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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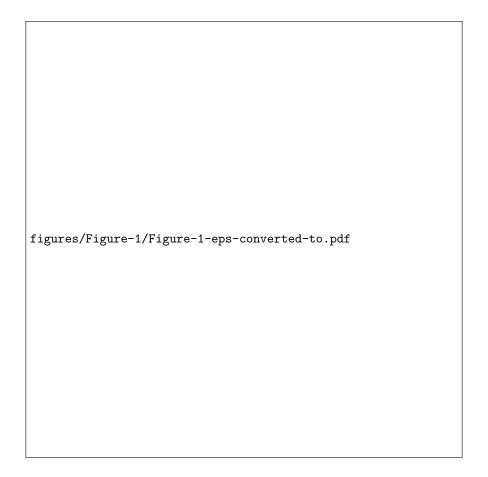
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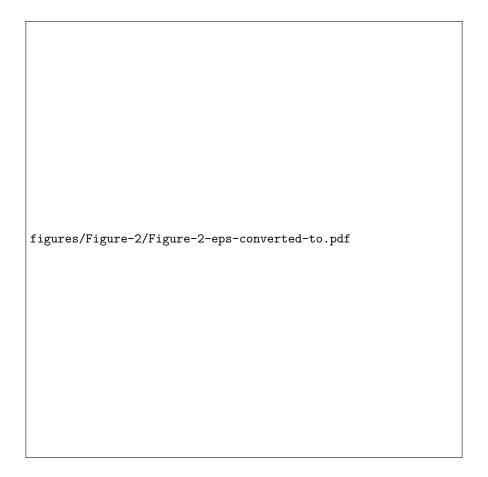
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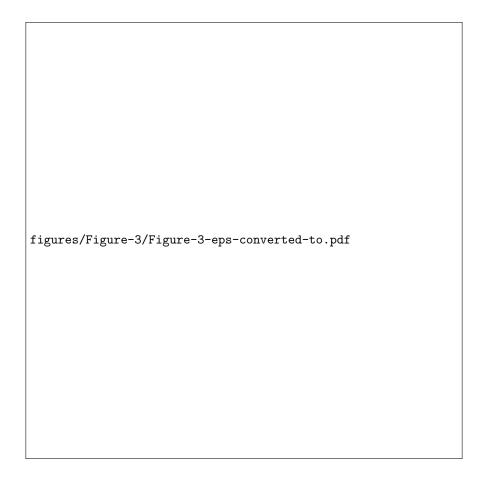
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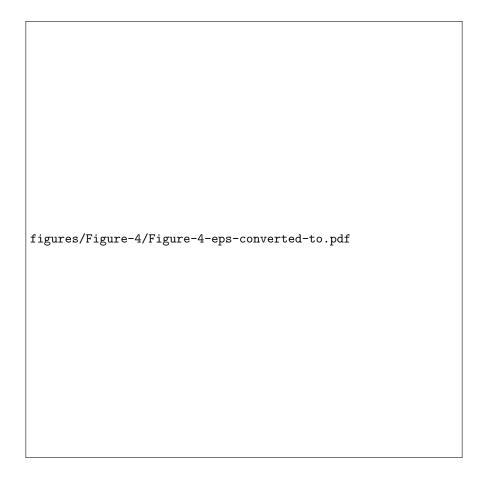
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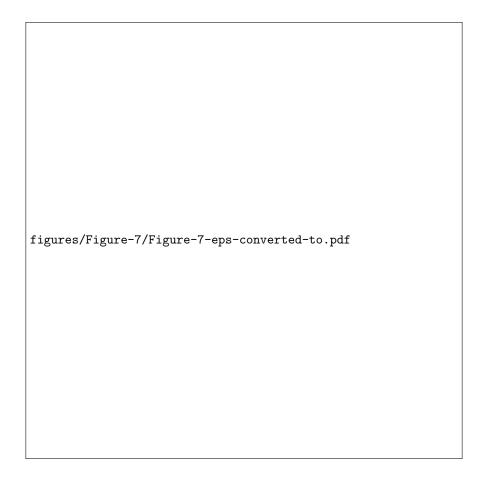


