

# VOTING METHODS

*You are a member of a new country, SCH Land. You have to help them decide which voting system they should use to elect their leaders.*

*In class we studied three different voting systems: Plurality, Condorcet Method, and Borda Count. Unfortunately, each method had its shortcomings. Condorcet Method did not always produce a winner. The Plurality method sometimes produced a different winner from the Condorcet Method. Borda Count failed the Independence of Irrelevant Alternatives criterion and fluctuated too much with the entry of additional candidates.*

*In class, we brainstormed several techniques to improve on these methods. You must create your own voting system and see how it stacks up against our three methods.*

*Your goal is to create a system that always produces a winner, is not influenced by irrelevant candidates, and always matches the Condorcet winner. You may not be able to find a system that satisfies all of these conditions. Create a voting method that is as good as possible.*

**Due Date:**

**Point Value:** 20 points

## Report

**Creation:** Describe your voting method, and the thinking that went into choosing it. (4)

**Calculations:** Calculate the winner of each of the elections we've investigated in class using your voting method.

Test your method against IIA: try adding an interloper into the elections as we did in class and see if he can shake up the results. Show your calculations. (8)

**Questions:**

1. Where did your method agree with the three class methods, and where did it disagree?
2. Could your method result in a tie? What do you do in that case?
3. Suppose your method not only had to produce a winner, but a ranking of the candidates. Could you modify it to do so? How? (8)

**Resolution:** SCH Land will decide on its new voting system with an ... election.

## Preference Lists

|            |            |           |            |           |           |
|------------|------------|-----------|------------|-----------|-----------|
| <b>34%</b> | <b>43%</b> | <b>5%</b> | <b>14%</b> | <b>3%</b> | <b>1%</b> |
| Bush       | Gore       | Nader     | Bush       | Gore      | Nader     |
| Nader      | Nader      | Gore      | Gore       | Bush      | Bush      |
| Gore       | Bush       | Bush      | Nader      | Nader     | Gore      |

|                  |   |   |   |   |   |   |
|------------------|---|---|---|---|---|---|
| Number of voters | 5 | 3 | 5 | 3 | 2 | 3 |
| First choice     | A | A | C | D | D | B |
| Second choice    | B | D | E | C | C | E |
| Third choice     | C | B | D | B | B | A |
| Fourth choice    | D | C | A | E | A | C |
| Fifth Choice     | E | E | B | A | E | D |

|     |    |   |    |   |    |   |
|-----|----|---|----|---|----|---|
|     | 13 | 5 | 10 | 7 | 10 | 6 |
| 1st | R  | R | S  | S | M  | M |
| 2nd | S  | M | R  | M | R  | S |
| 3rd | M  | S | M  | R | S  | R |

|     |   |   |   |   |   |   |   |   |
|-----|---|---|---|---|---|---|---|---|
|     | 1 | 1 | 1 | 3 | 1 | 1 | 1 | 1 |
| 1st | C | C | C | P | R | R | R | R |
| 2nd | J | P | R | C | C | J | J | P |
| 3rd | P | J | J | R | P | C | P | J |
| 4th | R | R | P | J | J | P | C | C |

|        |   |   |   |   |   |
|--------|---|---|---|---|---|
| Votes  | 2 | 1 | 1 | 1 | 3 |
| First  | A | A | B | B | C |
| Second | B | C | A | C | B |
| Third  | C | B | C | A | A |