

COVID-19 Scenarios

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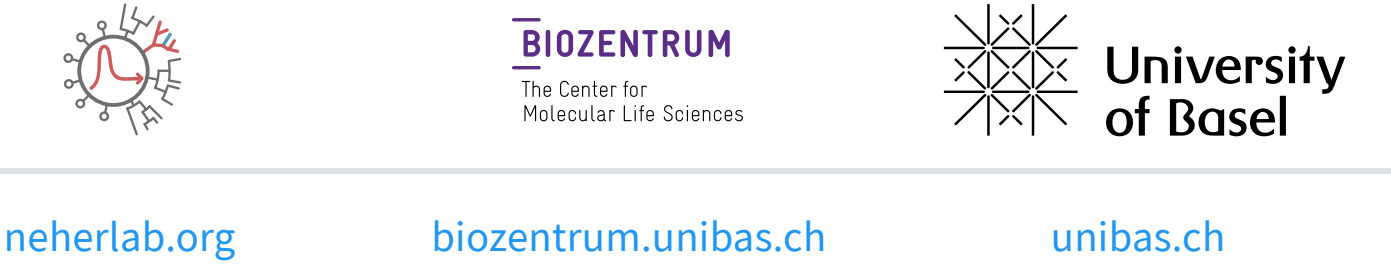
Important information

COVID-19 Scenarios is a tool that allows to explore the dynamics of a COVID-19 outbreak in a given community and to assess the associated burden on the healthcare system. COVID-19 Scenarios, as every other model, it has parameters whose values are not known with certainty, which might differ between places and change with time. The values of some of these parameters have a major effect on the results.

The results are particularly sensitive to parameters that determine how rapidly the disease spreads or how effective counter-measures are: some values will result in a small limited outbreak, others in a massive outbreak with many fatalities. Furthermore, when extrapolating the outbreak into the future, the results will critically depend on assumptions of **future** policy and the degree to which infection control measures are adhered to. It is therefore important to interpret the model output with care and to assess the plausibility of the parameter values and model assumptions.

COVID-19 Scenarios uses an age-structured generalized SEIR model. For details, please consult the documentation on [covid19-scenarios.org/about](#). Default parameter choices are informed by the available evidence at the time, but might need adjustment for a particular community or as more information on the outbreak is available.

This tool is not a medical predictor, and should be used for informational and research purposes only. Please carefully consider the parameters you choose. Interpret and use the simulated results responsibly. Authors are not liable for any direct or indirect consequences of this usage.



Scenario: United Kingdom of Great Britain and Northern Ireland (edited)

Parameters

Population

| Parameter | Value |
|--|--|
| Age distribution for ¹ | United Kingdom of Great Britain and Northern Ireland |
| Case counts for ² | United Kingdom of Great Britain and Northern Ireland |
| Number of hospital beds ³ | 139647 |
| Number of available ICU beds ⁴ | 4114 |
| Cases imported into community per day | 0 |
| Number of cases at the start of the simulation | 10000 |
| Population size | 6648891 |
| Seroprevalence [%] | 15.16 |

