WHAT IF VOTERS DON'T RANK ALL THE CANDIDATES?

Inactive Ballots in Single-Choice vs. Instant Runoff Voting

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EXECUTIVE SUMMARY

- Instant runoff voting (IRV) is a form of ranked choice voting that, after voters rank candidates in order of preference, eliminates candidates who have the least top-choice support. Votes that do not help voters' top choices will count for their next choice. The process repeats until a single candidate remains.
- Single-choice voting (also known as plurality voting) only allows each voter to choose one candidate.
- Inactive ballots are any ballots that do not contribute to the outcome between the final two candidates. They constitute a small percentage of all ballots in IRV elections.
- Inactive ballots arise in nearly every election method, but IRV results in fewer ballots becoming inactive than single-choice voting. This is demonstrated by real-world examples from Maine, New York City, San Francisco, Utah, Virginia, and Wyoming.
- Inactive ballots in IRV elections are equivalent to votes for minor candidates in singlechoice elections, or to turnout dropoff in runoff elections, in that some votes do not contribute to the decision between the frontrunners. However, with IRV, voters can vote for their favorite candidate and designate backup choices, increasing the chance that their vote will count in the tally between finalists.
- Most inactive ballots in an IRV election happen because the voter chose not to rank all the candidates. Not ranking certain candidates is an active choice and expresses a preference itself; some voters will be consciously indifferent between some candidates or do not want to cast a vote for someone they truly don't like.

Perhaps the most basic right we have as citizens of the United States is the ability to vote for representatives at the local, state, and federal level. This is how we achieve the fundamental tenet of having a government by the people. Given the importance of this principle, it is critical that the method we use to collect and interpret the voice of the people accurately reflects that voice, and is as free from strategic manipulation as possible.

Many different election methods can be employed, but they each share two important components.

The first component is the method of collecting voters' opinions. In single-choice elections, the only voter opinion collected is the voter's first-choice candidate. On the other hand, in an instant runoff voting (IRV) election, voters are asked to rank candidates (some jurisdictions allow voters to rank all the candidates, while others limit the number voters can rank). IRV collects more information about voter opinion than a single-choice vote, and provides a more complete picture of an individual voter's opinion.

The second component is the method of interpreting the voter opinion data. In a single-choice election, this is done by identifying which candidate received the most first choices (even if that is a minority of the total votes cast). IRV is one method of interpreting "ranked choice" ballot data. There are dozens of possible ways to interpret ranked candidate data from voters, including methods such as ranked pairs, the condorcet method, coomb's rule, borda count, or an instant runoff. The ranked choice method most commonly used today is instant runoff voting – known simply as "ranked choice voting" in many jurisdictions that use it. In an IRV election, the first choices of each voter are tallied first. If any candidate has a majority of the first choices, that candidate wins. If no candidate has a majority, then the candidate with the fewest first choices is eliminated. Ballots that listed the eliminated candidate first are then distributed to their next-highest choices. The process repeats until a candidate obtains a majority of the votes remaining.

IRV is the fastest-growing nonpartisan voting reform in the nation. Used in just 10 American cities in 2016, IRV has spread to over 50 cities, counties, and states in 2023.

Every election method has pros and cons, affecting how candidates campaign, the degree of voter participation and confidence, and the faithfulness of representation to the populace. Understanding these pros and cons is an important issue for both political science and mathematics today.

One factor that affects nearly all election methods – though to differing degrees – is the presence of "inactive ballots." Inactive ballots are any ballots cast that do not directly affect the final outcome of an election. This includes incomplete ranked choice ballots where all the candidates selected are eliminated, as well as ballots in single-choice elections that are not cast for one of the top-two candidates.

In every case, the relevant questions about inactive ballots and their impact on election results are:

- (1) Why do ballots become inactive?
- (2) Which voting systems minimize inactive ballots?
- (3) What are the relevant tradeoffs between voting systems?

Inactive ballots frequently arise in single-choice elections: Any ballot that is not cast for one of the top-two candidates is inactive because it does not directly affect the outcome and is essentially ignored. This is often referred to as a voter "throwing their vote away" and risking a less favorable candidate being elected. In fact, in some single-choice elections, a third-place candidate can act as a "spoiler" for one of the top-two candidates, if the portion of inactive ballots cast for them is significant. This is because if that thirdplace candidate had dropped out before the election, those inactive ballots likely would have contributed to one of the top-two candidates and potentially changed the outcome.

