NIVEL
Research for better care

FluCov Bulletin – end-December 2022

FluCov project: ***combining data from around the world to better understand the impact of COVID-19 on influenza activity***

Commentary

Contents

It has been three years since a cluster of atypical pneumonia cases in Wuhan, China, was reported to the World Health Organization (WHO) (January 1, 2020) that was later linked to the new **SARS-CoV-2** virus. The FluCov Bulletin provides an overview of the number of positive cases of **influenza** and **SARS-CoV-2** and the percentage of specimens that tested positive from January 2019 onwards in 22 countries across most regions of the world (see page 4).

Results

Globally, **influenza** circulation remains high and the peak has surpassed total detections during the winters of 2019/20, 2020/21 and 2021/22 (see Figure 1). The following patterns have been observed for **influenza** in December (until week 52):

- Increased **influenza** activity was reported in **France**, **Germany**, **Israel**, **Poland**, **South Korea**, and the **United Kingdom**.
- **Spain** and **Italy** also reported increased **influenza** activity, but the peak may have been reached.
- Although seasonal **influenza** activity remains high in North America (**Canada, Mexico** and **the United States**), it has started to decrease in these countries.
- **Influenza** A is currently the dominant circulating virus: when subtyped, most countries reported **influenza** A(H3) was dominant.
- The **Netherlands** and the **United Kingdom**, reported a mix of **influenza** A(H3) and A(H1N1)pdm09. In the Netherlands, influenza B has also been detected (26% of total detections in week 49).
- In Israel **influenza** A(H1N1)pdm09 is dominant.
- Very little **influenza** activity was reported by the Southern Hemisphere countries covered in the Bulletin: **Australia**, **Brazil** and **South Africa**.
- Relatively low **influenza** activity was also observed in **China**, **Thailand**, **Japan, India** and the **Philippines**.

In most countries covered by the Bulletin, the decline in **SARS-CoV-2** detections that has been seen since August 2022 has leveled off and some countries are seeing increased activity. The following patterns were observed for **SARS-CoV-2** in December (week 52):

- Increased **SARS-CoV-2** activity was reported in **Brazil**, **Mexico**, **Japan** and **South Korea** during the second half of December.
- Some **SARS-CoV-2** activity was also reported in **France**, **Germany**, **Italy** and **Australia**. However, in these countries the number of detections is decreasing again.
- In **China,** weekly **SARS-CoV-2** detections seem to be decreasing sharply, however, this may be influenced by non-reporting or a reporting delay.

- Relatively low **SARS-CoV-2** activity has been reported in most of the other countries covered by the Bulletin (**United States**, **Canada**, **United Kingdom**, **Poland**, **Netherlands**, **Philippines**, **Spain**, **South Africa**, **India**, **Thailand**, **Israel**, **Vietnam**).

Implications

The 2022/23 Northern Hemisphere **influenza** season has started very early this winter, with increased activity in the **United States**, **Canada**, **Germany, Spain** and **Mexico**. A peak in **influenza** activity has been reached in these countries around week 49, and activity has started to decrease. Other Northern Hemisphere countries, mainly in Europe, are seeing an increasing number of **influenza** detections.

Importantly, the peak of total detections in December 2022 (see Figure 1) has surpassed the peak of the previous three winters (2019/20, 2020/21 and 2021/22); this may be associated to increased influenza testing during the pandemic, and will need to be assessed further.

At the moment (week 52), when subtyping is performed, influenza detections are dominated by **influenza** A(H3). No **influenza** B(Yamagata) activity has been observed in the last weeks and **influenza** B(Yamagata) has been nearly absent since the start of the **SARS-CoV-2** pandemic [1].

SARS-CoV-2 activity is particularly high in a number of Asian countries (**China, Japan,** and **South Korea**). Importantly, **China** is currently experiencing the worst **SARS-CoV-2** wave since the beginning of the pandemic. The observed decrease in **SARS-CoV-2** activity in **China** may be influenced by non-reporting, delayed reporting and possibly a reduction in testing; future reporting will have to confirm this.

Globally, **Influenza** and **SARS-CoV-2** are co-circulating and increasing (see Figure 1), with some countries like **South Korea**, **France** seeing a simultaneous increase in activity of both viruses. However in **Mexico**, **influenza** activity decreased as **SARS-CoV-2** activity increased, and this pattern may become more common as SARS-CoV-2 activity increases (see Figure 1) in other countries.

Based on an assessment of the population immunity levels in western Europe (**France, Germany, Italy, Spain, United Kingdom)** before the 2022/23 winter and Australia during the Southern Hemisphere 2022 winter, a modelling exercise estimated that countries in western Europe will experience early and moderately large influenza epidemics. This analysis also expects differences will arise in the influenza epidemics between countries, with **Germany and Spain** experiencing larger epidemics than **France, Italy and the UK**, especially in children [2].

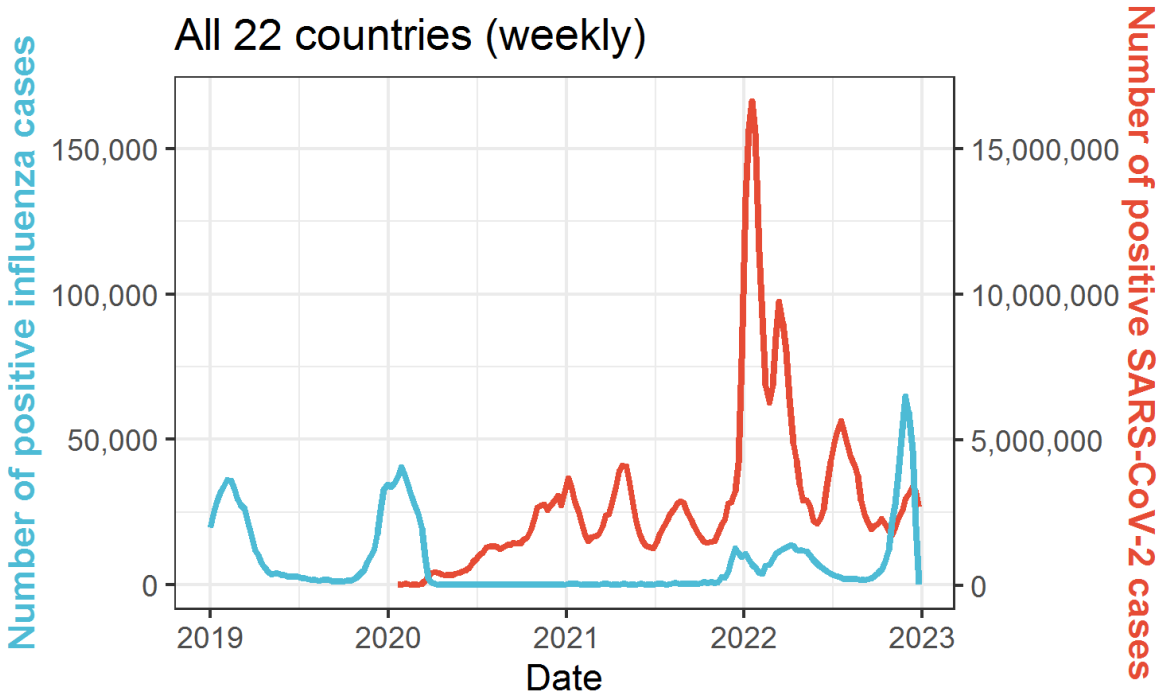


Figure 1: SARS-CoV-2 and influenza detections in the 22 countries covered by the Bulletin since 2019

Note: The apparent and sharp decrease in influenza detections in week 52 of 2022 is likely due to incomplete reporting

Monthly plots by country

The plots per country show weekly data for **influenza** and of **SARS-CoV-2** infections from January 1, 2019 up to December 18, 2022. This FluCov Bulletin includes the countries Canada, United States, Mexico, Brazil, United Kingdom, France, Germany, Italy, Netherlands, Spain, Poland, South Africa, Egypt, China, Japan, South Korea, India, Philippines, Thailand, Vietnam, Israel and Australia.

Per country, the top plot displays the number of positive **influenza** (in blue) and of **SARS-CoV-2** (in red) cases. An overview of the absolute number of **influenza** and of **SARS-CoV-2** cases per country can be found on **pages 27-28 of this FluCov Bulletin (click here).** The bar in the middle displays the Stringency Index (SI; a country-specific composite metric of the mitigation measures that are in place) over time, where light red indicates loose measures and dark red indicates strict measures. The bottom plot displays the percentage of **influenza** (in blue) and of **SARS-CoV-2** (in red) specimen testing positive

The FluCov Dashboard is live!
All Figures and Tables in the FluCov Bulletin can now be accessed (real-time) at:
https://www.nivel.nl/en/dossier-epidemiology-respiratory-viruses/flucov-dashboard

Countries (click to view plot)

North America
Canada
United States

Central America Caribbean
Mexico

Tropical South America
Brazil

Northern Europe
United Kingdom

Eastern Europe
Poland

South West Europe
France
Germany
Italy
Netherlands
Spain

Northern Africa
Egypt

Southern Africa
South Africa

Eastern Asia
China
Japan
South Korea

Southern Asia
India

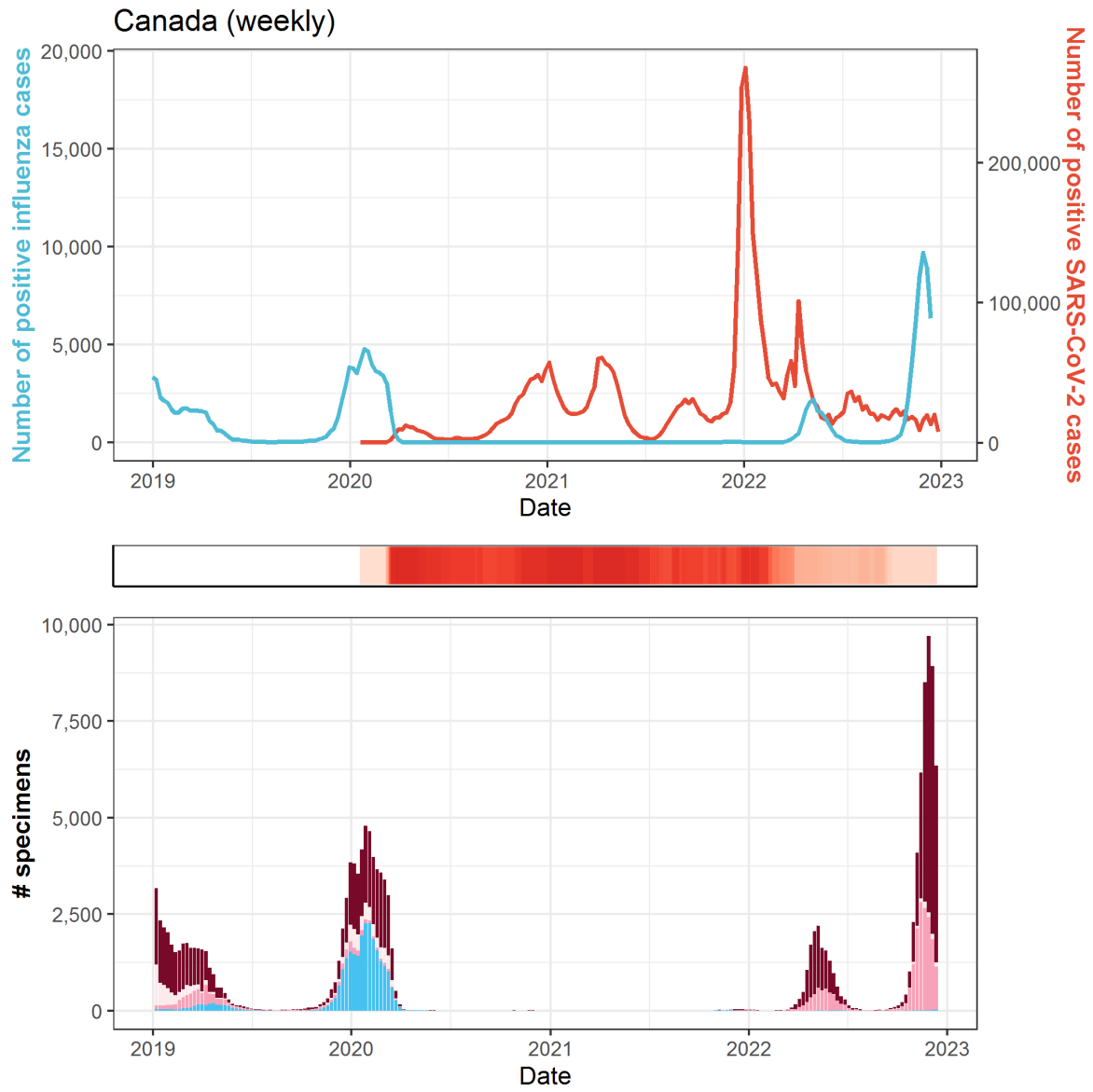
South East Asia
Philippines
Thailand
Vietnam