Epidemiology

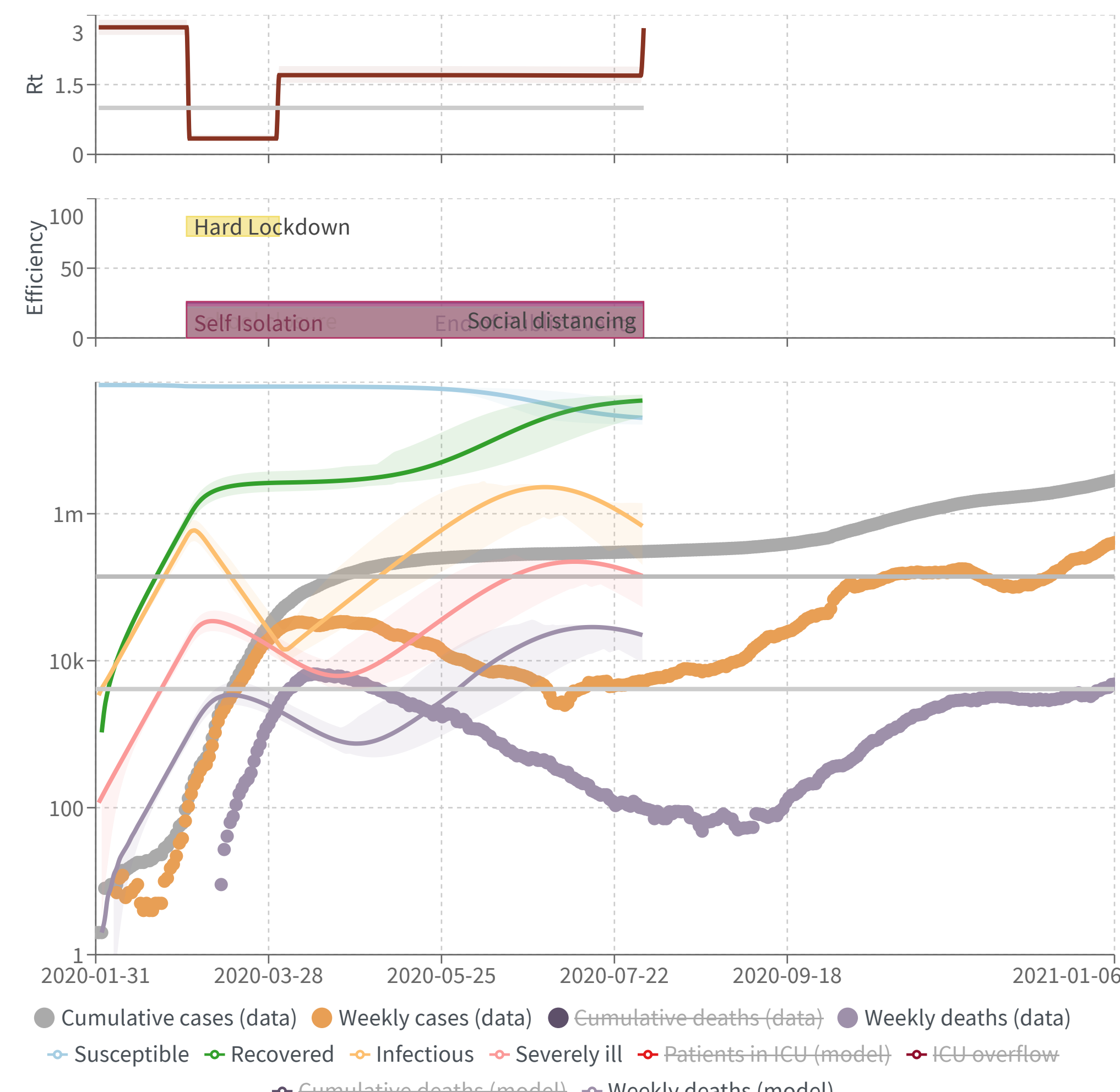
| Parameter | Value |
|--|-----------|
| Average time in regular ward [days] | 11 |
| Average time in ICU ward [days] | 7 |
| Infectious period [days] | 3.5 |
| Latency [days] ⁵ | 3.5 |
| Increase in death rate when ICUs are overcrowded | 2 |
| Seasonal peak in transmissibility | January |
| R0 at the beginning of the outbreak | 2.9 - 3.5 |
| Seasonal variation in transmissibility | 0 |

Mitigation

| Intervention name | From | To | Reduction of transmission |
|----------------------|-------------|-------------|---------------------------|
| school closure | Mar 01 2020 | Aug 01 2020 | 0% - 23% |
| End of Public Events | Mar 01 2020 | Aug 01 2020 | 0% - 20% |
| Self Isolation | Mar 01 2020 | Aug 01 2020 | 2% - 20% |
| Social distancing | Mar 01 2020 | Aug 01 2020 | 0% - 24% |
| Hard Lockdown | Mar 01 2020 | Apr 01 2020 | 75% - 85% |

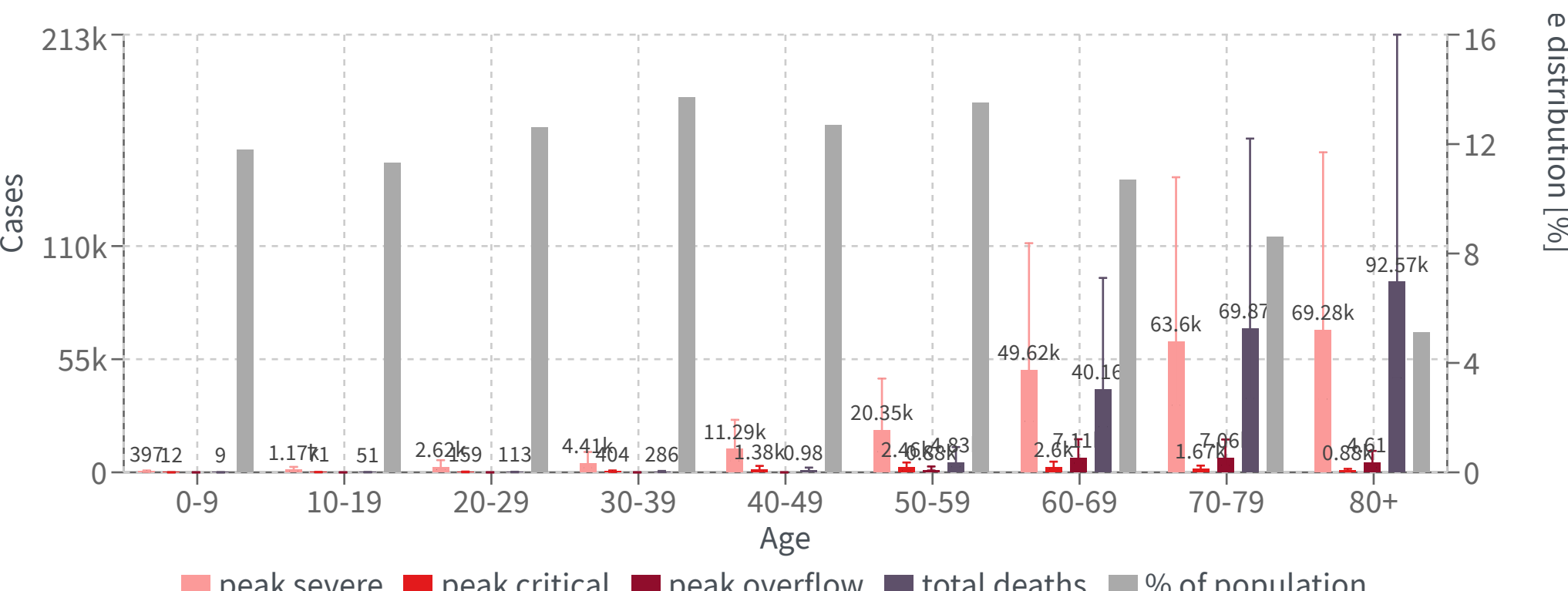
¹Country to determine the age distribution in the population
²Region for which to plot confirmed case and death counts.
³Number of hospital beds available. The default values are rough estimates indicating total capacity. Number of beds available for COVID-19 treatment is likely much lower.
⁴Number of available beds in Intensive Care Units (ICUs). The default values are rough estimates indicating total capacity. Number of ICU/CMUs available for COVID-19 treatment is likely much lower.
⁵Time from infection to onset of symptoms (here onset of infectiousness)

