

## Conditional predictions daily new cases $A_{new}$ (formerly $I_{new}$ ) for Germany, based on data until Jan. 20, 2021

For a short commentary on the effects of the partial lockdown of Dec 16, 2020, see the page *Conditional predictions actual cases A for Germany . . . .* The resulting effects for the numbers of daily new infected and a conditional prediction for the next 30 days are shown below. The conditions are: No essential change of contact behaviour during the time of lockdown until February 15 and proportion of the new virus mutant (B 1.1.7) at the order of 1 % at the beginning of January (similar to values in Switzerland).

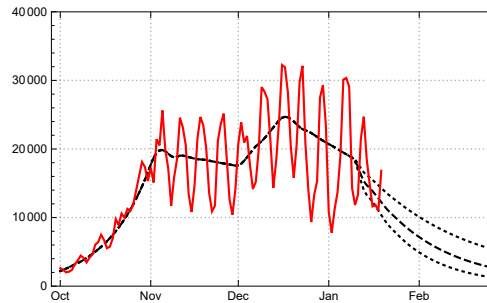


FIGURE 1. Conditional 30-day prediction for the new infections  $A_{new}$  (7-day centred sliding averages ), based on JHU data available at Jan 21, 2021, JHU data (3-day averages) red, model values black dashed. Dotted: boundary of interval  $1 \sigma$  interval for variability of reproduction rates since January 3.

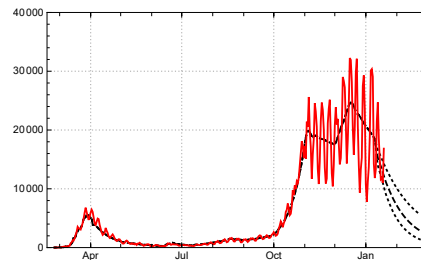


FIGURE 2. SEPIR model values  $A_{new}$  of daily new infections (7-day centred sliding averages) since March 2020; JHU data (3-day averages) red, model values black dashed. Dotted: boundary of  $1 \sigma$  interval for variability of reproduction rates since January 3.

## Conditional predictions daily new cases $I_{new}$ for Germany, based on data until Dec. 12, 2020

A comparison with the conditional prediction of Nov. 26 shows that in mid November the reproduction number started to increase from about 0.98 in early November to  $R = 1.12$  at the end of the month.. Accordingly the number of new infections started to rise again since the beginning of December. Its (centred) 7-day sliding average would rise to above 30  $k$  at the end of the year, if no measures were taken (solid red line). The new containment measures announced for Dec 16 will hopefully reduce the increase by an unknown amount. We show here two assumption (red dotted lines): reduction of contact rates by 10 % resp. 30 %.

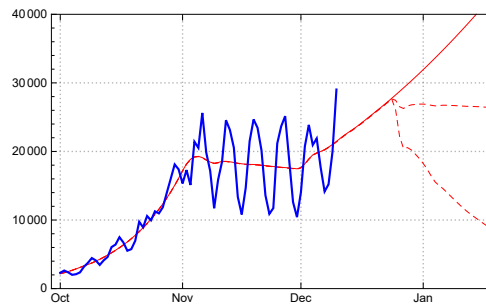


FIGURE 1. Conditional prediction for the new infections  $I_{new}$  (7-day centred sliding averages ), based on JHU data available at Dec 13, 2020, last SEPIR reproduction rate  $R = 1.12$ ; JHU data (3-day averages) blue, model values red; dotted assumed reduction of measures by 10 % resp. 30 %.

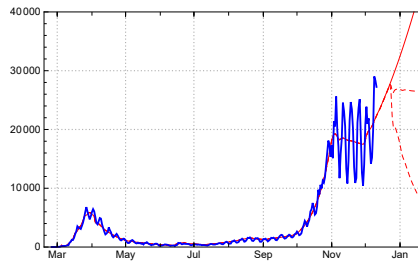


FIGURE 2. SEPIR model values  $I_{new}$  of daily new infections (7-day centred sliding averages) since March 2020; JHU data (3-day averages) blue, model values red. Dotted: assumptions on effect of containment measures like above.

## Conditional predictions daily new cases $I_{new}$ for Germany, data until Nov. 25, 2020

A comparison with the conditional prediction of Nov. 10, shows that the present situation is close to the most pessimistic variant foreseen in our last outlook (top left). The measures decided Nov. 25 by the German authorities are minor and will be put into place on Dec. 1. We do not expect noticeable effects from them; we therefore show here only what can be expected from extrapolating the last calculable reproduction rate into the near future.

