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Edward B. Foley

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Edward B. Foley

Total Vote Runoff: A Majority-Maximizing Form of Ranked Choice Voting

21 U.N.H. L. Rev. 323 (2023)

ABSTRACT. Total Vote Runoff (TVR) is an electoral system designed to be identical to Instant Runoff Voting (IRV), which is the most commonly understood and implemented form of Ranked Choice Voting (RCV) in the United States, except for one key detail. Like IRV, TVR sequentially eliminates the weakest candidate on the ranked-choice ballot when no candidate is ranked first on a majority of ballots. Unlike IRV, however, TVR identifies the weakest candidate to be eliminated based on the total votes each candidate receives on all the ballots, rather than just the number of first-place votes (as IRV does). A candidate's total votes from each ballot is defined as the number of other candidates the candidate is ranked higher than on the ballot — as being ranked higher than another candidate is equivalent to securing a vote against that candidate, given that ranked-choice ballots can be conceived as mathematically equivalent to a round-robin election among all the candidates on the ballot. TVR has the advantage, compared to IRV, of always electing a candidate whom a majority of voters prefer to each other candidate on the ballot and thus who would be the undefeated winner of the round-robin election. More generally, TVR improves upon the instant runoff nature of the IRV process by using all the information from each ranked-choice ballot, rather than just first-choice preferences, in order to determine which candidate most deserves to be eliminated in the instant runoff procedure. A comparison of TVR and IRV in the context of the most recent midterm elections in the United States shows that TVR potentially could perform better than IRV in redressing the increased polarization affecting American politics, resulting in elections that better represent the preferences that a majority of voters record with their ballots.

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The idea of the Total Vote Runoff version of Ranked Choice Voting comes from correspondence with Prof. Eric Maskin of Harvard University. We presented this idea in a Washington Post column. See Edward B. Foley & Eric S. Maskin, *Alaska's Ranked-Choice Voting Is Flawed. But There's an Easy Fix*, Wash. Post (Nov. 1, 2022, 7:00 AM), <https://www.washingtonpost.com/opinions/2022/11/01/alaska-final-four-primary-begich-palin-peltola/> [<https://perma.cc/2AEZ-YJBH>].

I'm grateful for the opportunity to present this idea as part of the symposium leading to the publication of this article. A video of that presentation is available online at https://www.youtube.com/watch?v=_WQYU6rJb24 (starting at 3:46:25). I very much appreciate the comments received during and after that presentation, as well as those received in response to the Washington Post column.

My Election Law at Ohio State colleagues, Steve Huefner and Gillian Thomson, contributed to the idea's development, and Gillian, in particular, conducted the analysis of the Alaska special election and its ballots, as described in the Appendix. Errors are, of course, solely my own.

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I. INTRODUCTION: EXTREME CANDIDATES AND THE 2022 MIDTERM ELECTIONS

The pattern repeated itself in race after race in the 2022 midterm elections. The electorate divided its allegiance essentially three ways among these types of candidates: (1) a Make America Great Again (MAGA) Republican, endorsed by former President Donald Trump; (2) a GOP Republican, rooted in the party's traditional conservatism and resistant to the MAGA embrace of election denialism; and (3) a Democrat.¹ In theory, there could have been a four-way division, with Democrats divided between a centrist and a progressive.² But Democrats largely coalesced around a single left-of-center candidate in each race, while the Republicans fractured between the two wings of their party.

The MAGA candidate generally prevailed over the more traditional GOP conservative in the 2022 Republican primaries.³ That left the general election as a race between the MAGA candidate and the Democrat. But the Republican primary was often quite close. In Arizona's gubernatorial primary, the MAGA candidate, Kari Lake, beat the GOP traditionalist, Karrin Taylor Robson, 48% to 43%.⁴ In New Hampshire's U.S. Senate primary, the MAGA candidate, Donald Bolduc, beat the

¹ See Philip Bump, *The MAGA vs. GOP Divide in the Republican Primaries*, WASH. POST (May 11, 2022, 12:27 PM), <https://www.washingtonpost.com/politics/2022/05/11/maga-vs-gop-divide-republican-primaries/> [<https://perma.cc/7P4M-28S4>].

² In Pennsylvania, the Democratic primary for the U.S. Senate involved competition between a centrist, Conor Lamb, and a progressive, John Fetterman (who won the nomination and then the general election). Paula Reed Ward, *What Went Wrong with Conor Lamb's U.S. Senate Campaign?*, TRIBLIVE (May 22, 2022, 5:01 AM), <https://triblive.com/news/politics-election/what-went-wrong-with-conor-lamb-s-u-s-senate-campaign/> [<https://perma.cc/T6HM-V3X9>]; see also Marc Levy, *Democrat John Fetterman Wins US Senate Race in Pennsylvania*, ASSOCIATED PRESS (Nov. 9, 2022), <https://apnews.com/article/pennsylvania-senate-race-2022-midterm-elections-93709b5b7ab4cef658f45751cd76c090> [<https://perma.cc/K494-CD4B>]. But in this respect, Pennsylvania was unusual; elsewhere, Democrats tended to consolidate behind a single more moderate candidate, as in Ohio, where Tim Ryan was the party's consensus choice as its nominee for that state's U.S. Senate seat. See Jazmine Ulloa, *Tim Ryan will be the Democrats' Nominee for Senate in Ohio*, N.Y. TIMES (May 3, 2022), <https://www.nytimes.com/2022/05/03/us/tim-ryan-ohio-senate-democratic-nominee.html> [<https://perma.cc/AZ7T-CZTQ>].

³ See Zachary B. Wolf, *The MAGA-fication of the GOP Is in Overdrive*, CNN (Sept. 14, 2022, 2:27 PM), <https://www.cnn.com/2022/09/14/politics/primary-elections-maga-gop-what-matters/index.html> [<https://perma.cc/A4LF-24JY>].

⁴ ARIZ. SEC'Y. OF ST., STATE OF ARIZONA OFFICIAL CANVASS 2022 PRIMARY ELECTION – AUG 02, 2022, at 4 (2022), https://azsos.gov/sites/default/files/20220822_state_canvass_master_report_signed.pdf [<https://perma.cc/2V9Q-2HK8>].

GOP traditionalist, Chuck Morse, 37% to 36%.⁵ Pennsylvania's U.S. Senate election was so close it went to a recount, with the MAGA candidate, Mehmet Oz, prevailing over the more traditional David McCormick by less than 0.1%, or 31.21% to 31.14%.⁶

All of these results raise the question whether in the November general election the voters of these states would have preferred the non-MAGA, traditional GOP alternative to the MAGA winner of the primary. The primary electorate is a different set of voters from the November electorate; primary elections typically result in lower turnout and are often more reflective of the party's hard-core base, which has moved toward the MAGA end of the spectrum under the influence of Trump.⁷ In Arizona, New Hampshire, and Pennsylvania (among other states in the 2022 midterms), the November voters might have preferred the non-MAGA to the MAGA type of a Republican. Indeed, the November voters might have preferred the non-MAGA, traditional GOP conservative to *either* the MAGA candidate *or* the Democrat.

New Hampshire offers an especially clear example of this point. In the November general election for the state's U.S. Senator, incumbent Democrat Maggie Hassan defeated the MAGA candidate, Don Bolduc, 53.5% to 44.4%.⁸ At the same time, in the state's gubernatorial election, incumbent Republican Chris Sununu beat the Democrat challenger, Tom Sherman, 57.0% to 41.5%.⁹ Sununu has planted himself firmly in the GOP traditionalist wing of the Republican party, distancing himself sharply from Trump and its MAGA wing.¹⁰ In the Republican primary for the Senate seat, Sununu strongly endorsed Chuck Morse, the president

⁵ N.H. SEC'Y OF ST., STATE OF NEW HAMPSHIRE – PRIMARY ELECTION – UNITED STATES SENATOR – REPUBLICAN, at 1 (Sept. 13, 2022), <https://www.sos.nh.gov/sites/g/files/ehbemt561/files/inline-documents/sonh/2022-sp-uss-republican-remediated.pdf> [<https://perma.cc/3W74-DV5G>].

⁶ 2022 General Primary Official Returns, PA. DEP'T OF ST. (Dec. 18, 2022), <https://www.electionreturns.pa.gov/Home/SummaryResults?ElectionID=94&ElectionType=P&IsActive=0> [<https://perma.cc/6XZG-4BX9>].

⁷ Zachary Albert & Ray La Raja, *Insurgency in Republican Primaries* 5 (unpublished manuscript) (on file with author).

⁸ N.H. SEC'Y OF ST., STATE OF NEW HAMPSHIRE - GENERAL ELECTION: UNITED STATES SENATOR (Nov. 8, 2022), https://www.sos.nh.gov/sites/g/files/ehbemt561/files/inline-documents/sonh/2022-ge-us-senator_2.xls [<https://perma.cc/FAD9-EJ9E>].

⁹ N.H. SEC'Y OF ST., STATE OF NEW HAMPSHIRE - GENERAL ELECTION: GOVERNOR (Nov. 8, 2022), https://www.sos.nh.gov/sites/g/files/ehbemt561/files/inline-documents/sonh/2022-ge-governor_2.xls [<https://perma.cc/J64V-2UPC>].

¹⁰ See David Siders, *The One Republican Trump Can't Touch*, POLITICO (April 26, 2022, 4:30 AM), <https://www.politico.com/news/2022/04/26/sununu-bucks-trump-in-2024-00027612> [<https://perma.cc/2RM5-G6WK>].

of the state senate.¹¹ During the primary campaign, Sununu expressed his opposition to Bolduc even more forcefully, calling him a “conspiracy-theory extremist.”¹² The 12-point gap between the Democrat’s share of the vote in the gubernatorial and U.S. Senate general election results (41.6% compared to 53.6%) indicates that had Morse been the GOP nominee in the Senate race, he likely would have performed closer to Sununu than to Bolduc. Even if only half the Sununu-Hassan ticket-splitters would have voted for Morse rather than Hassan had they been given the opportunity to cast their ballot for a GOP moderate rather than the Sununu-labeled “conspiracy-theory extremist,”¹³ it would have been enough to put Morse ahead of Hassan.¹⁴ Thus, the candidate who appears to have been most preferred by a majority of the state’s voters—a GOP traditionalist, Morse, rather than *either* a MAGA extremist *or* a Democrat—was missing from the ballot in the November general election, where voters instead were offered only a choice between two lesser-preferred alternatives.¹⁵

¹¹ Chris Sununu, *Gov. Chris Sununu: Chuck Morse for U.S. Senate*, N.H. Union Leader (Sept. 11, 2022), https://www.unionleader.com/opinion/op-eds/gov-chris-sununu-chuck-morse-for-u-s-senate/article_bca7c0f9-b7c8-5e70-9fa5-8d24889b60b9.html [<https://perma.cc/YU8-Q27X>].

