps best illustrated by Tammany Hall and New York City's Board of Aldermen.

During the 1920s and 1930s the New York City Board of Aldermen, a precursor to the current City Council, was dominated by Democratic supermajorities due in no small part to the electoral stranglehold the Democratic political machine Tammany Hall had over votes and the electoral system that resulted in disproportionate seat bonuses. Following political scandals involving the Democratic Party and Tammany Hall during the early 1930s, electoral reform measures adopted in 1936 included the adoption of proportional representation to elect the Board of Aldermen to limit the power Tammany Hall had over New York City politics. With the specific adoption of the single transferable vote, the system was perfectly set up to ensure "a mix of local representation, minority representation, and third party representation that New York had never seen before" (Doctor & Landsman, 2017, p. 5).

The introduction of single transferable voting led to the election of the first woman and the first African-

American man to the Board of Aldermen. In 1937, after serving as the only woman on the city's Charter Revision Committee, Genevieve Beavers Earle became the first woman on the Board of Aldermen. In 1941 Earles was joined by Adam Clayton Powell Jr. the first African-American man elected to the Board (Ochoa & Cheung, 2020).

In 1947, after 10 years of the single transferable vote, the coordinated assault on the system finally won out, and ranked choice voting was removed in favor of a winner-take-all, plurality system. Popularity for repeal grew among the Republican Party, who began to see their share of seats go down as vote shares for third parties grew. Additionally, Democratic realignment around FDR and the popularity of the New Deal minimized many of the reasons reform went on the ballot a decade earlier (Doctor & Landsman, 2017, pp. 18–19). However, the rising tensions of the Cold War and the ensuing Red Scare allowed opponents of proportional representation to successfully exploit the election of Communist Party candidates, which started with the implementation of single transferable voting (Amy, 1996).

3. Ranked Choice Voting Theory on Improving Descriptive Representation

In U.S. politics incumbents receive many advantages when it comes to running for office that in turn create structural barriers for political newcomers, who are more likely to be women or from other traditionally underrepresented communities. While this article focuses on the impact ranked choice voting has had on women's representation in the U.S., many of the ways ranked choice voting impacts the barriers for political newcomers would likely help the electoral representation for people of color as well as women.

There is a common refrain in U.S. politics that 'when women run, women win.' These words echo a perception held by activists and political scientists alike that the underrepresentation of women in politics is a pipeline problem, rather than a structural problem. What proponents of this refrain often miss is the importance of 'seat type' for women's representation. During both the 2018 and 2020 U.S. Congressional elections, which were widely held up as 'record-breaking' years for women candidates, women still had substantially lower success rates than men, as the majority of new women candidates ran as challengers, instead of in open-seat races, where women fared better. In 2018, the men who ran for Congress had a success rate of 54%; the success rate for women candidates was lower at 44%. In 2020, there was an even larger gap in success rates, with men winning 50% of their races and women only winning 36%.

A 2010 study found that "if women are not recruited to fill open seats, then the power of incumbency will continue to inhibit their numeric representation" (Fox & Lawless, 2010, p. 311). When controlled for seat type men and women often have comparable success rates at least at the national level in the U.S. However, as men continue to make up the majority of incumbents, efforts to increase women's representation solely by recruiting more women to run for office fall short of achieving transformative growth.

Just as candidate-focused solutions alone will not be enough to achieve parity in the U.S., this is not all to say that women's equal political representation will be achieved simply through the implementation of ranked choice voting and other structural reforms. To achieve parity in the U.S., advocates will need to pursue both structural and candidate-focused interventions. Since women have been filing to run as challengers in greater numbers over the last few years, interventions that stand to mitigate the barriers that challengers face will become necessary. Previous research on ranked choice voting has illustrated that the adoption of a new electoral system may help to mitigate the barriers that non-incumbents face. Specific barriers that ranked choice voting has the potential to address include the spoiler effect (Amy, 1993; Zimmerman, 1994), high campaign costs, and negative campaign tactics (Donovan et al., 2016).

3.1. The Spoiler Effect

The U.S.' favored single-winner, plurality electoral system is vulnerable to the spoiler effect, especially when there is a large field of candidates. The spoiler effect restricts healthy competition, especially during primaries, and strengthens the power of political gatekeepers to use the spoiler effect as a reason to limit opportunities for political newcomers.

Although the spoiler effect impacts both male and female candidates, women and women of color in particular are more often told to "wait their turn" before running for office (Malveaux, 2018). A 2020 study found Black women vying for elected office in the U.S. faced many structural barriers to becoming candidates, "Noting issues ranging from perceived lack of electability to be told to 'wait their turn,' " by party leaders and gatekeepers (Brown & Lemi, 2020, p. 1633). Similar situations have been anecdotally reported by women of all races.

Comparable scrutiny and gatekeeping is not often seen when more than one white male candidate is running for a seat, as they are typically seen as the norm. When discussing identity politics, the "political status quo is treated as race-neutral, when it is in fact anything but" (Sellers, 2019, p. 1515). Similar trends can be seen when discussing gender in U.S. politics, with structural barriers being cast as gender neutral, when in reality they advantage male candidates by default.

Ranked choice voting in single-seat districts ensures no candidate wins with less than a majority of votes, (50% + 1) eliminating the threat of the spoiler effect, and depriving many political gatekeepers of their reason to only recruit one woman or person of color to run at a time. And, ranked choice voting in multi-seat districts has

been shown to make voters more likely to balance their tickets and vote for both men and women candidates, encouraging parties to recruit more women (Amy, 1993; Zimmerman, 1994).

The first step to ensuring more women win elected office is increasing the number of women who run, ranked choice voting offers incentive for this to happen.

3.2. The Cost of Successful Campaigns

The cost of running campaigns in the U.S. is often commented on, with the amount of money raised and spent on Congressional campaigns growing every cycle. While there remains debate around the impact money has on outcomes and success rates, the cost of running a campaign can be daunting to political newcomers. Candidates running in open seats and as challengers are more likely to run with smaller donor networks and as a result often raise less money on average than incumbents (Terrell & Reilly, 2020b, p. 31).

Ranked choice voting typically rewards a positive and issue-focused campaign, which lowers the cost of running. Because women are more likely to be running as challengers or in open seats, the more affordable grassroots campaigning encouraged by ranked choice voting and elimination of costly elections allows women to compete on a more level playing field (Lamendola & Terrell, 2020b, p. 22).

3.3. The Negative Campaign Style

Together with increasing political polarization and partisanship are the negative campaign strategies that serve to alienate opponents in the hopes of ensuring base support. While many critics blame candidates and media sensationalism for the increasingly negative political environment, an often-overlooked contributor is the U.S.'s electoral system.

The winner-take-all plurality voting system currently used in the U.S. encourages personal appeals and character attacks to win, rather than the issue-focused arguments emphasized in ranked choice voting. Winning in the current system rests on a candidate's ability to please the most people for the most time, leading candidates to shy away from policy stances that may alienate supporters (Amy, 1993, pp. 63–66).

This system incentivizes campaigns to cast their opponents with negatively perceived qualities and characteristics to either garner more support from the base or lower turnout for their opponents. In turn, creating a political environment in which "one major reason candidates avoid confronting issues in campaigns is because it is the safest and most effective way to get elected under plurality rules" (Amy, 1993, p. 66). And although negativity in campaigns is often an issue faced by candidates of all genders, studies on the dearth of women candidates cite negative campaigns as a contributing cause (Thomas & Wilcox, 2014, p. 7).

In ranked choice elections, candidates must campaign for not only first-choice votes but also second- and third-choice votes, encouraging coalition building rather than personal attacks (Donovan et al., 2016; Reilly, 2002). The grassroots campaign style favored in ranked choice elections encourages candidates to focus on policy goals and the issues facing their potential constituents rather than attacking their opponents' character. The emphasis placed on positive campaigns may encourage more women to run in ranked choice elections.

4. Ranked Choice Voting in America Now

4.1. Ranked Choice Voting Returns

Following a narrowly defeated 1991 referendum to reimplement ranked choice voting in Cincinnati, four electoral reform organizations across the U.S. formed the Citizens for Proportional Representation. Recognizing the need for an organized and concerted nationwide approach to electoral reform, Citizens for Proportional Representation took up permanent offices in Takoma Park, Maryland and changed their name to the Center for Voting and Democracy (Thomas, 2017). In the ensuing decades, the organization changed its name to FairVote and took on advocating for ranked choice voting up and down the ballot.

Since 1991 numerous U.S. cities and jurisdictions have adopted and implemented ranked choice voting in various capacities. Currently, more than 10 million voting age adults in 21 jurisdictions across 12 states use ranked choice voting, and an additional six states use ranked ballots for military and overseas voting. A growing number of Republican and Democratic state parties used ranked choice voting for internal elections in 2020 and the majority of states have pro-ranked choice voting organizations and pending ranked choice voting legislation. After re-adopting ranked choice voting via a ballot measure in 2019, New York City implemented ranked choice voting with a special election in February 2021, nearly doubling the number of voters using the electoral system.

During the 2018 midterm elections, Maine became the first U.S. state to use ranked choice voting in their federal elections to elect the representative for Maine's second Congressional district. In November 2020, the state made history once again using ranked choice voting for the presidential election and a highly contested U.S. Senate seat. Also on Election Day 2020, the state of Alaska and five other jurisdictions voted to adopt ranked choice voting, including: Boulder, Colorado; Minnetonka, Minnesota; Bloomington, Minnesota; Albany, California; and Eureka, California. In fact, only one of the ballot measures to adopt ranked choice voting failed this election cycle, a measure to adopt ranked choice voting for statewide elections in Massachusetts.

4.2. Ranked Choice Voting and Women's Political Representation

4.2.1. Methodology

The 2016 study analyzes the impact of single seat ranked choice voting on women's representation in electoral contests from eleven California cities, including four cities that use ranked choice voting and seven control cities that did not adopt ranked choice voting. The control cities Alameda, Anaheim, Richmond, San Jose, Santa Ana, Santa Clara and Stockton were selected to reflect the demographics of the ranked choice voting treatment cities of Berkeley, Oakland, San Francisco and San Leandro (John et al., 2016).

Original 2020 research on ranked choice voting analyzes the demographics of candidates and winners in single- and multi-seat ranked choice elections with three or more candidates in the running between 2010 and 2019. Follow up research on women's representation in Bay Area municipalities using ranked choice voting was also conducted. This follow-up research includes a comparative analysis of women's representation in the four Bay Area cities using ranked choice voting, with California cities with a population of 30,000 or more, and the seven Bay Area control cities that have not adopted ranked choice voting (Lamendola & Terrell, 2020b).

Due to the multiple factors affecting local election outcomes, this analysis does not infer causality between ranked choice voting and improvements in the descriptive representation, but instead illustrates the correlation. Other factors that could have influenced the elected representation include the increased reach of recruitment and training organizations focused on women candidates and an overall national trend of more women winning elected office. However, comparative analysis illustrates the number of women running for and winning elected office is higher in municipalities using ranked choice voting than in those using other voting systems.

