

Bucklin with Approval then Instant Runoff Voting (updated 3 June 2021)

Single-Winner Election (with 4 candidates)

The goal of a single-winner election is to choose a candidate with broad public support. “Broad public support” can be summarized by a single metric:

The winning candidate should receive some level of support from a majority of voters.

Conversely, the winning candidate must not be the most opposed candidate of a majority of voters. The simplest way to reliably achieve this goal is by using a runoff system between candidates based on some initial voting scheme (plurality, range/score, approval, ranking, etc.). Election systems without runoffs often fail to produce a majority winner because voters can opt to choose a single candidate (or if forced to choose additional candidates they can choose dishonestly to minimize risk to their favorite). For example, range voting and approval voting will reduce to plurality (first past the post) voting if voters refuse to support any candidate but their favorite.

However, runoff schemes have the flaw of being “non-monotonic”. This means that a candidate A who would win a runoff against B but not C might fare better if some of their votes had been changed to candidate B. Another possibility is that A would win a runoff against either B or C, but A does not make it to the runoff. Such elections still succeed in meeting the stated metric for successful elections, but the possibility of such peculiar outcomes can erode faith in the election system, especially a new one.

Hence runoffs should be avoided if possible, and if used should reward candidates with broad-based support and not simply a large minority of dedicated voters. The proposed “Bucklin with Approval then Instant Runoff” method attempts to satisfy those criteria.

Voters rank candidates in order and indicate whether each of those candidates is “approved” or not. Candidates ranked 1st are always treated as approved. Votes for approved candidates are counted one rank at a time until the leading candidate has votes from a majority of voters (Bucklin voting). If that fails to produce a majority, then an instant runoff is held between the two candidates with the most “approval” votes.

Features

A candidate with an absolute majority of 1st rank votes will win.

If a majority of voters split all allowed 1st and 2nd rank approved votes between two candidates, then one of those candidates will win.

If a majority of voters split all allowed 1st, 2nd, and 3rd rank approved votes between three candidates, then one of those candidates will win.

The candidate with the lowest approval cannot win unless that approval is over 50%.

The last choice of a majority of voters cannot win (like other true runoff methods but unlike plurality, range, approval, and STAR).

Voters choose between “friend betrayal” and “later no harm” by approving or not approving candidates.

Votes can be tabulated at the precinct level using a table similar to Table 1 below.

Counting Votes:

First Round: If a candidate receives a majority of 1st rank votes, then that candidate is the winner. Otherwise:

Second Round: The candidate with the highest total of 1st and approved 2nd rank votes wins IF that total is greater than 50% of all ballots cast. *If all voters approve a 1st and 2nd choice in a 4-way race (with no write-ins) the winning candidate is guaranteed to have at least 50% at this point.* Otherwise:

Third Round: The candidate with the highest total of approved 1st, 2nd, and 3rd rank votes wins IF that total is greater than 50% of all ballots cast. Otherwise:

Third Round: The candidate with the highest total of approved 1st, 2nd, 3rd, and 4th rank votes wins IF that total is greater than 50% of all ballots cast. This includes all “approved” votes. If still no candidate has over 50% support, then

Fifth Round: Instant runoff between the two candidates with the most “approved” votes (i.e. highest approval).

Sample Ballot:

Rank your top four choices in order of preference. Choose one candidate per rank and one rank per candidate. Also indicate if you approve your 2 nd , 3 rd , and 4 th choices. Ranking without approval cannot reduce the likelihood of your higher choices winning.				
Rank →	1st	2nd	3rd	4th
		Approve? <input type="radio"/>	Approve? <input type="radio"/>	Approve? <input type="radio"/>
Ape	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bee	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dog	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Write-in)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Tabulation for Sample Election

Assume that Eel and Fox have been identified as write-in candidates. Suppose that five voters rank the candidates as follows (asterisk represents approval):

- Voter 1: (Ape*, Bee, Cat, Dog)
- Voter 2: (Bee*, Cat, Ape, Dog)
- Voter 3: (Cat*, Ape*, Bee, Dog)
- Voter 4: (Ape*, Bee*, Cat, Dog)
- Voter 5: (Bee*, Cat, Ape, Dog)

Votes would be tabulated as follows. This table may be reported at the precinct level. For 2nd – 4th ranks, also tally which candidates were ranked higher.