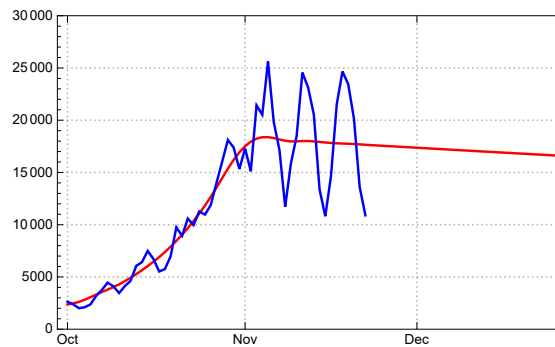


FIGURE 1. Conditional prediction for the number of new infections  $I_{new}$ , (3-day centred sliding averages) based on JHU data available at Nov 26, 2020, last SEPIR reproduction rate  $R = 0.99$ ; JHU data blue, model values red.

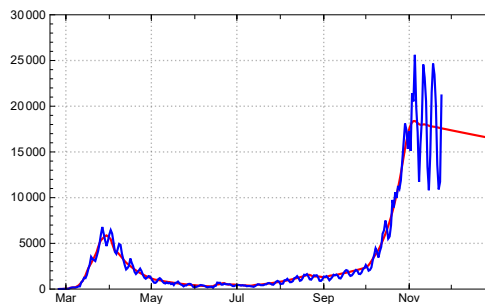


FIGURE 2. Left: SEPIR model for the number of daily new infections  $I_{new}$ , (3-day centred sliding averages) based on JHU data 2020; JHU data blue, model values red.

## Conditional predictions daily new cases $I_{new}$ for Germany, data until Nov. 10, 2020

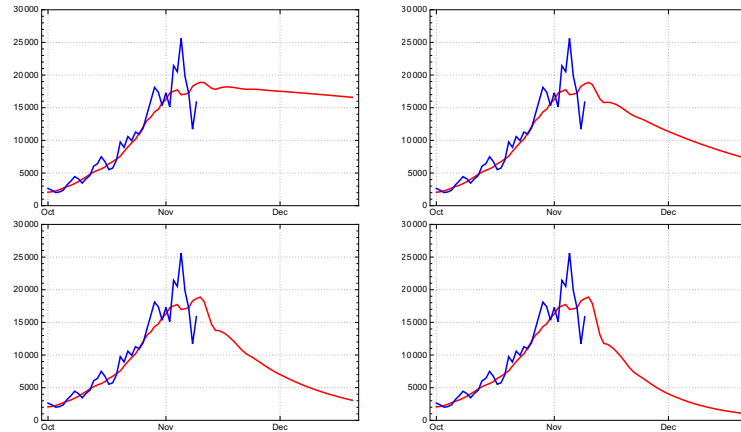


FIGURE 1. Conditional prediction for the number of daily new infections  $I_{new}$  based on JHU data (3-day sliding averages) available at Nov 11, 2020 (data until Nov 10, last SEPIR reproduction rate  $R = 1.11$ ).<sup>†</sup> Blue JHU data, solid red line model values. Assumptions: Top left, government measures enacted Nov. 2 reduce reproduction rate by 10% to  $R=0.999$ . Top right: reduction by 20 % to  $R=0.89$ . Bottom left: reduction by 30 % to  $R=0.78$ . Bottom right: reduction by 40 % to  $R=0.67$ .

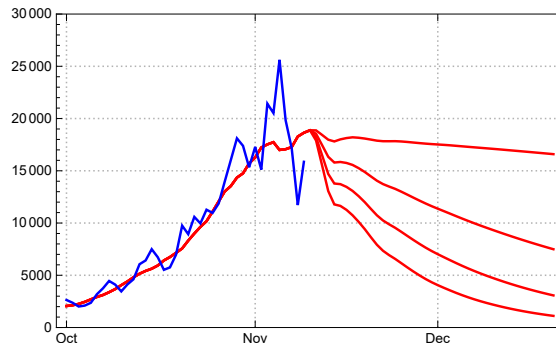


FIGURE 2. Results of all 4 assumed conditions in one (see above figure). With our parameter values the predicted date for the peak of number of daily new infections (7 day sliding centered average) for the second to last scenario is to be expected about Nov. 11.

<sup>†</sup> The date of the last available reproduction rate  $R$  is Oct, 28, i.e. 11 days later than the one of the following page but not yet influenced by the measurements enacted Nov. 2. The reduction of  $R$  in this time interval may be due to a *change of behaviour* under strong public announcement, added by a *beginning overload of test capacities*.