4.2.2. Women's and Minority Representation in the Bay Area

Research on California Bay Area cities that used ranked choice voting for local elections, including city council and mayoral elections, found from analyzing outcomes pre- and post-ranked choice voting the number of women running for and winning local office increased compared to the control cities.

The percentage of women candidates went down in both the treated and control cities. However, the drop in women candidates was steeper in cities which did not use ranked choice voting suggesting ranked choice voting helped curb a larger trend occurring in the Bay Area (Figure 1).

Outcomes for women improved under ranked choice voting in the Bay Area. The percentage of women winning rose by two points. This slight increase is starker when compared to control cities that saw the percentage of women winning decrease by four and a half points during the same time period (Figure 2).

Follow up research on the 2016 report found in the Bay Area treatment cities women have won 56% of ranked choice elections between 2010 and 2019,

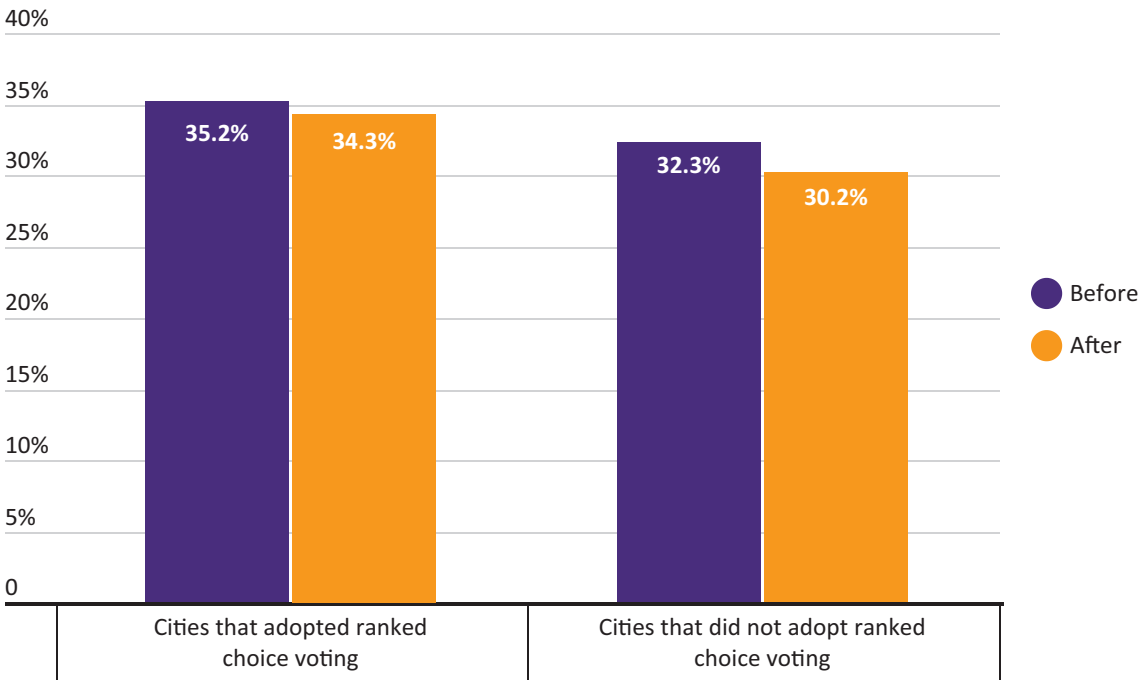

Figure 1. Percentage of women candidates, before and after ranked choice voting in the Bay Area (1995–2014). Source: John et al. (2016).

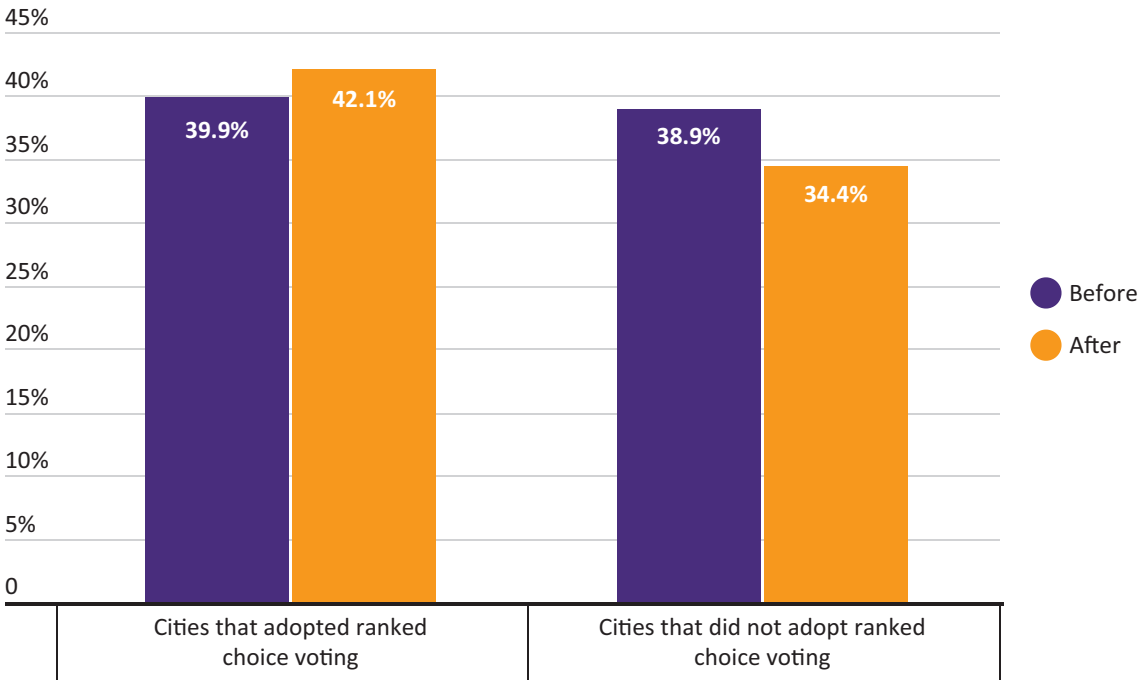

Figure 2. Percentage of women winning, before and after ranked choice voting in the Bay Area (1995–2014). Source: John et al. (2016).

winning 58% of mayoral elections and 55% of city council elections (Table 1).

As of July 2020, women's average representation is eleven points higher in the California city councils elected using ranked choice voting compared to the average of comparison California cities with a population 30,000 or higher, excluding the four treatment cities (Table 2).

Similar discrepancies in representation exist when comparing the four Bay Area city councils elected using ranked choice voting with the seven control Bay Area city councils. In the four treatment cities Women's representation on the city council is ten points higher than the control city councils (Table 3).

Table 1. Ranked choice voting outcomes for women in the Bay Area (2010–2019).

Jurisdictions Using Ranked Choice Voting	Seats	Candidates	Women Candidates	Percentage of Women Candidates	Women Winners	Seats Won by Women
Berkeley	16	63	24	38%	8	50%
Oakland	22	120	51	43%	17	77%
San Francisco	27	184	65	35%	11	41%
San Leandro	10	34	14	41%	6	60%
Total	75	401	154	38%	42	56%

Source: Lamendola and Terrell (2020b).

Table 2. Comparison of women's representation in California city councils (July 2020).

	Seats	Women	Percentage of Women
Bay Area cities using ranked choice voting	34	16	47%
Comparison CA cities with 30,000 + residents	1,298	472	36%

Table 3. Comparison of women's representation in the Bay Area (July 2020).

	Seats	Women	Percentage of Women
Bay Area cities using ranked choice voting	34	16	47%
Bay Area control cities	49	18	37%

4.2.3. Women's Representation in All Ranked Choice Elections (2010–2019)

Over the past decade, jurisdictions in the U.S. that adopted and implemented ranked choice voting have seen encouraging results for the representation of women traditionally underrepresented at every level of American politics.

Between 2010 and 2019, women won 48% of the seats elected by ranked choice voting across the 19 municipalities using the voting system (Table 4).

As of January 2021, 13 U.S. cities used ranked choice voting to elect their mayors; women serve as mayors in six of these cities, making up 46% of ranked choice elected mayors. Comparatively, in U.S. control cities with a population of 30,000 or more, women make up only 23% of mayors (Figure 3).

4.2.4. Women's Representation in Ranked Choice Elections (November 2020)

Elections held in November 2020, also had higher than average outcomes for women candidates. Six jurisdictions used ranked choice voting for local elections in November 2020, women made up 39% of the candidates on ranked choice ballots. Women won 42% of the seats elected with ranked choice voting, giving women a success rate of 27% compared to men's success rate of 23% (Table 5).

Table 4. Outcomes for women candidates in U.S. ranked choice elections (2010–2019).

Jurisdictions Using Ranked Choice Voting		Races	Seats	Candidates	Women Candidates	Percentage of Women Candidates	Women Winners	Seats Won by Women
Berkeley	CA	16	16	63	24	38%	8	50%
Oakland	CA	22	22	120	51	43%	17	77%
San Francisco	CA	27	27	184	65	35%	11	41%
San Leandro	CA	10	10	34	14	41%	6	60%
Telluride	CO	3	3	9	1	11%	1	33%
Cambridge	MA	10	75	168	56	33%	32	43%
Takoma Park	MD	5	5	15	6	40%	3	60%
Portland	ME	3	3	22	3	14%	1	33%
Eastpoint	MI	1	2	4	2	50%	1	50%
Minneapolis	MN	30	32	158	38	24%	12	38%
St. Louis Park	MN	1	1	3	1	33%	0	0%
St. Paul	MN	16	16	75	29	39%	8	50%
Buncombe	NC	1	1	3	2	67%	0	0%
Cumberland	NC	1	1	3	1	33%	1	100%
Rowan	NC	1	1	3	1	33%	1	100%
Las Cruces	NM	3	3	17	7	41%	2	67%
Santa Fe	NM	4	4	14	4	29%	3	75%
Payson	UT	1	3	5	1	20%	1	33%
Vineyard	UT	1	2	7	2	29%	1	50%
Total	—	156	227	907	308	34%	109	48%

Source: Lamendola and Terrell (2020b).

