

## Supplementary data for

# The influence of non-pharmaceutical interventions, vaccination and coronavirus seasonality on the progression of the COVID-19 pandemic in Northern Europe.

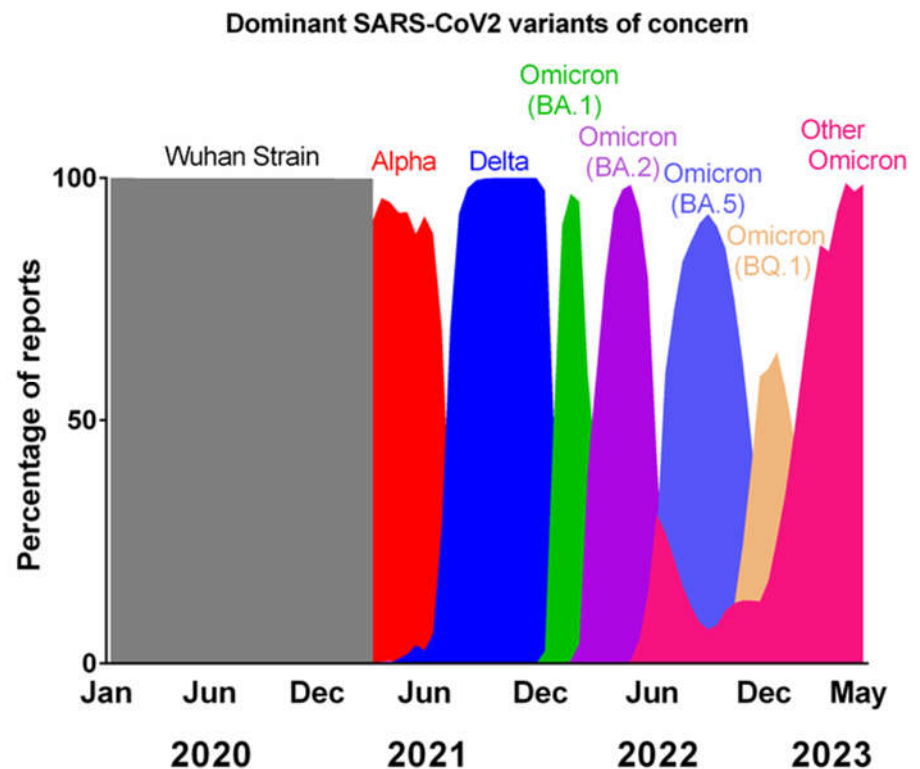
Gerry A Quinn, Michael Connolly, Norman E Fenton, Steven J Hatfill, Paul Hynds, Coilín ÓhAiseadha, Karol Sikora, Willie Soon and Ronan Connolly

### Supplementary Tables

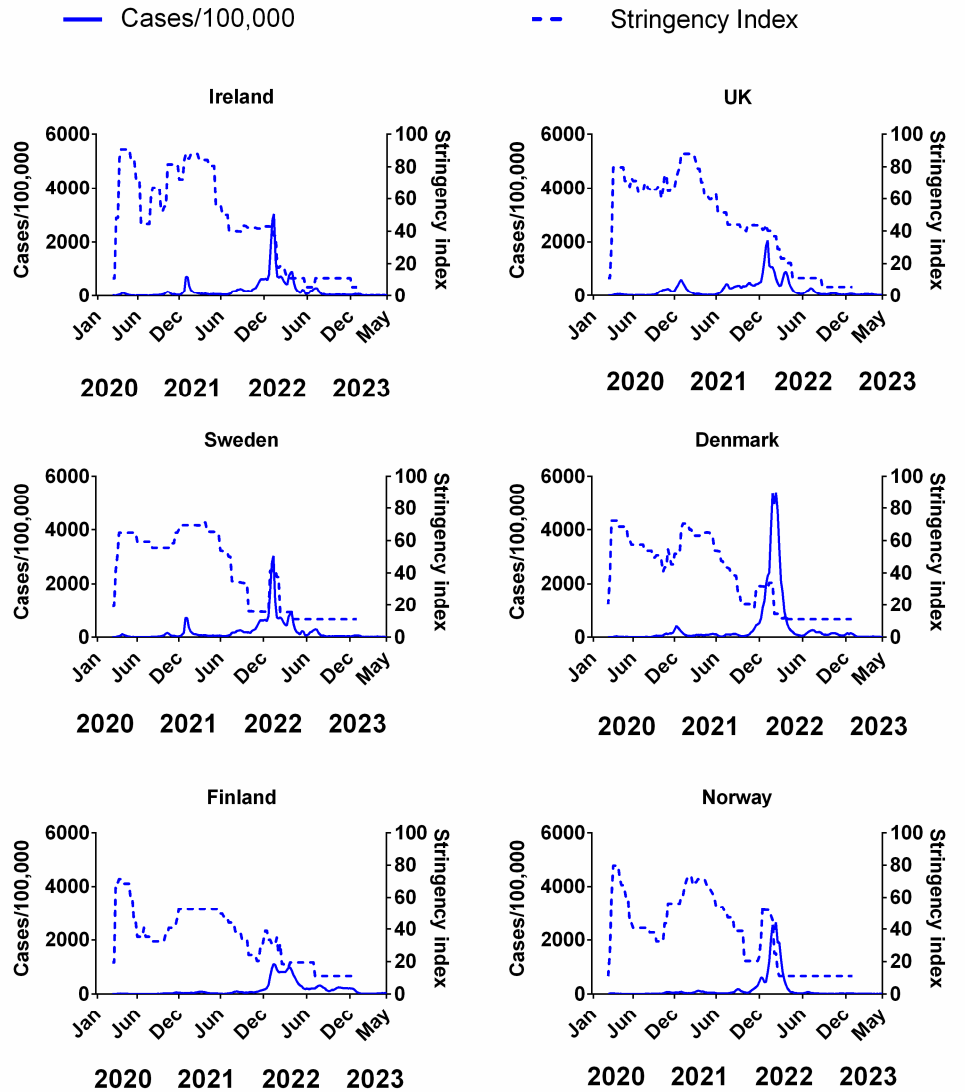
**Table S1.** Estimated time period in weeks between the peaks of deaths and cases during the 3 waves of the COVID-19 pandemic in Northern European countries. Deaths and cases both measured per 100,000. Data covering the period 1 March 2020 to 6 May 2023 was taken from “Our World in Data”, <https://ourworldindata.org/coronavirus>; accessed 05/07/23.

