Transcript

Out for the Count: The Mathematics of Voting Systems

Counting: Alternative vote system

Andrew Potter: Did you manage to declare a winner? Under First Past The Post, the winner is Candidate C! Candidate A scored 2 votes, Candidate B scored 3 votes, Candidate C scored 5 votes, and Candidate D scored 1 vote. Since Candidate C scored the most votes, they are the winner under First Past The Post!

Now, let's think about fairness. Did you think this system was fair? It's certainly a simple system, and very egalitarian – everyone just gets one vote. Some might think it wasn't fair that the winning candidate didn't get a majority of support – only 5 out of the 11 votes, so not quite half. In extreme cases where there are lots of candidates, a winning candidate might not even get a quarter of the votes – for example, in the Belfast South constituency in 2015, the winning candidate won 24.5% of the total votes cast.

There are also concerns about where you draw the constituency boundaries – as this can produce wildly different results. It also leads to the idea of "safe seats" and "marginal seats" where political parties pour all of their campaigning efforts into winning marginal seats at the expense of safe seats. What do you think? Is First Past The Post a fair system?

The second system we're going to look at is the Alternative Vote system. We're going to take the same ballots and count them in a slightly different way, which takes into account the lower-ranked preferences of the voters. We have several rounds of counting.

In Round 1, we count exactly as we did for First Past The Post: we just create piles of votes based on the first-preference votes alone. But, since no candidate got a majority of votes, we start looking at the lower ranked preferences and move into Round 2. We eliminate the candidate with the fewest votes, then redistribute their votes to the other candidates, based on their voters' next-ranked preferences. If there is still no candidate with a majority of votes, then we move on to Round 3.

We again eliminate the candidate with the fewest votes and redistribute their votes according to their voters' next-ranked preferences. This is complicated to explain, but you'll get into the swing of it by doing it yourself! If, at any point, there is a tie for last place and you're not sure who to eliminate, you should eliminate the candidate with the fewest **first**-preference votes.

Have a go at this yourself! Again, once you have declared a winner, have a think about what aspects of the system might be considered fair, and what aspects might be considered unfair.