CLUB VITA
Ahead of the *longevity* curve

Thank you for joining us – the webinar will start shortly

# What happened in 2022?

*The UK excess mortality conundrum, what caused it and will it continue?*

Thursday February 9th, 2023

1pm (UK time)

linkedin.com/company/club-vita

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# What happened in 2022?

*The UK excess mortality conundrum, what caused it and will it continue?*

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**(Chair)**
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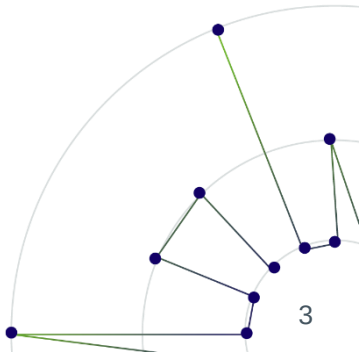
Actuary & Chief Content Officer, Club Vita

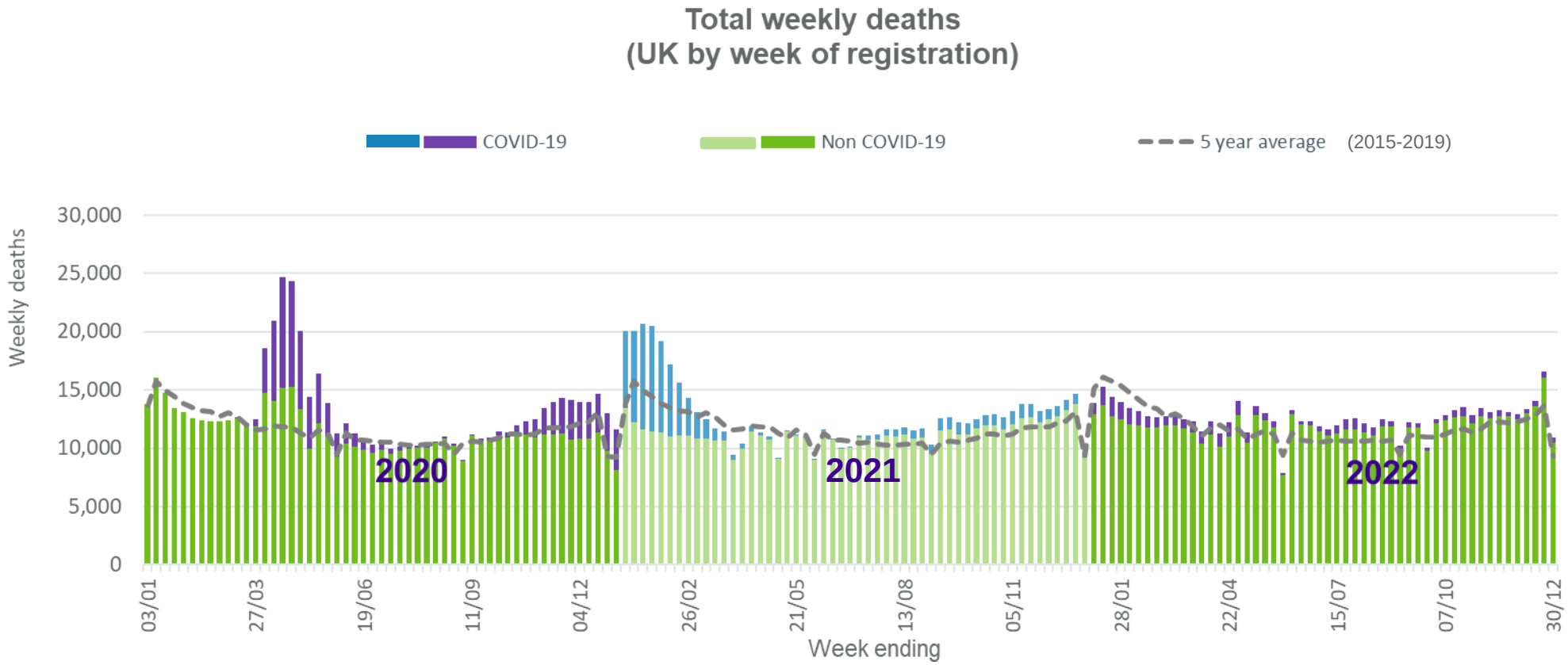
# Agenda

1. What happened in 2022?
2. What caused it and will it continue?



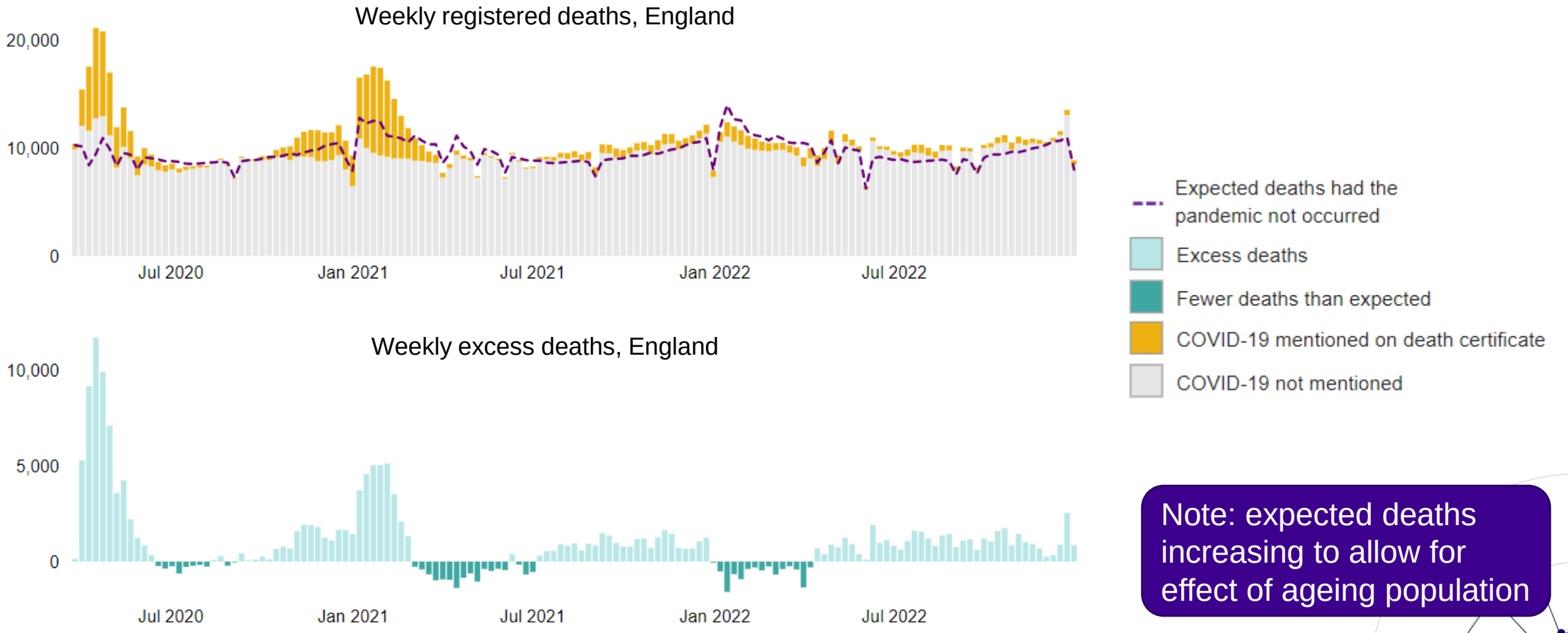
# What happened in 2022?

# Deaths over the pandemic in the UK




Sources: ONS weekly deaths data (England & Wales), NRS (Scotland) weekly deaths data, NISRA (Northern Ireland) weekly deaths.

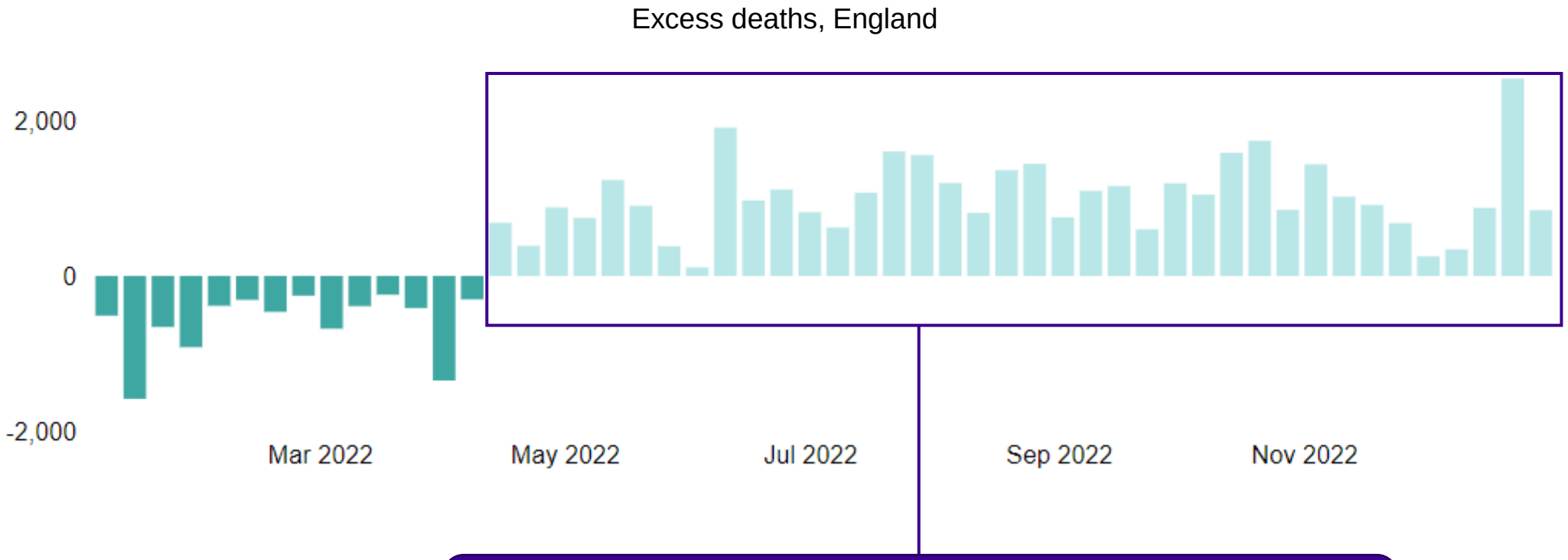
# Deaths over the pandemic
## *27th March 2020 – 30th December 2022*




Note: expected deaths increasing to allow for effect of ageing population

Source: Office for Health Improvement and Disparities (Excess mortality in England dashboard)

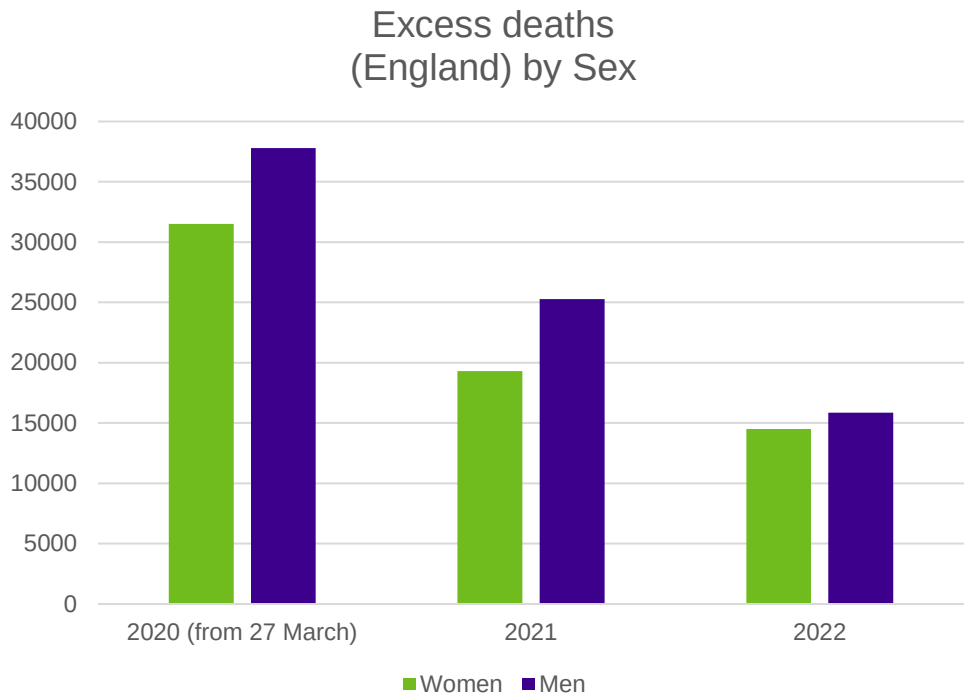
# Excess deaths in 2022 (England)

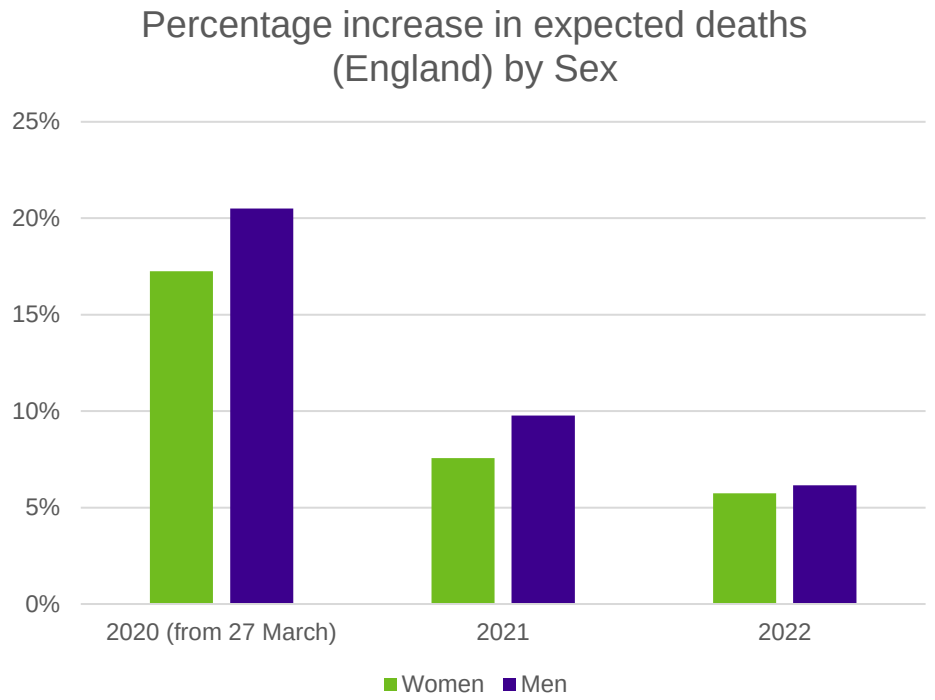



- 11% more deaths than expected after 8th April 2022
- Only around **half** of these were due to COVID

Source: Office for Health Improvement and Disparities (Excess mortality in England dashboard)

# Excess deaths split by sex (England)




Source: Office for Health Improvement and Disparities (Excess mortality in England dashboard).
Excess deaths are actual deaths minus expected deaths. Percentage increase in expected deaths is actual deaths divided by expected deaths.

