Title: Testing for Network Effects in Field Experiments: Examples from Legislative Studies

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Abstract:

Most social processes involve complex interaction among units through some form of social, communication, or collaboration network. The stable unit treatment value assumption (SUTVA)---the assumption that a unit's outcome is unaffected by other units' treatment statuses---is required in conventional approaches to causal inference. When SUTVA is violated, as in networked social interaction, treatment effects spread to control units through the network structure. We evaluate the evidence for spillover effects in data from three field experiments on US state legislatures. Randomized field experiments represent the gold standard in causal inference when studying political elites. It is rarely possible to bring political elites into a controlled laboratory environment, and causal identification with observational data is fraught with problems. We review newly-developed methods for testing for causal effects---including interference effects---while relaxing SUTVA. We propose new specifications for treatment spillover models, and construct networks through geographical or ideological proximity and co-sponsorship. Considering different combinations of spillover models and networks, we evaluate the robustness of recently developed non-parametric tests for interference. The approaches we illustrate can be applied to any experimental setting in which interference is suspected.