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Epidemics spread in heterogeneous populations

Individuals building populations are subject to variability. This variability affects progress of epidemic outbreaks, because individuals tend to be more or less resistant. Agents also differ with respect to their recovery rate. Here, properties of the SIR model in inhomogeneous populations are studied. It is shown that a small change in model's parameters, e.g recovery or infection rate, can substantially change properties of final states which is especially well-visible in distributions of the epidemic size.
In addition to the epidemic size and radii distributions first passage time properties of epidemic outbreaks are explored.

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