¹² Trip Gabriel & Michael C. Bender, *In New Hampshire, an Intraparty G.O.P. Fight for the Senate Intensifies*, N.Y. TIMES (Sept. 12, 2022), <https://www.nytimes.com/2022/09/12/us/politics/new-hampshire-gop-primaries.html> [<https://perma.cc/BC57-GN94>]. Sununu did go on to support Bolduc in the general election, see Shawna Mizelle, *GOP Gov. Chris Sununu on Backing Election Denier: ‘I Don’t Think Anybody Should Be a One-Issue Voter’*, CNN (Nov. 1, 2022, 12:00 PM), <https://www.cnn.com/2022/11/01/politics/chris-sununu-don-bolduc-election-falsehoods-cnntv/index.html> [<https://perma.cc/2LC2-79SD>]. However, in the aftermath of the November midterms, Sununu continued to distance himself from Trump and the MAGA wing of the Republican party. See Paul Steinhauser, *On the Trail: Media Blitz Expands Sununu’s National Footprint*, CONCORD MONITOR (Dec. 17, 2022, 12:41 PM), <https://www.concordmonitor.com/On-the-trail-49211849> [<https://perma.cc/A5CH-CMFS>]. He told a reporter, “America really stood up and said, ‘Let’s fix crazy, before we worry about the policy.’” *Id.*

¹³ Gabriel & Bender, *supra* note 12.

¹⁴ Because Bolduc’s vote share was 44.4%, adding half of the 12-point gap between Democrats Sherman and Hassan (6%) would put Morse’s imputed vote share to 50.6%, enough to win the seat. See N.H. SEC’Y OF ST., GENERAL ELECTION: UNITED STATES SENATOR, *supra* note 8; N.H. SEC’Y OF ST., GENERAL ELECTION: GOVERNOR, *supra* note 9.

¹⁵ Some commentators have offered a similar assessment of Pennsylvania’s U.S. Senate election, arguing that David McCormick would have beaten John Fetterman, whereas Trump-endorsed Mehmet Oz came up short. See, e.g., David La Torre, *Trump Is the Gift That Keeps on Giving. To Democrats*, PA. CAPITAL-STAR (Nov. 11, 2022, 6:30 AM), <https://www.penncapital-star.com/commentary/trump-is-the-gift-that-keeps-on-giving-to-democrats-opinion/> [<https://perma.cc/F38M-ZMXQ>]. But because Pennsylvania Republicans nominated an even

This analysis of the New Hampshire election parallels what actually occurred in Alaska's special election to fill its single seat in the U.S. House of Representatives. This election was the first use of Alaska's new system involving Ranked Choice Voting (RCV), and it came down to a three-candidate race of the kind that dominated the 2022 midterms.¹⁶ Sarah Palin was the MAGA candidate, endorsed by Trump. Nick Begich was the GOP traditional conservative. Mary Peltola was the Democrat.

Palin ran ahead of Begich in the number of first-choice preferences on the RCV ballots, 31.3% to 28.5%,¹⁷ suggesting that Palin would have beaten Begich in the kind of conventional Republican primary held in Arizona, New Hampshire, Pennsylvania, and most other states. If so, then in those states the general election would have been a two-candidate contest between the MAGA Republican (Palin) and the Democrat (Peltola), with the traditional GOP conservative (Begich) eliminated by the partisan primary. But because Alaska used a nonpartisan primary to determine the candidates on the RCV ballot,¹⁸ the non-MAGA Republican was not eliminated, but instead ended up on the ballot alongside the MAGA Republican and the Democrat.¹⁹

Moreover, the rankings on all the Alaska ballots showed that more voters

more extreme candidate, Doug Mastriano, in that state's gubernatorial election, *see* Jonathan Swan & Josh Kraushaar, *Trumpier than Trump*, AXIOS (Sept. 9, 2022), <https://www.axios.com/2022/09/09/pennsylvania-governor-doug-mastriano-trump-maga> [https://perma.cc/8NXD-296Z], it is not possible to do the same kind of numerical analysis that was done for New Hampshire. A similar point applies to Arizona, where the Republican nominees for both governor and U.S. Senator were Trump-endorsed election denialists from the more extreme MAGA wing of the party. *See* Rachel Leingang, *Arizona's GOP Primaries Went Full MAGA. Now, Democrats Think They Have a Shot.*, WASH. POST (Aug. 4, 2022, 5:33 PM), <https://www.washingtonpost.com/opinions/2022/08/04/trump-candidates-arizona-success/> [https://perma.cc/7N2Q-UKCC].

¹⁶ James Brooks, *Five Takeaway Lessons from Alaska's First Ranked Choice Election*, ALASKA PUB. MEDIA (Sept. 7, 2022), <https://alaskapublic.org/2022/09/07/five-takeaway-lessons-from-alaskas-first-ranked-choice-election/> [https://perma.cc/5CAG-JDEL].

¹⁷ ALASKA DIV. OF ELECTIONS, 2022 SPECIAL GENERAL ELECTION RCV TABULATION 2 (Aug. 16, 2022), <https://www.elections.alaska.gov/results/22SSPG/RcvDetailedReport.pdf> [https://perma.cc/4TW5-KDGE].

¹⁸ ALASKA DIV. OF ELECTIONS, PICK ONE PRIMARY INFORMATION RACK CARD 1 (Nov. 16, 2021), <https://www.elections.alaska.gov/tcv/Top%20Four%20Primary%20Rack%20Card%20-%20Distribution.pdf> [https://perma.cc/Q5RY-XWF9].

¹⁹ Liz Ruskin, *Peltola Leads in Alaska's U.S. House Race, Followed by Palin and Begich*, ALASKA PUBLIC MEDIA (Aug. 16, 2022), <https://alaskapublic.org/2022/08/16/peltola-leads-in-alaskas-u-s-house-race-followed-by-palin-and-begich/> [https://perma.cc/C6KE-2UBM].

preferred non-MAGA Begich over MAGA Palin, rather than the reverse, by a whopping 61.4% to 38.6%.²⁰ This is because, as shown in Tables 1 and 2, many voters who ranked Peltola first also ranked Begich second, preferring him to Palin.²¹ The combination of voters who ranked Begich first or ranked him second over Palin was larger than the number of voters who ranked Palin first or ranked her second over Begich.²²

²⁰ See Table 2. See also Appendix for a detailed explanation of Alaska U.S. House special election RCV ballots.

²¹ Twenty-five percent of all voters ranked Peltola first and Begich second. Only 12.6% of all voters ranked Peltola first and didn't rank any candidate second, and only 2.5% of all voters ranked Peltola first and Palin second.

²² Specifically, 28% of all voters ranked Begich first. As stated in the immediately preceding footnote, 25% of all voters ranked Begich second ahead of Palin. These two groups amounted to 53% of all voters. Conversely, although 31.3% of all voters ranked Palin first, which was more than ranked Begich first, only 2.5% ranked Palin second ahead of Begich. Thus, the combination of groups who preferred Palin to Begich, 33.8% of all voters, was significantly smaller than the combination that preferred Begich to Palin—essentially a 20-point difference. (Note: because the 12.6% of voters who ranked only Peltola first did not express any preference between Palin and Begich, the percentage that each of these two candidates was favored by the subset of voters expressing a preference between these two is different from the percentage that each candidate was favored over the other within the entire electorate.)

Table 1: 2022 Alaska U.S. House Special General Election – Ranked Choice Voting Results²³

Number of Votes	Percent of Votes	First Choice	Second Choice	Third Choice
11,361	6.0%	Begich		
15,397	8.2%	Begich	Peltola	Palin
26,977	14.3%	Begich	Palin	Peltola
<i>Begich 1st: 53,735</i>	<i>28.5%</i>			
23,783	12.6%	Peltola		
47,319	25.1%	Peltola	Begich	Palin
4,631	2.5%	Peltola	Palin	Begich
<i>Peltola 1st: 75,733</i>	<i>40.2%</i>			
21,359	11.3%	Palin		
33,934	18.0%	Palin	Begich	Peltola
3,627	1.9%	Palin	Peltola	Begich
<i>Palin 1st: 58,920</i>	<i>31.3%</i>			

More Alaska voters also preferred GOP Begich over Democrat Peltola, 52.5% to

²³ The data in this table was drawn from a CSV file produced by the MIT Election Data and Science Lab (MEDSL). The source of MEDSL's data was a JSON file available on the Alaska Division of Elections (AK DOE) website. See *2022 Special General Election for U.S. Representative – August 16, 2022: Cast Vote Record*, ALASKA DIV. OF ELECTIONS (Dec. 20, 2022, 11:29 AM), <https://www.elections.alaska.gov/election-results/e/?id=22sspg> [<https://perma.cc/978B-THSN>]. As explained by the AK DOE, the Cast Vote Record (CVR) contains the votes and rankings on the ballots that were scanned. *Id.* It does not include ballots that were only counted by hand. *Id.* As such, vote totals in the table do not match exactly the official results released by the AK DOE. See ALASKA DIV. OF ELECTIONS, 2022 SPECIAL GENERAL ELECTION RCV TABULATION, *supra* note 17. Our analysis of the CVR sought to treat skipped rankings, overvotes, and write-ins in the manner described in Terms and Definitions on the AK DOE election results webpage. See *2022 Special General Election for U.S. Representative – August 16, 2022: Terms and Definitions*, ALASKA DIV. OF ELECTIONS (Dec. 20, 2022, 11:29 AM), <https://www.elections.alaska.gov/election-results/e/?id=22sspg> [<https://perma.cc/978B-THSN>]. However, a small number of ballots contain rankings that present questions even after the vote-counting rules have been applied. This may have also led to minor differences from the official results. Not included in the table are ballots that do not contain any valid ranking for a non-write-in candidate. Due to rounding, total percentages may not reflect the sum of the subtotals. See Appendix for a more detailed analysis and a comparison with the official results.

47.5%. This is because enough voters who ranked Palin first also ranked Begich second—another Republican, even if less desirable, being a better alternative in their eyes to a Democrat.²⁴ These second-choice votes for Begich, along with his first-choice votes, outnumbered the first-choice votes for Peltola plus the very few Palin voters who were willing to rank Peltola second.²⁵

Table 2: 2022 Alaska U.S. House Special General Election – Ranked Choice Voting Results with Begich Versus Palin Head-to-Head Highlighted²⁶

Number of Votes	First Choice	Second Choice	Third Choice	Prefer Begich	Prefer Palin
11,361	Begich			11,361	
15,397	Begich	Peltola	Palin	15,397	
26,977	Begich	Palin	Peltola	26,977	
23,783	Peltola			--	--
47,319	Peltola	Begich	Palin	47,319	
4,631	Peltola	Palin	Begich		4,631
21,359	Palin				21,359
33,934	Palin	Begich	Peltola		33,934
3,627	Palin	Peltola	Begich		3,627
				TOTAL	TOTAL
				101,054	63,551
				61.4%	38.6%

²⁴ Eighteen percent of all voters ranked Palin first and Begich second, and this cohort was 57.6% of Palin-first voters. Only 11% of all voters ranked Palin first and did not rank any candidate second, and only 2% ranked Palin first and Peltola second.