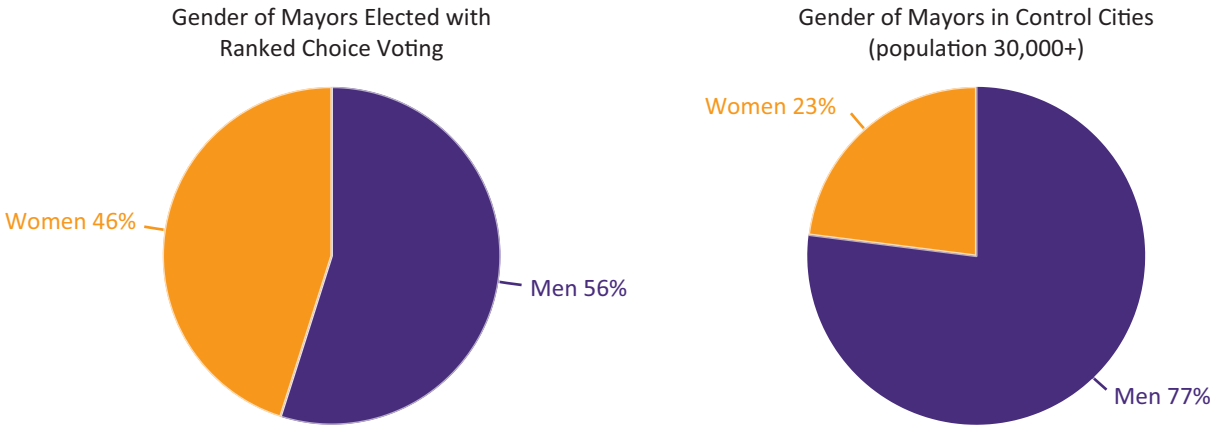

Figure 3. Comparison of women's mayoral representation in the U.S. (January 2021).

Table 5. Outcomes for women candidates in U.S. ranked choice elections in 2020.

Jurisdictions Using Ranked Choice Voting		Races	Seats	Candidates	Women Candidates	Percentage of Women Candidates	Women Winners	Seats Won by Women
Benton	OR	2	2	6	2	50%	2	100%
Eastpointe	MI	1	1	3	2	66%	1	100%
Berkeley	CA	4	4	14	4	29%	1	25%
San Francisco	CA	5	5	26	8	31%	2	40%
Oakland	CA	9	9	37	16	43%	3	33%
Portland	ME	3	3	11	5	45%	1	33%
—	ME	2	2	9	4	44%	1	50%
Total	—	26	26	106	41	39%	11	42%

5. Conclusion: Electoral Systems Matter, Especially for Women

In her 1995 book on proportional representation in the U.S., Katherine Barber concisely argues "electoral systems have political consequences" (Barber, 1995, p. 81). The U.S.' plurality-winner, geographically-based election systems are a holdover from English colonial rule, which has persisted for over 200 years despite its continued failures to adequately represent the true diversity of opinion, race, class, gender and age in elected bodies.

Although academic research on the topic of minority representation under ranked choice voting is slowly expanding, there is still more to do on the impact for women candidates, who continue to be underrepresented at every level of American politics. Original research in this article has highlighted the strong correlation between the adoption of ranked choice voting at the local level and outcomes for women and minorities; but it must also be built upon in the future by experts in the field. The findings in this article should be re-examined and re-visited as more jurisdictions in the U.S. implement ranked choice voting and the sample size increases. Suggested areas that require further research should include a focused study of single- and multi-seat ranked choice voting in the U.S., and the extent to which each variant improves descriptive representation.

Jeannette Rankin, the first woman elected to Congress and a proponent of multi-seat districts and ranked choice voting, once said "you can't have progress, without choice" (Chall, 1974, p. 29). Maintaining the political status quo limits the choices of voters and citizens, hindering not only diverse representation, but progress toward a more perfect union.

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Conflict of Interests

The authors declare no conflict of interests.

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Review

Variants of Ranked-Choice Voting from a Strategic Perspective

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Abstract
Ranked-choice voting has come to mean a range of electoral systems. Broadly, they can facilitate (a) majority winners in single-seat districts, (b) majority rule with minority representation in multi-seat districts, or (c) majority sweeps in multi-seat districts. Further, such systems can combine with rules to encourage/discourage slate voting. This article describes five major versions used, abandoned, and/or proposed for US public elections: alternative vote, single transferable vote, block-preferential voting, the bottoms-up system, and alternative vote with numbered posts. It then considers each from the perspective of a 'political strategist.' Simple models of voting (one with two parties, another with three) draw attention to real-world strategic issues: effects on minority representation, importance of party cues, and reasons for the political strategist to care about how voters rank choices. Unsurprisingly, different rules produce different outcomes with the same sets of ballots. Specific problems from the strategist's perspective are: 'majority reversal,' serving 'two masters,' and undisciplined third-party voters (or 'pure' independents). Some of these stem from well-known phenomena, e.g., ranking truncation and 'vote leakage.' The article also alludes to 'vote-management' tactics, i.e., rationing nominations and ensuring even distributions of first-choice votes. Illustrative examples come from American history and comparative politics. A running theme is the two-pronged failure of the Progressive Era reform wave: with respect to minority representation, then ranked voting's durability.

Keywords
alternative vote; ballot exhaustion; block-preferential voting; bottoms-up system; exhaustive-preferential system; instant runoff voting; ranked-choice voting; open-list proportional representation; single transferable vote; strategic coordination

Issue
This review is part of the issue "The Politics, Promise and Peril of Ranked Choice Voting" edited by Caroline Tolbert (University of Iowa, USA).

1. Introduction

Over the course of the past two decades, various forms of ranked-choice voting (RCV) have been adopted in the US. These include at the local and state levels, with and without partisan elections, and sometimes for party primaries. These RCV forms, as I will show below, have different implications for campaign strategy, minority representation, and coalition politics. Yet popular discourse has emphasized the ballot type (ranked), which is just one part of a larger electoral system. Other key features are district magnitude (the number of seats per district), allocation rule (how votes turn into seats), the size of an assembly (Rae, 1967; Shugart & Taagepera, 2020), and rules that do or do not encourage coalition-minded ballot marking (e.g., unique party labels, compulsory ranking, a ticket-voting option). The emerging literature in American politics has focused on just one form of RCV, where district magnitude equals one. This article introduces four other types, as well as a series of strategic issues arising under them. One is minority representation in the presence of polarized voting.

For the purpose of what follows, RCV means an electoral system in which voters rank candidates and ballots transfer to next-ranked picks until all seats in a district are filled. Broadly, such systems can facilitate (a) majority winners in single-seat districts, (b) majority rule with minority representation in multi-seat districts, or (c) majority sweeps in multi-seat districts. They can also facilitate single-party, multi-party, or weak-party

government. Facilitate is a good term because much depends on how (and whether) voters rank choices.

This review adopts the perspective of a winning-minded strategist. Winning can refer to just one seat or control of the entire government (cf. Cox, 1997). Hence the essay is about strategic coordination, not strategic voting. An assumption is that parties—or multi-party coalitions, or party-like formations—will emerge under RCV (cf. Aldrich, 1995). Then their leaders will take interest in how and whether voters rank choices (Laver, 2000). Stories of campaign strategy below will substantiate the emphasis on leadership.

Reformers may dispute my focus on elites, especially because their work proceeds in a context of frustration with the parties (McCarthy & Santucci, 2021). Yet it may be helpful to grapple with two facts, both of which relate to organized electoral competition in post-reform environments.

One fact is the near-universal repeal of RCV systems in the late Progressive Era and New Deal. Of these, just two remain: Cambridge (MA) and Arden (DE). Many of my vignettes draw from such historic cases.

Although a comprehensive account of repeal is impossible in this article, one overarching possibility stands out: trying to use reform to create a multi-party system, versus introducing reform where multiple parties already exist. In most other RCV democracies, such systems have been imposed to manage existing (or incipient) multi-party competition: Australia (Farrell & McAllister, 2006a), Ireland (Gallagher, 2005, pp. 512–514), Malta (Hirczy de Miño & Lane, 1996, p. 24), Northern Ireland (McGarry & O'Leary, 2006), New Zealand (Cheyne & Comrie, 2005), Scotland (Curtice, 2007), and most recently Wales (Slaughter, 2020). In the US, by contrast, two-party politics have been constant. Therefore, RCV adoptions in the US have been, by necessity, about managing (e.g., Santucci, 2018a; Weeks, 1937) or creating (e.g., Gehl & Porter, 2020; Porter, 1914) intra-party factionalism. Differences between 'multi-party politics' and 'two-party factionalism' may help explain RCV's historic instability in the US. Note that, in repeal campaigns, opposing party bosses often blamed these systems for producing a "lottery effect" (Straetz, 1958, pp. 13, 31, 37; cf. Weaver, 1986, pp. 142–143). This suggests widespread frustration with unpredictable outcomes—both from elections and politics inside of legislatures (see, e.g., the 'two masters' problem noted in Section 4). These problems are less common in multi-party RCV democracies.

Second is that seemingly minor RCV details can reduce minority representation. Such effects may not be foreseeable when voting coalitions are in flux, i.e., the very conditions propelling many RCV adoptions. But modern reformers need to know that many of their predecessors' 'wins' occurred in a context of voting restriction (Bridges & Kronick, 1999, p. 693). As US voting rights expanded to a larger share of the population, effects of the other details became visible (cf. Trebbi, Aghion, & Alesina, 2008, p. 345). Those details include small assemblies, numbered posts, nonpartisan ballots, and citywide plurality-majority elections (which replaced or outlasted RCV). Block-preferential RCV, also covered below, could play a similar role today.

The essay begins with RCV 'forms' that have been used for US public elections. Section 2 sketches a simple model of voting and seat allocation in each form. This shows what happens when voting is polarized and voters are able to rank all choices. The model draws attention to several issues that might concern a strategist: mechanical effects on minority representation, consequences of strong/weak party cues, problems from voters' non-use of rankings, and problems from cross-aisle preference flows (referred to here as majority reversal and serving two masters). I allude to the problem of vote management, or optimizing the number of nominees and how votes are distributed among them.

Sections 5 and 6 introduce a third party. This is because having more parties is a major goal for some reformers (e.g., Drutman, 2020, on multi-seat districts). Meanwhile, others aim to have more non-party independents (e.g., Gehl & Porter, 2020, on single-seat districts without party nominations). The three-party model addresses both constituencies. Its core results are: outcome sensitivity to small variation in third-party vote distribution, this group's pivotal status, and (counterintuitively) that the 'proportional' system (single transferable vote, henceforth STV) minimizes its impact on major-party seat shares. The essay concludes with a summary of core points.

2. Types of Ranked Voting in the US

Most RCV systems derive from STV, so that is worth describing up front. A candidate must meet a win threshold (technically a quota), usually defined as: (total valid votes)/(seats in district + 1) + 1. Votes above the threshold are surplus; they transfer to next-ranked picks. If no candidate meets threshold, the trailing candidate is eliminated, and ballots in their column transfer to next-ranked picks. Ballots without next-ranked picks sometimes lead to quota re-calculation. The count iterates between surplus transfer and elimination until all seats are filled. Surplus transfer may be at random (a subset of a winner's ballots) or by some fractional rule (a portion of each of a winner's ballots). See the Ranked Choice Voting Resource Center (2020) for details. If there is only one seat in the district, STV becomes the alternative vote (AV). The quota is a majority, and surplus cannot exist.

