Universiteit Antwerpen
Faculteit Geneeskunde en Gezondheidswetenschappen

Navorming Minerva 17 nov 2022 update vaccins

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Centrum voor de Evaluatie van Vaccinaties

Numbers at a glance

632 953 782

Confirmed cases

Last update: 16 November 2022 at 06:45 pm CET

6 593 715

Confirmed deaths

Last update: 16 November 2022 at 06:45 pm CET

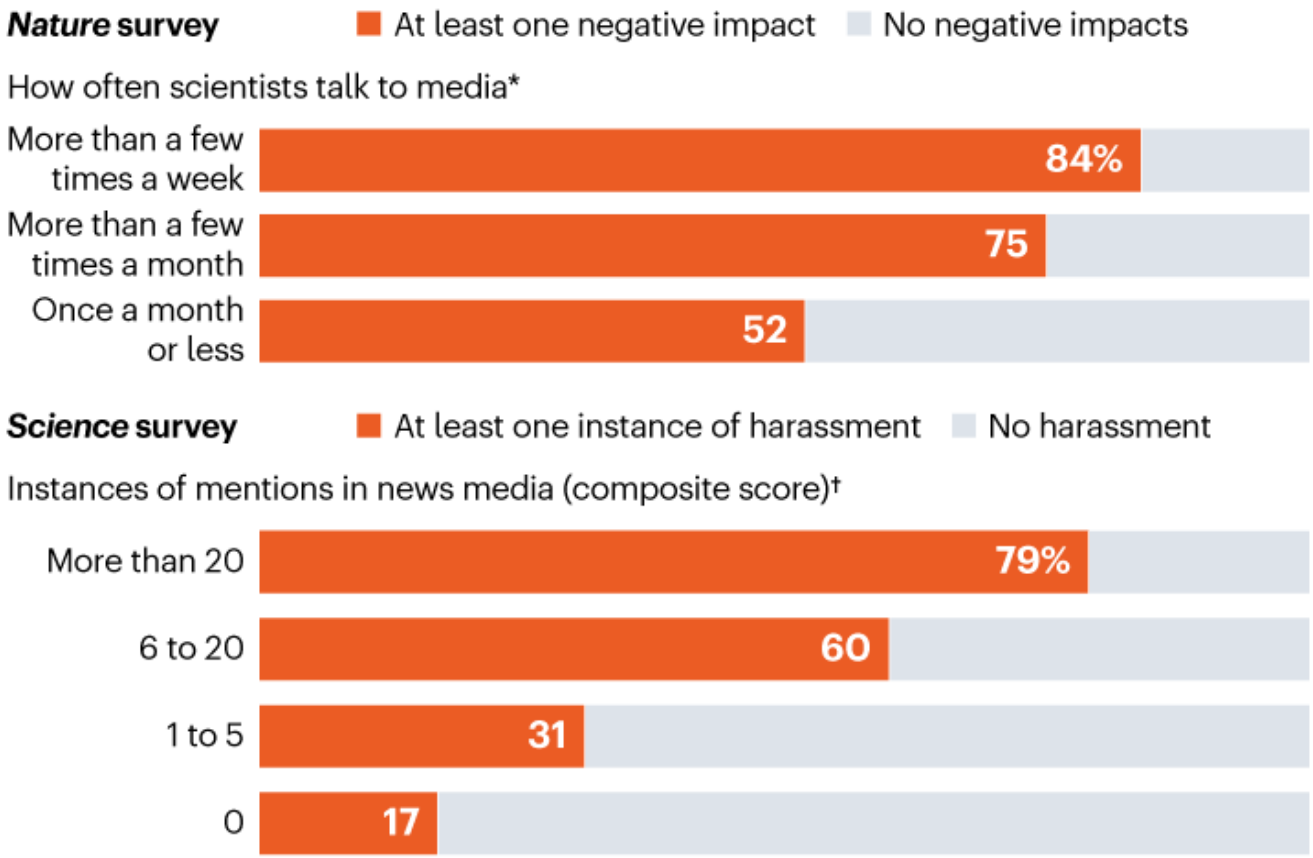
12 885 748 541

Vaccine doses administered

Last update: 9 November 2022

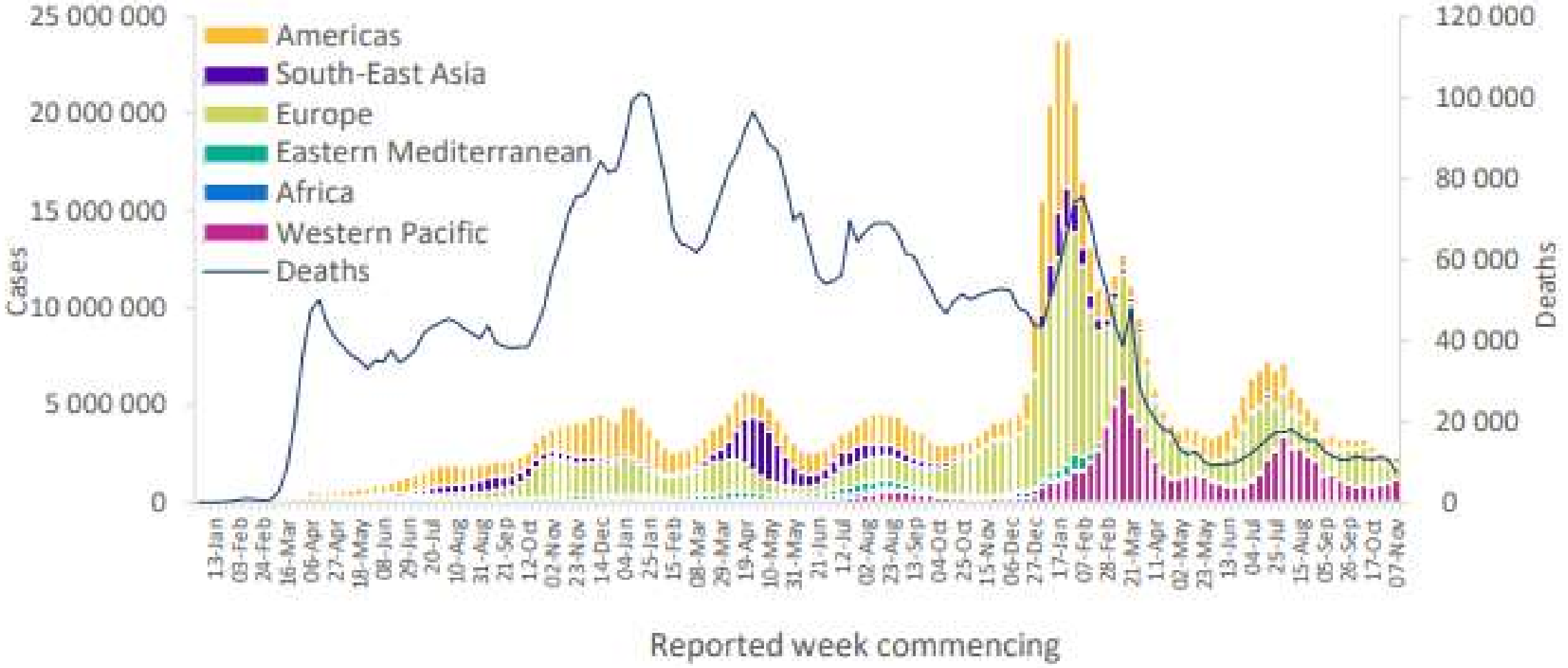
THE MEDIA EFFECT

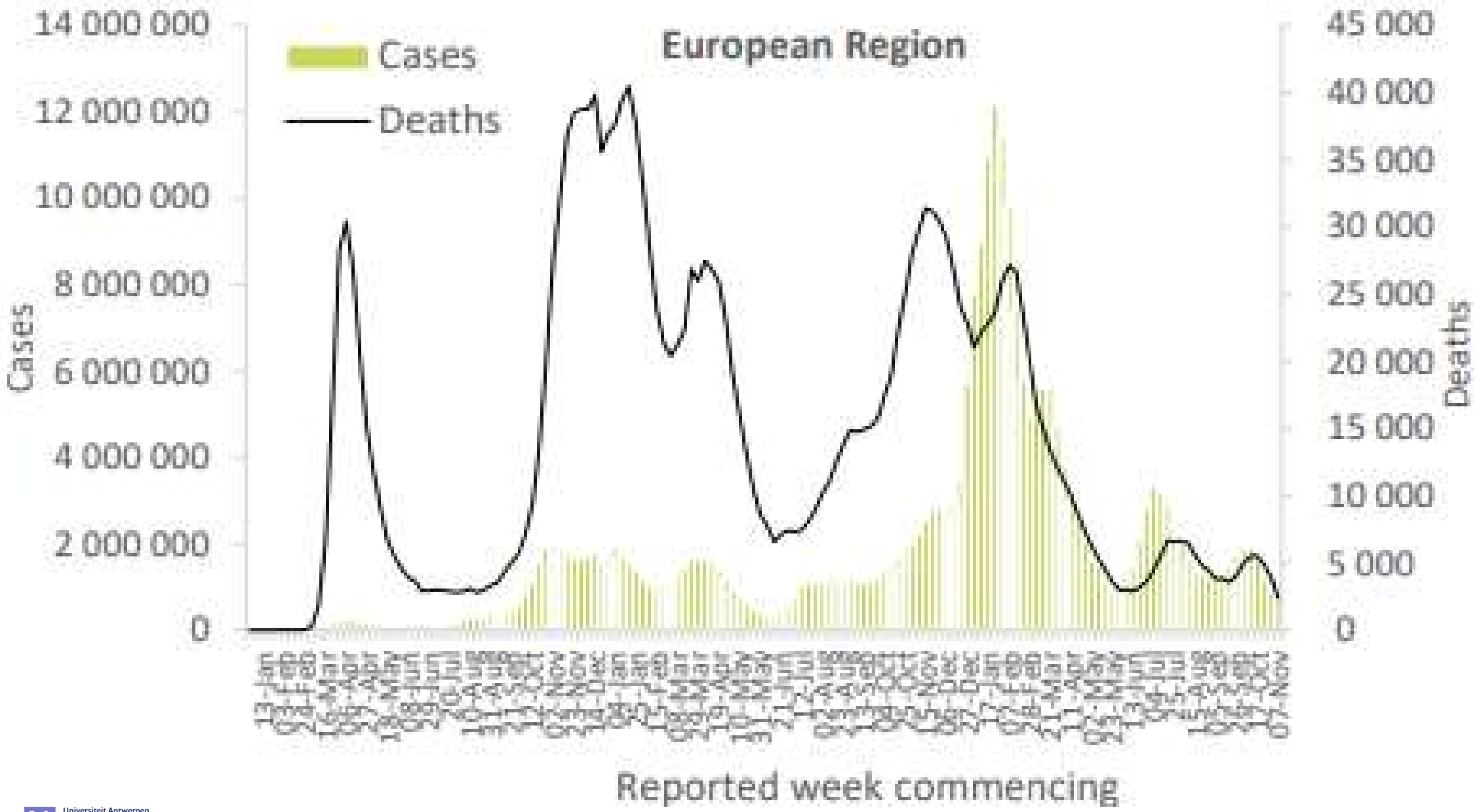
Surveys by *Nature* and *Science* suggest that scientists who frequently appeared in news media to discuss COVID-19 were more likely to report harassment than those with less media exposure.



