D1-D2: Voting Methods and the Electoral College vs. Popular Vote

Group Activity

D1: Voting Methods

1. A homeowners' association is deciding a new set of neighborhood standards for architecture, yard maintenance, etc. Four options have been proposed. The votes are:

Number of voters	8	9	11	7	7	5
1st choice	B	A	D	A	B	C
2nd choice	C	D	B	B	A	D
3rd choice	A	C	C	D	C	A
4th choice	D	B	A	C	D	B

   a. How many voters voted in this election?

   b. How many votes are needed for a majority?

   c. How many votes are needed for a plurality win?

   d. Find the winner under the plurality method.

   e. Find the winner under the Instant Runoff Voting method.

   f. Find the winner under the Borda Count method.

   g. Find the winner under the Pairwise Comparisons method.

   h. Which method do you think is the most fair in this situation and why?

2. In the election shown below under the plurality method, explain why voters in the third column may feel they cannot vote for their first choice. How could it affect the outcome of the election?

Number of voters	96	90	10
1st choice	A	B	C
2nd choice	B	A	B
3rd choice	C	C	A

    a. How many voters voted in this election?

    b. How many votes are needed for a majority?

    c. How many votes are needed for a plurality win?

    d. Find the winner under the plurality method.

    e. Under the plurality method, explain why voters in the third column may feel they cannot vote for their first choice. How could that affect the outcome of the election?

    f. Find the winner under the Instant Runoff Voting method.

    g. Find the winner under the Borda Count method.

    h. Find the winner under the Pairwise Comparisons method.

    i. Which method do you think is the most fair in this situation and why?

D2: Electoral College vs. Popular Vote and Voting Power

3. In the U.S., the Electoral College is used in presidential elections. Each state is awarded a number of electors equal to the number of representatives (based on population) and senators (2 per state) they have in congress.

Most states award the winner of the popular vote in their state all their state's electoral votes. To explore how the Electoral College works, we'll look at a mini-country with only 4 states. Here is the outcome of a hypothetical election:

State	Smalota	Medigan	Bigonia	Hugodo
Population	50,000	70,000	100,000	240,000
Votes for A	40,000	50,000	80,000	50,000
Votes for B	10,000	20,000	20,000	190,000

a. If this country used an overall popular vote, which candidate would win the election?

b. Now suppose this country uses an Electoral College where each state has one representative for every 10,000 people and each state has 2 senators. The number of electoral votes is the total of the representatives and senators. Each state will give all of their electoral votes to the winner of the popular vote in the state.

Use this information with the table above to fill in this table.

State	Smalota	Medigan	Bigonia	Hugodo
Number of Representatives				
Number of Senators				
Number of Electoral Votes				
Electoral Votes for A				
Electoral Votes for B				

c. Which candidate wins the election based on the electoral college?

d. Which method do you think is more fair and why?

Voting Power

4. a. Do you think each state has the same voting power? Why or why not?

    b. Let's calculate the voting power of each state. (Number of electoral votes per 10,000 people)

State	Smalota	Medigan	Bigonia	Hugodo
Population				
Number of Electoral Votes				
Number of Electoral Votes per 10,000 people				

    c. Which states have more voting power? Less voting power?