AV is used to elect roughly 20 local governments, in part or entirety. Six jurisdictions since 2000 have discontinued use: Aspen (CO), Burlington (VT), Cary (NC), Hendersonville (NC), Pierce County (WA), and North Carolina (for statewide judicial elections). A handful of states use AV for one or more party primaries/conventions. Maine uses it in primaries and federal general elections (FairVote, 2020). One recent innovation is

to apply AV in the second round of a non-partisan two-round election. In Alaska, the only place to adopt this so far, four candidates will proceed to the AV round, regardless of party designation (Herz, 2020). Cary (NC) used a 'contingent vote' version, which let only the top two candidates receive vote transfers ("Cary chosen," 2007). Queensland, Australia also used this (1892–1942) to elect its unicameral legislature. Ann Arbor (MI) used AV for a partisan mayoral election in 1975, then summarily repealed it (Ratner, 2018). During the Progressive Era, 11 states used either AV or Bucklin voting for statewide party primaries (Weeks, 1937). Bucklin was the AV of its day and similar to it with one exception: candidates are not eliminated. Rather, in each round of counting, lower preferences are added to higher preferences, until a majority winner emerges (Hoag, 1914a, p. 10).

STV is used in Albany (CA), Eastpointe (MI), Palm Desert (CA), Cambridge (MA), Arden (DE), and Minneapolis for park board elections (since 2006). The first three resulted from voting-rights claims (or threats thereof) against citywide plurality systems. Arden has used STV since 1912, when it was a single-tax colony (Proportional Representation League, 1915, p. 3). Cambridge retains STV from an earlier reform wave, 1915–1947, when 23 cities adopted it as part of council-manager charters. One more, New York City, combined STV with a separation-of-powers system (Amy, 1996; Santucci, 2017; Weaver, 1986).

A third version is the bottoms-up system, used for some South Australian local-council elections until 1999 (Sanders, 2011, p. 703). Like STV, it uses multi-seat districts, but there is no quota (and hence no surplus redistribution). Trailing candidates are eliminated, and their ballots redistributed, until all seats in a district are filled. Recently, reformers in Missouri have sought to impose 'bottoms-up' for state-legislative elections, in tandem with reducing the size of that assembly (Ballotpedia, 2021). Five states used a modified version for 2020 Democratic presidential primaries. District magnitude was the number of delegates in each jurisdiction. In contrast to 'standard' bottoms-up, however, transfers brought candidates to 15% (per Democratic National Committee rules). Then, candidates earned delegates in proportion to their final-round vote shares (as such, votes for candidates functioned as votes for parties would in a proportional system where voters rank parties, not candidates).

Fourth is the block-preferential vote (BPV), exhaustive preferential system, sequential RCV, or instant runoffs (plural). This applies AV to a multi-seat election. Voters rank all candidates at once, but each seat gets a separate tabulation. The win threshold is a majority—not an STV quota. After the first candidate is elected, *all ballots* in their pile count toward next-ranked choices *at full value.* Other ballots count toward highest-ranked choices who have not been elected. Elimination occurs within a tabulation if someone cannot get to a majority. The process repeats until all seats are filled. Currently, any Utah city opting into RCV with multi-seat districts must use BPV (Municipal Alternative Voting Methods Pilot Project, 2019). Other places considering BPV are Missouri, along the lines of the Utah law (Stacy, 2021), and Arlington (MA; Town of Arlington, 2021, p. 32). The system is called 'block' because it uses AV to build up a full slate. In that, it is related to multi-seat plurality (wherein the voter may cast as many votes as there are seats), commonly called 'block vote.'

Finally, AV can be used with numbered-post elections. Progressives achieved a functional equivalent by combining the Bucklin system with the commission form of government (Bucklin, 1911; Johnson, 1914; Porter, 1914). Under commission government, candidates would run citywide in a series of 'numbered posts,' which, at the time, corresponded to city departments (e.g., parks, water, roads). In modern times, these posts become, e.g., Seat A, Seat B, Seat C. The candidate declares which seat (post) they are contesting, and the election is city-(or district-)wide. It is similar to BPV in that the same district-wide majority gets to fill every seat.

Any RCV system now (or formerly) appearing in the US—AV, STV, bottoms-up, BPV, and AV with numbered posts—can be combined with rules that encourage slate voting. Australian federal politics have been conspicuous for these: grouping co-partisans on the ballot, permitting voters to ratify a predetermined set of rankings (which may include multiple parties), and/or requiring some minimum number of rankings (Reilly, 2021; Reilly & Maley, 2000). Australia also is the only jurisdiction to have used AV for legislative elections, over many decades, without seeing it repealed. Another basic issue is whether ballots include party labels at all, or, if they do, whether a party gets to present a single slate (e.g., versus in Alaska).

As the next two sections show, how and whether voters use rankings is important for winning-minded elites. Note that three related RCV modifications were debated in American history. A so-called Gove (1894) system would have let the voter choose one candidate and, by extension, that person's rank-ordering. In New Jersey, where Bucklin-commission was widespread, a ballot was invalid unless the voter ranked at least one candidate for each numbered post (Rosenthal & Santucci, 2021). Two of 11 states with majoritarian ranked-ballot primaries required at least two rankings (Weeks, 1937, p. 65). Finally, in American history, reformers got support for STV by combining it with party-free ballots, nomination-by-petition, and reduction of assembly size (i.e., council-manager reform). See Thompson (1913, pp. 421–426) for related critique of "the so called non-partisan idea."

3. Simple Model of Ranked Voting with Two Parties

This section demonstrates seat-share outcomes for a polarized electorate that can rank all choices, building on Santucci and Reilly (2020), with credit to political scientist Andy Eggers.

Let there be 100 voters in a city with a three-seat assembly. There are 26 candidates, A–Z. 51 voters rank them A, B… Z. 49 voters rank in reverse: Z, Y… A. To keep things simple, let the pure AV election be to just one seat (e.g., mayor).

Under AV, Party A wins in the first round of counting. In AV with numbered posts, Party A wins all three seats—even if Party Z has a majority in some neighborhood.

Under STV, the quota is 100/(3 + 1) + 1 = 26. A gets the first seat. Their surplus (51 − 26 = 25) transfers to B, now one vote shy of threshold. Z is the next candidate with a quota, and they get the second seat. Their surplus (49 − 26 = 23) transfers to Y. All trailing candidates are eliminated, as none has votes to contribute. B gets the third seat, with more votes than Y. Result: 2 for Party A, 1 for Party Z.

Under bottoms-up, A and Z get seats. No other candidate had votes to contribute on elimination. The council is left with a vacancy. This is unlikely in practice, however, because parties typically run as many candidates as they expect to win (see note on 'spread the preferences' in the next section).

Finally, under BPV, Party A candidates win all three seats. A gets the first seat. All their votes transfer, at full value, to candidate B. In the second tabulation, B gets the seat (now with 51 votes from A). All their votes transfer, at full value, to candidate C. In the third tabulation, C gets the seat (with 51 votes from B, which originated with A).

4. Strategic Implications for Two-Party Politics

The scenarios above demonstrate (or allude to) several strategic aspects of the varied RCV systems. These include effects on minority representation, outcomes when party cues do not structure rankings (which they did do above), outcomes when voters rank too few choices (which voters did not do above), and what happens if like-minded voters do not distribute their support efficiently among preferred candidates (e.g., leading to the empty seat under bottoms-up).

First, in polarized electorates, two of the three multi-seat rules do not provide minority representation: BPV and AV numbered-post. This is consistent with experience. BPV's most prominent use was for Australian Senate elections, 1919–1946, where 55 of 60 such races produced single-party sweeps: "All five deviant cases, moreover, arose in the first decade of the system's operation; thereafter it functioned exclusively as a winner-takes-all system" (Reilly & Maley, 2000, pp. 42–43, 57). Similar results have occurred in Australian local elections (Sanders, 2011). In the US, Progressive Era advocates of ranked ballots abandoned numbered-post for this reason (Hoag, 1914b, p. 54; Thompson, 1913, p. 420). Note that bottoms-up can replace either system if STV *and* single-seat districts are politically unworkable (and ranked ballots must be used).

Second, the scenarios illustrate what happens when party cues do not structure voters' rankings. A survey of the US literature suggests that unstructured rankings can lead to elite disaffection, efforts to get control of voters' rankings, and even more efforts to change the electoral system. In the past, such efforts have come from reform opponents, as well as reformers themselves.

One set of frustrations stems from 'vote leakage,' i.e., when transfers cross party lines (Gallagher, 1978). This encompasses two possible issues. One is majority reversal, e.g., votes leave Party A, then help Party B win more seats. An example of this occurred in Cincinnati, 1955, when the Republican Party won a majority of first-choice votes, but the 'good government' slate won a seat majority (author's work-in-progress). Some might cast this as a 'pro' for STV, allowing alternative issue dimensions to shape seat allocation. It is worth noting, however, that this was Cincinnati's last election under STV rules. Further, as noted in the introduction, blaming STV for a 'lottery effect' was common in such repeal efforts.

A second 'leakage' problem might be called two masters—when one party's winners owe their seats to voters from a different party. This is especially likely when a party over-nominates, i.e., runs more candidates than it can elect. It is rational to do this if expectations are unclear (e.g., where the RCV party system does not track voter registration). The strategist recruits a slate of neighborhood candidates, per normal STV strategy (Bowler & Farrell, 1991, p. 305; Carty, 1981; Schulze, 2011, p. 22), then pads its shared vote with transfers from hopeless candidates (Bentley, 1926, p. 466). If candidates know they are hopeless, they may seek transfers elsewhere. In turn, if elected, they may feel beholden to voters whose transfers got them into office (Reilly, 2018, pp. 211–216; Reilly & Stewart, 2021). Whether two masters is virtue or vice depends on the value of party cohesion.

One last problem with unstructured rankings is ranking truncation, or when a voter does not rank all candidates. This can result from indifference, protest voting, or from failure of elites to coordinate on likely winners. Most truncation is innocuous. However, when it leads to winners without full quotas of total ballots cast, it is common to refer to the rate of 'ballot exhaustion.' Analysts of ballot exhaustion have tended to study AV, pointing out winners without overall vote majorities (Burnett & Kogan, 2015; Kilgour, Grégoire, & Foley, 2020). But in multi-seat elections, we may care about legislative majorities. In the STV example above, Party A won a majority because its voters *did give* candidate B their second choices. This did not happen in New York City, where, at the first STV race in 1937, reformers failed to win a seat majority. McCaffrey (1937, p. 45) writes: "The Democrats won two or three more places than their proportion of first choices would have entitled them to receive because of the large number of exhausted ballots cast by members of the opposition."

