# The ONS data on deaths by covid vaccination status

Released 21 Feb 2023

Norman Fenton, 23 Feb 2023

https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/deathsbyvaccinationstatusengland

# Deaths by vaccination status, England

## Correction

22 February 2023

Months were mislabelled in tables 3 to 5 and the contents labels for tables 3 and 5 listed incorrect months. This has now been corrected. We apologise for any inconvenience.

Contact:
Charlotte Bermingham, Owen Gethings, Tom Stevens, Jasper Morgan, Megan Munro, Piotr Pawelek, Vahé Nafilyan

Release date:
21 February 2023

Next release:
To be announced

View all data related to deaths

## About this Dataset

Age-standardised mortality rates for deaths involving coronavirus (COVID-19), non-COVID-19 deaths and all deaths by vaccination status, broken down by age group.

## Edition in this dataset

### Deaths occurring between 1 April 2021 and 31 December 2022 edition of this dataset

## Contact details for this dataset

Charlotte Bermingham, Owen Gethings, Tom Stevens, Jasper Morgan, Megan Munro, Piotr Pawelek, Vahé Nafilyan
health.data@ons.gov.uk
+44 1633 582486

# Our complaint about previous report

## UK Statistics Regulator agrees with our recommendation to ignore any claims of vaccine safety based on ONS deaths by vaccination status data

They also agree that the ONS underestimates the true population proportion unvaccinated

Norman Fenton and Martin Neil
Jan 20

237 73

https://wherearethenumbers.substack.com/p/uk-statistics-regulator-agrees-with

## The ONS data on vaccine mortality is not fit for purpose

Norman Fenton and Martin Neil
Nov 11, 2022

46 3

Office for flawed National Statistics

Office for Statistics Regulation

Search

Home | Talk to Us | About us | Regulatory work | News | Blog | Policies and Guidance

Ed Humpherson to Norman Fenton, Martin Neil, Clare Craig and Scott McLachlan: ONS Deaths by Vaccination Status statistics

## Ed Humpherson to Norman Fenton, Martin Neil, Clare Craig and Scott McLachlan: ONS Deaths by Vaccination Status statistics

Dear Norman Fenton, Martin Neil, Clare Craig and Scott McLachlan,

**ONS Deaths by Vaccination Status statistics**

Thank you for contacting us with your concerns about ONS's Deaths by Vaccination Status publication and for your patience as we have carried out our investigations. It has taken us some time to respond, for which I apologise. This is because these are important issues and we wanted to consider them carefully. I have set out our thinking on the issues below.

**Dated**
23 January 2023

**Last updated on**
23 January 2023

**Sent by:**
Ed Humpherson
Director General for Regulation, Office for Statistics Regulation

**Sent to:**

https://www.dailymail.co.uk/health/article-11775169/Death-rates-NOT-higher-Covid-vaccinated-Brits.html



# Death rates are NOT higher among Covid-vaccinated Brits, according to official stats debunking major anti-vaxx myth

- **The ONS analysed deaths recorded between April 2021 and December 2022**
- **Risk of dying was consistently lower for people who had ever been vaccinated**
- **Read more: Just a third of people in some parts of England had first Covid jab**

By EMILY STEARN, HEALTH REPORTER FOR MAILONLINE
**UPDATED:** 18:24, 21 February 2023

# Key changes from previous release

All data for those under 18 have been removed

Data for Jan-March 2021 has vanished

Many changes to the raw data for April 2021-May 2022 between latest version and previous

Edition in this dataset

Deaths occurring between 1 April 2021 and 31 December 2022 edition of this dataset

xlsx (611.6 KB)

Previous versions of this data are available.

Deaths occurring between 1 January 2021 and 31 May 2022 edition of this dataset

Deaths occurring between 1 January 2021 and 31 March 2022 edition of this dataset

Deaths occurring between 1 January 2021 and 31 January 2022 edition of this dataset

Deaths occurring between 1 January and 31 December 2021 edition of this dataset

Deaths occurring between 1 January and 31 October 2021 edition of this dataset

Deaths occurring between 2 January and 24 September 2021 edition of this dataset

Deaths occurring between 2 January and 2 July 2021 edition of this dataset

https://thedailybeagle.substack.com/p/fudgegate-ons-makes-person-years

The unvaccinated person-years are (bad) estimates only

Table 1

**Monthly age-standardised mortality rates by vaccination status for all cause deaths, deaths involving COVID-19 and deaths not involving COVID-19, per 100,000 person-**

This worksheet contains 1 table.

Source: Office for National Statistics, National Immunisation Management Service.

| Cause of Death | Year | Month | Vaccination status | Count of deaths | Person-years | Age-standardised mortality rate / 100,000 person-years | Noted as Unreliable | Lower confidence limit | Upper confidence limit |
|---|---|---|---|---|---|---|---|---|---|
| All causes | 2021 | April | Unvaccinated | 3,556 | 1,627,374 | 2087.2 | | 2009.1 | 2165.4 |
| All causes | 2021 | April | First dose, less than 21 days ago | 428 | 225,906 | 1851.2 | | 1605.1 | 2097.3 |
| All causes | 2021 | April | First dose, at least 21 days ago | 16,237 | 1,271,496 | 1594.8 | | 1567.0 | 1622.6 |
| All causes | 2021 | April | Second dose, less than 21 days ago | 5,431 | 402,753 | 470.9 | | 454.5 | 487.2 |
| All causes | 2021 | April | Second dose, between 21 days and 6 months | 5,884 | 218,219 | 709.1 | | 674.4 | 743.8 |
| All causes | 2021 | April | Second dose, at least 6 months ago | 0 | 0 | x | | x | x |
| All causes | 2021 | April | Third dose or booster, less than 21 days ago | 0 | 2 | x | | x | x |
| All causes | 2021 | April | Third dose or booster, at least 21 days ago | 0 | 2 | x | | x | x |
| All causes | 2021 | April | Ever vaccinated | 27,980 | 2,118,377 | 810.3 | | 800.2 | 820.4 |
| All causes | 2021 | May | Unvaccinated | 2,871 | 1,440,421 | 1720.2 | | 1648.7 | 1791.8 |
| All causes | 2021 | May | First dose, less than 21 days ago | 155 | 186,246 | 1614.5 | | 1254.4 | 1974.6 |
| All causes | 2021 | May | First dose, at least 21 days ago | 8,123 | 844,993 | 5002.5 | | 4869.9 | 5135.0 |
| All causes | 2021 | May | Second dose, less than 21 days ago | 3,373 | 525,787 | 777.1 | | 745.4 | 808.8 |
| All causes | 2021 | May | Second dose, between 21 days and 6 months | 19,529 | 875,765 | 766.2 | | 751.5 | 781.0 |
| All causes | 2021 | May | Second dose, at least 6 months ago | 0 | 0 | x | | x | x |
| All causes | 2021 | May | Third dose or booster, less than 21 days ago | 0 | 2 | x | | x | x |
| All causes | 2021 | May | Third dose or booster, at least 21 days ago | 0 | 5 | x | | x | x |
| All causes | 2021 | May | Ever vaccinated | 31,180 | 2,432,797 | 853.9 | | 844.0 | 863.8 |
| All causes | 2021 | June | Unvaccinated | 2,385 | 1,081,514 | 1537.8 | | 1468.0 | 1607.6 |
| All causes | 2021 | June | First dose, less than 21 days ago | 93 | 219,920 | 1809.9 | | 889.4 | 2884.2 |
| All causes | 2021 | June | First dose, at least 21 days ago | 3,697 | 461,837 | 6358.5 | | 6118.5 | 6598.5 |
| All causes | 2021 | June | Second dose, less than 21 days ago | 976 | 406,838 | 1462.1 | | 1333.6 | 1590.7 |
| All causes | 2021 | June | Second dose, between 21 days and 6 months | 25,687 | 1,580,685 | 791.7 | | 780.8 | 802.6 |
| All causes | 2021 | June | Second dose, at least 6 months ago | 0 | 26 | x | | x | x |
| All causes | 2021 | June | Third dose or booster, less than 21 days ago | 0 | 46 | x | | x | x |
| All causes | 2021 | June | Third dose or booster, at least 21 days ago | 0 | 11 | x | | x | x |
| All causes | 2021 | June | Ever vaccinated | 30,453 | 2,669,362 | 946.8 | | 749.3 | 1144.3 |
| All causes | 2021 | July | Unvaccinated | 2,553 | 898,740 | 1681.5 | | 1608.8 | 1754.2 |

Raw mortality rate: 199 per 100K never vaccinated

1282 per 100K ever vaccinated

# Problem with the raw mortality rate and the need for the age-standardised mortality rate (ASMR)

| | Deaths | Person years | Mortality rate (deaths per 100K case) |
|---|---|---|---|
| Never Vaccinated | 2,871 | 1,440,421 | 199.3 |
| Ever vaccinated | 31,180 | 2,433,797 | 1281.1 |