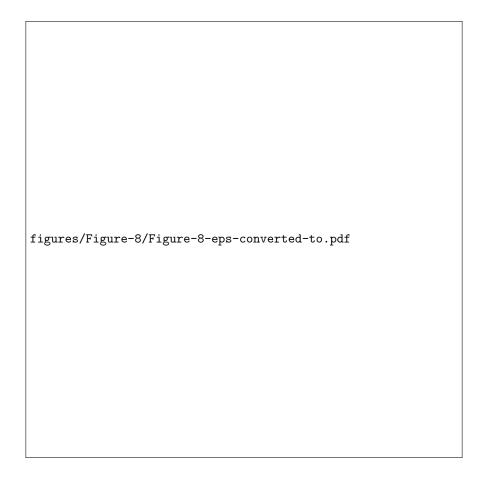


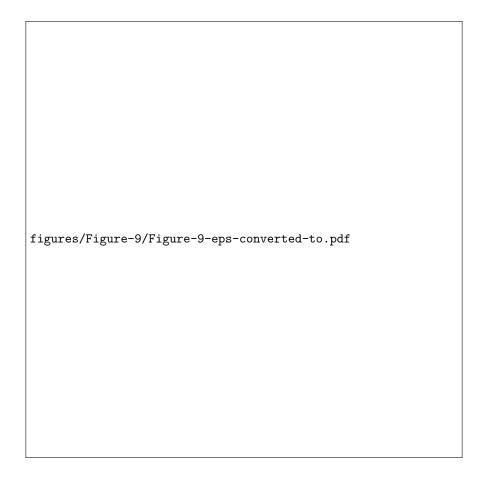


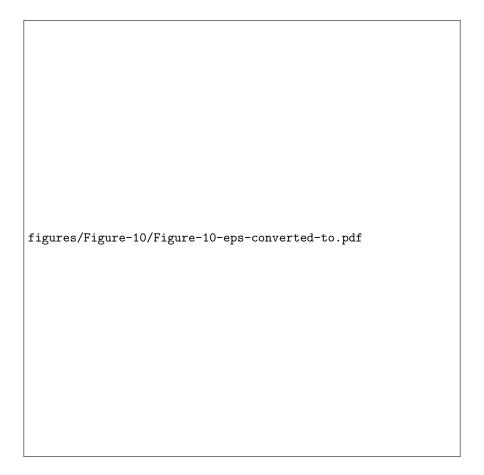
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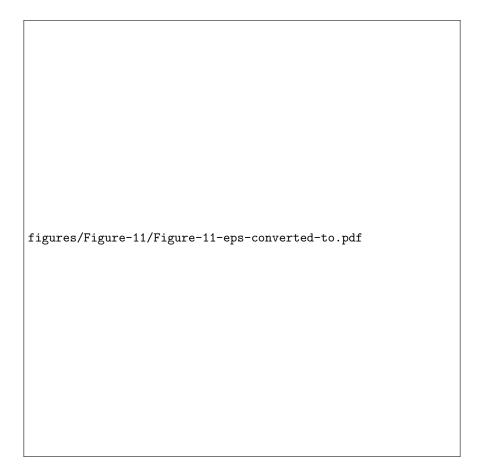
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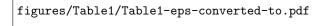












	Quadratic function	Logarithmic	Estimation of peak value and date	Estimation of total infected population	Estimation end time
Turkey	$y = -36.3 x^2 + 6330.6 x - 113188$	$y = 95,3 \ln x - 264820$	87th days June 04, 2020	162.842	August 30, 2020
Spain	$y = -54.5 x^2 + 7952.5x - 9432.1$	$y = 87363 \ln x - 107850$	73th days May 27, 2020	280.718	August 07, 2020
UK	$y = -10.7 x^2 + 5284.9x + 32384$	$y = 63211 \ln x - 36841$	247th days December 6, 2020	684.043	August 15, 2021