

Introduction to Voting Theory

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Introduction

Today we introduced voting theory. The simplest way to pick a winner is the **plurality method**: whichever candidate gets the most votes wins.

There are some disadvantages of the plurality method:

- **The Spoiler Effect**: A **spoiler candidate** is a candidate who will not win the election, but will change the outcome if they decide to run. The plurality method is very easily messed up by spoiler candidates.
- **Strategic Voting**: Voters might not vote for their favorite candidate if they don't think that candidate can win. They might vote for a second or third choice to try to affect the outcome instead. Need a good example.

Ranked Ballots

One idea to reduce incentives for strategic voting is to let voters rank all of the candidates using a **ranked ballot**:

A ranked choice ballot

A popular method to pick the winner of an election using ranked ballots is instant run-off voting (IRV).

Instant Run-Off Voting

In the late 1700's, two French mathematicians got interested in this problem and tried to come up with better systems to run elections.

Jean Charles Borda (left) and Nicholas de Condorcet (right)

Borda Count Method

Borda proposed a simple voting method that is a lot less likely to be impacted by spoiler candidates. Instead of having votes cast a single vote, they must rank all of the candidates using a ranked ballot.

In the Borda count method, candidates get points from each ballot. If there are n candidates running, then the first place candidate gets n points, second place gets $n - 1$, on down to the last candidate who only get 1 point. Then the winner of the election is the candidate with the most points. You can keep track of the points candidates get using a **preference matrix**:

Number of Voters

10 voters

20 voters

30 voters