Responses to unstructured rankings—or rankings that do not accord with reformers' expectations—have taken several forms. One is outright repeal, as noted

above with respect to STV in Cincinnati. Alvarez, Hall, and Levin (2018) and Eberhard (2017) document such an outcome under AV in Pierce County (WA). The former compared ballot data from partisan and nonpartisan races in 2008. In the partisan races, most voters ranked their preferred party's candidates. In the nonpartisan race, rankings reflected other factors. None of this is surprising. One year later, however, leaders in both parties orchestrated AV's repeal, responding to an independent victory in the nonpartisan race. Meanwhile, in Cleveland under nonpartisan Bucklin (1913–1919), "Alternative votes of the independent voters would tend to build up the aggregate vote of the party candidates, but the regular party voters would contribute nothing to the aggregate vote of the independent candidates" (Maxey, 1922, p. 85). In this case, party cues *did* structure voters' rankings—just not in the way that reformers had hoped. Hence, they abandoned Bucklin for STV, seeking direct representation via the non-majority quota (Barber, 1995, pp. 120–124).

Another response to unstructured rankings, mainly under STV, was to create de facto parties in response to adverse outcomes. This was common practice in US cities at the end of the Progressive Era, based on a 'lessons-learned' report for the National Municipal League (Harris, 1930). In turn, Gosnell (1930) analyzed aggregate transfers in the city where these 'good government' parties had been perfected. He found that "rivalry between the [reform slate] and the organization Republican party outweighed all other factors" (p. 471). This rivalry also shaped descriptive representation. The party stopped slating women and blacks until it came to believe those groups would reliably provide transfers to the slate's other members (Burnham 1997, p. 139, 2013, p. 56; Santucci, 2018b; cf. Benade, Buck, Duchin, Gold, & Soo, 2021).

There are several ways to deal with unstructured rankings. One is to require voters to rank all candidates, as Australia does federally with AV and once did with STV. Another is to permit ticket voting, which raises questions about who should constitute a ticket (Muller, 2018). The Maltese solution is to allocate seats based on parties' first-choice vote totals (Hirczy de Miño & Lane, 2000, p. 183). Finally, one can replace STV with open-list proportional representation, getting rid of rankings and transfers altogether. In a paper that largely went ignored, Gosnell (1939) proposed just such a change, having examined STV returns from New York City and Cincinnati (also see Lien, 1925, p. 265). With open-list proportional representation, votes for candidates determine two things: how many seats each party will get, then who in those parties will get seats. Ranking truncation and vote leakage are nonissue in open-list proportional representation.

This section has pointed out some strategic issues with two-party politics under ranked ballot. It has not delved deeply into issues of vote management, i.e., ensuring that slate candidates each have enough high rankings to survive early-round elimination. The discussion of neighborhood candidates alluded to a spread-the-preferences strategy, and STV with parties might make it important (e.g., the Fair Representation Act, which would apply STV to US House elections). In addition to rationing nominations, spread-the-preferences involves evening out the first-choice-vote distribution (Farrell, Mackerras, & McAllister, 1996, p. 34). Note that, in the bottoms-up example, the third seat did not get filled because neither party had 'spread the preferences.' Other issues not covered here are ballot-order effects—as in Australia (Orr, 2002), Scotland (Curtice & Marsh, 2014), and Boulder (CO; Sowers, 1934, p. 34)—as well as the politics of filling casual vacancies (Miragliotta & Sharman, 2017; Straetz, 1958, p. 80).

5. Simple Model of Ranked Voting with Three Parties

Say that candidates M and N have launched their own party in the 'middle' of the spectrum. Another way to think about this 'centrist' party is that it has found an issue that splits the majors' coalitions (cf. Nagel, 2006, p. 146). Examples are Ross Perot in 1996, or Ralph Nader in 2000. Four voters rank N, M, L… A. Three voters rank M, N, O… Z. This shared 7% is inspired by the share of pure independents in the 2019 US electorate (LaLoggia, 2019). Each third-party group aims to keep votes away from its main competitor, although, in practice, they might gang up on largest Party A (Laver, 2000). The overall vote distribution is A–Z (47), Z–A (46), N–A (4), M–Z (3). Again, for simplicity, let the pure AV election be to just one seat.

In AV and AV with numbered post, Party A wins all seats. Since no candidate has a majority, all candidates without votes are eliminated. Then M is eliminated, and their ballots flow to N (now with seven). Still, no candidate has a majority. N is then eliminated; four votes go to A (now with 51), and three votes go to Z (now with 49).

In STV, competition is for the third seat. A and Z win outright, transferring surplus to B and Y, who enter the next round with 21 and 20 votes, respectively. Neither has a quota, so all candidates without votes are eliminated. That leaves B (21 votes), Y (20 votes), N (4 votes), and M (3 votes). Then M is eliminated, and three ballots flow to N (7 votes). In the following round, three N ballots flow to Y (23 votes), and the other four go to B (24 votes). B then gets the third seat by default.

With bottoms-up, three parties get one seat each. Round one eliminates all but A, Z, M, and N. Then M is eliminated. Their three ballots flow to N. With just three candidates remaining, all seats are filled: A, Z, and N.

Finally, with BPV, Party A sweeps the district. No candidate has an outright majority. M is eliminated, and their four ballots flow to N. Now with seven votes, N is eliminated. Four of these votes land with A (47 + 4 = 51). The other three votes land with Z (46 + 3 = 49). A now has a majority, taking the first seat. B and C enter the second and third tabulations, respectively, with A's 47 votes. As the process repeats, B and also C win.

6. Strategic Implications for Multi-Party Politics

Everything noted in Section 4 still applies with a third party. New insights are as follows.

First, results are sensitive to minor change in the vote distribution across pivotal groups, just as under 'conventional' plurality. If one N–A voter had ranked M–Z instead, the AV and BPV elections would have tied. In bottoms-up, the third seat would have gone to M, not N. In STV, seat three would have gone to Y, not B. A two-vote shift would turn the ties into wins for Party Z.

How might one deal with the unpredictability of third-party/independent voters? Potential solutions may not sit well with those who oppose parties writ large, nor with those who oppose multi-party politics. One is simply to have more parties, so that voters can rank choices based on a sense of 'party family' (cf. Clark, 2021; Clark & Bennie, 2008). Another is for M and N to control a *disciplined* party. While that party still would be pivotal, it could cut deals with other parties *as parties* (Sharman, Sayers, & Miragliotta, 2002).

Finally, STV appears to blunt the impact of the M and N groupings. Under each majoritarian system, they can change the entire result. With bottoms-up, one of them is able to win a seat (hence the importance for major parties of nominating the right number and 'spreading the preferences'). With STV, however, M and N only change which major party has a seat majority. For those who view STV as 'proportional' (but see Farrell & Katz, 2014), this is counterintuitive. Many expect such systems to enhance the role of 'outsiders' (cf. Hermens, 1941; but see Lien, 1941). While the adoption of proportional representation is beyond the scope of this article, dealing with threats from 'outsiders' is a major part of that story (see, e.g., Ahmed, 2010; Cox, Fiva, & Smith, 2019).

7. Conclusion

This article has described the different kinds of RCV used for public elections in the US, historically and in modern times, drawing on comparative cases. These include rarely-used (for now) and less-understood systems like bottoms-up, BPV, and AV with numbered posts. The standard versions are AV and STV, although, as we have seen, the ecosystem is more complicated. Seemingly small and technical distinctions matter. Different allocation rules can produce different outcomes with identical vote and ranking distributions. In turn, those different allocation rules have predictable effects—given polarized voting—on minority representation.

Meanwhile, elites matter—not just whether voters are strategic. Minor variations in vote and ranking distributions can produce different outcomes with the same RCV type. Such systems therefore carry many of the same strategic issues as plurality, except with allowance for 'expressive' first-choice voting. Hence the strategist is apt to care about how and whether voters rank choices.

The article covered some strategic issues with party and party-like competition in RCV: vote leakage (with derivative problems of majority reversal and two masters), ranking truncation, issues of vote management (the need to nominate strategically and manage a vote distribution across like-minded candidates), and the need for stable coalition (to deal with otherwise unpredictable third parties/independents). The US literature suggests that some of these issues have come up in RCV repeal campaigns.

The sorts of dynamics noted in this article may not resonate with some reformers, as their work centers (for now) on "expanding voter choice" (e.g., FairVote, 2015). Rather, strategy tends to matter later on, as coalitions settle in, and normal politics resumes. One such issue is certain variants' potential, given polarized voting, to cut off minority representation. This potential relates to district structure and allocation rule—two sometimes-overlooked aspects of the myriad RCV systems. Another set of issues relates to parties' role in a democracy—especially whether we expect (or want) them to structure voters' rankings.

A broader question is whether RCV can be used to induce multi-party politics. Maybe it can (cf. Duverger, 1954), and maybe it cannot (cf. Colomer, 2005). If one wants more parties in legislatures, STV is better than AV in any form (Jansen, 2004). Far more important is the interaction of district magnitude and assembly size (Shugart & Taagepera, 2017). Less obvious, as shown above in the case of bottoms-up, is that major-party coordination failure may create the real openings (cf. Maeda, 2012). Whatever form RCV takes, if one wants to avoid repeal at the hands of opposing 'party bosses,' coalitions need some measure of control of voters' rankings. For example, Drutman (2020, pp. 184–185) recommends Australian-style ticket voting. But most of this gets back to adoption where more than two parties do not yet exist. History suggests the price has been designing RCV systems to 'get parties out of politics.'

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Conflict of Interests

The author declares no conflict of interests.

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Article

Lessons from the Use of Ranked Choice Voting in American Presidential Primaries

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Abstract
Grounded in experience in 2020, both major political parties have reasons to expand use of ranked choice voting (RCV) in their 2024 presidential primaries. RCV may offer a 'win-win' solution benefiting both the parties and their voters. RCV would build on both the pre-1968 American tradition of parties determining a coalitional presidential nominee through multiple ballots at party conventions and the modern practice of allowing voters to effectively choose their nominees in primaries. Increasingly used by parties around the world in picking their leaders, RCV may allow voters to crowd-source a coalitional nominee. Most published research about RCV focuses on state and local elections. In contrast, this article analyzes the impact on voters, candidates, and parties from five state Democratic parties using RCV in party-run presidential nomination contests in 2020. First, it uses polls and results to examine how more widespread use of RCV might have affected the trajectory of contests for the 2016 Republican nomination. Second, it contrasts how more than three million voters in the 2020 Democratic presidential primaries backed withdrawn candidates with the low rate of such wasted votes for withdrawn candidates in the states with RCV ballots. Finally, it concludes with an examination of how RCV might best interact with the parties' current rules and potential changes to those rules.

Keywords
electoral reform; instant runoff; presidential primaries; ranked choice voting

Issue
This article is part of the issue "The Politics, Promise and Peril of Ranked Choice Voting" edited by Caroline Tolbert (University of Iowa, USA).

