Voting Paradoxes in the Real World

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Project Goals

- Collect ballot data from AP Top 25 College Football polls and MLB Baseball MVP Voting, clean the data and format as csv files to facilitate further analysis.
- Systematically investigate the data for occurrence of voting paradoxes.

Description of Data

- **Data source:** AP Top 25 College Football Poll data was scraped from `collegepolltracker.com`. MLB Baseball MVP voting data was scraped from `bbwaa.com`.
- **MLB MVP Voting Data:**
  - 12 seasons (2012-2023), 2 leagues per season (AL/NL), 24 total votes.
- **AP Poll Data:**
  - 11 seasons (2014-Present), 15-18 weeks per season, approx. 200 total polls.

How the AP Top 25 College Football Poll Works

- Approximately 60 sports journalists are selected to vote on the Top 25 Poll by the Associated Press (AP).
- Every voter submits a ranked list of 25 teams.
- Each team is assigned points according to where they were ranked by pollsters.
  - 25 points for first place
  - 24 points for second place
  - 1 point for 25th place
  - 0 points for Not Ranked
- The points earned by each team are aggregated across voters. The official AP top 25 ranking is determined by the total number of points earned by each team.

AP Top 25 Poll Example: 10/6/2024 Rankings

RK	TEAM	REC	PTS	TREND
1	Texas (52)	5-0	1516	↑1
2	Ohio State (9)	5-0	1473	↑1
3	Oregon	5-0	1348	↑3
4	Penn State	5-0	1305	↑3
...				
23	Illinois	4-1	182	↑1
24	Michigan	4-2	170	↓14
25	SMU	5-1	165	NR

Some Voting Methods

- **Plurality Method.**
  - The candidate(s) with the most first place votes wins.
- **Borda Count Method.**
  - Assume there are n candidates. Each voter ranks the candidates in the order of preference.
  - Points are assigned based on the rank: Standard Borda Count: n points for 1st place, $n-1$ for 2nd place, etc, and 1 point for the last place.
  - The points for each candidate are added up and the candidate with the highest total points wins.

Some Voting Paradoxes

- **The Borda count winner is the Plurality loser**
- **Nontransitive Cycles:** There exists a cycle of candidates A, B, and C such that
  - a majority of voters rank A over B
  - a majority of voters rank B over C
  - a majority of voters rank C over A.

Progress Report

- **Completed Tasks:**
  - Collected and cleaned data.
  - Implemented plurality and Borda count voting methods in Python, and tested on both the MVP and AP Top 25 data.
  - Wrote code to detect cycles of three teams in our data.
- **Next Steps:**
  - Write code to detect other types of voting paradoxes in our data.
  - Expand Borda count testing to include more general classes of point systems.

Thank you!