



Figure 10: Average SF Ratios of graphs of different sizes under the Poisson models. Note y-axis is in log scale.

of real world social networks. So while we demonstrate an alternate cause for the Micromega rule in certain types of social networks, the result does not necessarily generalize to real world networks.

6 CONCLUSION

In this paper, we proposed a number of heuristic voter models for strategic voting in social networks. While the Full Voter model in [25] works well in small graphs, the exact computation of expected utilities proves infeasible for larger graphs. Voters in our models are boundedly rational and our heuristics lighten their cognitive burden in ways that would be natural for a human voter. Our heuristics perform up to 2 orders of magnitude faster, and retain a high level of fidelity when compared to the Full Voter model. As a result, this allows us to highlight the differences in strategic behavior when voters are part of populations of different sizes.

To illustrate this, we use our heuristic voter model to investigate the Micromega rule. We show that in certain networks, particularly the directed Erdős-Rényi and directed Barabási-Albert models, smaller populations offer more support for fringe candidates than larger electorates. The orientation of directed edges in the dBA graphs lends it a strict hierarchical structure, which reinforces the Micromega rule dramatically in our simulations. Other preferential attachment models such as Bollobás's scale-free graphs offer parameters which may be tuned to allow for different degrees of hierarchy [5]. It would be interesting to explore the impact of hierarchical structure on strategic voting in future work.

Our heuristic models also pave the way to simulating strategic voting behavior in truly large scale networks. This opens up the possibility of simulating on real world datasets, where nodes number in the millions. We may also consider comparing the results of our models to human voting behavior in controlled settings. Moreover, our model could be extended to include other scoring rules, such as Borda and k-Approval, and other social choice functions in general.

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