1. Introduction

Many view America's election of its president as one of the most important choices that the country makes. Every four years, there is intense interest in the major parties' presidential nomination process rules—both as written and as they might be reformed—from the media, political activists, and the public.

On the one hand, the current process is creating surprises for the parties—as evidenced by the strength of outsider candidates like Donald Trump and Bernie Sanders—and generating interest in how to ensure any such candidate earns majority support within the party before becoming its nominee. On the other, reforms that seem to symbolize a return to the 'smoke-filled rooms' of the pre-1968 nominations—like giving more power to superdelegates and increasing the odds of a brokered convention—are unpopular among party voters. To address the goals of (1) choosing strong nominees who unite the party and help shape its future and (2) giving more voters a meaningful vote, the major parties could consider expanding the use of a reform that has been used in party and general election contests: ranked choice voting (RCV) ballots. Specifically, this article analyzes applications of the most common form of RCV widely known as instant runoff voting (IRV), which can be adjusted to fit party rules and thresholds.

Addressing the first objective of choosing a strong nominee, the modern presidential primary process gives more power to voters than the pre-1968 process, but it can still neglect their will and divide parties. Most dramatically, candidates can win the majority of pledged delegates without winning a majority of primary votes, especially in early contests that often effectively decide the nomination. Many scholars have noted that the spirit of compromise that was forced by majority thresholds in past nominating conventions has dissipated with the end of brokered conventions (Aldrich, 1980; Busch, 1992). The winner of a narrow plurality of the vote in a handful of states that begin the process each year can gain momentum that alters the course of a race before most voters have had a say.

RCV, recommended in *Robert's Rules of Order* (Robert, Honemann, & Balch, 2011, pp. 425–428) and widely used in governmental and party elections, including by all five national parties in Canada when choosing their party leaders for prime minister and for most party leadership elections in the United Kingdom, could directly address this problem (Oberstaedt, 2020). In an election with RCV, voters rank their preferred candidate first and can also rank other candidates in order of preference as backups. Votes count for your first choice unless that candidate is eliminated, which then means your vote counts for your next ranked choice among the continuing candidates.

In 'winner-take-all' primaries, votes would be redistributed from the last place candidate round-by-round until a candidate attains a majority. RCV primaries with proportional allocation and delegate thresholds—as was the case in five Democratic caucuses and primaries in 2020 that used RCV with thresholds of 15% to earn delegates—would redistribute voter preferences until every remaining candidate is above the threshold. At that point, delegates would be allocated. In addition to releasing results used to determine delegate allocation, states and parties could run the tally down to the final two candidates. Doing so could allow the momentum for winning the state to go to a candidate not benefiting from a fractured majority vote—recognizing that this would require a shift in media attention from 'plurality thinking' (that is, the candidate with the most delegates in a state 'wins,' even if less than a majority) to 'majority thinking' (that is, the goal of a nomination process is to identify the candidate who best unites the party).

The RCV ballot has many potential benefits for representing the will of primary voters. Those voting early or by mail for candidates that dropped out of the race prior to election day would have their preference heard rather than their vote wasted. In a more wide-ranging manner, parties could be more likely to unite around coalitional candidates that are more palatable to a broader group of its delegates and voters than polarizing candidates that not only might be weak nominees, but also vehicles for changing the party's platform and identity. For purposes of this article, a coalitional candidate is one who achieves the most support within their party by earning both first choice support and backup support from party convention delegates or primary voters who prefer a different candidate, as measured by later ballots at contested conventions or backup rankings on RCV ballots.

In this sense, RCV may help alter voter and candidate strategies. Voters could express their true preferences at the ballot box rather than engaging in 'strategic' voting based on trying to make the most of a single choice. Candidates would have to work harder to earn voters' backup preferences, encouraging them to form broader electoral coalitions within their parties.

RCV could be used in the current presidential primary system to ensure that the winners of early states that help establish the 'momentum' that today typically decides nomination contests are better able to unite groups of voters in their first and later choices. RCV could also be used as part of more fundamental changes to the presidential nominating process, such as a replacement for caucuses or the mechanism for a growing number of states voting on a single day after early contests define the field.

The first part of this article conducts a review of literature related to how presidential primaries balance the interests of different stakeholders and how momentum affects the process. The second part examines RCV ballots in presidential primaries from a historical perspective, first by examining the history of brokered conventions and then by describing how RCV could have altered the course of the 2016 Republican primary process. The third part of the article discusses RCV in practice, including the impact of RCV's use in five states in the 2020 Democratic nomination contest. The fourth part of this article looks at RCV in the context of different party and state rules and potential changes to those rules.

2. Academic Literature on the Dynamics of Presidential Nomination Contests

2.1. Balancing the Interests of Party Elites and Party Voters in Presidential Primaries

There is a significant amount of political science literature that examines presidential primaries in the United States. One focus of scholarly research on presidential primaries is determining the relative influence of party elites vis-à-vis presidential primary voters in deciding the major party's presidential nominations. In "One Party Decided," Cohen (2018) evaluates *The Party Decides* (Cohen, Karol, Noel, & Zaller, 2008) in light of the 2016 Democratic and Republican presidential primaries. Cohen (2018, p. 256) summarizes the book as a "study of the 'invisible primary,' the process by which party elites agree upon a nominee before the presidential primaries have concluded." Revisiting the "four invisible primary fundamentals" that can be predictive of presidential primary performance—"polls, money, media coverage, and endorsements"—Cohen concludes that Democratic

party elites effectively decided on Hillary Clinton as the 2016 nominee, while Republican Party elites were too slow and fractured in making endorsements to prevent Donald Trump's nomination (Cohen, 2018, pp. 261, 272).

Steger (2016) adds similar caveats to *The Party Decides*, arguing that while party elites may influence presidential primary outcomes, this role is conditional and depends on how many elected officials make endorsements, when they do so, and the extent to which they coalesce.

Norrander (1996, p. 876) conducts a comprehensive literature review regarding presidential nomination politics and concludes that "rules matter." Norrander (1996) finds that numerous studies have demonstrated how various primary rules affect both the type of candidates that succeed and the way they campaign.

Aldrich (1980, p. 10) studies the evolution of the presidential primary system and finds that reforms in the 1970s, as well as other factors (such as the influence of mass media, public opinion polling, and the weakening of party organization), create a situation where "delegates to the convention play an ever-shrinking role in the decisions about which presidential nominees are chosen." Steger (2018) then applies the Herfindahl-Hirschman Index to presidential primaries, finding that presidential primary voters have had meaningful choices in most elections since the 1970s reforms were implemented.

While this increase in presidential primary voters' influence may have an intuitive appeal that parallels how most states conduct congressional primaries, scholars have noted downsides to this 'democratization' of the process. Busch (1992) laments the reforms of the presidential nominating system, including the decline of the 'mixed' nominating system where voters had some say at select primaries but delegates had the power to determine the nominee at the convention. He argues that political parties could be better served if the process required movements to build support among party leaders, helping their nominees win elections and ensuring that they can consolidate the party over the long term (Busch, 1992).

The outcomes of presidential primaries can have long-lasting consequences on parties' ideological composition and governance, so while some partisans may be entirely focused on 'electability,' many party elites and primary voters also have an interest in choosing an ideologically representative nominee. As Steger (2018, p. 278) notes, "presidential nominations are consequential because the presidential nominee of a party plays an outsized role in shaping public perceptions of what a party stands for and setting expectations about what it will do if it wins the election." Scala (2018) makes the case for the importance of ideology in voter decision making during primaries, arguing that even though many voters do not have definitive self-identified ideologies nor fully understand candidates' ideologies, they have a rough estimation of presidential primary candidate ideology that is an important cue for the way they vote.

There is still the question of whose ideology and preferences should be represented: party elites or primary voters? No matter the stance one takes on this question, RCV is one potential reform to help parties more efficiently balance elites' and voters' influence over the process. If party elites are fractured in their endorsements but clearly opposed to one candidate (e.g., Donald Trump in 2016), RCV ballots can be a way for primary voters to reflect party elite preferences and consolidate support around a candidate that elites find acceptable.

Crucially, voters still have the choice of whether they will follow party elites' signals or not. However, RCV ballots could help avoid playing a game of 'plurality roulette'—both major party's current nomination rules risk a 'hostile takeover' from a plurality faction, while RCV ballots can help shift to a more majoritarian nomination system.

2.2. The Influence of Momentum in Presidential Primaries and Caucuses

Another focus of scholarly research is on momentum and the way that the sequential nature of presidential primaries and caucuses plays a dynamic role in the decisions of candidates and voters. Examples abound of early contests elevating a candidate out of a crowded field and becoming the inevitable nominee before most states vote.

Bartels' (1988, p. 5) systematic study of momentum in presidential primaries evaluates "the complex interactions among initial primary results, expectations, and subsequent primary results that make it possible for [presidential primary candidates] to emerge from relative obscurity into political prominence in a matter of days or weeks" and provides a framework for more recent scholarship.

One way to examine momentum is in shaping voters' perceptions of candidate viability (how likely a candidate is to win the party nomination) and electability (how likely a candidate is to win the general election). Abramowitz (1989, p 988) evaluates responses to a 1988 DeKalb County presidential primary exit poll and finds that, while respondents do not necessarily distinguish between viability and electability, they act "to a considerable extent… as rational utility maximizers" in weighing viability and electability over their evaluation of the candidates. Redlawsk, Tolbert, and Donovan (2010) argue that the sequential nature of presidential nomination contests, starting with the Iowa caucuses, allows for candidates to gain 'momentum' from wins in earlier states that shape voters' perception of candidate viability and electability which ultimately influences the outcome of later nominating contests.

Redlawsk et al. (2010, p. 10) find evidence of these dynamics from the 2008 Iowa caucuses, writing that:

> Our national survey data show that winning (mostly white Iowa) was critical to perceptions that Obama

could win the nomination (what is called 'viability'), and that viability was in turn the most important factor for predicting a vote for Obama in subsequent primaries and caucuses.

The central importance of momentum in the presidential primary process means that very few votes in early states that often have crowded fields of candidates can allow a candidate lacking in broad support across their party to be propelled towards their nomination. These dynamics may strengthen the importance of ranked choice ballots, as RCV could be an important component of early primaries and caucuses to ensure the winner who garners momentum from winning such contests reflects the broad support of the electorate.

3. The Historical Perspective on RCV in Presidential Primaries

3.1. Historical Context: Pre-1968 Multiple-Ballot Party Conventions Resulting in Coalitional Nominees

In order to understand how presidential primaries have shifted from being an elite-driven process to one that includes a larger role for primary voters, it is useful to review the history of these nomination rules. For much of American history, the presidential primary process did not involve any primaries at all, nor any participation from rank-and-file party members. Until the late 1820s, congressmen met behind closed doors in what was known as a 'King Caucus' to determine party platforms and nominees (Roberts, Hammond, & Sulfaro, 2004). As criticism of the King Caucus system grew louder, conventions opened up greater access to the presidential nominating process in the 1830s, but these conventions were still dominated by party elites who selected delegates by secretive means (Cowan, 2016).

