

Rate and Growth

Rate

$$\frac{dY}{dt}$$

dY = amount of change

dt = change in time

Population Growth

$$\frac{dN}{dt} = B - D$$

B = birth rate

D = death rate

N = population size

Exponential Growth

$$\frac{dN}{dt} = r_{\max} N$$

K = carrying capacity

$r_{\max}$ = maximum per capita
growth rate of population

Logistic Growth

$$\frac{dN}{dt} = r_{\max} N \left(\frac{K - N}{K} \right)$$