6 times higher in vaccinated

Hypothetical breakdown

Aged at least 50 only

| | Deaths | Person years | Mortality rate (deaths per 100K case) |
|---|---|---|---|
| Never Vaccinated | 2,500 | 100,000 | 2500 |
| Ever vaccinated | 31,110 | 2,000,000 | 1555 |

So BOTH age categories: higher in the never vaccinated

Aged less that 50

| | Deaths | Person years | Mortality rate (deaths per 100K case) |
|---|---|---|---|
| Never Vaccinated | 371 | 1,340,421 | 27.7 |
| Ever vaccinated | 80 | 433,797 | 18.4 |

The data is 'age confounded'

***Example of Simpson's paradox***

## Age Standardized Mortality Rate (ASMR): a computed metric to avoid age confounding

A weighted average of the different age categorized mortality rates

Weights are based on ‘standard population’ size for that age category

Suppose 60% on the population is <50, so:

Never vaccinated $(0.6 \times 27.7) + (0.4 \times 2500) = 1016.6$

Ever vaccinated $(0.6 \times 18.4) + (0.4 \times 1555) = \boxed{633}$

Much lower rate for ever vaccinated)

# Age Standardized Mortality Rate: Generalized

Typically there will be more than two age categories for which data are collected
(e.g. “<10”, “10-19”, “20-29” etc)

Suppose there are *n* age categories $A_1, A_2, \ldots, A_n$
And that the respective population proportions for these are $P_1, P_2, \ldots, P_n$

Age Standardized Morality Rate (ASMR) of number of deaths per 100K is:

$$ASMR = \left(P_1 \times \frac{d_1}{t_1}\right) + \left(P_2 \times \frac{d_2}{t_2}\right) + \cdots \left(P_n \times \frac{d_n}{t_n}\right) \times 100{,}000$$

Where:

$t_i$ is the number of people of category $A_i$ in the dataset
$d_i$ is the number of those of category $A_i$ in the dataset who died

## But there is a fundamental weakness with the ASMR as shown in this example

| | Deaths | Person years | Mortality rate (deaths per 100K case) |
|---|---|---|---|
| Never Vaccinated | 2,871 | 1,440,421 | 199.3 |
| Ever vaccinated | 31,180 | 2,433,797 | 1281.1 |

Mortality rate is higher in older age category but NOT in younger age category

Hypothetical breakdown

Aged at least 50 only

| | Deaths | Person years | Mortality rate (deaths per 100K case) |
|---|---|---|---|
| Never Vaccinated | 2,500 | 100,000 | 2500 |
| Ever vaccinated | 31,000 | 2,000,000 | 1550 |

**The ASMR hides this difference**

Aged less that 50

| | Deaths | Person years | Mortality rate (deaths per 100K case) |
|---|---|---|---|
| Never Vaccinated | 371 | 1,340,421 | 27.7 |
| Ever vaccinated | 180 | 433,797 | 41.5 |

**The never vaccinated ASMR is unchanged at 1016 but the ever vaccinated is still much lower at 645**

# Ideally we should not even need to use the ASMR

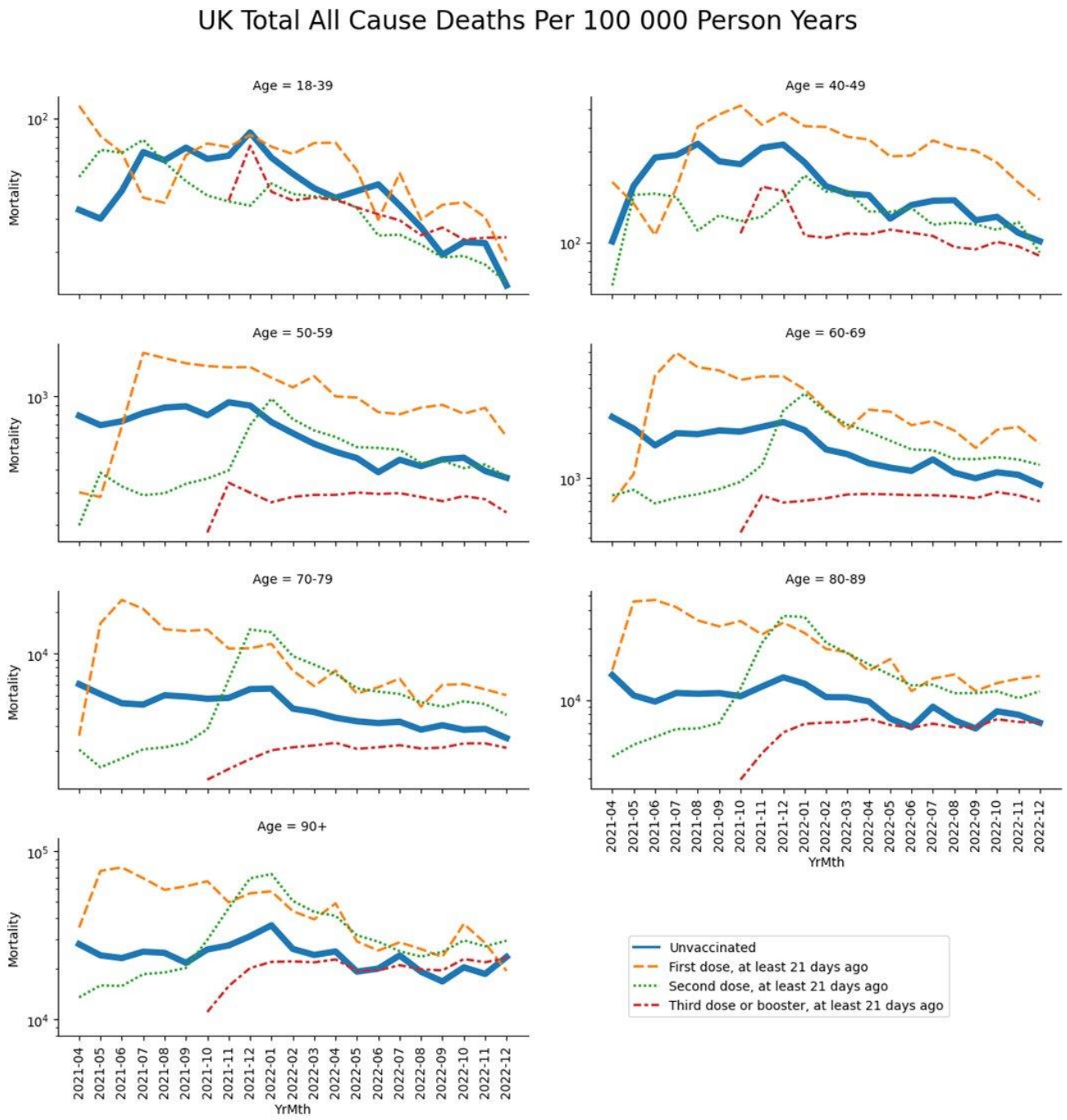
The age standardised mortality rate (ASMR) is a terrible metric for assessing vaccination safety.

While it accounts for age-confounding, **it obscures the information needed to determine risk/benefit for different specific age groups**

By looking at raw mortality rates within each age category there is no need for the complex, obfuscated ASMR

The ONS do provide age categorised breakdown:
18-39, 40-49, 50-59, 60-69, 70-79, 80-89, 90+

(although the 18-39 category is rather ‘coarse’ and, unlike previous versions, those aged under 18 are no longer included so we have less information than before)




