This is the model we are going to use.

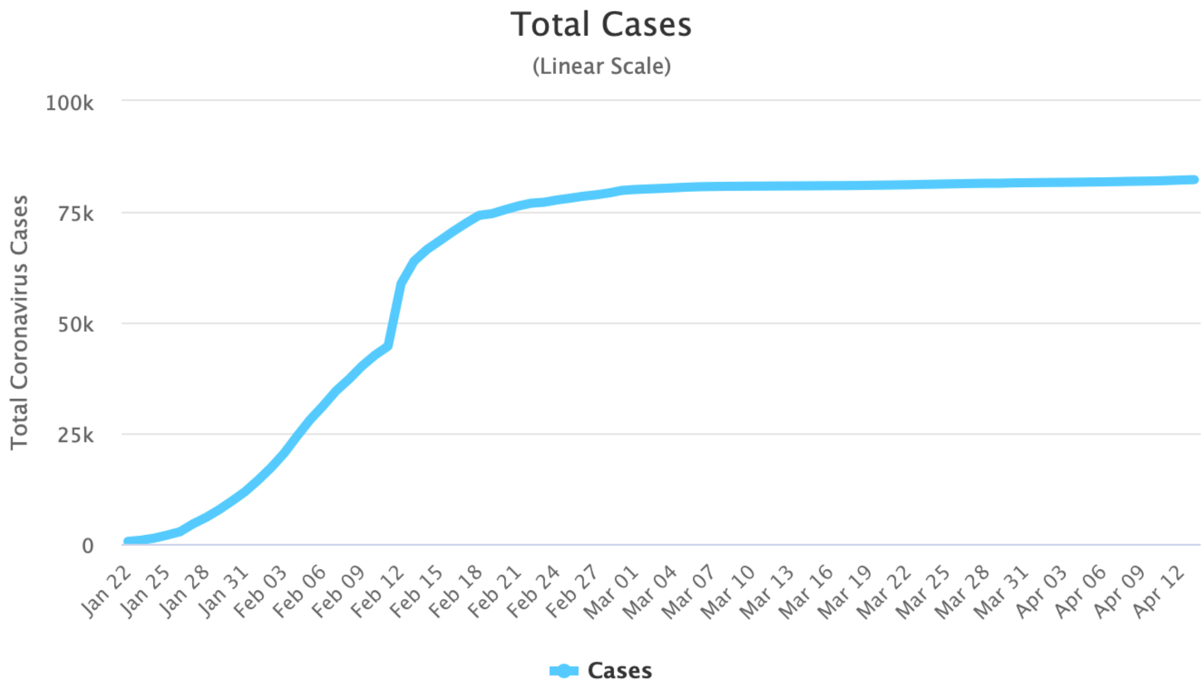
Parameter	Description	Dimension
β	basic transmission rate	$individuals^{-1}$ $\times$ $time^{-1}$
c	reduction of transmission in hospital	dimensionless
γ_1	per capita rate of progress from exposed to infectious state	$time^{-1}$
γ_2	per capita rate of progress through initial infectious state	$time^{-1}$
γ_3	per capita rate of progress through hospitalized state	$time^{-1}$
γ_4	per capita rate of progress through non-hospitalized infectious state	$time^{-1}$
p_1	proportion of initially infectious population that becomes hospitalized.	dimensionless
p_2	proportion of hospitalized population that die	dimensionless

