

Presidential Election Simulation

Stochastic Modeling BUAD 5032

Objective:

Work in teams to predict the outcome of the 2024 presidential election using Monte Carlo simulation. Each team will present its results at the end of class.

Materials Needed:

- Access to polling data for swing (battle) states (from websites like RealClearPolitics, FiveThirtyEight, Race to the WH, or Other)
- A computer with R and RStudio.

Activity Instructions:

1. Identify Swing States:

- Here are some swing states for the 2024 presidential election.
 - Michigan
 - Pennsylvania
 - Wisconsin
 - Georgia
 - Arizona
 - North Carolina
 - Nevada

2. Collect Polling Data:

Use one or several polls to obtain the polling average and MOE. If you are using several polls, calculate a weighted average where the weights are the number of people polled.

3. Collect Electoral Votes Data:

You can find the number of electoral votes for each state here: <https://jagelves.github.io/Data/ElectoralVotes.csv>

4. Set up the Simulation:

- Create a tibble that has the state, the polling average for each candidate, the margin of error, and the electoral votes awarded in the state.
- Simulate the winner in these states by using at least 10,000 simulations. You can do this by comparing the random average number of votes generated for each candidate. You can generate these from a normal distribution (rnorm) with mean provided by the polls and standard deviation given by the MOE.
- Award electoral votes for each candidate when they win the state.
- For each simulation, determine the election winner by using the total number of EVs each candidate has already secured and those determined by your simulation (swing state EVs).
- Use a single simulation to create a map of a possible result.

5. **Present Results:** After running the simulation, each team will present their findings:

- What were the polling averages used, and from what sources?
- How many EVs are locked for each candidate and how many are up for grabs?
- What percentage of simulations does each candidate win (i.e. probability)?
- Under what scenario does each candidate win?
- Show a map or maps illustrating how each candidate can win the election.