Country	1st Wave	2 <sup>nd</sup> Wave	3 <sup>rd</sup> Wave
Ireland	1	3	3
UK	1	2	2
Sweden	1	2	4
Denmark	1	3	4
Finland	1	1	3 or 4
Norway	2	3	6 or 7

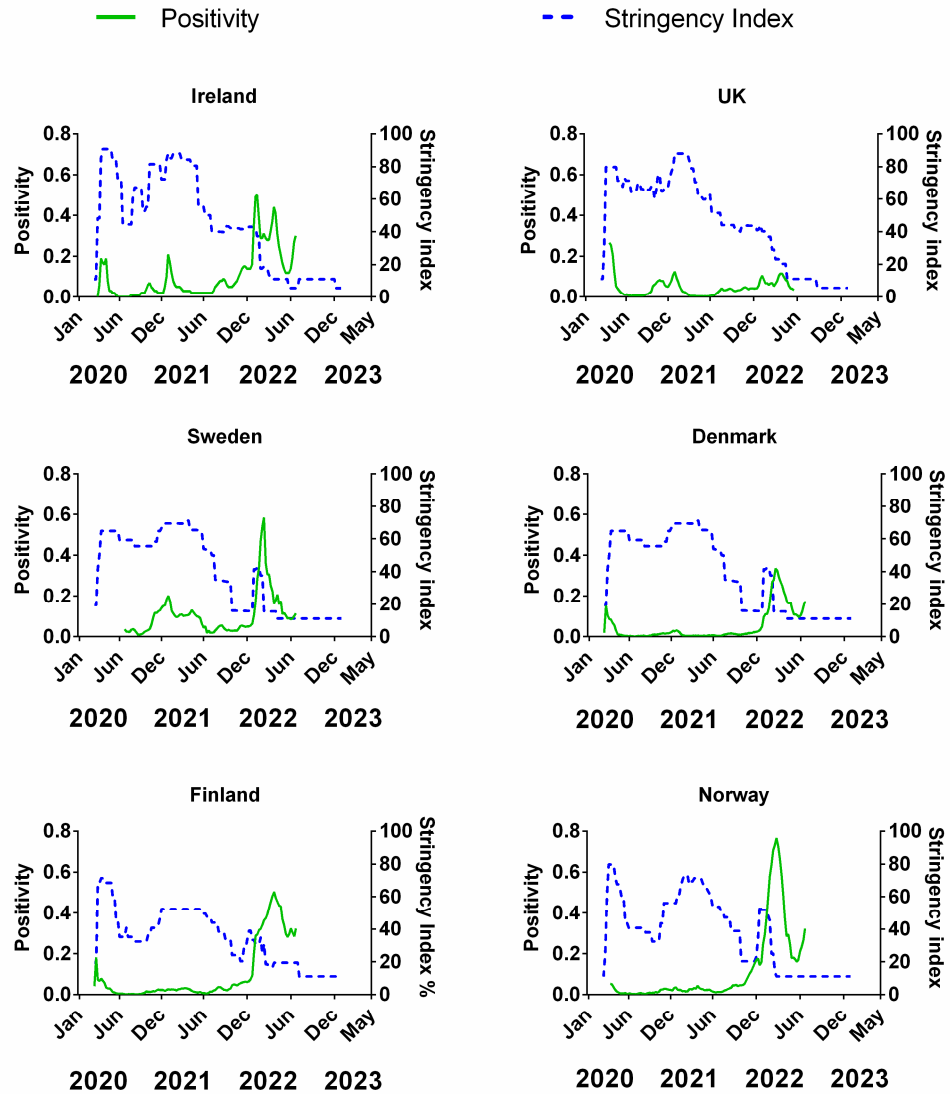
## Supplementary Figures



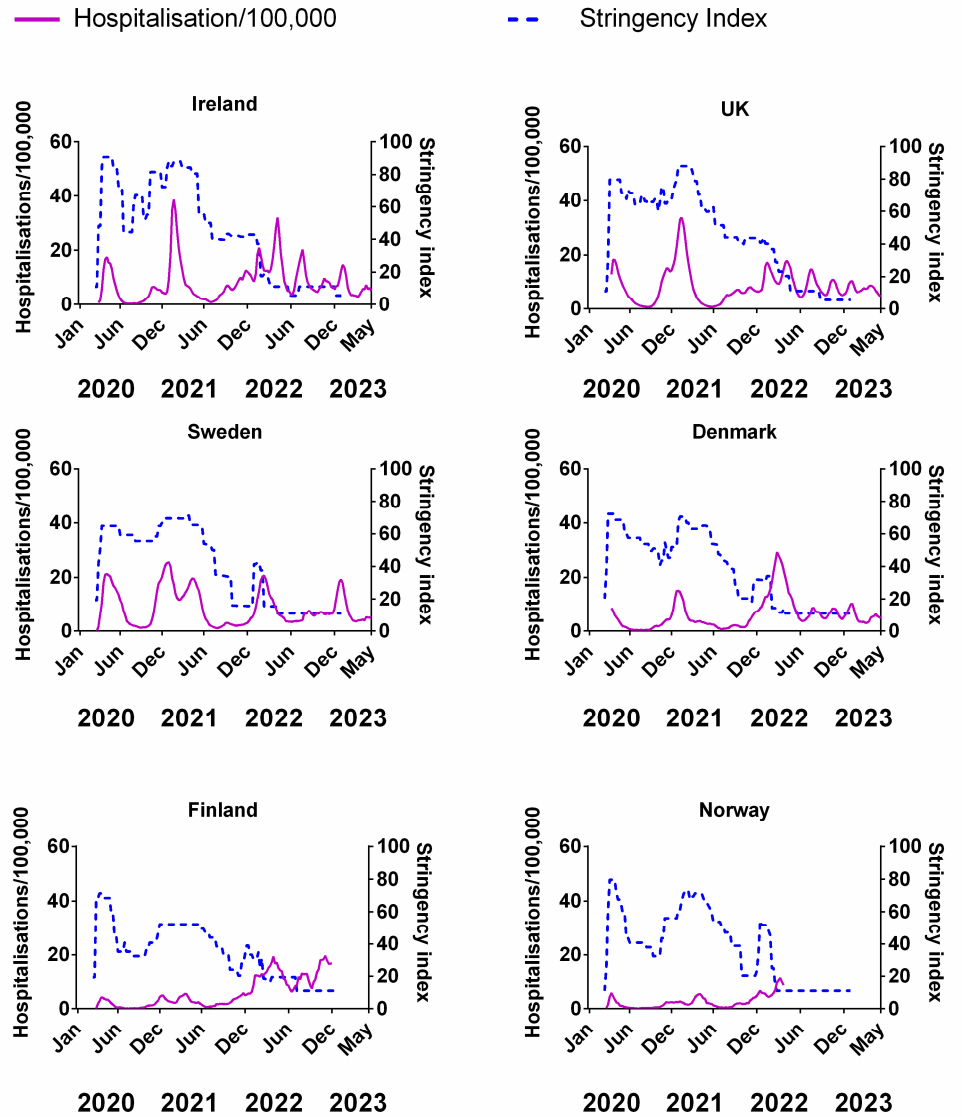
**Figure S1.** Development of the main SARS-CoV2 variants over the course of the COVID-19 pandemic. Data covering the period 1 March 2021 to 8 May 2023. Data sourced from GISAID, via CoVariants.org -accessed 1 November 2023 - Note: Recently-discovered or actively-monitored variants may be overrepresented, as suspected cases of these variants are likely to be sequenced preferentially or faster than other cases. Data from Our-WorldInData.org/coronavirus. More detailed breakdown of variants of concern can be found in Excel File S1



