# Worldwide Big Data Analysis Suggests COVID Vaccination Increases Excess Mortality Of Countries Months After Initiation

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# Contribution

- Proved causal relation between vaccination and increasing excess mortality
- Big data analysis using data of 55 countries representing 1.7 billion population

# Outline

- Concerns on COVID Vaccines
- Excess Mortality Around The World
- Vaccine Side Effects, Post-COVID Sequelae Affecting Excess Mortality? — An Analysis Using Big Data Analysis

# Concerns on COVID vaccines

- Insufficient development time, long-term side effects unknown.
- Major component is spike protein, proven cytotoxicity alone [1], able to reproduce important aspects of pathogenesis after SARS-CoV-2 infection [2].
- Causes cardiovascular disease (myocarditis risk equivalent to infection among young people [3])
- Long-term immunization effect turns negative, the more vaccinated, the more likely to be infected[4]. (More in the paper …)


[1] https://www.salk.edu/news-release/the-novel-coronavirus-spike-protein-plays-additional-key-role-in-illness/

[2] Oldfield PR et al. How Does Severe Acute Respiratory Syndrome-Coronavirus-2 Affect the Brain and Its Implications for the Vaccines Currently in Use. *Vaccines*. 2022; 10(1):1. https://doi.org/10.3390/vaccines10010001

[3] Patone M et al. Risks of myocarditis, pericarditis, and cardiac arrhythmias associated with COVID-19 vaccination or SARS-CoV-2 infection. Nat Med. 2022 Feb;28(2):410-422. doi: 10.1038/s41591-021-01630-0. Epub 2021 Dec 14. PMID: 34907393; PMCID: PMC8863574.

[4] Nabin K Shrestha and others, Effectiveness of the Coronavirus Disease 2019 Bivalent Vaccine, Open Forum Infectious Diseases, Volume 10, Issue 6, June 2023, ofad209, https://doi.org/10.1093/ofid/ofad209

# Concerns on COVID vaccines

- The vaccinated more susceptible to infection in long-term → increased COVID mortality
- Vaccine long-term side effects → increased side effect mortality