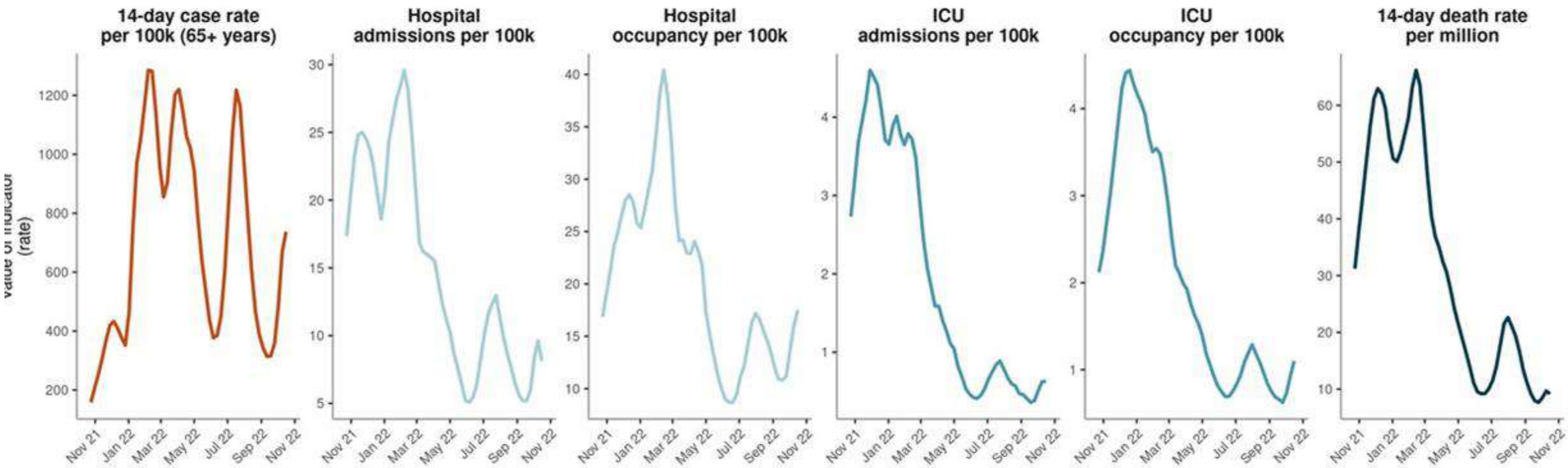
*Respondents were asked if they experienced any of a list of negative impacts — and were invited to fill in their own responses — after talking to the media or posting on social media about COVID-19. †Composite 'news media' score: assigns points for each instance of news-media publicity recalled by respondents (television, radio, print/online media or other).

Figure 1. COVID-19 cases reported weekly by WHO Region, and global deaths, as of 13 November 2022**




European Region
Cases
Deaths
14 000 000
12 000 000
10 000 000
8 000 000
6 000 000
4 000 000
2 000 000
0
Cases
45 000
40 000
35 000
30 000
25 000
20 000
15 000
10 000
5 000
0
Deaths
Reported week commencing

EU/EEA: COVID-19 epidemiological indicators, last 52 weeks to 16 October 2022



ECDC. Figure produced 20 October 2022
Epidemic intelligence national data and TESSy COVID-19: 14-day death rate;
Pooled data from Member States (n = 14 for week 41): ICU admissions;
Pooled data from Member States (n = 16 for week 41): Hospital occupancy;
Pooled data from Member States (n = 17 for week 41): Hospital admissions;
Pooled data from Member States (n = 20 for week 41): ICU occupancy;
TESSy COVID-19 (n = 29 for week 41): 14-day case rate

The first autumnal surge of SARS-CoV-2 infections (and probably also hospital admissions) has peaked. This wave was mainly driven by behavioral and seasonal changes as well as waning immunity. It is caused by BA.5.2*-derived viruses, including BF.7 variants, which have dominated in Belgium since June 2022 and were already partly responsible for the last summer wave of infections with BA.5* variants.

Omicron-derived BQ.1* and XBB* variants continue to show a growth advantage against BA.5 (and to a lesser extent against BF.7), and currently represent ~50% of the recent infections in Belgium. Although one would have expected that the dominance of more transmissible variants would have led to a concomitant surge of infections, this phenomenon has not yet been observed in Belgium or other countries, and the epidemiological evolution remains favorable at this stage.
In this report, we discuss the possible explanations of this (transient?) unpredicted evolution, including higher than expected cross-immunity and the possible impact of record-high temperatures during the last weeks of October 2022. If the latter hypothesis was to be validated, the expected surge of infections may be delayed, while the first hypothesis would tend towards a more sustained low circulation of the virus.

BQ1.1.: morbiditeit/mortaliteit beperkt bij goede achtergrondimmuniteit

KU LEUVEN
Department of MICROBIOLOGY, IMMUNOLOGY and TRANSPLANTATION
UZ LEUVEN | LABORATORIUMGENEESKUNDE

Genomic surveillance report

Update for Belgium, 08/11/2022

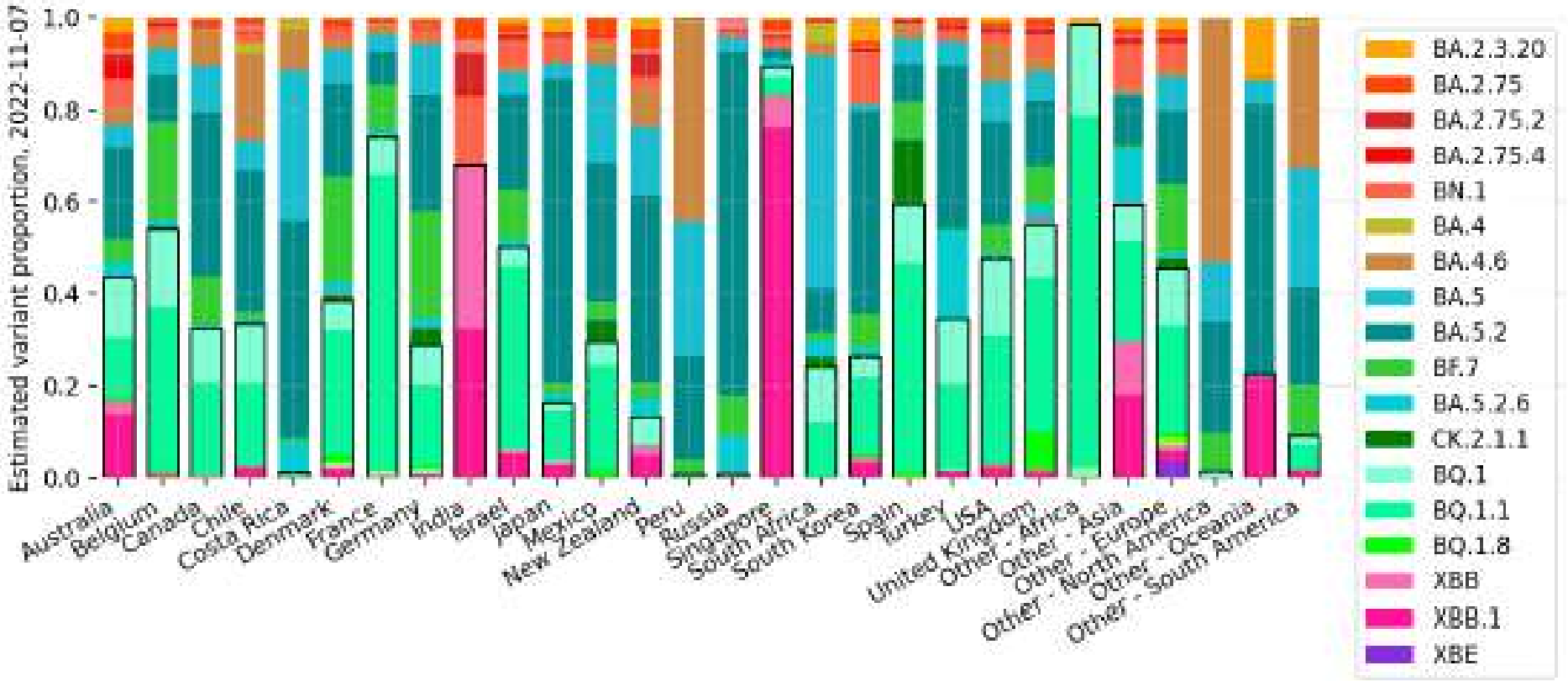


Figure 3: *Estimated variant proportions in different countries including Belgium (Source: Moritz Gerstung available at https://github.com/gerstung-lab/SARS-CoV-2-International,* last update 7/11/2022)

It is expected that BQ.1* variants will shortly dominate in most parts of the world including Europe. Data from India and Singapore suggest that XBB* is also able to outcompete BA.5*.

