

Multi-Winner Ranked Choice Voting Process

Adapted from https://www.fairvote.org/multi_winner_rcv_example

Overview

Under ranked choice voting, voters rank multiple candidates in order of choice. From the voter's perspective, they mark their favorite candidate as first choice and then indicate their second and additional back-up choices in order of choice. Voters may rank as many candidates as they want, knowing that indicating a later choice candidate will never hurt a more preferred candidate.

How Winners Are Determined

To find out who wins, votes are counted in a series of rounds (each round is like our usual process of additional balloting). It is possible for all available positions to be elected in the first round. In each round, one of two things happens: either a winning candidate is identified and elected and any votes they received in excess of what they needed to win (the election threshold) transfer to their next choices; or if no candidate receives the number of votes need to win then the candidate in last place is eliminated, in which case votes for that candidate transfer to their next choices.

First, we need to know how many votes are enough to guarantee victory, which we call the election threshold. That threshold is the number of votes that mathematically guarantees that the candidate cannot lose. For example, if three candidates will be elected, the threshold is 25% of votes. That's because if one candidate has more than 25% of the vote, it is impossible for three other candidates to get more votes than them (because that would add up to more than 100% of votes). Further, were four positions to be filled, the threshold would be 20% of votes. If five positions, the the election threshold is about 17% of votes.

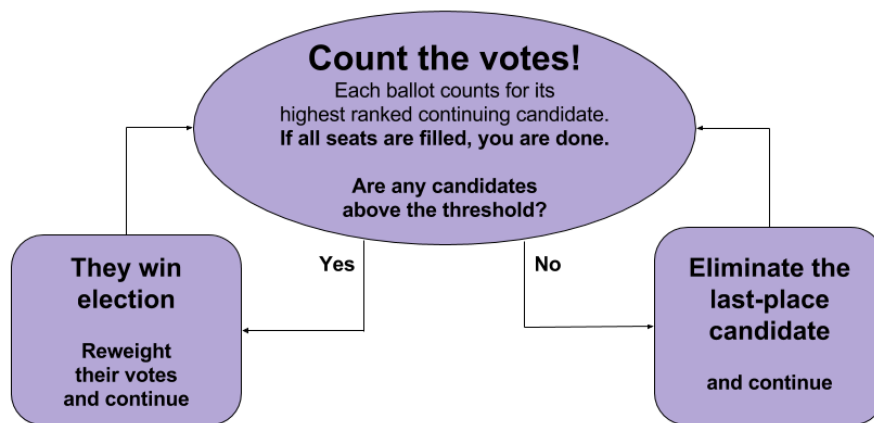
Initially, every vote counts for its first choice only. If enough candidates have more votes than the threshold to win so that every seat is filled, then those candidates win and the vote counting is over (thanks be to God!). Otherwise, votes are counted in rounds as follows:

Election: if any candidates have more votes than the election threshold, they are elected. The number of votes they received in excess of the threshold then are added to the totals of continuing candidates. This works by adding a fraction of each vote for the elected candidate to the totals of the candidate ranked next. For example, if a candidate has 10%

more votes than the election threshold, every one of their voters will have 10% of their vote count for their next choice. That way, voters aren't punished for honestly ranking a very popular candidate first.

Elimination: if no candidate has more votes than the election threshold, the candidate with the fewest votes is eliminated. When a voter's top choice is eliminated, their vote instantly counts for their next choice. That way, voters aren't punished for honestly ranking their favorite candidate first, even if that candidate cannot win.

The process of counting surplus votes and eliminating last-place candidates repeats until all seats are filled. Here is a flowchart that summarizes the process:



An Example at St. Swithen's by the Swamp

The chart below shows the results of a competitive ranked choice vestry election at St. Swithen's Episcopal Church by the Swamp. Six candidates (Saints) are running for three vestry seats and a total of 920 votes are cast from the congregation. With 920 votes cast, the election threshold (see To Determine Winners, above) is 230 votes, 25% of 920.