**—> Increase Long-term excess mortality ?**

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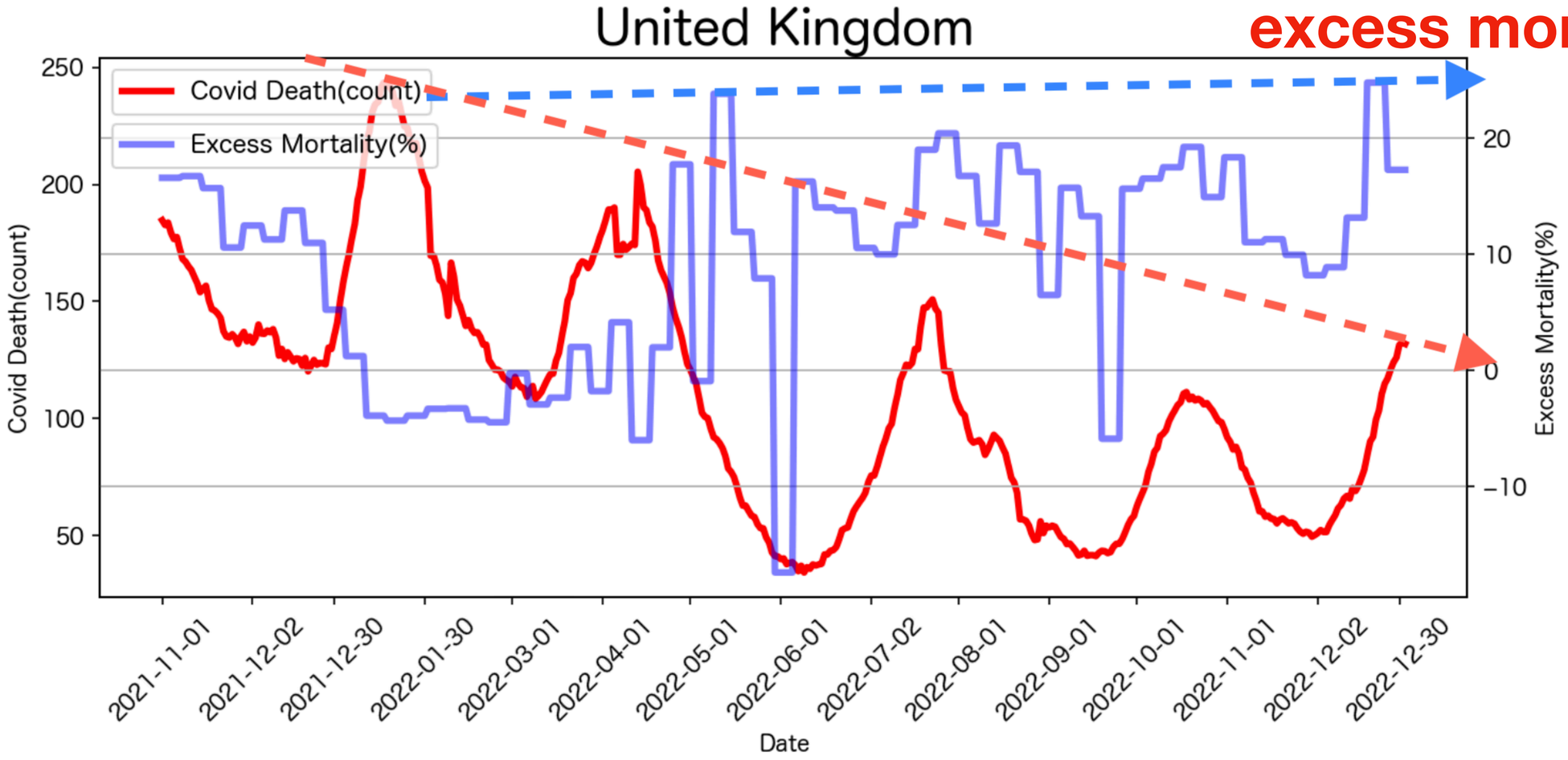
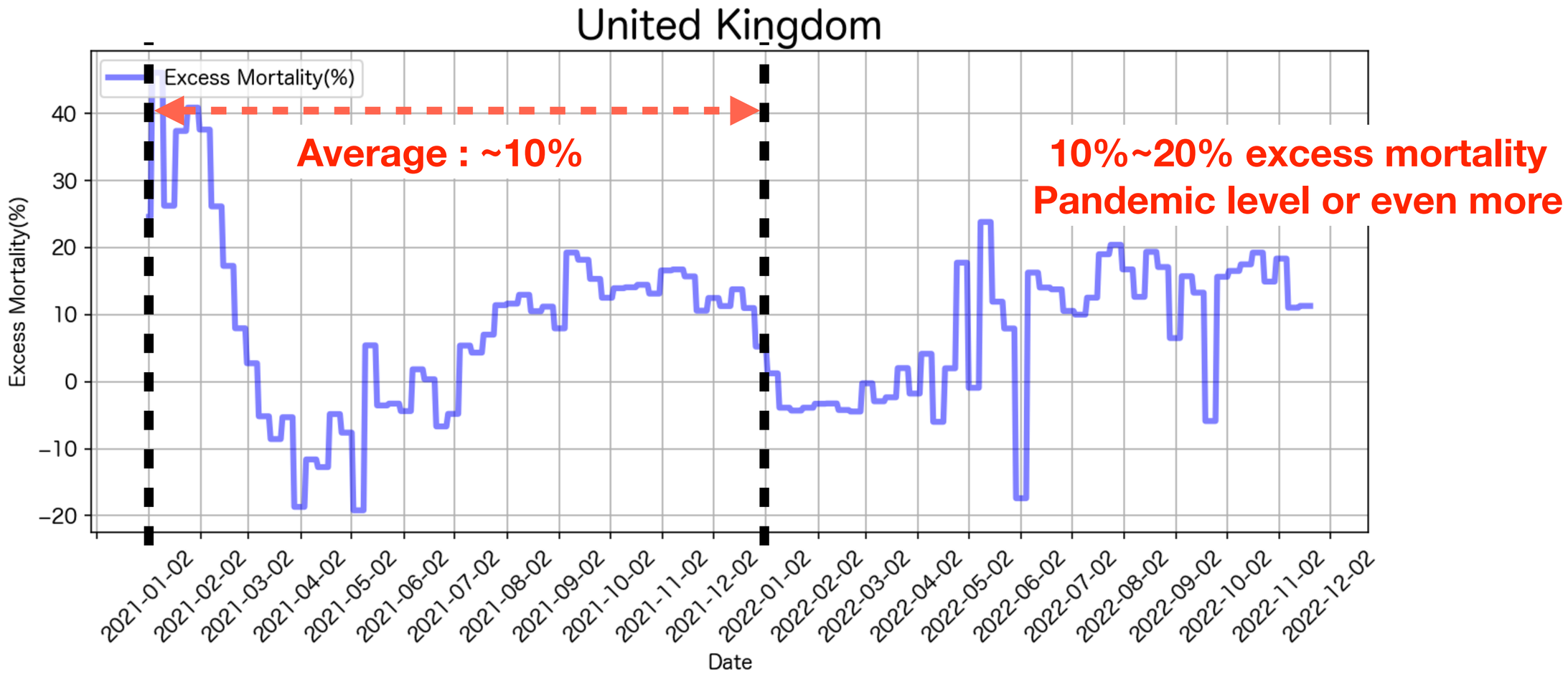
# Excess Mortality Around the World - UK