- Higher excess morality in men throughout 2020 and 2021
- No clear difference in 2022

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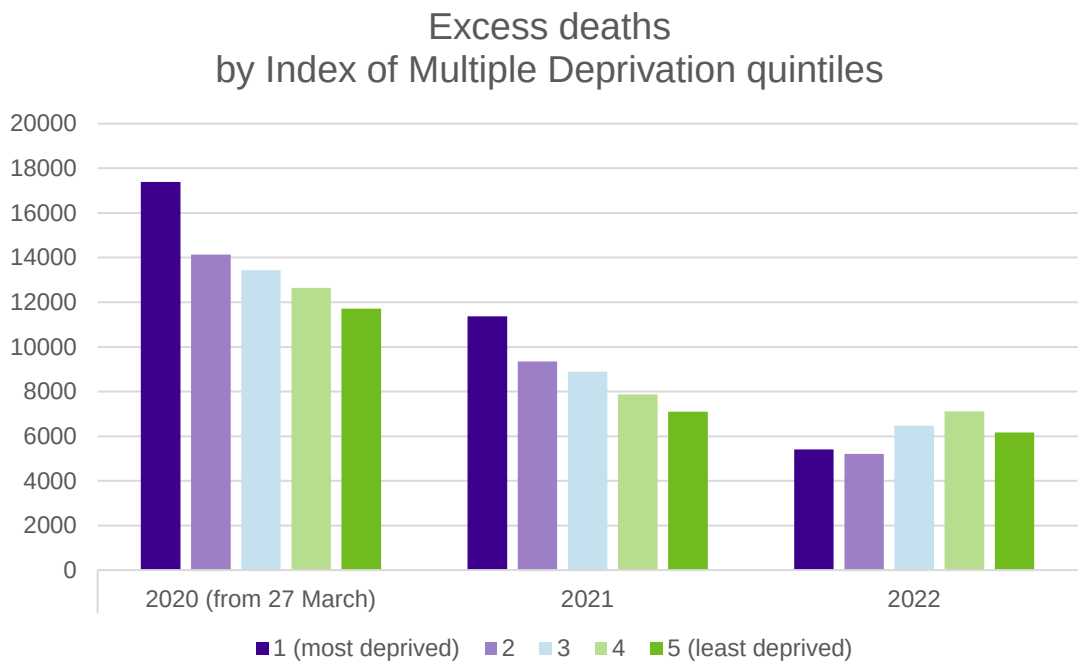
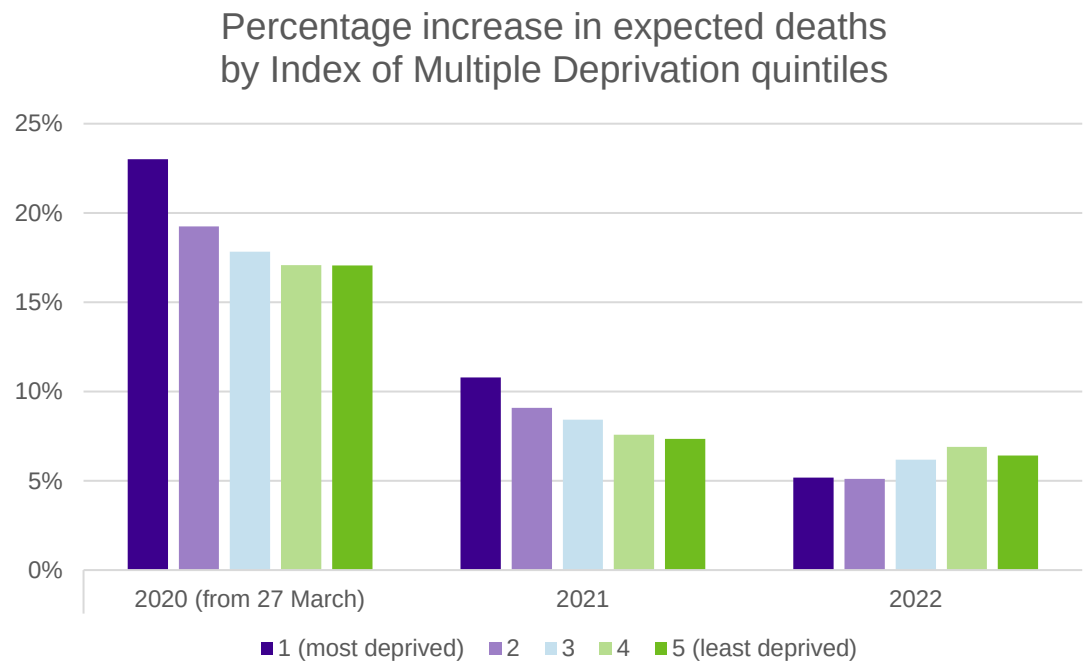
# Excess deaths split by deprivation (England)

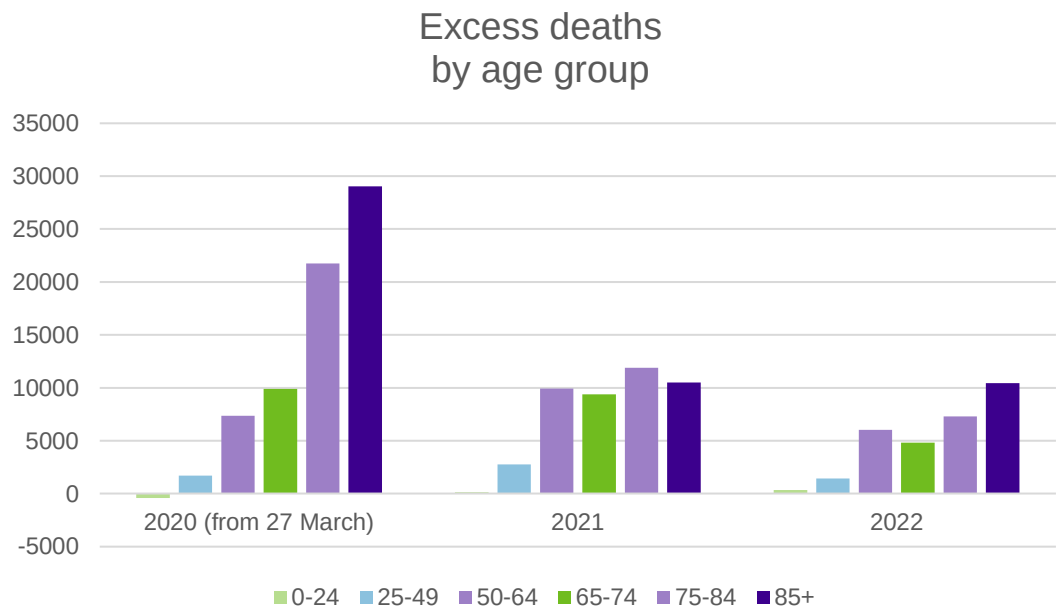


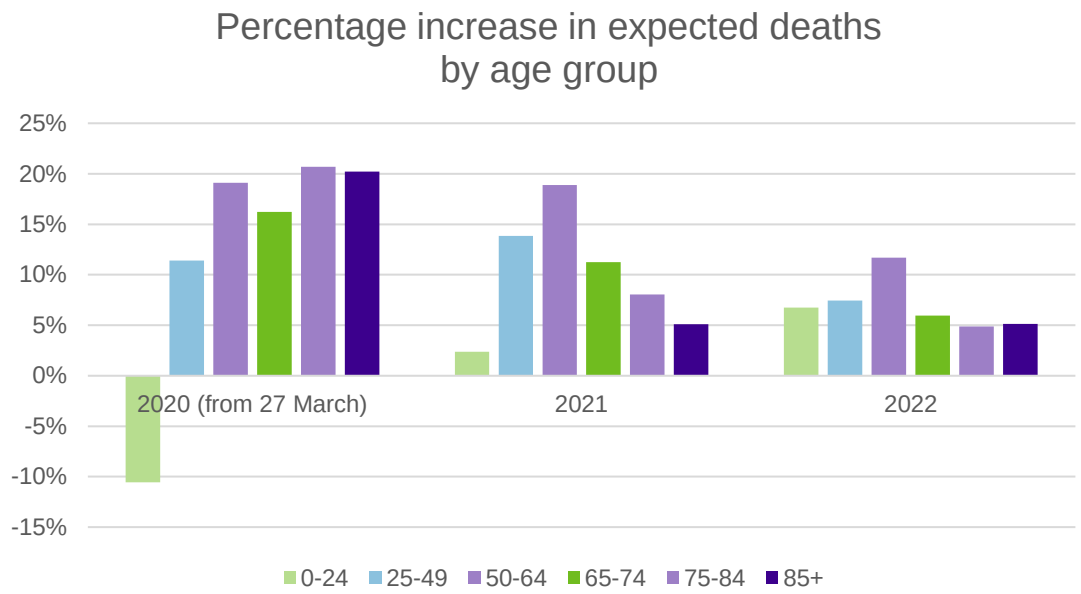




Source: Office for Health Improvement and Disparities (Excess mortality in England dashboard).
Excess deaths are actual deaths minus expected deaths. Percentage increase in expected deaths is actual deaths divided by expected deaths.

- Higher excess mortality in more deprived groups throughout 2020 and 2021 at national level
- Note: we did not see this differential in the Club Vita data for 2020 and 2021
- No clear difference in 2022

# Excess deaths split by age (England)




Source: Office for Health Improvement and Disparities (Excess mortality in England dashboard).
Excess deaths are actual deaths minus expected deaths. Percentage increase in expected deaths is actual deaths divided by expected deaths.

- Higher excess mortality in older age groups in 2020 (at national level)
- Higher excess mortality in 50-64 year-olds in 2021 and 2022

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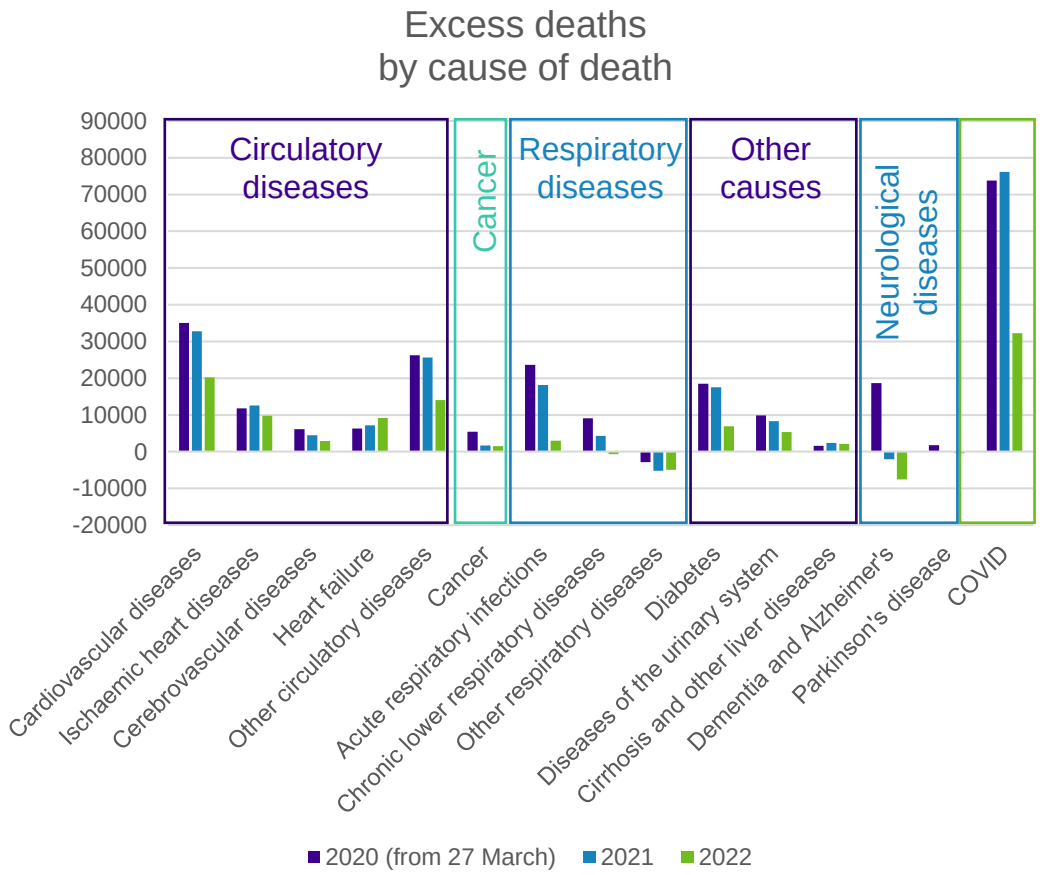
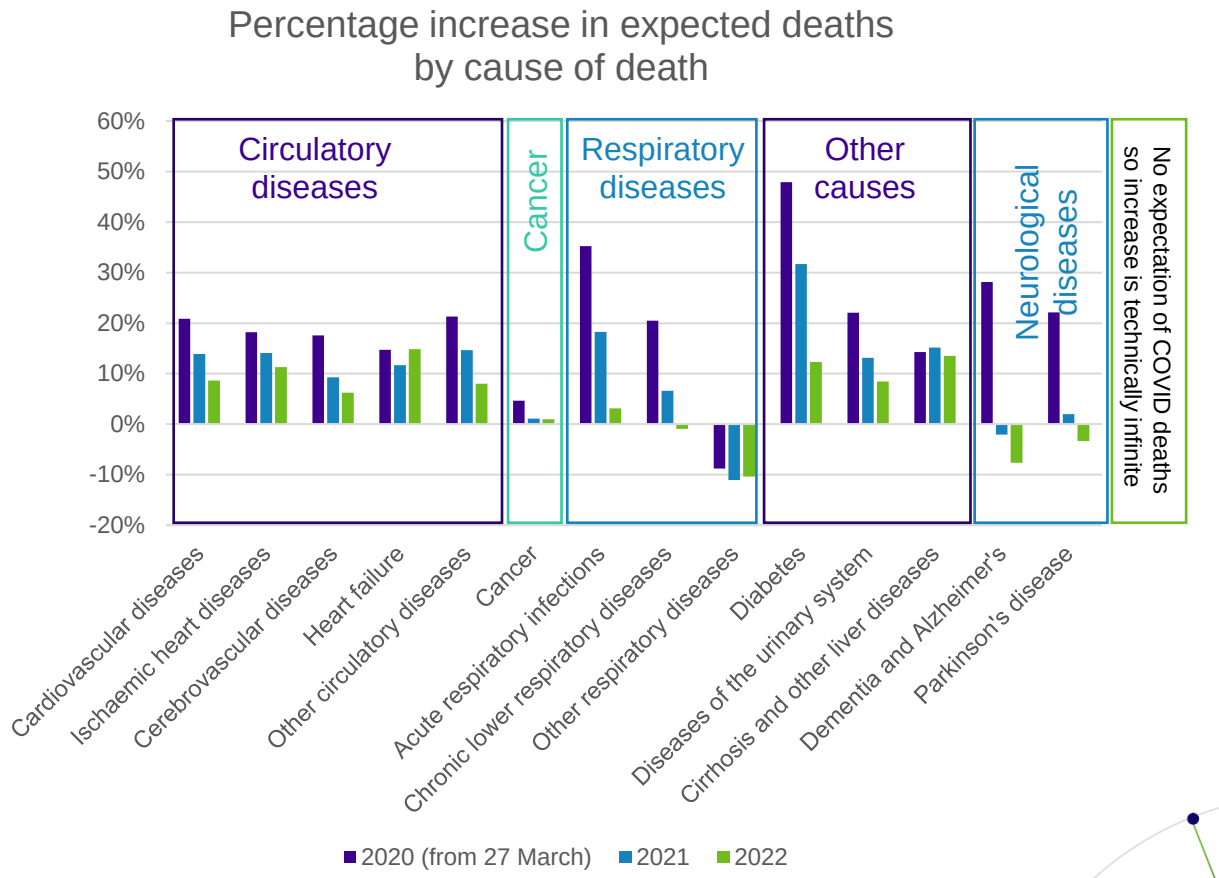
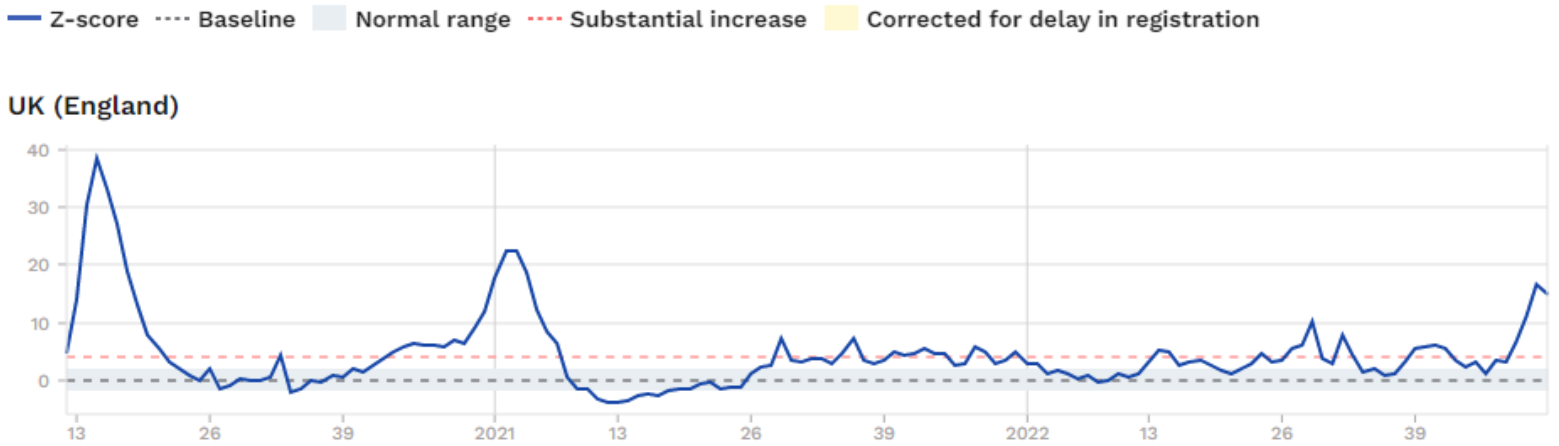
# Excess deaths split by cause (England)



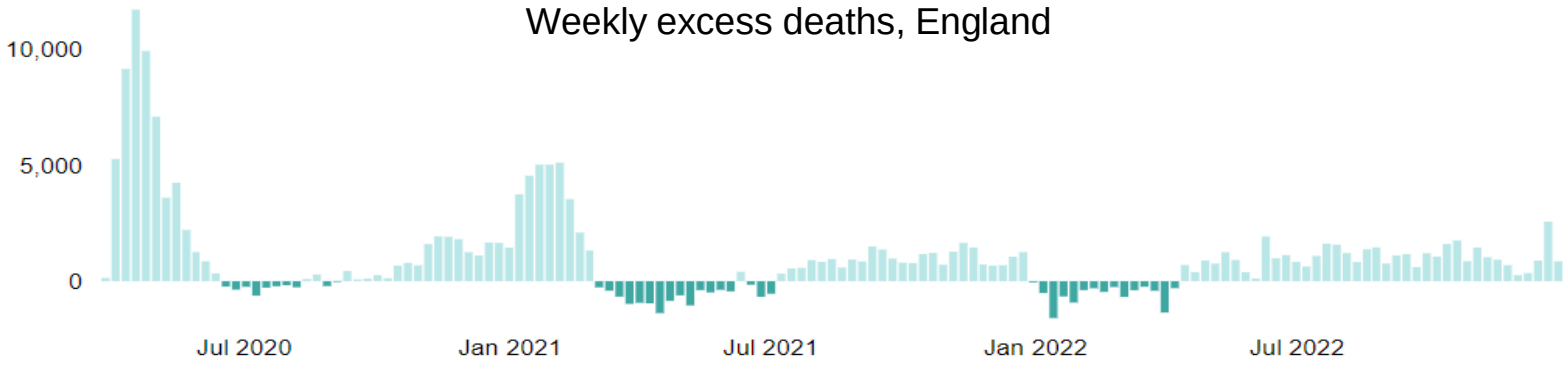




Source: Office for Health Improvement and Disparities (Excess mortality in England dashboard). Excess deaths are actual deaths minus expected deaths. Percentage increase in expected deaths is actual deaths divided by expected deaths. Expected deaths and actual deaths are for the identified conditions as the underlying cause. It is possible for more than one cause of death to be identified as the underlying cause. Each cause of death is modelled separately.