²⁵ A total of 46.5% of all voters ranked Begich either first (28.5%) or second ahead of Peltola (18%), whereas a total of 42.1% of all voters ranked Peltola either first (40.2%) or second ahead of Begich (1.9%).

²⁶ See *2022 Special General Election for U.S. Representative – August 16, 2022: Cast Vote Record*, Alaska Div. of Elections, *supra* note 23. The total percentage reflects only those ballots where a voter ranked either Begich or Palin or both.

Table 3: 2022 Alaska U.S. House Special General Election – Ranked Choice Voting Results with Begich Versus Peltola Head-to-Head Highlighted²⁷

Number of Votes	First Choice	Second Choice	Third Choice	Prefer Begich	Prefer Peltola
11,361	Begich			11,361	
15,397	Begich	Peltola	Palin	15,397	
26,977	Begich	Palin	Peltola	26,977	
23,783	Peltola				23,783
47,319	Peltola	Begich	Palin		47,319
4,631	Peltola	Palin	Begich		4,631
21,359	Palin			--	--
33,934	Palin	Begich	Peltola	33,934	
3,627	Palin	Peltola	Begich		3,627
				TOTAL	TOTAL
				87,669	79,360
				52.5%	47.5%

Thus, Begich was preferred by more Alaska voters over either opponent. But he was not the candidate elected by Alaska’s RCV system. Peltola was. The problematic nature of this outcome will be addressed in what follows. Still, it is worth emphasizing at the outset that this Alaska election was one in which more voters favored the traditional GOP conservative when compared directly against *either* the MAGA candidate *or* the Democrat.

The same point might be true about other 2022 midterm races featuring a three-way split between a MAGA candidate, a non-MAGA GOP conservative, and a Democrat. None of these other races involved the kind of RCV ballot that Alaska uses. But what if they did? In Arizona, what if Karrin Taylor Robson was on an RCV ballot alongside both Kari Lake (the MAGA candidate) and Kati Hobbs (the Democrat), in the same way that Begich was on the ballot alongside Palin and Peltola? Would more Arizona voters prefer Taylor Robson to *either* Lake *or* Hobbs? Because Hobbs beat Lake by an extremely narrow margin, 50.32% to 49.65%,²⁸ it

²⁷ *Id.* The total percentage reflects only those ballots where a voter ranked either Begich or Peltola or both.

²⁸ ARIZ. SEC’Y OF ST., STATE OF ARIZONA OFFICIAL CANVASS: 2022 GENERAL ELECTION - NOV 08, 2022 (2022), https://azsos.gov/sites/default/files/2022Deco5_General_Election_Canvass_Web.pdf

stands to reason that a much less controversial Republican nominee than Lake might have managed to prevail over Hobbs.

Or, given the analysis of New Hampshire’s U.S. Senate election in comparison with the state’s gubernatorial election, what if Chuck Morse were on an RCV ballot with both Donald Bolduc (the MAGA candidate) and Maggie Hassan (the Democrat)? It is easy to imagine Morse occupying a position comparable to Begich in Alaska. A significant component of the electorate would have ranked Morse first: those who would have preferred a traditional Republican, like the state’s Governor Sununu, more than a Democrat—but who could not bring themselves to support a “conspiracy-theory extremist” over a Democrat.²⁹ Even more significantly, a sizable number of voters would have ranked Morse second, either behind Hassan (because those voters would have preferred a traditional Republican to a MAGA extremist) or behind Bolduc (because those voters would have preferred a traditional Republican over a Democrat). Thus, there is a high probability that an RCV ballot would have showed that a majority of New Hampshire voters preferred Morse to either Hassan or Bolduc.

If this is true, then the partisan primary in that state eliminated from contention the candidate whom the state’s voters in November would have preferred to either of the two major-party nominees on the November ballot. The November voters did not even get a chance to vote for the candidate whom they most preferred when compared to each of the other alternatives. And what was true in New Hampshire may also have been true in Arizona, Pennsylvania, and elsewhere. The question thus inevitably arises whether it would be possible to reform the electoral system so as to avoid this denial of an opportunity for the preference of the electorate to prevail.

II. THE INADEQUACY OF INSTANT RUNOFF VOTING

The new Alaska system offers a ready-made method for conducting an election with three candidates, or even more. In fact, the Alaska system is designed to have four finalists on the RCV ballots—the four candidates who receive the most votes in the system’s nonpartisan primary.³⁰ But in the special election to fill the remainder of the term for the state’s single congressional seat, one of the four finalists dropped

[<https://perma.cc/T8EG-5YP8>].

²⁹ Gabriel & Bender, *supra* note 12.

³⁰ *Alaska Better Elections Implementation*, ALASKA DIV. OF ELECTIONS, <https://www.elections.alaska.gov/RCV.php> [<https://perma.cc/2QPT-2CR2>] (last visited Feb. 12, 2023).

out, leaving the three-way race between Begich, Palin, and Peltola.³¹

Thus, Alaska-style RCV could be used for any three-way race between a traditional GOP conservative, a MAGA Republican, and a Democrat. If Arizona had used Alaska's system this year, Karrin Taylor Robson undoubtedly would have been among the top three (or four) finalists, along with Kari Lake and Katie Hobbs. The same point is true for Chuck Morse in New Hampshire and David McCormick in Pennsylvania.

The problem, however, is that Alaska's version of RCV would not necessarily elect the candidate who is preferred by more voters over each of the other two alternatives. The Alaska election itself proves this point. As shown in the analysis above, based on Tables 1–3, more Alaska voters preferred Begich to Peltola, and more Alaska voters also preferred Begich to Palin, and yet the Alaska system elected Peltola and not Begich.

³¹ Liz Ruskin, *Gross, a Top Four Candidate for US House, Calls It Quits*, Alaska Pub. Media (June 20, 2022), <https://alaskapublic.org/2022/06/20/gross-a-top-four-candidate-for-us-house-calls-it-quits> [https://perma.cc/S58S-VXCH]; Mark Thiessen, *Alaska Supreme Court Ruling Keeps Tara Sweeney Off U.S. House Special Election Ballot*, Anchorage Daily News (June 25, 2022), <https://www.adn.com/politics/2022/06/25/alaska-supreme-court-ruling-keeps-tara-sweeney-off-us-house-special-election-ballot> [https://perma.cc/AW3H-GBSW].

Table 4: 2022 Alaska U.S. House Special General Election – Instant Runoff Official Results³²

	Round 1				
	Number of Votes	Percent of Votes			
Begich	53,810	28.5%			
Palin	58,973	31.3%			
Peltola	75,799	40.2%			
Begich had the least first-choice votes and was eliminated. The 53,810 ballots that ranked him first were transferred as follows:					
	Round 1			Round 2	
	Number of Votes	Percent of Votes	Ballots Transferred	Number of Votes	Percent of Votes
Begich	53,810	28.5%	--		
Palin	58,973	31.3%	+ 27,053	86,026	48.5%
Peltola	75,799	40.2%	+ 15,467	91,266	51.5%
Exhausted/Overvotes			+ 11,290		
Peltola wins with over 50% of the continuing ballots.					

This outcome is not an aberrational fluke, but rather inherent in the specific “instant runoff” design of Alaska’s version of RCV. Moreover, in a three-way race between a traditional GOP conservative, a MAGA election denialist, and a Democrat, where a majority of the electorate prefers the traditional GOP conservative over either the MAGA election denialist or the Democrat, Alaska’s instant runoff system will not always cause the Democrat to win. Instead, depending on the second-choice preferences of the voters who rank the traditional GOP conservative first, the instant runoff system may cause the MAGA election denialist to win despite the fact that more voters casting ballots in the election would prefer the traditional GOP conservative to win.

To illustrate this point, consider this hypothetical set of RCV ballots involving a three-way race between a traditional GOP conservative, a MAGA Republican, and a Democrat:

³² See Alaska Div. of Elections, 2022 Special General Election RCV Tabulation, *supra* note 17.

Table 5: Hypothetical Three-Way Race

%	1 st Place	2 nd Place
35	MAGA	GOP
18	GOP	MAGA
7	GOP	Democrat
40	Democrat	GOP

This set of ballots, while simplified in comparison to what would actually occur in practice, is not unrealistic in terms of the relative strength of the three candidates among the preferences of the voters. For example, imagine that Ohio used Alaska's RCV system and that the November U.S. Senate election in the state were not just a two-way race between J.D. Vance, the Trump-endorsed MAGA election denialist, and Tim Ryan, the Democrat. Suppose, instead, that Ohio's incumbent Senator Rob Portman took advantage of this system to run for reelection without having to compete against Trump-endorsed Vance in a partisan primary in order to be one of the candidates on the November ballot. In this scenario, Portman would be in the same posture as Alaska's incumbent Senator Lisa Murkowski, who was able to avoid a partisan primary against Trump-endorsed MAGA election denialist Kelly Tshibaka.³³

In this hypothetical three-way race between Vance, Ryan, and Portman, it would not be unrealistic to expect that 40% of the voters would be loyal Democrats with Ryan as their first choice while preferring Portman as the second-best option over election denialist Vance.³⁴ Likewise, one could expect 35% of the electorate to favor Vance first, given the strength of the MAGA movement in red-leaning Ohio, which eclipses traditional GOP conservatism among Republicans in the state. Still, despite their preference for Trump-endorsed Vance, these Republican voters in Ohio could be expected to favor Portman, a generally popular incumbent senator, over the Democrat, Ryan. These preferences would leave a quarter of the electorate to favor Portman as their first-place choice, with the bulk being loyal Republicans with a preference for Vance over Ryan. Even so, a slice of the Portman-preferring

³³ See Becky Bohrer, *GOP's Lisa Murkowski Wins Reelection in Alaska Senate Race*, ASSOCIATED PRESS (Nov. 23, 2022), <https://apnews.com/article/2022-midterm-elections-donald-trump-alaska-223ea5a590c1b9c4f7905ab4b7849e6f> [<https://perma.cc/4CZE-TTB9>].

³⁴ In the 2022 midterms, Ohio Democrats consistently received about 40% of the vote against Republicans. For returns from the Attorney General, Auditor, and Secretary of State races, see *Ohio Election Results*, N.Y. TIMES (Dec. 14, 2022), <https://www.nytimes.com/interactive/2022/11/08/us/elections/results-ohio.html> [<https://perma.cc/35T4-AJG3>].

voters who could not stomach the election denialist Vance would prefer Ryan as their second choice.

