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Mixtures of Individual-level Models for Infectious Disease Modelling

Individual-level models (ILMs) are a class of models that have been used to describe the spatiotemporal spread of infectious diseases. However, current ILMs do not account for (hidden) population heterogeneity, and instead assume a homogeneous population. A mixture ILM (MILM) is proposed that is an adjustment to a simple, spatial ILM, and allows for population heterogeneity with respect to certain model parameters. A simulation study was conducted in which both the simple ILM and MILM were fit to simulated epidemic data, and the respective posterior predictive abilities were assessed.