**Supplementary material**

**Table S1. The dates for the start and end of the first wave and the second wave of COVID-19 in the five European countries.**

|  |  |
| --- | --- |
| **Country** | **New confirmed cases** |
| **1st wave** | **2nd wave** |
| **Start date** | **End date** | **Median number****of new cases** | **Start date** | **End date (predicted)** | **Dates for the training set** | **Median number of new cases** |
| **France** | 1-Mar-20 | 30-Jun-20 | 572 | 1-Jul-20 | 26-Apr-21 | 14-Aug-20 ̶ 15-Oct-20 | 6,926 |
| **Germany** | 1-Mar-20 | 14-Jun-20 | 1,601 | 15-Jun-20 | 20-Sep-21 | 15-Oct-20 ̶30-Nov-20 | 15,434 |
| **Italy** | 21-Feb-20 | 13-Jun-20 | 985 | 14-Jul-20 | 1-Aug-21 | 30-Sep-20 ̶31-Oct-20 | 9,070 |
| **Spain** | 1-Mar-20 | 15-Jun-20 | 1,313 | 16-Jun-20 | 15-Sep-21 | 1-Dec-20 ̶ 31-Dec-20 | 10,831 |
| **UK** | 1-Mar-20 | 30-Jun-20 | 1,814 | 1-Jul-20 | 10-Aug-21 | 30-Nov-20 ̶31-Dec-20 | 23,417 |
| **Country** | **New deaths** |
| **1st wave** | **2nd wave** |
| **Start date** | **End date** | **Median number****of new deaths** | **Start date** | **End date (predicted)** | **Dates for the training set** | **Median number of new deaths** |
| **France** | 13-Mar-20 | 31-Jul-20 | 280 | 1-Aug-20 | 10-Sep-21 | 10-Oct-20 ̶10-Dec-20 | 391 |
| **Germany** | 20-Mar-20 | 19-Aug-20 | 63 | 20-Aug-20 | 10-Aug-21 | 20-Nov-20 ̶31-Dec-20 | 434 |
| **Italy** | 1-Mar-20 | 31-Aug-20 | 287 | 1-Sep-20 | 1-Aug-21 | 15-Oct-20 ̶15-Dec-20 | 477 |
| **Spain** | 6-Mar-20 | 31-Jul-20 | 145 | 1-Aug-20 | 15-Sep-21 | 15-Oct-20 ̶15-Dec-20 | 231 |
| **UK** | 14-Mar-20 | 19-Aug-20 | 272 | 20-Aug-20 | 20-Sep-21 | 25-Oct-20 ̶31-Dec-20 | 419 |

**Table S2. The dates for the start and when new confirmed cases or new deaths reached the highest number of the first wave and the second wave of COVID-19 in the five European countries.**

|  |  |
| --- | --- |
| **Country** | **New confirmed cases (NCCs)** |
| **1st wave** | **2nd wave** |  |
| **Start date** | **The date when NCCs reached the highest number** | **Duration (days)** | **Start date** | **The date when NCCs reached the highest number** | **Duration (days)** | **The highest number of NCCs** |
| **France** | 1-Mar-20 | 31-Mar-20 | 30 | 1-Jul-20 | 9-Sep-20 | 70 | 8,000 |
| **Germany** | 1-Mar-20 | 27-Mar-20 | 27 | 15-Jun-20 | 15-Oct-20 | 120 | 7,000 |
| **Italy** | 21-Feb-20 | 21-Mar-20 | 30 | 14-Jul-20 | 14-Oct-20 | 90 | 7,000 |
| **Spain** | 1-Mar-20 | 25-Mar-20 | 25 | 16-Jun-20 | 4-Sep-20 | 80 | 10,000 |
| **UK** | 1-Mar-20 | 6-Apr-20 | 35 | 1-Jul-20 | 23-Sep-20 | 83 | 5,000 |
|  |
| **Country** | **New deaths (NDs)** |
| **1st wave** | **2nd wave** |  |
| **Start date** | **The date when NDs reached the highest number** | **Duration (days)** | **Start date** | **The date when NDs reached the highest number** | **Duration (days)** | **The highest number of NDs** |
| **France** | 13-Mar-20 | 3-Apr-20 | 20 | 1-Aug-20 | 17-Nov-20 | 110 | 1,000 |
| **Germany** | 20-Mar-20 | 15-Apr-20 | 25 | 20-Aug-20 | 8-Dec-20 | 110 | 500 |
| **Italy** | 1-Mar-20 | 27-Mar-20 | 27 | 1-Sep-20 | 3-Dec-20 | 93 | 1,000 |
| **Spain** | 6-Mar-20 | 25-Mar-20 | 20 | 1-Aug-20 | 11-Nov-20 | 100 | 700 |
| **UK** | 14-Mar-20 | 7-Apr-20 | 23 | 20-Aug-20 | 30-Dec-20 | 130 | 1,000 |