In IRV elections, ballots can become inactive due to:

- Voluntary abstention: As described above, the voter can choose not to rank every candidate; if the candidates they did rank do not advance to the final round, their ballot will become inactive.
- Ranking limits: Some jurisdictions only allow voters to rank a certain number of candidates. For example, Minneapolis allows voters to indicate their top-three choices. If the ranking limit is three, a voter might rank the maximum allowed, but those three candidates could all be eliminated before the final round, meaning the voter does not weigh in between the final two candidates, which makes their ballot inactive.
- Error: Some ballots are incorrectly completed. For example, the voter may skip their second and third ranking but mark a fourth. However, this type of inactive ballot is rare, since most mismarked ballots count as the voter intended. For example, in most IRV jurisdictions, if a voter leaves their first choice blank but marks a second choice, the second-choice candidate would count as the voter's first choice.

For example, suppose a voter only ranks their favorite candidate, and that candidate gets eliminated. That voter's ballot would be inactive in all subsequent rounds. Due to ballot inactivity of this type, the total number of ballots in play in later rounds is often smaller than the number of ballots in play in earlier rounds. Therefore, the winning candidate must have a majority of votes still active in the final round, but this may be less than a majority of total ballots cast in the election as a whole.

It's All Relative Inactive ballots are not unique to IRV.

When evaluating IRV, it is important to compare it to the status quo: single-choice voting. No voting system is 100% perfect on all possible criteria,¹ nor are all reforms equally practical to pass and implement. We know IRV is achievable, demonstrated by its widespread adoption in the U.S. So the important questions are: Does IRV or another method present a substantial improvement to the status quo? Where there are alleged weaknesses, are they specific to IRV or are they found in other methods too? What constitutes a "weakness"?

The potential "weakness" this paper examines is inactive ballots. In IRV elections, inactive ballots are votes that do not count for either of the final-two candidates. However, with single-choice voting, there are also votes that do not count in the contest between the top-two candidates and thus constitute inactive ballots.

For example, consider the 1992 presidential election. Bill Clinton and George H.W. Bush were the clear frontrunners, but Ross Perot also won 19% of the vote. Votes for Perot did not count for either finalist, so they did not directly impact the choice between Clinton and Bush. Many voters were told they would be "wasting" their vote on Perot. Since inactive ballots are defined the same way in single-choice voting as they are in IRV, 19% of ballots were inactive in 1992. It is important to note that Clinton won with a minority of votes, and that Perot's vote share was much larger than Clinton's margin of victory.



1992 Presidential election results

¹ <u>Classification of Preferential Ballot Voting Methods</u> by Amir Aazami and Hubert Bray. 2022.

Often, early voters cast ballots for candidates who are not just low-polling, but who drop out before Election Day. In the 2020 Democratic presidential primaries, 3 million ballots were cast for candidates who dropped out or did not reach the threshold to earn delegates.² These ballots are also inactive. In fact, not only did many ballots not count toward a top candidate, but they did not count toward any candidate still in the race.

Ideally, elections should be able to accommodate more than two candidates. Voters should have multiple options on the ballot, and low-polling candidates can be effective in giving an issue salience and keeping frontrunners responsive to voters. For example, after Perot ran with a focus on fiscal responsibility, the Clinton administration balanced four budgets. Most of the time, single-choice elections create a false (or real) sense that there are only two possible choices. When there are more than two candidates, there will be some votes that do not affect the decision between finalists.

IRV welcomes multiple candidates while still giving voters a true choice. This is because IRV allows more votes that would be "wasted" or "inactive" under single-choice voting to count toward finalist candidates. For example, if we had used IRV in 1992, Perot voters could have had their vote count toward their next choice between Clinton and Bush. Moreover, in an IRV presidential primary, votes that are cast for a candidate who has since dropped out will count toward each voter's next-favorite candidate who is still in the race.

Some Perot voters might have held the opinion "Perot or no one!" or did not have a preference between the other two options. If 1992 had been an IRV election, these voters might have only ranked Perot, and their ballot would have been inactive in the next round. But that "inactivity" would simply be an expression of their preferences. However, most Perot voters probably did have a second choice. As such, IRV would have allowed more votes to count in the tally between Clinton and Bush. This phenomenon is not unique to the 1992 presidential election. IRV typically allows more votes to count between finalists, which is an improvement over single-choice voting.