Table 1

Candidate →		Ape	Bee	Cat	Dog	Eel	Fox	Other
Approved	1st	2	2	1				
	2nd	1	1					
	3rd							
	4th							
Not Approved	2nd		1	2				
	3rd	2	1	2				
	4th				5			
Ranked Behind Which Candidates?	Ape	-----	3	2	5			
	Bee	2	-----	4	5			
	Cat	3	1	-----	5			
	Dog				-----			
	Eel					-----		
	Fox						-----	
	Other							-----

Vote tallies:

With five voters, three votes are required in order to exceed 50%.

First Round: Sum 1st rank votes on all ballots:

Ape: 2, Bee: 2, Cat: 1, Dog: 0, Eel: 0, Fox: 0, Other: 0

No candidate exceeded 50%.

Second Round: Sum approved 1st and 2nd rank votes on all ballots:

Ape: 3, Bee: 3, Cat: 1, Dog: 0, Eel: 0, Fox: 0, Other: 0. Ape and Bee are tied above 50%. Others eliminated.

Third Round: Sum approved 1st, 2nd, and 3rd rank votes:

Ape: 3, Bee: 3. Still a 2-way tie.

Fourth Round: Sum approved 1st, 2nd, 3rd, and 4th rank votes:

Ape: 3, Bee: 3. Still a 2-way tie.

Fifth Round: Instant runoff. Add all votes and subtract votes ranked behind the other candidate:

Ape: (5 votes) – (2 behind Bee) = 3

Bee: (5 votes) – (3 behind Ape) = 2

Ape wins!

Note that Cat would have defeated Ape in a runoff, but Cat was only approved by a single voter. This is an appropriate result, since fewer voters disapprove of the winner than if Cat had won.

Bee would have defeated Cat in a runoff.

Bee had a slightly higher average ranking than Ape, but a majority of voters preferred Ape to Bee.

RCV/IRV would have eliminated Cat, and Ape would still have won.

Note that in a hand recount, it is only necessary to tabulate votes for competitive candidates. The rest may be lumped together as “other”.

Primary Election (with 4 winners)

When selecting four winners, the “best” candidate by most definitions would likely be selected by almost any method. The question is what sort of representation is desirable among the four winners. Should they represent four candidates favored by a single majority-sized group of voters (e.g. approval voting or “vote for 4”)? Or should they represent four distinct constituencies (e.g. plurality voting)? Or something in between to represent distinct constituencies but resolve vote-splitting (e.g. range/score or ranked voting)?

Consistency with the method described above would also use Bucklin voting, but with all votes indicating approval and a >20% threshold with no runoff. The >20% threshold is chosen so that four candidates (but not 5) splitting all of the votes equally would all advance.

Voters rank four candidates in order. Votes are tallied as follows:

First Round: If a candidate receives >20% of 1st rank votes, then that candidate is selected. In theory this could yield four winners with 25% each. Otherwise proceed to the next round:

Second Round: Remaining candidates (up to a total of 4 winners) with the highest total of 1st and 2nd rank votes are selected IF their totals exceed 20%. At this point eight candidates splitting the votes evenly would have 25%, or two candidates could each have 100%.

Third Round: Remaining candidates (up to a total of 4 winners) with the highest total of 1st, 2nd, and 3rd rank votes are selected IF their totals exceed 20%. At this point twelve candidates splitting the votes evenly would have 25%, or three candidates could each have 100%.

Fourth Round: Remaining candidates (up to a total of 4 winners) with the highest total of votes (all ranks) are selected. At this point sixteen candidates splitting the votes evenly would have 25%, or four candidates could each have 100%.