# EuroMOMO comparison data



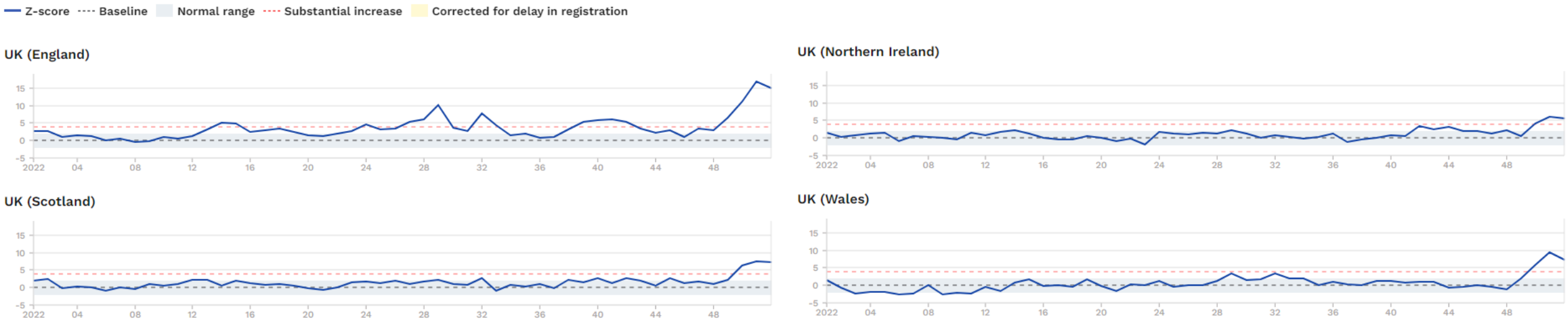

Source: EuroMOMO https://www.euromomo.eu/graphs-and-maps/




Source: Office for Health Improvement and Disparities (Excess mortality in England dashboard)

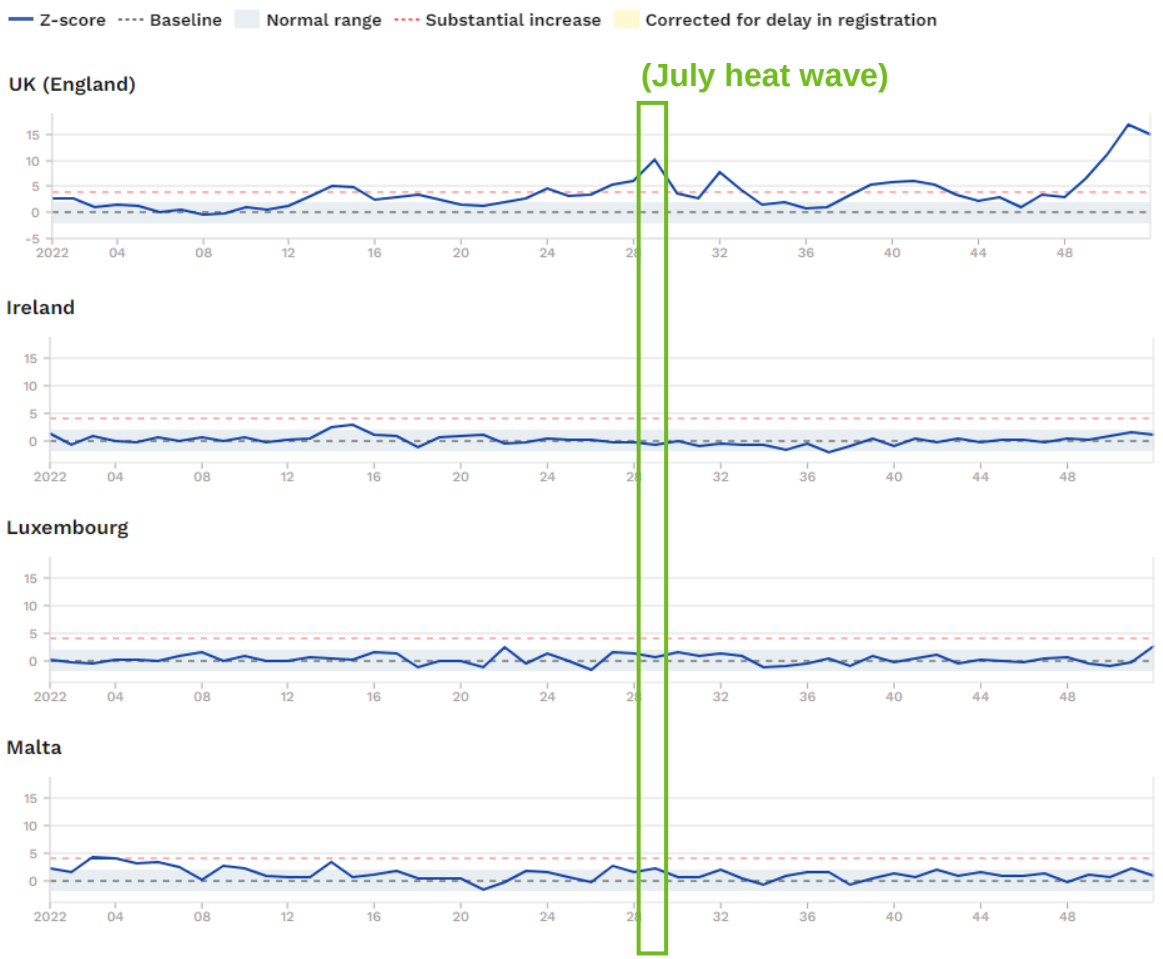
- The European Mortality Monitoring Project collects data from 27 contributing countries.
- They use “Z-scores” to enable comparisons across different countries and time periods.
- “Z-score” = excess deaths / standard deviation of deaths around the expectation

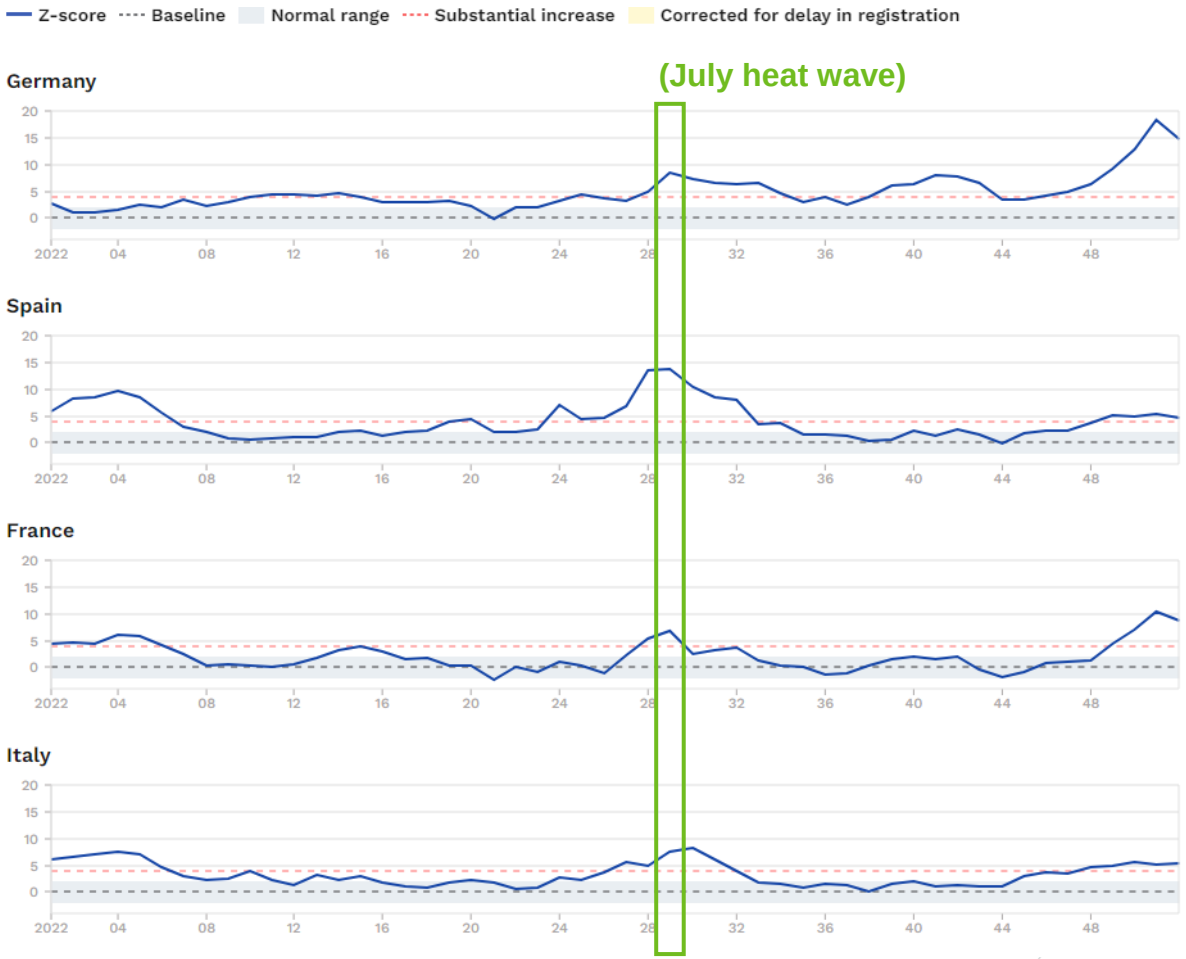
# EuroMOMO comparison data




Highest Z-scores in the UK seen in England throughout 2022

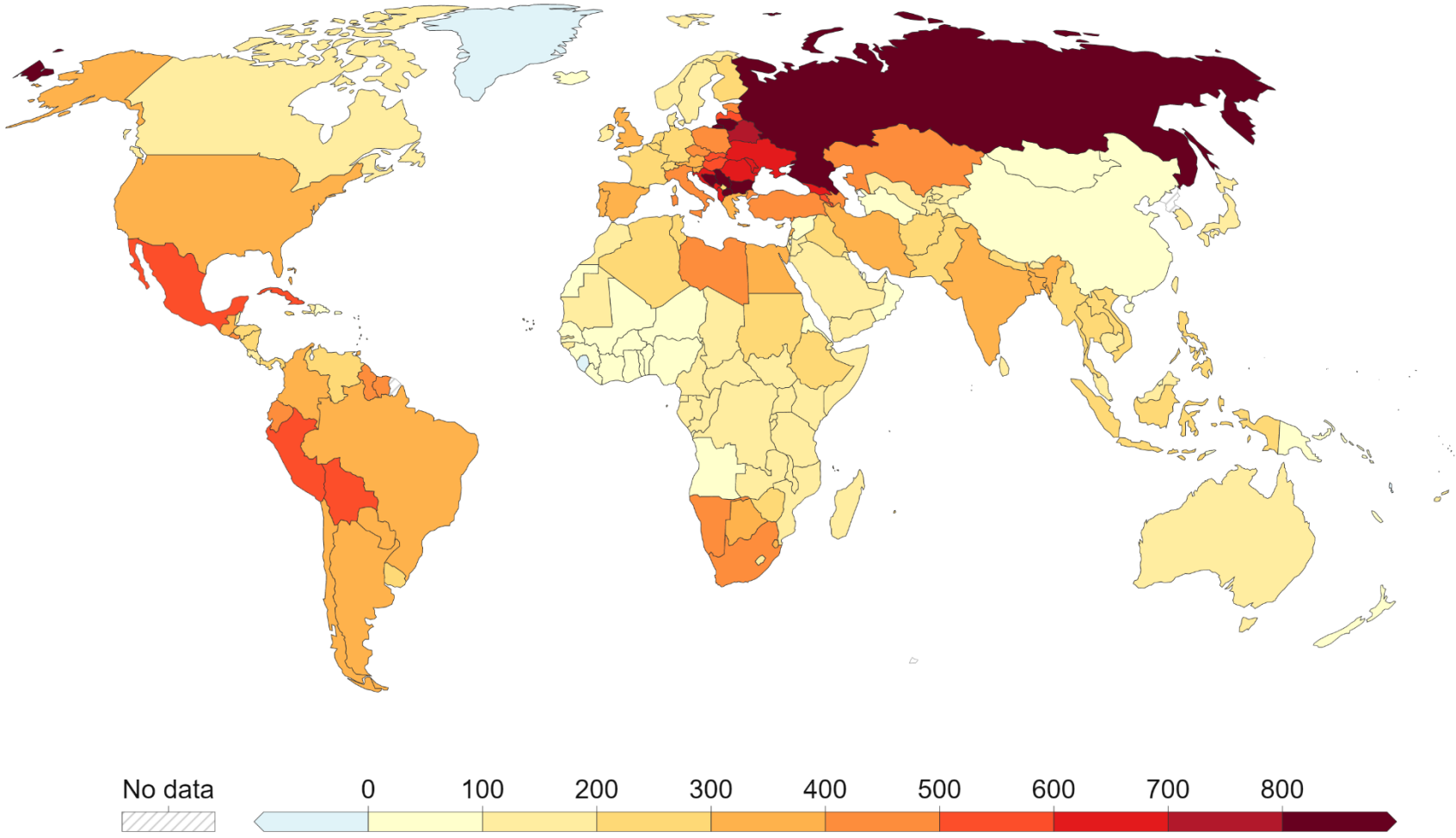
# EuroMOMO comparison data




England seeing higher Z-scores than much of Europe,
but not unique in seeing high excess deaths through 2022

# Global patterns of excess deaths in 2022



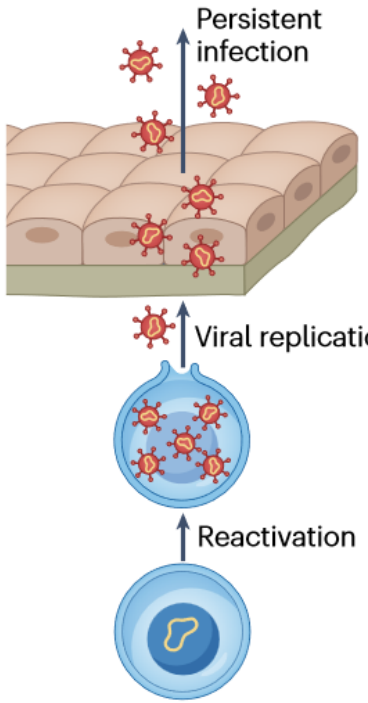

Source: The Economist, figures shown are deaths per 100,000

# What caused it and will it continue?

# Continuing impact of COVID

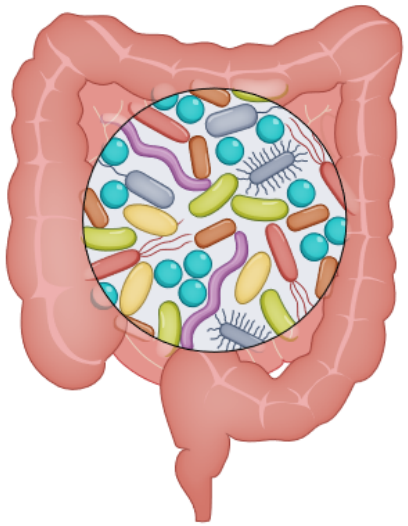
# Different theories on Long COVID

**Immune dysregulation**



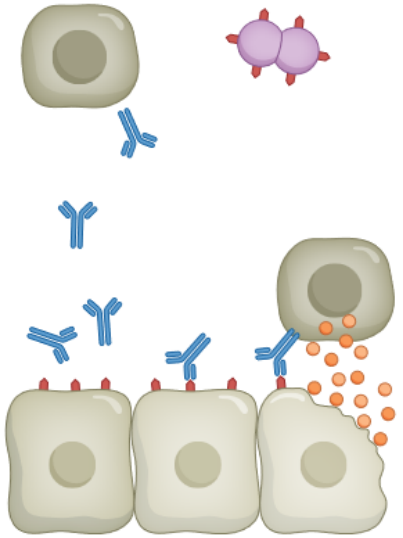

Immune dysregulation, with or without reactivation of underlying pathogens, including herpesviruses such as EBV and HHV-6