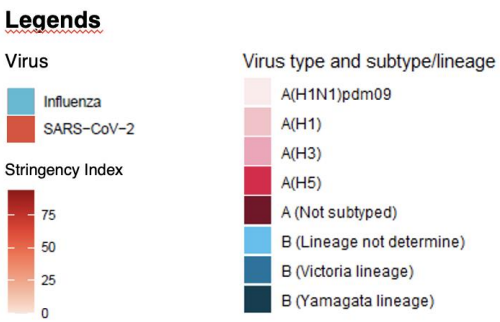
Western Asia
Israel

Oceania
Australia

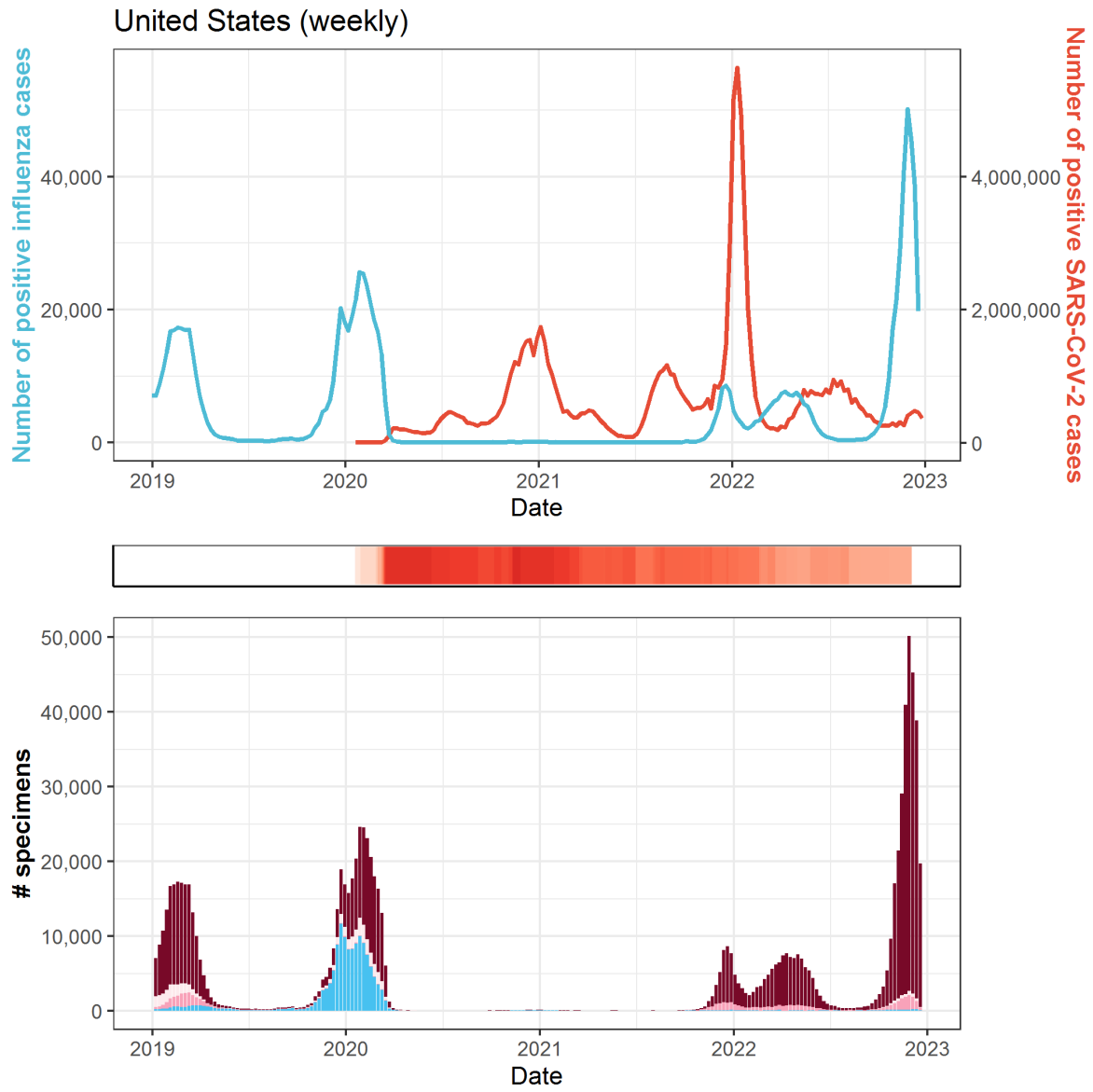
North America

Canada





United States



Legends

Virus

- Influenza
- SARS-CoV-2

Stringency Index

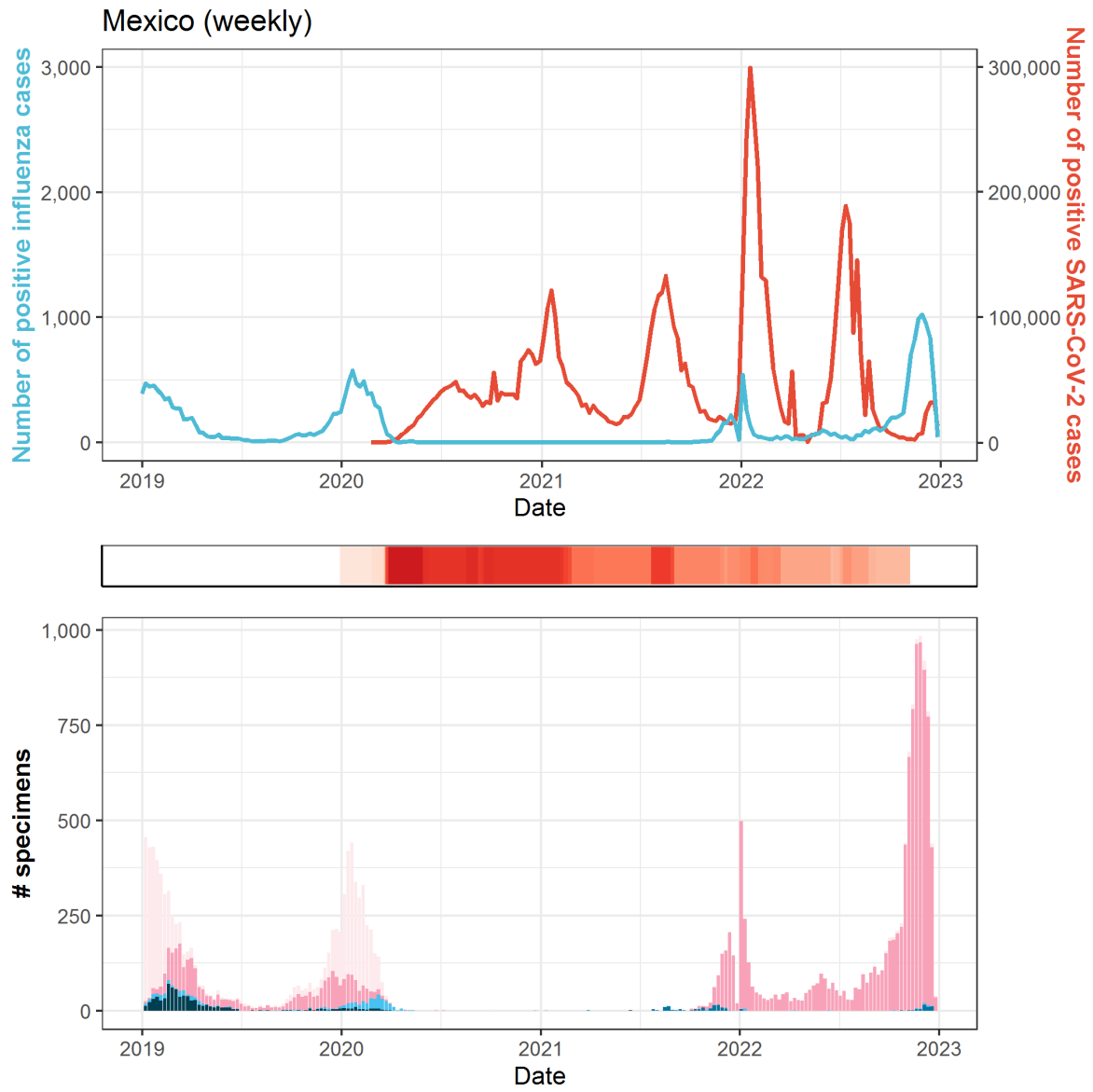
75
50
25
0

Virus type and subtype/lineage

- A(H1N1)pdm09
- A(H1)
- A(H3)
- A(H5)
- A (Not subtyped)
- B (Lineage not determine)
- B (Victoria lineage)
- B (Yamagata lineage)

Central America Caribbean

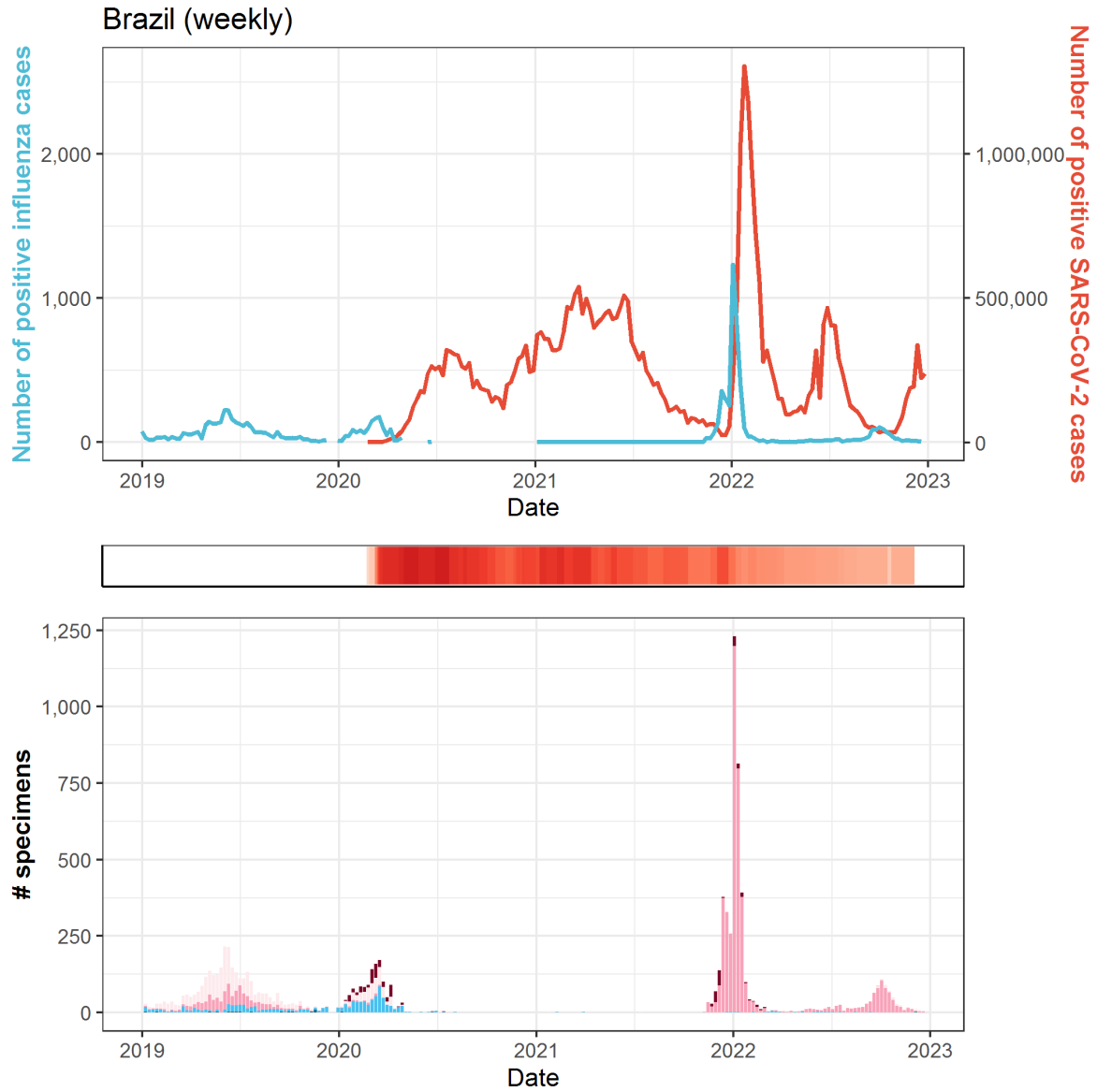
Mexico



Note: The steep decrease in influenza detections in week 52 of 2022 is likely due to a delay in reporting.