Given all these preferences on this set of RCV ballots, Portman is the candidate preferred by a majority of voters over either opponent. Portman is ranked above Ryan on 60% of ballots: the 25% of all ballots that rank Portman first, plus the 35% of all ballots that rank Vance first but put Portman ahead of Ryan. Portman is also ranked above Vance on a whopping 65% of ballots: again, the 25% that rank Portman first, plus this time the 40% that prefer Ryan but favor Portman over Vance. In the technical language of electoral system theory, Portman being preferred in this way by a majority over either opponent makes Portman the “Condorcet winner” of the election. Named after the Marquis de Condorcet, the French scientist who formulated the concept in the Enlightenment, a “Condorcet winner” is the candidate whom a majority prefer over each other candidate when the two opponents are compared directly one-on-one.³⁵

For anyone familiar with current Ohio politics, it makes sense that Portman would be the Condorcet winner of a three-way election with Ryan and Vance as the other two candidates. Between Portman and Ryan, a majority of Ohio voters would likely prefer Portman. Ohio, after all, is an increasingly red-leaning state, where Trump beat both of his opponents by 8 points,³⁶ and the popular Portman won reelection in 2016 over former governor Ted Strickland by a decisive 21 points.³⁷ Portman would also likely beat Vance among all Ohio voters, even if Trump-endorsed Vance would beat Portman in an increasingly MAGA-dominated Republican primary. If all of Ohio’s general election voters were choosing only between Portman and Vance, then the state’s Democrats (who amount to a sizable minority of the overall electorate) would likely prefer the less objectionable Portman to the more objectionable Vance. These Democrats, along with the portion of the electorate who would prefer Portman most among all three candidates, would form

³⁵ See Amartya Sen, *Majority Decision and Condorcet Winners*, 54 *Social Choice and Welfare* 211 (2020).

³⁶ OHIO SEC’Y OF ST., NOVEMBER 3, 2020 GENERAL ELECTION OFFICIAL CANVASS: PRESIDENT AND VICE PRESIDENT (2020), <https://www.ohiosos.gov/globalassets/elections/2020/gen/statewideresultsbycounty.xlsx> [https://perma.cc/SNX2-S2R9]; OHIO SEC’Y OF ST., NOVEMBER 8, 2016 GENERAL ELECTION OFFICIAL CANVASS: PRESIDENT (2016), <https://www.ohiosos.gov/globalassets/elections/2016/gen/county.xlsx> [https://perma.cc/74ZN-WET6].

³⁷ OHIO SEC’Y OF ST., NOVEMBER 8, 2016 GENERAL ELECTION OFFICIAL CANVASS: U.S. CONGRESS (Nov. 8, 2016), <https://www.ohiosos.gov/globalassets/elections/2016/gen/county.xlsx> [https://perma.cc/ZJJ4-PZXC].

a majority of Ohio's voters.

But the use of Alaska's instant runoff method of RCV would not elect Portman, given the preferences on this set of ballots, despite Portman being the Condorcet winner of the election. Operationally, the instant runoff method works by examining first-choice preferences on the ballots, and if no candidate receives a majority of first-choice preferences, then the instant runoff eliminates the candidate with the fewest first-choice votes.³⁸ In this example, Portman would be the candidate eliminated, because he has only 25% of first-choice votes, compared to Ryan's 40% and Vance's 35%. In this way, the instant runoff procedure eliminates the Condorcet winner, leaving the runoff between Ryan and Vance.

After eliminating Portman, the instant runoff procedure would look at all the ballots that ranked Portman first and redistribute them to whichever other candidate is ranked second on each of these ballots. This redistribution portion of the instant runoff procedure would cause Ryan to pick up the 7% of ballots that ranked him second after ranking Portman first. Ryan's new total would be 47% of all ballots. The redistribution process would cause Vance to pick up the 18% of all ballots that ranked *him* second after ranking Portman first. Vance's new total would be 53%. Thus, Vance would win the instant runoff over Ryan—53% to 47%—which is the same margin by which Vance beat Ryan in the 2022 midterm.³⁹

Not only would the instant runoff procedure fail to elect the Condorcet winner, it would also essentially replicate the two-candidate race produced by conventional partisan primaries. By eliminating Portman immediately, the instant runoff would make the election end up being between Vance and Ryan, just as is the case with Ohio's current electoral system. Moreover, assuming the state's voters would cast their ranked-choice ballots to indicate the same preferences they have when casting conventional ballots, the instant runoff would yield the same result as a conventional general election in which Vance and Ryan are the only two candidates on the ballot.

Thus, although RCV enables a third candidate like Portman to appear on the November ballot without winning a party primary, the instant runoff method of electing a winner from the RCV ballots reproduces the same result as the conventional party primary process, and this is true even though those RCV ballots show that a majority of the state's voters would have preferred electing Portman rather than the instant runoff winner, Vance.

³⁸ See *Ranked Choice Voting*, FAIRVOTE, <https://fairvote.org/our-reforms/ranked-choice-voting> [<https://perma.cc/NKM8-JB93>] (last visited Jan. 12, 2023).

³⁹ Ohio Election Results, N.Y. TIMES, *supra* note 34.

Is it possible to have an electoral system that elects the candidate who is preferred by a majority of voters when compared directly to each opponent, since Alaska's instant runoff version is incapable of doing that?

III. THE IDEA OF A ROUND-ROBIN ELECTION

Anyone who wears prescription eyeglasses knows the experience of being asked, "Which is better, A or B?" After answering that question, the patient is asked by the optometrist, "Okay, now which is better, A or C?" Or, depending on how the patient answered the first question, maybe the next question is: "Which is better, B or C?" The process involves a series of one-on-one comparisons to determine which option is better than each of the rest.

The same type of procedure could be used to identify the winning candidate in an election. In a three-candidate election, voters could be asked directly their choice between each pair of candidates. To continue with the hypothetical three-way election with Vance, Ryan, and Portman as the candidates, voters could receive a ballot that directly asks:

For each of these comparisons, which candidate do you prefer?

___ Portman or ___ Ryan

___ Portman or ___ Vance

___ Ryan or ___ Vance

After all of these ballots were cast, computers could tally which candidate won more votes than the other in each of these three one-on-one comparisons. If one candidate won both of these direct comparisons against each opponent, that candidate could be declared the winner of the election. This type of ballot, in essence, would be structured to elect the Condorcet winner.

This type of ballot would also resemble a round-robin sports tournament, in which each competitor has a direct contest against each other competitor.⁴⁰ In a round-robin tournament, a competitor who wins every contest against each other competitor is declared the tournament's winner. Thus, a Condorcet winner would

⁴⁰ See Edward B. Foley, *Tournament Elections with Round-Robin Primaries: A Sports Analogy for Electoral Reform*, 2021 WIS. L. REV. 1187, 1188 (2021).

always prevail in an election conducted with this kind of round-robin ballot.

In a round-robin election, it is possible that there is no candidate who is a Condorcet winner, beating each other candidate in their series of direct comparisons, and indeed it is also possible that round-robin elections end in ties. In a three-candidate round-robin election, the same three 1-1 ties could occur as in a three-competitor round-robin sports tournament. Depending on the preferences that voters have among the three candidates, A could beat B but lose to C, while B beats C but loses to A, and C beats A but loses to B.⁴¹

A tie in a round-robin election could be broken by electing the candidate who receives the most total votes. Suppose these are the votes in a round-robin election involving candidates A, B, and C:

Table 6: Hypothetical Round-Robin Election

	Win	Lose
A vs. B	A 55	B 45
A vs. C	C 70	A 30
B vs. C	B 75	C 25

A has 85 total votes: 55 in winning against B, plus 30 losing to C. B has 120 total votes: 75 from winning against C, plus 45 losing to A. C has 95 total votes: 70 from winning against A, plus 25 from losing to B. Using total votes as a tiebreaker, B would win the round-robin election with the most total votes.

Readers already familiar with election system theory will recognize total votes in this kind of round-robin election as the mathematical equivalent of a candidate's "Borda score"—named after Jean-Charles de Borda, a French theorist who was a contemporary of Condorcet.⁴² An electoral system that elects the Condorcet winner whenever there is one and, if not, then elects the candidate with the highest Borda score, was proposed by the twentieth-century Scottish economist Duncan Black.⁴³ The round-robin electoral system described here, which elects the candidate who wins all direct comparisons against each competitor or, in the event of a tie, elects the candidate with the most total votes, can be seen as the equivalent of what

⁴¹ For example, this three-way tie would result from these ranked-choice ballots:

30%: A>B>C

25%: C>A>B

45%: B>C>A

⁴² GEORGE G. SZPIRO, NUMBERS RULE: THE VEXING MATHEMATICS OF DEMOCRACY, FROM PLATO TO THE PRESENT 55, 58–59 (2010).

⁴³ See Duncan Black, *The Theory of Committees and Elections* 66 (1958).

Duncan Black proposed.

One might consider this kind of round-robin electoral system an attractive way to identify the winner of a three-way election between a MAGA election denialist, a traditional GOP conservative, and a Democrat. Consider, again, the Arizona gubernatorial election as an example. If Katie Hobbs, the Democrat, beats both Kari Lake, the MAGA election denialist, and Karrin Taylor Robson, the GOP conservative, in each one-on-one comparison against the other two, then Hobbs should be declared the election's winner. But if a majority of voters prefer Taylor Robson to either Hobbs or Lake in each of the direct comparisons, then Taylor Robson deserves to be declared the winner.⁴⁴ And if the round-robin among these candidates results in a three-way tie, then whichever candidate has the most total votes could be considered deserving of the victory. After all, a candidate's total votes is a measure of the candidate's overall strength against the rest of the competition as a whole.

The same analysis would apply to any of the 2022 midterm elections that emerged as three-way competitions between MAGA, GOP, and Democrat. In New Hampshire, if Maggie Hassan (Democrat) could have won a majority of votes against either Donald Bolduc (MAGA) or Chuck Morse (GOP), then she would have deserved to win reelection to her U.S. Senate seat. But if Morse could have won a majority against either Hassan or Bolduc, then he would have deserved to be the winner. Likewise, in Pennsylvania, if John Fetterman (Democrat) could have beaten either Mehmet Oz (MAGA) or David McCormick (GOP), Fetterman would have deserved the Senate seat. But if McCormick could have prevailed over either Fetterman or Oz, then McCormick would have been deserving of victory. And if necessary to break a tie, these three-way Senate races could have been settled on the basis of which candidate received the most total votes in the series of one-on-one comparisons that form the round-robin election.

But as attractive as this kind of round-robin election might be in theory, there are some practical issues to consider. It would be necessary to limit the round-robin election to only three candidates. Otherwise, voters would be asked to indicate their preferences in an excessively large number of direct comparisons between each pair of candidates. In a four-candidate round-robin, there would be six direct comparisons: A vs. B, A vs. C, A vs. D, B vs. C, B vs. D, C vs. D. In a five-candidate round-robin, there would be ten of these one-on-one contests.