**Microbiota dysbiosis**



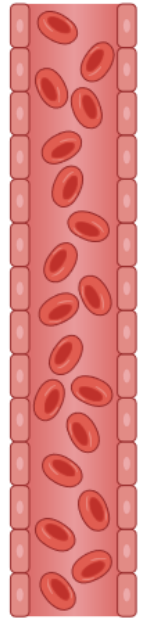
Impacts of SARS-CoV-2 on the microbiota and virome (including SARS-CoV-2 persistence)

**Autoimmunity and immune priming**



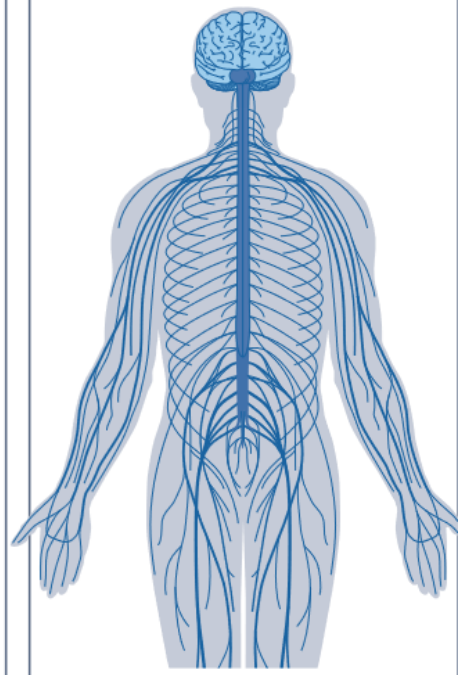
Autoimmunity and primed immune cells from molecular mimicry

**Blood clotting and endothelial abnormalities**



Microvascular blood clotting with endothelial dysfunction

**Dysfunctional neurological signalling**

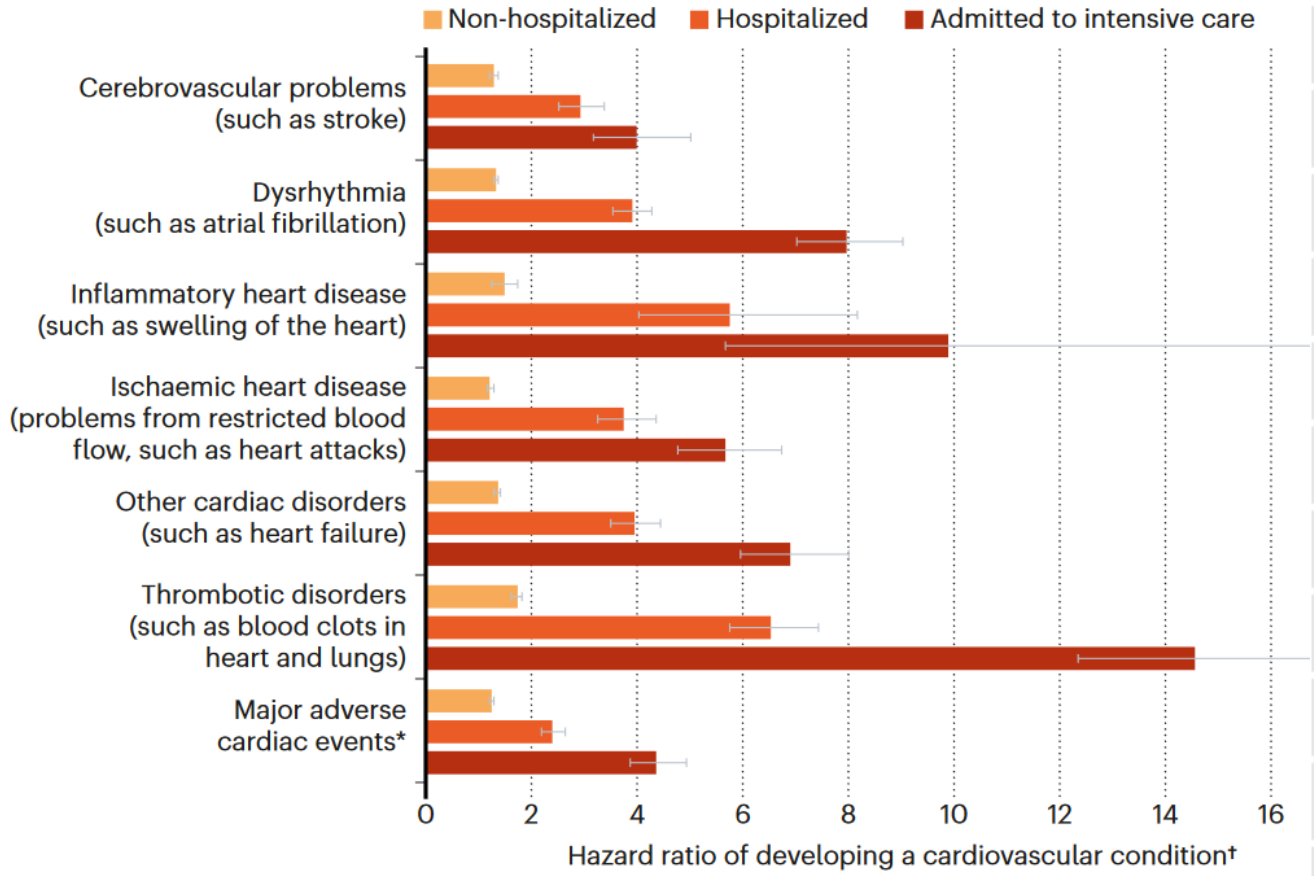


Dysfunctional signalling in the brainstem and/or vagus nerve

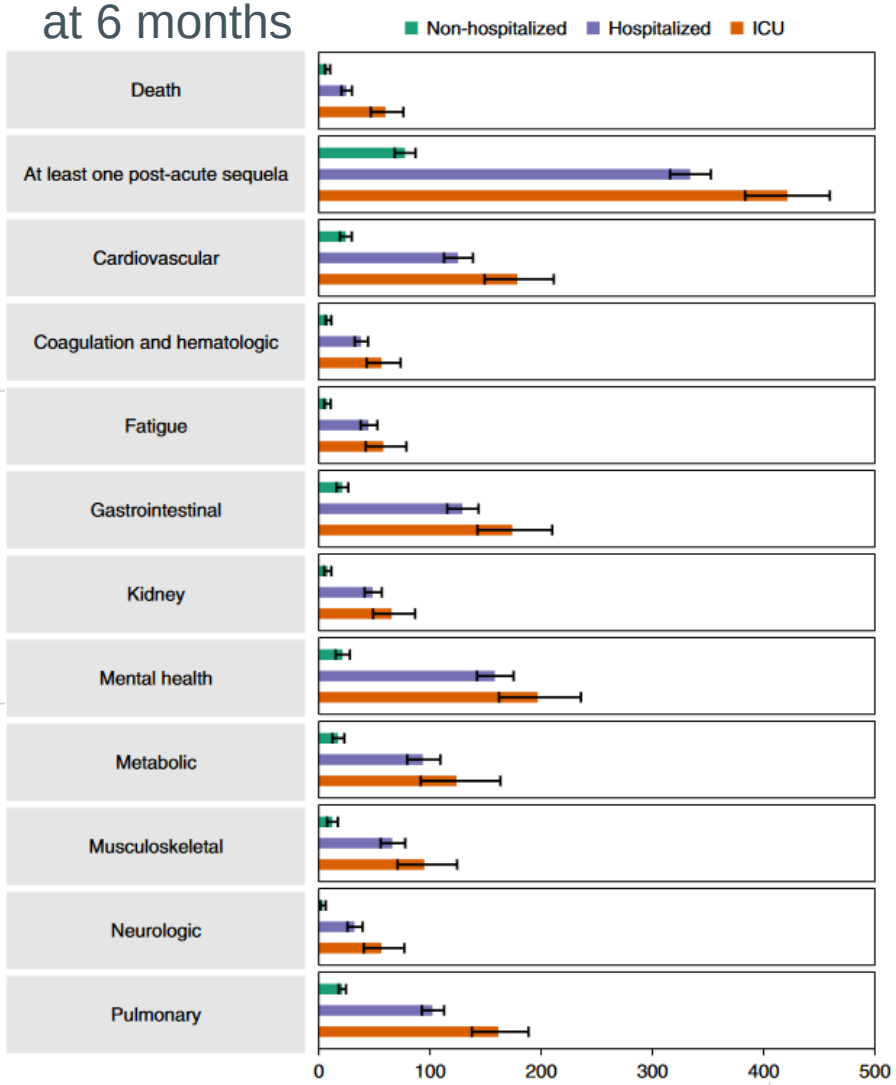
Source: Long COVID: major findings, mechanisms and recommendations (link)

# Long-term impact of COVID

## Increased risk of cardiovascular events after 12 months



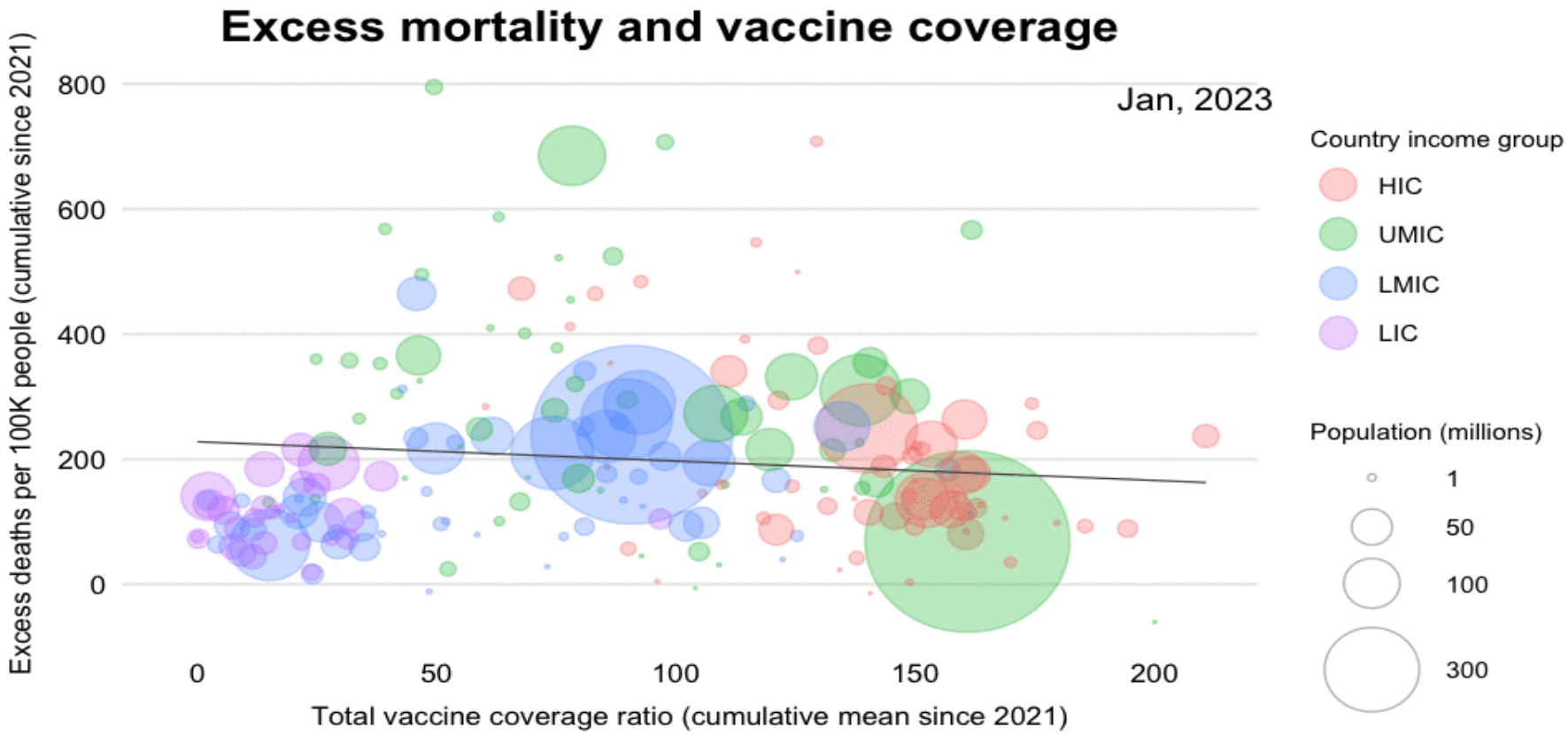

## Excess burden per 1,000 persons at 6 months




Source: Long-term cardiovascular outcomes of COVID-19 (link)

# Targeting COVID vaccines

## - causality demands correlation, correlation does not prove causality




Source: Economist; OWID; WPP. Updated: 2023-02-05. Latest: pandem-ic.com.
Note: Excess death rates: mid-point estimates by The Economist and are cumulative since start of 2021. Total vaccine coverage ratio: adjusted primary doses and booster by 100 people (with primary doses converted into 2-dose equivalents) and calculated as a cumulative mean since start of 2021. Line: population-weighted regression. Color: World Bank income groups. Time progresses at 14-day intervals.