Tropical South America

Brazil



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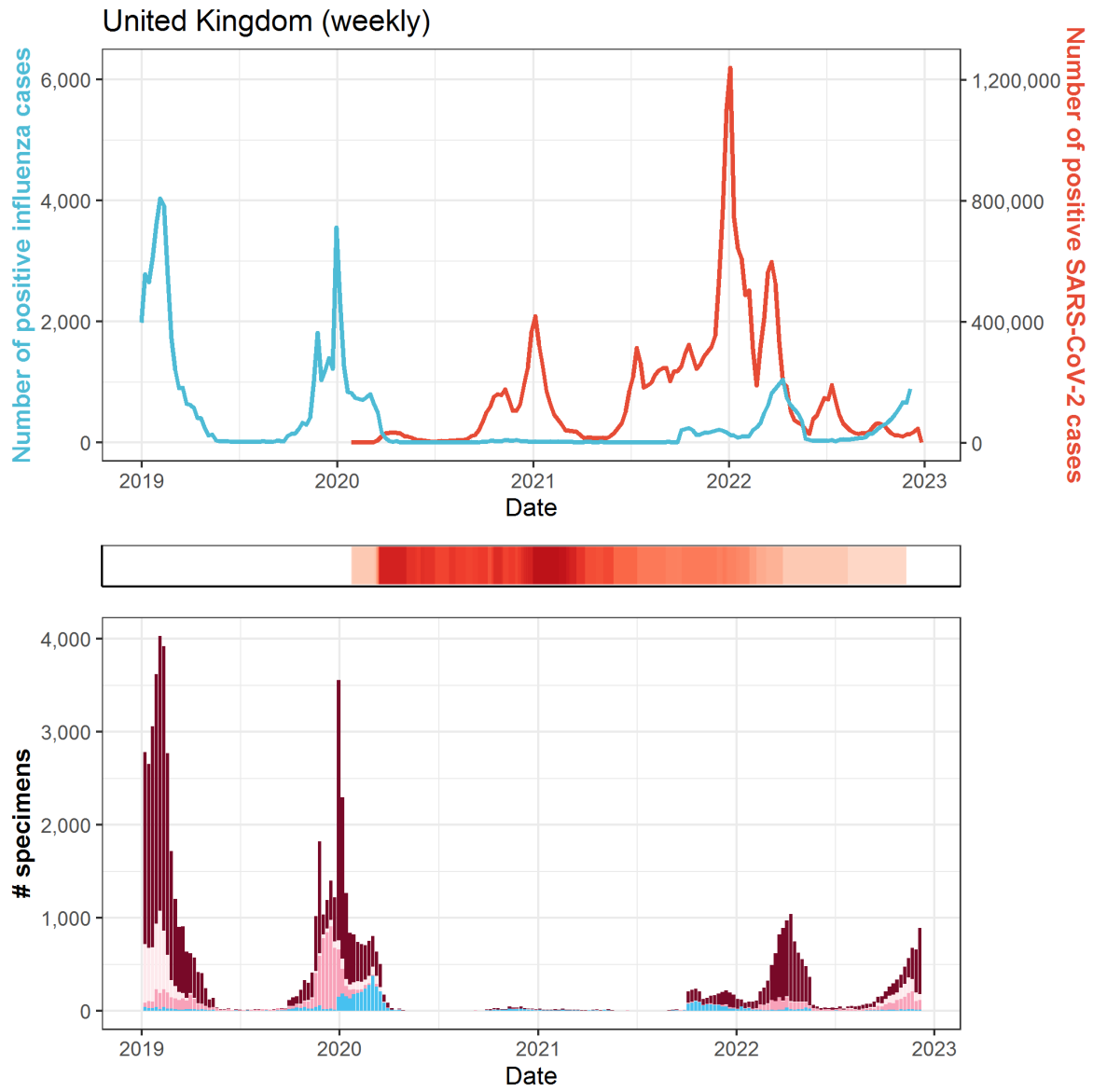
Northern Europe

United Kingdom



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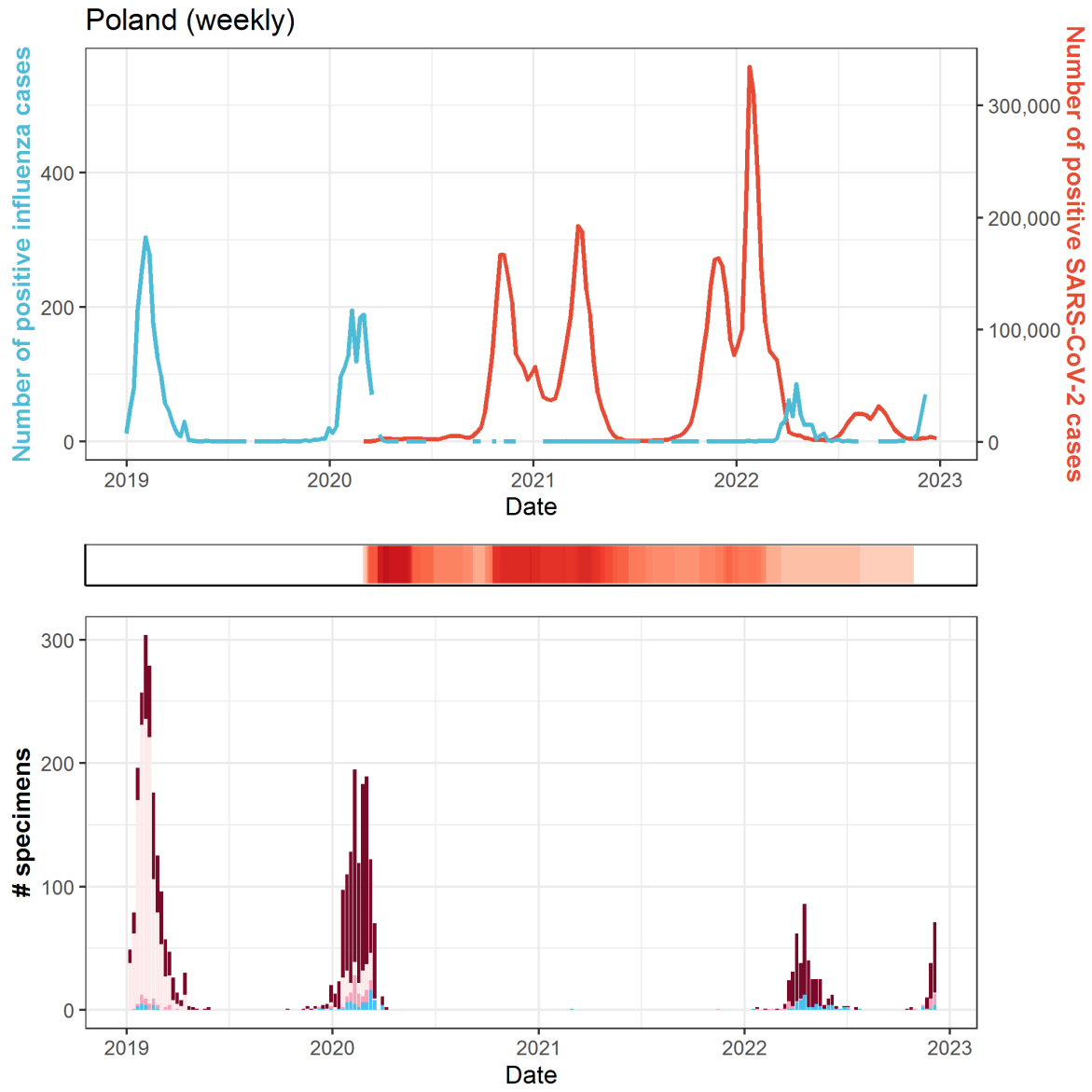
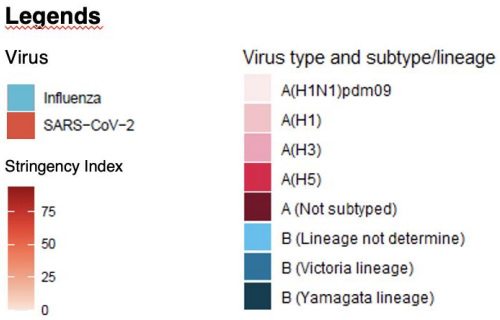
Eastern Europe

