

Risk Group Turnover in STI/HIV Epidemics

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Research Questions

1. How can rates of entry into and turnover between risk groups be chosen to ensure steady-state risk group sizes?
2. How can these rates be informed by commonly available data sources?
3. How are the dynamics of SIR epidemics influenced by the magnitude of turnover (from the highest risk group)?

Objectives

1. Formalize a mathematical framework for risk group demographics
2. Describe methods for deriving risk group demographic parameters from common data sources
3. Illustrate differences in modelled projections for different implementations of risk group demographics, using an example SIR system
 - (a) Impact of structure on prevalence:
 - i. Number of risk groups
 - ii. Inclusion of population growth
 - iii. Inclusion of turnover
 - (b) Impact of rates of turnover & treatment on:
 - i. Overall incidence & prevalence
 - ii. Sub-group incidence & prevalence
 - (c) Impact of turnover on fitted model outputs:
 - i. TPAF of high risk group