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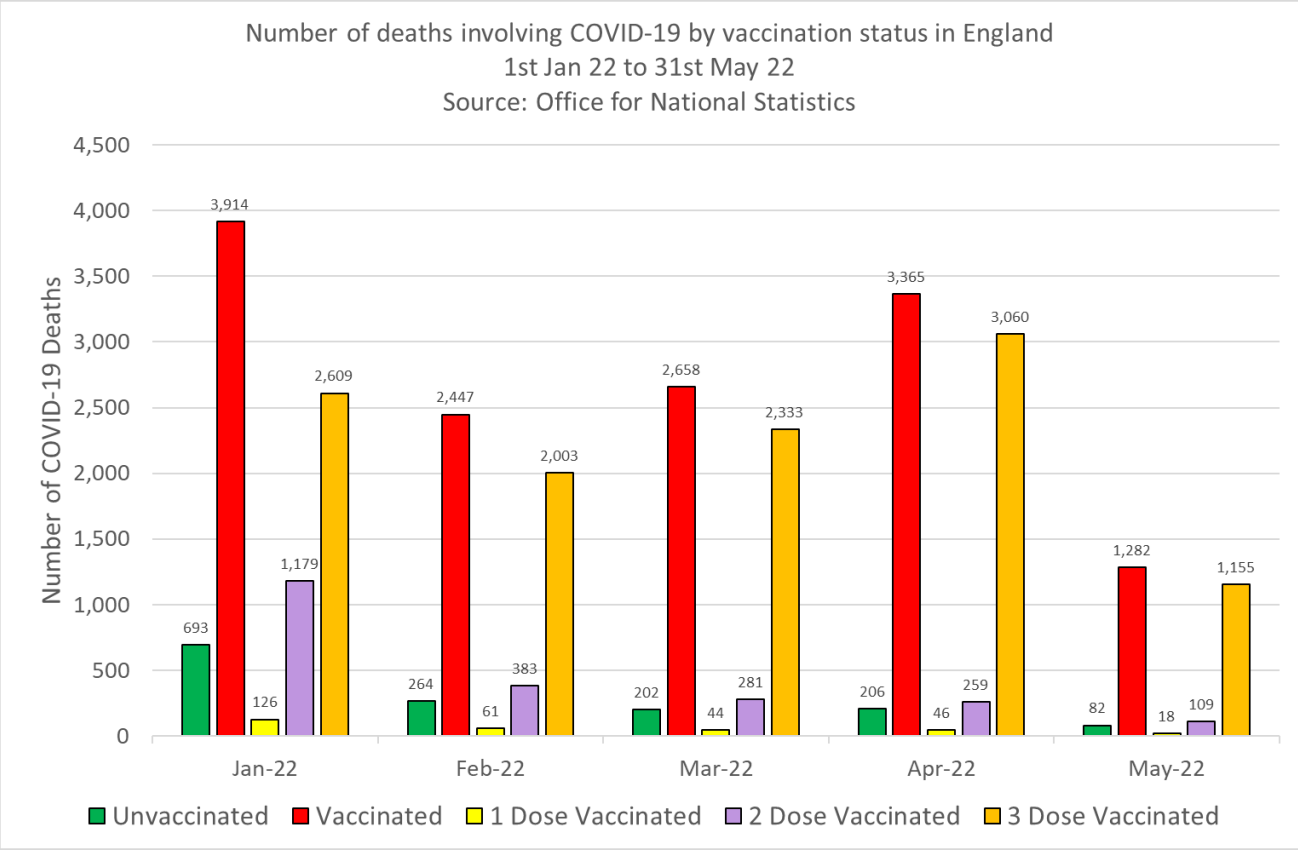
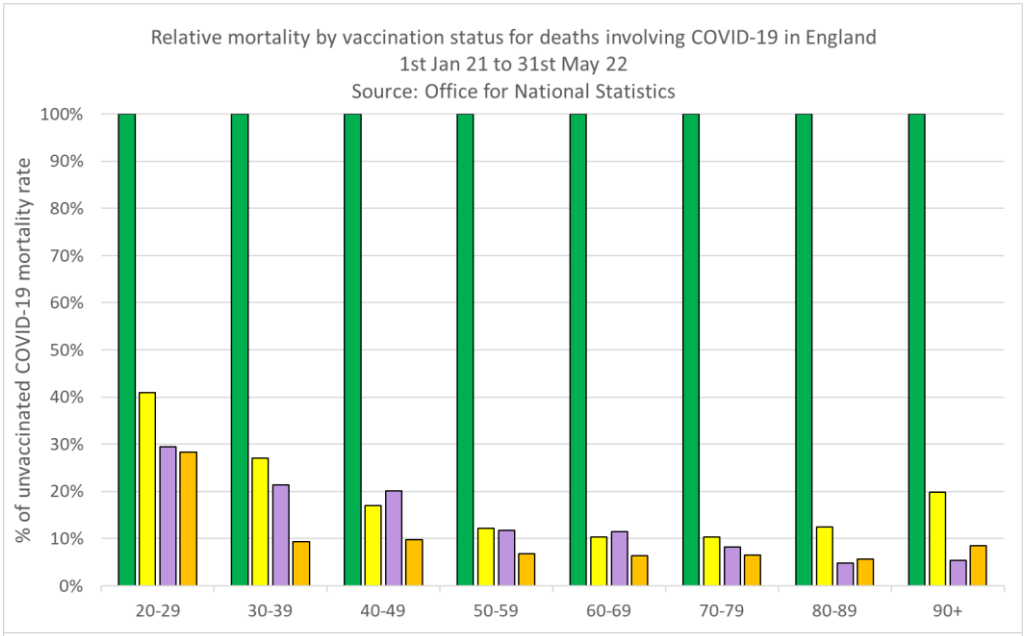
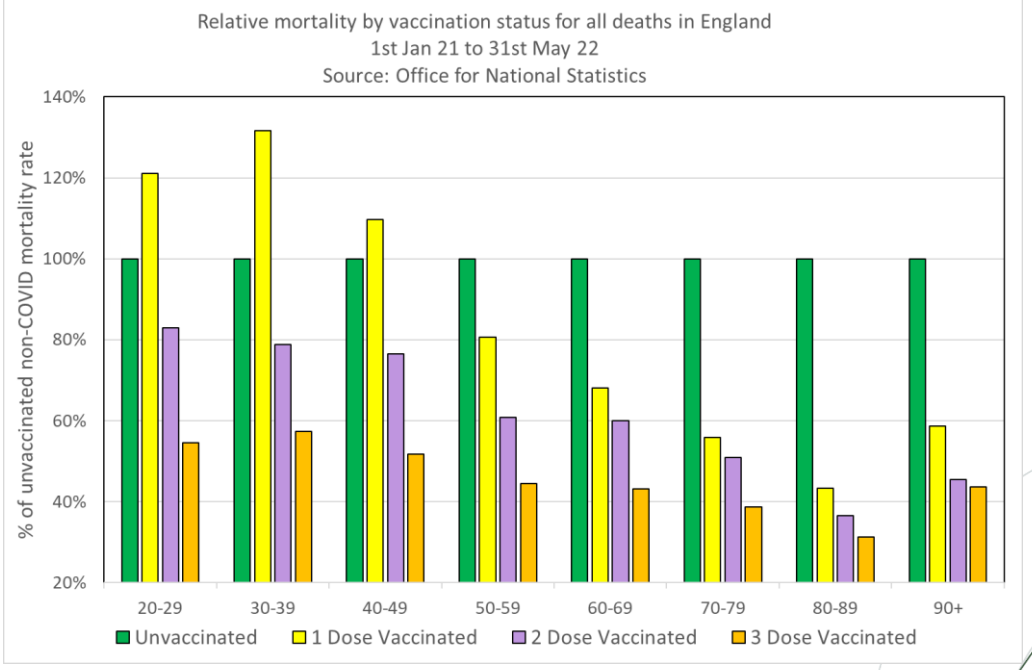
Source: pandem-ic.com

# Targeting COVID vaccines
## - data manipulation 101




Source: ONS deaths involving COVID-19 by vaccination status

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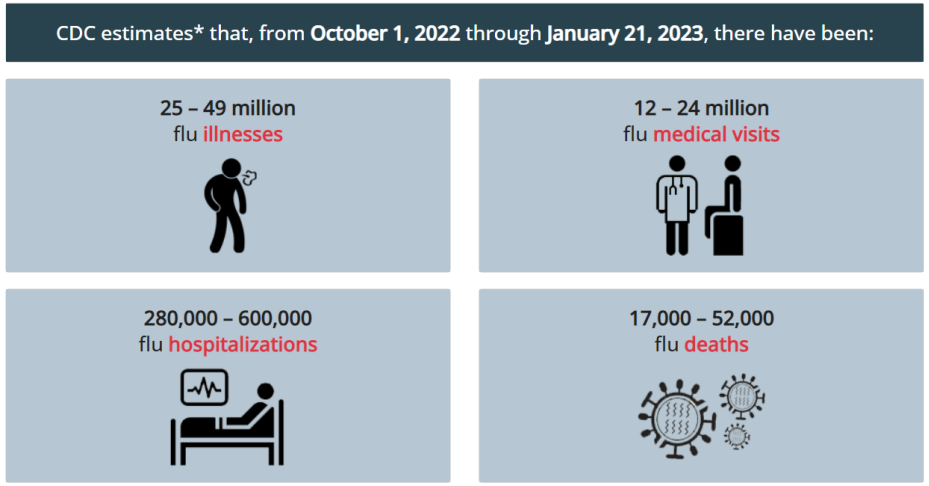
# Return of influenza

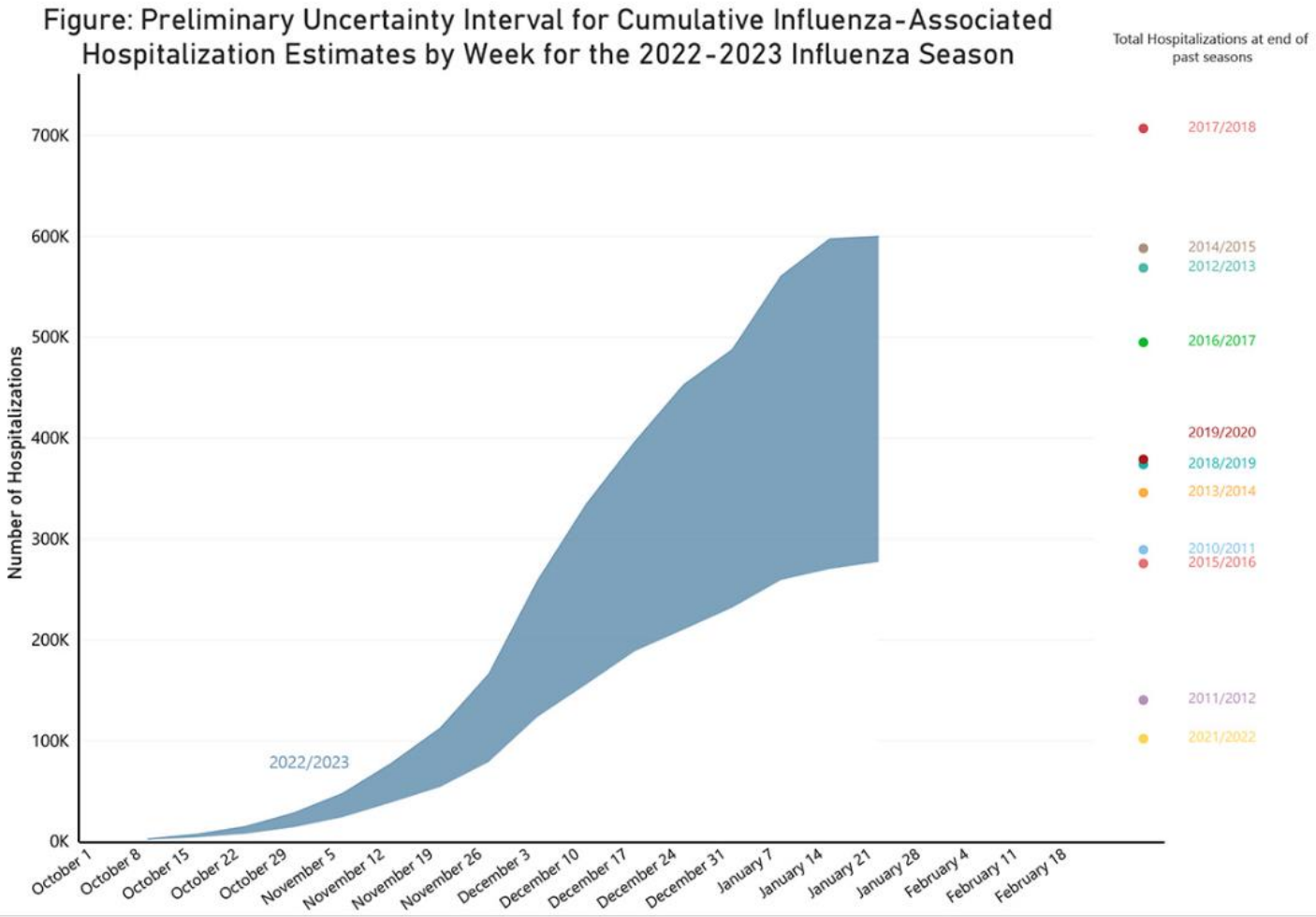
# Contribution from influenza - learnings from USA

This year's flu vaccine is expected to be 50% effective on average, but very much lower for older ages



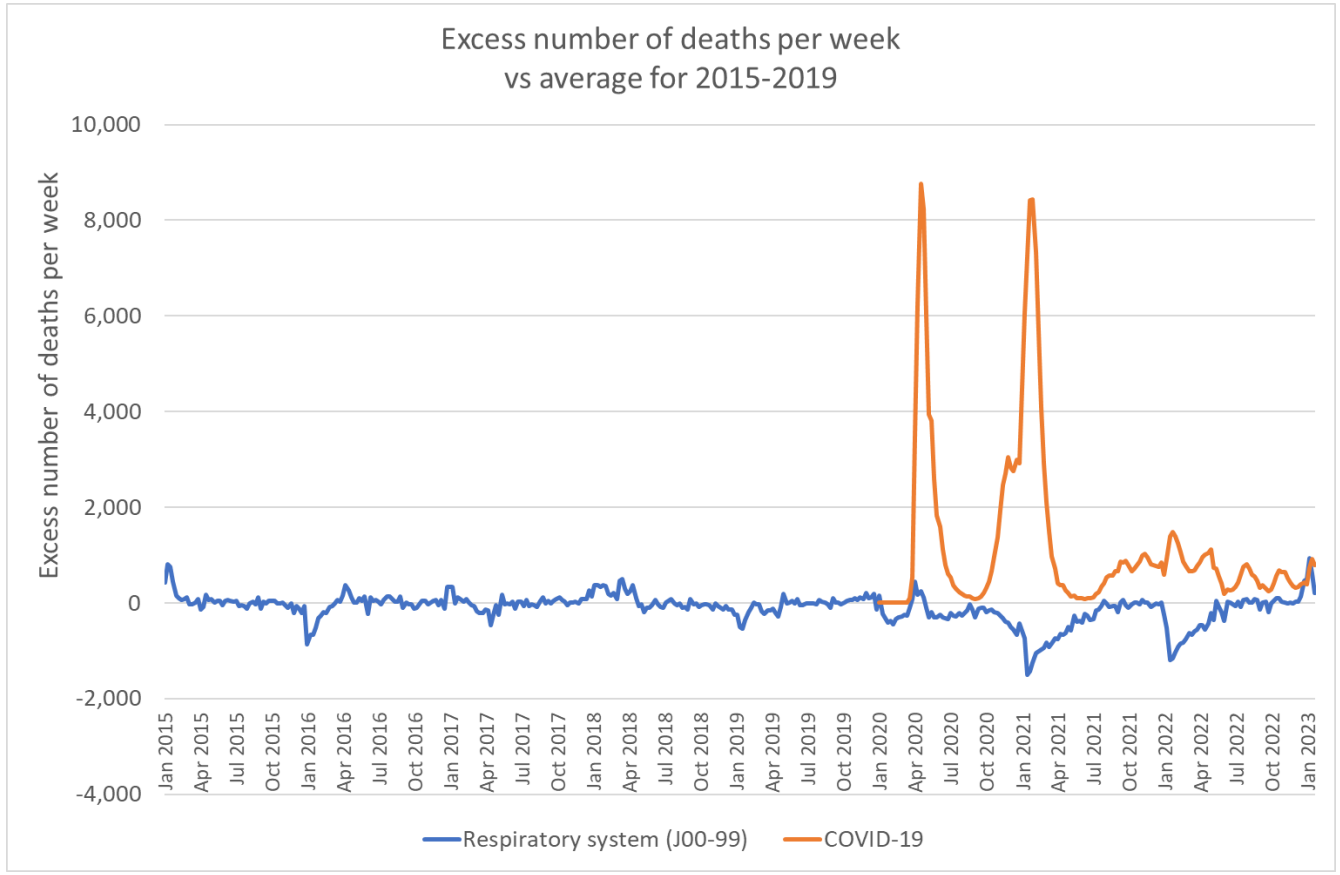

Source: Preliminary in-season flu estimates (link)

| Age | Vaccine effectiveness 2021/2 |
|---|---|
| <8 yrs | 17% |
| 9-17 yrs | 14% |
| 18-49 yrs | 43% |
| 50-64 yrs | 16% |
| 65+yrs | 10% |



# Contribution from influenza – UK perspective

Excess deaths in influenza season up to week 3 2023: 2,842




Source: National flu and COVID-19 surveillance report: wk5 (link)

**Figure 10: Respiratory DataMart samples positive for influenza and weekly positivity (%) for influenza, England**

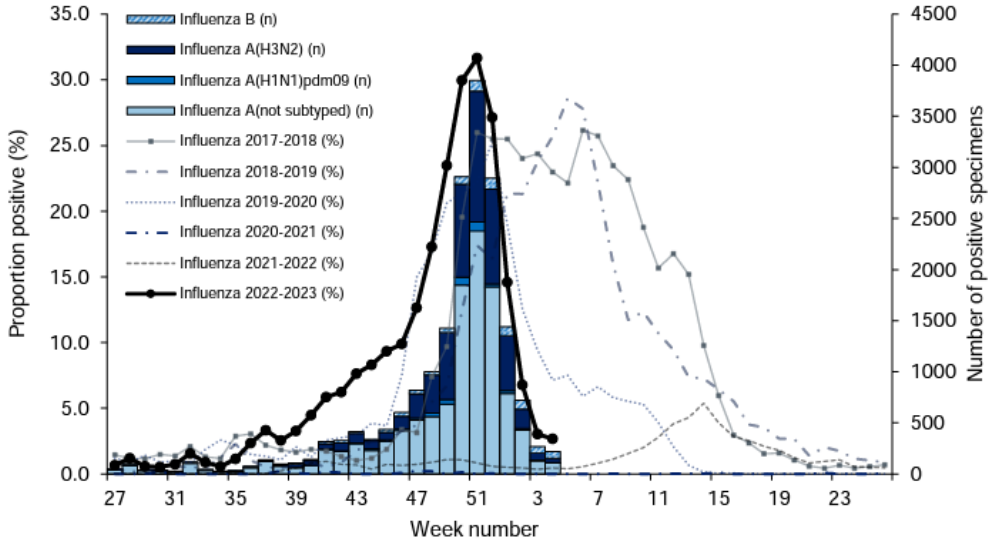
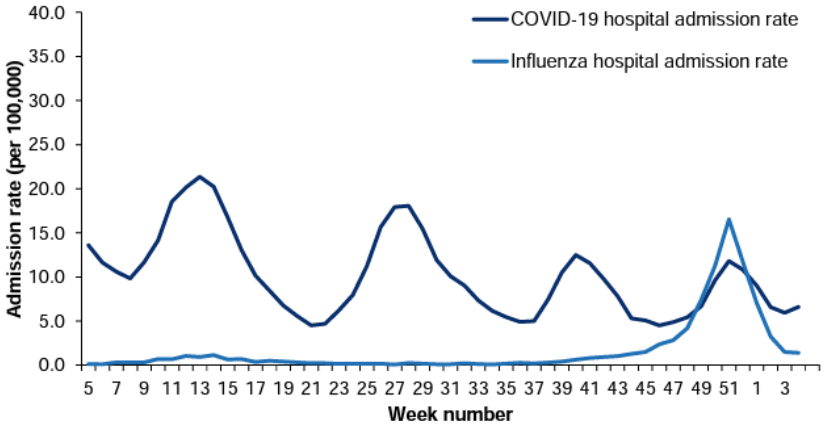
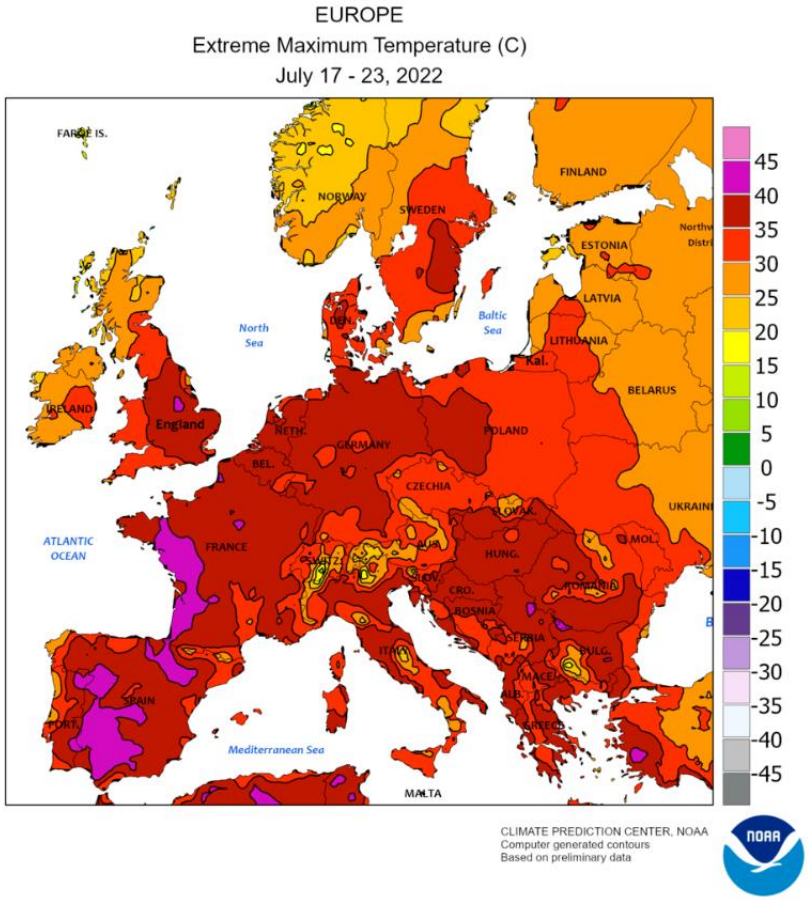