IRV Gives Voters More Voice

IRV allows more ballots to count in the tally between top candidates.

Fixation on inactive ballots, which are not inherently problematic, distracts from the fact that IRV allows more votes to count in the tally between finalists, not fewer.

² <u>Ranked Choice Voting in 2020 Presidential Primary Elections</u> by Deb Otis. 2020.

First, with IRV, voters do not have to worry about "wasting their vote" on a low-performing candidate, because their vote can count for their next choice. This means more votes count in the tally between top candidates compared to single-choice voting, and voters do not have to return to the polls in the event of a runoff election (which many don't). Resolving the issue of voters feeling like their vote is wasted is critical. Any good election method should give the voters freedom to vote honestly without fear that their vote will not matter. Single-choice voting fundamentally fails at this, as it effectively punishes voters who choose to express their honest preference for a non-top-two candidate by turning their ballots inactive. On the other hand, IRV encourages voters to voice their honest opinions in their rankings, and prevents most, if not all, honest votes cast for less popular candidates from becoming inactive.

For example, Maine uses IRV for state and federal elections. One of its first uses was in the 2018 election for its 2nd Congressional District. About 23,500 votes were initially cast for independent candidates. When the two independent candidates were eliminated, 65% of those ballots then counted toward the Republican or Democratic candidate. In a single-choice contest, those votes would have been inactive and considered "wasted." With IRV, more votes contributed to the decision between the top candidates.

New York City used IRV in its 2021 mayoral primaries. 13 candidates ran in the Democratic primary. 85% of voters expressed their preference between the two finalists: Eric Adams or Kathryn Garcia. For comparison, the last time NYC had an open-seat mayoral election was in 2013. The Democratic primary used single-choice voting that year, and only 68% of voters voted for one of the top-two candidates.³ Put another way, only 15% of ballots were inactive using IRV in 2021, compared to 32% that were inactive in 2013 using single-choice voting. That difference represents over 100,000 voters who cast impactful votes because of IRV.

San Francisco has used IRV since 2004 to elect several citywide offices. In the 2018 special election for mayor, eight candidates appeared on the ballot. 61% of voters ranked one of the top-two candidates – London Breed and Mark Leno – as their first choice. However, 90% of ballots counted in the final round between the two.⁴

³ <u>Ranked Choice Voting in New York City: An In-Depth Analysis</u> by Deb Otis and Nora Dell. 2021.

⁴ <u>Ranked Choice Voting Was Also a Winner of San Francisco's Special Mayoral Election</u> by Nancy Lavin. 2018.

The Virginia Republican Party used IRV to nominate their gubernatorial candidate in 2021. In the seven-way race that nominated now-Governor Glenn Youngkin, 92% of ballots counted in the final round between Youngkin and Pete Snyder.⁵ Of the delegates who did not express a preference between the finalists, most were following the (mis)guidance of candidate Amanda Chase, who encouraged her voters not to rank other candidates. In single-choice voting, their votes would have been inactive anyway, and these voters would not have had a way of voting for Chase without submitting an inactive ballot. IRV, on the other hand, gave them a chance to vote for Chase and not submit an inactive ballot. The fact that they did not take advantage of that opportunity was their choice.

In the 2020 Democratic presidential primaries, most states did not use IRV. Over three million voters, or 8%, cast a ballot for an inactive candidate. Five states used IRV in their 2020 Democratic presidential primaries (Alaska, Wyoming, Kansas, and Hawaii for all voters; and Nevada for early voters). In these states, a similar share of voters cast a ballot for an inactive candidate, but the vast majority of those ranked one of the finalists as a backup choice. 98% of ballots counted for a candidate in the final round, with just 2% inactive.⁶

For example, in the 2020 Wyoming Democratic presidential primary, more than 10% of ballots were cast for candidates other than Bernie Sanders or Joe Biden. These ballots would not have been counted in the final tally under single-choice rules. With IRV, 89% of voters who voted for withdrawn candidates had their ballot count for Sanders or Biden based on their rankings.⁷ Again, IRV allowed more voters to contribute to the decision between finalists.