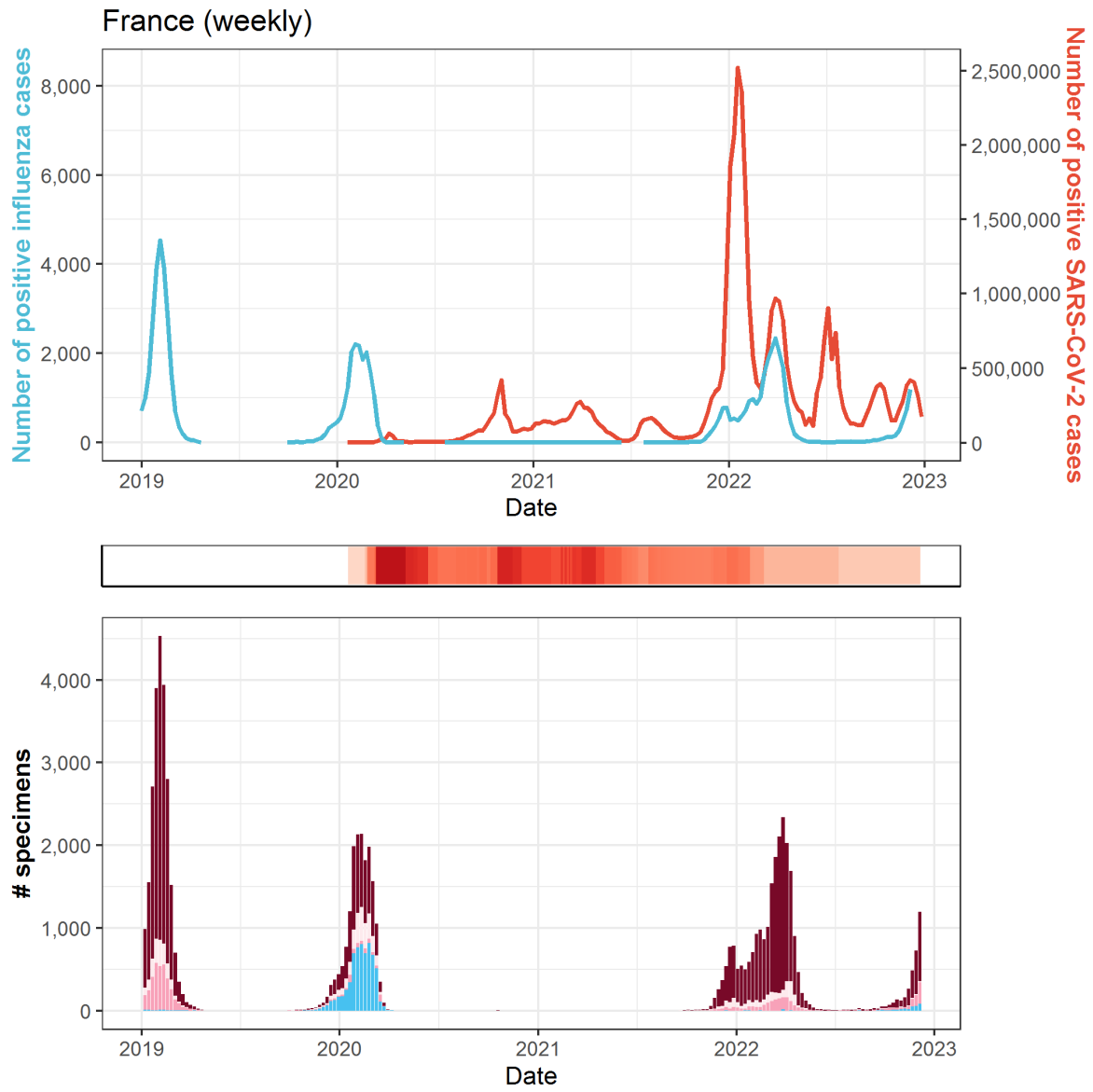
Poland





South West Europe

France



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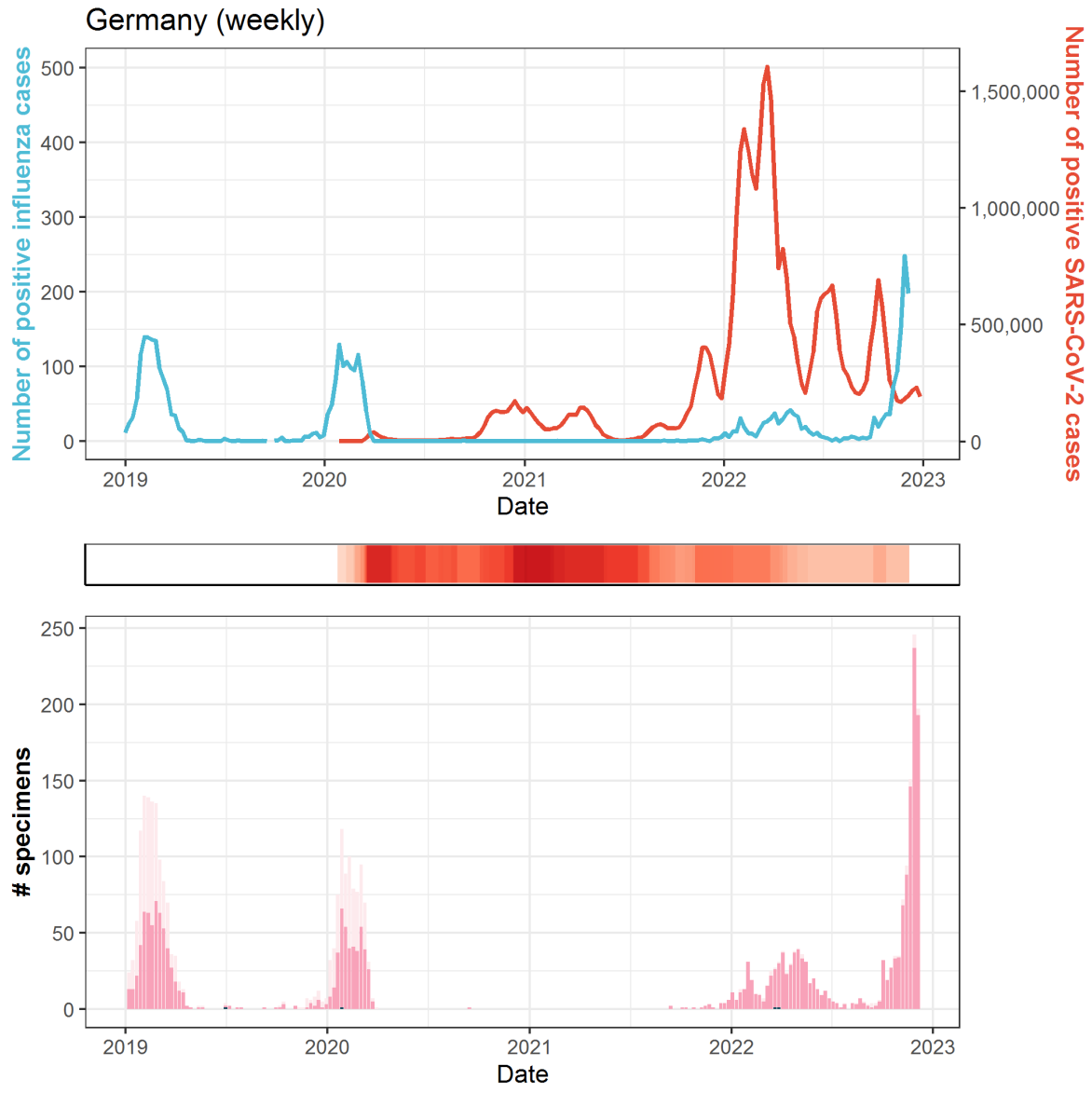
Germany



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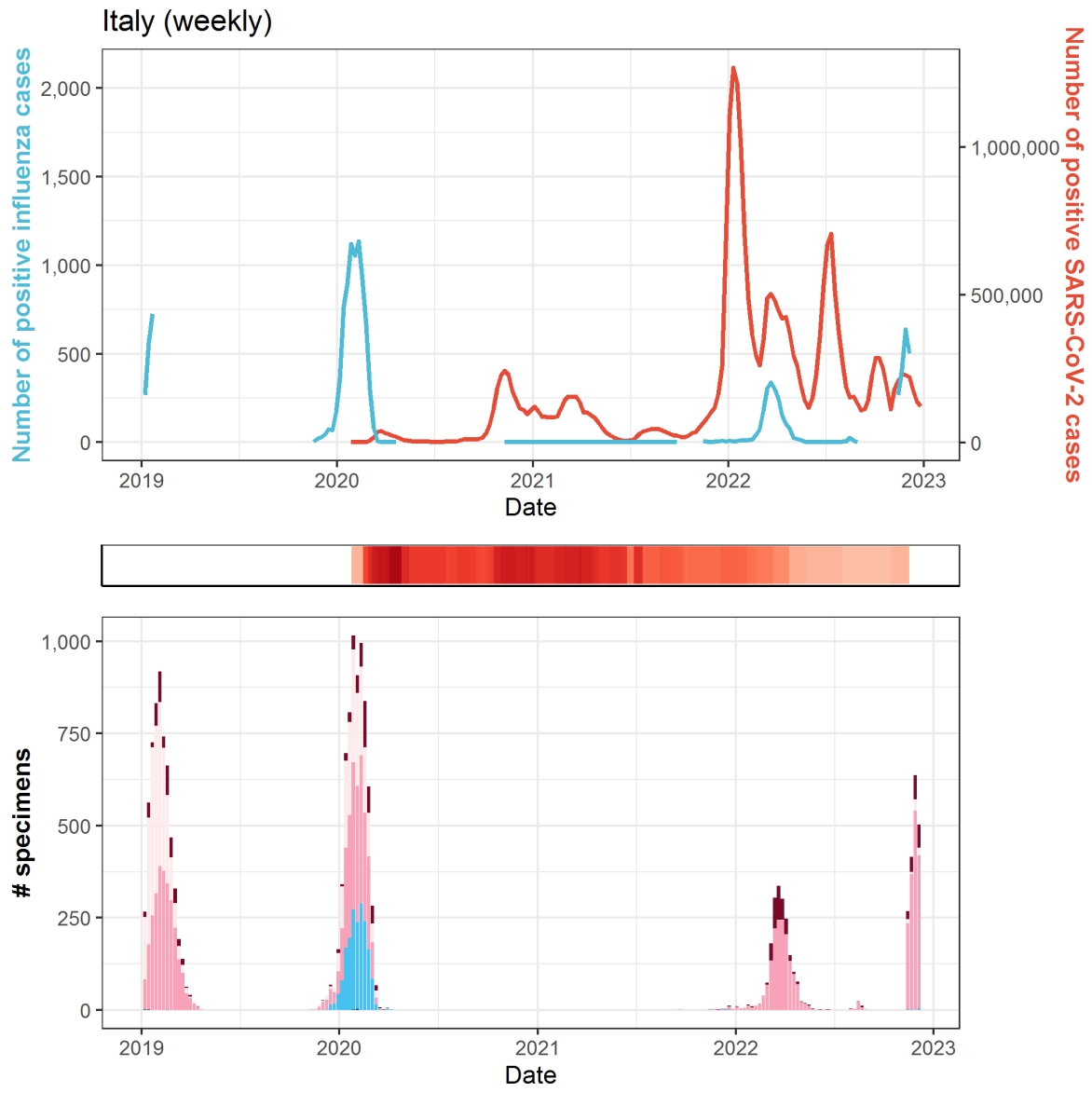
Italy



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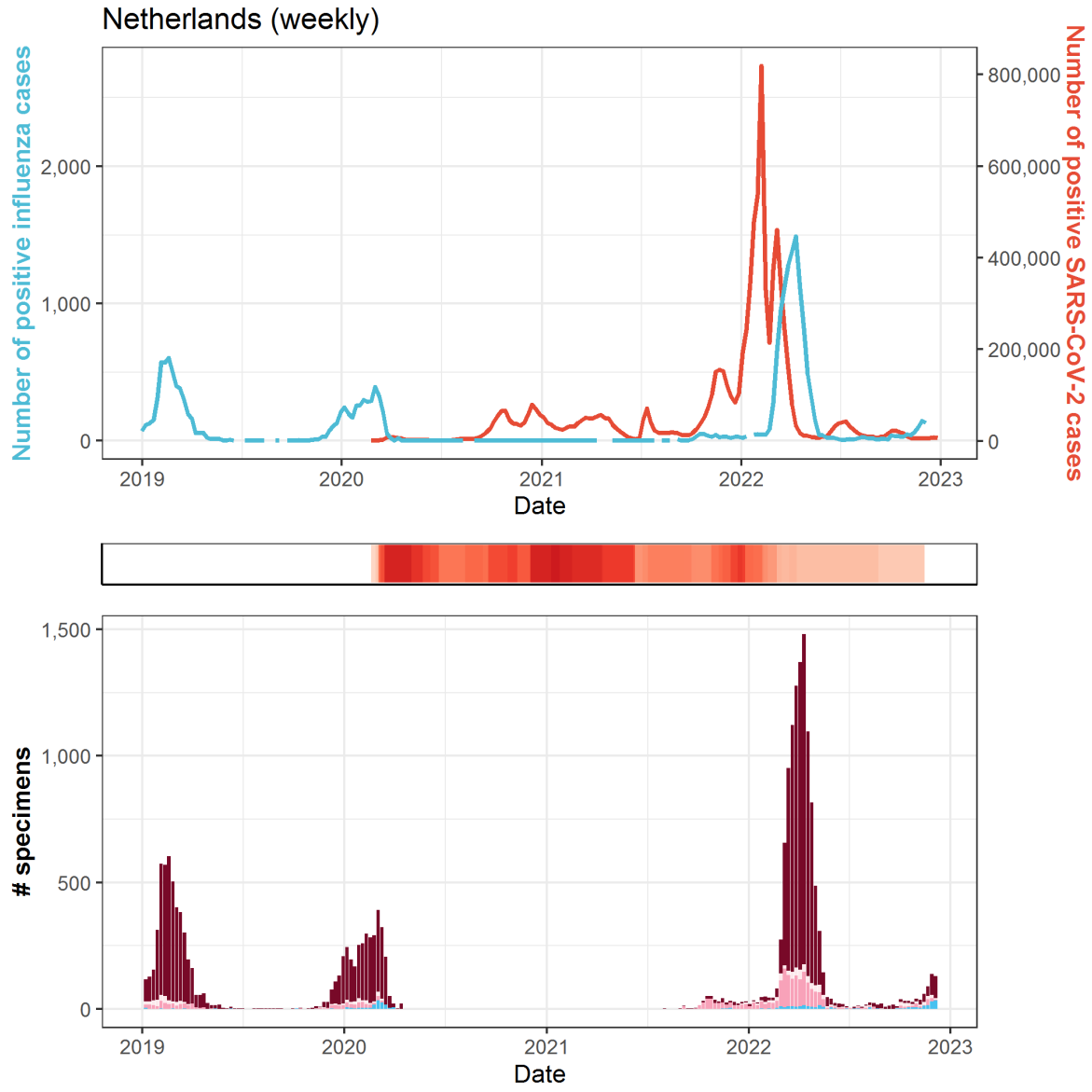
Netherlands



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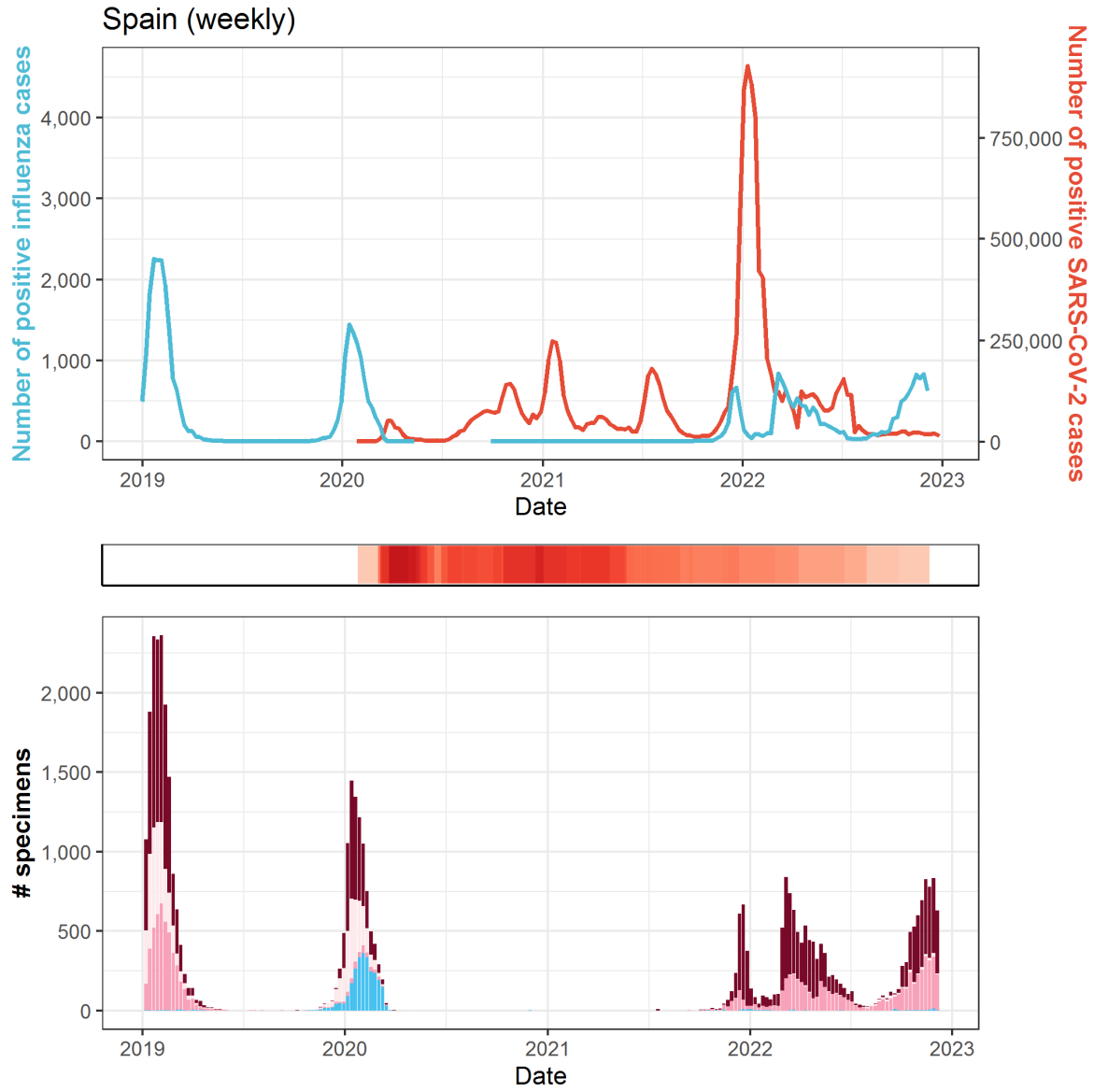
Spain