Even the three one-on-one comparisons in a three-candidate round-robin might be time-consuming for voters to complete, especially when considering the possibility of using this type of round-robin election for multiple races on the same

⁴⁴ Because Lake lost to Hobbs in the actual election, we know that Lake could not be the Condorcet winner in the three-way race.

ballot. For example, if a state midterm election involves both a U.S. Senate election and a gubernatorial election, along with elections to other statewide offices, and “down ballot” races for local offices, using a round-robin format for each of these elections would essentially triple the length of the ballot, even assuming that each of these races is limited to only three candidates.

There would also be the question of how to limit the November ballot to only three candidates for each race—if this limitation were considered acceptable in the first place. One could employ something like Alaska’s nonpartisan primary to select the top three candidates, rather than the top four, as Alaska does. But some might think limiting the November election to only three finalists is unduly restrictive, especially when there are those who advocate that Alaska’s “top four” system should be expanded to allow for five rather than four finalists.⁴⁵

There is also the question whether Maine’s alternative RCV system, which uses RCV for partisan primaries and then again for the general election, is preferable to Alaska’s nonpartisan primary.⁴⁶ Maine’s system would require the traditional GOP wing of the Republican party to break off into a new separate party in order to have a candidate on Maine’s November ballot, assuming that MAGA candidates endorsed by Trump would win the Republican primary. But even if GOP traditionalists formed a third party in a round-robin electoral system modeled on Maine’s rather than Alaska’s, there would remain the question of how to limit the November ballot to just three parties when additional parties—like the Libertarians, Greens, and others—might want to field candidates on the November round-robin ballot. While there are ways to answer this question, it might be better to abandon the idea of

⁴⁵ For example, voters in Nevada recently approved a “final five” variation on Alaska’s system. See Don Clyde, *Nevada Voters Back Big Changes to Their Election System*, NPR (Nov. 13, 2022, 10:04 PM), <https://www.npr.org/2022/11/13/1136342255/nevada-election-open-primary-ranked-choice-voting> [<https://perma.cc/HLM6-S9QL>]. For it to go into effect in Nevada, it needs voter approval a second time. Colton Lochhead, *Initiative to Change Elections in Nevada OK’d for November Ballot*, LAS VEGAS REVIEW-JOURNAL (July 21, 2022, 4:42 PM), <https://www.reviewjournal.com/news/politics-and-government/nevada/initiative-to-change-elections-in-nevada-okd-for-november-ballot-2611154> [<https://perma.cc/H76V-7F6U>]. The Institute for Political Innovation has advocated for this final-five primary system. See *Final-Five Voting*, INST. FOR POL. INNOVATION, <https://political-innovation.org/final-five-voting> [<https://perma.cc/HF4V-LQJA>] (last visited Feb. 17, 2023).

⁴⁶ A preference for Maine over Alaska’s use of RCV would tend to coincide with the view held by some political scientists that electoral systems should be structured to facilitate the institutional role of political parties as an efficient means to organize coalitions of voters.

See, e.g., Frances McCall Rosenbluth & Ian Shapiro, *Responsible Parties: Saving Democracy from Itself* (2018); Nancy L. Rosenblum, *On the Side of the Angels: An Appreciation of Parties and Partisanship* (2008).

conducting an actual round-robin election that would require voters to cast votes in each of the round-robin's direct comparisons and, instead, construct a new variation of RCV that would emulate key elements of a round-robin election while at the same time employing the efficiency of a ranked choice ballot.

IV. TOTAL VOTE RUNOFF: AN RCV SYSTEM THAT ELECTS THE MOST MAJORITY-FAVORED CANDIDATE

One simple change to the instant runoff procedure of RCV, as used in Alaska and Maine (and elsewhere), will cause RCV to replicate key attributes of a round-robin election. In particular, the change will guarantee to elect the candidate whom a majority of voters prefer to each other candidate (according to the preferences voters express on their ballots).⁴⁷ In other words, if there is a Condorcet winner based on how all the voters rank the candidates on their ballots, this change will make sure that candidate prevails. And if there is no Condorcet winner based on these rankings, then the change will use the total votes that each candidate receives in order to determine which candidate wins. Thus, this change also incorporates Borda scores into the instant runoff procedure, making RCV resemble a round-robin election's combination of Condorcet and Borda elements (similar to Duncan Black's proposal in this respect).

The one simple change is this: instead of eliminating the candidate with the lowest number of first-place votes, as the regular version of the instant runoff process does, eliminate the candidate with the lowest number of total votes.⁴⁸ Otherwise, the instant runoff process remains exactly the same. In other words, this "Total Vote Runoff" (TVR) variation uses the same RCV ballots as a regular instant runoff.

The first step of the Total Vote Runoff, like the first step of the regular instant runoff, is to see if any candidate has an outright majority of first-place votes. If so, that candidate is elected immediately. If not, then TVR eliminates the weakest candidate and recalculates the number of votes each remaining candidate has. If

⁴⁷ If voters vote insincerely, contrary to their true preferences, their ballots, of course, will reflect their insincere choices. The issue of strategic voting, where voters vote insincerely in an effort to manipulate the electoral system in order to achieve a result different from what they anticipate will occur if they vote sincerely, will be considered below in the last section.

⁴⁸ A candidate's "total votes" is based on all the preferences that all voters identify on their ranked-choice ballots, and is the same as the candidate's Borda score. The advantage of using the term "total votes" rather than "Borda score" is that, for the average American citizen, the concept of "total votes," once explained, is straightforward, while the term "Borda score" will seem arcane and off-putting.

there is now a candidate with a majority of first-place votes, TVR elects that candidate and proceeds no further—just as the regular instant runoff procedure does. If again there is no candidate with a majority of first-place votes, TVR repeats the process of eliminating the weakest of the remaining candidates and recalculating the number of votes each remaining candidate has. As with a regular instant runoff, this TVR process of elimination and recalculation continues until a candidate has a majority of first-place votes—if necessary, until only two candidates are left, with one having more first-place votes than the other.⁴⁹

The only difference between TVR and a regular instant runoff is how the weakest candidate is identified when a candidate is eliminated. A regular instant runoff identifies the weakest candidate as the one having the fewest first-place votes. TVR identifies the weakest candidate as the one having the fewest total votes. Because total votes is a more accurate measure of a candidate's relative strength, or weakness, when compared to the rest of the candidates, TVR is the superior procedure. This superiority is what enables TVR to elect a Condorcet winner when a regular instant runoff does not.

To illustrate the difference between TVR and a regular instant runoff, we can return to the hypothetical three-candidate election involving Vance, Ryan, and Portman. As we recall, these are the ballots in this example:

Table 7: Hypothetical Race Between Vance, Ryan, and Portman

%	1st Place	2nd Place	3rd Place
35	Vance	Portman	Ryan
18	Portman	Vance	Ryan
7	Portman	Ryan	Vance
40	Ryan	Portman	Vance

From these ballots, TVR calculates each candidate's total votes, as indicated in Table 8:

⁴⁹ The structural similarity between TVR and IRV means that TVR is not operationally identical to the so-called “Baldwin’s method.” Ned Foley, *“Total Vote Runoff” & Baldwin’s Method*, ELECTION L. BLOG (Nov. 9, 2022, 5:42 PM), <https://electionlawblog.org/?p=133027> [https://perma.cc/4H6J-6AP5].

Table 8: TVR Calculations for Hypothetical Vance, Ryan, and Portman Race

Candidate	1 st Place		2 nd Place		Total Votes
	Ballots (P1)	Votes (2*P1)	Ballots (P2)	Votes (1*P2)	(2*P1) + (1*P2)
Vance	35	70	18	18	88
Portman	25	50	75	75	125
Ryan	40	80	7	7	87

In a three-candidate election, a candidate's total votes is the sum of (i) the number of ballots on which the candidate is ranked first, doubled, plus (ii) the number of ballots on which the same candidate is ranked second. This calculation from the ranked-choice ballots corresponds to what the candidate's total votes would be if the same preferences had been expressed by voters in a round-robin election. A first-place vote on a ranked-choice ballot is the equivalent of a vote for that candidate over each of the other two candidates in a round-robin election. A second-place vote on a ranked-choice ballot is the equivalent of a vote for that candidate in only one of the two direct comparisons between that candidate and each opponent in a round-robin election.

Once it is determined that none of the candidates has a majority of first-place votes, TVR eliminates the candidate with the fewest total votes, who in this case is Ryan. With Ryan eliminated, Portman moves into first place on all of the ballots that had ranked Ryan first. This means that Portman now is ranked first on 65% of the ballots, with Vance still ranked first on 35%. Portman has a majority of first-place votes and thus is elected. TVR thus elects Portman, the Condorcet winner among these three candidates given the preferences on all the ballots, whereas the regular instant runoff process elected Vance based on the exact same set of preferences on these ballots.

TVR is a sequential elimination procedure using ranked-choice ballots, just as a regular instant runoff is. But because TVR uses total votes to eliminate candidates sequentially, TVR will never eliminate a Condorcet winner. Because a Condorcet winner is preferred by more voters than each other opponent, a Condorcet winner can never have the lowest number of total votes (where, again, a candidate's total votes is defined to be the same as the candidate's Borda score).⁵⁰ Whichever other

⁵⁰ In a three-way election, putting aside the candidate who is the Condorcet winner, one of the other candidates must have less than 50% of the votes in the one-on-one comparison with the third candidate. That losing candidate, who also by definition loses to the Condorcet winner, is sub-50% in both one-on-one comparisons, whereas the Condorcet candidate is above 50% in both. Thus, there will always be at least one candidate with a lower number of total votes than the

candidate is eliminated, the Condorcet winner will survive each elimination round. If there are only two candidates remaining, and one of them is the Condorcet winner of the entire field, the Condorcet winner, by definition, will be preferred by more voters than the other remaining candidate.

A. A Four-Candidate Example of TVR

TVR as a form of RCV is a procedure that easily can handle more than three candidates, in contrast to a pure round-robin election in which voters must declare their preferences for each of the six, ten, or even more direct comparisons between each pair of contenders. With TVR, like the regular instant runoff version of RCV, voters simply rank the order of their preferences among all the candidates on the ballot—first, second, third, and so forth⁵¹—and TVR's sequential elimination procedure will identify the candidate whom a majority of voters prefer more than every other candidate on the ballot. The elected candidate will be either the Condorcet winner, if there is one, or at least the majority-preferred candidate whose strength against the rest of the field is measured by the candidate's total votes against all other candidates.

To illustrate how TVR works with four candidates, consider the variation contained in Table 5 on the three-candidate hypothetical previously considered:

Condorcet candidate.

⁵¹ The issue of incompletely ranked ballots will be addressed subsequently.