## Conditional predictions daily new cases $I_{new}$ for Germany, Oct. 31, 2020

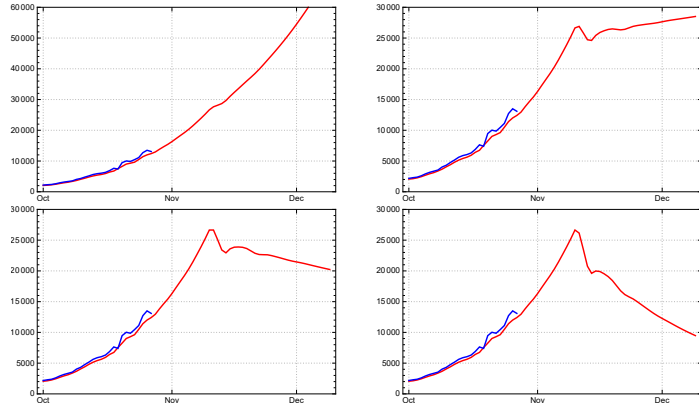


FIGURE 1. Conditional prediction for the number of daily new infections  $I_{new}$  based on data (JHU) available at Oct 31, 2020 (last SEPIR reproduction rate  $R = 1.39$ ). Blue JHU data, solid red line model values. Assumptions: Top left, government measures enacted Nov. 2 reduce reproduction rate by 10 % to  $R=1.25$ . Top right: reduction by 25 % to  $R=1.04$ . Bottom left: reduction by 30 % to  $R=0.97$ . Bottom right (very unlikely): reduction by 40 % to  $R=0.83$ .

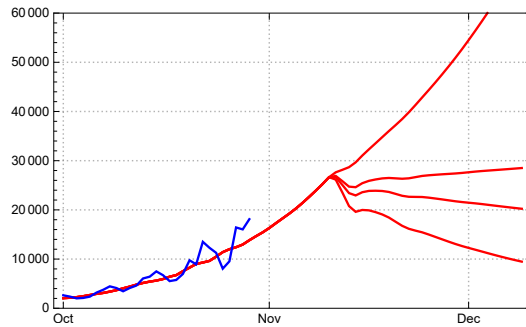


FIGURE 2. Results of all 4 assumed conditions in one (see above figure). With our parameter values the predicted date for the peak of number of daily new infections for the second to last scenario is to be expected about Nov. 11.

## Conditional predictions daily new cases $I_{new}$ for Germany Oct. 22, 2020

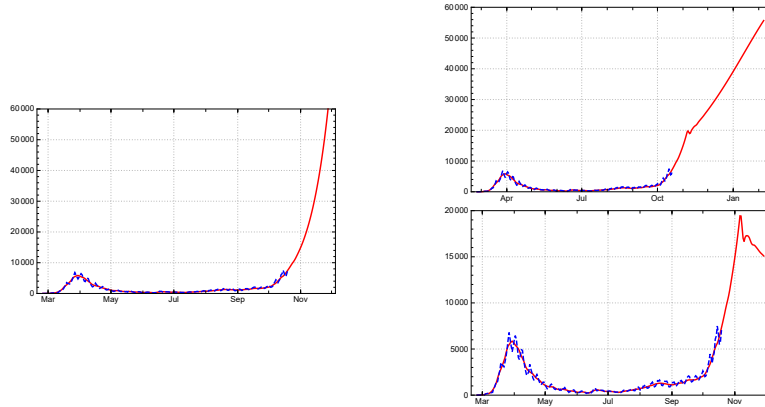


FIGURE 3. Conditional prediction for the number of daily new infections  $I_{new}$  based on data (JHU) available at Oct 21, 2020. Dashed blue JHU data, solid red line model values. Left: 1st reduction of reproduction rate  $R=1.4$  by 5 % to  $R=1.38$  at Oct 16. Top right: 2nd reduction by 20 % to  $R=1.10$  at Oct 30. Bottom right: 2nd reduction by 30 % to  $R=0.94$  at Oct 30.

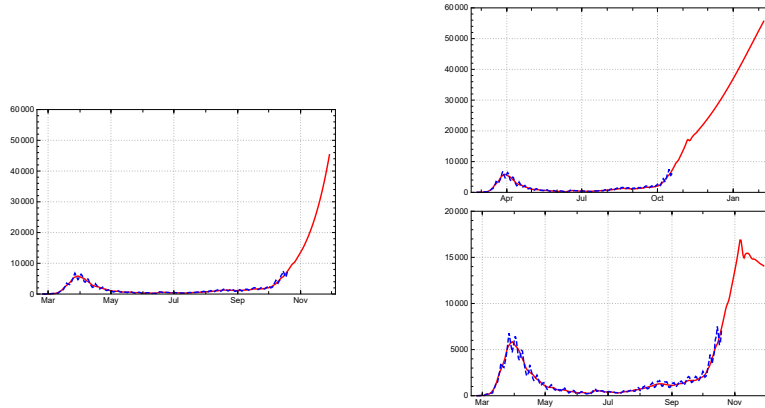


FIGURE 4. Conditional prediction for the number of daily new infections  $I_{new}$  based on data (JHU) available at Oct 21, 2020. Dashed blue JHU data, solid red line model values. Left: 1st reduction of reproduction rate  $R=1.4$  by 10 % to  $R=1.30$  at Oct 16. Top right: 2nd reduction by 15 % to  $R=1.11$  at Oct 30. Bottom right: 2nd reduction by 25 % to  $R=0.98$  at Oct 30.