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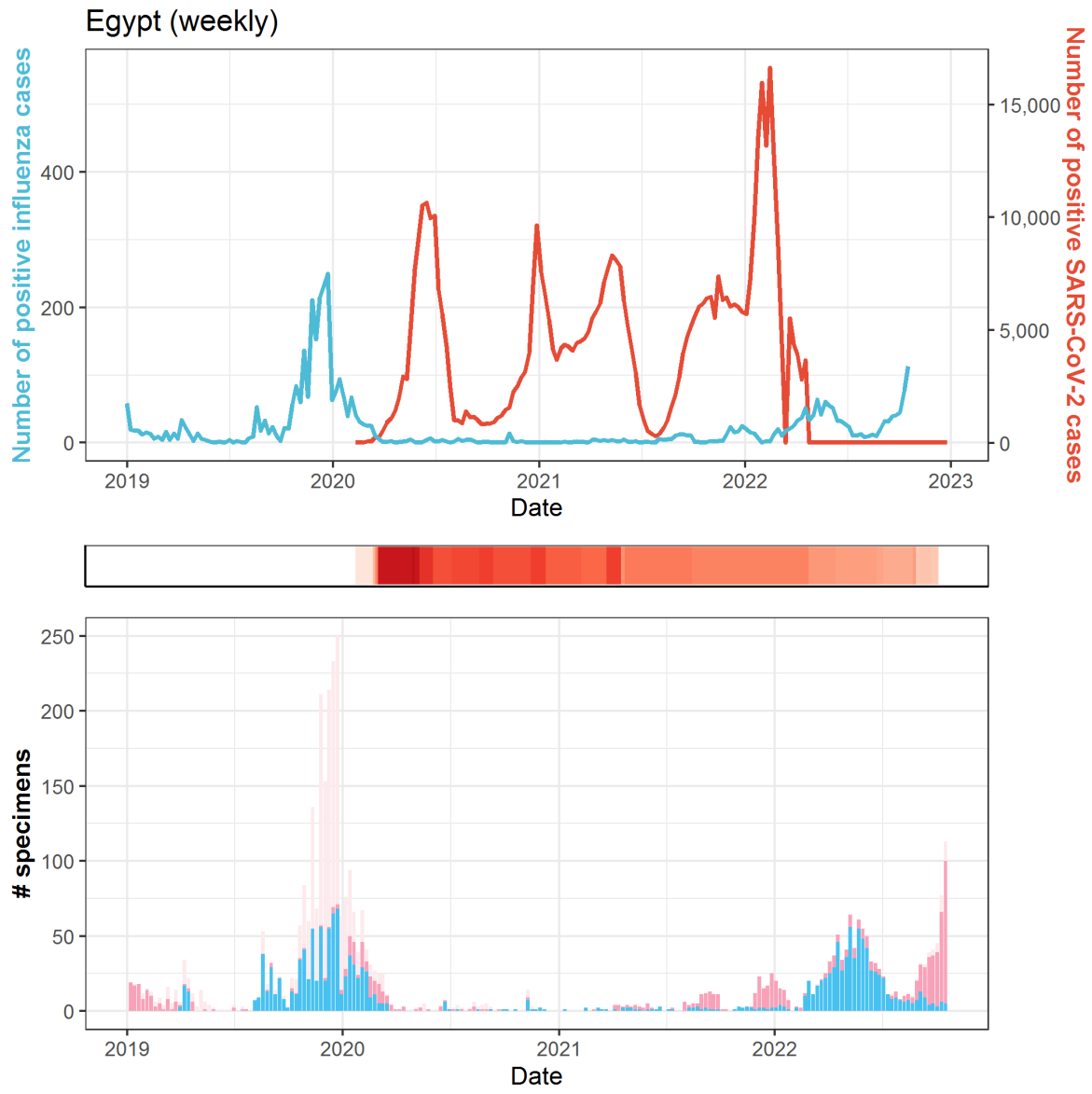
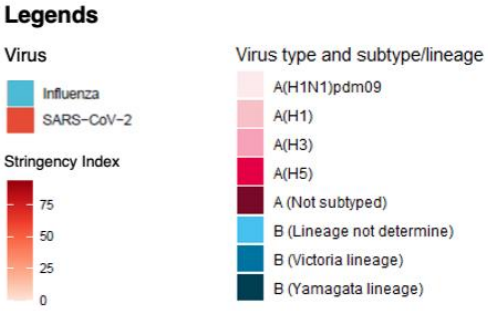
Northern Africa

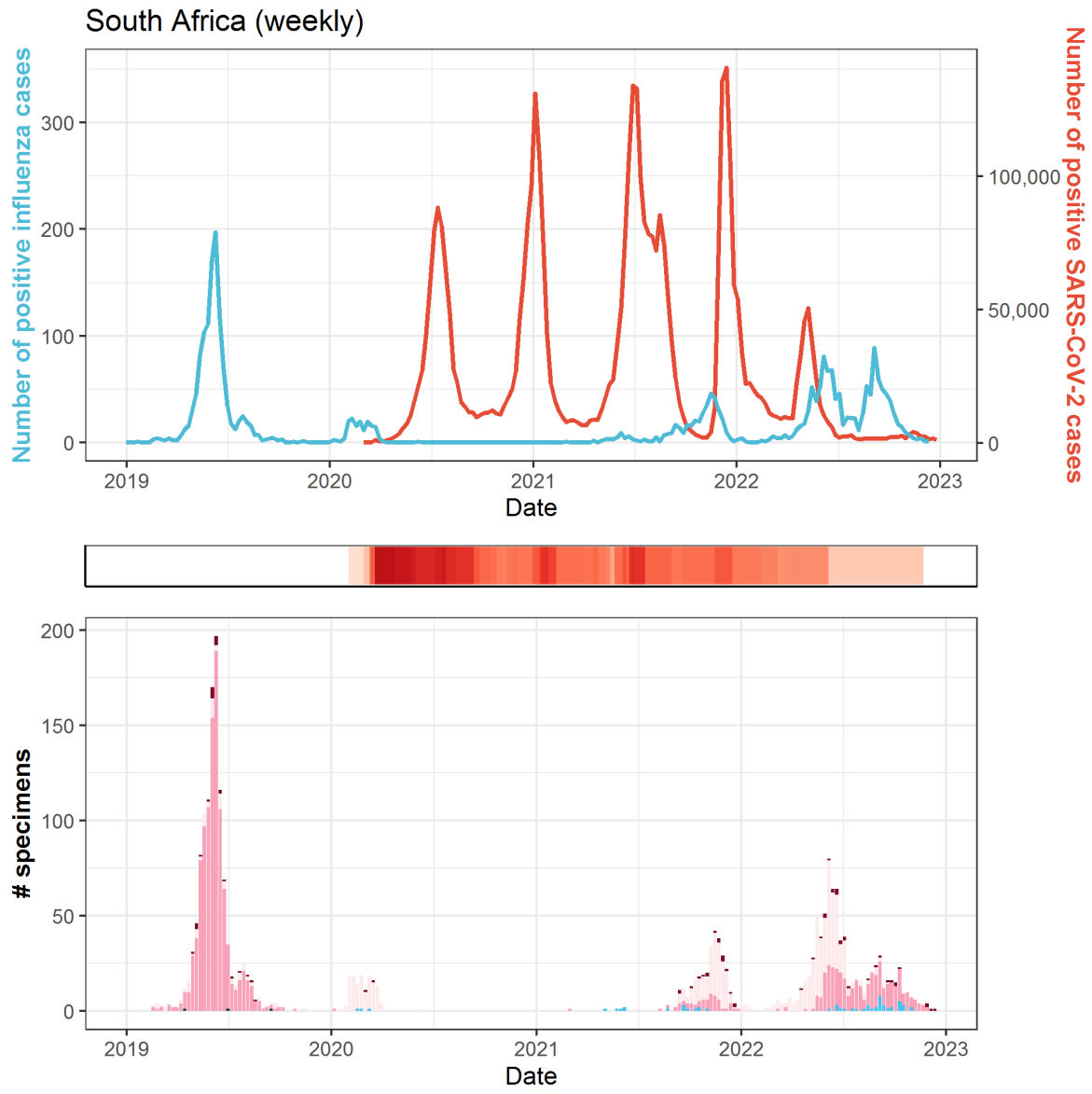
Egypt





Southern Africa

South Africa



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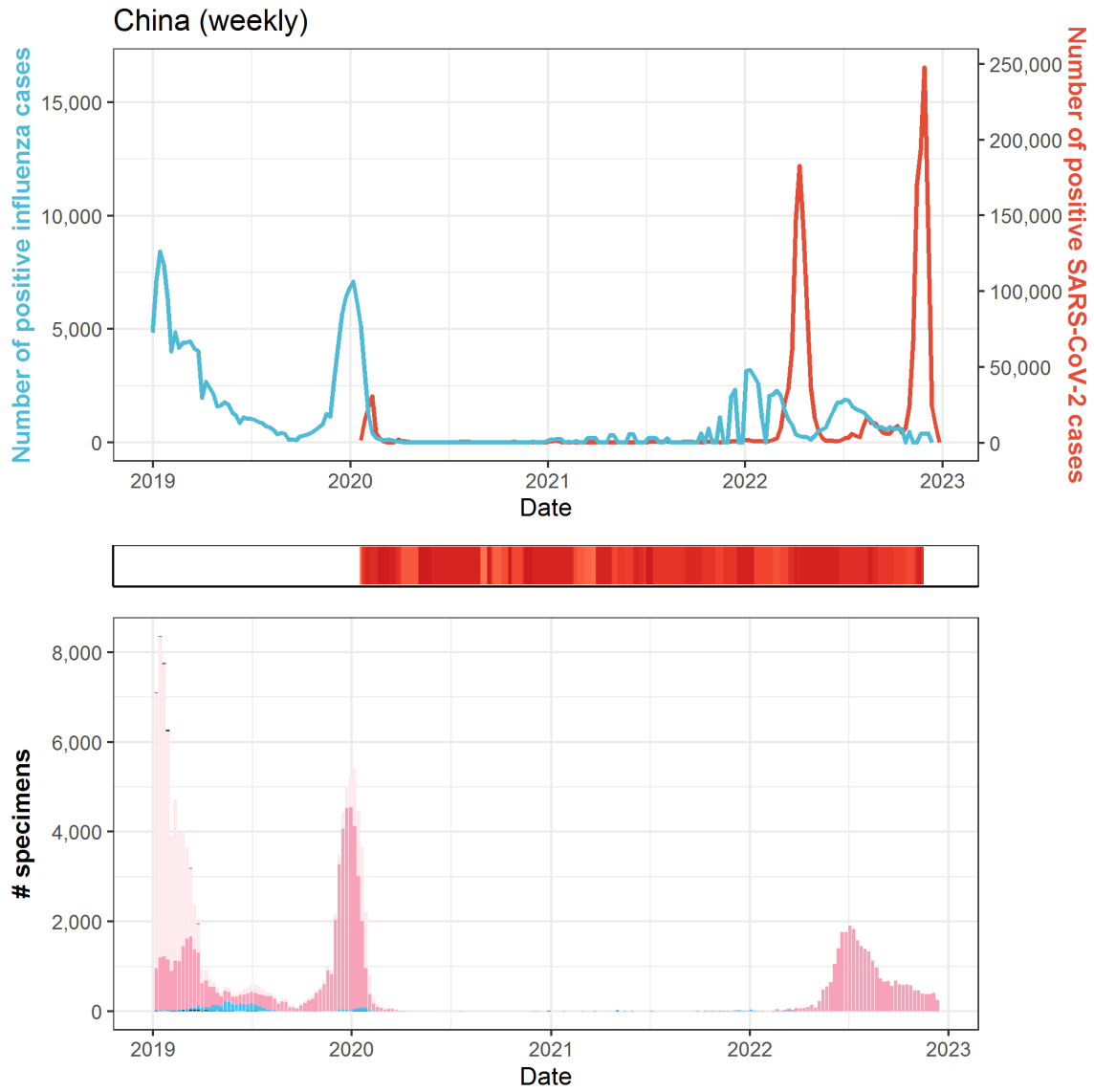
Eastern Asia

