

An investigation using the curve fitting method to estimate the peak value of the COVID-19 outbreak and its application

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Abstract

Mathematical modeling plays a major role in assessing, controlling, and forecasting potential outbreaks. In this study, the curve fitting method is taken into consideration. We give the method of the least squares as a standard approach in regression analysis that estimates the attainable maximum (peak value) of the Coronavirus infection that started in Wuhan, China, and spread to the world in a short time period. Finally, we demonstrated its applications for three countries and presented results clearly that earns further detailed disquisition.

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	<i>Quadratic function</i>	<i>Logarithmic function</i>	<i>Estimation of peak value and date</i>	<i>Estimation of total infected population</i>	<i>Estimation end time</i>
<i>Turkey</i>	$y = -36,3 x^2 + 6330,6 x - 113188$	$y = 95,3 \ln x - 264820$	87th days June 04, 2020	162.842	August 30, 2020
<i>Spain</i>	$y = -54,5 x^2 + 7952,5x - 9432,1$	$y = 87363 \ln x - 107850$	73th days May 27, 2020	280.718	August 07, 2020
<i>UK</i>	$y = -10,7 x^2 + 5284,9x + 32384$	$y = 63211 \ln x - 36841$	247th days December 6, 2020	684.043	August 15, 2021