Voters steadily gained more power at the end of the twentieth century, when a progressive-era movement for 'small-d democracy' pushed states to institute primary elections whereby ordinary party members could cast votes for their preferred candidate (Cowan, 2016). However, these conventions still empowered delegates who were typically not bound to vote for the winner of their primaries, and by 1968, 20 states still had no open selection process for delegates (McGovern–Fraser Commission, n.d.).

The foundations for the modern presidential primary process were created in the wake of the 1968 McGovern–Fraser Commission's recommendations for reform of the Democratic Party rules, after Hubert Humphrey's controversial nomination and subsequent loss that permanently disrupted the New Deal Coalition (Atkeson & Maestas, 2009). These changes included binding delegates to the results of their state primaries and encouraging more state legislatures to mandate primaries in states that previously had non-public methods for selecting delegates (Atkeson & Maestas, 2009). These reforms, which eventually found a permanent place in both parties, were critical to democratizing the presidential primary process, but they also ensured that conventions would be even less likely to require multiple rounds of balloting as the presumptive nominee could be established well before the convention.

Indeed, no major-party presidential nominating convention has required more than one ballot since 1952 (DeSilver, 2016). Prior to that, though, 18 such multiple-ballot (or brokered) conventions occurred among the 60 conventions after the end of the Civil War (DeSilver, 2016). At these brokered conventions, party insiders selected as delegates were often forced to compromise among themselves over the course of multiple rounds of voting, providing modern-day lessons about how parties can field coalitional nominees. That said, there may be some instances in which the goal of fielding coalitional candidates is not shared by all party elites who may favor a particular faction or candidate.

3.1.1. Brokered Conventions Can Produce Coalitional Nominees

Most notably, because the party's nominee was required to win the votes of a majority (or supermajority, as in the case of the early Democratic Party) of delegates, brokered conventions often led to the selection of coalitional candidates who appealed to broader ranges of geographic and partisan interests. One example that illustrates this consensus-building process was the 1860 Republican Convention in which Abraham Lincoln triumphed in three ballots after initially finishing well-behind William Seward in the first round (Ecelbarger, 2008).

The convention showcased Lincoln's political acumen and ability to appeal to multiple factions and state delegations, including those of his political rivals, as Lincoln's support grew from one-fifth of delegates in the first ballot to three-fourths in the third (Ecelbarger, 2008). Lincoln was also able to grow his support on successive ballots based on the greater appeal of his ideological stances, as some saw Seward as too closely aligned with the party's radical wing (Ecelbarger, 2008). Conversely, Lincoln's stances on issues of the economy and slavery were better aligned with the general electorate, enabling him to ultimately carry Western states and win the presidency—a breakthrough for his recently formed party (Ecelbarger, 2008). These attempts to field a more electable nominee at contested conventions appear successful, as FairVote's review of major-party nominating conventions since 1844 shows that 57% of come-from-behind winners at contested conventions went on to win the general election (FairVote, 2020a).

3.1.2. RCV Crowd-Sources a Coalitional Nominee

RCV may build upon the virtues of brokered conventions in an era where these conventions have become a thing

of the past. RCV simulates the use of multiple rounds of balloting to earn a majority, but these rounds occur efficiently and instantly rather than producing long and protracted fights that once occurred at brokered conventions. In 1924, for example, it took 103 ballots for Democratic Party delegates to agree on a nominee, with the convention's fights overshadowing the nomination (McVeigh, 2001).

Presidential primaries using RCV may also enable a public, crowd-sourcing selection of coalitional nominees without the undemocratic nature of party elites choosing on behalf of party voters. In past conventions, candidates could even bypass the primary process entirely, as Adlai Stevenson and Hubert Humphrey did in 1952 and 1968 respectively, and still win the nomination by shoring up support with party bosses rather than party members (Whitney, 2004). A primary process with RCV, on the other hand, allows voters, rather than only party elites, to express the full scope of their choices to potentially determine a consensus among themselves, increasing the likelihood that the nominee is representative of their will. In this way, RCV has the power to combine the democratic elements of the party primary process post-1968 with the compromise politics of prior conventions.

3.2. RCV Counterfactual in 2016 GOP Presidential Nomination

To understand how RCV could affect the modern presidential primary process, the 2016 Republican primaries can provide an interesting counterfactual example. On 26 May 2016, Donald Trump clinched the Republican presidential nomination after a long and divisive campaign season that started with 17 candidates (Sides, Tesler, & Vavreck, 2018). Trump polarized the party and ultimately earned nearly 60% of pledged delegates with just under 45% of the primary vote and with a favorability rating in his party that at times was just barely more positive than negative (Berg-Andersson, 2016; Silver, 2016). Several of his issue preferences broke with long traditions of the party in areas like foreign policy, trade, and immigration.

This result may have been made possible by the momentum gained from early wins with low pluralities of the vote. Trump benefited from Republican nomination rules which enabled 28 states to hold primaries in 2016 that used the winner-take-all system to allocate at least some delegates from that state or its congressional districts to the plurality winner (Putnam, 2016). Trump did not earn a majority of the votes cast in any of the first 33 states to vote. Of those 33 states, Trump earned 38% of the vote but 47% of delegates. By the time Trump began earning majorities after more than two months of plurality wins, all but three of the candidates had withdrawn from the race (Berg-Andersson, 2016).

As a result, Trump did not need to break out of his proverbial ceiling to rack up delegates and instead could let his base carry him, winning eight of the last 11 winner-take-all primaries (King, 2018). Conversely, RCV may encourage candidates to appeal to voters other than their base by incentivizing candidates to compete for first and later choice votes to attain majority support.

3.2.1. Trump May Have Needed to Gain Support Outside of His Base with RCV Primaries

A poll of Republican voters conducted by FairVote in partnership with the College of William and Mary and YouGov in February 2016 at the time of the Iowa caucuses mirrored the effect of RCV in the Republican primary process by asking respondents for not only their first-choice candidate but also their later rankings (FairVote, 2016). The survey included more than 1,000 respondents, with more than 90% choosing to rank all 11 candidates (FairVote, 2016). FairVote's poll found that while Trump led the field with the most first choice rankings at 37%, he also had the most (22%) last choice rankings of any candidate (FairVote, 2016). In a full RCV simulation with these nationally representative voters, Sen. Ted Cruz attained a narrow majority, beating Trump head-to-head when later choices were redistributed (FairVote, 2016).

More than a dozen other national and other polls provided second choice data and head-to-head comparisons that allowed FairVote to simulate RCV primaries. While Donald Trump consistently was the plurality leader in these polls, he frequently was not the winner after a simulated instant runoff (Richie, 2016). While some believe such polling has misjudged support for Trump in the past, there is no evidence of any systematic polling error in polls of the 2016 Republican primary (Kennedy et al., 2018).

FairVote's analysis in 2016 showed how the use of RCV by Republican voters may have resulted in different outcomes in most early primaries. While Trump won seven of nine regular primaries on Super Tuesday, for example, cementing his status as the Republican frontrunner, FairVote's simulation found Trump could have won as few as two primaries that day if the tally were run down to two candidates with RCV (Douglas, Richie, & Louthen, 2016; "Super Tuesday results 2016," 2016). Trump also likely would have lost to Sen. Marco Rubio in the crucial winner-take-all South Carolina primary that created momentum for him going into the March contests (Douglas et al., 2016). Polls suggest Cruz and Rubio could have won six of the Super Tuesday states, and Gov. John Kasich one (Douglas et al., 2016). As an example, Table 1 below shows the results of a RCV simulation in Georgia that suggests Rubio would have been favored after earning backup support from supporters of Cruz and other eliminated candidates. In actuality, Trump earned a majority of Georgia's delegates with less than 39% of the vote.

These findings indicate that Trump would have had to change his strategy in the 2016 primaries to have won the nomination under RCV rules. Specifically, Trump

Table 1. RCV simulation, Georgia Republican primary, 2016.

Candidate	First round	Second round	Third round
Donald Trump	38.8%	42.6%	48.9%
Marco Rubio	24.4%	30.5%	51.0%
Ted Cruz	23.6%	26.8%	—
All Other Candidates	13.1%	—	—

would have had to campaign outside of his base to consolidate support, even among those who did not rank him first.

While Trump did go on to win the 2016 presidential election in a narrow Electoral College victory while losing the popular vote, Cohen (2018) has noted that other Republican contenders may have been just as successful given the low favorability ratings of Hillary Clinton in 2016. Additionally, winning presidential elections may not be the only focus of a party. A presidential nominee can have an enduring impact on the party through their effect on down-ballot races and its future direction. As a result, RCV may be a way for parties to allow for evolution and change while ensuring a majority of primary voters, rather than a narrow plurality, drive that change.

4. Presidential Primary Reform in Practice

The effect of RCV in presidential primaries is not just a thought experiment. Five state Democratic parties used RCV ballots in presidential primary elections and caucuses in 2020, including Nevada for early voters and Alaska, Hawaii, Kansas, and Wyoming for all voters (Otis, 2020b). Ultimately, over 280,000 voters used RCV ballots for presidential primaries and caucuses in 2020 (Ginsburg, 2020b; McDonald, 2020).

All five RCV states were caucus states prior to 2020, and they added RCV to their nominating contests in response to new rules from the Democratic National Committee and an ongoing desire to create a smooth process for participants. Nina Herbert, the Wyoming Democratic Party communications director, says: "We began working backwards from, 'how can we make it easy for people to vote?' and built the logistics around that" (Otis, 2020b). Notably, the DNC Rules and Bylaws Committee unanimously approved these states' uses of RCV for that reason (Ginsburg, 2019).

Alaska, Hawaii, Kansas, and Wyoming implemented party-run primary elections with RCV ballots instead of caucuses (Otis, 2020b). RCV allowed them to preserve some elements of caucuses, such as allowing voters to 'realign' with a different candidate if their first choice is not viable, while creating a more modern and accessible experience for voters—one that was a particularly fortuitous choice after the onset of COVID-19. Nevada chose to keep traditional caucuses, but turned to RCV to enable early voters, which made up 70% of participants, to have their voices heard with RCV ballots incorporated with the traditional realignments of in-person caucus-goers (Otis, 2020b). Iowa, the nation's first contest, would have done a similar approach if the DNC had allowed voting by telephone (Hunnicutt & Brice, 2019).

4.1. How RCV Reduces 'Wasted Votes'

The results from these first five states to use RCV in presidential primaries and caucuses demonstrate the potential of RCV to engage voters and allocate convention delegates in a democratic, fair, and transparent manner that can make more votes count.