**Figure 35: Weekly overall hospital admission rates of new COVID-19 and influenza positive cases per 100,000 population reported through SARI Watch, England**

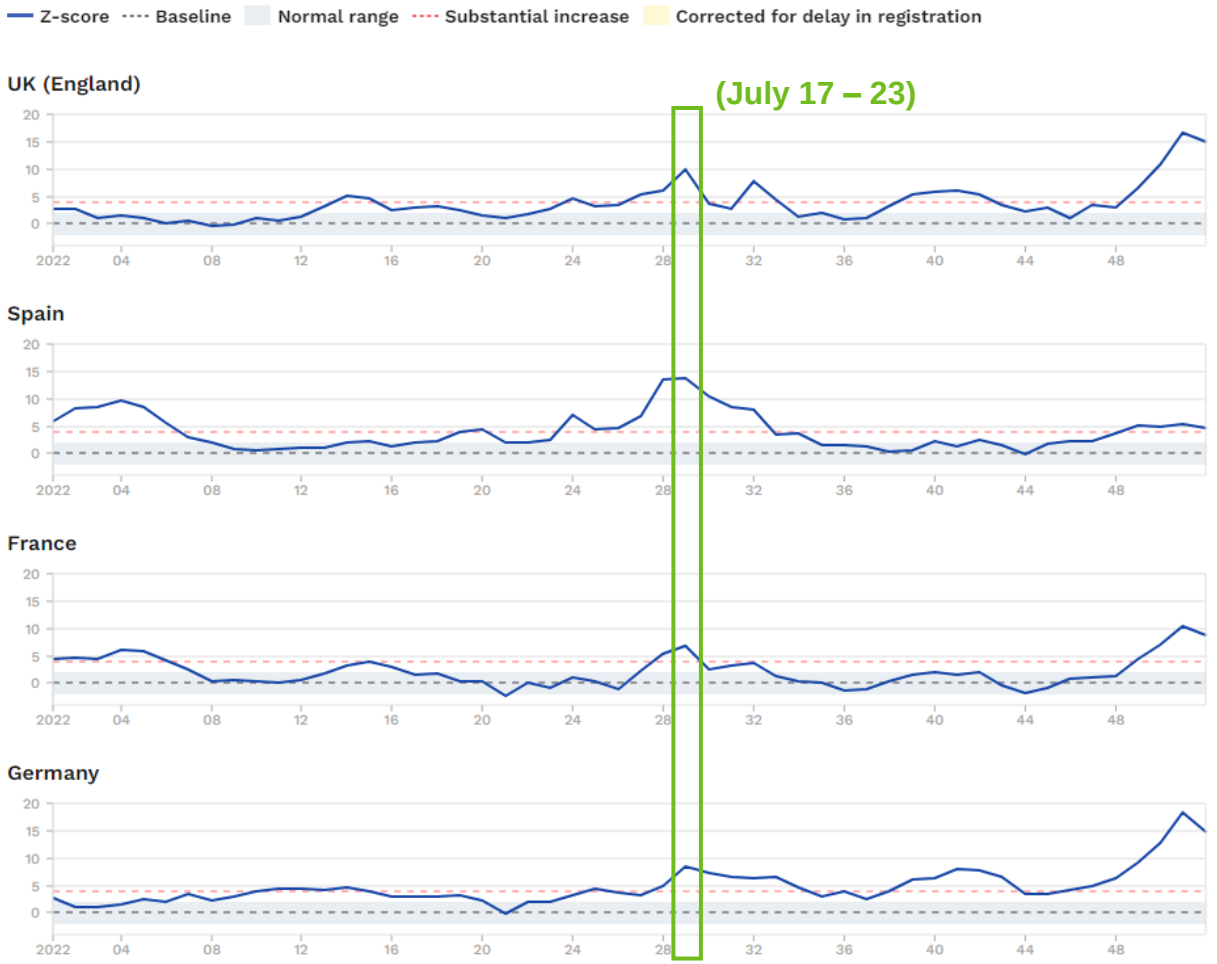


# Extreme heat

# July 2022 heat wave in Europe




Source: National Weather Service Climate Prediction Center https://www.cpc.ncep.noaa.gov/products/JAWF_Monitoring/Europe/temperature.shtml




Source: Euromomo https://www.euromomo.eu/graphs-and-maps/

Periods of extreme heat could have caused some excess deaths

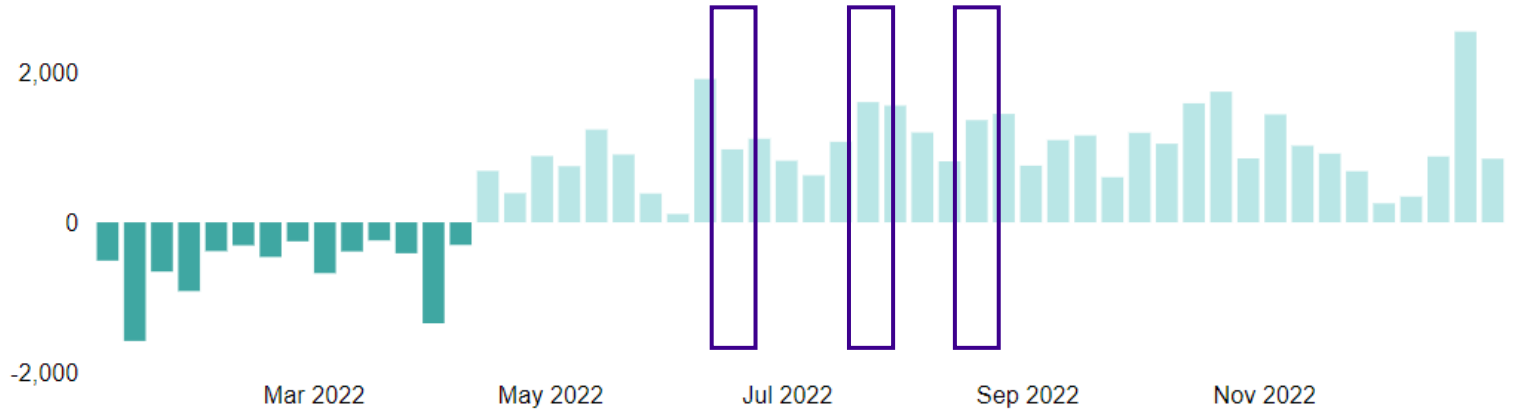
# Heat waves

The Met Office issued extreme heat weather warnings in the UK during the following periods:

- 15-17 June – highest temperature **32.7 °C** (90.9 °F)
- 17-19 July – highest temperature **40.3 °C** (104.5 °F)
- 9-13 August – highest temperature **34.2 °C** (93.6 °F)

Sources: Met Office (www.metoffice.gov.uk);
Accuweather (https://www.accuweather.com);

Weekly excess deaths, England (2022)

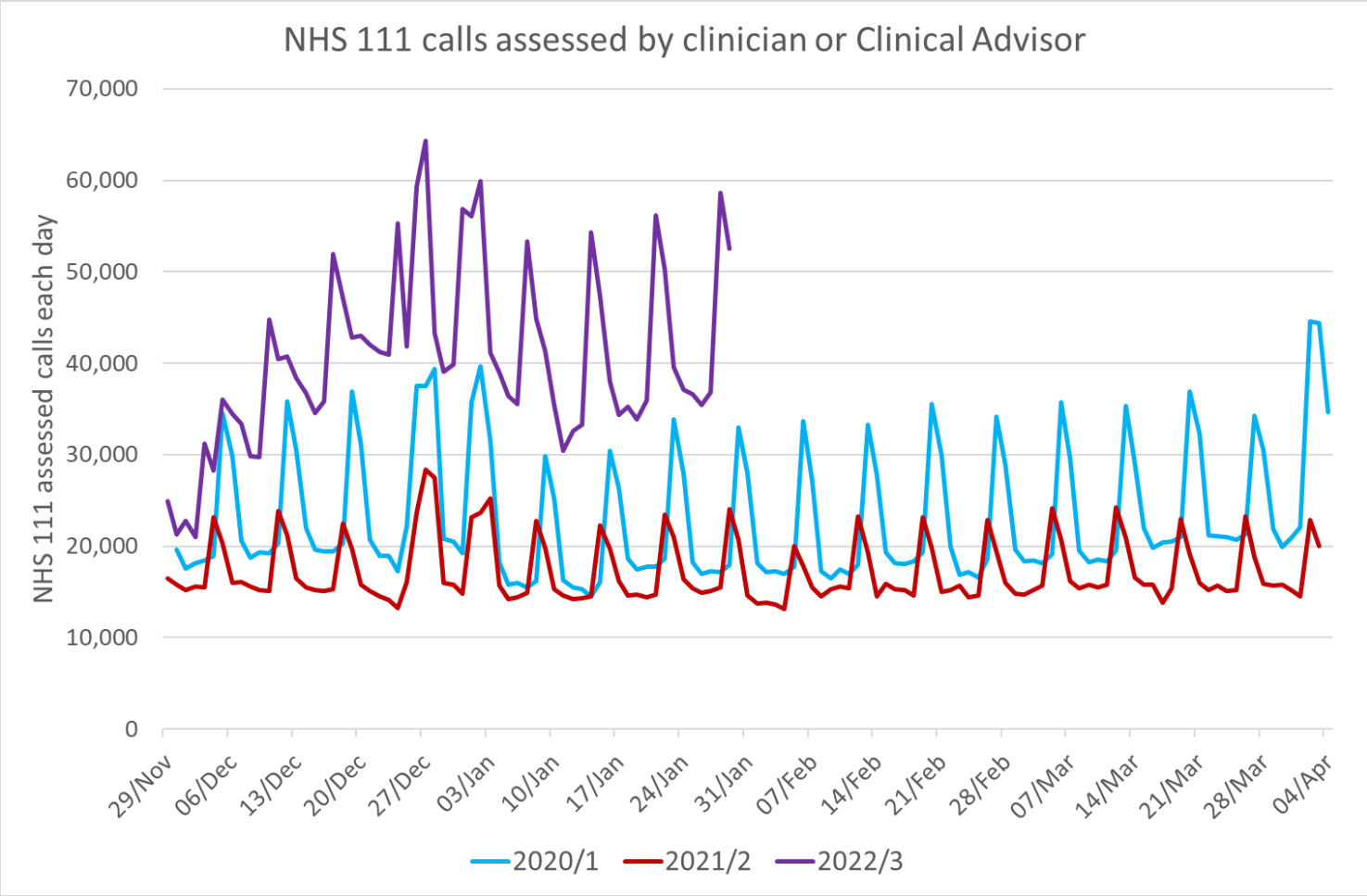



Source:
Office for Health Improvement and Disparities
(Excess mortality in England dashboard)

**Periods of extreme heat relatively short lived**
**How common will these periods of extreme heat be in the future?**

# Healthcare strains/disruption following pandemic

# Healthcare strains following COVID
## - indictors of growing medical need in community




Source: Urgent and Emergency Care Daily Situation Reports (link)

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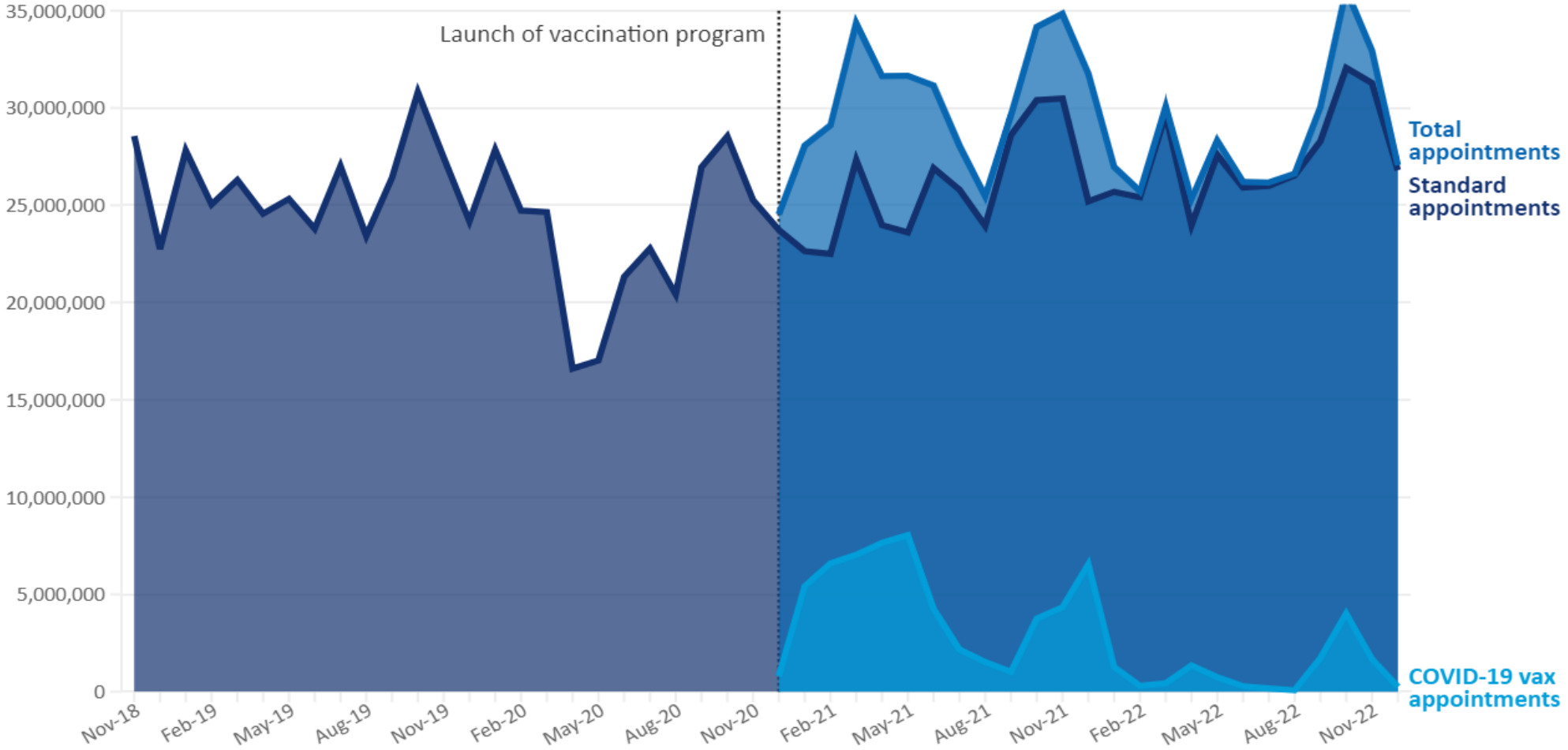
# Healthcare strains following COVID
## - growing demand for primary care services