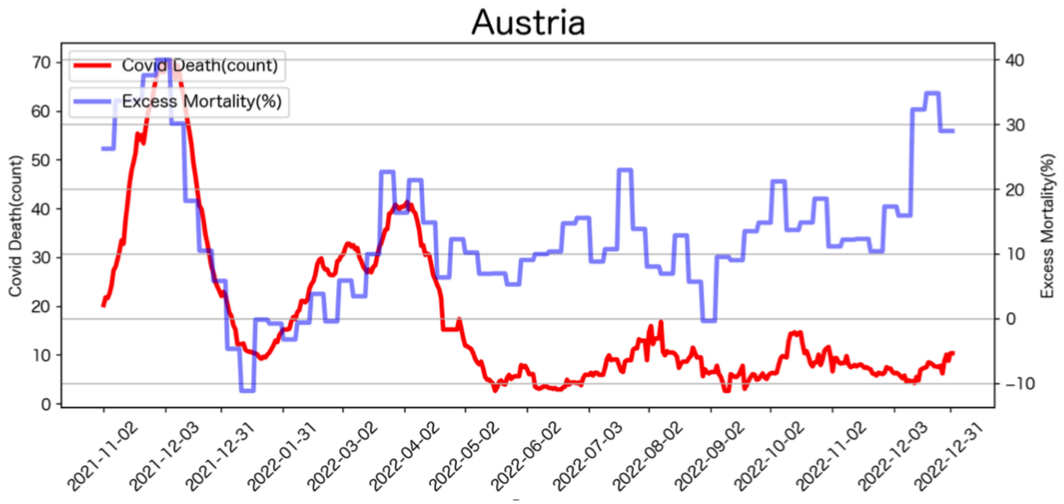
**10%~20%**
**excess mortality**

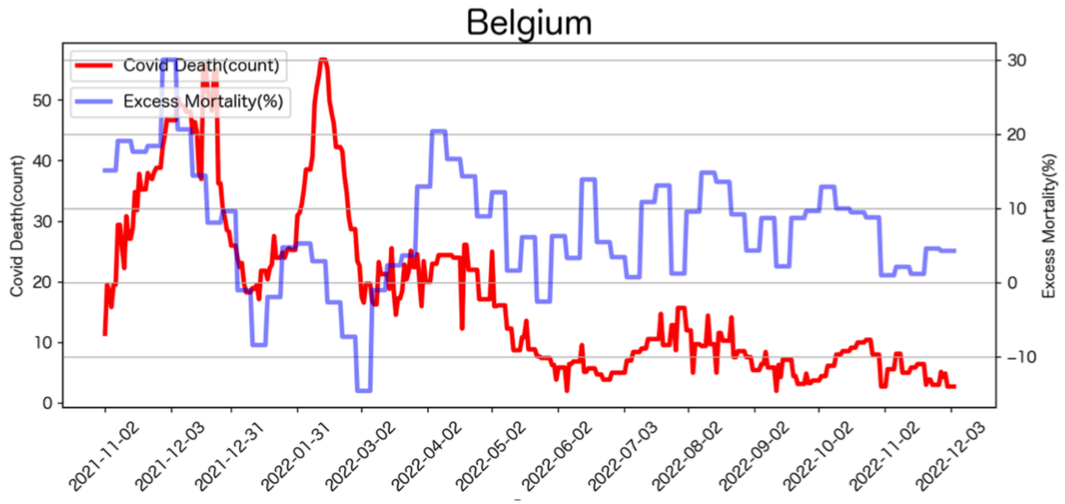


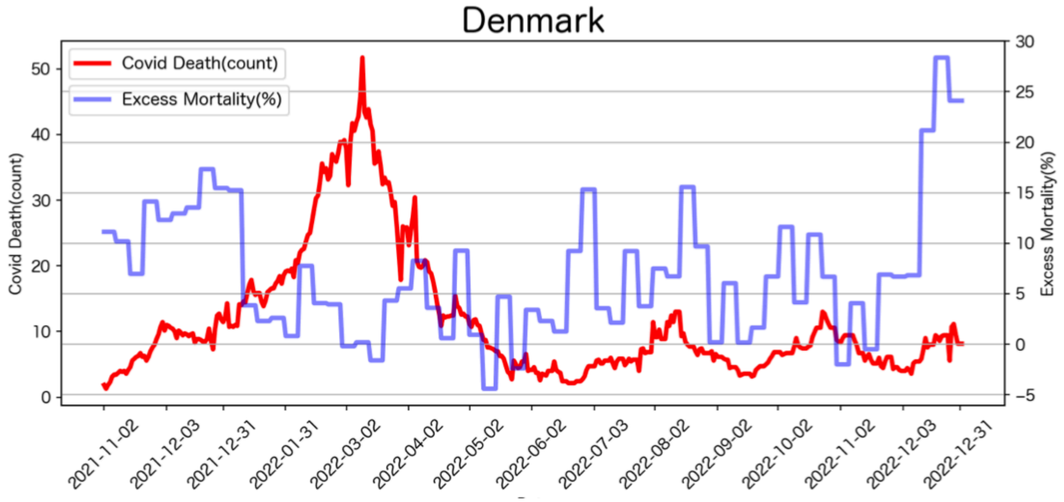
# Excess Mortality Around the World - UK (2021,2022)