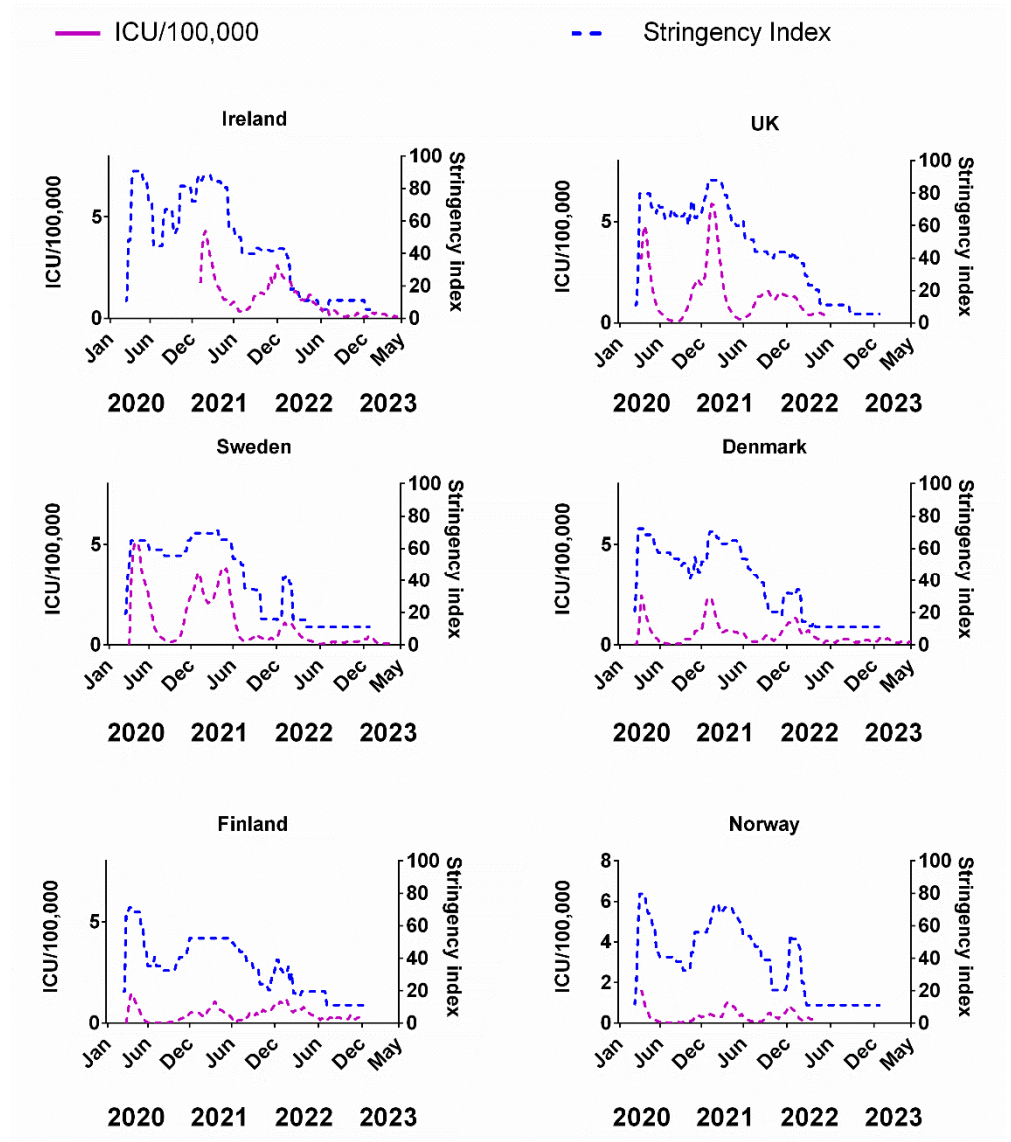
**Figure S2a.** Changes in NPI stringency compared to the progression of the COVID-19 pandemic in Northern Europe as measured by new cases. Cases per 100,000 of the population. Data covering the period 1 March 2020 to 6 May 2023 was taken from “Our World in Data”, <https://ourworldindata.org/coronavirus>; accessed 05/07/23 [55].