In a contrasting example, the 2020 Utah Republican gubernatorial primary employed single-choice voting. Spencer Cox won the primary with just over 36% of the total votes cast, while the second-place candidate, Jon Huntsman Jr., collected just under 35% of the total votes cast. The remaining 29% of voters were split (unevenly) between the third-and fourth-place candidates.⁸ That entire 29% of total votes were inactive ballots that did not play a role in selecting the winner. More troubling is the fact that from this, it is impossible to tell whether Republican voters as a whole truly preferred Cox to Huntsman. IRV would have prevented the loss of those 29% of ballots and allowed those ignored voters the opportunity to have a voice between the two most-popular candidates.

⁵ <u>Ranked Choice Voting Results and Analysis From Virginia Republican Convention</u> by Deb Otis. 2021.

⁶ <u>Ranked Choice Voting in 2020 Presidential Primary Elections</u> by Deb Otis. 2020.

⁷ <u>RCV in Wyoming's 2020 Democratic Presidential Primary</u> by FairVote. 2020.

⁸ <u>2020 Regular Primary Election Canvass</u>, by the State of Utah. 2020.

In addition to reducing wasted votes, IRV also provides more voters a voice in the final decision between top candidates when compared to elections that have runoffs. With inperson runoff elections, participation declines by 40% compared to the original general election. With IRV, participation in the final round drops off just 6.5%, and 4.8% is due to voluntary abstention. In contrast, the 40% decline for in-person runoffs is often due to obstacles in returning to the polls. Compared to the single-choice voting status quo or even runoff voting, IRV is a vast improvement in giving more voters a voice in the final decision.

Inactive Ballots are Minimal in IRV

Inactive ballots in IRV elections constitute a small percentage of all ballots, and most are due to rational voter choice.

In FairVote's dataset of over 300 single-winner IRV races with 3 or more candidates in the United States, only 6.5% of ballots were inactive. This includes 4.8% that were inactive by voluntary abstention, plus 1.6% by reaching a ranking limit, and 0.06% by error.⁹ Since the 4.8% and 1.6% of ballots became inactive because the candidates they ranked first were eliminated, they would have become inactive in a single-choice election anyway. Thus, there is really only a 0.06% loss attributable to IRV. This is in contrast to the inherent fact that all votes not cast for the top-two candidates in a single-choice election are inactive, which quite frequently amounts to far more than the 6.4% of ballots that are inactive due to voter choice in an IRV election.

For example, there was a 19% inactivity rate in the 1992 presidential race involving Ross Perot. All those inactive ballots were due to voter choice. On the other hand, IRV yields a 6.4% inactivity rate due to voter choice, while also adding 0.06% inactivity due to voter error. Comparing these two, IRV experiences 12.6% fewer inactive ballots due to voter choice in exchange for a 0.06% increase in inactive ballots due to voter error.

As noted above, most inactive ballots are due to voluntary abstention. This happens when a voter chooses not to use all possible rankings, and all the candidates they did rank are eliminated.

⁹ <u>Research and Data on RCV in Practice</u>, by FairVote.

	1st Choice	2nd Choice	3rd Choice	4th Choice
Candidate A	1	2	3	4
Candidate B		2	3	4
Candidate C	1	2	3	4
Candidate D	1		3	4
Candidate E	1	2	3	4

Though 71% of voters rank multiple candidates,¹⁰ there are several reasons a voter may choose not to use all rankings. The most likely reason is conscious indifference; the voter marks any preferences they have, and feels indifferent about the other candidates. Therefore, if their ballot becomes inactive by the final round, they are not lacking voice because they already voiced their lack of opinion between (or even disdain for) the finalists. An exit poll from the 2021 mayoral primaries in New York City revealed that 77% of voters who chose not to rank multiple candidates only had one preferred candidate.¹¹

This is no different than a Georgia voter casting their ballot for the Libertarian candidate in the 2020 U.S. Senate election, and deciding not to vote in the runoff because they did not like the alternatives. It is the voter's right to abstain, whether in in-person runoffs or instant runoffs via IRV.

Voters may decide not to rank all candidates because they are following party cues¹² or because they have confidence that their favorite candidate is a frontrunner and therefore they do not need a "backup" choice.¹³ Choosing not to rank all candidates does not necessarily mean one's ballot becomes inactive. If a single selected candidate remains in the race through to the final round, that ballot will continue to count in each round of counting. But abstaining from ranking does mean the voter is relinquishing their opportunity to express a preference in the event their favorite performs poorly and is eliminated before the final round. Again, that is their right.