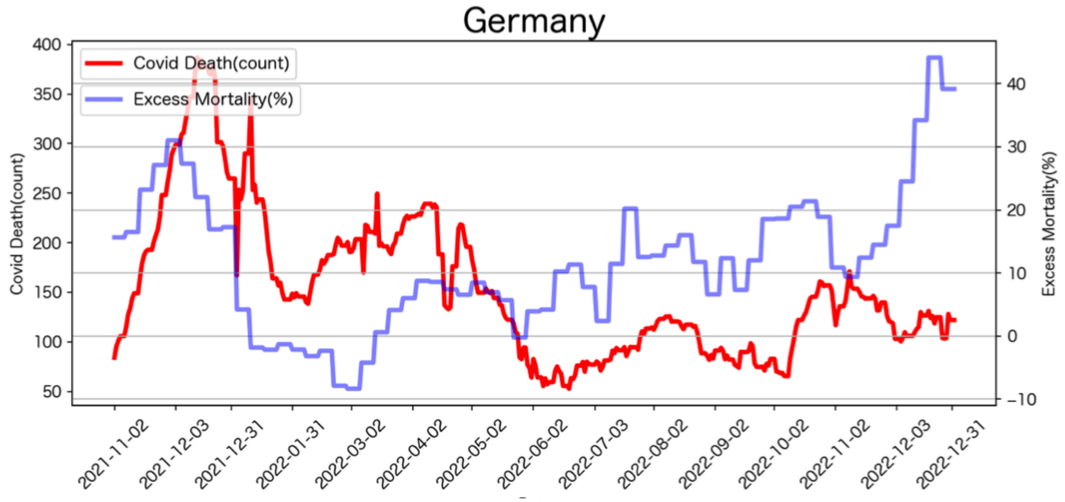


# Excess Mortality Around the World - Other Countries (1)

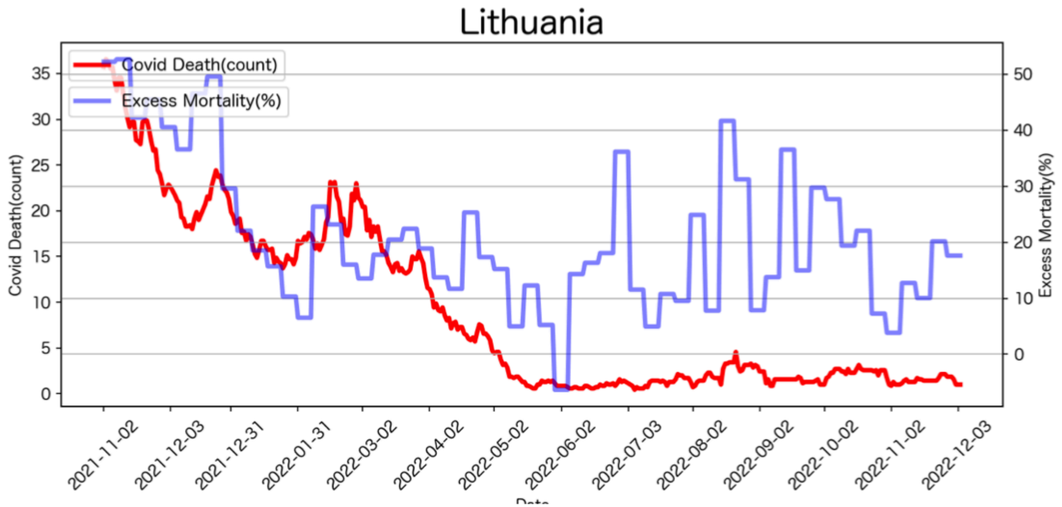


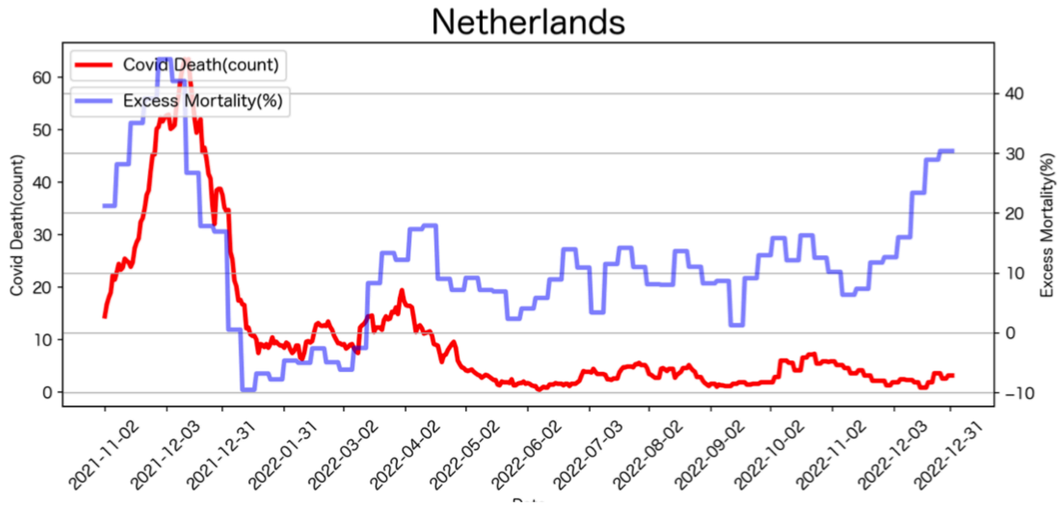



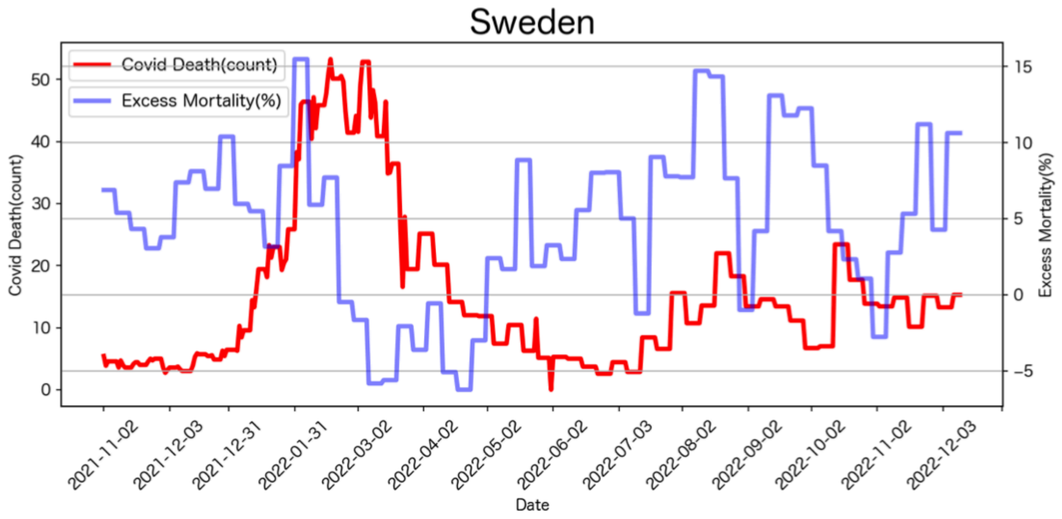



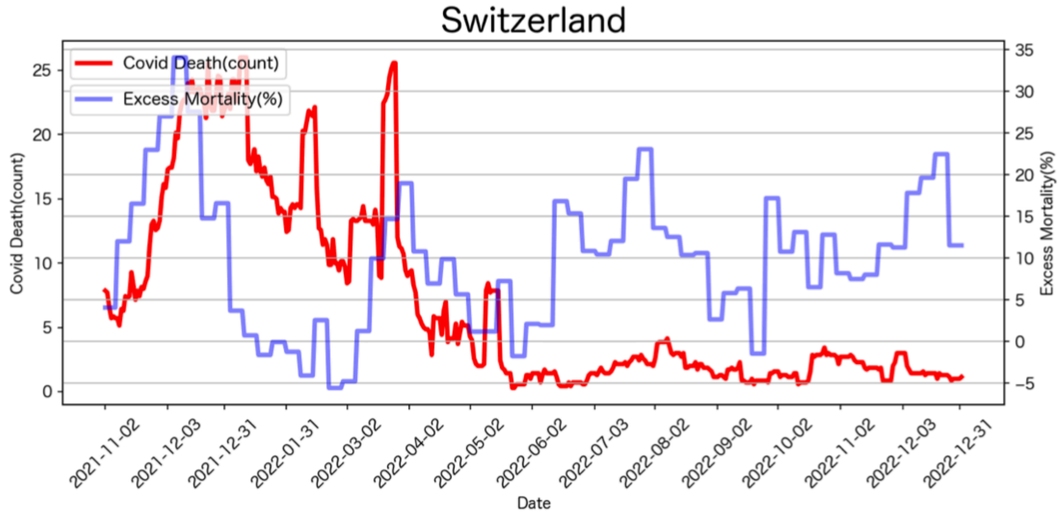



# Excess Mortality Around the World - Other Countries (2)



# Outline

- Concerns on COVID Vaccines
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# Variables Related To Excess Mortality

- Corona deaths (7-day average)
- Vaccine-related variables (which can express time elapsed since vaccination)
- Variables related to “lethal post-COVID sequelae effect”  (pre-existing infection rate, N-antibody possession rate)