China



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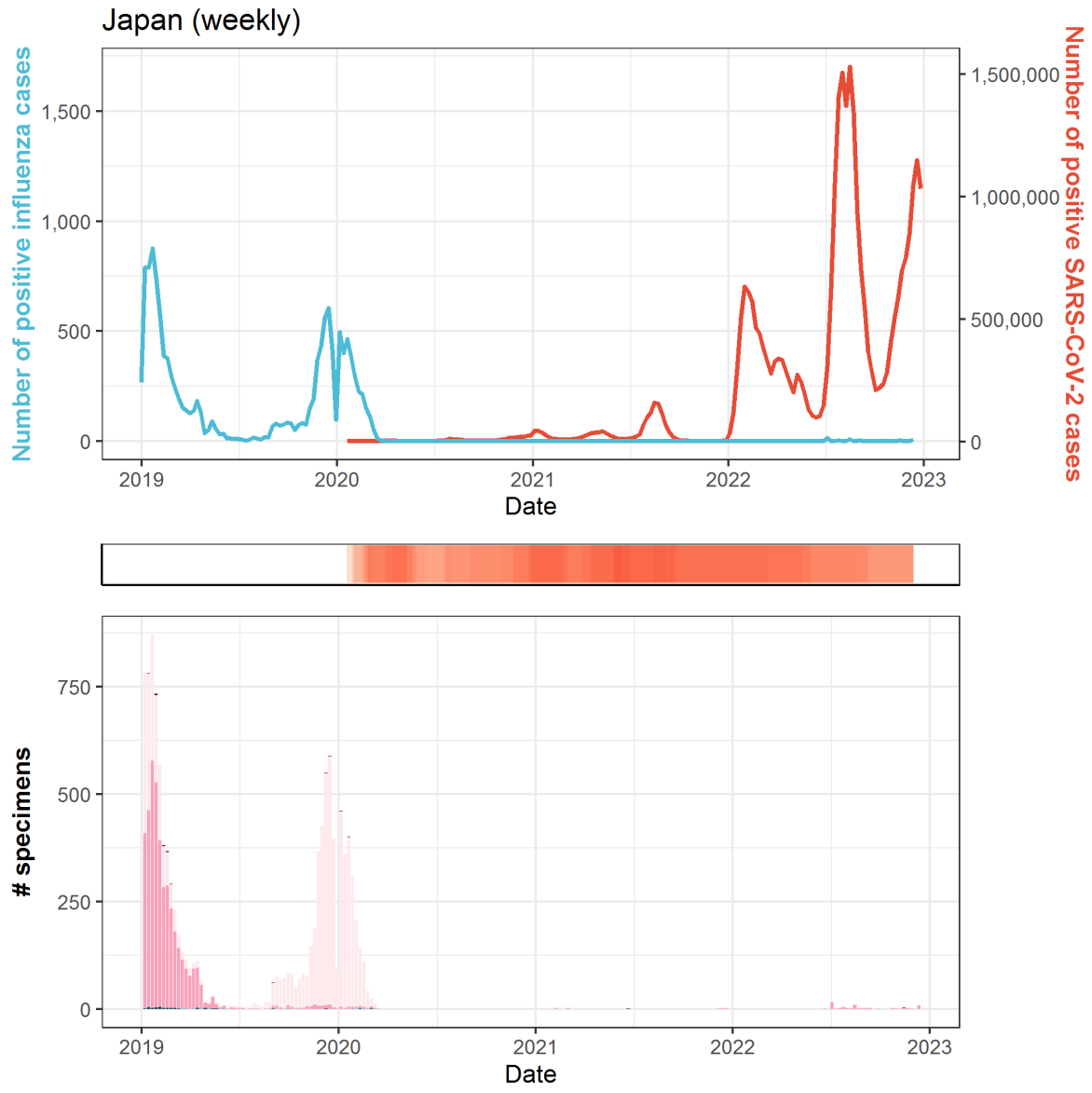
Japan



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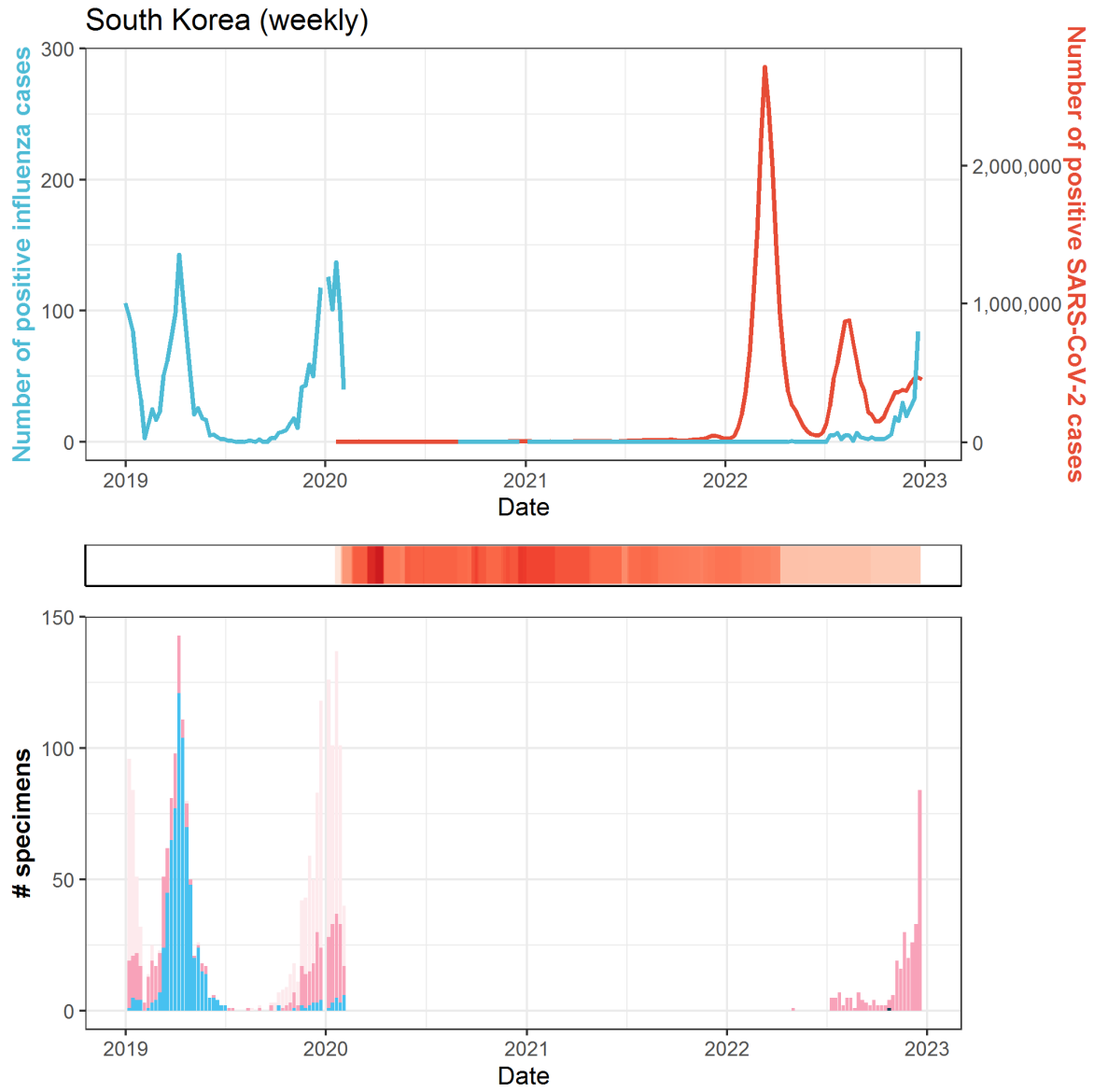
South Korea



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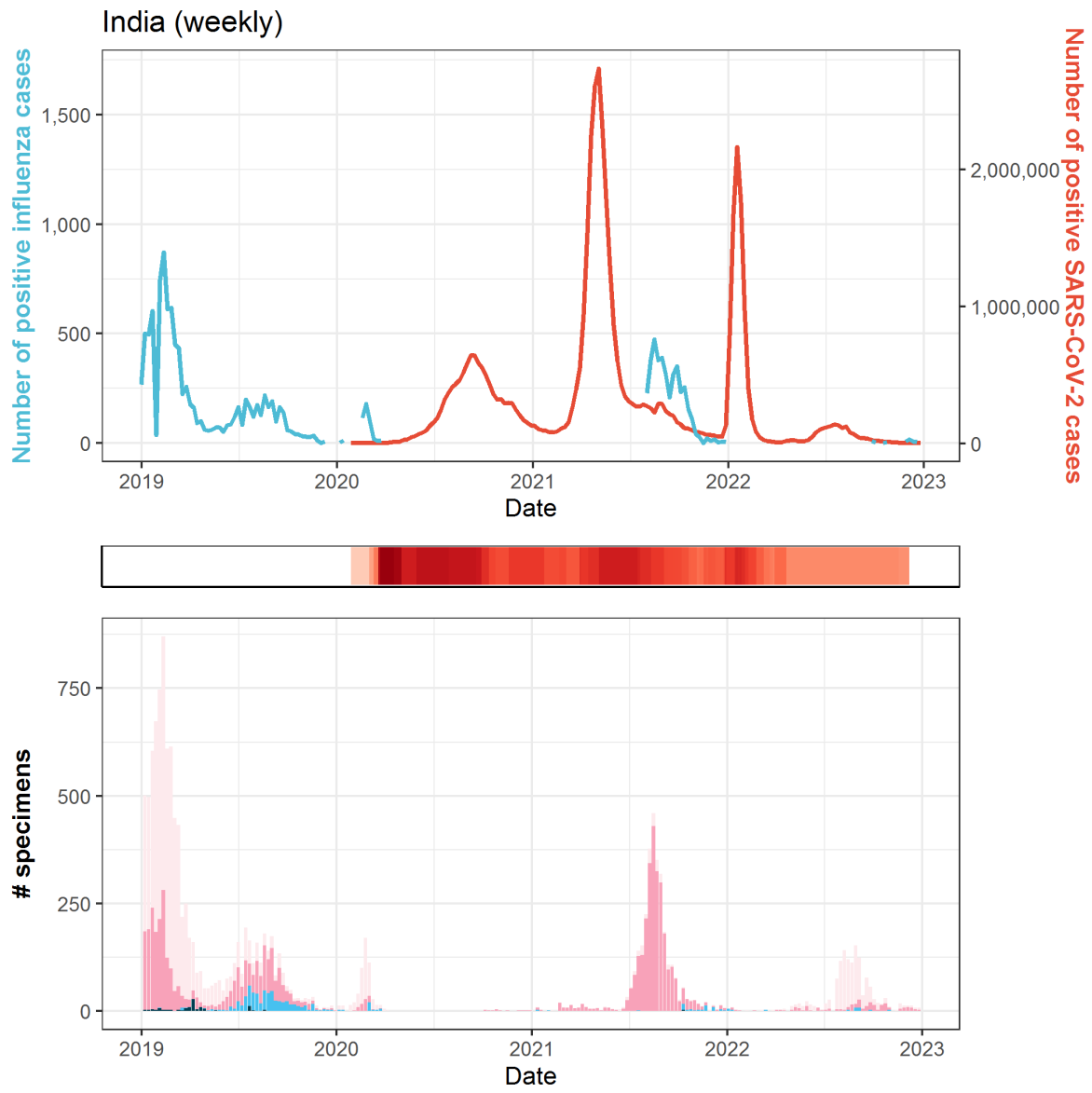
Southern Asia

