

### Voting Methods

- **Plurality method** the candidate with the most first-place votes is the winner.
- **Majority method** the candidate that gets more than 50% of the votes is the winner.
- **Borda Count method** requires the voter rank each candidate from most favorable to least favorable then assigns 1 point to the last-place candidate, 2 points to the next-to-last-place candidate, etc. The candidate with the most points among all voters wins the election.
- **Plurality with Elimination method** (a.k.a. instant-runoff voting or IRV) if no candidate has a majority of first-place votes then the candidate/s with the least number of first-place votes is/are eliminated. Then the remaining candidates move up on the ballot and the number of first-place votes is recounted. This process continues until a candidate receives a majority of first-place votes and is declared the winner.
- **Pairwise Comparison method** (a.k.a Copeland's method) matches each candidate head-to-head against every other candidate. The winner of each pairwise comparison gets 1 point, the loser 0 points, or in the case of a tie, each gets  $\frac{1}{2}$  point. After all pairwise comparisons are made, the candidate with the most points wins.
- **Approval voting** Each voter gives one vote to as many candidates on the ballot as they find acceptable. The winner is the candidate who receives the most votes.

### Voting Criteria

- **Head-to-Head Comparison criterion** states that if a particular candidate wins all head-to-head comparisons with all other candidates, then that candidate should win the election.
- **Majority criterion** states that if a candidate receives a majority of first-place votes, then that candidate should be the winner of the election.
- **Monotonicity criterion** states that if a candidate wins an election, and a reelection is held in which the only changes in voting, favor the original winning candidate, then that candidate should still win the election.
- **Irrelevant Alternatives criterion** requires that if a certain candidate wins the election and one of the other candidates is removed from the ballot and the ballots are recounted, the original winner still wins the election.