Source: Appointments in General Practice (link)

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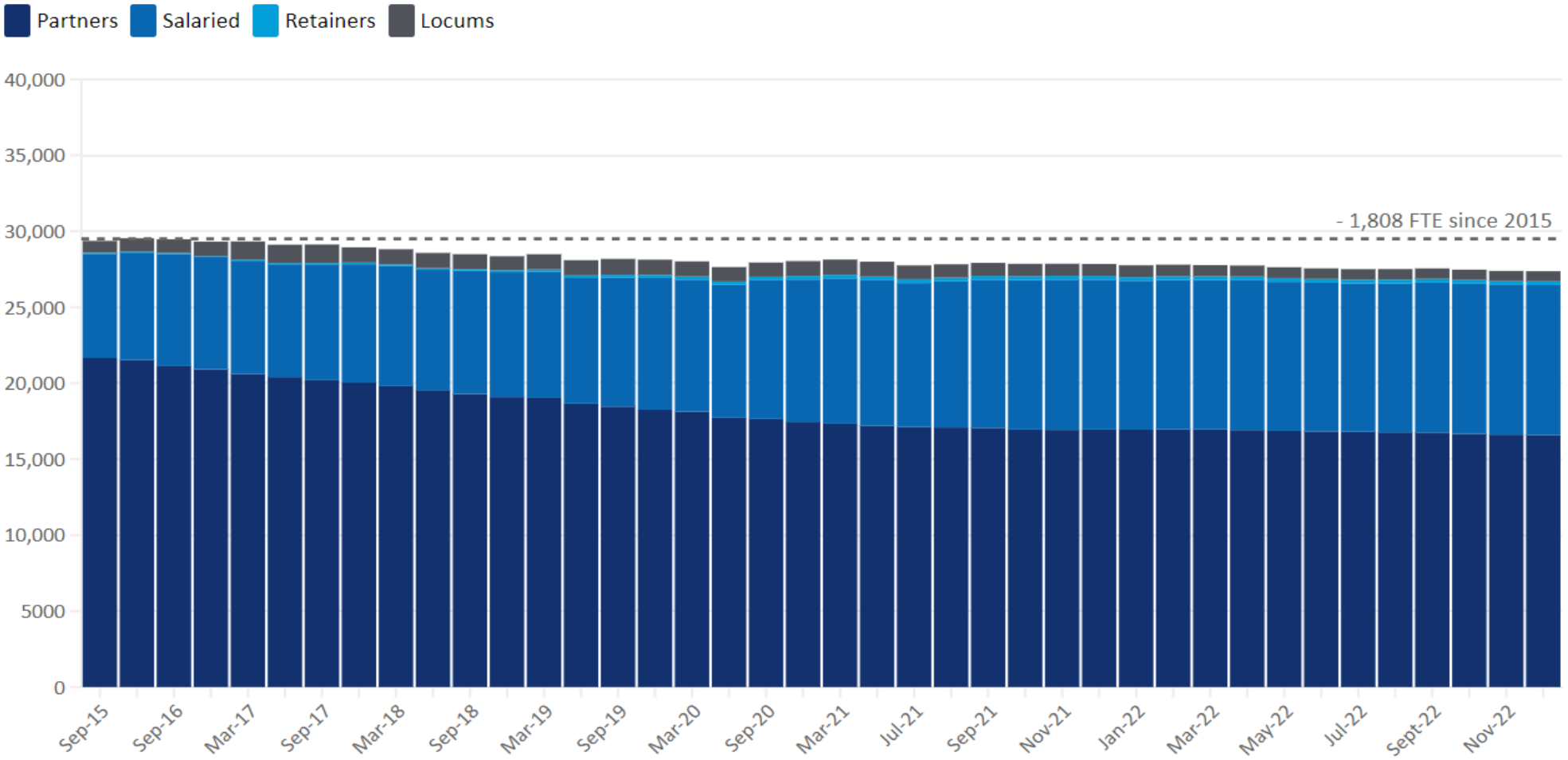
# Healthcare strains following COVID
## - falling numbers of General Practitioners




Source: NHS Digital General Practice Workforce Statistics (link)

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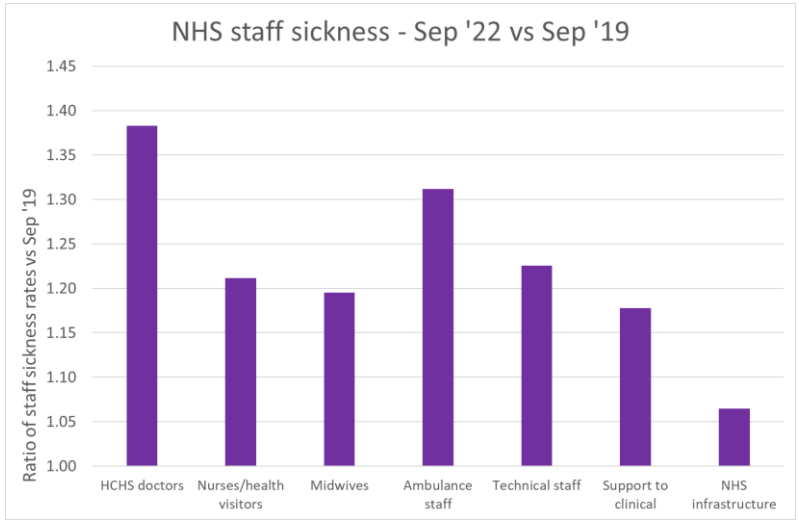
# Healthcare strains following COVID
## - reduced capacity across secondary health care sector

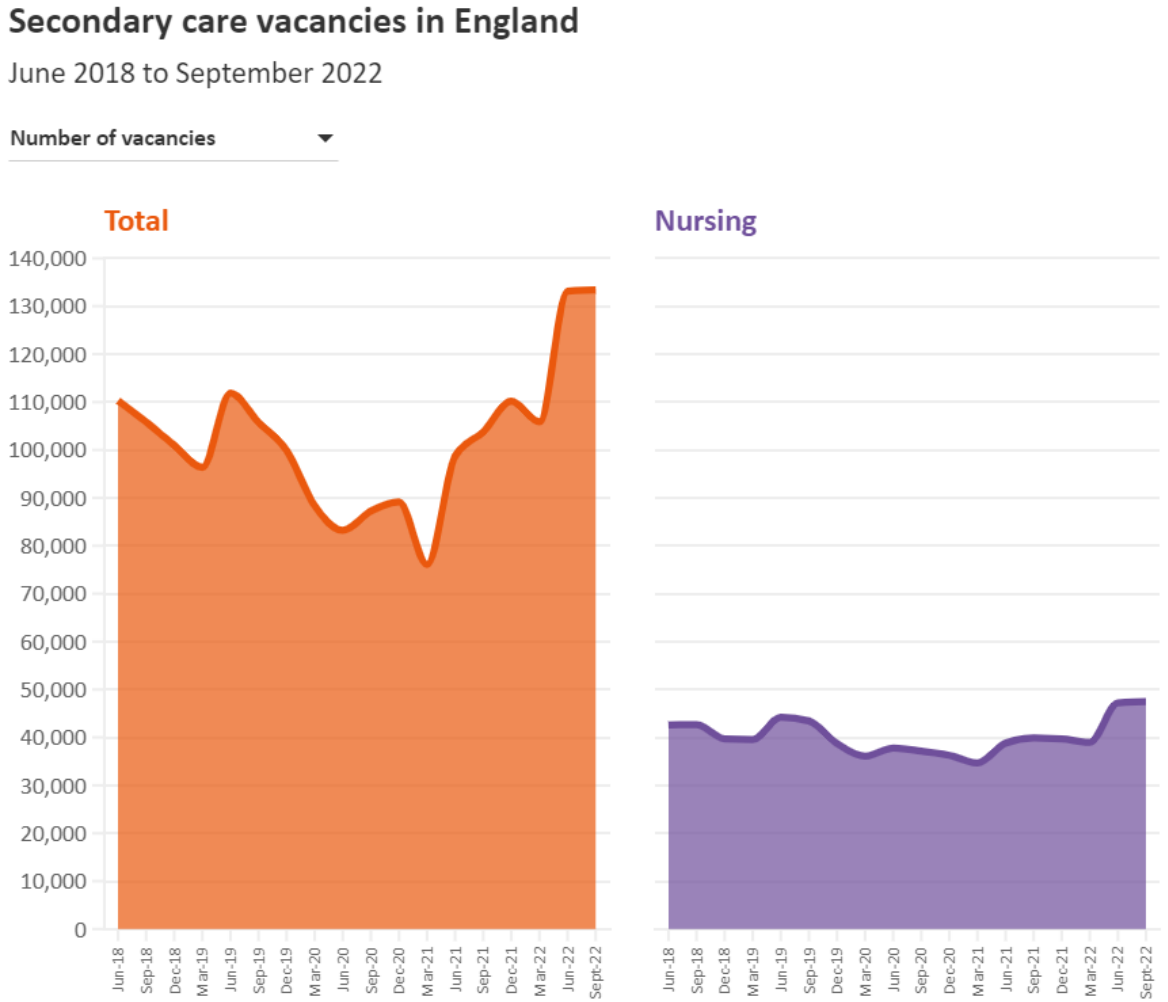
### Elective Operations – NHS England

Table 1: A Summary of the above results compared to previous quarters

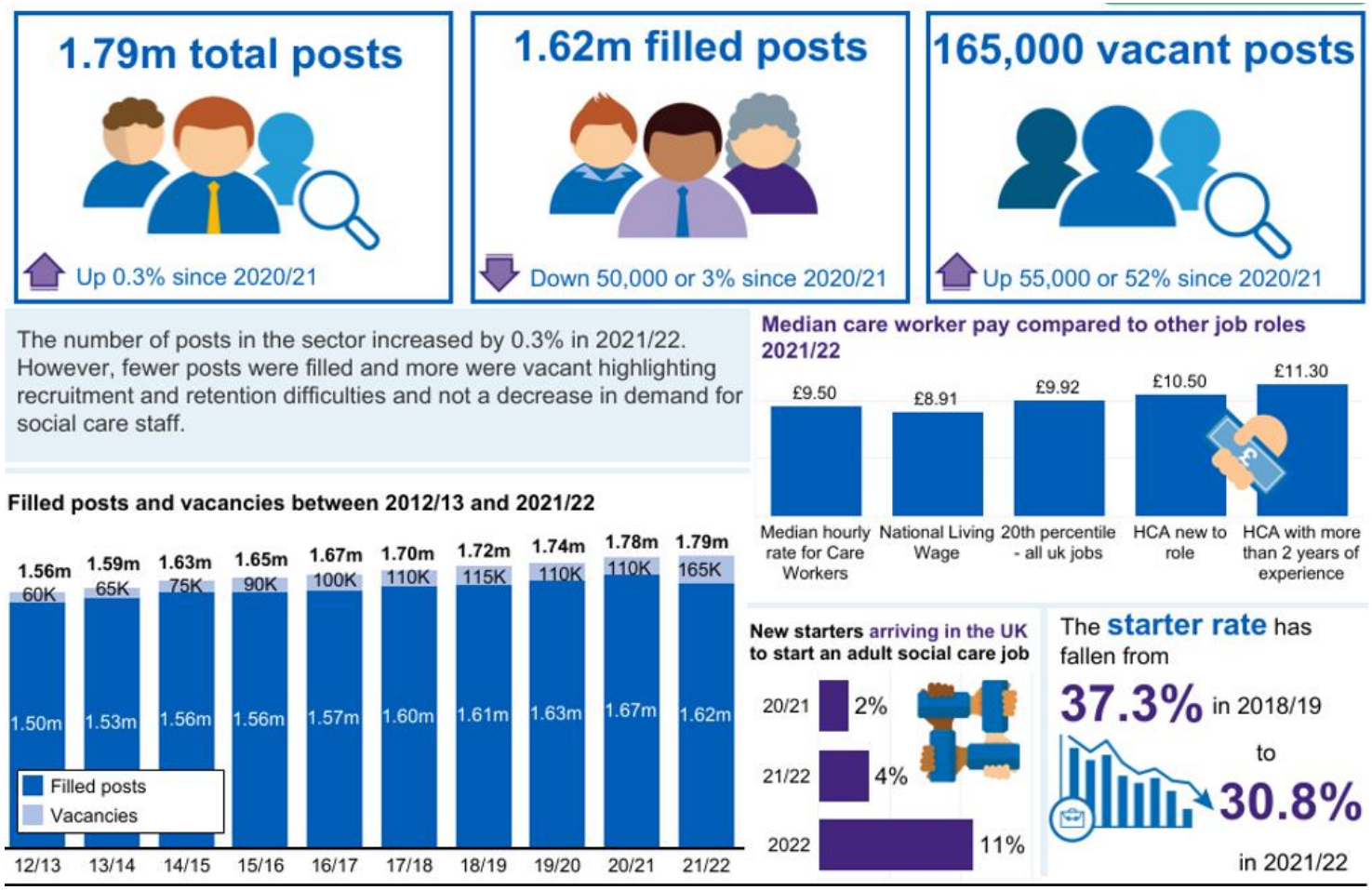
| Year | Quarter | Elective Spells | Breaches of Standard | Cancelled Operations | Breach Rate (%) | Cancelled Operations (%) |
|---|---|---|---|---|---|---|
| 2022/23 | Q2 | 1,863,910 | 4,149 | 19,439 | 21.3 | 1.0 |
| 2022/23 | Q1 | 1,783,056 | 4,145 | 17,579 | 23.6 | 1.0 |
| 2021/22 | Q4 | 1,748,645 | 4,015 | 17,477 | 23.0 | 1.0 |
| 2021/22 | Q3 | 1,745,939 | 4,603 | 19,338 | 23.8 | 1.1 |
| 2019/20 | Q3 | 2,044,739 | 2,138 | 23,503 | 9.1 | 1.1 |
| 2019/20 | Q2 | 2,046,888 | 1,548 | 20,961 | 7.4 | 1.0 |
| 2019/20 | Q1 | 1,990,164 | 1,730 | 19,969 | 8.7 | 1.0 |
| 2018/19 | Q4 | 1,999,288 | 2,157 | 21,931 | 9.8 | 1.1 |

Source: Cancelled elective operations (link)



