

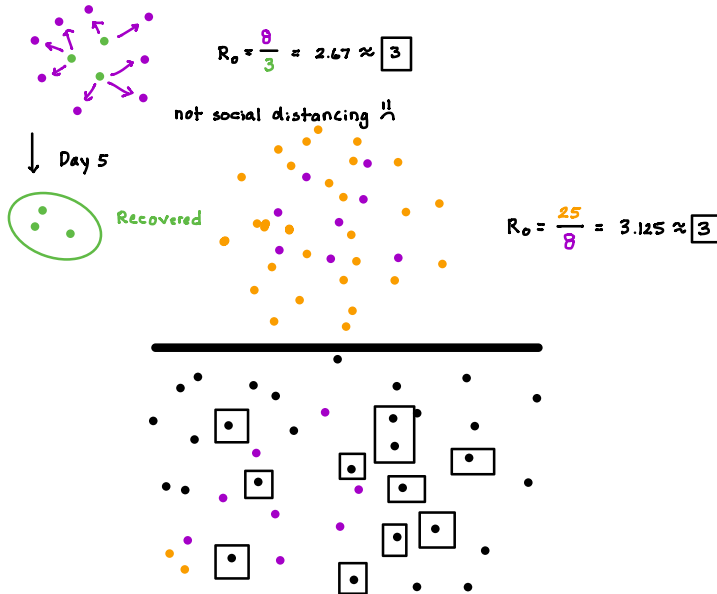
$R_0 = R_0$ "nought" value

= Basic reproduction number

- observing the spread of a disease and how likely one individual will spread a disease during its infectious period in a susceptible population
 - ↳ (immunocompromised, not vaccinated)
 - ↳ time between when a disease enters body to when a person shows symptoms (days → years)

$$R_0 = \frac{\text{new cases}}{\text{existing cases}}$$

Infection A



Factors Affecting R_0

- Infectious period
- Mode of transmission ✓
- Contact rate (social distancing)
- Vaccinations

Herd Immunity Threshold - percentage of a population that needs to be immune to a disease in order to prevent a disease from spreading

$$\text{HIT} = \frac{R_0 - 1}{R_0} = \frac{3 - 1}{3} \approx 67\%$$
$$= \frac{18 - 1}{18} \approx 0.94 = 94\%$$

R_0 measles : 12-18

R_0 common flu : 1-3

R_0 Covid-19 : 2-4

R_0 H1N1 flu (swine flu)

R_0 Ebola