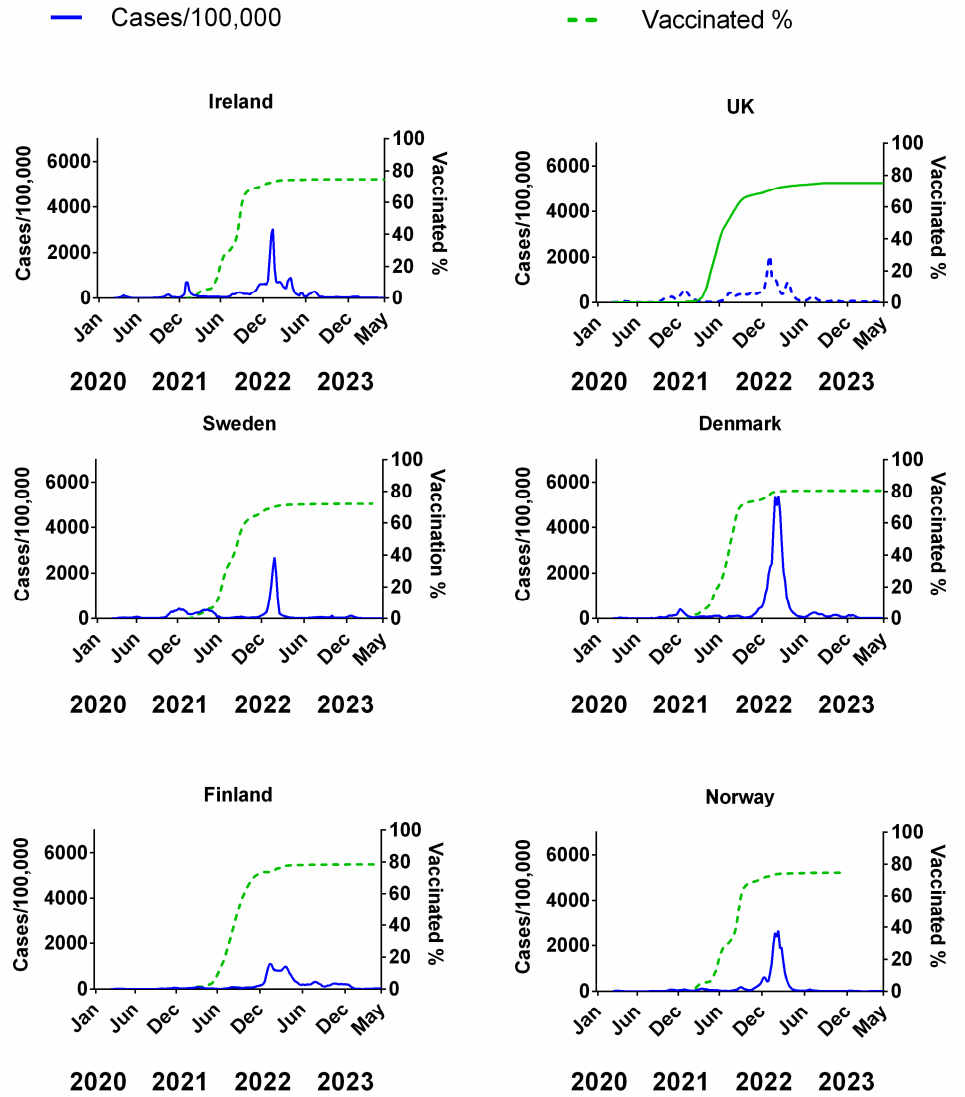
**Figure S2b.** Changes in NPI stringency compared to the progression of the COVID-19 pandemic in Northern Europe as measured by the positivity rate. Data covering the period 1 March 2020 to 6 May 2023 was taken from “Our World in Data”, <https://ourworldindata.org/coronavirus>; accessed 05/07/23 [55].



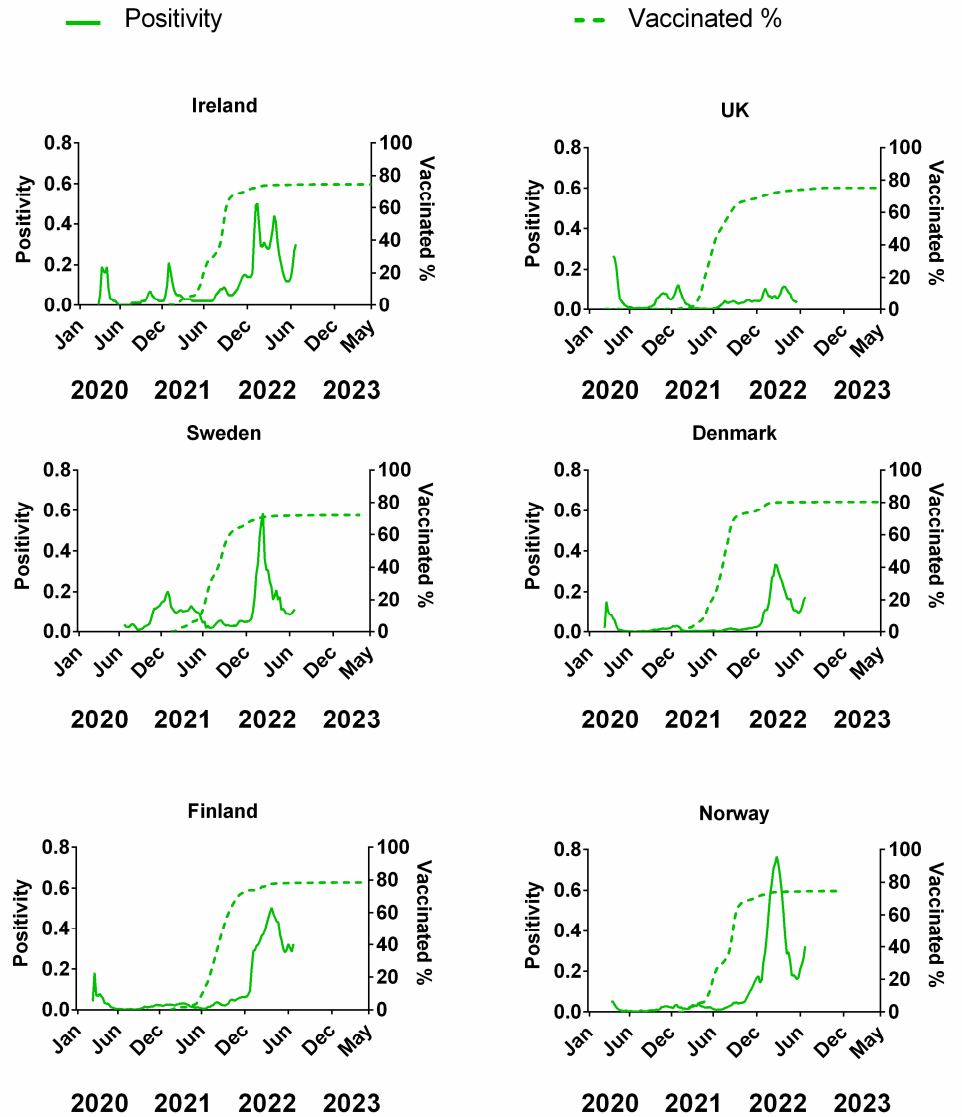
**Figure S2c.** Changes in NPI stringency compared to the progression of the COVID-19 pandemic in Northern Europe as measured by hospitalization. Data covering the period 1 March 2020 to 6 May 2023 was taken from “Our World in Data”, <https://ourworldindata.org/coronavirus>; accessed 05/07/23 [55].