Sample Multi-Winner Election at St. Swithen's by the Swamp: 920 ballots cast

| Nominees | Round 1 | Round 2 | Round 3 | Round 4 | Round 5 |
|-------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| St. Anna Alexander of Georgia | 27.2% 250 votes | 25% 230 votes | 25% 230 votes | 25% 230 votes | 25% 230 votes |
| St. Paul of Tarsus | 19% 175 votes | 20.1% 185 votes | 21.2% 195 votes | 34.8% 320 votes | 25% 230 votes |
| St. Mary Magdalene | 14.1% 130 votes | 14.3% 132 votes | 20.7% 190 votes | 22.3% 205 votes | 27.2% 250 votes |
| St. Julian of Norwich | 14.1% 130 votes | 14.1% 130 votes | 17.4% 160 votes | 17.9% 165 votes | 18.9% 174 votes |
| St. Augustine of Canterbury | 14.7% 135 votes | 15.5% 143 votes | 15.8% 145 votes | 0.0% 0 votes | 0.0% 0 votes |
| St. Peter of Bethsadia | 10.9% 100 votes | 10.9% 100 votes | 0.0% 0 votes | 0.0% 0 votes | 0.0% 0 votes |

Round 1: St. Anna Alexander of Georgia has 250 votes, 20 more than the 230 vote election threshold, and wins the first seat.

A count of all first choices elects the most popular candidate, St. Anna Alexander. With a total of 250 votes, St. Anna has 20 more votes than the threshold of 230, so 20 votes will transfer to other candidates. This is done by transferring 8% of every St. Anna voter's ballot to its next choice (8% of 250 is 20). Of the 250 voters who ranked St. Anna highest, 125 ranked St. Paul of Tarsus next; 100 ranked St. Augustine of Canterbury next; and 25 ranked St. Mary Magdalene next. As a result, in the following round, St. Paul receives 10 votes (8% of 125); St. Augustine receives 8 votes (8% of 100); and St. Mary Magdalene receives 2 votes (8% of 25). St. Anna keeps the other 92% of every ballot as her vote total, which is equal to the election threshold of 230 votes

Round 2: No candidate surpasses the election threshold of 25%, so St. Peter of Bethsadia, having the fewest votes, is eliminated.

After transferring St. Anna's votes to their next choices, no candidate is above the threshold. As a result, the weakest candidate, St. Peter, is eliminated (see above, How Winners Are Determined, Elimination). Ballots counting for St. Peter are added to the totals of their next choices. Of the 100 voters who ranked St. Peter highest, 58 ranked St. Mary Magdalene next, 30 ranked St.

Julian of Norwich next, 10 ranked St. Paul of Tarsus next, and 2 ranked St. Augustine of Canterbury next.

Round 3: Again, no election occurs so now St. Augustine of Canterbury, who has the fewest votes, is eliminated.

After St. Peter's votes transfer to their next choices, still no new candidate is above the threshold. Now, the weakest candidate is St. Augustine. He is eliminated, and ballots counting for him are added to the totals of their next choices. Of the 145 voters who ranked St. Augustine highest among the remaining candidates, 125 ranked St. Paul next; 15 ranked St. Mary Magdalene next; and 5 ranked St. Julian of Norwich next. Some of these voters may have ranked St. Anna Alexander or St. Peter next, but as those candidates are elected and eliminated respectively, ballots that would count for them move on to their *next* choice instead.

Round 4: St. Paul of Tarsus has more votes than the threshold and wins the second seat.

After receiving the lion's share of next-choice votes from St. Augustine's voters, St. Paul is well over the threshold and is elected. He has 90 votes in excess of the threshold, so 90 votes will transfer to other candidates. This will work by transferring 28.125% of every ballot counting for St. Paul to its next choice (28.125% of 320 is 90). Of the 320 voters who ranked St. Paul highest among the remaining candidates, 160 ranked St. Mary Magdalene next, 32 ranked St. Julian next, and 128 only ranked St. Anna and St. Augustine next. As a result, St. Mary Magdalene receives 45 votes (28.125% of 160); St. Julian receives 9 votes (28.125% of 32); and 36 votes (28.125% of the 128 ballots not ranking any other continuing candidates) are *inactive* and do not contribute to any other candidates.

Round 5: St. Mary Magdalene has more votes than the threshold and wins the last seat.

After St. Paul's votes transfer to their next choices, St. Mary Magdalene has more votes than the threshold and wins the last seat. Because all three seats have been filled, the vote counting can now end; there is no need to transfer St. Mary Magdalene's surplus support.

Final Results: The winners of the three vestry seats at St. Swithen's by the Swamp are St. Anna Alexander of Georgia, St. Paul of Tarsus, and St. Mary Magdalene.