Modeling Intervention Strategies for TB Control in the United States

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Introduction

Compartmental models are often used to model disease spread in the population. The canonical example of such a model is the SIR model, which has three compartments: Susceptible, Infected, and Recovered. The dynamics of a population modeled by this framework are shown in figure 1, with associated system of differential equations 2.

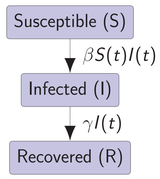

Figure: This flowchart depicts the standard SIR epidemiological model. It is accompanied by the system of differential equations 2.

$$\frac{dS}{dt} = -\beta S(t)I(t)$$
$$\frac{dI}{dt} = \beta S(t)I(t) - \gamma I(t)$$
$$\frac{dR}{dt} = \gamma I(t)$$

Figure: The system of differential equations governing the SIR model.

Intervention Analysis

Intervention Analysis

An Agent Based Implementation

Implementing an Agent Based Framework