The equations governing common upper respiratory virus dynamics are given by

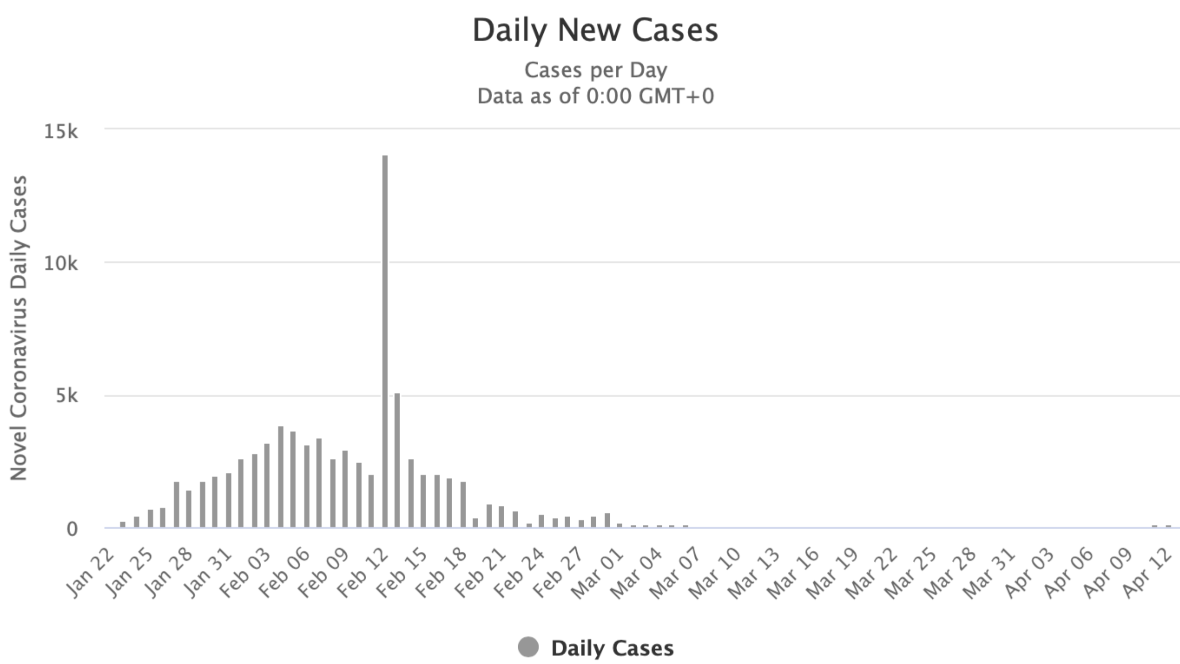
$$\begin{aligned}
\frac{dS}{dt} &= -\beta S(I_1 + I_2 + cH) \\
\frac{dE}{dt} &= \beta S(I_1 + I_2 + cH) - \gamma_1 E \\
\frac{dI_1}{dt} &= \gamma_1 E - \gamma_2 I_1 \\
\frac{dI_2}{dt} &= \gamma_2(1 - p_1)I_1 - \gamma_4 I_2 \\
\frac{dH}{dt} &= \gamma_2 p_1 I_1 - \gamma_3 H \\
\frac{dR}{dt} &= \gamma_4 I_2 + \gamma_3(1 - p_2)H \\
\frac{dD}{dt} &= \gamma_3 p_2 H
\end{aligned}$$

The total population is $\mathrm{N} = \mathrm{S} + \mathrm{E} + \mathrm{I}_1 + \mathrm{I}_2 + \mathrm{H} + \mathrm{R} + \mathrm{D}$. Parameters