# Raw all-cause mortality rate for each age category

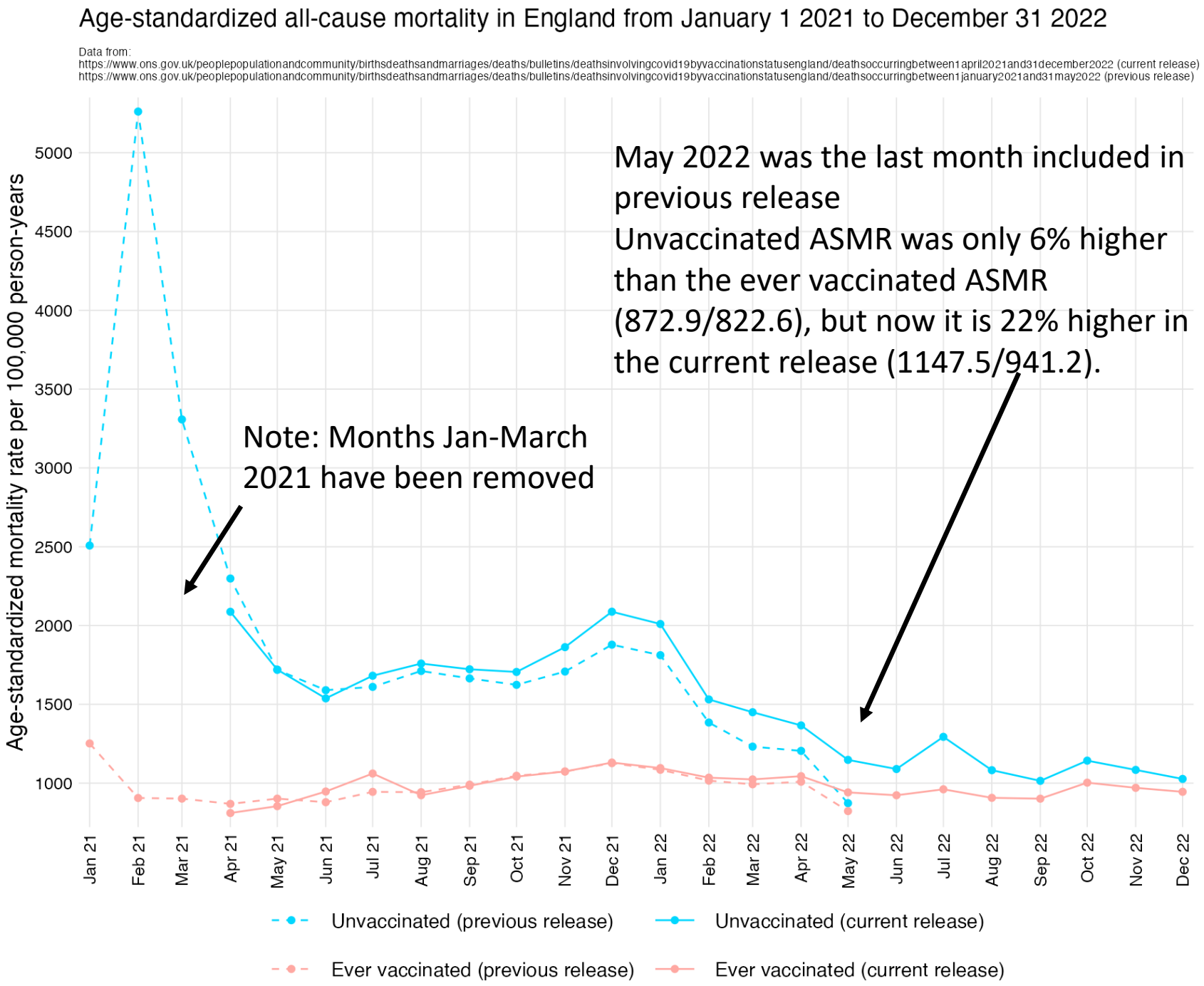
Tore Aarhus Gulbrandsen

https://twitter.com/saunasauen/status/1628138191642365958

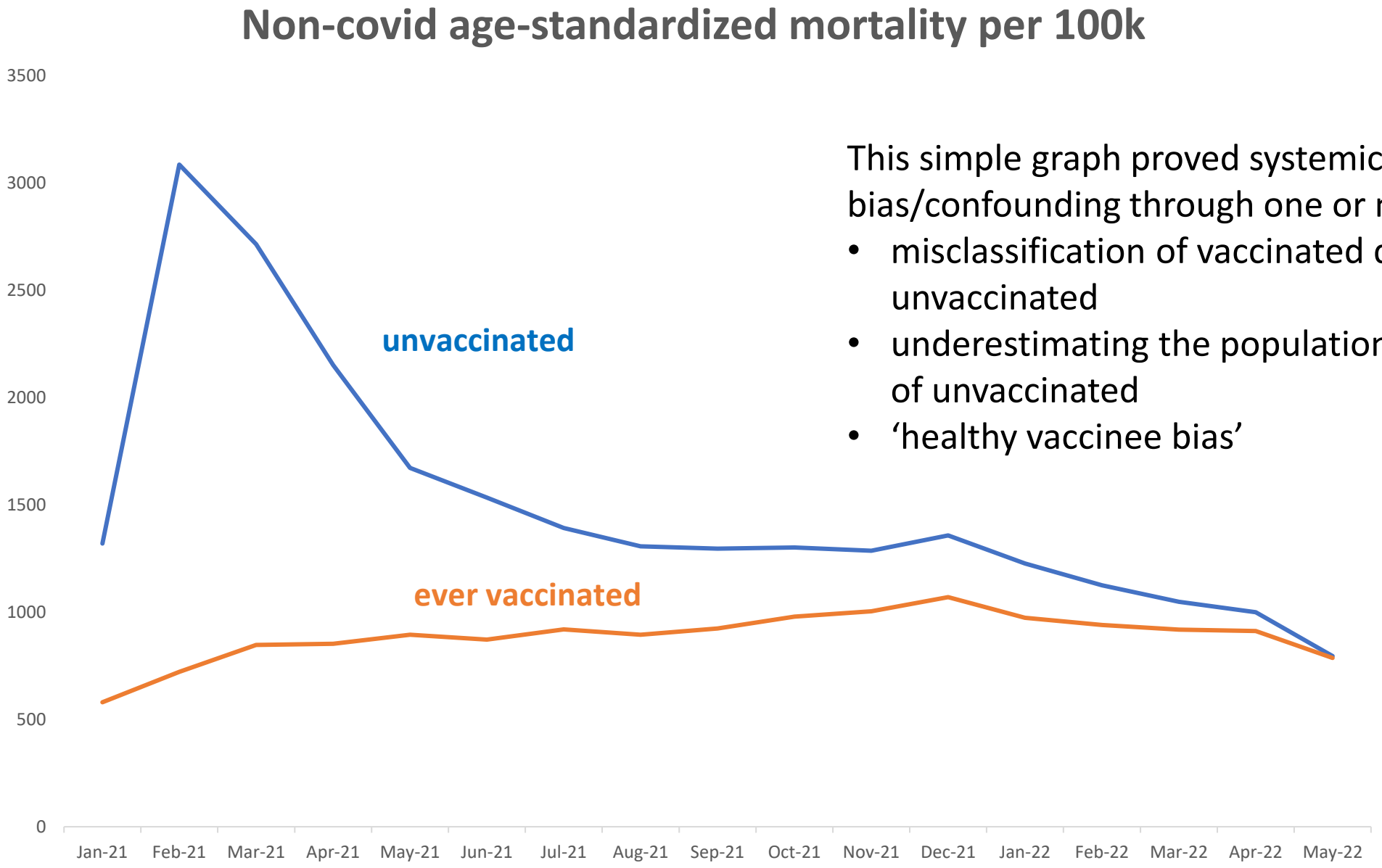
As in previous releases note the wild fluctuations in mortality rates for the different categories of vaccinated

In no age group is there any strong evidence of reduced all cause mortality for the vaccinated

# ASMR changes between this version and previous version



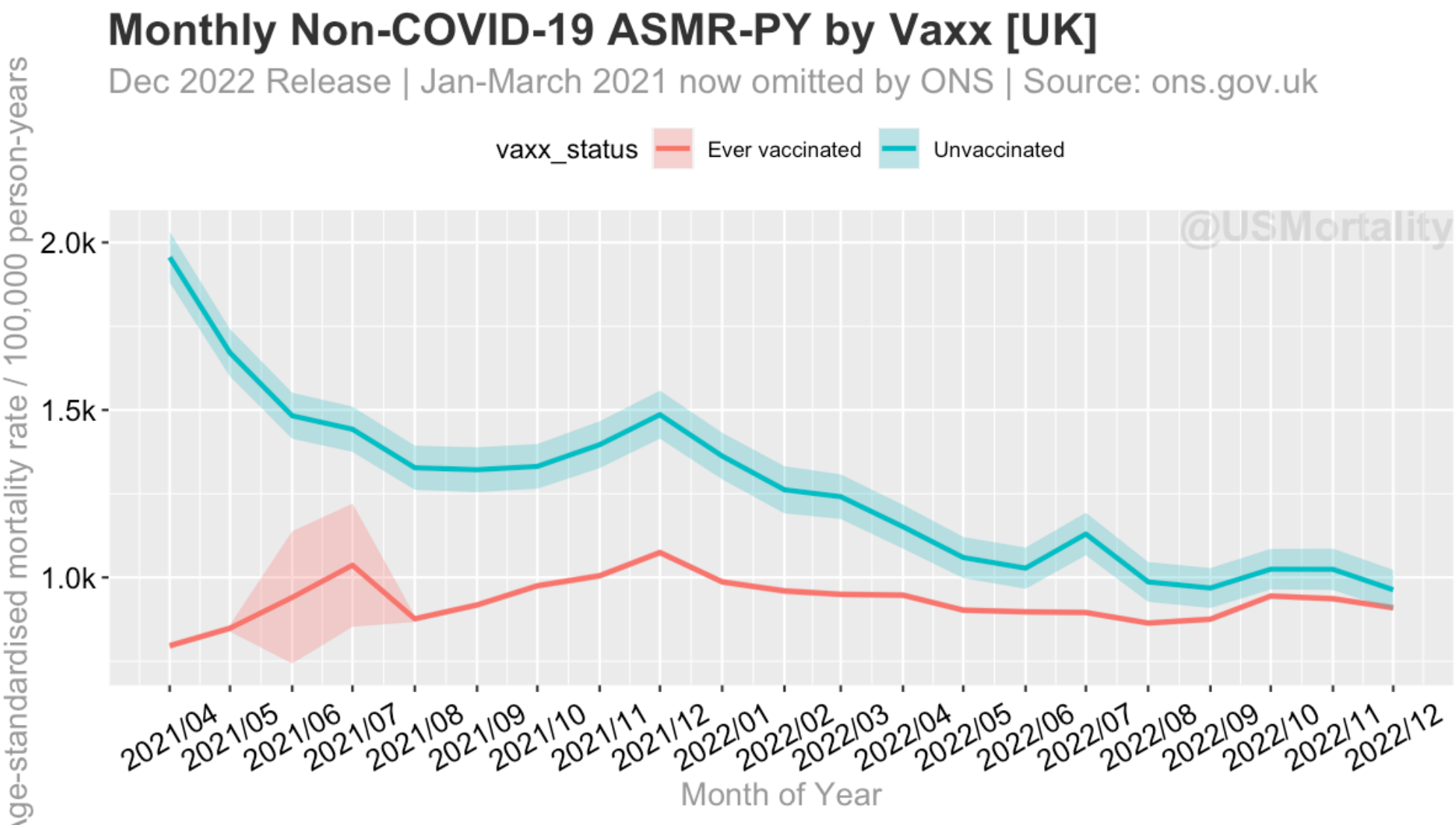
Big Problem with Previous Release: systemic bias




