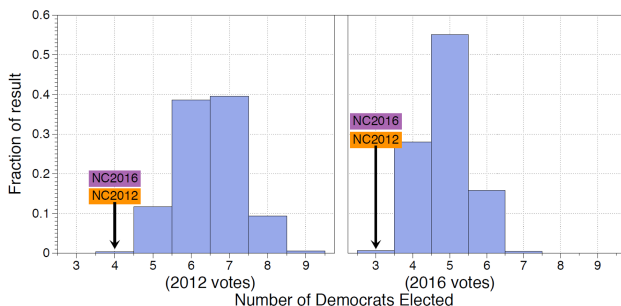


# Introduction

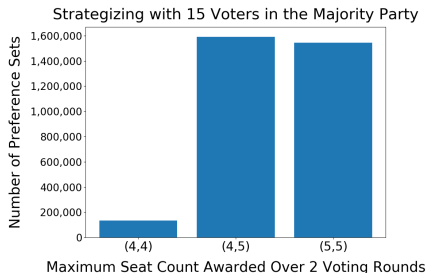
- Recently, computers have become crucial to the process of partisan gerrymandering
- Quantitative metrics have been proposed to measure gerrymandering
- The *outlier metric* determines if a congressional map is gerrymandered by comparing its seat count to the distribution of seat counts based on randomly sampled maps on that voter preference set



Retrieved from: Herschlag et al

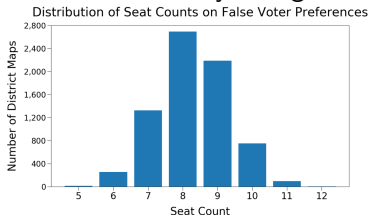
# Heuristic and Model

- We model the voting process as a game where parties control their voters and order them to vote untruthfully to circumvent the outlier metric
- Using a three-by-three grid graph, we establish conditions sufficient for strategizing and expand a heuristic to five-by-five grid graphs
- We find that our heuristic is reliable in enabling parties to strategize and vote untruthfully to circumvent the outlier metric

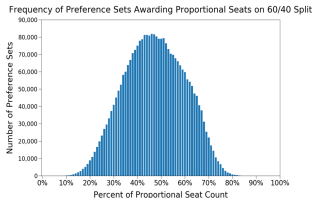
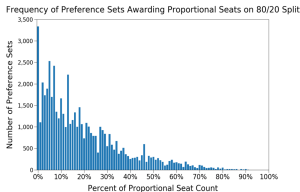


# Further Applications

- We modify our model and heuristic to apply it to real election data in North Carolina and find a possibility of strategizing to achieve similar circumvention results as on the five-by-five grid



- We also examine questions of proportionality and individual harm



# Conclusions and Recommendations

- We show that careful scrutiny should be given to any measurement which uses past voter behavior
- A more realistic model for influencing voters, election security/tampering
- Add noise or change the number of voting rounds
- More sophisticated algorithms and computation
- Consider how gerrymandering metrics that use past voter data can be less susceptible to strategizing