A structural model of gerrymandering

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Abstract

Legislative maps differ along dimensions of proportionality (the extent to which parties’ seat shares align with their vote shares) and competitiveness (the likelihood of close contests). Accurately evaluating maps along these dimensions requires estimating the probability distribution of election realizations. This paper develops a strategy for doing this and applies it to data from the 2008 to 2018 general elections in North Carolina. The strategy involves estimating a structural model of potential voters’ preference and turnout choices and then simulating counterfactual elections using draws from the joint distribution of parameter values. Before conducting simulations, I show that the model has strong predictive power for precinct-level vote shares, individual-level turnout decisions, and preference and turnout choices for survey respondents. Substantively, I find that a variety of recently used maps in North Carolina pack Democratic-leaning voters into uncompetitive districts and generate disproportionate seat shares for Republicans.