This simple graph proved systemic bias/confounding through one or more of:

- misclassification of vaccinated deaths as unvaccinated
- underestimating the population proportion of unvaccinated
- ‘healthy vaccinee bias’

https://usmortality.substack.com/p/englands-all-cause-mortality-data




The systemic problems have NOT been fixed in latest version ***They have got WORSE***

# Estimate of unvaccinated proportion is 10%. This is much too high

| Unvaccinated proportion of population | 18-39 | 40-49 | 50-59 | 60-69 | 70-79 | 80-89 | 90+ | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Apr-21 | | | | | | | | |
| May-21 | | | | | | | | |
| Jun-21 | | | | | | | | |
| Jul-21 | 28.02908 | 12.83275 | 7.146286 | 4.482383 | 2.665801 | 2.553042 | 3.152677 | 13.93061 |
| Aug-21 | 24.25621 | 12.08032 | 6.872462 | 4.361524 | 2.613775 | 2.495686 | 3.078889 | 12.45271 |
| Sep-21 | 22.56353 | 11.64404 | 6.704611 | 4.287625 | 2.583199 | 2.456398 | 3.027334 | 11.75969 |
| Oct-21 | 21.51484 | 11.32836 | 6.584244 | 4.235673 | 2.558657 | 2.419797 | 2.969361 | 11.31621 |
| Nov-21 | 20.70644 | 11.08529 | 6.483766 | 4.189521 | 2.535083 | 2.382829 | 2.901493 | 10.97067 |
| Dec-21 | 19.82135 | 10.81863 | 6.369069 | 4.138148 | 2.507992 | 2.342781 | 2.83642 | 10.59286 |
| Jan-22 | 18.86076 | 10.54565 | 6.251098 | 4.087883 | 2.480617 | 2.303947 | 2.762169 | 10.18805 |
| Feb-22 | 18.32213 | 10.4134 | 6.191859 | 4.065869 | 2.472336 | 2.282544 | 2.720525 | 9.964003 |
| Mar-22 | 18.12536 | 10.40084 | 6.187542 | 4.067025 | 2.47205 | 2.267884 | 2.69517 | 9.889594 |
| Apr-22 | 18.01143 | 10.41493 | 6.195292 | 4.072006 | 2.473676 | 2.251825 | 2.665264 | 9.848808 |
| May-22 | 17.93725 | 10.43007 | 6.205826 | 4.081967 | 2.474709 | 2.240441 | 2.63503 | 9.823862 |
| Jun-22 | 17.90179 | 10.45874 | 6.218668 | 4.092607 | 2.477755 | 2.231655 | 2.612102 | 9.813528 |
| Jul-22 | 17.89264 | 10.49512 | 6.232453 | 4.104856 | 2.480413 | 2.22453 | 2.587728 | 9.815259 |
| Aug-22 | 17.8973 | 10.53324 | 6.248176 | 4.117373 | 2.485394 | 2.215457 | 2.567736 | 9.822483 |
| Sep-22 | 17.91571 | 10.57204 | 6.266247 | 4.130062 | 2.492441 | 2.210573 | 2.554497 | 9.834998 |
| Oct-22 | 17.94555 | 10.60778 | 6.288199 | 4.142671 | 2.496623 | 2.206392 | 2.546656 | 9.852212 |
| Nov-22 | 17.97792 | 10.64703 | 6.310658 | 4.154725 | 2.502561 | 2.199444 | 2.529739 | 9.871251 |
| Dec-22 | 18.0127 | 10.68698 | 6.330352 | 4.167767 | 2.50949 | 2.195267 | 2.510338 | 9.892064 |

e.g. were just 6.19% of 50-59-year-olds unvaccinated in the UK in March 2022

As noted by Igor Chudov, according to the **UKHSA Week 13 vaccine surveillance report** (Page 17) 87% of the 50-59 age group were vaccinated in March 2022. So 13% were unvaccinated

https://igorchudov.substack.com/p/ons-data-25-excess-mortality-among

## The core death counts are still unreliable and inaccurate: misclassification is still happening

NOTE 17

There were some people who were vaccinated but not included in the NIMS data as they died soon after vaccination. Of these, 1,029 linked to our 2021 Census linked dataset. We included the latest vaccination records for these people in our dataset. This data is provisional and extends up to the 1 November 2022. This will be updated in future releases.

**Josh Guetzkow** @joshg99 · 21 Feb

Replying to @joshg99 and @SarahCaul_ONS

(2/2)... how do you count/classify the deaths of people whose jab status has not been linked to NIMS?

1 3 48 2,645

**Sarah Caul**
@SarahCaul_ONS

Replying to @joshg99

If someone is in our Census 2021 based dataset, but does not have a record in either NIMS or the extract of people who are not in NIMS, they are classed as unvaccinated

**Josh Guetzkow** @joshg99 · 21 Feb

Replying to @SarahCaul_ONS

So other than the 1,029, all the rest of "some" people (you still haven't said how many that is) who died shortly after first jab but haven't been linked are counted as unvaccinated? That's rather convenient.

3 15 86 2,286

**Sarah Caul** @SarahCaul_ONS · 21 Feb

Replying to @joshg99

We are getting that number. Just won't be available immediately as the team are working on it alongside other pieces. We produce the number of deaths involving the vaccine in monthly mortality analysis

2 2 17 2,054

Show replies

**Josh Guetzkow** @joshg99 · 21 Feb

Replying to @SarahCaul_ONS

And another question: so if somebody is matched to the extract of people who are not in NIMS, are they also categorized as unvaccinated?

1 9 800

**Sarah Caul** @SarahCaul_ONS · 21 Feb

Replying to @joshg99

I'll check with the team that produce this just to double check my answer (likely tomorrow now)

1 5 732

Show replies

**Josh Guetzkow** @joshg99 · 10h

Replying to @SarahCaul_ONS

(1/3)

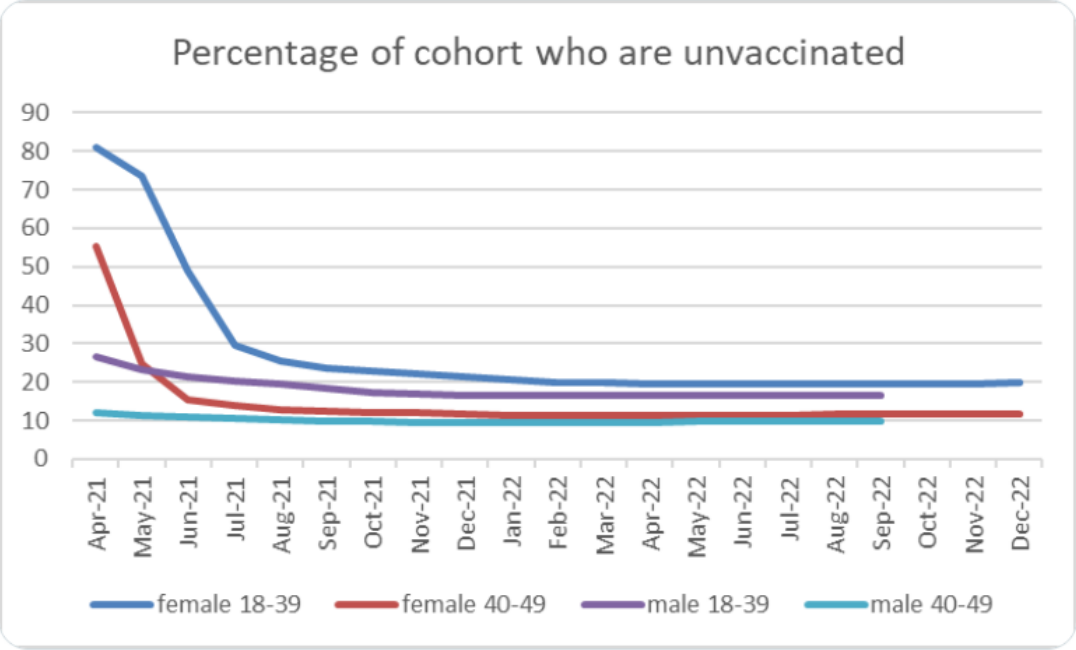
Sarah, you are overwhelmed so to help you here are two unanswered questions from yesterday, to make it easier for you to answer:

