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Analysis of Partially Observed Networks via Exponential-family Random Network Models

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Exponential-family random network (ERN) models specify a joint representation of both the dyads of a network and nodal characteristics. This class of models allow the nodal characteristics to be modelled as stochastic processes, expanding the range and realism of exponential-family approaches to network modelling. In this paper we develop a theory of inference for ERN models when only part of the network is observed, as well as specific methodology for missing data, including non-ignorable mechanisms for network-based sampling designs and for latent class models. In particular, we consider data collected via contact tracing, of considerable importance to infectious disease epidemiology and public health.

Subjects: Methodology (stat.ME)

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