Epidemics on Time-Varying E

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Introduction

Contact networks are intrinsically temporal, but we often analyze them as aggregated over time. This simplifies both analytical and simulation approaches, but with simulation approaches we may dis-aggregate with minimal additional complexity when the simulation is based on strictly empirical networks.

We have a large population, multi-year dataset for geo-temporal co-location, based on anonymized access to a municipal WiFi system. We use that data to explicitly consider compare the time evolution of network measures when aggregating on shorter time scales up to aggregating over the entire period. We then use the network as a time-varying, empirical backbone for simulating infection spread.
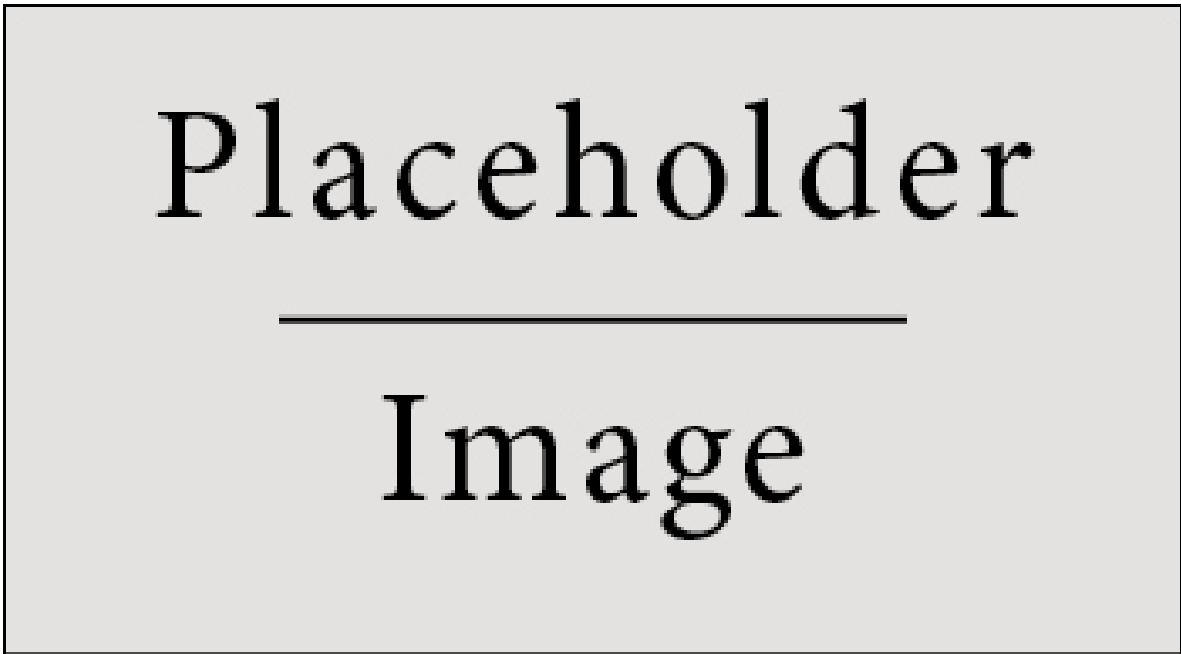

Figure 1: The first figure should be a series of comparisons of network measures (e.g., degree distribution) for the totally aggregated network vs averaged values of the network aggregated at different time periods - 1 year, 1 month, 1 week, 1 day. May also want to do some heat charts of those measures through time, since the averages might hide neat insights like seasonality.