

Abstract Submitted
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Electoral Susceptibility and Entropically Driven Interactions¹

BASSIR CARAVAN, GREGORY LEVINE, Hofstra University — In the United States electoral system the election is usually decided by the electoral votes cast by a small number of “swing states” where the two candidates historically have roughly equal probabilities of winning. The effective value of a swing state is determined not only by the number of its electoral votes but by the frequency of its appearance in the set of winning partitions of the electoral college. Since the electoral vote values of swing states are not identical, the presence or absence of a state in a winning partition is generally correlated with the frequency of appearance of other states and, hence, their effective values. We quantify the effective value of states by an *electoral susceptibility*, χ_j , the variation of the winning probability with the “cost” of changing the probability of winning state j . Associating entropy with the logarithm of the number of appearances of a state within the set of winning partitions, the entropy per state (in effect, the chemical potential) is not additive and the states may be said to “interact.” We study χ_j for a simple model with a Zipf’s law type distribution of electoral votes. We show that the susceptibility for small states is largest in “one-sided” electoral contests and smallest in close contests.

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Gregory Levine
Hofstra University

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