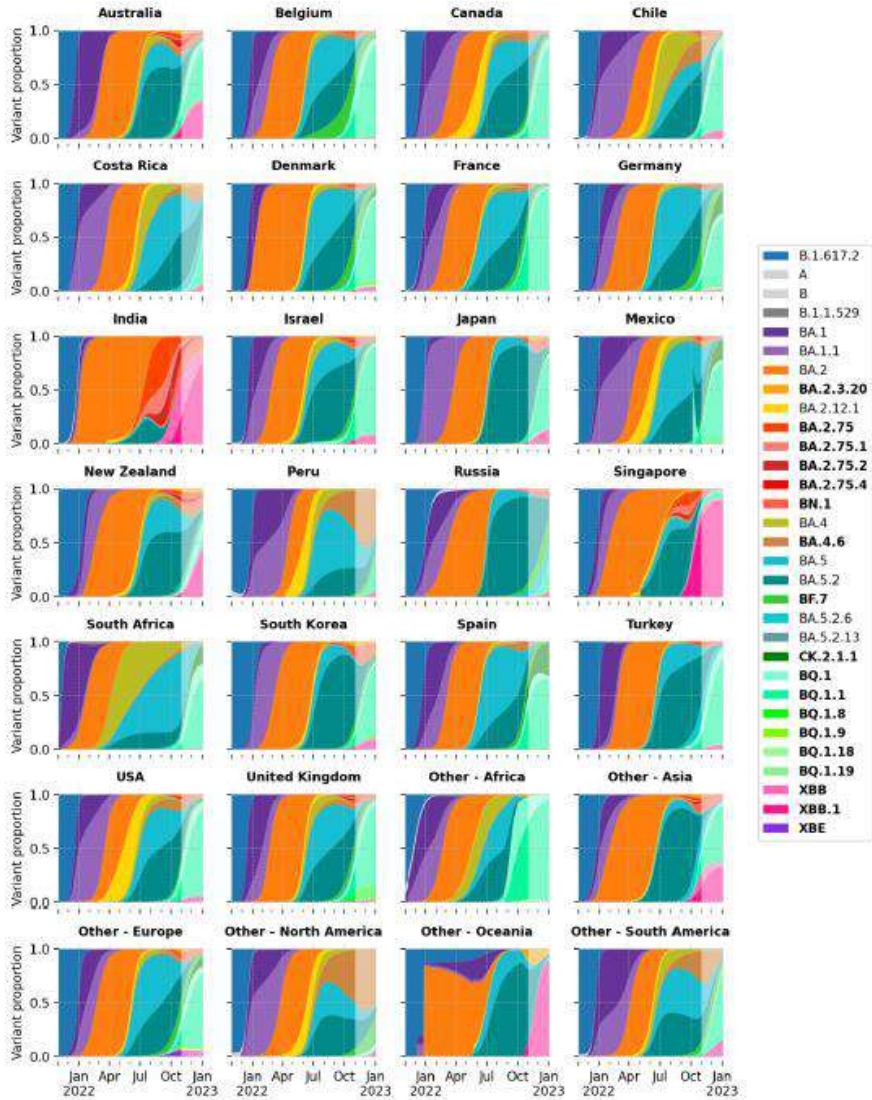
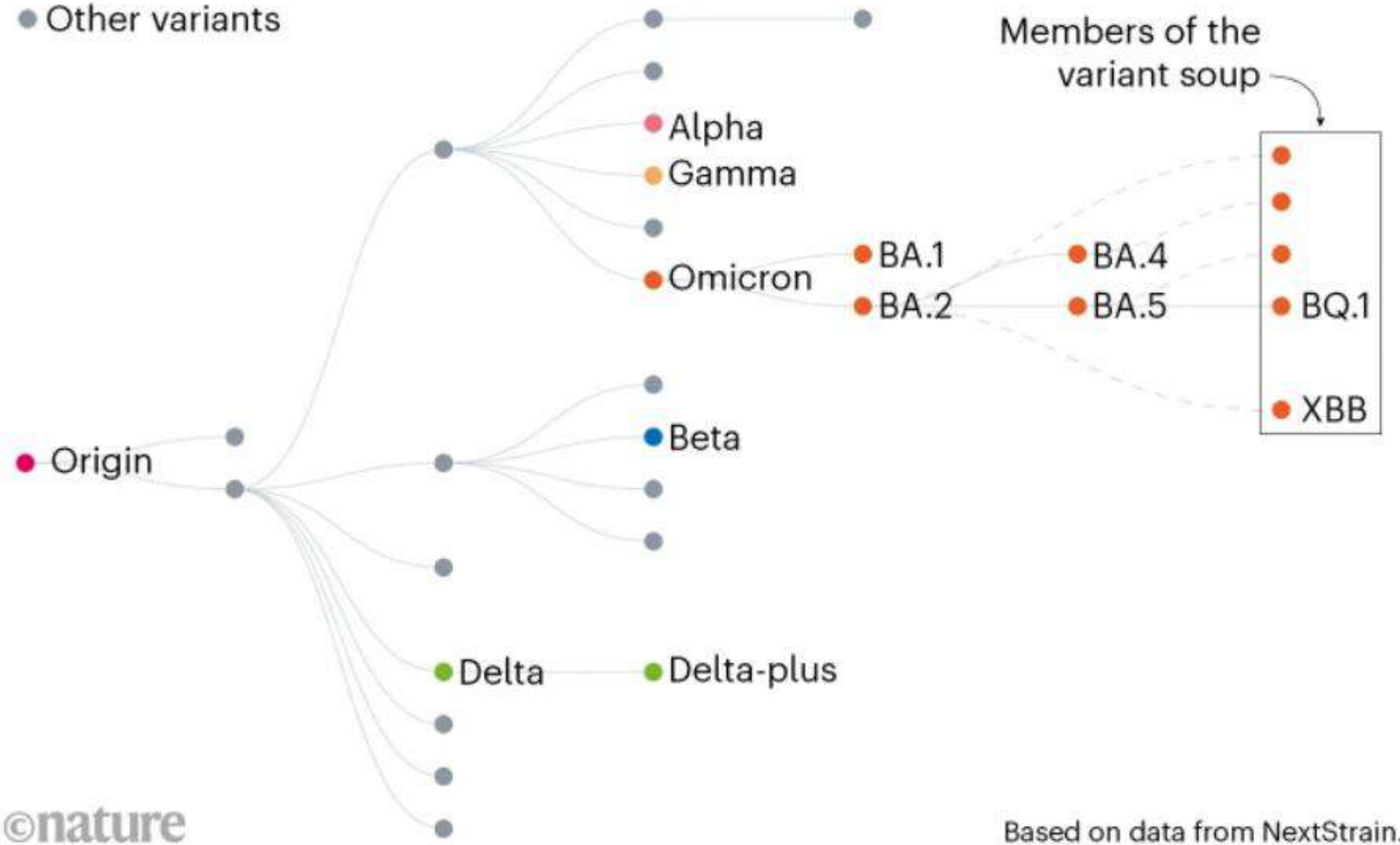


Figure 4: *Past and projected proportions of SARS-CoV-2 variants (Source: Moritz Gerstung available at https://github.com/gerstung-lab/SARS-CoV-2-International, last update 7/11/2022)*

GROWING FAMILY

Omicron sublineages come from a single part of the SARS-CoV-2 family tree, unlike earlier variants of concern such as Alpha and Delta.



©nature

Based on data from NextStrain.

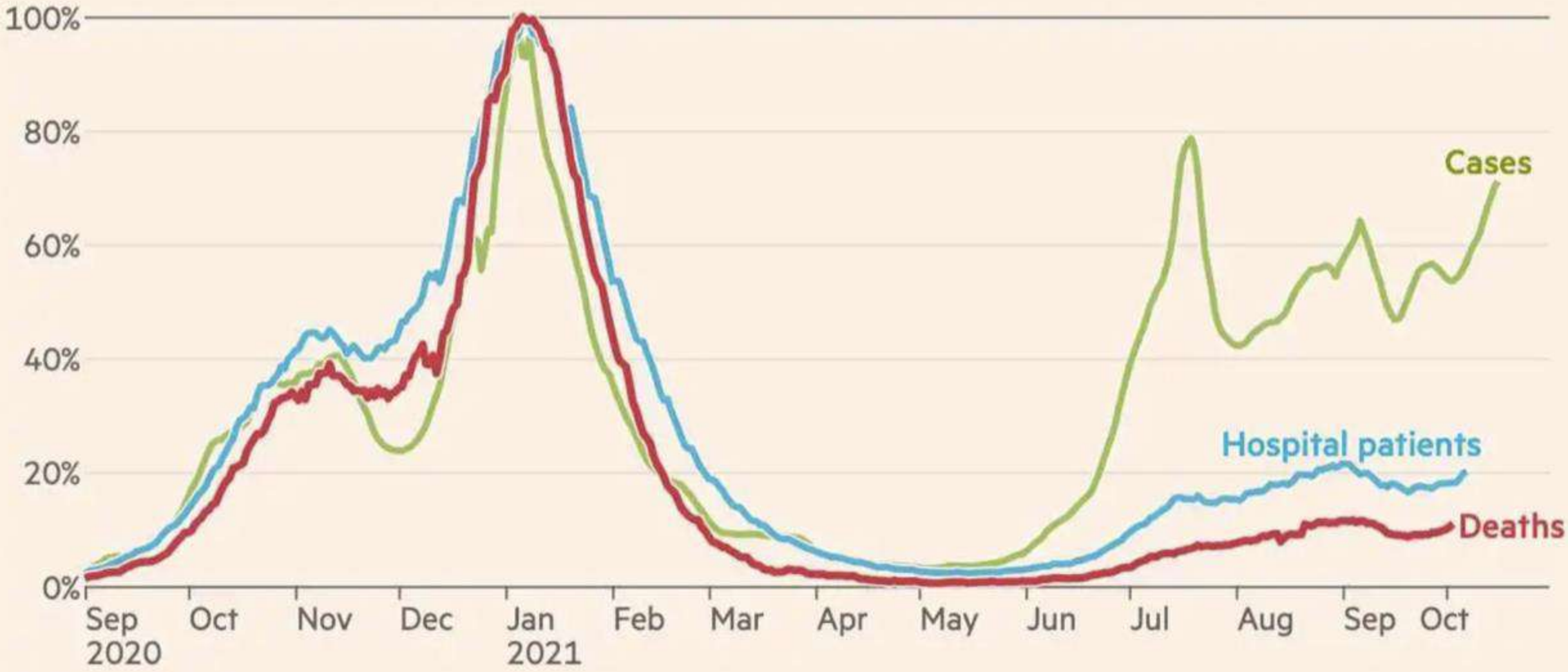
Source: Nextstrain

Booster-vaccination policy and the delta-variant (Q3 2021)

watching US, UK and Israel!

UK Covid cases are high going into the winter, but vaccines have greatly reduced the share of cases that end in hospitalisation or death

Covid-19 metrics as a percentage of their peak value last winter



Boosters en Omikron

Dissociation because of

1. **waning immunity after primary schedule**
2. **Appearance of new variants**

New data from England show boosters do not merely top up immunity, they elevate protection well above the peak level from two doses