Our World in Data

# Vaccine-related Variables

## TPAVI

- Different time periods after countries started Xdose vaccinations (Coding time periods into categorical variables)

| TPAVI Variables | Definition | TPAVI Variables | Definition |
|---|---|---|---|
| **1dose_1_3m** | After 1st dose, 1-3 months | **2dose_10_12m** | After 2nd dose, 10-12 months |
| **1dose_4_6m** | After 1st dose, 4-6 months | **2dose_13+m** | After 2nd dose, 13 months and more |
| **1dose_7_9m** | After 1st dose, 7-9 months | **3dose_1_3m** | After 3rd dose, 1-3 months |
| **1dose_10_12m** | After 1st dose, 10-12 months | **3dose_4_6m** | After 3rd dose, 4-6 months |
| **1dose_13m+** | After 1st dose, 13 months and more | **3dose_7_9m** | After 3rd dose, 7-9 months |
| **2dose_1_3m** | After 2nd dose, 1-3 months | **3dose_10_12m** | After 3rd dose, 10-12 months |
| **2dose_4_6m** | After 2nd dose, 4-6 months | **3dose_13m+** | After 3rd dose, 13 months and more |
| **2dose_7_9m** | After 2nd dose, 7-9 months | | |

# Vaccine-related Variables (example)

## TPAVI

- Variable of different time periods after 1st dose vaccination initiation(e.g. Japan)
- Date of 1st dose vaccination initiation: 2021-02-22
  (coding date into one-hot values)

| Date of data | 1dose_1_3m | 1dose_4_6m | 1dose_7_9m | 1dose_10_12m | 1dose_13m+ |
|---|---|---|---|---|---|
| 2021.05.01 | 1 | 0 | 0 | 0 | 0 |
| 2021.06.01 | 0 | 1 | 0 | 0 | 0 |

# Ever-infected Rate Related Variables

## Lethal Post-COVID Sequelae Effect

- High ever-infected rate → more lethal post-COVID sequelae → increase excess mortality


**Identification of deaths with post-acute sequelae of COVID-19 from death certificate literal text: United States, January 1, 2020–June 30, 2022**

CDC Stacks
Public Health Publications

December, 2022

By Ahmad, Farida B. ; Anderson, Robert N. ; Cisewski, Jodi A. ; ...

https://dx.doi.org/10.15620/cdc:121968

Series: NVSS vital statistics rapid release ; report no. 25

118

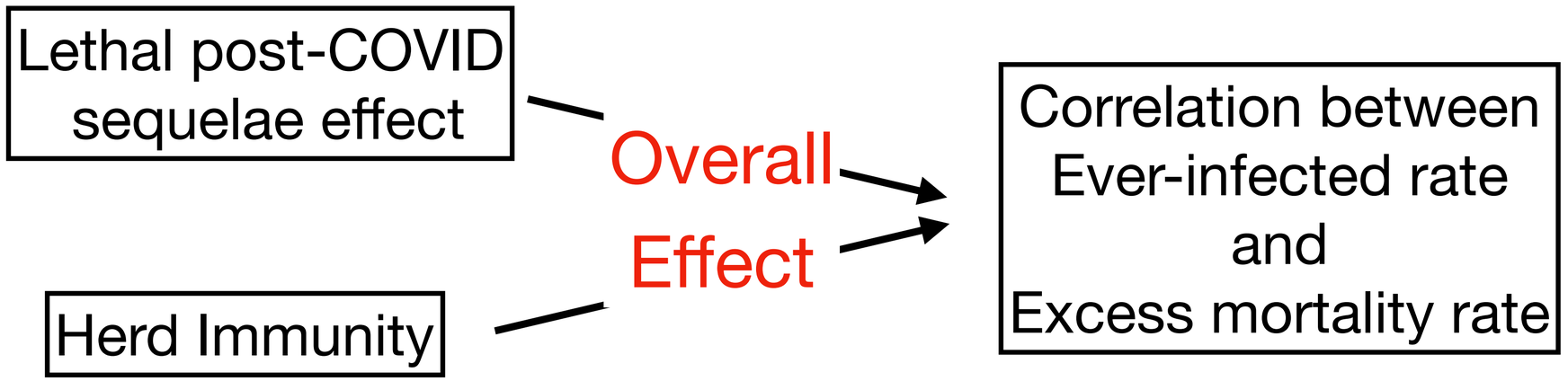
3544 deaths from post-COVID sequelae until June 2022

[1] https://stacks.cdc.gov/view/cdc/121968

# Ever-infected Rate Related Variables

## Herd Immunity Effect

- High ever-infected rate → Herd Immunity formed → decrease excess mortality rate



# Ever-infected Rate Related Variables(Design)

- High ever-infected rate
  - Data not available
  - Positively correlates with elapsed time (months) → can be expressed in terms of elapsed months
  - Seasonal effects → variables with 3-month interval
  - COVID deaths 2-8 weeks after infection → Reference date set to 2021.01.01 (1 month after 2020.12 winter)