**Figure S2d.** Changes in NPI stringency compared to the progression of the COVID-19 pandemic in Northern Europe as measured by ICU occupancy. Data covering the period 1 March 2020 to 6 May 2023 was taken from “Our World in Data”, <https://ourworldindata.org/coronavirus>; accessed 05/07/23 [55].

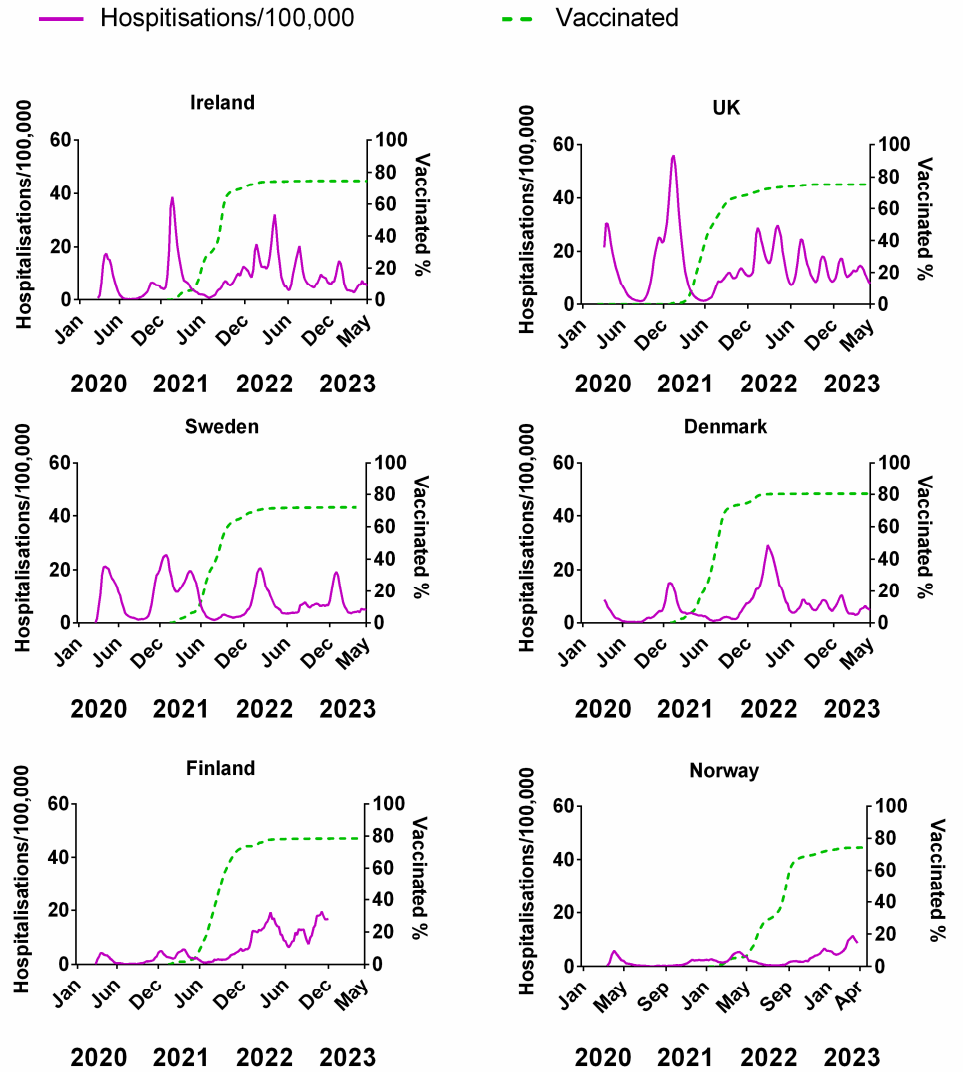


**Figure S3a.** Population wide vaccination programme compared to the progression of the COVID-19 pandemic in Northern Europe as measured by new cases. Data covering the period 1 March 2020 to 6 May 2023 was taken from “Our World in Data”, <https://ourworldindata.org/coronavirus>; accessed 05/07/23 [55].