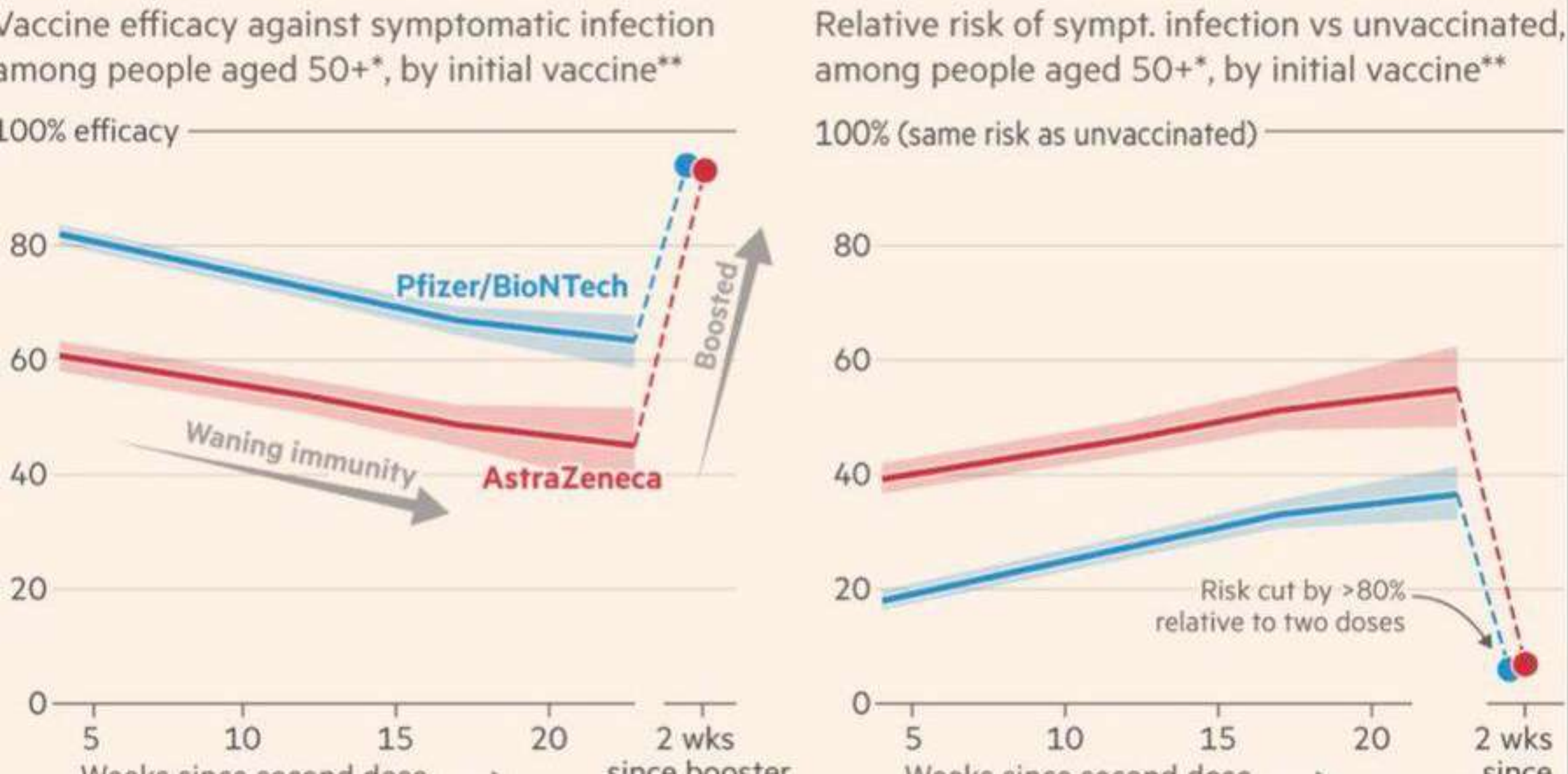
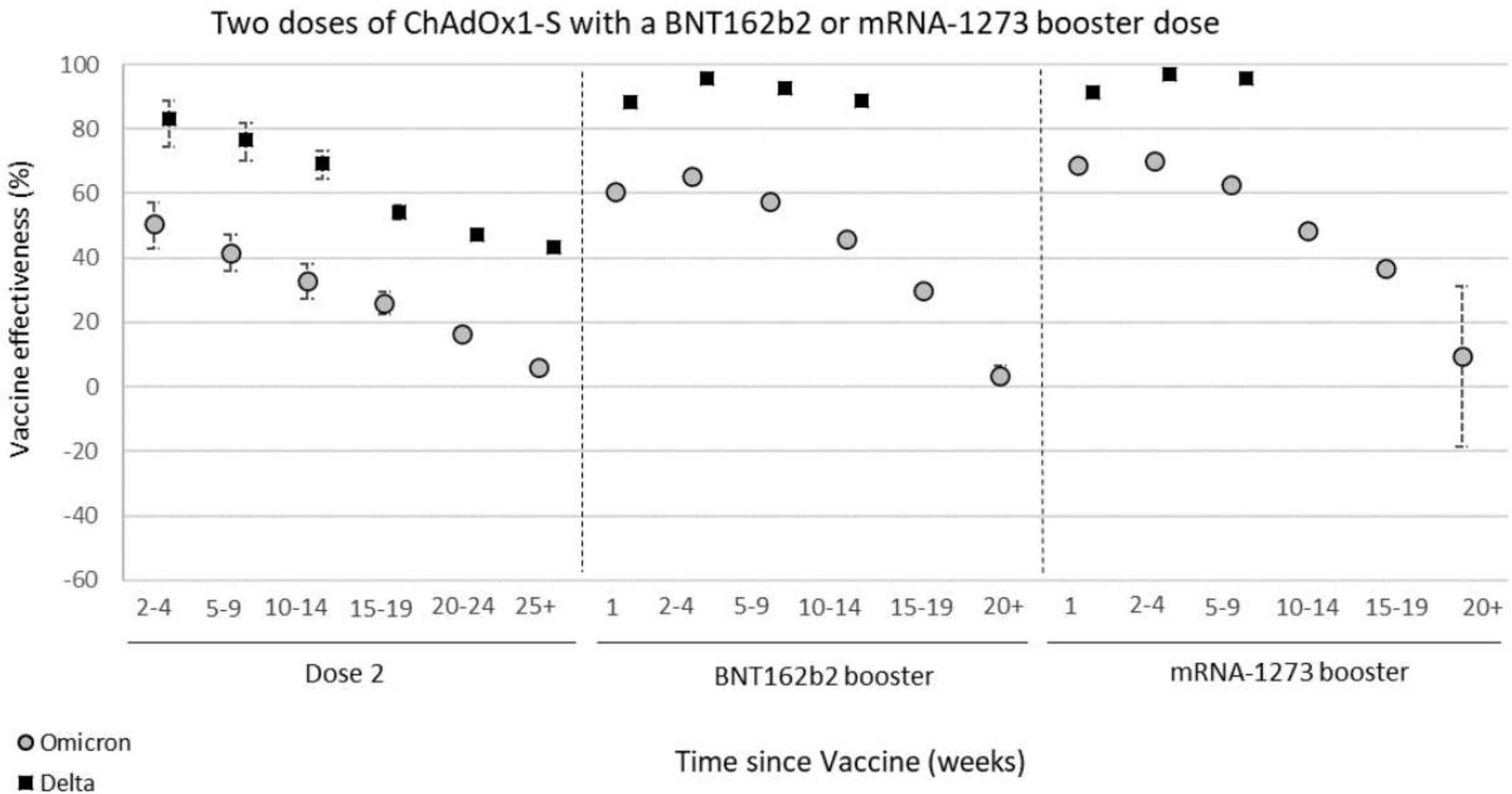


Figure 1. Vaccine effectiveness against symptomatic disease by period after the second and booster doses for Delta (black squares) and Omicron (grey circles) for a) recipients of 2 doses of AstraZeneca (ChAdOx1-S) vaccine as the primary course and Pfizer (BNT162b2) or Moderna (mRNA-1273) as a booster; b) recipients of 2 doses of Pfizer vaccine as the primary course and Pfizer or Moderna as a booster, and c) 2 doses of Moderna as a primary course and Pfizer or Moderna as a booster

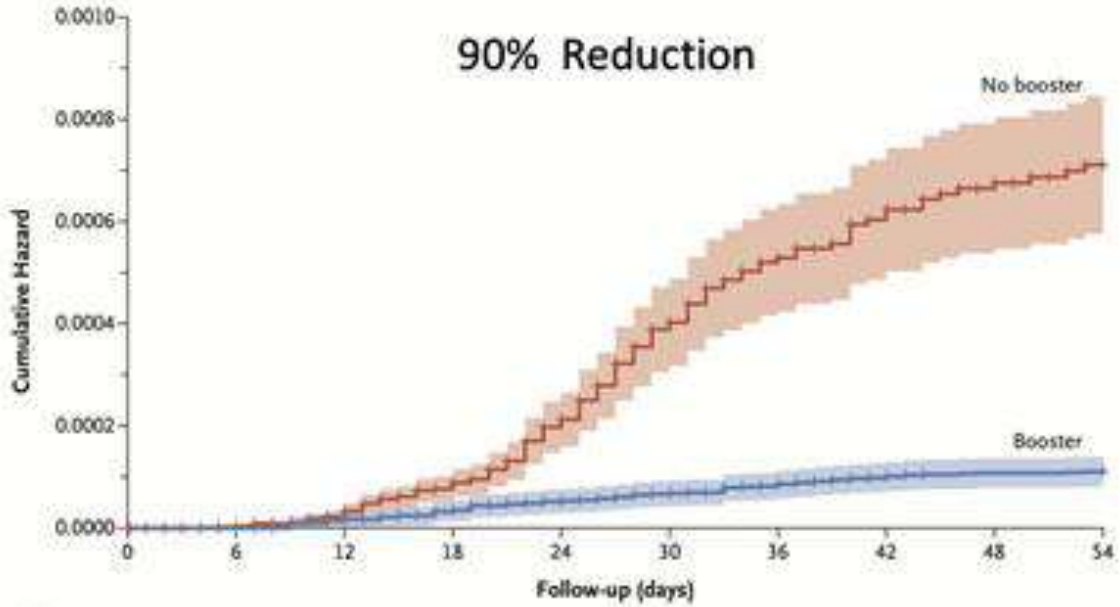
a)



2° booster and the new variants

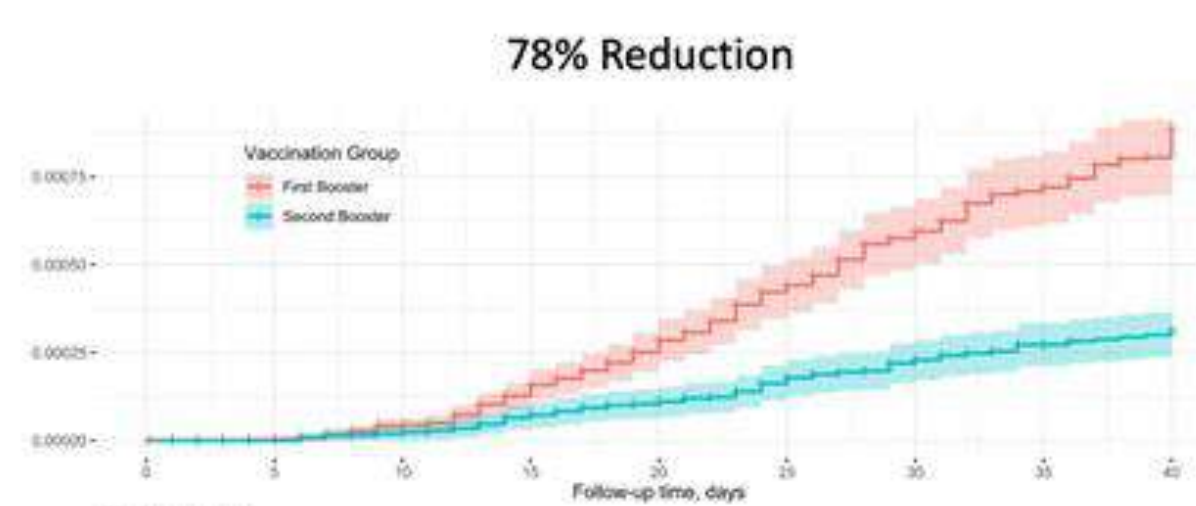
Mortality Reduction at Calit Health for Initial Booster and Second Booster

3rd shot vs 2 shots, age 50+



No. at Risk										
No booster	841,428	723,609	520,459	326,741	202,797	145,021	111,761	101,695	90,036	83,989
Booster	46,259	119,332	322,203	515,639	639,315	696,859	729,971	739,945	756,591	757,614

4th shot vs 3-shots, age 60+



Number at risk

First Booster	550648	453524	329688	284252	264512	250861	243292	238311	233847
Second Booster	12817	109774	233373	278549	298038	311424	318775	323619	328022

Place and Age Group	4th dose vs 3rd dose	Variant(s)	Citation
Israel, age 60+	74% protection vs Covid death; 68% vs hospitalization	Omicron	Magen O et al, NEJM, April 28, 2022
Israel, age 60+	78% protection from death; 64% vs hospitalization	Omicron	Arbel R et al, Nature Medicine, 25 April 2022
Sweden, Age 80+	60% reduced all-cause mortality	Omicron	Nordstrom P et al, Lancet Reg Health, 13 July 2022
United States, Age 50+	4-fold reduction in mortality	Omicron BA.2 and BA2.12.1	https://covid.cdc.gov/covid-data-tracker/#rates-by-vaccine-status
Israel, median age 80	50% reduction of need for mechanical ventilation or death	Omicron	Brosh-Nissimov T et al, MedRxiv, 27 April 2022

Portugal, Age 80+ May to July 2022	81% protection vs. hosp. 82% protection vs. deaths	Omicron BA5	Kislaya I. et al, Eurosurveillance, Sept 15, 2022