1. If someone in census '21 is not in NIMS or extract of people not in NIMS, are they classified as unvaccinated?

**Dr Clare Craig (not one of her impersonators)**
@ClareCraigPath

There is no data at all for males in Table 4 after September 2022.

It appears that someone has transposed the data such that the missing figures may be from the first three months.




**Dr Clare Craig (not one of her imperso...** @ClareCraig... · 21 Feb

Replying to @ClareCraigPath

I am not nitpicking.

That table is the only one where it is possible to calculate a population denominator.

It is not easy to.

Each population of male, female and each of the vaccination status categories needs to be calculated and then summed.

| |
|---|
| Unvaccinated |
| First dose, less than 21 days ago |
| First dose, at least 21 days ago |
| Second dose, less than 21 days ago |
| Second dose, at least 21 days ago |
| Third dose or booster, less than 21 days ago |
| Third dose or booster, at least 21 days ago |

6 43 220 17.8K

**Dr Clare Craig (not one of her imperso...** @ClareCraig... · 21 Feb

Without data for the males it is impossible to see what size denominator has been used.

They have also completely omitted data on children with no explanation given.

**Dr Clare Craig (not one of her imperso...** @ClareCraig... · 21 Feb

There are other issues too:

Table 5 only goes up to Sept 2022.
There is no entry for covid deaths in 18-39 yr olds in Aug 2022.

@SarahCaul_ONS @ONS Please can you take another look and make sure all the data is there.

4 64 289 15.4K

**Vahé Nafilyan** @Vnafilyan · 21 Feb

Replying to @ClareCraigPath

Hi Clare, thank you for pointing this. It is indeed a mistake. It is an issue with the labelling of the months. The time series starts form April 2021; yet, in some tables the data for April 2021 are labels as "January 2021" etc, and Dec 2022 as Sep 2022. We are fixing the issue

1 1 160

**Vahé Nafilyan** @Vnafilyan · 21 Feb

Replying to @ClareCraigPath

Hi Clare, thank you for pointing this out. It is indeed a mistake. The issue is with the labels of the months. the series should start in April 2021; but 'April 2021' is incorrectly labelled 'Jan 2021'. Sep 2022 should be December 2022. We are uploading the correct data. Thanks

Dear Sir or Madam,

I think there might be at few issues in the latest dataset update, that I want to inform you of:

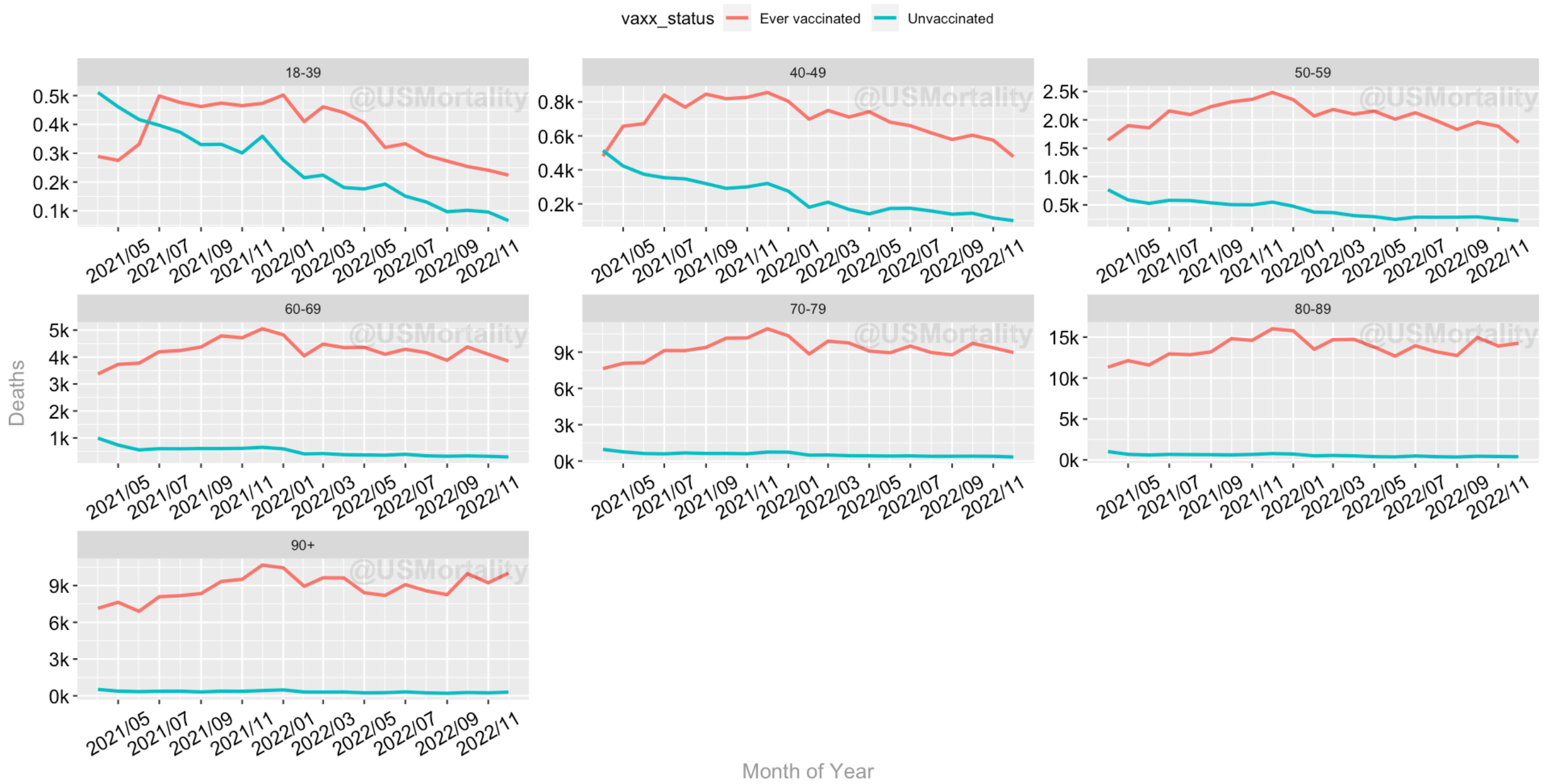
1) The data for Jan, Feb, Mar 2021 is missing now
2) Table 5 is missing data for Oct, Nov, Dec for “Deaths involving COVID-19”
3) Table 2, 4 are missing the “Ever vaccinated” rows
4) Table 2 seems to be missing significant data compared to Table 5, see sum of April 2021 (529 vs 800)
5) According to the comment of Sarah Caul, there might be unknown or vaccinated in the “not vaccinated” rows, which should be avoided: https://twitter.com/SarahCaul_ONS/status/1628077387513573395?s=20