Table 9: Four-Candidate Election with Ranked-Choice Ballots

%	1st Place	2nd Place	3rd Place	4th Place
35	MAGA	GOP	Democrat	Progressive
18	GOP	MAGA	Democrat	Progressive
7	GOP	Democrat	MAGA	Progressive
5	Democrat	GOP	Progressive	MAGA
20	Democrat	Progressive	GOP	MAGA
15	Progressive	Democrat	GOP	MAGA

This variation adds a fourth Progressive candidate to the three previous ones: a MAGA election denialist, a traditional GOP conservative, and a Democrat. The Progressive is further to the left of the more centrist Democrat. The preferences of the voters remain essentially the same, with those who prefer MAGA or GOP the most liking Progressive the least. The 40% of the electorate who preferred the Democrat in the three-candidate race is now split: 15% of the electorate prefers the Progressive the most, but otherwise prefers the Democrat over the GOP and MAGA candidates (in that order). A fifth (20%) of the electorate still likes the Democrat the best but prefers the Progressive over either the GOP or MAGA candidate, while 5% of the electorate who likes the Democrat the best thinks the Progressive is too left-wing and thus prefers the GOP candidate over the Progressive (but still ranks MAGA last).

Given these preferences, no candidate has more than 50% of first-place votes, and thus TVR needs to compute the total votes for each candidate. In a four-candidate election, a candidate gets three votes from each first-place ranking on a ballot, two votes from each second-place ranking, one vote from each third-place ranking, and zero from each last-place ranking. As before, these numbers correspond to the number of votes the candidate would receive if the same preferences were expressed in a round-robin election's series of direct comparisons between each pair of candidates. A candidate ranked first on an RCV ballot, in other words, would get a vote in each of the three one-on-one comparisons in a round-robin election. A candidate ranked second would get only two votes in the one-on-one comparisons, losing one vote to the candidate ranked first on the same ballot. A candidate ranked third would get only one vote in the one-on-one comparisons, losing to both the candidate ranked first and the candidate ranked second. Finally, the candidate ranked last would not get any vote in these one-on-one comparisons, losing to all three competitors.

This example can be generalized. Whatever the number of candidates there are in a TVR election, the number of votes that a candidate receives for being ranked first on an RCV ballot is one less than the number of candidates. Thus, if there are

n candidates, then a candidate receives $n-1$ votes for each ballot on which that candidate is ranked first. Each lower-ranked position on a ballot earns the candidate one fewer votes than the immediately higher-ranked position on the ballot. Thus, with n candidates, a second-place ranking earns $n-2$ votes, a third-place ranking earns $n-3$ votes, and so forth. A last-place ranking always earns zero votes ($n-n=0$).

The calculation of each candidate's total votes for this four-candidate example is contained in Table 10:

Table 10: TVR Calculations for Four-Candidate Election with Ballots from Table 9

Candidate	1st Place		2nd Place		3rd Place		Total Votes
	Ballots (P1)	Votes (3*P1)	Ballots (P2)	Votes (2*P2)	Ballots (P3)	Votes (1*P3)	(3*P1) + (2*P2) + (1*P3)
MAGA	35	105	18	36	7	7	148
GOP	25	75	40	80	35	35	190
Democrat	25	75	22	44	53	53	172
Progressive	15	45	20	40	5	5	90

The Progressive candidate has the fewest total votes and thus is the first candidate to be eliminated in the TVR process, as show in Table 11:

Table 11: TVR Elimination of Fourth Place Candidate

%	1st Place	2nd Place	3rd Place	4th Place
35	MAGA	GOP	Democrat	Progressive
18	GOP	MAGA	Democrat	Progressive
7	GOP	Democrat	MAGA	Progressive
5	Democrat	GOP	Progressive	MAGA
20	Democrat	Progressive	GOP	MAGA
15	Progressive	Democrat	GOP	MAGA

With the Progressive candidate eliminated, the remaining candidates shift to any higher-ranked position vacated by the eliminated candidate on any ballot, and the ballots now resemble the previous three-candidate example:

Table 12: Ballot Rankings for Remaining Three Candidates

%	1st Place	2nd Place	3rd Place
35	MAGA	GOP	Democrat
18	GOP	MAGA	Democrat
7	GOP	Democrat	MAGA
5	Democrat	GOP	MAGA
20	Democrat	GOP	MAGA
15	Democrat	GOP	MAGA

Once again, no candidate is ranked first on a majority of ballots, and thus TVR needs to eliminate another candidate. At this point, each candidate’s total votes are recalculated based on there now being only three candidates remaining in the race, with Progressive already eliminated. As before, the total votes for these three candidates are:

Table 13: TVR Calculations for Three Candidates with Ballots from Table 12

Candidate	1st Place		2nd Place		Total Votes
	Ballots (P1)	Votes (2*P1)	Ballots (P2)	Votes (1*P2)	(2*P1) + (1*P2)
MAGA	35	70	18	18	88
GOP	25	50	75	75	125
Democrat	40	80	7	7	87

At this stage, as before, the Democrat is eliminated. In the previous version of this three-candidate example, the Democrat was specifically Tim Ryan, but now we can consider this example more generically as the three-candidate stage of the archetypical four-candidate illustration. In any event, with the Democrat now eliminated in this stage of the TVR process, the ballots become those shown in Table 14:

Table 14: TVR Elimination of Third Place Candidate

%	1st Place	2nd Place	3rd Place
35	MAGA	GOP	Democrat
18	GOP	MAGA	Democrat
7	GOP	Democrat	MAGA
40	Democrat	GOP	MAGA

Remaining candidates once again shift into any higher-ranked position vacated by the eliminated candidate:

Table 15: Ballot Rankings for Remaining Two Candidates

%	1st Place	2nd Place
35	MAGA	GOP
18	GOP	MAGA
7	GOP	MAGA
40	GOP	MAGA

The GOP candidate is now ranked first on 65% of the ballots, a majority, and thus wins the TVR election. The GOP candidate is Condorcet winner in this four-candidate election, just as in the earlier three-candidate hypothetical—a point that can be confirmed by calculating all the one-on-one comparisons between the GOP candidate and the three others.⁵² Regardless of how many candidates there are, TVR will always elect the Condorcet winner when there is one. Thus, this illustration demonstrates that the TVR procedure can handle a four-candidate election as well as a three-candidate election, and the same point applies to an election with five candidates or even more.

B. Incompletely Ranked Ballots

TVR also can handle the choice of voters to rank fewer candidates than the number they are able. In a four-candidate election, for example, a voter might decide only to rank one candidate first, leaving the rest unranked. Or the voter might decide to rank one candidate first and another candidate second, leaving the other two candidates unranked. Ranking only three candidates is mathematically equivalent to ranking all four in a four-candidate election, because if only one candidate remains unranked that is the same as being ranked last, which earns zero

⁵² Based on the ballots in Table 9, GOP beats both MAGA and Progressive 65-35 and beats Democrat 60-40.

votes in the TVR calculations.

Whenever more than one candidate is unranked, TVR treats all unranked candidates as tied for all unranked positions on a voter's ranked-choice ballot. Thus, in a four-candidate election, if a voter identifies only one candidate as the voter's first choice, leaving the three other candidates unranked, this means those three candidates are tied for second, third, and last place. TVR still gives the voter's first-choice candidate three votes, because the voter prefers that candidate to all three unranked candidates.⁵³ TVR then divides the two votes for second-place candidates and one vote for third-place candidates among the three unranked candidates. In other words, in an election involving four candidates A, B, C, and D, if A is ranked first on a voter's ballot, but no other candidate is ranked, then candidates B, C, and D equally share two votes for second place and one vote for third place. These three candidates hence share three votes equally, meaning these candidates each receive one vote from this voter's ballot.

Suppose instead that in this same four-candidate election, another voter ranks A first and B second, but leaves C and D unranked. Then, A receives three votes from this ballot (being preferred to all three other candidates), and B receives two votes (being preferred to both unranked candidates). The two unranked candidates, C and D, share third place, and thus they each receive a half-vote for being tied for the single vote that being ranked third receives in this four-candidate election. The same treatment applies when two unranked candidates are tied for second place in a three-candidate election: these two candidates also share the single vote for being ranked second in this situation.

Giving each of two candidates half a vote when they are tied for next-to-last place (and also last place) makes sense. It is the equivalent to each of the two being ranked above the other half the time. If the election were conducted in the round-robin format, two candidates tied in this way would mean half the time one would be preferred over the other when compared head-to-head, and the preference would be reversed in the other half. If there were one hundred ballots for which two candidates were tied for the last two places, each candidate would be ahead of the other on 50% of these, for fifty votes, while the other candidate would be ahead on the other 50%, for the other fifty votes to be awarded from these one hundred ballots. When it is just one ballot in this category, each of the two unranked candidates—who are thus tied for the last two places—should still receive 50% of the single vote to be awarded. Accordingly, each of these two tied candidates earn a half-vote from

⁵³ If the election were held in a round-robin format, the voter would vote for the first-choice candidate against each of the three unranked candidates, and thus the first-choice candidate would receive three votes in this round-robin election.

this ballot.

To show how the calculation of incompletely ranked ballots works in the TVR process, Table 16 contains a simple derivative of the previous four-candidate example found in Table 9:

Table 16: Variation on Table 9 with Incompletely Ranked Ballots

%	1st Place	2nd Place	3rd Place	4th Place
35	MAGA			
18	GOP	MAGA	Democrat	Progressive
7	GOP	Democrat	MAGA	Progressive
5	Democrat	GOP	Progressive	MAGA
20	Democrat	Progressive	GOP	MAGA
15	Progressive	Democrat		

In this instance, all of the voters who like the MAGA candidate best decide not to rank any other candidate. Similarly, the voters who like the Progressive candidate best rank the Democrat as second-best but are indifferent between the GOP and MAGA options.

With this set of ballots, TVR proceeds as before. First, it sees that no candidate is ranked first on a majority of ballots and thus calculates total votes for each candidate. These total vote calculations, including the additional steps required for incompletely ranked ballots, is set forth in Table 17:

Table 17: Total Vote Calculations for Ballots in Table 16, Including Incompletely Ranked Ballots

Candidate	1st Place		2nd Place		3rd Place		Subtotal ⁵⁴
	Ballots (P1)	Votes (3*P1)	Ballots (P2)	Votes (2*P2)	Ballots (P3)	Votes (1*P3)	(3*P1) + (2*P2) + (1*P3)
MAGA	35	105	18	36	7	7	148
GOP	25	75	5	10	20	20	105
Democrat	25	75	22	44	18	18	137
Progressive	15	45	20	40	5	5	90
	3-Way Tie for 2nd & 3rd Place ⁵⁵		2-Way Tie for 3rd Place		Subtotal from Above		Total Votes
	$((2*P2) + (1*P3)) \div 3$		$(1*P3) \div 2$				Adding Prior 3 Columns
MAGA	--		7.5		148		155.5
GOP	35		7.5		105		147.5
Democrat	35		--		137		172
Progressive	35		--		90		125

In this case, the Progressive is still the candidate with the fewest total votes and is the first eliminated. As a result, the ballots become as indicated in Table 18:

⁵⁴ As explained in the text, for incompletely ranked ballots it is necessary to add the fractional votes to this subtotal. When three candidates are tied for 2nd and 3rd place, they each receive: $((2*P2) + (1*P3)) \div 3$. When two candidates are tied for 3rd place, each gets $(1*P3) \div 2$.