¹⁰ <u>Research and Data on RCV in Practice</u>, by FairVote. Accessed February 2023.

¹¹ <u>New York City Voters Embrace Ranked Choice Voting (RCV): Preliminary results from largest Ranked</u> <u>Choice Voting exit poll and election in US history</u> by Common Cause New York. 2021.

 ¹² Ranked Choice Voting in Australia and America: Do Voters Follow Party Cues? by Benjamin Reilly. 2021.
¹³ Rate of "Bullet Voting" Depends on Candidate Strength, Party Cues, and Other Factors by Deb Otis and Chris Zawora. 2021.

It is possible some voters have difficulty or are not interested in getting informed about every candidate on the ballot. This is true no matter the voting method used. However, finalist candidates tend to be higher-polling and more well known. As a result, indifference between (or equal disdain for) finalist candidates is a more likely reason a ballot becomes inactive than a lack of information about those candidates.

It is unlikely that confusion prevents voters from ranking (and potentially having their ballot become inactive). Polling shows a clear theme of simplicity. When Alaskans used IRV for the first time in 2022, 85% of voters reported that it was "simple."¹⁴ 95% of voters in New York City's 2021 primary elections found the ranked ballot "simple to complete."¹⁵ 92% of voters in Minneapolis, which has used IRV since 2009, find it "simple."¹⁶

Some ballots become inactive due to a ranking limit. Some jurisdictions allow voters to rank only a certain number of candidates. For example, New York City allows five rankings. Cambridge, MA and Portland, ME allow up to 15. A 2010 San Francisco Board of Supervisors race garnered attention for having a high rate (46%) of ballots that became inactive before the final round. In the 21-way race, voters could rank their top-three choices. Today, San Francisco allows ten rankings, which reduces the risk of ballots becoming inactive due to the ranking limit.

Ranking limits can keep ballots shorter and easier to navigate. At the same time, voters should be allowed enough rankings to express their preferences. We should seek to minimize the number of ballots that become inactive for reasons other than voluntary abstention. The election reform organization FairVote recommends a ranking limit of at least five candidates.¹⁷

Overall, inactive ballots in an IRV election are a small percentage of ballots. Most of them can be attributed to voluntary abstention, meaning the voter likely made an active, empowered, rational choice based on their honest preferences.

¹⁴ <u>Polling Shows Alaskan Voters Understand Ranked Choice Voting</u> by Amanda Moser. 2022

¹⁵ <u>New York City Voters Embrace Ranked Choice Voting (RCV): Preliminary results from largest Ranked</u> <u>Choice Voting exit poll and election in US history</u> by Common Cause New York. 2021.

¹⁶ <u>Ranked Choice Voting in Minnesota: Summary of Post-Election Report by Minneapolis City Staff</u> by FairVote. 2017.

¹⁷ <u>Ballot Usage Analysis and Recommendations</u> by FairVote and the Ranked Choice Voting Resource Center. 2022.

An Effective Majority

Compared to other systems, IRV has a strong majority requirement and enhances voter choice.

In order to win an IRV election, a candidate must have a majority of votes in the final round. This majority may be reached with just first choices, or in a later round with a combination of first, second, third, and subsequent choices. This is to ensure that the winner has deep (first-choice) and broad (backup-choice) support, and incentivizes candidates to reach out to more voters. Because some ballots do not express a preference between the two finalists, the majority requirement applies to ballots that are active in the final round. This means a candidate may win the race with less than 50% of ballots initially cast. This happens in one third of U.S. single-winner IRV races with three or more candidates.¹⁸

Again, the relevant comparison is to the status quo. Single-choice voting has no majority requirement whatsoever. Since 1992, there have been four presidential elections in which no candidate emerged with a majority of the popular vote.¹⁹ Between 1992 and 2022, 53 U.S. senators were elected with a minority of votes.²⁰ It should be recognized that any time an election is won by a candidate receiving a minority of votes, it means that a majority of people said that they did not want that candidate. Why should we not listen to that majority? Ignoring them simply because it is less convenient to understand what they want seems to be undemocratic.

When candidates do win a majority of votes in single-choice general elections, it is usually because there are only two choices. This means that when single-choice voting does provide a majority winner, it doesn't necessarily mean that winner is strongly supported by half the voters, but perhaps that they were just the better of two options. In races that invite more competitors, such as primaries and municipal elections, candidates often win with far less than a majority. In 2022, 120 candidates advanced from U.S. House, U.S. Senate, and statewide primary elections with a minority of votes.²¹ Santa Fe used IRV for the first time in 2018. Before that, 6 of the previous 10 mayoral races were won with a minority of votes.²²

¹⁸ <u>Research and Data on RCV in Practice</u> by FairVote.