Kind regards,
Ben

https://twitter.com/USMortality

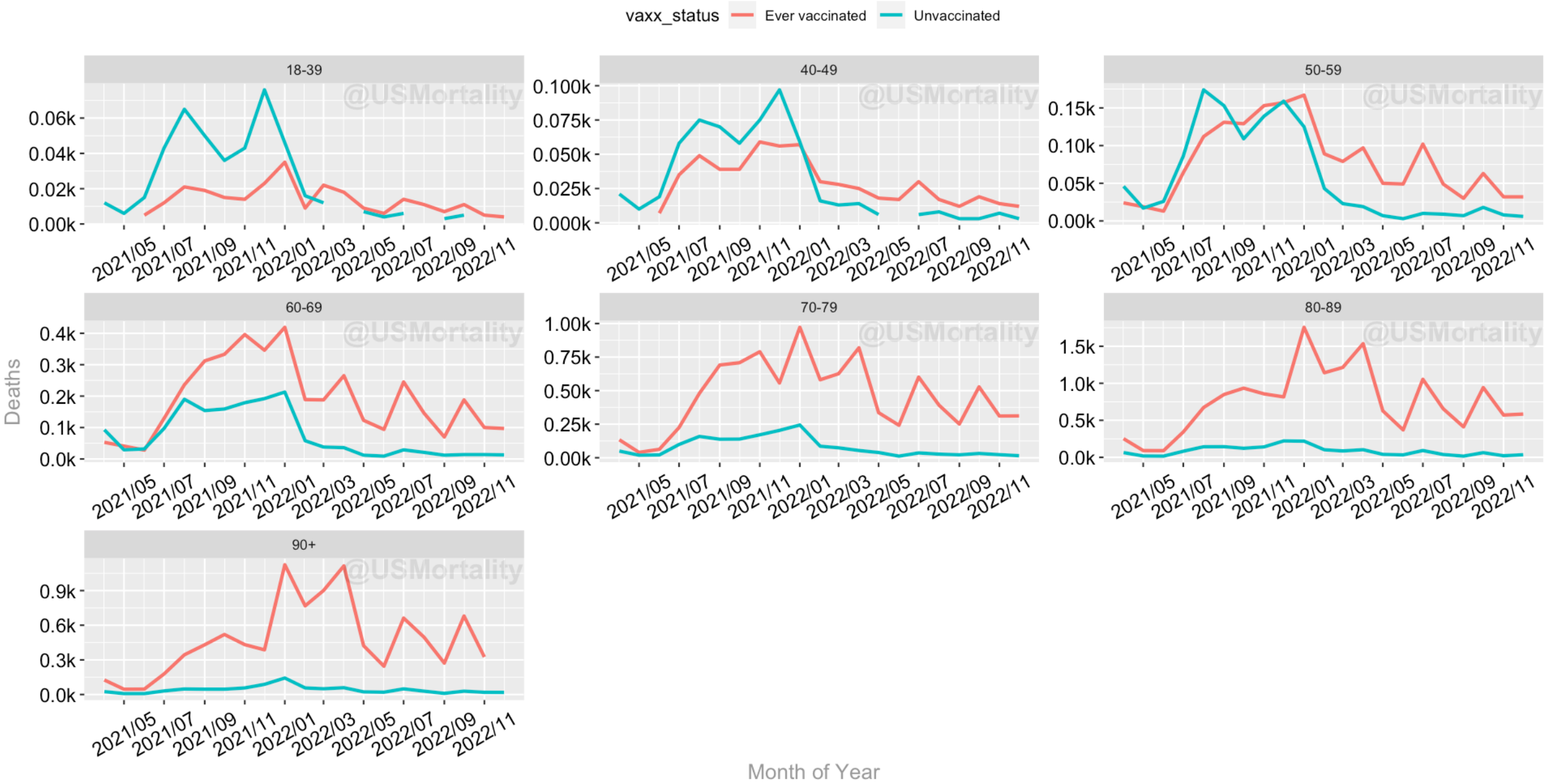
# Monthly All-Cause Deaths by Vaxx [UK]

Source: ons.gov.uk



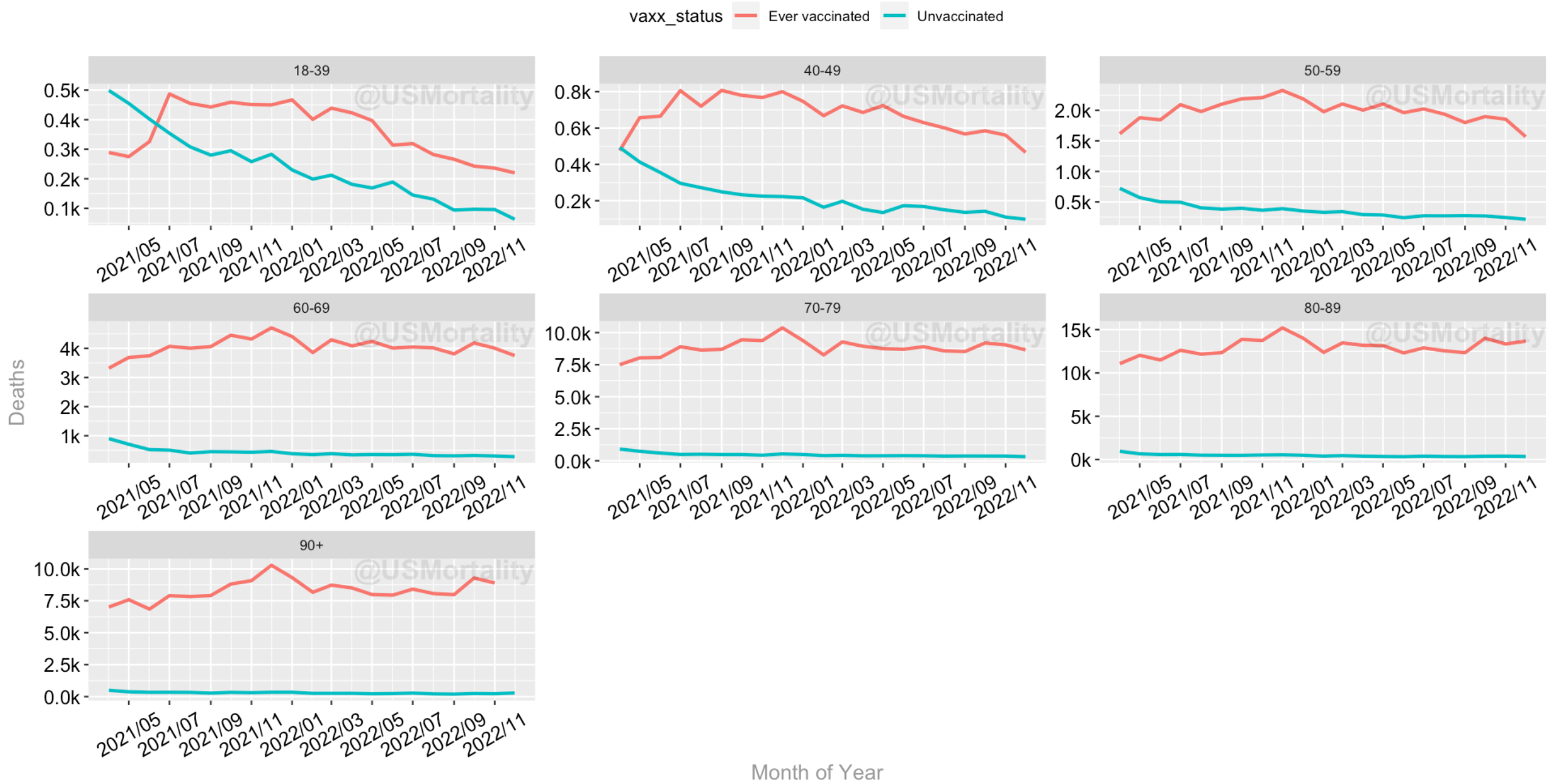
# Monthly COVID-19 Deaths by Vaxx [UK]