Table 3. Breakthrough Infection Rates Among 4-Dose and 3-Dose Vaccinated Health Care Workers

Characteristic	No. infected/No. at risk (%)		Crude analysis, RR (95% CI)	Time-dependent model, adjusted HR (95% CI)	Matched comparisons, RR (95% CI)
	3-Dose group (n = 24 280)	4-Dose group (n = 5331)			
All	4802/24 280 (20)	368/5331 (7)	0.35 (0.32-0.39)	0.56 (0.50-0.63)	0.61 (0.54-0.71)
Sex					
Male	1415/7804 (18.)	154/2426 (6)	0.35 (0.30-0.41)	0.56 (0.49-0.65)	0.66 (0.56-0.79)
Female	3387/16 476 (21)	214/2905 (7)	0.36 (0.31-0.41)	0.55 (0.46-0.66)	0.57 (0.46-0.70)
Age group, y					
<40	2044/10 429 (20)	81/1112 (7)	0.37 (0.30-0.46)	0.57 (0.45-0.72)	0.62 (0.48-0.81)
40-59	466/2466 (19)	106/1706 (6)	0.33 (0.27-0.40)	0.56 (0.48-0.65)	0.58 (0.48-0.71)
≥60	2292/11 385 (20)	181/2513 (7)	0.36 (0.31-0.41)	0.55 (0.45-0.68)	0.73 (0.54-0.99)

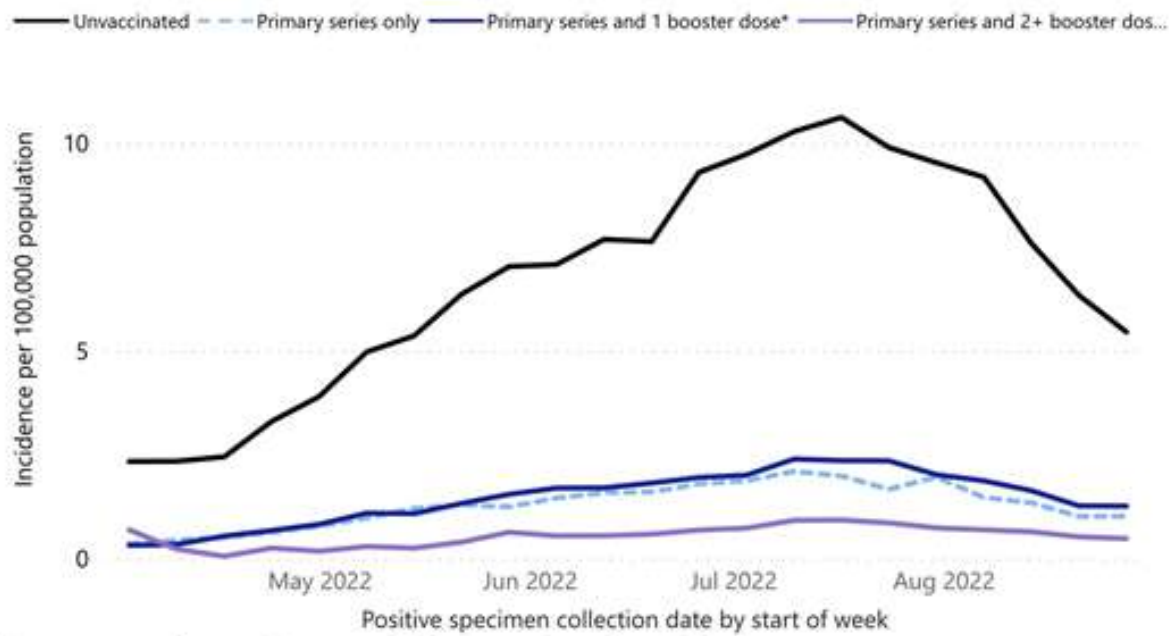
At Least One Booster Dose

Rates of COVID-19 Deaths by Vaccination Status and 2+ Booster Doses* in Ages 50+ Years

April 03, 2022–September 03, 2022 (26 U.S. jurisdictions)

Select Outcome

- (●) Deaths
- ( ) Cases



In August 2022, among people ages 50 years and older, unvaccinated people had:

12X
Risk of Dying from COVID-19

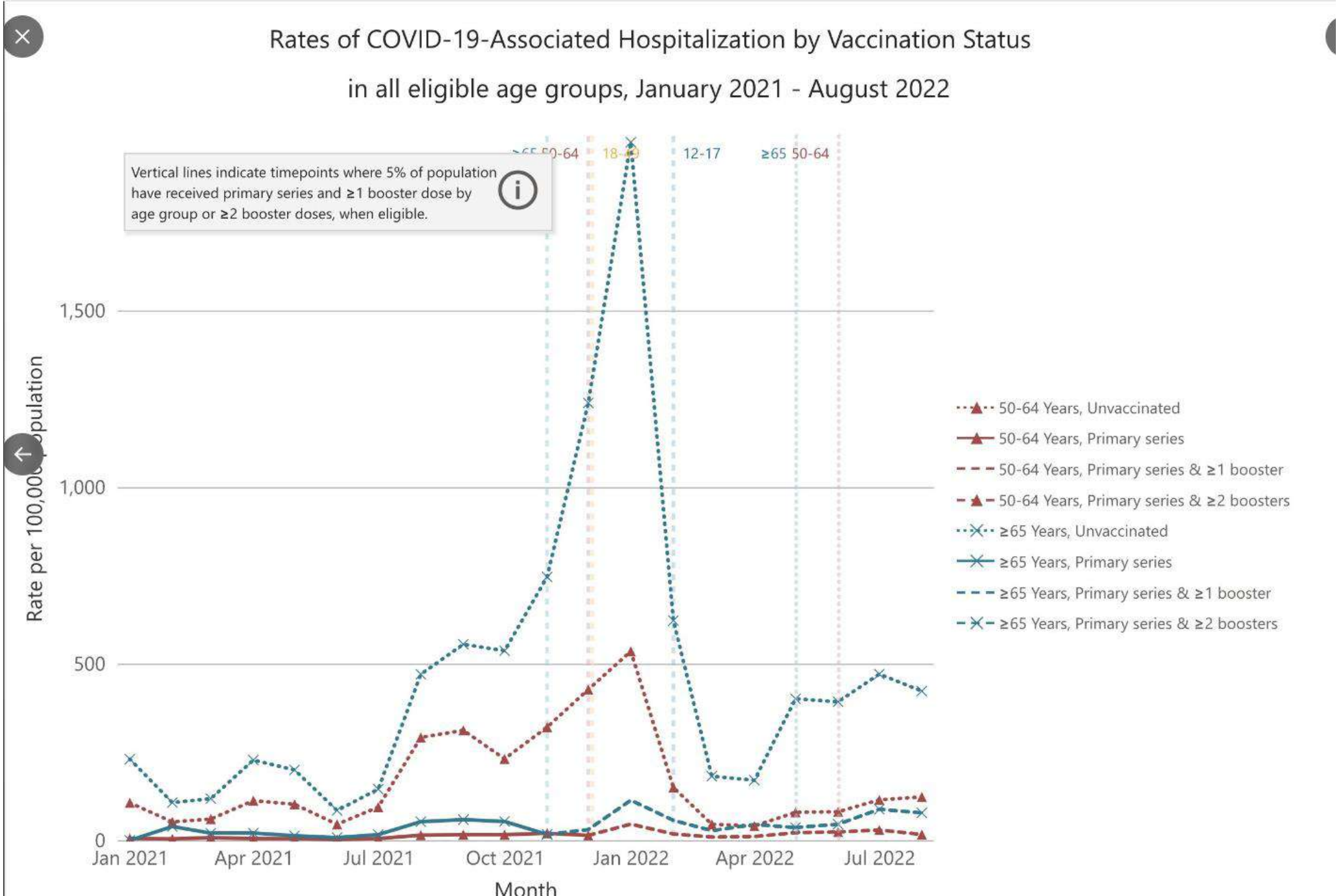
compared to people vaccinated with a primary series and two or more booster doses.*

Among people ages 50 years and older, vaccinated people with a primary series and one booster dose had:

3X
Risk of Dying from COVID-19

compared to people vaccinated with a primary series and two or more booster doses.*

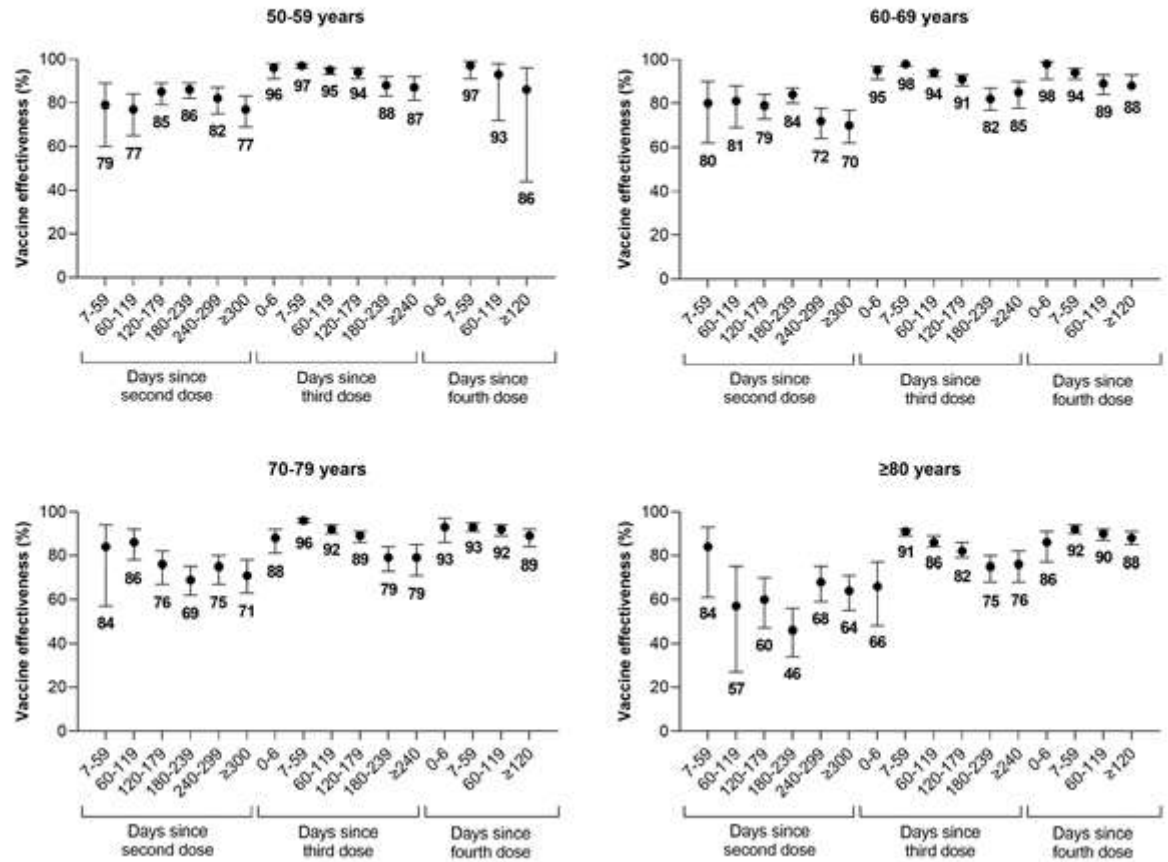
Source: CDC COVID-19 Response, Epidemiology Task Force, Surveillance & Analytics Team, Vaccine Breakthrough