¹⁹ 1992, 1996, 2000, and 2016

²⁰ 1992-2019 stat from: <u>The magic of majority rule in elections</u> by Jason Harrow and Victor Shi. 2019. From 2019-2023, 4 more US Senators were elected with a plurality (Gary Peters, Tina Smith, Thom Tills, Catherine Cortez Masto)

²¹ <u>Fewest Votes Wins: Plurality Victories in 2022 Primaries</u> by Rachel Hutchinson. 2022.

²² <u>Santa Fe's 1st RCV Election: Clear Outcomes, Effective New Ballot Use</u> by Dave Daley. 2018.

Several Southern states reconcile this by holding runoff elections when no candidate receives a majority of votes.²³ However, runoff elections have a near-universal decline in turnout. In 96% of primary runoff elections for Congress between 1994 and 2022, fewer people voted in the runoff than in the first round.²⁴ The median decline in turnout is 40%.²⁵ Because of this dropoff, sometimes the winner receives fewer votes in the runoff than they did in the first election. This happened in nine primary runoffs in Texas in 2018.²⁶ This may not be immediately clear to casual observers because vote totals in runoff elections are reported as a percentage of voters who participated in the runoff, not as a percentage of first-round voters. IRV avoids this dropoff because the runoff is instant; a winner is declared in the election where turnout is naturally the highest.



Share of Voters Who Participated in the Final Round

So long as a system retains choice and requires a majority winner, that majority must be defined as a majority of voters who choose to participate. IRV could only guarantee that the winner had a majority of all ballots cast if voters were required to rank all candidates on the ballot. However, just as the U.S. gives people the right not to vote, people have the right not to rank. Voters should not have to express preferences they do not have. This way, a voter is never forced to have their ballot count for a candidate they do not like.

²³ Alabama, Arkansas, Georgia, Louisiana, Oklahoma, South Carolina, Texas, North Carolina (30% threshold), and South Dakota (35% threshold).

²⁴ <u>Primary Runoff Elections And Decline in Voter Turnout, 1994-2022</u> by Jeremy Rose. 2022.

²⁵ Primary Runoff Elections And Decline in Voter Turnout, 1994-2022 by Jeremy Rose. 2022.

²⁶ <u>Texas Primary Runoffs Show Why Ranked Choice Voting is a Better Way</u> by Theodore Landsman. 2018.

One article expresses that inactive ballots are a concern "when the margin of victory in the final round is less than the number of [inactive] ballots," meaning the outcome could have differed were those ballots still active.²⁷ Similarly, the number of people who opt out of voting in any given election is often much larger than that election's margin of victory. However, we do not frame things this way, because those voters chose to stay home. Similarly, most ballots become inactive because voters chose not to rank certain candidates. Therefore, there is no special concern about IRV for this reason.

Conclusion

At its best, the instant runoff form of ranked choice voting allows more votes to count in the decision-making process between frontrunning candidates. By considering voters' backup preferences, IRV delivers a consensus result even when many candidates are on the ballot. At its worst, a voter can choose to rank one candidate, and if that candidate performs poorly, their vote essentially counts the same way it would in a single-choice race. With single-choice voting, many voters have to choose between voting for their favorite candidate and having influence between the frontrunners. With IRV, voters do not have to make this choice.

The key word is choice; ballots mostly become inactive when the voter chooses not to offer an opinion between frontrunners. Voters are well within their rights to do so. Nonetheless, most IRV races elect a candidate who won a majority of all ballots cast in the race.

Overall, inactive ballots occur in both single-choice and IRV elections. The number of inactive ballots in IRV elections is minimal and can be explained by rational voter behavior. While the inactive ballots in a single-choice election are also due to rational voter behavior, the number of inactive ballots is generally much larger than in comparable IRV elections. Thus, at least for the particular issue of minimizing inactive ballots, IRV is superior to single-choice elections.

²⁷ <u>The prevalence and consequences of ballot truncation in ranked-choice elections</u> by D. Marc Kilgour, Jean-Charles Grégoire, and Angèle M. Foley. 2020.



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