

Final Project: Applying Voting Methods to a Homemade Survey

Math F113X: Math and Society

Overview

Design a ranked-choice survey with exactly 4 options and collect responses from at least 25 people. **Analyze** the results using five voting methods—four from class and one of your own invention—then **reflect** on which method best suits your survey’s purpose.

Your final submission must be typed, stapled, and organized into clearly labeled sections as outlined in the checklist (next page). Write in complete sentences throughout, providing sufficient background and detail so that a classmate could follow your work. The document should feel cohesive, with a clear goal of concisely analyzing how the choice of voting method affects the outcome. Use the rubric and checklist to guide your decisions.

Use of AI

The use of AI (ChatGPT, Claude.ai, etc.) to produce or edit any part of your project is prohibited and will result in a grade of zero.

Submission Checklist

Complete all of the following. Each item should appear as a clearly labeled section in your report.

- Title page:** Include your name and the project title.

Section 1: Survey Goals and Background

- Survey goal:** State what you were trying to find out.
- Survey question:** Include the exact wording and all 4 choices.
- Preference schedule:** Summarize the ballots; column totals must sum to the number of voters.

Section 2: Results and Analysis of Different Voting Methods

- Plurality:** Determine the winner and rank all 4 choices. Show work.
- Instant Runoff Voting:** Show every round. State clearly who is eliminated each round and how votes are redistributed. Use fewest last-place votes to break ties.
- Borda Count:** Assign points, total them, and rank all 4 choices. Show work. Use fewest last-place votes to break ties.

- Copeland’s Method:** List every head-to-head matchup, determine the winner of each, and rank all 4 choices.
- Your own method:** Invent a new method (clearly different from the four above), describe it in plain language, apply it, and rank all 4 choices.

Section 3: Fairness Discussion and Conclusions

- Fairness discussion:** Write 1–2 paragraphs (at least 10 sentences total) explaining which method is most fair and which is least fair *for your survey’s purpose*. Address the strengths and weaknesses of all five methods; do not merely describe how they work.

Appendix

- Raw data:** Attach all 25+ ballots (table or spreadsheet is fine).

Rubric

Component	Description	Points
Survey	goal stated ≥25 ballots collected raw data included preference schedule correct and totals check out	20
Known voting methods	Plurality, IRV, Borda Count, Copeland’s Method each method clearly identified supporting details and calculations	40
Your own voting method	clearly described distinct from known methods applied correctly	10
Fairness discussion	all 5 methods included in discussion clear argument well-supported	20
Overall composition	Quality of writing, organization, and following directions	10
Total		100