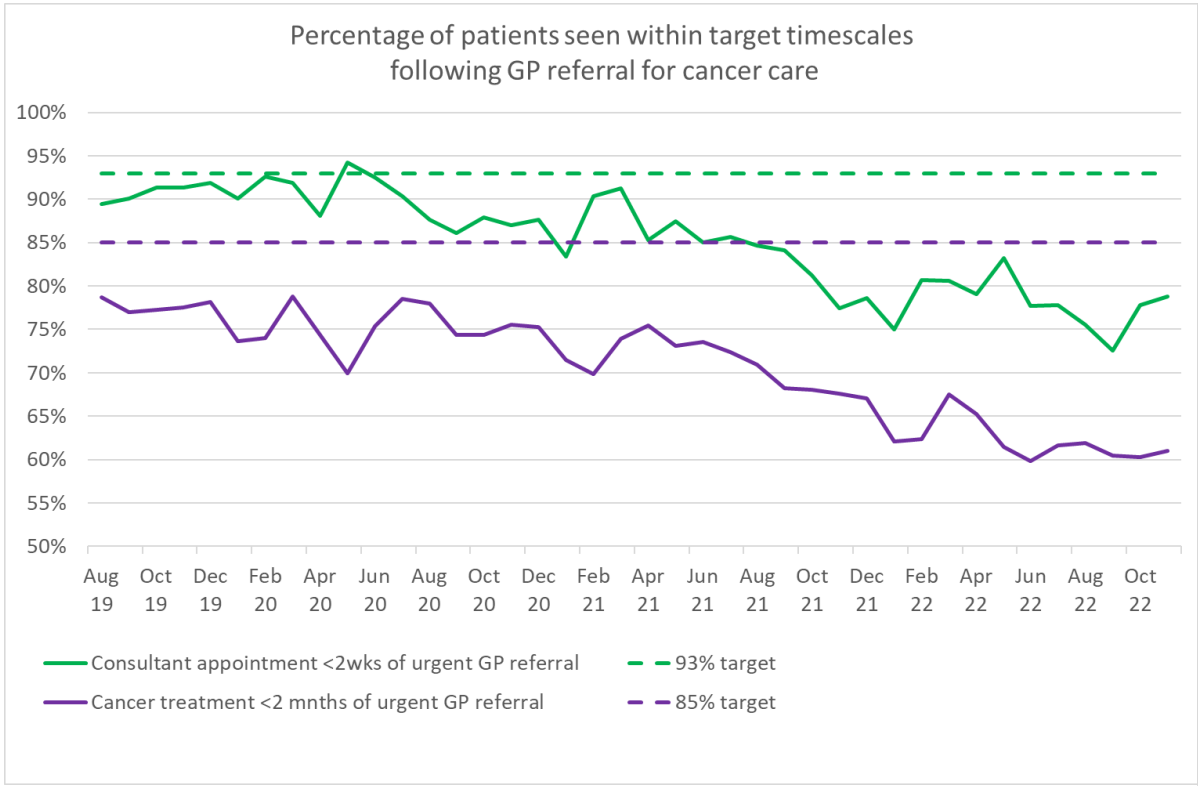



# Healthcare strains following COVID
## - reduced capacity across adult social care sector

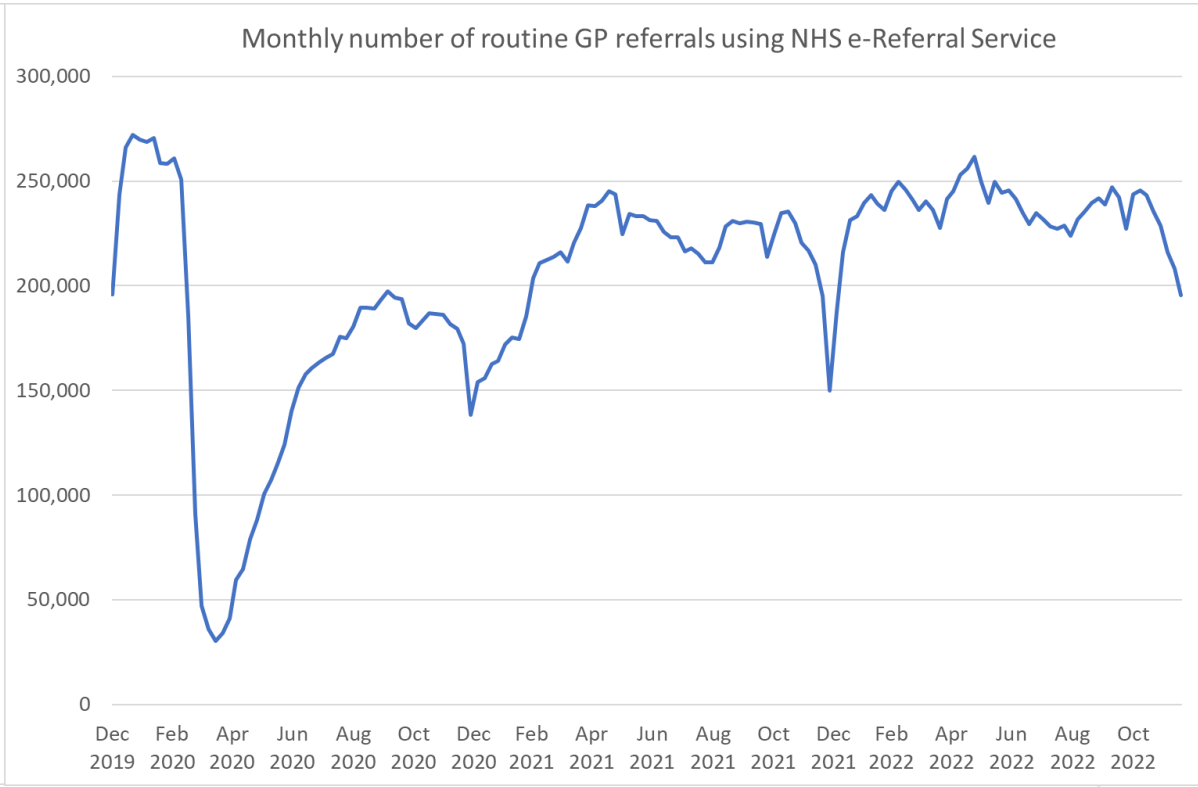



Source: Workforce intelligence (link)

# Healthcare strains following COVID
## - delays in diagnosis and treatment




Source: NHS England cancer waiting times (link)

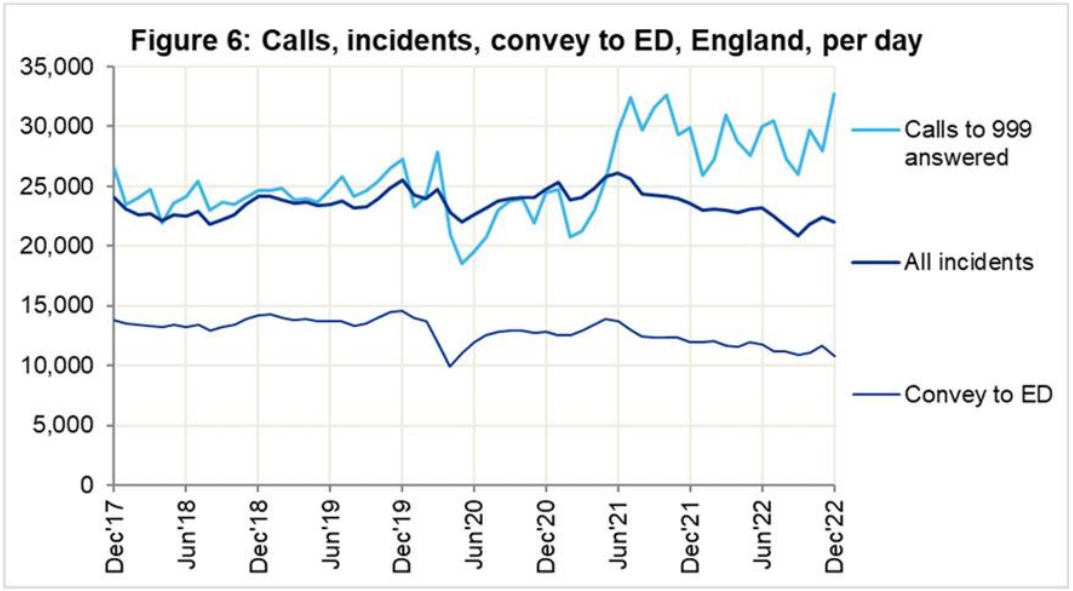



Source: NHS England e-Referral Services (link)

# Healthcare strains following COVID

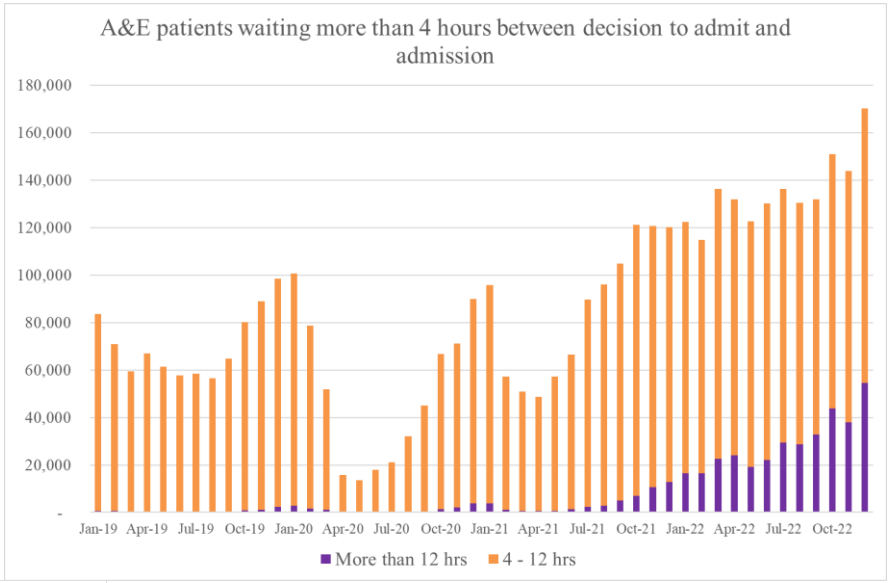
## - delays at different stages in the admission and discharge process

### Ambulance service



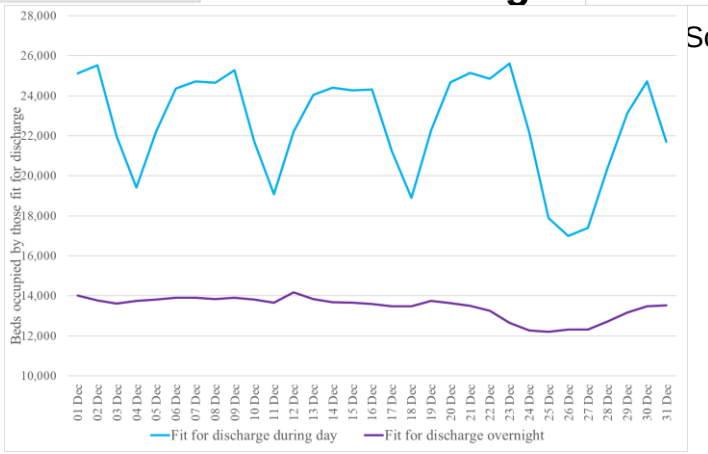

Source: Ambulance quality indicators data (link)

### Accident & Emergency




Source: A&E Attendances and Emergency Admissions (link)

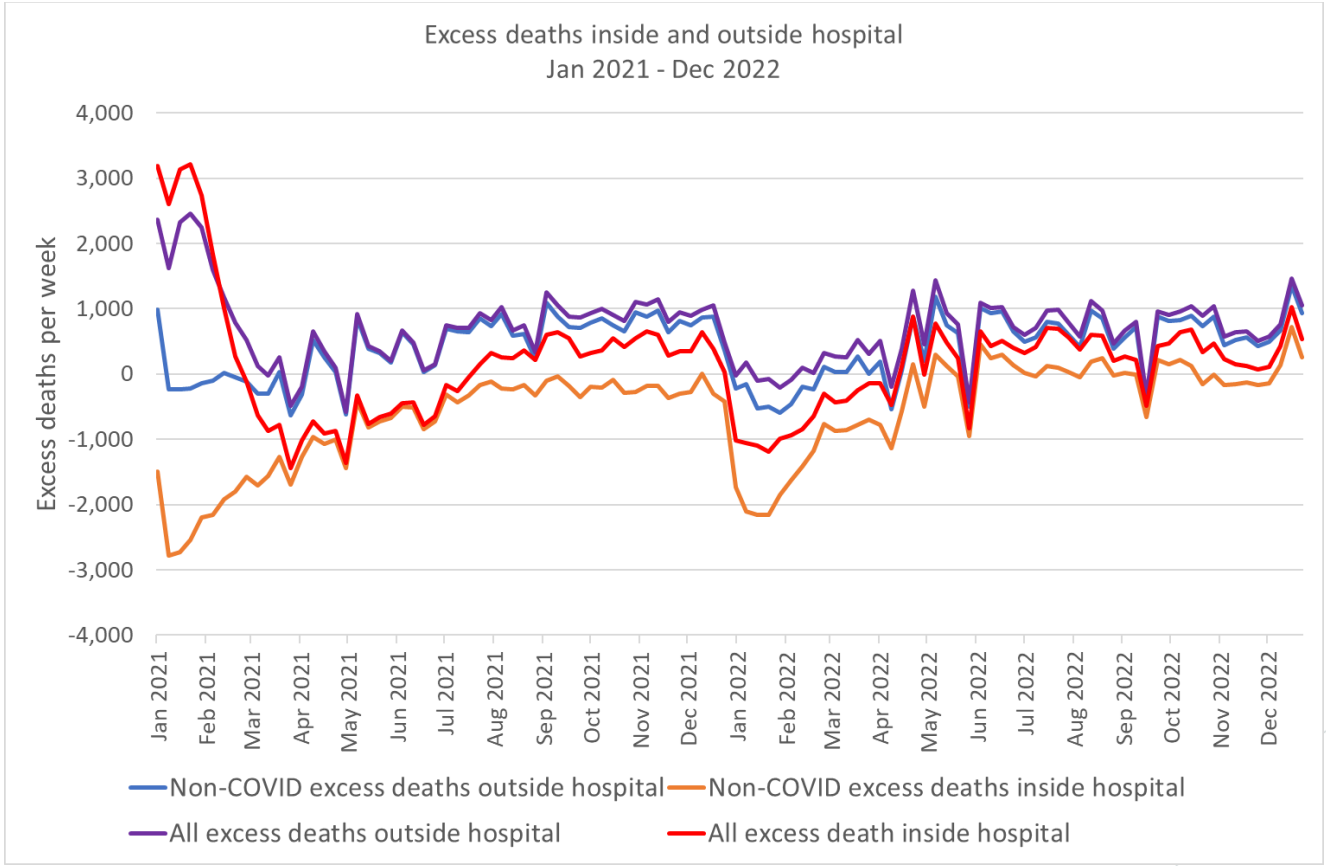
### Fit for discharge




Source: Discharge delays acute (link)

# Healthcare strains following COVID
## - unravelling excess deaths by place of death

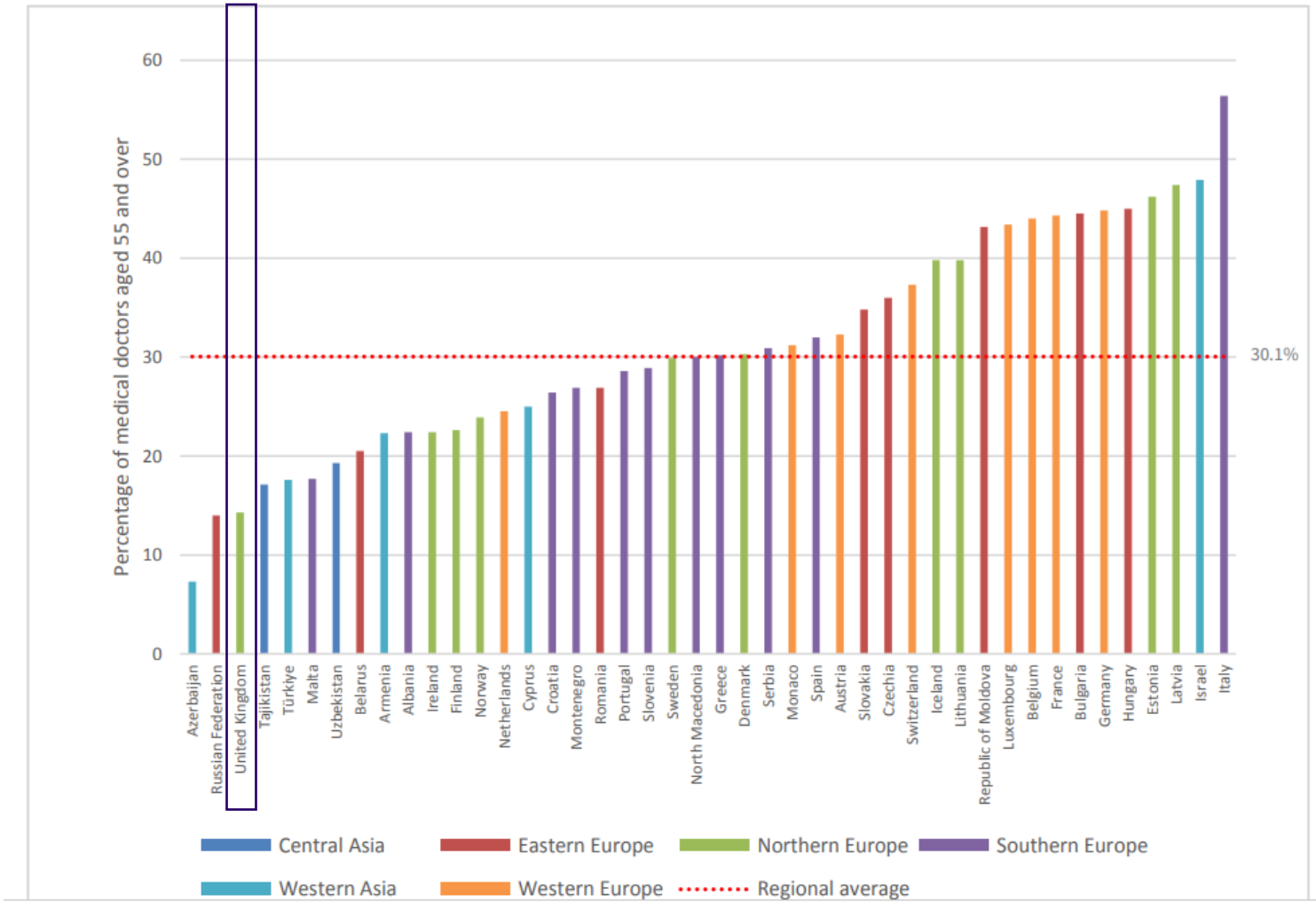
| | Place of death | 8 Jan 21 - 6 Jan 22 | 22 Apr 22 - 5 Jan 23 |
|---|---|---|---|
| Non-COVID excess deaths | At home | 37,500 | 21,700 |
| | Care home/other | -16,500 | 2,200 |
| | At hospital | -42,500 | 500 |
| Deaths involving COVID | At home | 5,700 | 1,600 |
| | Care home/other | 14,700 | 3,400 |
| | At hospital | 55,700 | 13,400 |
| All excess deaths | At home | 43,200 | 23,300 |
| | Care home/other | -1,800 | 5,600 |
| | At hospital | 13,200 | 13,900 |




Source: ONS death registrations (link)

# Healthcare strains following COVID
## - international perspective


**Fig. 3.** Percentage of medical doctors aged 55 and over, 2020 or latest year

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# Questions?

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# Thank you