References:

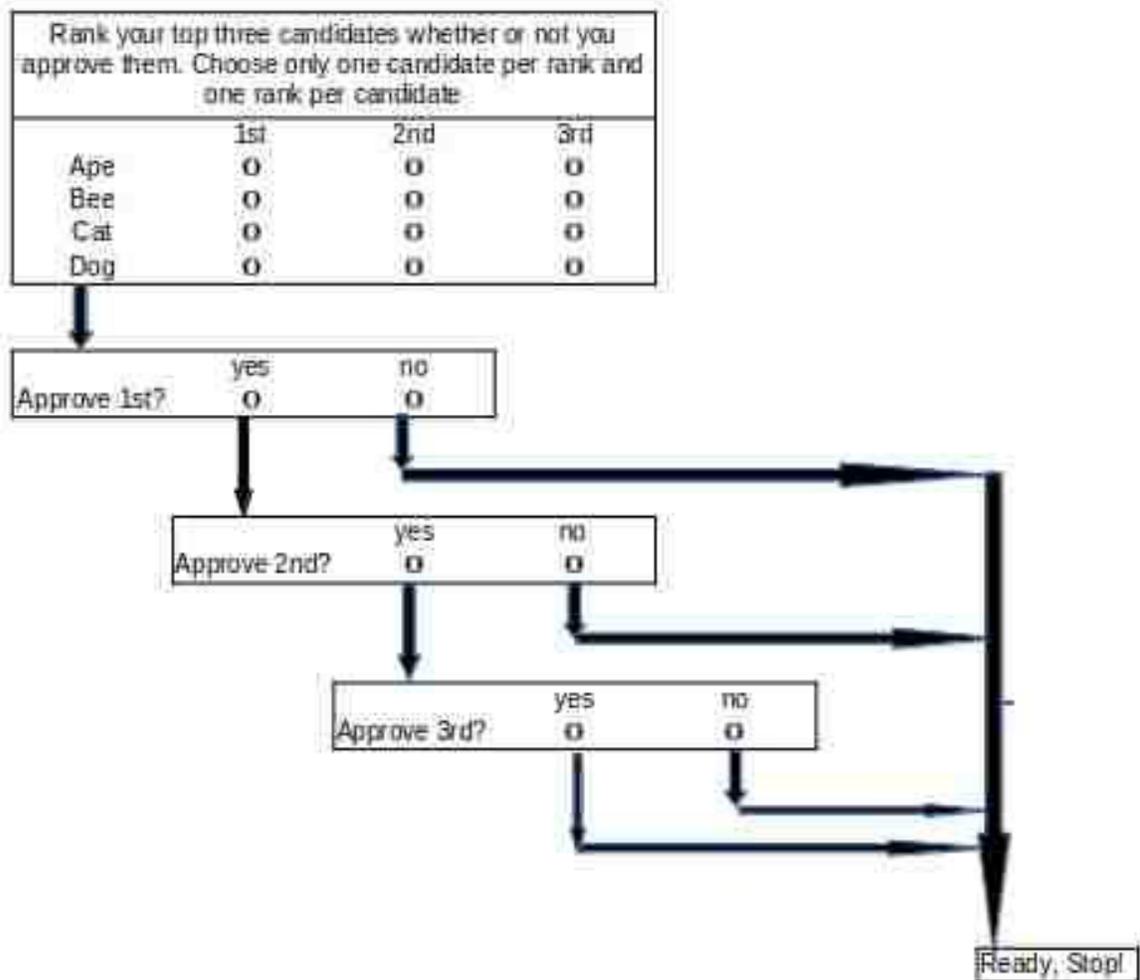
Bucklin voting: https://en.wikipedia.org/wiki/Bucklin_voting,
<http://archive.fairvote.org/?page=2077>

Approval cutoff: https://electowiki.org/wiki/Approval_cutoff#Total_preference_order

Alternative Ballots for single-winner election:

Indicate candidates you approve, then rank your top three choices whether or not you approve them. Choose only one candidate per rank and one rank per candidate.				
	Approve?	1 st	2 nd	3 rd
Ape	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bee	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cat	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dog	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(Write-in)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Courtesy of [multi system fan](#):



Please send suggestions or comments to robert.close@classicalmatter.org.