# Ever-infected Rate Related Variables (TPARD)

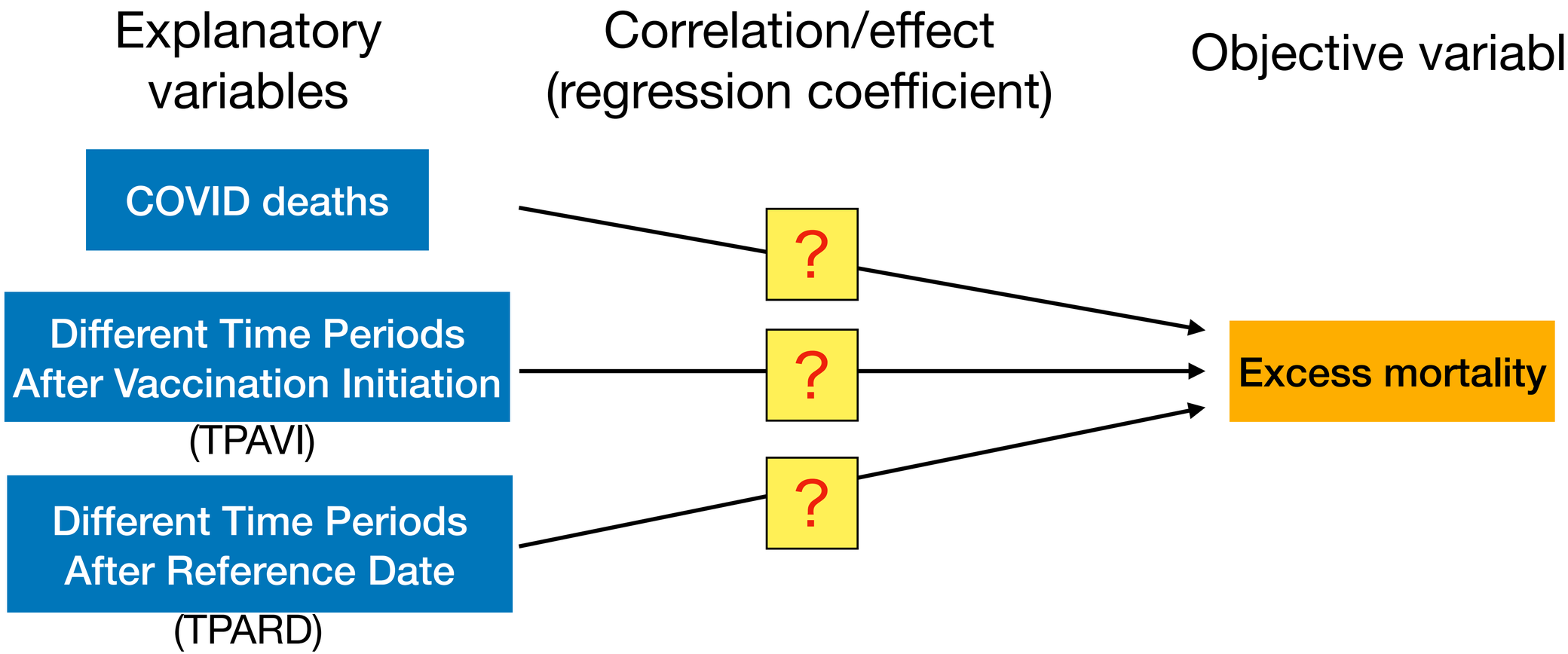
- Different time periods after the reference date (e.g., 1-3 months after the reference date of 2021.01.01)

| TPARD Variables | Definition | TPARD Variables | Definition |
|---|---|---|---|
| **overall_1_3m** | After Jan. 1st 2021, 1-3 months | **overall_13_15m** | After Jan. 1st 2021, 13-15 months |
| **overall_4_6m** | After Jan. 1st 2021, 4-6 months | **overall_16_18m** | After Jan. 1st 2021, 16-18 months |
| **overall_7_9m** | After Jan. 1st 2021, 7-9 months | **overall_19_21m** | After Jan. 1st 2021, 19-21 months |
| **overall_10_12m** | After Jan. 1st 2021, 10-12 months | **overall_22m+** | After Jan. 1st 2021, 22 months and more |

Coded similar as TPAVIs

# Analysis Method - Multiple Regression Analysis

## Predicting excess mortality



# Data Processing - Selection

- Data of countries excluded
  - Insufficient COVID death data (less than 10 updates)
  - Insufficient excess mortality data (less than 5 updates)
  - 3rd dose rate lower than median value ( need high value to see effect of 3rd dose vaccination)
- Dropped data before 2020.12
    - Bias in excess mortality rate due to early stage of the pandemic, disorder in each country, insufficient medical care, etc.
    - Vaccination rolled out in 2020.12
- Data of 55 countries representing 1.7 billion population

# Results - Model performance

## R-square

| Models | R-Square | Confidence Interval |
|---|---|---|
| **COVID death + TPAVIs + TPARDs** | $0.355 \pm 0.107$ | $(0.145,\ 0.569)$ |