⁵⁵ In this example, the calculation of " $((2*P2) + (1*P3)) \div 3$ " is $((2*35) + (1*35)) \div 3 = 35$.

Table 18: TVR Elimination Based on Table 17

%	1st Place	2nd Place	3rd Place	4th Place
35	MAGA			
18	GOP	MAGA	Democrat	Progressive
7	GOP	Democrat	MAGA	Progressive
5	Democrat	GOP	Progressive	MAGA
20	Democrat	Progressive	GOP	MAGA
15	Progressive	Democrat		

Table 19 shows the candidates repositioned to fill higher-ranked vacant spots:

Table 19: Ballot Rankings After Table 18 Elimination

%	1st Place	2nd Place	3rd Place
35	MAGA		
18	GOP	MAGA	Democrat
7	GOP	Democrat	MAGA
5	Democrat	GOP	MAGA
20	Democrat	GOP	MAGA
15	Democrat		

Still, no candidate is ranked first on a majority of ballots, and thus the candidates' total votes must be recalculated now that there are only three candidates remaining:

Table 20: Total Vote Calculations for Ballots in Table 19, Including Incompletely Ranked Ballots

Candidate	1st Place		2nd Place		2-Way Ties for 2nd Place		Total Votes
	Ballots (P1)	Votes (2*P1)	Ballots (P2)	Votes (1*P2)	(1*P2) ÷ 2		
					35% Set	15% Set	
MAGA	35	70	18	18	--	7.5	(2*P1) + (1*P2) + 2nd Place Tie Votes 95.5
GOP	25	50	25	25	17.5	7.5	100
Democrat	40	80	7	7	17.5	--	104.5

Now, MAGA is the candidate with the fewest total votes. With MAGA

eliminated, the ballots are as shown in Table 21:

Table 21: TVR Elimination Based on Table 20

%	1st Place	2nd Place	3rd Place
35	MAGA		
18	GOP	MAGA	Democrat
7	GOP	Democrat	MAGA
5	Democrat	GOP	MAGA
20	Democrat	GOP	MAGA
15	Democrat		

With repositioning, Table 22 depicts the ballots:

Table 22: Ballot Rankings After Table 21 Elimination

%	1st Place	2nd Place
35		
18	GOP	Democrat
7	GOP	Democrat
5	Democrat	GOP
20	Democrat	GOP
15	Democrat	

The Democrat is ranked first on more ballots than the GOP candidate, 40% to 25%, and thus wins the TVR election.

C. Strategic Voting

The preceding example involving incompletely ranked ballots reveals an important point about the limits of strategic voting if TVR is the electoral system. We can imagine the MAGA candidate, wanting to avoid losing to the GOP traditionalist, urging voters to rank only the MAGA candidate first and not ranking any other candidate. But in the preceding example, this “bullet voting” strategy results in the Democrat, not MAGA, being elected.⁵⁶ On the assumption that the

⁵⁶ “Bullet voting” is the strategic decision to vote for only one candidate when there is the opportunity to vote for more than one. *Bullet Voting*, CTR. FOR ELECTION SCI., <https://electionscience.org/library/bullet-voting> [<https://perma.cc/94F7-JN72>] (last visited Jan. 16, 2023); see also Deb Otis & Chris Zawora, *Rate of “Bullet Voting” Depends on Candidate Strength, Party Cues, and Other Factors*, FAIRVOTE (Aug. 16, 2021), https://fairvote.org/rate_of_bullet_voting_depends_on_candidate_strength_party_cues_and_ot

voters who rank MAGA first would actually prefer the GOP traditionalist to the Democrat, the strategic voting in this case backfires and produces a less desirable outcome for those who engage in the strategy.

We can generalize this point. As long as the MAGA candidate’s share of first-place votes is under 40%, and as long as all the voters who rank the Democrat first rank the GOP traditionalist second, then the MAGA candidate cannot succeed through a “bullet voting” strategy. These ballots illustrate this mathematical truth:

Table 23: Bullet Voting by MAGA Voters

%	1st Place	2nd Place	3rd Place
39	MAGA		
21	GOP	MAGA	Democrat
40	Democrat	GOP	MAGA

In this case, no candidate has above 50% of first-place votes, and MAGA has the fewest total votes—as indicated in Table 24:

Table 24: Total Vote Calculations for Ballots Based Upon Bullet Voting in Table 23

Candidate	1st Place		2nd Place		2-Way Tie for 2nd Place	Total Votes
	Ballots (P1)	Votes (2 * P1)	Ballots (P2)	Votes (1 * P2)	(1 * P2) ÷ 2	(2 * P1) + (1 * P2) + 2nd Place Tie Votes
MAGA	39	78	21	21	--	99
GOP	21	42	40	40	19.5	101.5
Democrat	40	80	--	--	19.5	99.5

With MAGA eliminated, Democrat has more first-place votes than GOP and wins the TVR election.

The same point is true regardless of how high or low is the share of first-place votes for Democrat and GOP—as long as the share of first-place votes for MAGA stays below 40%, and as long as all voters who rank Democrat first rank GOP second. Here’s the example with Democrat having just under half of all first-place votes:

her_factors [https://perma.cc/ETA8-96TU].

Table 25: Bullet Voting by MAGA Voters with Democratic Candidate Shy of Majority

%	1st Place	2nd Place	3rd Place
39	MAGA		
12	GOP	MAGA	Democrat
49	Democrat	GOP	MAGA

In this case, MAGA has the fewest total votes. Again, Democrat wins once MAGA is eliminated:

Table 26: Total Vote Calculations for Ballots Based Upon Bullet Voting in Table 25

Candidate	1st Place		2nd Place		2-Way Tie for 2nd Place	Total Votes
	Ballots (P1)	Votes (2*P1)	Ballots (P2)	Votes (1*P2)	(1*P2) ÷ 2	(2*P1) + (1*P2) + 2nd Place Tie Votes
MAGA	39	78	12	12	--	90
GOP	12	24	49	49	19.5	92.5
Democrat	49	98	--	--	19.5	117.5

Suppose the share of first-place votes is reversed so that GOP has just under half:

Table 27: Bullet Voting by MAGA Voters with Traditional Republican Candidate Shy of Majority

%	1st Place	2nd Place	3rd Place
39	MAGA		
49	GOP	MAGA	Democrat
12	Democrat	GOP	MAGA

In this case, Democrat has by far the fewest total votes:

Table 28: Total Vote Calculations for Ballots Based Upon Bullet Voting in Table 27

Candidate	1st Place		2nd Place		2-Way Tie for 2nd Place	Total Votes
	Ballots (P1)	Votes (2*P1)	Ballots (P2)	Votes (1*P2)	(1*P2) ÷ 2	(2*P1) + (1*P2) + 2nd Place Tie Votes
MAGA	39	78	49	49	--	127
GOP	49	98	12	12	19.5	129.5
Democrat	12	24	--	--	19.5	43.5

With Democrat eliminated, GOP has more first-place votes than MAGA and thus wins. Again, MAGA’s strategy of bullet voting is defeated.

The ability to defeat MAGA’s strategy of bullet voting as long as MAGA’s share of first-place votes is under 40%, and as long as the voters who rank Democrat first rank GOP second, is powerful. It means that Democrats can protect against MAGA extremists winning whenever their share of the electorate combined with the share who prefer a GOP traditionalist is above 60%. Whether the Democrats’ own share is above or below 40%, as long as there are enough voters who most prefer a GOP traditionalist to cross the 60% mark, Democrats have it within their power under TVR to prevent the election of a MAGA candidate. Democrats may not be able to win the election themselves, but they at least can ensure that the MAGA extremist will not prevail.

Moreover, even if the share of the electorate who ranks the MAGA candidate first reaches 40% or above, the Democrats can prevent successful bullet voting on behalf of the MAGA candidate as long as enough voters who rank the GOP candidate first are willing to rank the Democrat second. Indeed, when the share of the electorate who ranks MAGA first is exactly 40%, it takes only one voter who ranks GOP first to rank Democrat second to prevent the success of the MAGA bullet voting strategy. We can illustrate this point with these ballots:

Table 29: Bullet Voting by MAGA Voters with 1% of GOP Voters Favoring a 2nd Place Democratic Candidate

%	1st Place	2nd Place	3rd Place
40	MAGA		
19	GOP	MAGA	Democrat
1	GOP	Democrat	MAGA
40	Democrat	GOP	MAGA

Given these ballots, no candidate has above 50% of first-place votes, and MAGA has the fewest total votes—see Table 30:

Table 30: Total Vote Calculations for Ballots Based Upon Bullet Voting in Table 29

Candidate	1st Place		2nd Place		2-Way Tie for 2nd Place	Total Votes
	Ballots (P1)	Votes (2*P1)	Ballots (P2)	Votes (1*P2)	(1*P2) ÷ 2	(2*P1) + (1*P2) + 2nd Place Tie Votes
MAGA	40	80	19	19	--	99
GOP	20	40	40	40	20	100
Democrat	40	80	1	1	20	101

With MAGA eliminated, Democrat has more first-place votes than GOP and wins.

The same point is true even if we increase or decrease the relevant share of first-place votes for Democrat or GOP within their combined 60%. If Democrat’s share of first-place votes marginally increases, while GOP’s marginally decreases, these become the ballots:

Table 31: Bullet Voting by MAGA Voters with 1% of GOP Voters Favoring a 2nd Place Democratic Candidate, and Increased Democratic Support

%	1st Place	2nd Place	3rd Place
40	MAGA		
18	GOP	MAGA	Democrat
1	GOP	Democrat	MAGA
41	Democrat	GOP	MAGA

MAGA has the fewest total votes; with MAGA eliminated, Democrat still wins:

Table 32: Total Vote Calculations for Ballots Based Upon Bullet Voting in Table 31

Candidate	1st Place		2nd Place		2-Way Tie for 2nd Place	Total Votes
	Ballots (P1)	Votes (2 * P1)	Ballots (P2)	Votes (1 * P2)	(1 * P2) ÷ 2	(2 * P1) + (1 * P2) + 2nd Place Tie Votes
MAGA	40	80	18	18	--	98
GOP	19	38	41	41	20	99
Democrat	41	82	1	1	20	103

Conversely, if GOP's share of first-place votes marginally increases, while Democrat's marginally decreases, then these become the ballots:

Table 33: Bullet Voting by MAGA Voters with 1% of GOP Voters Favoring a 2nd Place Democratic Candidate, and Increased GOP Support

%	1st Place	2nd Place	3rd Place
40	MAGA		
20	GOP	MAGA	Democrat
1	GOP	Democrat	MAGA
39	Democrat	GOP	MAGA

Now Democrat has the fewest total votes:

Table 34: Total Vote Calculations for Ballots Based Upon Bullet Voting in Table 33

Candidate	1st Place		2nd Place		2-Way Tie for 2nd Place	Total Votes
	Ballots (P1)	Votes (2*P1)	Ballots (P2)	Votes (1*P2)	(1*P2) ÷ 2	(2*P1) + (1*P2) + 2nd Place Tie Votes
MAGA	40	80	20	20	--	100
GOP	21	42	39	39	20	101
Democrat	39	78	1	1	20	99

With Democrat eliminated, GOP has the most first-place votes and wins under TVR.