Results



Results summary

| Date | Severe | Critical | ICU Overflow | Deaths | Recovered |
|-------------|-------------|-----------|--------------|-------------|-------------|
| Feb 01 2020 | 0 | 0 | 0 | 0 | 0 |
| Feb 08 2020 | 158 - 179 | 4 - 5 | 0 | 2 - 3 | 12k - 13k |
| Feb 15 2020 | 1k | 51 - 62 | 0 | 42 - 50 | 50k - 59k |
| Feb 22 2020 | 3k - 5k | 212 - 287 | 0 | 210 - 277 | 161k - 222k |
| Feb 29 2020 | 10k - 17k | 1k | 0 | 1k | 493k - 1m |
| Mar 07 2020 | 24k - 44k | 2k - 3k | 0 | 2k - 4k | 1m - 2m |
| Mar 14 2020 | 24k - 46k | 3k - 4k | 0 - 1k | 5k - 9k | 2m - 3m |
| Mar 21 2020 | 19k - 36k | 3k - 4k | 0 - 1k | 7k - 14k | 2m - 4m |
| Mar 28 2020 | 13k - 26k | 2k - 4k | 0 - 368 | 9k - 18k | 2m - 4m |
| Apr 04 2020 | 9k - 18k | 2k - 4k | 0 | 10k - 20k | 2m - 4m |
| Apr 11 2020 | 6k - 12k | 1k - 3k | 0 | 11k - 22k | 2m - 4m |
| Apr 18 2020 | 4k - 11k | 1k - 2k | 0 | 12k - 24k | 2m - 4m |
| Apr 25 2020 | 4k - 17k | 1k - 2k | 0 | 13k - 25k | 2m - 4m |
| May 02 2020 | 4k - 27k | 1k - 3k | 0 | 14k - 28k | 2m - 5m |
| May 09 2020 | 5k - 43k | 1k - 4k | 0 - 148 | 15k - 29k | 2m - 7m |
| May 16 2020 | 7k - 69k | 1k - 4k | 0 - 2k | 15k - 36k | 3m - 9m |
| May 23 2020 | 10k - 108k | 1k - 4k | 0 - 5k | 17k - 49k | 3m - 11m |
| May 30 2020 | 14k - 156k | 1k - 4k | 0 - 10k | 18k - 65k | 3m - 15m |
| Jun 06 2020 | 20k - 205k | 2k - 4k | 0 - 15k | 20k - 86k | 4m - 20m |
| Jun 13 2020 | 28k - 239k | 3k - 4k | 0 - 19k | 22k - 113k | 4m - 25m |
| Jun 20 2020 | 41k - 271k | 4k | 92 - 22k | 25k - 145k | 5m - 30m |
| Jun 27 2020 | 59k - 234k | 4k | 2k - 23k | 31k - 176k | 7m - 33m |
| Jul 04 2020 | 81k - 240k | 4k | 4k - 21k | 38k - 205k | 9m - 36m |
| Jul 11 2020 | 104k - 230k | 4k | 6k - 21k | 49k - 228k | 11m - 38m |
| Jul 18 2020 | 109k - 199k | 4k | 8k - 20k | 63k - 247k | 14m - 40m |
| Jul 25 2020 | 78k - 157k | 4k | 8k - 16k | 81k - 260k | 18m - 41m |
| Aug 01 2020 | 54k - 152k | 4k | 5k - 13k | 101k - 276k | 21m - 42m |



Proportions



Totals/Peak

Quantity **Peak/total value**
Total death: (101.29k, **208.85k**, 276.34k)
Total severe: (0.66m, **1.1m**, 1.32m)
Peak severe: (110.3k, **222.67k**, 278.71k)
Peak critical: (12.57k, **23.76k**, 29.56k)