

Comparing Bucklin Voting to Ranked Choice Voting and Approval Voting

An Analysis for the City and County of Denver
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This report differentiates between three *entirely separate* voting methods. According to Arrow's Impossibility Theorem, no mathematically perfect voting method exists. Thus, public administrators look to political scientists to aid in identifying best practices.

Why is Bucklin Voting significant?

Among the alternative voting methods that have been tried, but failed is Bucklin Voting (BV). The Bucklin ballot uses rankings, so it is tempting to confuse it with Ranked Choice Voting (RCV). However, BV's tally makes it less like RCV and more like Approval Voting (AV).

HISTORIC & LEGAL OVERVIEW

Bucklin Voting was first proposed by Marquis de Condorcet in 1793, and later implemented by James W. Bucklin in Grand Junction, CO in 1909. It is sometimes called the Grand Junction Method. It was eventually used in 60+ cities including Denver & San Francisco. The courts struck it down in Minnesota and Oklahoma; Brown vs. Smallwood (1915) found that it provided more than one vote per voter. Other places including Denver repealed it because it is susceptible to strategic voting.

Ranked Choice Voting is the voter-centered name for a system invented for proportional representation in multi-winner elections in the 1850's. It was later adapted for implementation in single-winner races by William Ware of MIT in the 1870's. RCV is sometimes called Single Transferable Vote when used in multiple-winner races and is sometimes called Instant Runoff Voting when used in single-winner races. RCV was first implemented in the US in [Ashtabula, Ohio in 1915](#). Ranked Choice Voting has withstood legal challenges most recently in [Baber v. Dunlap](#) in the District Court of Maine, it was also found that "...one person, one vote' does not stand in opposition to ranked balloting, so long as all electors are treated equally at the ballot."

Approval Voting was first implemented in Fargo, ND in 2020 with an additional use pending in St. Louis, MO, it has not yet been challenged in court. Because it can produce more cumulative votes than voters, it may not withstand such a legal challenge.

VOTING & TALLY METHOD OVERVIEW

Bucklin Voting (BV)

Voting: Voters rank the candidates in order of preference (1st, 2nd, 3rd).

Tabulation and outcome: Majority threshold is set at (50% +1). Election officials tabulate the 1st round of votes. If a candidate has a majority, then they win. If no candidate achieves this threshold, then the votes on each ballot for the 2nd place candidates are ADDED to the first

round tally. If a candidate achieves a 50%+1 majority then they win. If more than one candidate passes the threshold, the candidate with the most accumulated votes wins. If no candidate passes the threshold, it continues to round 3. If no candidate has a majority after round 3, the candidate with a plurality of the accumulated vote is declared the winner.

Problems:

- Voters are incentivized to bullet vote for one candidate, that way their support cannot be used to water-down the support for their first choice.
- Candidates are incentivized to encourage bullet voting and to not build political coalitions outside of their base.
- Instead of eliminating candidates, subsequent round votes are added - there can be more votes than voters. Thus it was found unconstitutional.
- The majority in the final round of active ballots can be less than would have been required in the first round.
- More than one candidate can pass the threshold in subsequent rounds of tally. There is no consideration given to the strength of support given to the candidates by the rankings.
- If no candidate passes the majority threshold in the third round, the winner is a plurality winner.

Utility: In hand-counted elections, adding the total of votes each round is simpler than RCV.

Ranked Choice Voting (RCV)

Voting: Voters rank the candidates in order of preference (1st, 2nd, 3rd).

Tabulation and outcome: Majority threshold is set at $((1/(\text{number of seats to be filled} + 1)) + 1)$; in single-winner races this simplifies to (50% +1). Election officials tabulate the 1st round of votes. If a candidate has a majority of the first choice votes, then they win. If no candidate achieves this threshold, then the candidate with the fewest first choice votes is ELIMINATED. The votes for the eliminated candidate are then counted for the second choice indicated on those ballots. The process continues until a candidate has a majority. In multiple-winner races, when the win threshold is passed the votes in surplus of the threshold are transferred to those ballots next active choice before the next elimination.

Problems:

- The majority in the final round of active ballots can be less than would have been required in the first round.

Utility:

- Finds a majority of the active ballots in one round of voting.
- Replaces top-two runoffs which are an added cost and tend to have lower turnout.
- Political scientists including Jack Nagel, Jack Santucci, and Larry Diamond indicate that RCV best serves the voters.

Approval Voting (AV)

Voting: Voters vote for as many candidates as they approve.

Tabulation and outcome:

Election officials tabulate the votes. The candidate with the most votes wins.

Problems:

- There is no majority threshold.
- There can be more votes than voters; AV likely will not withstand legal scrutiny.
- Strategic 'bullet voting' is incentivised, as approving more than one candidate weakens support for the favorite.
- There is no consideration given to the strength of support for candidates.

Utility: In places without ranked choice capability or a majority target, AV can be a temporary improvement for voter experience over plurality elections.