India



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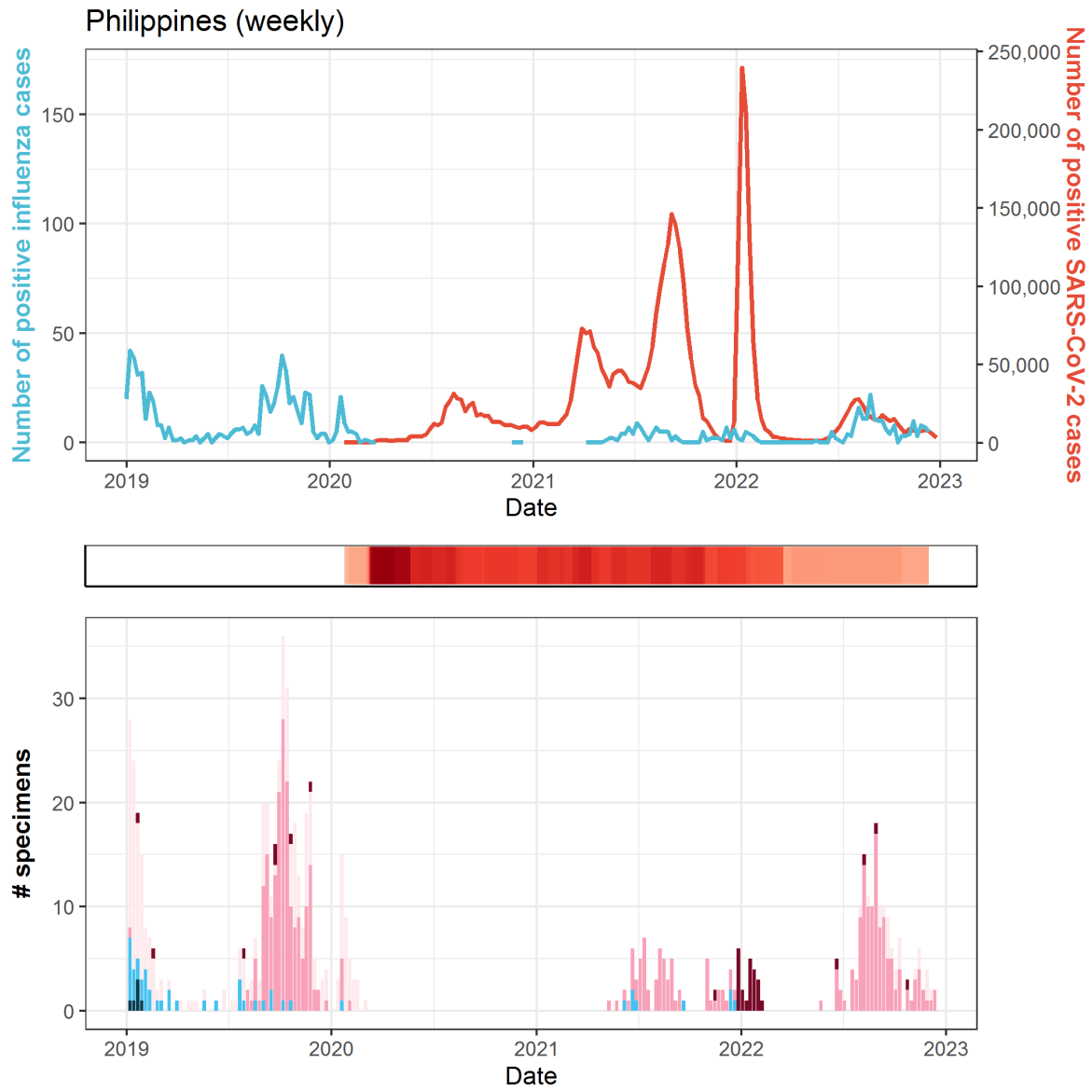
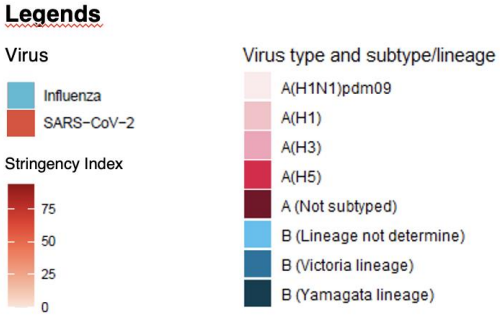
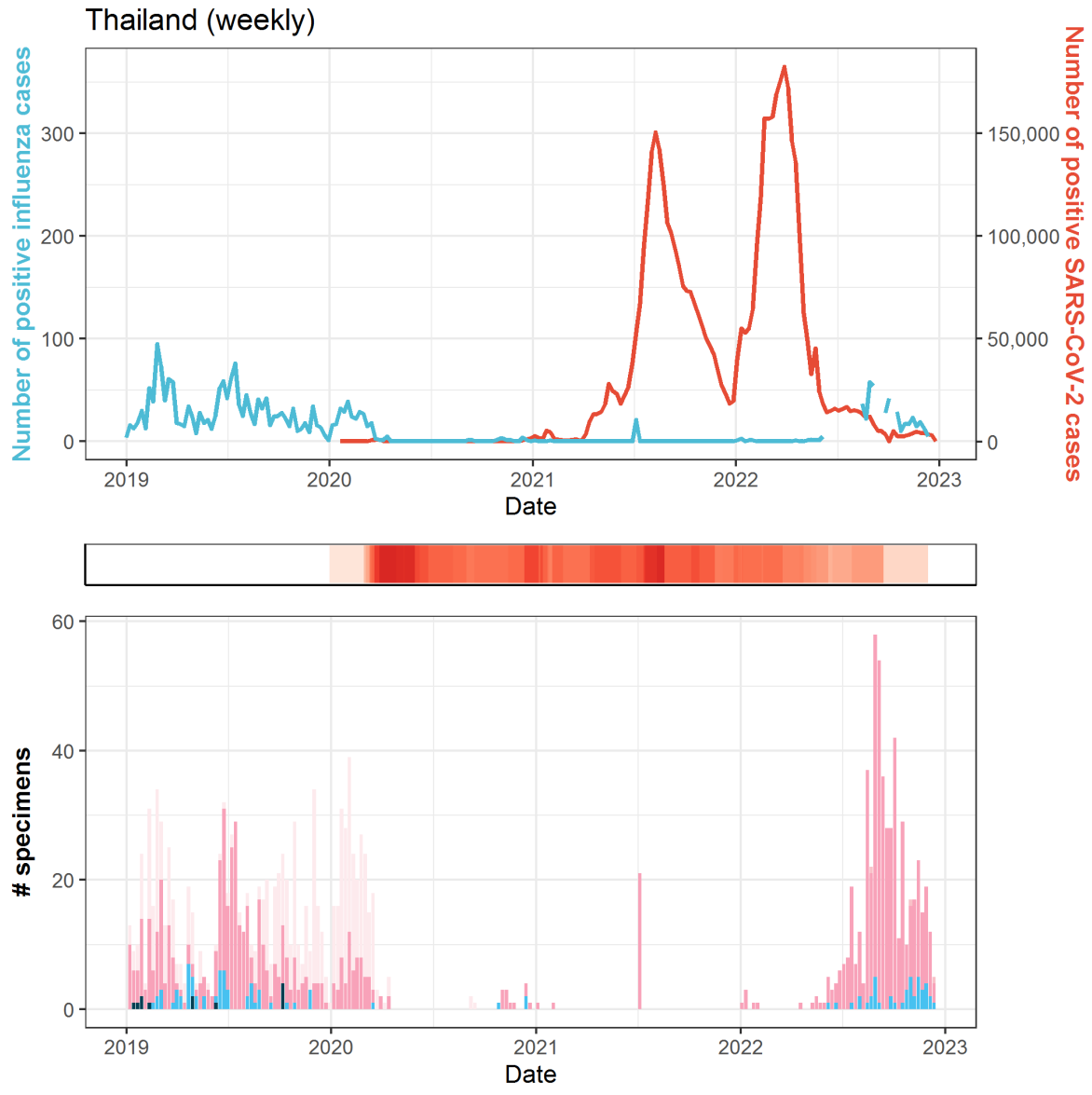
South-East Asia

Philippines





Thailand



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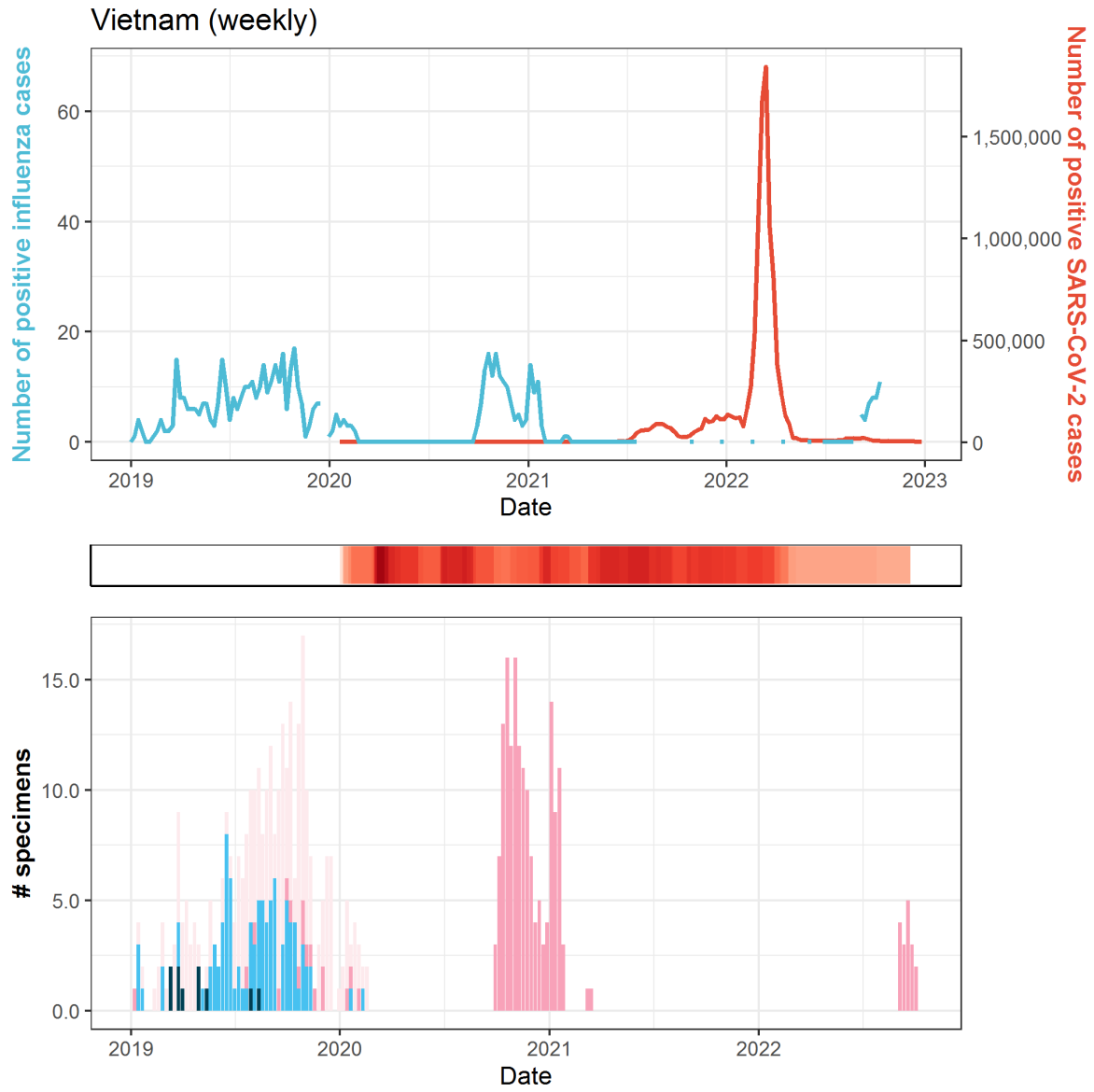