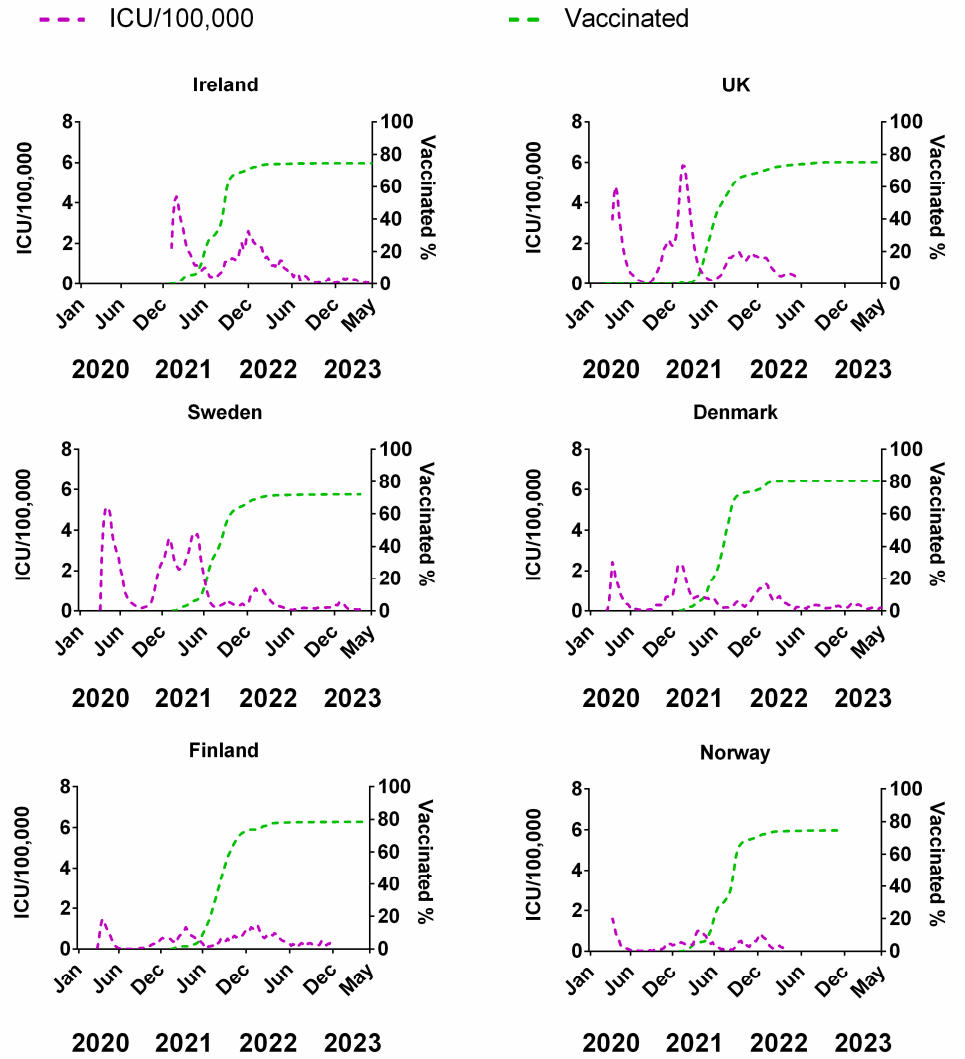


**Figure S3b.** Population wide vaccination programme compared to the progression of the COVID-19 pandemic in Northern Europe as measured by the positivity rate. Data covering the period 1 March 2020 to 6 May 2023 was taken from "Our World in Data", <https://ourworldindata.org/coronavirus>; accessed 05/07/23 [55].