Source: ons.gov.uk



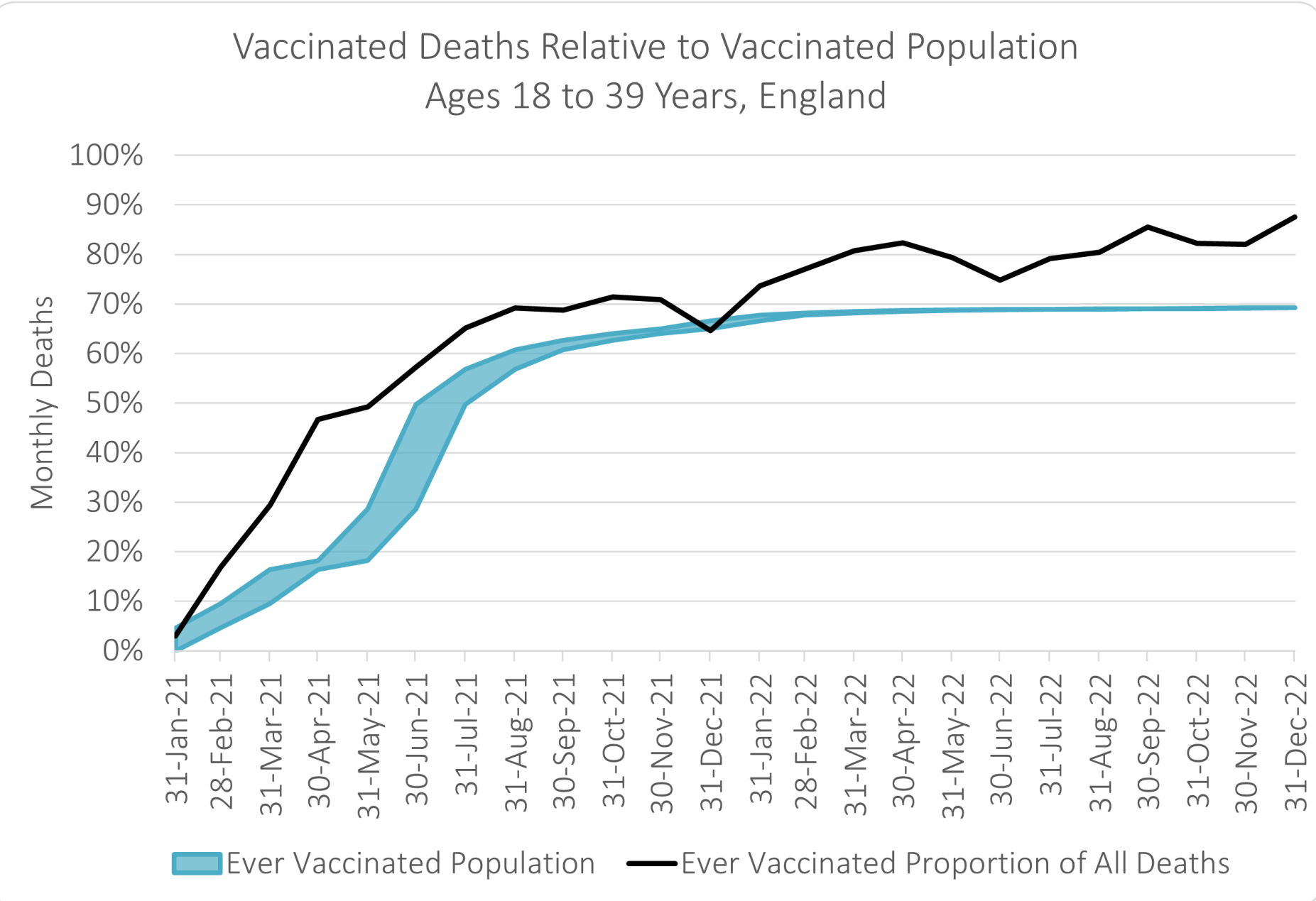
# Monthly Non-COVID-19 Deaths by Vaxx [UK]

Source: ons.gov.uk

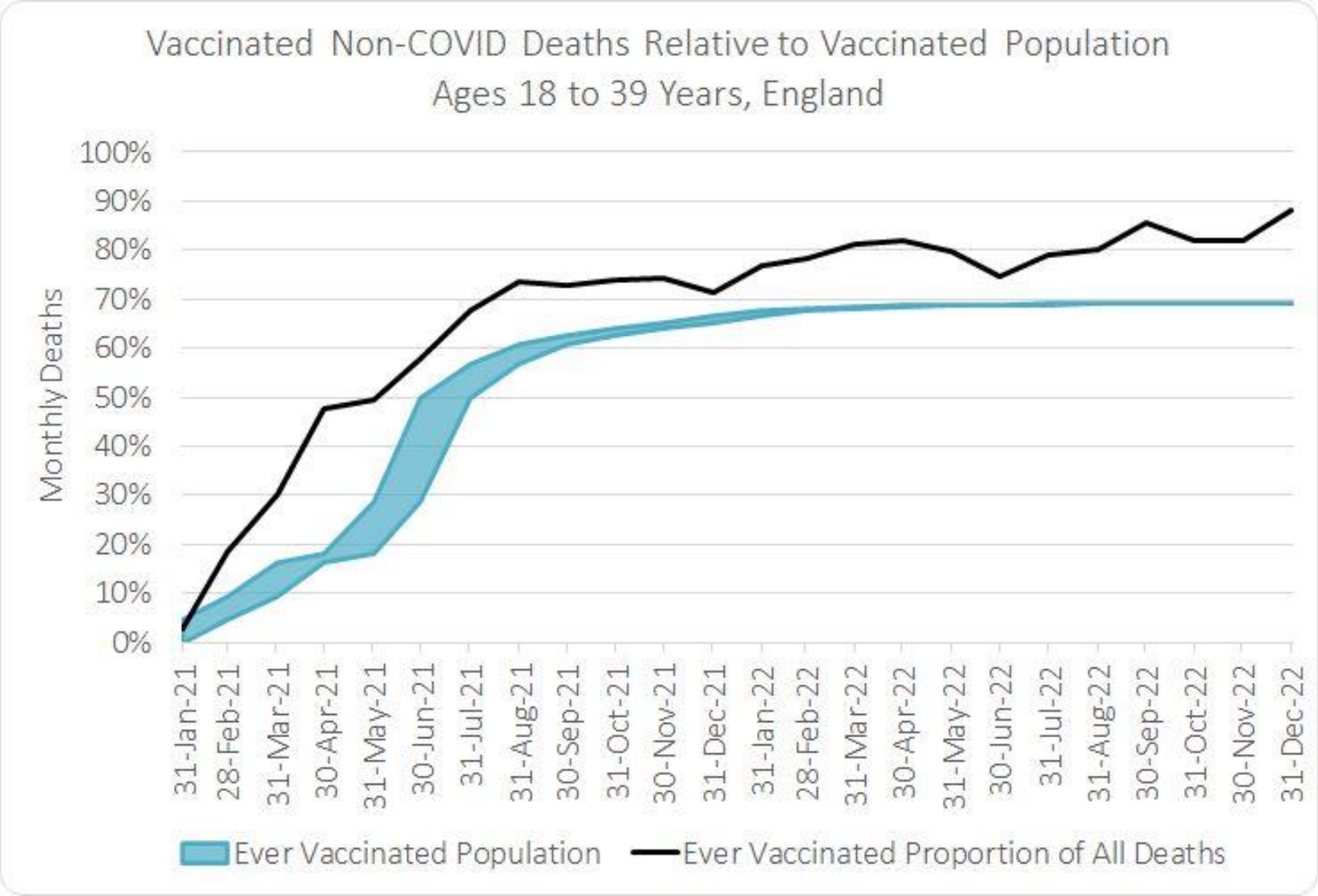


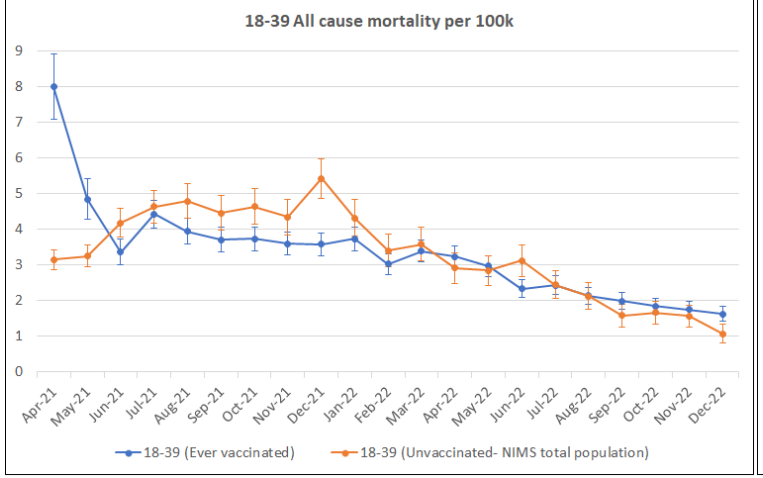
From Joel Smalley

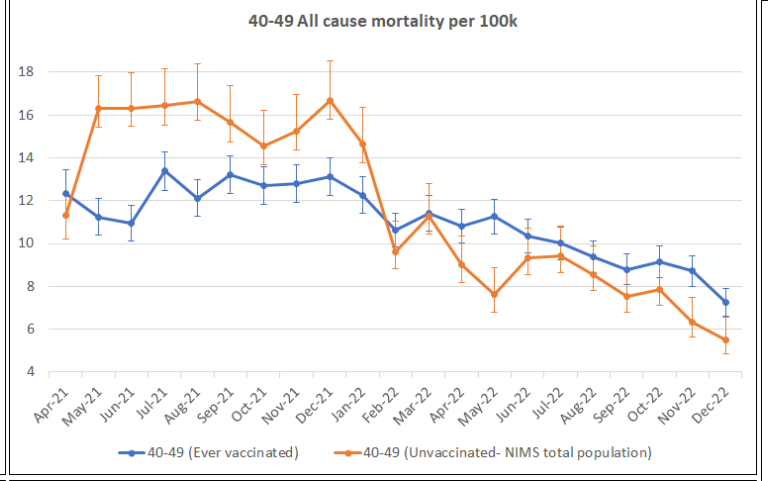
https://metatron.substack.com/p/england-deaths-by-vaccination-status




"Consistently, we see elevated mortality rates for the vaccinated since the start of 2022 when COVID represents less than 10% of deaths but the vaccinated disproportionally more of all deaths."


