

RANKED CHOICE VOTING (RCV) JUST A PROCESS REVIEW

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ABSTRACT. “[F]or single-winner elections in which voters have one vote and rank candidates in order of preference. If no candidate receives a majority of first preference rankings, the candidate with the fewest number of votes is eliminated and that candidate’s votes redistributed to the voters’ next preferences among the remaining candidates. This process is repeated until one candidate has a majority of votes among candidates not eliminated”...

See http://en.wikipedia.org/wiki/Instant-runoff_voting

Theorem 1 (The RCV Theorem). *RCV is valid for selection of one candidate from many: A, B, C, or D using all voters votes cast re-allocated but not discarded.*

Definition 1.

$$(choice) \quad \begin{pmatrix} 1st & 2d. & 3d. \\ \mathbf{A1}_n & \mathbf{A2}_n & \mathbf{A3}_n \\ \mathbf{B1}_n & \mathbf{B2}_n & \mathbf{B3}_n \\ \mathbf{C1}_n & \mathbf{C2}_n & \mathbf{C3}_n \\ \mathbf{D1}_n & \mathbf{D2}_n & \mathbf{D3}_n \end{pmatrix}$$

$$(total) \quad \text{Votes}_{total} = \mathbf{A1}_n + \mathbf{B1}_n + \mathbf{C1}_n + \mathbf{D1}_n$$

Proof. Since $A \rightarrow D_n$ candidate with lowest votes eliminated and eliminated candidate votes recast as 2d. choice then added to remaining 1st choice candidates totals, so $\text{Votes}_{total} =$ total votes cast none are discarded, but after the first candidate elimination there appears to become a problem; for example, how to *have every vote count*, but maybe not:

- (1) Voter choice $D1$ eliminated because of least 1st. choice and 1st. round votes counted.
- (2) Deleted $D1$ votes redirected to $A \rightarrow C$ 2d. choice the added into 1st choice vote counts.

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- (3) So, the second round runoff, for example eliminate $B1_n$ so $B1$ votes redirected to remaining $A1$ or $C1$ but to use all voters votes; it follows, the 3d. choice column choices must be added to the 1st choice else voter's votes would be eliminated from the cast votes.

□

Corollary 1. *It is apparent the voters choice for voting their 1st choice is legitimate voter preference ranking and for first-round runoff and the elimination of one candidate of many allows a voters vote to become recast as a voters 2d choice vote, but when eliminating more than one candidate the voters 3d. choice may be valid as their first choice by this method of repeated or second-round runoff.*

Corollary 2. *Therefore I do not find this method of RCV to be representative of the voters choice. So, I would think the only valid method would remain as the candidate with the most votes wins the voter election preference results.*

Corollary 3. *But, maybe somebody could explain in detail how—for example, when the number of candidates is > 3 and presented to the voters for selection; as a result, is a voters worst choice presented as the best resulting candidate by use of this RCV process method?*