\[ R_0 = R \text{"nought" value} \]

- Basic reproduction number

\[ R_0 = \frac{\text{new cases}}{\text{existing cases}} \]

observing the spread of a disease and how likely one individual will spread a disease during its infectious period in a susceptible population.

\[ \text{time between when a disease enters body to when a person shows symptoms (days-years)} \]

**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.

\[
\text{HIT} = \frac{(R_0-1)}{R_0} = \frac{3-1}{3} \times 100\% = \frac{18-1}{18} \times 0.94 \times 100\%
\]
$R_0$ measles: 12-18
$R_0$ common flu: 1-3
$R_0$ Covid-19: 2-4
$R_0$ H1N1 flu (swine flu)
$R_0$ Ebola