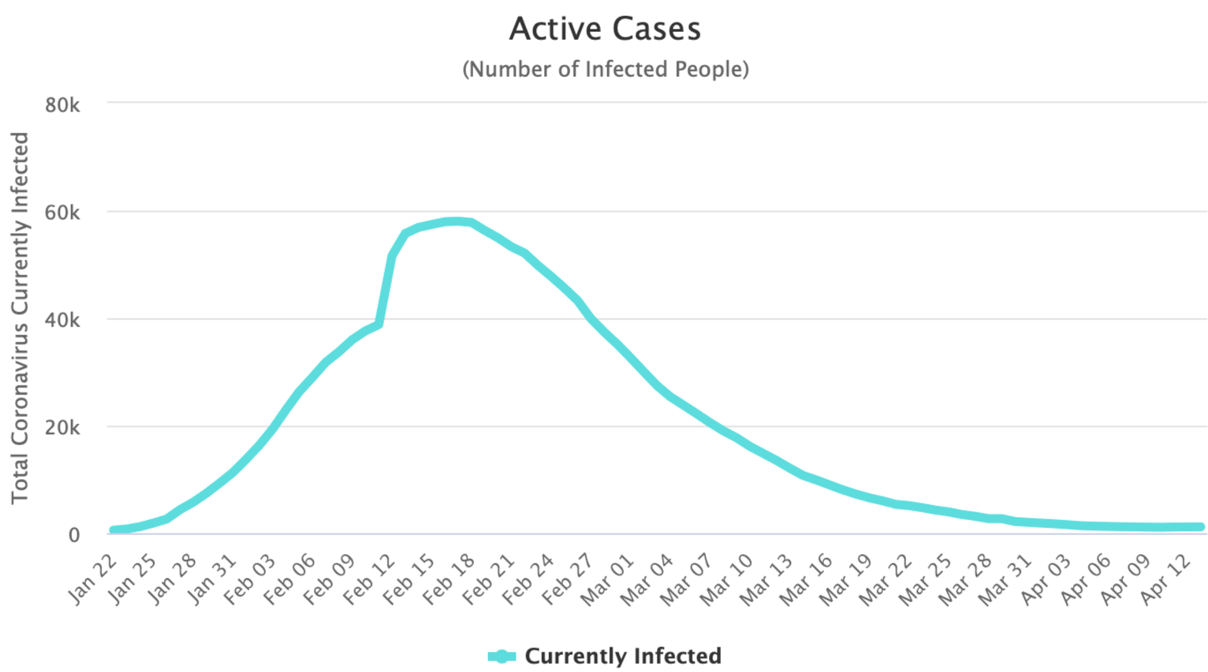
Total Coronavirus Cases in China



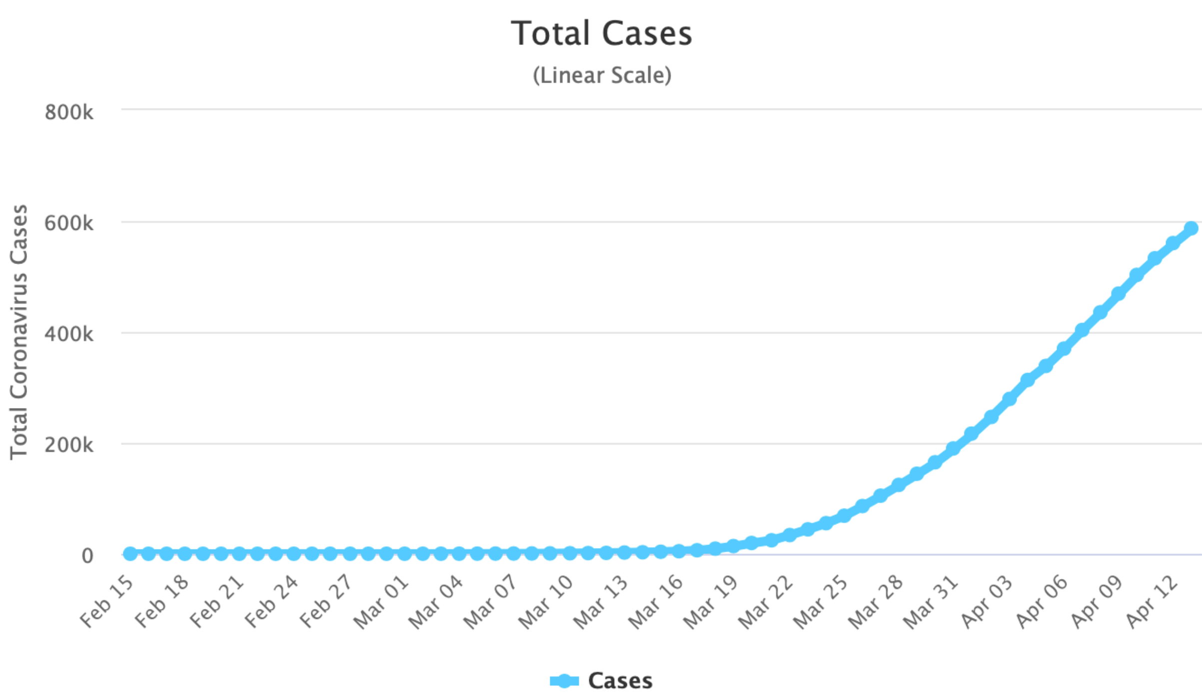
Daily New Cases in China



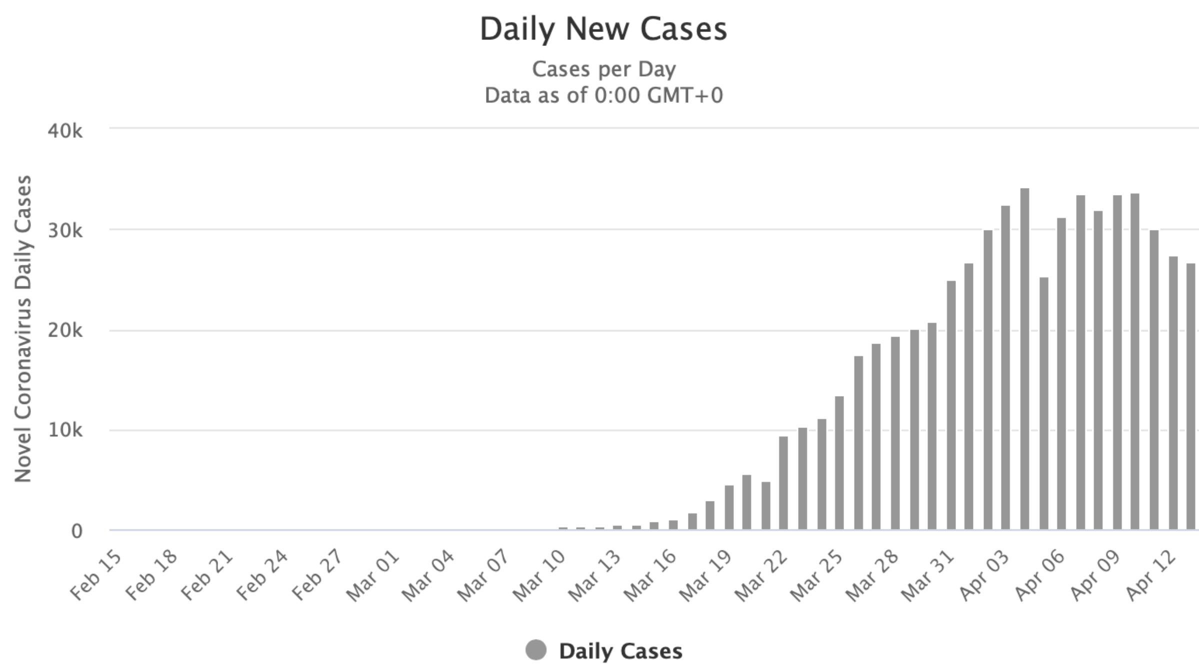
Active Cases in China



Total Coronavirus Cases in the United States



Daily New Cases in the United States



Active Cases in the United States