Rates of COVID-19-Associated Hospitalization by Vaccination Status
in all eligible age groups, January 2021 - August 2022
Vertical lines indicate timepoints where 5% of population have received primary series and ≥1 booster dose by age group or ≥2 booster doses, when eligible.
12-17
≥65 50-64
1,500
1,000
500
0
Jan 2021
Apr 2021
Jul 2021
Oct 2021
Jan 2022
Apr 2022
Jul 2022
Month
50-64 Years, Unvaccinated
50-64 Years, Primary series
50-64 Years, Primary series & ≥1 booster
50-64 Years, Primary series & ≥2 boosters
≥65 Years, Unvaccinated
≥65 Years, Primary series
≥65 Years, Primary series & ≥1 booster
≥65 Years, Primary series & ≥2 boosters

Title: Effectiveness of mRNA COVID-19 vaccine booster doses against Omicron severe outcomes

Authors: Ramandip Grewal PhD[1], Lena Nguyen MSc[2], Sarah A Buchan PhD[1,2,3,4], Sarah E Wilson MD[1,2,3,4], Sharifa Nasreen PhD[2,3], Peter C. Austin, PhD[2,5], Kevin A. Brown PhD[1,2,3], Deshayne B. Fell PhD[2,6,7], Jonathan Gubbay MBBS MSc[1,8], Kevin L. Schwartz MD MSc[1,2,3], Mina Tadrous PharmD PhD[2,9,10], Kumanan Wilson MD, MSc[11,12,13], Jeffrey C Kwong MD MSc[1,2,3,4,14,15] on behalf of the Canadian Immunization Research Network (CIRN) Provincial Collaborative Network (PCN) Investigators

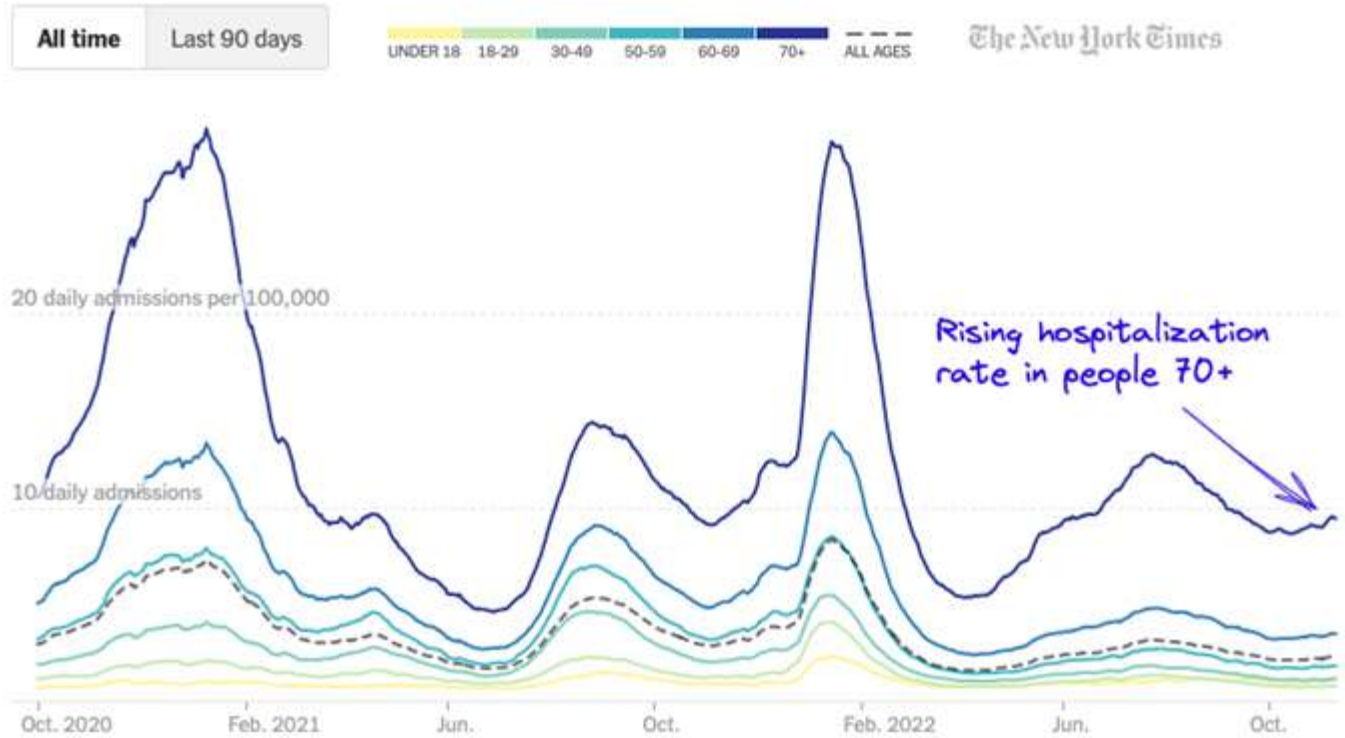
2: Vaccine effectiveness of 2, 3, and 4 doses of monovalent mRNA COVID-19 vaccines Omicron-associated severe outcomes among community-dwelling adults aged ≥50 years rio, Canada, compared to unvaccinated adults (Note: Estimates were not reported if they ıstable [i.e., 95% confidence interval width exceeded 100 percentage points]).



Covid-19

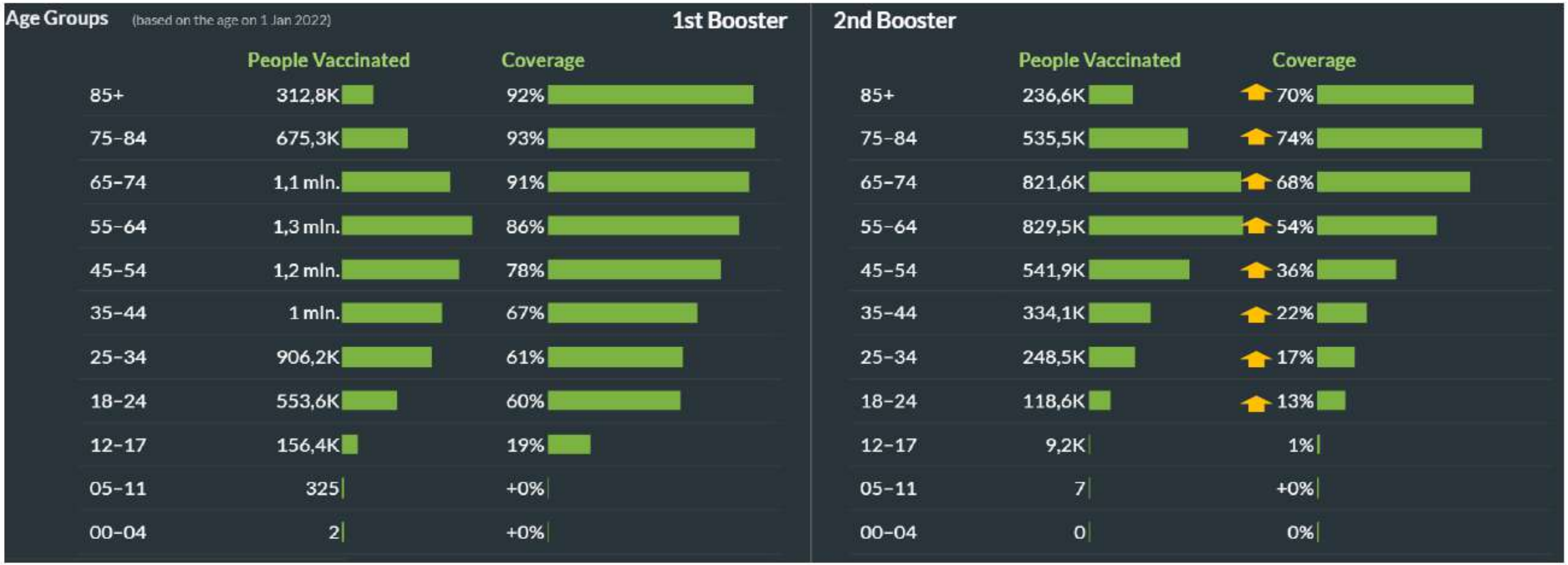
Last week, I wondered whether the U.S. may be headed into another covid-19 wave. This week, I see more evidence for this scenario. Cases and hospitalizations have begun to tick up, as has test positivity. Fourteen states and Washington D.C. have seen a double-digit rise in hospitalizations over the last two weeks. The rise is most evident in hospitalization rates in older adults, the group that is most vulnerable to developing severe disease. Unfortunately, just 27% of adults 65 and older have received an updated bivalent booster, which I worry will contribute to an increase in hospitalizations.

It's too soon to say we'll see another wave for sure, but coupled with the early and widespread flu season, the healthcare system is likely facing another difficult winter season.

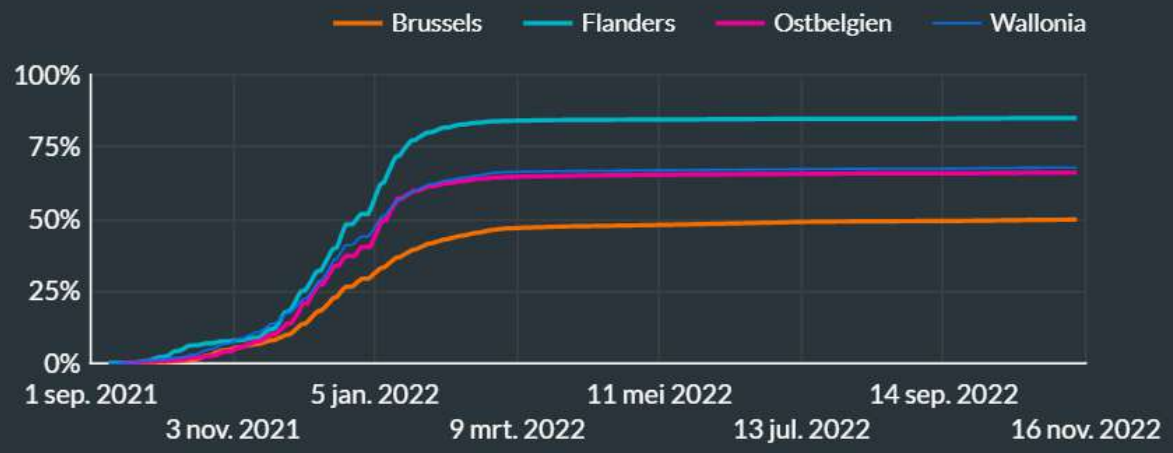


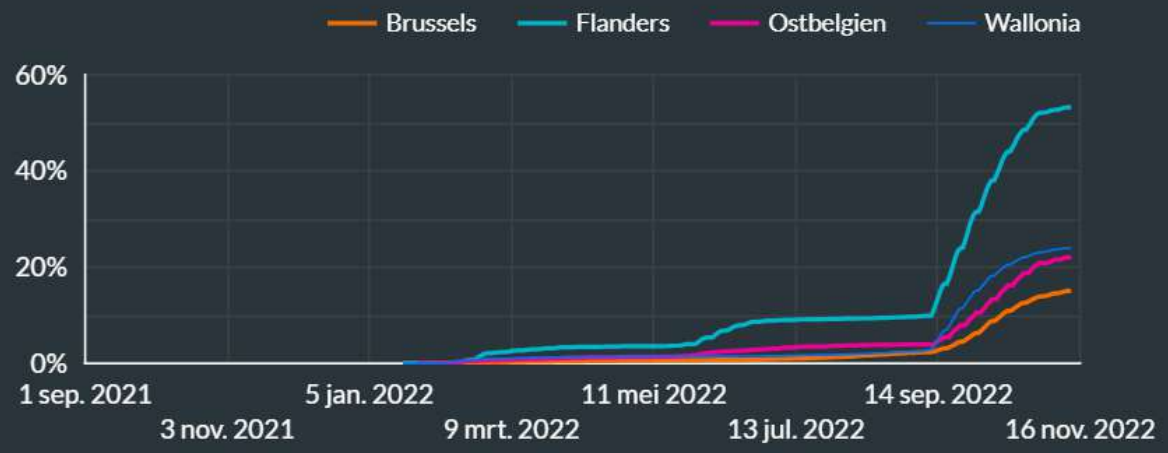
Daily new COVID-19 hospitalizations by age. Source: New York Times