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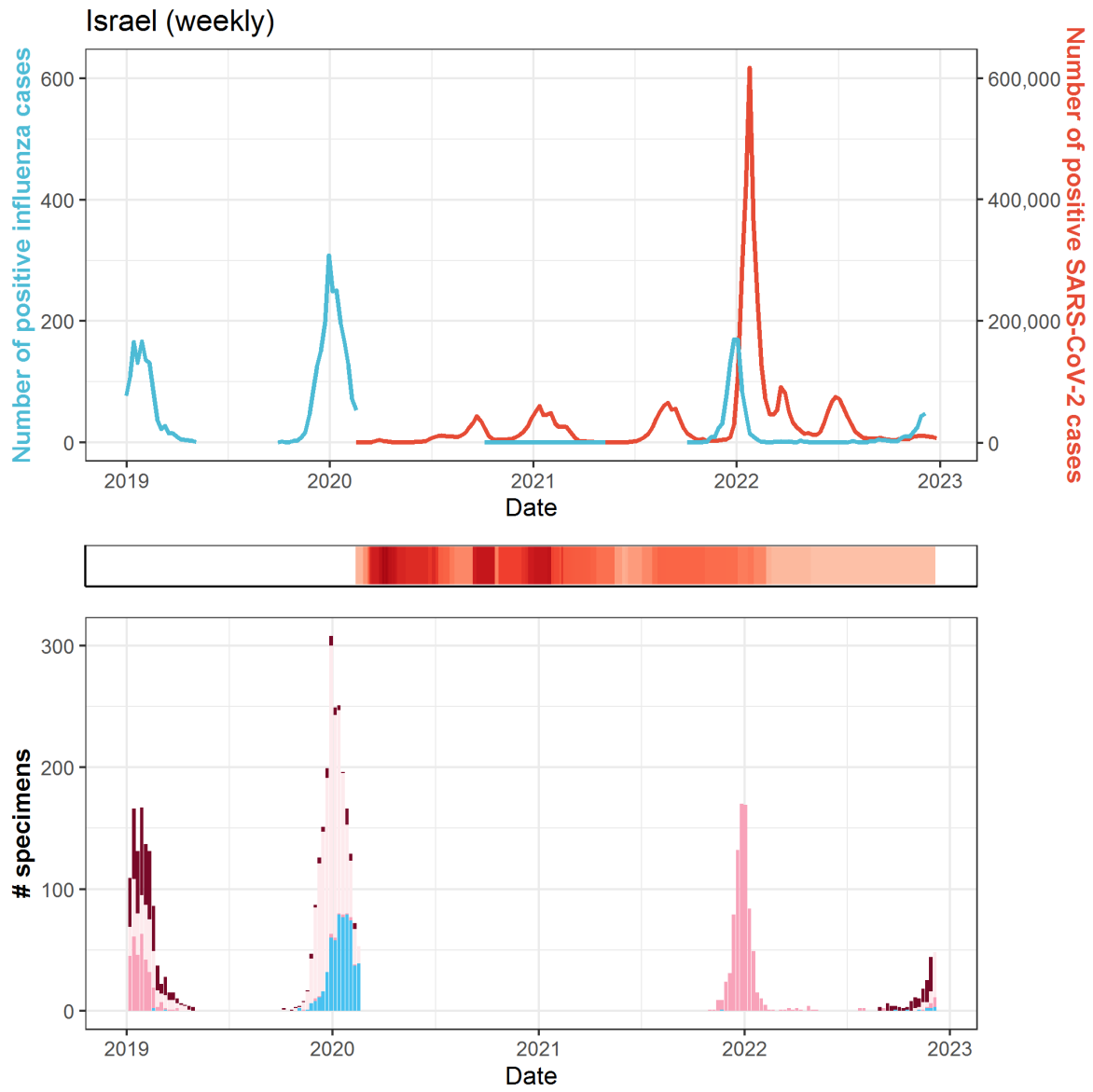
Western Asia

Israel



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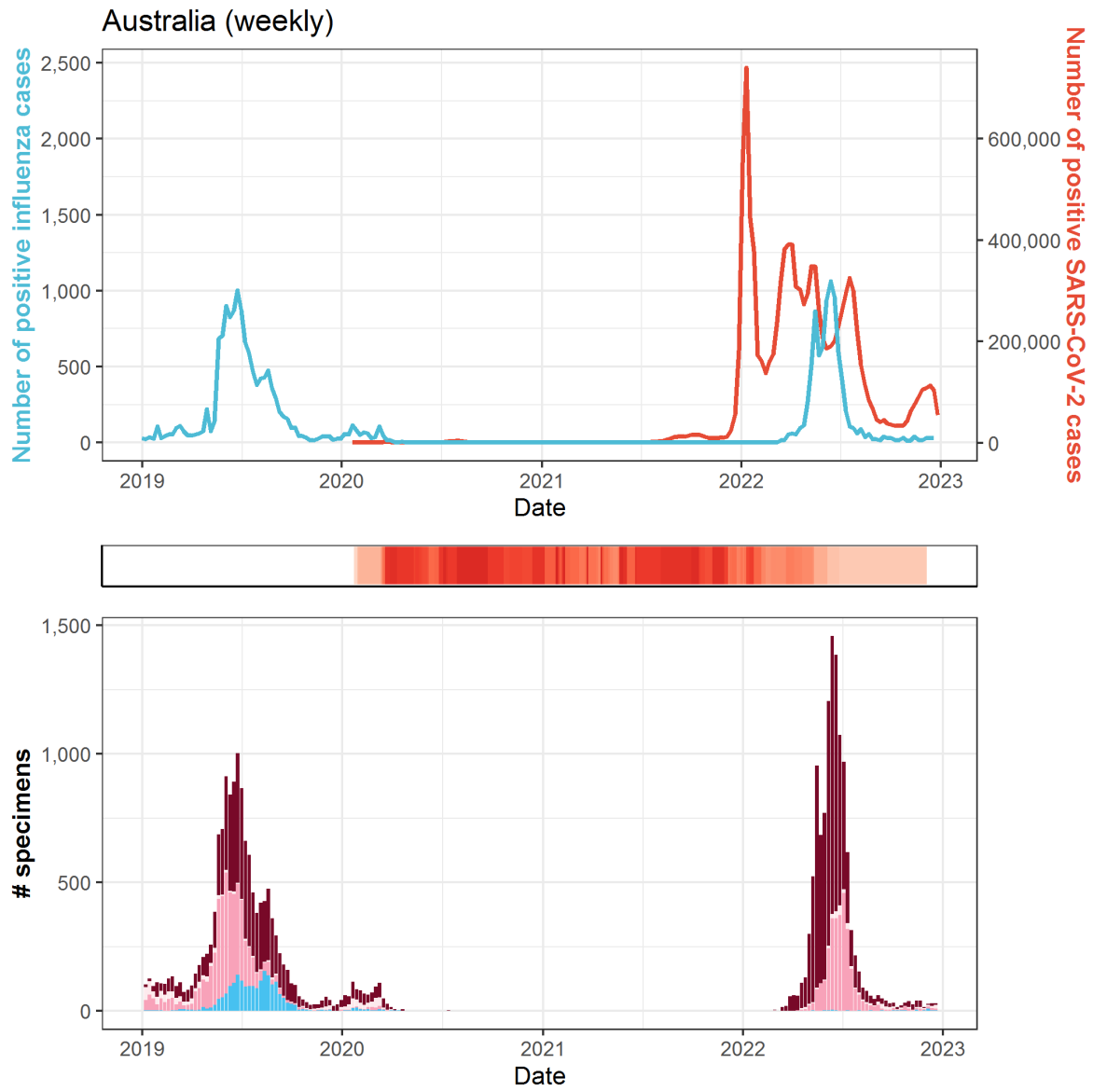

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Absolute numbers per country

Country	Year	Cases[a] of SARS-CoV-2	+/- since last month[b]	Cases[a] of influenza	+/- since last month[b]	Week of last influenza update
Australia	2019			12,404		
Australia	2020	28,425		784		
Australia	2021	397,071		7		
Australia	2022	10,735,641	471,809	8,308	100	2022-51
Brazil	2019			3,320		
Brazil	2020	7,700,828		1,314		
Brazil	2021	14,485,929		1,183		
Brazil	2022	14,039,578	1,103,682	3,613	33	2022-52
Canada	2019			43,196		
Canada	2020	590,249		44,956		
Canada	2021	1,633,486		337		
Canada	2022	2,297,368	72,716	63,474	24,991	2022-50
China	2019			122,757		
China	2020	93,153		31,164		
China	2021	21,489		10,145		
China	2022	1,794,737	309,704	52,682	797	20220-50
Egypt	2019			1,998		
Egypt	2020	138,062		659		
Egypt	2021	247,513		233		
Egypt	2022	130,070	0	1,227	0	2022-42
France	2019			25,405		
France	2020	2,735,590		16,589		
France	2021	7,706,191		3,071		
France	2022	29,345,799	1,447,462	23,700	1,932	2022-49
Germany	2019			1,215		
Germany	2020	1,719,737		958		
Germany	2021	5,430,685		29		
Germany	2022	30,260,684	906,381	1,510	446	2022-49
India	2019			9,698		
India	2020	10,286,709		457		
India	2021	24,574,870		4,085		
India	2022	9,820,232	6,010	76	37	2022-52
Israel	2019			1,796		
Israel	2020	423,290		1,424		
Israel	2021	961,872		456		
Israel	2022	3,379,744	41,266	543	92	2022-49
Italy	2019			2,787		
Italy	2020	2,107,314		7,484		
Italy	2021	4,018,517		31		
Italy	2022	19,018,022	883,045	3,820	1,140	2022-49
Japan	2019			10,343		
Japan	2020	235,747		2,915		
Japan	2021	1,497,558		9		
Japan	2022	27,501,370	4,419,369	72	10	2022-50

Country	Year	Cases[a] of SARS-CoV-2	+/- since last month[b]	Cases[a] of influenza	+/- since last month[b]	Week of last influenza update
Mexico	2019			6,963		
Mexico	2020	1,426,094		4,799		
Mexico	2021	2,553,629		960		
Mexico	2022	3,255,892	109,291	10,314	3,324	2022-52
Netherlands	2019			5,166		
Netherlands	2020	806,620		3,235		
Netherlands	2021	2,346,892		454		
Netherlands	2022	5,426,571	27,264	11,403	280	2022-49
Philippines	2019			612		
Philippines	2020	474,064		52		
Philippines	2021	2,369,926		105		
Philippines	2022	1,221,098	28,166	194	20	2022-50
Poland	2019			1,786		
Poland	2020	1,294,878		1,282		
Poland	2021	2,813,337		2		
Poland	2022	2,260,264	15,724	534	109	2022-49
South Africa	2019			1,164		
South Africa	2020	1,057,161		157		
South Africa	2021	2,382,539		413		
South Africa	2022	590,916	7,312	1,166	6	2022-50
South Korea	2019			1,702		
South Korea	2020	61,768		505		
South Korea	2021	573,484		0		
South Korea	2022	28,481,547	1,960,987	295	163	2022-51
Spain	2019			16,580		
Spain	2020	1,938,671		8,829		
Spain	2021	4,440,910		2,210		
Spain	2022	7,391,148	88,754	14,887	1,465	2022-49
Thailand	2019			1,568		
Thailand	2020	6,882		297		
Thailand	2021	2,216,551		23		
Thailand	2022	2,507,715	14,564	440	36	2022-50
United Kingdom	2019			42,447		
United Kingdom	2020	2,488,780		14,377		
United Kingdom	2021	10,456,330		2,755		
United Kingdom	2022	10,353,762	136,912	14,932	1,550	2022-49
United States	2019			268,524		
United States	2020	20,217,289		229,766		
United States	2021	34,687,346		39,508		
United States	2022	45,845,051	1,915,869	410,223	154,164	2022-51
Vietnam	2019			355		
Vietnam	2020	1,465		146		
Vietnam	2021	1,729,792		39		
Vietnam	2022	9,235,034	9,323	43	0	2022-41

[a] Laboratory-confirmed cases.

[b] Influenza cases are reported by FluNet on a weekly basis. To convert these data to months, weekly data are assigned to the month most days in that week belong to. SARS-CoV-2 cases are reported per day and assigned to each month by date.

Methodology

Background

After assessment of alarming levels of spread and severity of SARS-CoV-2 virus, on March 11, 2020, WHO declared COVID-19 a pandemic [3]. The emergence of this new virus has had a major impact on the global circulation of respiratory viruses, including influenza and RSV [4]. The FluCov project aims to understand and communicate the impact of COVID-19 on: i) influenza activity and ii) prevention and control measures (e.g. vaccination) in the coming years.

Scope

The countries included in this FluCov-Bulletin are distributed over the Americas (North, Central and Tropical South), Europe (Northern, South West and Eastern), Africa (Northern and Southern), Asia (Eastern, Southern, South East and Western) and Oceania. These data are compared to the prevention and control measures applied in each country using the Stringency Index from the Oxford COVID-19 Government Response Tracker (OxCGRT) [5].

Data sources

- **Influenza**: FluNet [6] is a global web-based tool for influenza virological surveillance first launched in 1997. The virological data entered into FluNet, e.g. number of influenza viruses detected by subtype, are critical for tracking the movement of viruses globally and interpreting the epidemiological data. The data are provided remotely by National Influenza Centres (NICs) of the Global Influenza Surveillance and Response System (GISRS) and other national influenza reference laboratories collaborating actively with GISRS or are uploaded from WHO regional databases.
- **SARS-CoV-2**: Our World in Data systematically collects COVID-19 data which is presented in their online tool [7]. We used this platform to extract data on the number of cases, as well as tests performed per country. This data is extracted both from the John Hopkins repository on daily confirmed COVID-19 [8] cases as well as various national public health institutions.
- **Government response tracker**: The Oxford COVID-19 Government Response Tracker (OxCGRT) [5] systematically collects information on several different common policy responses that governments have taken to respond to the pandemic on 20 indicators such as school closures and travel restrictions. It now has data from more than 180 countries. OxCGRT data is downloaded directly from the Our World in Data platform.

Extraction details

Data were extracted on 2 January 2023 and cover the period 1 January 2019 to 1 January 2023. Data from both platforms are regularly updated and **sometimes retrospectively corrected**. This might explain any discrepancies between our reported figures and the data published online, even when using data for the exact same period. In case of any unclarities or perceived irregularities, feel free to contact us at flucov@nivel.nl.

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Websites

Project Website: https://www.nivel.nl/en/flucov

FluCoV Dashboard: https://www.nivel.nl/en/dossier-epidemiology-respiratory-viruses/flucov-dashboard

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