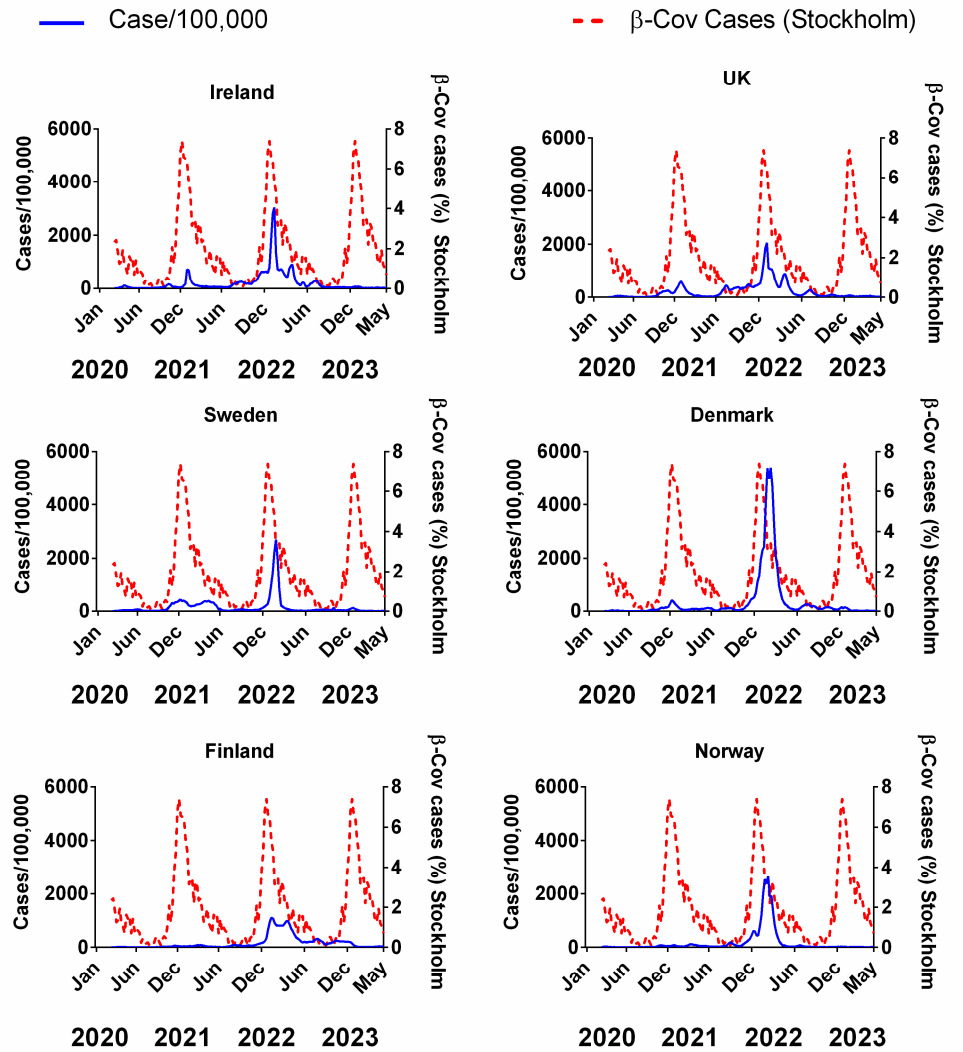




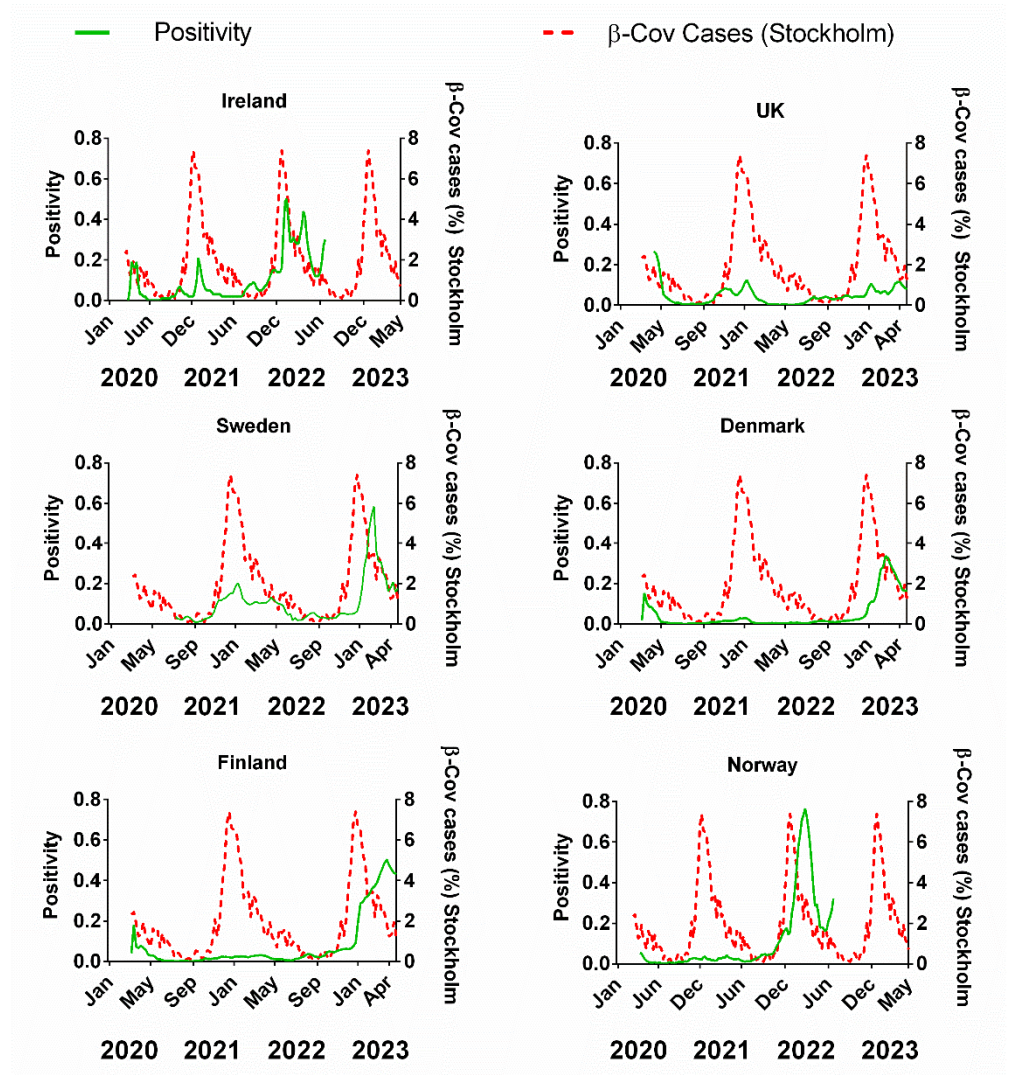
**Figure S3c.** Population wide vaccination programme compared to the progression of the COVID-19 pandemic in Northern Europe as measured by hospitalisation. Data covering the period 1 March 2020 to 6 May 2023 was taken from "Our World in Data", <https://ourworldindata.org/coronavirus>; accessed 05/07/23 [55].



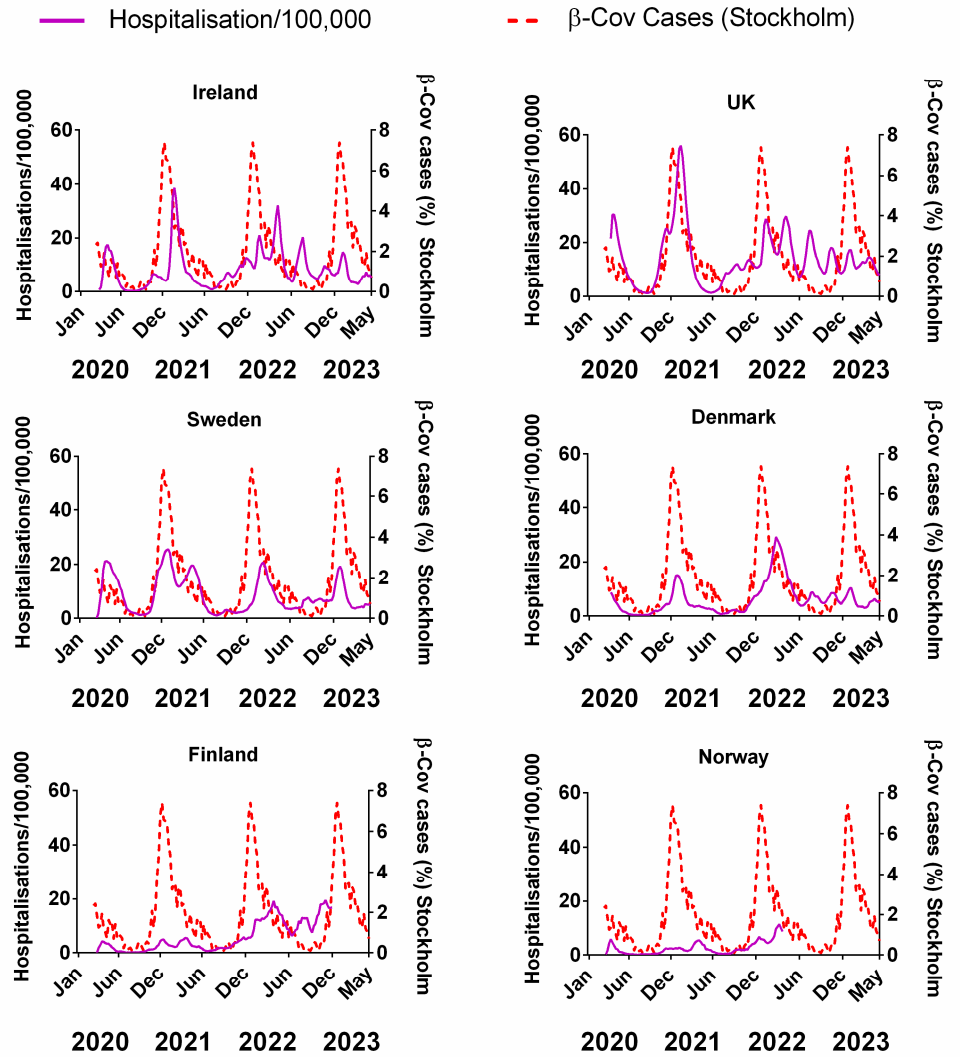
**Figure S3d.** Population wide vaccination programme compared to the progression of the COVID-19 pandemic in Northern Europe as measured by ICU occupancy. Data covering the period 1 March 2020 to 6 May 2023 was taken from “Our World in Data”, <https://ourworldindata.org/coronavirus>; accessed 05/07/23 [55].