Vaccination coverage by age group



Source: Dashboard Sciensano – Numbers of 5 November



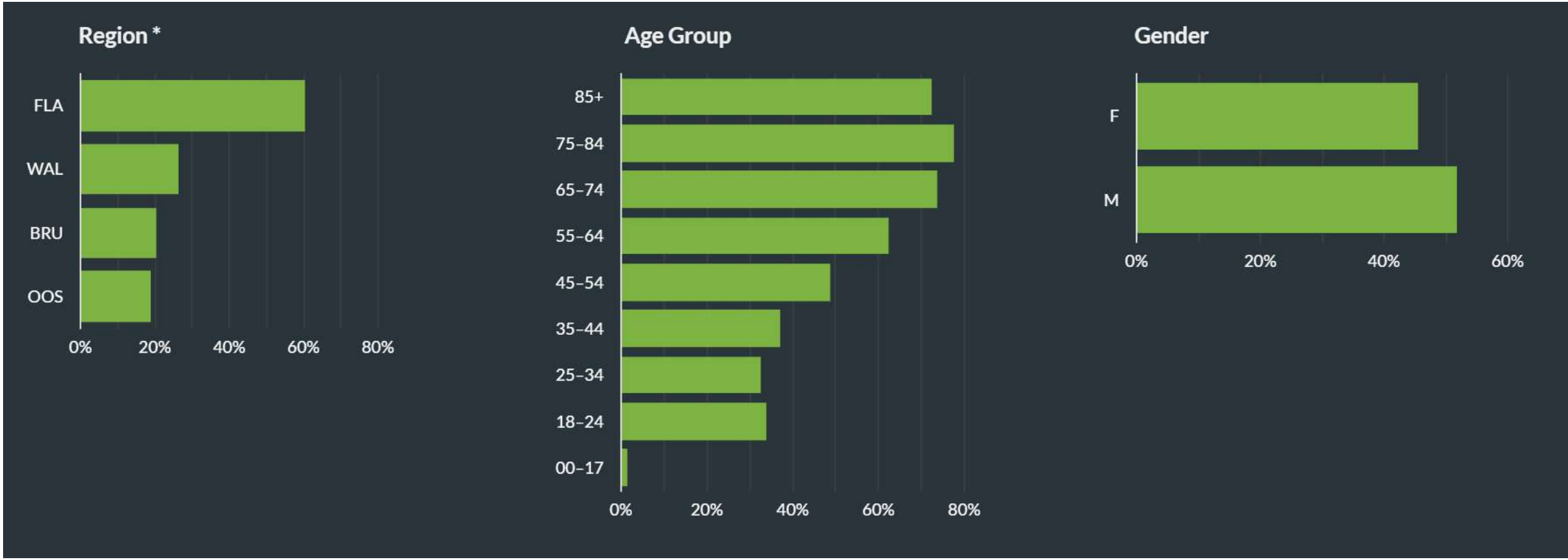


overage by Region and Age Group

	Brussels	Flanders	Ostbelgien	Wallonia
85+	82%	96%	83%	86%
75–84	79%	96%	87%	88%
65–74	74%	95%	84%	86%
55–64	64%	92%	72%	79%
45–54	52%	86%	67%	70%
35–44	42%	78%	56%	57%
25–34	38%	73%	47%	48%
18–24	26%	73%	50%	50%
12–17	5%	30%	8%	5%

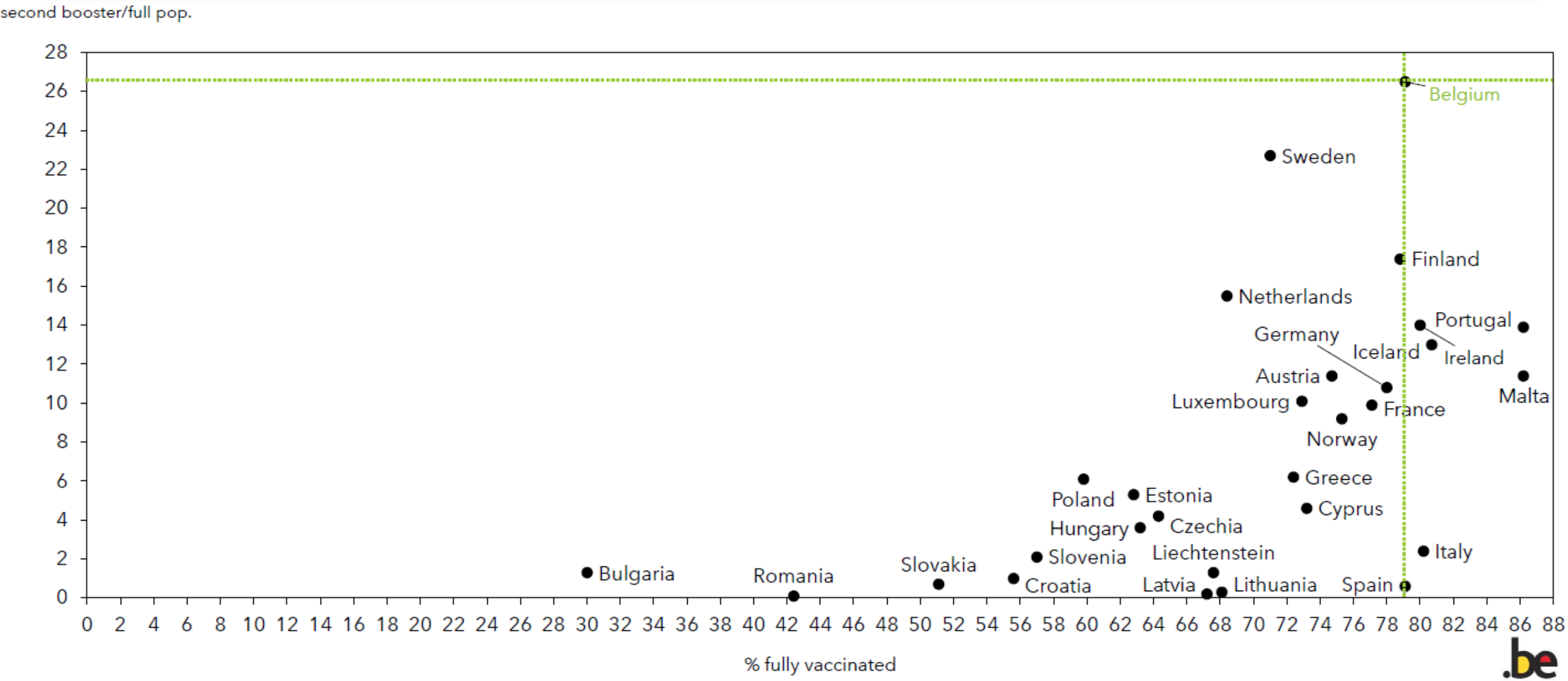
	Brussels	Flanders	Ostbelgien	Wallonia
85+	51%	80%	43%	54%
75–84	49%	85%	48%	58%
65–74	39%	81%	42%	53%
55–64	24%	67%	26%	37%
45–54	13%	50%	17%	18%
35–44	6%	36%	11%	5%
25–34	4%	28%	7%	3%
18–24	1%	23%	6%	2%
12–17	+0%	2%	+0%	+0%

Gezondheidswerkers – booster 2 (7 nov 2022)



Vaccination coverage: international comparison

Vaccination coverage fully-vaccinated population and second booster in EU/EEA countries

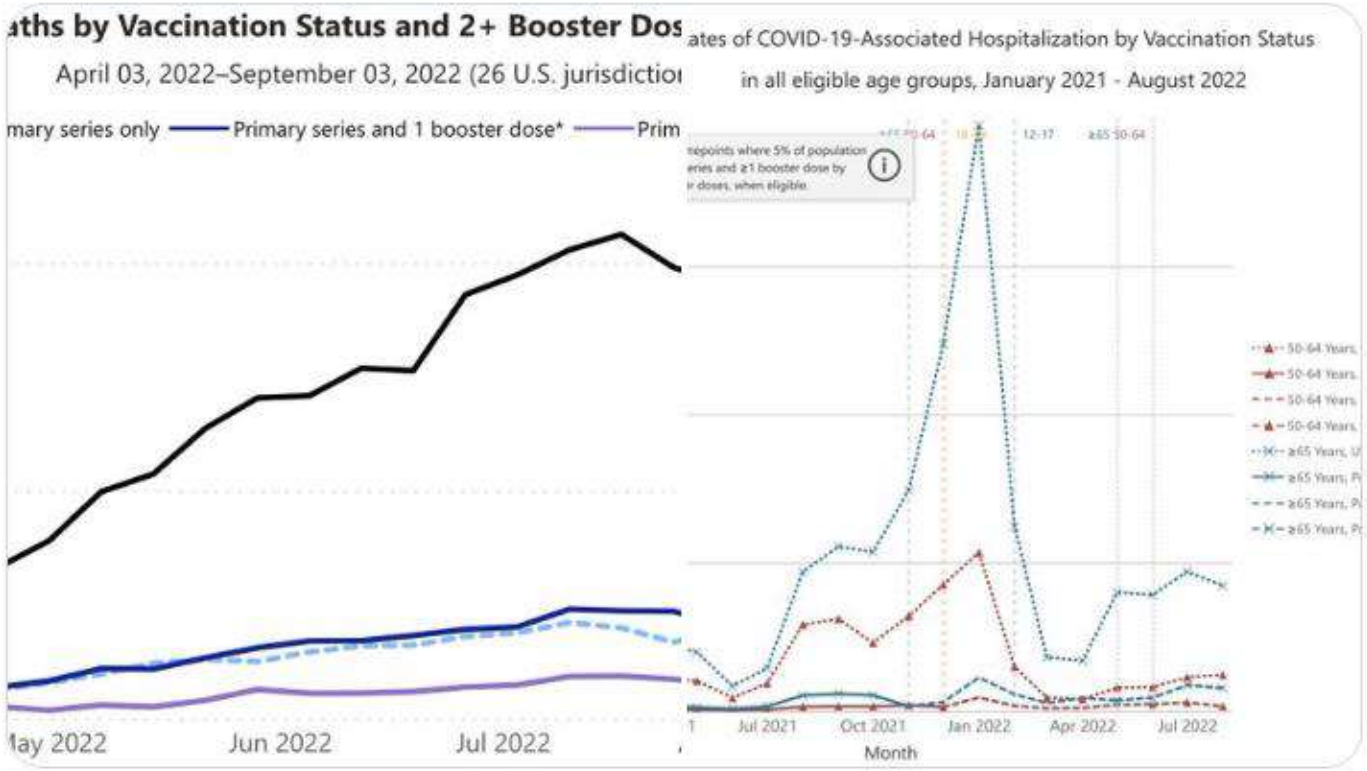


Source: ECDC vaccine tracker – updated on 27/10

Eric Topol
@EricTopol

What if you had something that decreased death by >90% and hospitalization by >80% but <25% of the people who would benefit got it?
[Americans, age 50+ w/ 2+ boosters, not > 6 months]

