MOTIVATION

SIMPLE EPIDEMIC MODEL

Consider a single-season of flu epidemic in a fixed and closed population (no births / deaths / immigration) of size N.

Suppose a 'new' strain of flu is introduced into the population by an individual.

We want to develop a mathematical model to study the time evolution of flu in the population.

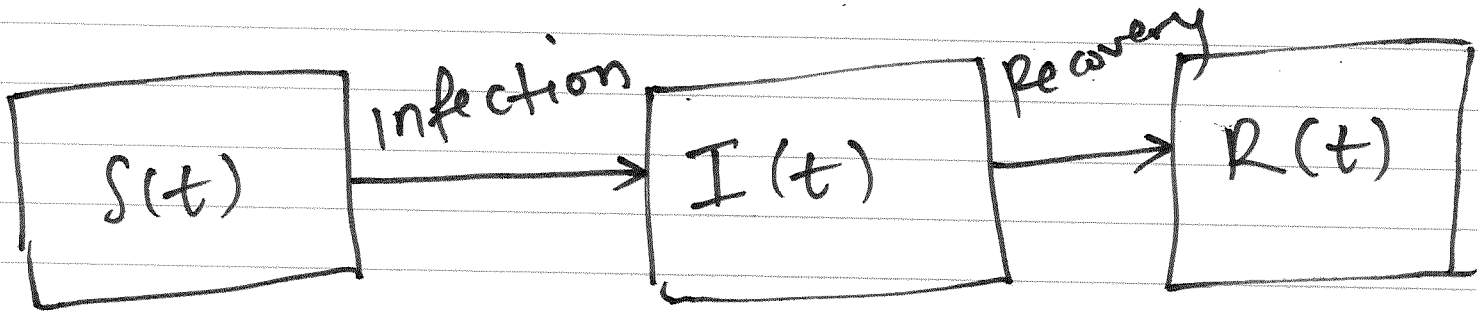
Define variables

Let

$S(t)$ = # of susceptible people at time t

$I(t)$ = # of infectious ✓ ✓ time t

$R(t)$ = # of recovered ppl at time t.



$\frac{dS(t)}{dt}$ = − rate of infection

$\frac{dI(t)}{dt}$ = rate of infection − rate of recovery

$\frac{dR(t)}{dt}$ = rate of recovery.