COMPARING VOTING METHODS

Data type overview

Ballots are a measure of political intent and different voting methods collect different types of data. In the social sciences, different measuring tools collect different levels of detail. Quantitative measures are always more detailed than qualitative. Ordinal data always collects more information than nominal. Nominal measures are a type of qualitative data, there is no objective measure between the selections. Ordinal data is a type of quantitative data, it differentiates between items being measured. BV and RCV collect ordinal data, but use it differently. AV collects nominal data.

Bucklin Voting versus Ranked Choice Voting

BV & RCV Similarities

Ballot Visual: The BV and RCV ballots allow rankings.

Ordinal Data: Ideally, voters fill out both BV and RCV ballots with the same logic and intent.

Majority Threshold: Both methods have a majority threshold.

BV & RCV Differences

Ballot Visual: The BV ballots allow ranking for 3 candidates. RCV ballots allow for ranking any number of candidates. In practice, the number of rankings is usually capped at between 5 and 8.

Number of Votes Tabulated: In the BV method, no candidates are eliminated, therefore no votes are transferred and first and subsequent votes are accumulated, resulting in more votes

than ballots. Unlike BV, by design the RCV tally method never results in a situation in which the number of votes never exceeds the number of ballots. It is mathematically impossible for two candidates to surpass the 50%+1 victory threshold. This is because when counting 100% of the ballots, a candidate's total cannot exceed 50%.

Majority Tabulation: Worst-case scenario in BV - no candidate passes the threshold. This happened in Denver in 1923. Additionally, it can happen that multiple candidates cross the threshold in which case the candidate with a plurality wins. Worst-case scenario in RCV - the majority in the final round of active ballots can be less than would have been required in the first round. In practice, this happens rarely - about 0.05% of the time. The odds of this occurring can be reduced by offering more rankings on the ballot.

Use of ordinal data: The ordinal data is used differently between the methods. In BV the data indicates in which round votes are added into the candidates accumulated totals. In RCV, the ordinal data indicates where the vote should go in the event that the stronger preference candidate is eliminated.

Strategic Voting: The BV method encourages a "bullet vote" for only one candidate. Historically, BV candidates successfully gamed disproportionate support by directing their voters to "bullet vote" for only them.

- "Bullet vote for me" succeeded. It yielded a win for a candidate who was unlikely to be a second-choice candidate for the majority. (Stapleton proposed extending prohibition) (Denver, CO)

RCV candidates have found no effective way to game disproportional support. Efforts to do so have back-fired.

- "Rank me 1, 2, and 3" failed. It yielded no political voice for a candidate's supporters after he was eliminated. (Oakland, CA)
- "Rank me second" failed. It yielded early elimination for a candidate without enough first round support to avoid elimination. (Green party TX)
- "Bullet vote for me" failed. It yielded a loss for a candidate who failed to get enough second-choice votes to win. (Telluride, CO)

Vote Ceiling: BV limits voters to vote for three candidates, the maximum number of votes is three times the number of voters. RCV allows the vote to be active for only one candidate at a time; the ceiling is one vote per voter.

Majority Rule: Both BV and RCV have a 50%+1 threshold for a victorious candidate through the third round. BV does not guarantee a majority winner, if no candidate surpasses the 50%+1 threshold at the end of round three, then the candidate with the plurality support over the three rounds wins the race.

Bucklin Voting versus Approval Voting

BV & AV Similarities

Accumulative: Both BV and AV ballots can produce election results where the vote totals exceed the number of ballots cast.

Strategic Voting: Historically, both BV and AV candidates successfully gamed disproportionate support by directing their voters to “bullet vote” for only them.

- “Bullet vote for me” succeeded. It yielded a win for a candidate who was unlikely to be a second-choice candidate for the majority. (Stapleton proposed extending prohibition) (Denver, CO)

AV candidates have also been successful in races where they encouraged bullet voting.

- “Bullet vote for me” succeeded. Winning candidates used this message. ([Fargo 2020](#))

Plurality Potential: Neither BV and AV can guarantee a majority winner in active ballots. In Denver 1923, the BV winner fell short of the majority. The 2020 adoption of AV in St. Louis uses a separate top-two runoff.

Super Plurality potential: Both BV and AV produce election results where candidates win with a plurality, not a majority. The larger the pool of candidates the more likely both AV and BV will produce a plurality winner. Both methods also could produce a situation in which a candidate wins with a “super plurality,” because the vote total for multiple candidates surpassed the number of ballots cast.

BV & AV Differences

Ballots: BV ballots look more similar to RCV ballots. AV ballots look more like traditional plurality voting ballots, with slightly different voting instructions.

Majority Threshold: The BV method of electing a winner occurs in rounds of voting accumulation to reach the 50%+1 threshold. AV just holds “one round” of tabulation and elects the candidate with a plurality - there is no majority threshold.

Vote Ceiling: BV limits voters to vote for three candidates, therefore it reigns in the amount of votes that can exceed the number of ballots. In contrast, AV does not place a limit to the number of votes a voter can make—the only limit to voters is the number of candidates on the ballot.

Measurement Modality: BV uses an ordinal measurement, whereas AV uses a weaker nominal measurement.

About this Report

Information for this report was compiled by a team of researchers including FairVote Minnesota, More Equitable Democracy, RCV for Colorado, and the RCV Resource Center.