Tweet vertalen



7:19 p.m. · 30 okt. 2022 · Twitter Web App

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SECURITE DE LA CHAINE ALIMENTAIRE
ET ENVIRONNEMENT

federale overheidsdienst
VOLKSGEZONDHEID,
VEILIGHEID VAN DE VOEDSELKETEN
EN LEEFMILIEU

16 november 2022

Informatie over de basis- of boostervaccinatie tegen COVID-19 van kinderen en jongeren (6 maanden tot en met 17 jaar)

De Interministeriële Conferentie Volksgezondheid van 16 november 2022 zette het licht op groen voor de COVID-19 **basisvaccinatie van kinderen van 6 maanden tot en met 4 jaar**, en voor de **boostervaccinatie van kinderen en jongeren van 5 tot en met 17 jaar**. Deze vaccinaties worden aanbevolen voor kinderen en jongeren met co-morbiditeit en met immunosuppressie en aangeboden aan gezonde kinderen. Deze beslissing werd genomen op basis van het advies van de Hoge Gezondheidsraad (HGR) van 16/11/22.

Recommendations

Children at risk to be vaccinated against COVID-19

- **Immunocompromised patients**
  - Immunosuppressive treatment in transplant or auto-immune disease, haemato-oncological disease treatment;
  - Some primary immunodeficiencies (PID):
    - **PID with severe combined immune disorder** ((S)CID or severe lymphopenia (CD4 T cell count < 200));
    - **PID AND severe lung disease;**
    - **PID patients who will receive or have received stem cell transplant or gene therapy** < 1 year ago or longer if additional treatment is required;
    - **Other PID namely chronic granulomatous disease (CGD), familial haemophagocytic lymphohistiocytosis (HLH), congenital autoinflammatory diseases (except familial Mediterranean fever FMF), PID and active* immune dysregulation (LRBA, NFKB1, NFKB2, STAT3 GOF, IRAK4, MyD88, STAT2, etc.);**
      * autoimmune or autoinflammatory optic surge during the past year or recently started immunosuppressive medication
    - **Other serious PID conditions for which the patient himself was contacted by the treating physician for COVID vaccination.**

- **Severe chronic diseases** (including rare diseases) affecting renal, gastrointestinal, cardiovascular, respiratory or neurological health

Basisvaccinatie voor kinderen van 6 maanden tot en met 4 jaar

Bij **gezonde kinderen** is een vaccinatie tegen COVID niet aanbevolen, maar het kan wel op individuele basis gebeuren, mits goed geïnformeerde toestemming van de ouders. Deze kinderen kunnen nog gedurende korte tijd gevaccineerd worden in een vaccinatiecentrum, of bij bepaalde huisartsen en apothekers. De deelstaten zullen binnenkort communiceren waar deze basisvaccinatie mogelijk zal zijn

Basisvaccinatie wordt wel aanbevolen voor **kinderen met comorbiditeiten of met immunosuppressie** op basis van het individueel afwegen van benefit/risk bij het kind. De lijst met aandoeningen kan worden gevonden in het hogervermelde advies van de HGR.

De vaccinatie gebeurt met een pediatrisch Pfizer vaccin. Het gaat om een origineel vaccin, niet aangepast aan de Omicron variant, omdat de goedkeuring van de booster door het EMA voor deze leeftijdsgroep enkel is gegeven voor het originele vaccin.

Het basisschema bestaat uit 2 doses, met een interval van ongeveer 3 weken. Bij patiëntjes met verlaagde immuniteit is een 3 dosisschema te overwegen, met de 3^{e} dosis 2 maanden toe te dienen na de 2^{e} dosis.

- Pediatric reference hospitals (cf. vaccination 5-11Y Down syndrome in 12/21)

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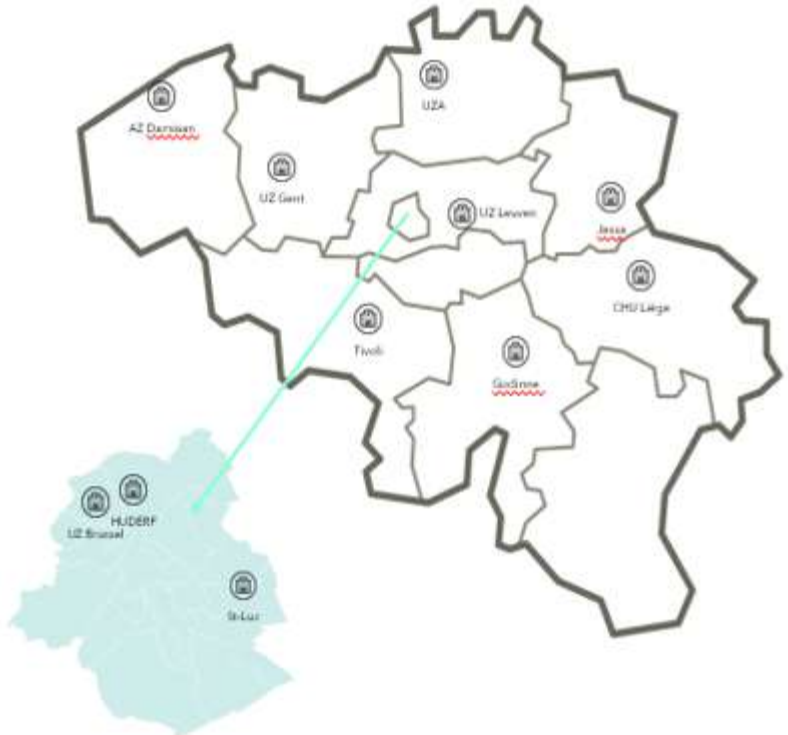

Boostervaccinatie voor kinderen van 5 tot en met 17 jaar

Boostervaccinatie bij **gezonde kinderen** van 5 tot en met 17 jaar wordt niet aanbevolen door de HGR, maar kan wel aangeboden worden op individuele vraag.

Voor kinderen **met immunosuppressie of comorbiditeiten** heeft de HGR reeds een booster aanbevolen in juli 2022. De HGR somt in deze rapporten de betrokken aandoeningen op.

De vaccinatie gebeurt met een pediatrisch mRNA vaccin. Het gaat om een origineel vaccin, niet aangepast aan de Omicron variant, omdat de goedkeuring van de booster door het EMA voor deze leeftijdsgroep enkel is gegeven voor het originele vaccin.

Interval tussen doormaken covid-19 en vaccinatie

- **Vanaf 14 dagen na genezing COVID-19 of na pos PCR test (HGR, België)**
- **CDC, US: binnen de 3 maanden na COVID-19 infectie**
- **Veel individuele variatie in duur natuurlijke bescherming na COVID-19 inf.**
  - Voorzorgsprincipe
  - Mogelijkheid om vaccin toe te dienen binnen een venster van

    14 dagen tot 3 maanden

Press Release

Sanofi and GSK's next-generation COVID-19 booster vaccine VidPrevtyn® Beta approved by the European Commission

- First and only next-generation protein-based adjuvanted COVID-19 booster approved in Europe
- Strong immune response against all tested variants of concern
- Ready to supply for fall-winter COVID-19 vaccination campaigns in Europe

Paris, November 10, 2022. After the European Medicines Agency's Committee for Medicinal Products for Human Use (CHMP) adopted a positive opinion for VidPrevtyn® Beta, the vaccine was approved by the European Commission, as a booster for the prevention of COVID-19 in adults 18 years of age and older. Designed to provide broad protection against multiple variants, the protein-based COVID-19 booster vaccine is based on the Beta variant antigen and includes GSK's pandemic adjuvant. VidPrevtyn Beta is indicated as a booster for active immunization against SARS_CoV_2 in adults who have previously received an mRNA or adenoviral COVID vaccine. Shipments of VidPrevtyn Beta are ready to be distributed to European countries as per Advance Purchase Agreements.

About the VAT08 Stage 2 Efficacy & Safety Study

The VAT08 Phase 3 Stage 2 study is a randomized, double-blind, placebo-controlled trial investigating primary vaccination with a bivalent COVID-19 vaccine containing both parental (D614) and Beta strains. The results showed a 64.7% efficacy against symptomatic SARS-CoV-2 infection in adults, regardless of their SARS-CoV-2 infection status prior to vaccination, and 75.1% efficacy in participants previously infected with SARS-CoV-2. This study was the first ever to report efficacy data in an Omicron environment.

Across all the above-mentioned studies, the Sanofi-GSK bivalent next-generation vaccine candidate was well-tolerated, with an acceptable safety profile.

Vaccine	Platform*	Strain	Use	Population ≥6 months	≥5 years	≥12 years	≥18 years
Comirnaty (BioNTech)	mRNA	Original strain	Primary vaccination	✓ 6 months to 4 years	✓ 5-11 years	✓	✓
			Booster		✓ 5-11 years	✓	✓
		Original strain + Omicron BA.1 variant (adapted**)	Booster			✓	✓
		Original strain + Omicron BA.4-5 variants (adapted**)	Booster		✓ 5-11 years	✓	✓
Spikevax (Moderna)	mRNA	Original strain	Primary vaccination	✓ 6 months to 5 years	✓ 6-11 years	✓	✓
			Booster			✓	✓
		Original strain + Omicron BA.1 variant (adapted**)	Booster			✓	✓
		Original strain + Omicron BA.4-5 variants (adapted**)	Booster			✓	✓
Vaxzevria (AstraZeneca)	Adenoviral vector	Original strain	Primary vaccination				✓
			Booster				✓
Jcovden (Janssen)	Adenoviral vector	Original strain	Primary vaccination				✓
			Booster				✓
Nuvaxovid (Novavax)	Protein	Original strain	Primary vaccination			✓	✓
			Booster				✓
COVID-19 Vaccine Valneva (Valneva)	Inactivated	Original strain	Primary vaccination				✓ 18-50 years
VidPrevtyn Beta (Sanofi Pasteur)	Protein	Beta variant	Booster				✓

Nieuwe vaccins

- **Wuhan stam gebaseerde vaccins**
- **Bivalente vaccins op basis van BA1 en wuhan stammen**
- **Bivelante vaccins op basis van BA4/5 en wuhan stammen**
- **Recombinant-eiwit Beta-stam gebaseerd vaccin**

In ontwikkeling (eerst via fase 1, fase 2, evt human challenge studies, fase 3, …)

- **Mucosale/nasale vaccins**
- **Combinatie griep en COVID-19 vaccins**
- **Pan-corona vaccins**