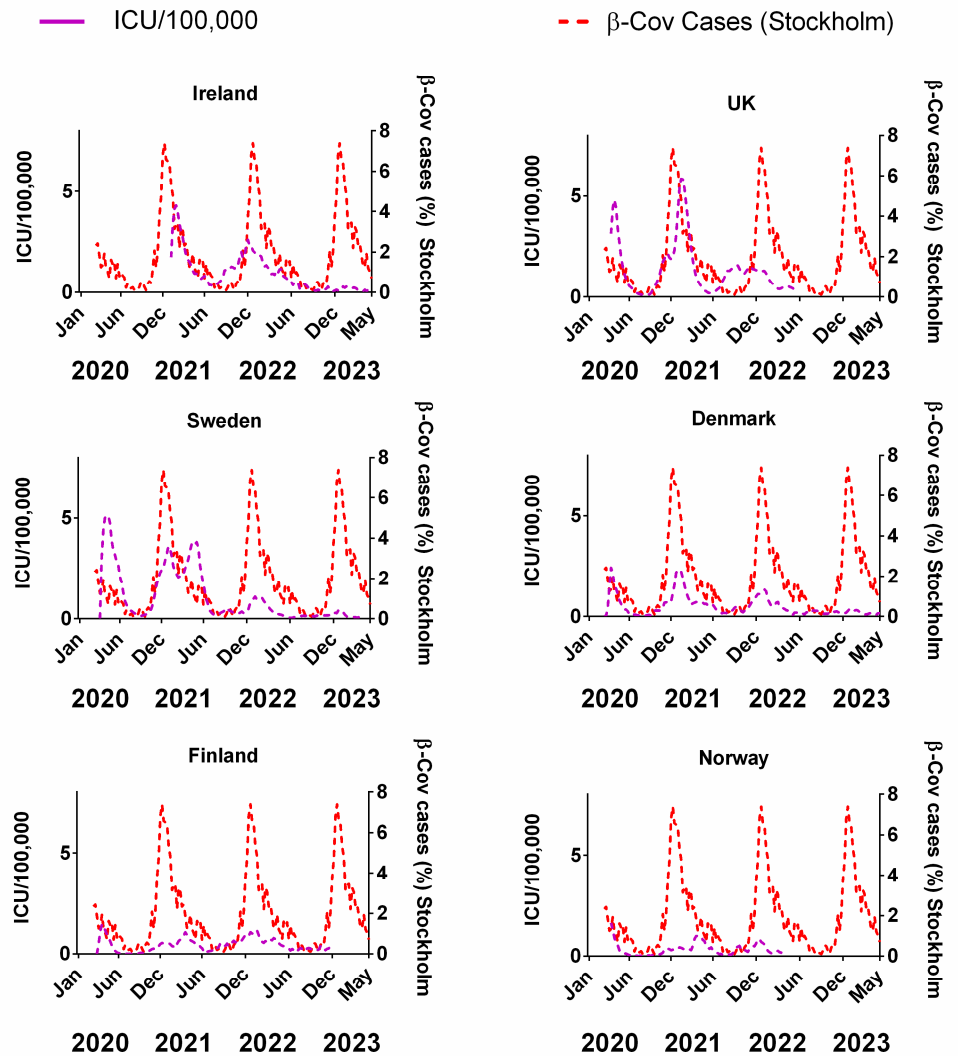
**Figure S4a.** Comparison of the average human beta-coronavirus cases in Stockholm over a ten year period with the progression of the COVID-19 pandemic in Northern Europe countries as measured by new cases. COVID-19 cases annotated per 100,000 of the population. Data covering the period 1 March 2020 to 6 May 2023 was taken from “Our World in Data”, <https://ourworldindata.org/coronavirus>; accessed 05/07/23 [55]. and weekly beta-coronavirus (HCoV OC43 and HCoV HKU1) cases (1 January 2010 to 2 April 2020) from the University Hospital in Stockholm, Sweden [39].



**Figure S4b.** Comparison of the average human beta-coronavirus cases in Stockholm over a ten year period with the progression of the COVID-19 pandemic in Northern Europe countries as measured by positivity rate. Data covering the period 1 March 2020 to 6 May 2023 was taken from “Our World in Data”, <https://ourworldindata.org/coronavirus>; accessed 05/07/23 [55] and weekly beta-coronavirus (HCoV OC43 and HCoV HKU1) cases (1 January 2010 to 2 April 2020) from the University Hospital in Stockholm, Sweden [39].



**Figure S4c.** Comparison of the average human beta-coronavirus cases in Stockholm over a ten year period with the progression of the COVID-19 pandemic in Northern Europe countries as measured by hospitalisation. Data covering the period 1 March 2020 to 6 May 2023 was taken from “Our World in Data”, <https://ourworldindata.org/coronavirus>; accessed 05/07/23 [55] and weekly beta-coronavirus (HCoV -OC43 and HCoV -HKU1) cases (1 January 2010 to 2 April 2020) from the University Hospital in Stockholm, Sweden [39].



**Figure S4d.** Comparison of the average human beta-coronavirus cases in Stockholm over a ten year period with the progression of the COVID-19 pandemic in Northern Europe countries as measured by ICU occupancy. Data covering the period 1 March 2020 to 6 May 2023 was taken from “Our World in Data”, <https://ourworldindata.org/coronavirus>; accessed 05/07/23 [55]. and weekly beta-coronavirus (HCoV -OC43 and HCoV -HKU1) cases (1 January 2010 to 2 April 2020) from the University Hospital in Stockholm, Sweden [39].

**We also include the following data files in the supplementary information**

**Excel File S1.** COVID-19 Epidemiological data for six Northern European countries. Epidemiological metrics used during COVID-19 pandemic and correlations of this data. Data from the period 1 March 2020 to 6 May 2023 was taken from “Our World in Data” <https://ourworldindata.org/coronavirus>; accessed 05/05/22. Average weekly beta-coronavirus (HCoV -OC43 and -HKU1) cases (1 January 2010 to 2 April 2020) from the University Hospital in Stockholm, Sweden.