The crowded field of candidates in the 2020 Democratic primary led to 'wasted votes' in non-RCV states in two ways. First, more than three million votes were cast for candidates who had withdrawn from the race prior to Election Day in that state (FairVote, 2020c). Many of these votes came from early and mail voters, who cast their ballot days or weeks ahead of primary day. In Washington, FairVote demonstrated that more than 33% of the primary votes that were cast early went to withdrawn candidates—a rate fully five times higher than the rest of the ballots cast closer to the primary (Otis, 2020a).

Additionally, votes can be wasted when a voter's first choice candidate fails to achieve the 15% threshold required to earn convention delegates from a given jurisdiction. Caucus-goers have the option to realign with a viable campaign, but primary voters simply lose the opportunity to influence delegate allocation. More than 1.4 million voters cast ballots for an active candidate who did not earn a share of their state's delegates (FairVote, 2020c). The combined wasted votes from these two sources represent more than four million votes, as shown in Table 2 below, or 12% of all Democratic primary voters in 2020 (FairVote, 2020c).

In the states that used RCV for all voters, no ballots went to withdrawn candidates or active candidates below the 15% threshold. In Alaska, for example, the only two candidates to earn delegates were Joe Biden and Bernie Sanders. Eleven percent of voters chose a different candidate as their first choice, but over 99% of Alaska Democrats ranked at least one of the two delegate-earners on their ballots. Even voters whose vote did not count for their first choice ultimately had a voice in the delegate allocation between the two finalists (see Table 3 below).

In an RCV election, the only votes that do not count towards the outcome are ballots that do not rank any delegate-earning candidates and the small number that

Table 2. Wasted votes, 2020 Democratic primaries and caucuses.

Category	Votes	Percent of total votes cast
Votes for withdrawn candidates	3,010,892	8.2%
Votes for non-delegate-earning candidates	1,448,695	3.9%
Total Democratic primary and caucus votes cast	36,917,179	—

contain a disqualifying error. It is likely that, with RCV, the vast majority of 'wasted votes' in other states would have counted for delegates.

4.2. Voters' Use of Ranked Choice Ballots

Voters in RCV states overwhelmingly took advantage of the option to rank candidates on their ballots, demonstrating their understanding of RCV and their willingness to engage with a ranked ballot. Even though Joe Biden had become the presumptive nominee prior to the first fully ranked-choice primary election, nearly three out of every four voters ranked multiple candidates (Otis, 2020b).

Ballot use varied slightly between states based on the date of the election. However, a vast majority of voters in each RCV state opted to rank more than one candidate, even when only Joe Biden was actively campaigning, as was the case for Kansas and Hawaii (Otis, 2020b). In addition, the ballot error rate was very low, in line with error rates in other RCV contests. In Nevada, 99.7% of in-person early voters used at least three rankings, and an even higher percentage in the four RCV primary states cast a valid ballot (Ginsburg, 2020c; Otis, 2020b).

5. RCV and the Broader Primary Reform Landscape

5.1. Integrating RCV with Current Party Rules

The Democratic and Republican parties have significant differences in the way that delegates are allocated and, thus, the way that RCV would determine delegate allocation.

5.1.1. Integrating RCV with Democratic Primary Rules

The Democratic Party implemented rules in 1992 to award delegates proportionally to only the candidates that clear a threshold of 15% of the vote (Putnam, 2019). With RCV, all ballots are first counted for the candidate marked as the first choice. If all candidates have crossed the vote threshold (15% per Democratic Party rules), the count is complete and delegates are awarded proportionally. If the tally for any candidate is below the threshold, the candidate with the fewest votes is dropped and that candidate's ballots are added to the totals of each voter's next ranked choice. The process continues until all remaining candidates have crossed the threshold and delegates are awarded proportionally among the remaining candidates. As a result, the millions of voters who cast ballots for candidates that do not reach this threshold could still have their voice heard with RCV as their vote could be redistributed to their later choices if they used such rankings.

5.1.2. Integrating RCV with Republican Primary Rules

The Republican Party allows states more leeway for setting their own delegate allocation rules, which leads to a patchwork of different systems to award delegates. The nomination process begins with states that use more proportional methods (often with thresholds) and later shifts to states that primarily use winner-take-all methods to allocate all delegates to the winner of the plurality of the primary vote (Uhrmacher, Schaul, & Mellnik, 2016).

For delegates awarded with a threshold, RCV would operate in the same manner that it would in Democratic primary contests. For delegates awarded with winner-take-all methods, an 'instant runoff' would occur if no candidate attains a majority of first choices. Candidates in last place would have their ballots counted for their next choices until two candidates are left. In this way, RCV may allow winner-take-all states to award their delegates to the candidate with the deepest and broadest support among the electorate.

5.2. Voter Confidence in Early and Mail-In Voting with RCV

RCV could allow party officials to continue to expand voter access with early and mail-in voting without fear

Table 3. RCV results in Alaska by final-round preference.

Category	Votes	Percent of total votes cast
Joe Biden as first choice	9,862	49.9%
Bernie Sanders as first choice	7,764	39.3%
Counted for Biden as a later choice	972	4.9%
Counted for Sanders as a later choice	991	5.0%
Did not rank either finalist	170	0.9%
Total ballots cast	19,759	—

of 'wasted votes.' Ballots cast before primary day often end up as 'wasted votes' as presidential candidates may drop out after a voter cast their ballot for them, as was the case with more than three million Democratic votes in 2020 and more than 600,000 Republican votes in 2016 (FairVote, 2020c; Ginsburg, 2020a). With RCV, on the other hand, voters' backup choices could be considered, giving voters confidence that their voice will be heard even if they cast a ballot early. RCV has not been adopted on a wide enough scale to empirically test interactions with early voting, mail voting, or other reforms.

5.3. RCV as a Strong Alternative to Caucuses

Seven states and most territories did not hold state-run primaries in 2020. These states had traditionally held in-person caucuses with Democrats usually allowing participants to 'vote with their feet' and 're-align' to another candidates' group if their preferred candidate is not viable in their precinct.

However, such caucuses are time-intensive for participants, leading to an electorate that is not representative of the overall party and depressed rates of turnout that can be only a third as large as primaries (Unite America Institute, 2020). As a result, many states are moving away from traditional in-person caucuses. Notably, Nevada is already seriously considering converting its early caucus into a primary to allow more voters to participate, while Iowa's first-in-the-nation caucus is facing increasing scrutiny, especially on the Democratic side, given concerns with the messiness of reporting results in 2020 and Iowa's disproportionately white demographics (Appleton, 2021; McCormick, 2021). Both parties are beginning to think about restructuring their nomination calendars for 2024 with a formal review underway by the Democratic National Committee (McCormick, 2021).

While the results of this potential restructuring are far from certain, the rising criticism of caucuses offers an opportunity for the expansion of RCV ballots. As demonstrated in five Democratic contests in 2020, RCV may allow such state parties to hold more accessible contests, including early voting and vote by mail that enable voters to express their alternative preferences through a simpler and more efficient process than in-person caucusing (Otis, 2020b). Additionally, while an RCV primary may not be able to simulate all elements of caucuses, such as the discussion and lobbying that occurs, it can modernize the process and help states avoid the caucus-specific issues that plagued Iowa and Nevada in 2020 (Culliford & Reid, 2020).

6. Conclusion

The modern presidential primary process has evolved over time, and RCV ballots represent a logical next step in the reform process, with potential benefits for both parties and voters. Before the McGovern-Fraser reforms in 1968, the presidential primary process was dominated by party elites and forced compromise between them through conventions that required multiple rounds of balloting. Such brokered conventions often produced coalitional nominees who had majority support across party delegates. These coalitional candidates had desirable attributes for the party and its voters as they were less likely to be polarizing, could unite multiple party factions, and were often more electable. This process was untenable in the modern era, however, as it allowed party delegates to choose their nominee in proverbial 'smoke-filled rooms' without the say of ordinary voters.

While the democratization of the presidential primary process has ensured that all modern party conventions have required only one ballot, RCV may allow for the selection of coalitional candidates by voters. This crowdsourcing of a coalitional nominee occurs through requiring the winning candidate to have broad appeal to voters in both first and later choice preferences. In this sense, RCV may combine the consensus-building of pre-1968 conventions with the modern practice of empowering voters to choose their party's nominees.

Recent presidential primaries illustrate the value of RCV. The 2016 Republican presidential primary process demonstrated that, without RCV, a candidate can win many Republican primaries and capture the nomination with only narrow pluralities. Polling data indicates that with RCV, conversely, Trump may have had to adjust his approach or other Republican candidates with wider appeal could have better competed for second and later choice votes.

In 2020, more than 280,000 Democratic primary voters cast ranked choice ballots in five states, demonstrating how RCV may improve the voting process. In these states, RCV eliminated 'wasted votes' for candidates that dropped out after the voter cast their ballot or did not clear the delegate threshold. Voters also demonstrated enthusiasm for RCV, with most voters utilizing multiple rankings.

While 2020 was a watershed year for RCV in presidential primaries, 2024 offers the opportunity for its further expansion. FairVote anticipates that most, if not all, of the five state Democratic parties that implemented RCV in the 2020 Democratic primaries (Nevada, Alaska, Wyoming, Kansas, and Hawaii) will continue to use RCV ballots in 2024 given their 2020 successes. In addition, Maine will join these states using RCV in presidential primaries as its 2020 law requires the implementation of RCV ballots in both parties' primaries beginning in 2024—although the parties will have to decide whether to make use of the RCV ballot data to be generated by voters (FairVote, 2020b).

Beyond these states, it is quite possible that other state parties, recognizing the efficacy of RCV in 2020 primary contests, will also implement RCV ballots in some form for their primaries or caucuses in 2024.

Should RCV be expanded in presidential primaries, it could both complement existing party rules and work well with other potential future reforms. As one example,

Ethics and Public Policy Center fellow Henry Olsen proposed in the *Washington Post* a de facto national primary two months after several opening contests, with RCV used in that final vote (Olsen, 2020). Democrats concerned about their proportional allocation rules leading to a brokered convention might consider using RCV to enable raising the delegate threshold after the early contests without resulting in more wasted votes. In all of these applications, RCV would positively affect voter and candidate decision-making by eliminating the need for 'strategic' voting while encouraging candidates to campaign to broader coalitions.

RCV ballots indeed could successfully be implemented with all forms of delegate allocation, ensuring more candidates reach the threshold to attain delegates or ensuring more representative nominees in states with winner-take-all rules. RCV could also enable greater confidence in vote-by-mail and early voting that otherwise leads to 'wasted votes' for candidates that drop out before election day. Responding to the need to make caucuses accessible, RCV ballots may allow voters to realign their preferences in a more time-efficient manner with higher turnout. While the days of 'smoke-filled rooms' may be in the past, parties that value consensus have a path available to them in the form of RCV.

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Conflict of Interests

The authors declare no conflict of interests.

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