For each additional point above 40% in the share of the electorate that ranks MAGA first, it takes two additional points in the share of voters who rank GOP first and Democrat second to defeat MAGA's strategic bullet voting. This is because MAGA being ranked first earns two votes for each of those ballots, while Democrat being ranked second on a ballot that ranks GOP first is worth only one vote. To illustrate:

Table 35: Bullet Voting by MAGA Voters with Increased GOP Voters Favoring a 2nd Place Democratic Candidate

%	1st Place	2nd Place	3rd Place
41	MAGA		
16	GOP	MAGA	Democrat
3	GOP	Democrat	MAGA
40	Democrat	GOP	MAGA

Given these ballots, MAGA has the fewest total votes, and Democrat again wins:

Table 36: Total Vote Calculations for Ballots Based Upon Bullet Voting in Table 35

Candidate	1st Place		2nd Place		2-Way Tie for 2nd Place	Total Votes
	Ballots (P1)	Votes (2 * P1)	Ballots (P2)	Votes (1 * P2)	(1 * P2) ÷ 2	(2 * P1) + (1 * P2) + 2nd Place Tie Votes
MAGA	41	82	16	16	--	98
GOP	19	38	40	40	20.5	98.5
Democrat	40	80	3	3	20.5	103.5

Most significantly, if Democrats can hold MAGA’s share of first-place votes to under 45%, and if Democrats can maintain their own share of first-place votes to at least above one-third of the electorate, while convincing half of the voters who rank the GOP traditionalist first to rank the Democrat second, then the Democrats can still defeat MAGA’s strategic bullet voting. Here are the ballots to demonstrate this:

Table 37: Bullet Voting by MAGA Voters with Less Than 45% Support

%	1st Place	2nd Place	3rd Place
44	MAGA		
11	GOP	MAGA	Democrat
11	GOP	Democrat	MAGA
34	Democrat	GOP	MAGA

Given these ballots, MAGA again has the fewest total votes, and Democrat wins:

Table 38: Total Vote Calculations for Ballots Based Upon Bullet Voting in Table 37

Candidate	1st Place		2nd Place		2-Way Tie for 2nd Place	Total Votes
	Ballots (P1)	Votes (2 * P1)	Ballots (P2)	Votes (1 * P2)	(1 * P2) ÷ 2	(2 * P1) + (1 * P2) + 2nd Place Tie Votes
MAGA	44	88	11	11	--	99
GOP	22	44	34	34	22	100
Democrat	34	68	11	11	22	101

These examples illustrate just how powerful concerted resistance to bullet voting can be. This remains true even when far-right candidates approach 45% of the electorate, and the left's share of voters simultaneously drops to almost one-third. Likewise, the same point applies to extreme left-wing candidates: as long as the right maintains above one-third of the electorate, the right can prevent successful bullet voting on the left even when the left's share of the electorate comes close to within half of the electorate. In this way, TVR enables anti-extremist coalitions to block the election of extremists on either the right or the left, and this remains true even when the extremists attempt to manipulate the result through bullet voting.

V. CONCLUSION

The TVR procedure deserves serious consideration by any state or locality contemplating the adoption of RCV. Methodologically identical to the regular "instant runoff" version of RCV except in one key detail, TVR offers all the attributes of an Alaska-style RCV system that make it an attractive alternative to the conventional electoral system used in most states. TVR, like Alaska's system, can permit multiple candidates to appear on the general election ballot, so that voters can choose among more moderate contenders who otherwise would be eliminated in partisan primaries (as well as still having the option of voting for the candidates who would win these primaries). The 2022 midterms clearly show the advantage of giving general election voters the chance to elect moderates who could not win their own party's primary.

TVR, moreover, has an added benefit lacking in the regular "instant runoff" version of RCV. The one methodological change that TVR makes to the "instant

runoff⁹ procedure enables the RCV election to identify—and declare to be the winner—the candidate whom the majority of voters most prefer when compared to every other candidate. TVR does this by taking account of all the rankings on the ballots that the voters cast when deciding which candidate to eliminate in the instant runoff process, rather than just taking account of the first-choice preferences on the ballots. Using all the information from the ballots in this way, TVR is able to identify which candidate is the weakest overall—and thus most deserving to be eliminated—because that candidate overall is preferred less often when compared to each other candidate. By contrast, the regular instant runoff procedure, as used in Alaska, will eliminate a stronger candidate rather than the weakest one by failing to consider how often voters prefer the stronger candidate to others in the race even when that stronger candidate is not the voters' first choice.

To be sure, TVR is not a perfect electoral procedure. No voting system is. And if the goal is to design an electoral system that most straightforwardly elects the candidate most preferred by a majority of voters, one can more directly replicate a round-robin election using ranked-choice ballots. A simulated round-robin election using ranked-choice ballots, in contrast to TVR, would start by examining how each candidate fares against every other candidate from their relative position on all the ranked ballots, then elect the candidate who beats all others in these head-to-head comparisons. In the event that there is no outright round-robin winner, it would resort to calculating the total votes that each candidate receives from all of these head-to-heads. But in contrast to constructing a simulated round-robin election from ranked-choice ballots, the TVR procedure has the virtue of being structured in the form of an instant runoff and thus most directly comparable to the kind of RCV system already used in Alaska and elsewhere. In this sense, TVR is the easiest way to incorporate the majority-maximizing nature of a round-robin election within the structural contours of an instant runoff.

As for the fear that TVR would be acutely vulnerable to strategic voting in a way that regular instant runoff is not, there are sound reasons to believe that those fears are unwarranted. While more research should be conducted on this point, including simulating conditions of electoral competition when the one variable is whether the electoral system in place is TVR rather than a regular instant runoff, the mathematical properties of TVR make it relatively immune to strategic manipulation by extremist candidates. As long as the supporters of anti-extremist candidates vote sincerely, they can defeat strategic voting by the supporters of an extremist opponent when the extremist faction of the electorate is unable to command close to a majority of all voters. If extremists remain under 40%, or even 45%, of the whole electorate, the opposition to extremism can be heartened by their capacity to defeat extremism by voting sincerely under TVR.

Add to this analysis the fact that a regular instant runoff will often cause an extremist candidate to win even when a majority would prefer a non-extreme opponent. Given the goal of avoiding the election of extremist candidates who do not command support from a majority of the electorate, choosing a regular instant runoff instead of TVR is counterproductive. As demonstrated in this article, strategic voting in a TVR context does not increase an extreme candidate's chances of winning an election with minority support. Indeed, even after accounting for the limited risk of strategic voting, TVR more likely will prevent extremists who lack majority support from prevailing when compared to a regular instant runoff system. Thus, on balance, the combined goals of adopting an electoral system that maximizes the preferences of the majority and simultaneously avoids the election of extremists provide strong reasons to favor TVR over the version of instant runoff voting used in Alaska's new electoral system.

APPENDIX:

A. Analysis of Cast Vote Record for Alaska U.S. House Special Election

The Election Law at Ohio State program analyzed the Cast Vote Record (CVR) released by the Alaska Division of Elections (AK DOE) for the 2022 Alaska U.S. House Special General Election on August 16, 2022.⁵⁷

- 1) As explained by the AK DOE, the CVR contains the votes and rankings on the special general election ballots that were scanned.⁵⁸ It does not include ballots that were only counted by hand. As such, vote totals in the table do not match the official results released by the AK DOE, which include Rounds 1 and 2 of instant runoff voting.⁵⁹
- 2) Our analysis of the CVR sought to treat skipped rankings, overvotes, and write-ins in the manner described in Terms and Definitions on the results page for this election on the AK DOE website.⁶⁰
 - a. AK DOE explains its treatment of undervotes (or skipped rankings) as follows:

⁵⁷ See *2022 Special General Election for U.S. Representative – August 16, 2022: Cast Vote Record*, ALASKA DIV. OF ELECTIONS, *supra* note 23.

⁵⁸ *Id.*

⁵⁹ See ALASKA DIV. OF ELECTIONS, 2022 SPECIAL GENERAL ELECTION RCV TABULATION, *supra* note 17.

⁶⁰ See *2022 Special General Election for U.S. Representative – August 16, 2022: Terms and Definitions*, ALASKA DIV. OF ELECTIONS, *supra* note 23

- If you skip a ranking, your next ranking moves up.⁶¹
 - If you skip two or more rankings in a row, only the rankings before the skipped rankings will count.⁶²
- b. AK DOE explains that an overvote occurs when a voter gives multiple candidates the same ranking.⁶³ “Under Alaska law, an overvote and all lower rankings do not count. Thus, overvotes will not be skipped, but will invalidate subsequent rankings.”⁶⁴
- c. AK DOE explains its treatment of write-ins when they do not meet the threshold to be considered as follows: “the write-in candidates will be unresolved and rankings for them will be excluded, meaning they will not be considered.”⁶⁵ Further, “a ranking for a write-in will not be considered a blank or skipped ranking”⁶⁶

A small number of ballots contain rankings that present questions even after the vote-counting rules have been applied. This may also lead to minor differences from the official results.

- 3) Not included in the analysis are ballots that did not contain any valid ranking for a non-write-in candidate. Possible reasons for this include: voters ranking only write-in candidates, voters skipping the first two (or more) ranking spots, or voters ranking two candidates as their first choice.

B. Comparing AK DOE Round 1 Official Results and the Round 1 Results from Election Law at Ohio State Analysis.

As this table indicates, the Round 1 results from AK DOE and from the *Election Law at Ohio State (ELOSU)* analysis are very close:

⁶¹ *See id.*

⁶² *See id.*

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ *Id.* (“Write-in candidates will only advance if they come in first or a close second in the initial results.”); *Alaska Better Elections Implementation*, ALASKA DIV. OF ELECTIONS, *supra* note 30.

⁶⁶ *2022 Special General Election for U.S. Representative – August 16, 2022: Terms and Definitions*, ALASKA DIV. OF ELECTIONS, *supra* note 23

Table A.1: Alaska Round 1 Results

Candidate	AK DOE ⁶⁷	<i>ELOSU</i> Analysis	Number Difference	Percent Difference
Begich	53,810	53,735	-75	-0.14%
Palin	58,973	58,920	-53	-0.09%
Peltola	75,799	75,733	-66	-0.09%
Subtotal	188,582	188,388	-194	

It is plausible that the slightly lower counts for each candidate in our analysis is the absence of the hand-counted ballots that were not included in the CVR.

⁶⁷ ALASKA DIV. OF ELECTIONS, 2022 SPECIAL GENERAL ELECTION RCV TABULATION, *supra* note 17.