Vaccinated Non-COVID Deaths Relative to Vaccinated Population
Ages 18 to 39 Years, England
Monthly Deaths
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
31-Jan-21
28-Feb-21
31-Mar-21
30-Apr-21
31-May-21
30-Jun-21
31-Jul-21
31-Aug-21
30-Sep-21
31-Oct-21
30-Nov-21
31-Dec-21
31-Jan-22
28-Feb-22
31-Mar-22
30-Apr-22
31-May-22
30-Jun-22
31-Jul-22
31-Aug-22
30-Sep-22
31-Oct-22
30-Nov-22
31-Dec-22
Ever Vaccinated Population
Ever Vaccinated Proportion of All Deaths




These charts show monthly crude rates per 100k (population).

While ONS transformed their linkage from Census 2011 to Census 2021, growing their catchment from ~80% to ~90% of the population, this analysis is unaffected. It ignores all subset (linked) data tables & uses table 5 from the latest publication, which provides *ALL* registered deaths in England.

Registration delays apply-> meaning all months from mid 2022 will likely be lacking & will revise up if & when the next publication comes to pass.

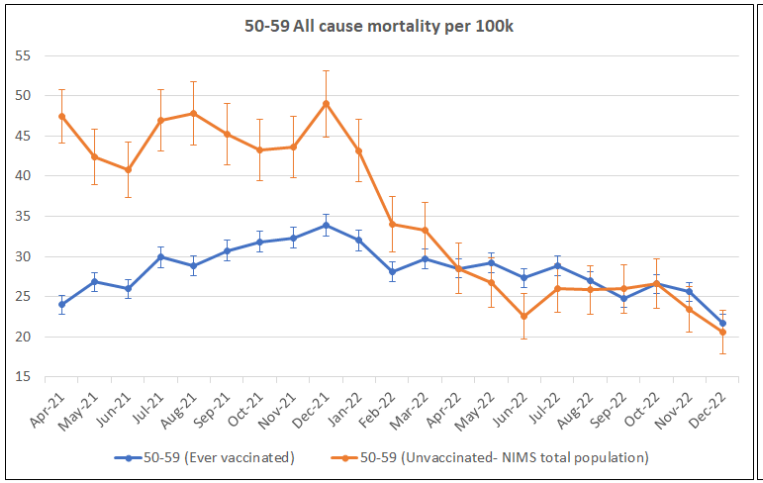
The populations for ever vaccinated here, are determined by the *MAX* cumulative 1st doses in each month. The unvaccinated populations are therefore determined by subtracting these MAX values from England's total population as it is given. This means that the Ever vaccinated rates shown are as low as they can be & that the Unvaccinated rates shown are as high as they can be.

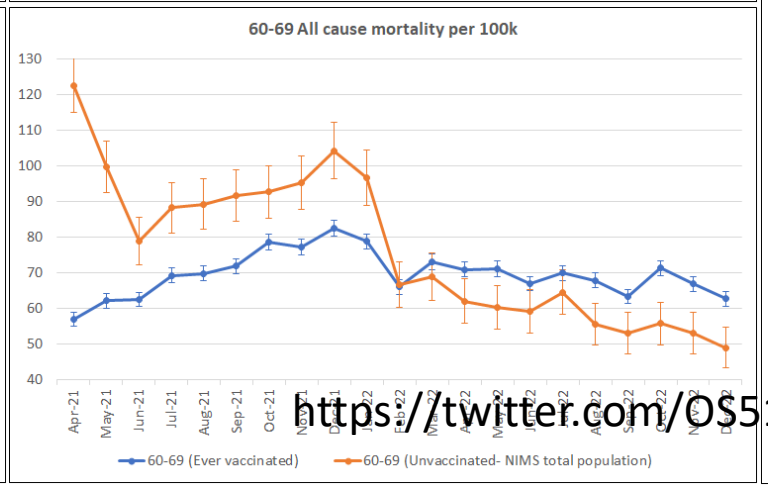
The choice of total population (NIMS in this instance) was deemed appropriate, to work with the given vaccination data, because it was established at an earlier point that, for all age groups (*namely 40-89yo subgroups), The other suggested total populations (e.g. ONS mid 2021/ 2022 projection etc) were found to be too small -> creating errors & resulting in negative mortality rates.

The sources for this analysis are:

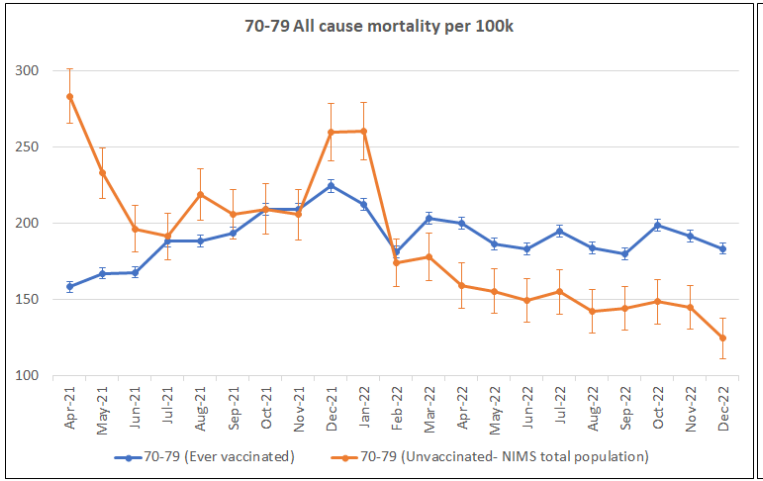
https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/deathsbyvaccinationstatusengland

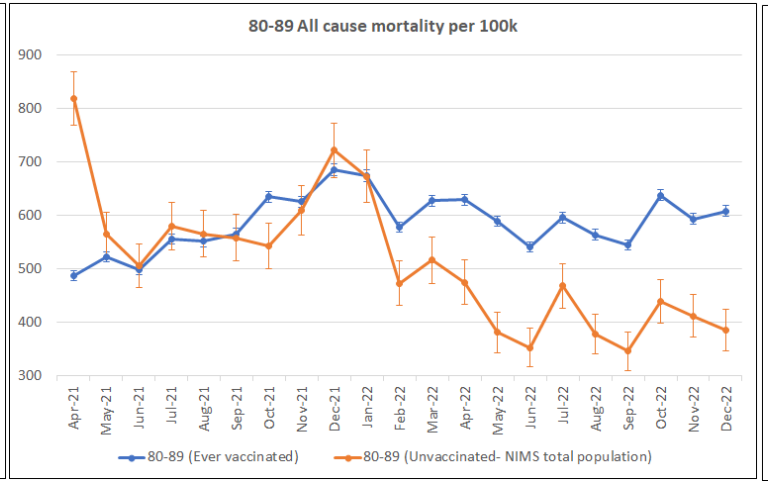
https://coronavirus.data.gov.uk/details/download -> (https://api.coronavirus.data.gov.uk/v2/data?areaType=nation&areaCode=E92000001&metric=vaccinationsAgeDemographics&format=csv)

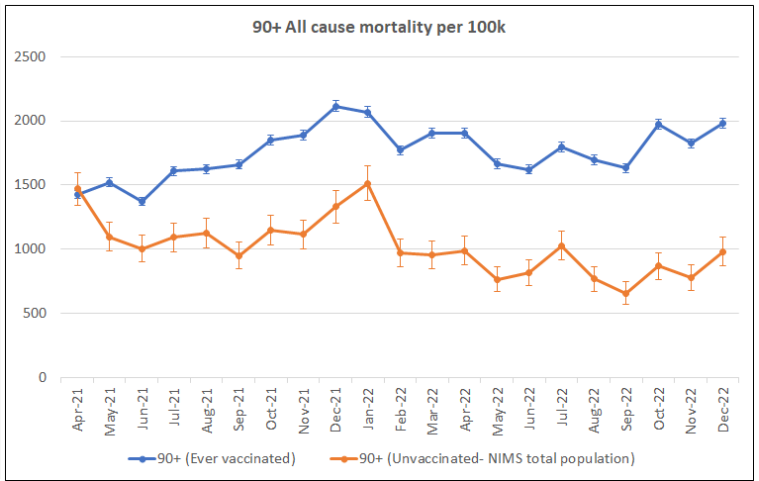




# Summary

None of the core limitations and flaws of the previous report have been resolved.

The higher non-covid mortality rates in the unvaccinated confirm there are biases/confounders still not adjusted for.

There is still gross underestimation of the proportion of unvaccinated in the population. This artificially inflates mortality rates of unvaccinated and reduces rates of vaccinated.

Use of new census data means the data in previous reports has changed significantly, but seems no more reliable.

The data for months Jan-March 2021 have been removed. These were the months that especially exposed misclassification of deaths shortly after vaccination.

There are numerous errors in the data and key data are missing or difficult to analyse.

Even with all the biases there is still no clear evidence that the vaccine has reduced all-cause mortality; the evidence actually points to safety risks especially in the younger age groups.