# Regression Coefficients

P<0.05 → statistically significant (plotted as figures in next slides)

| Explanatory Variable(s) | Regression Coefficients | p value | Explanatory Variable(s) | Regression Coefficients | p value |
|---|---|---|---|---|---|
| **7 days average COVID death** | **0.674** | 0.000 | **3dose_4_6m** | 0.040 | 0.055 |
| **1dose_1_3m** | 0.010 | 0.599 | **3dose_7_9m** | **0.073** | 0.003 |
| **1dose_4_6m** | 0.010 | 0.725 | **3dose_10_12m** | **0.100** | 0.000 |
| **1dose_7_9m** | -0.007 | 0.841 | **3dose_13m+** | **0.129** | 0.000 |
| **1dose_10_12m** | **0.089** | 0.026 | **overall_1_3m(W)** | **-0.085** | 0.000 |
| **1dose_13m+** | 0.023 | 0.610 | **overall_4_6m(SP)** | 0.019 | 0.429 |
| **2dose_1_3m** | **-0.044** | 0.008 | **overall_7_9m(SU)** | 0.023 | 0.397 |
| **2dose_4_6m** | **-0.051** | 0.029 | **overall_10_12m(F)** | **-0.108** | 0.001 |
| **2dose_7_9m** | 0.030 | 0.308 | **overall_13_15m(W)** | **-0.214** | 0.000 |
| **2dose_10_12m** | **0.090** | 0.008 | **overall_16_18m(SP)** | **-0.153** | 0.000 |
| **2dose_13m+** | 0.068 | 0.081 | **overall_19_21m(SU)** | **-0.144** | 0.000 |
| **3dose_1_3m** | **0.039** | 0.010 | **overall_22m+ (F)** | **-0.147** | 0.001 |

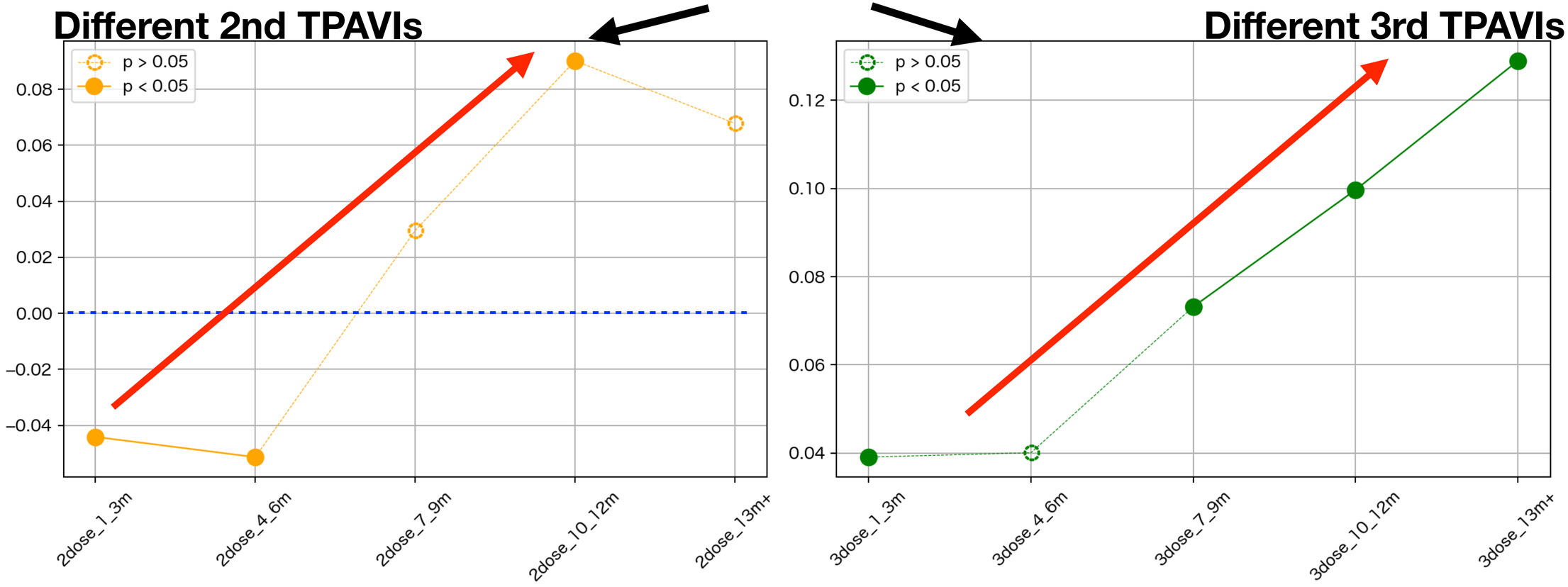
2nd dose TPAVIs

3rd dose TPAVIs

TPARDs

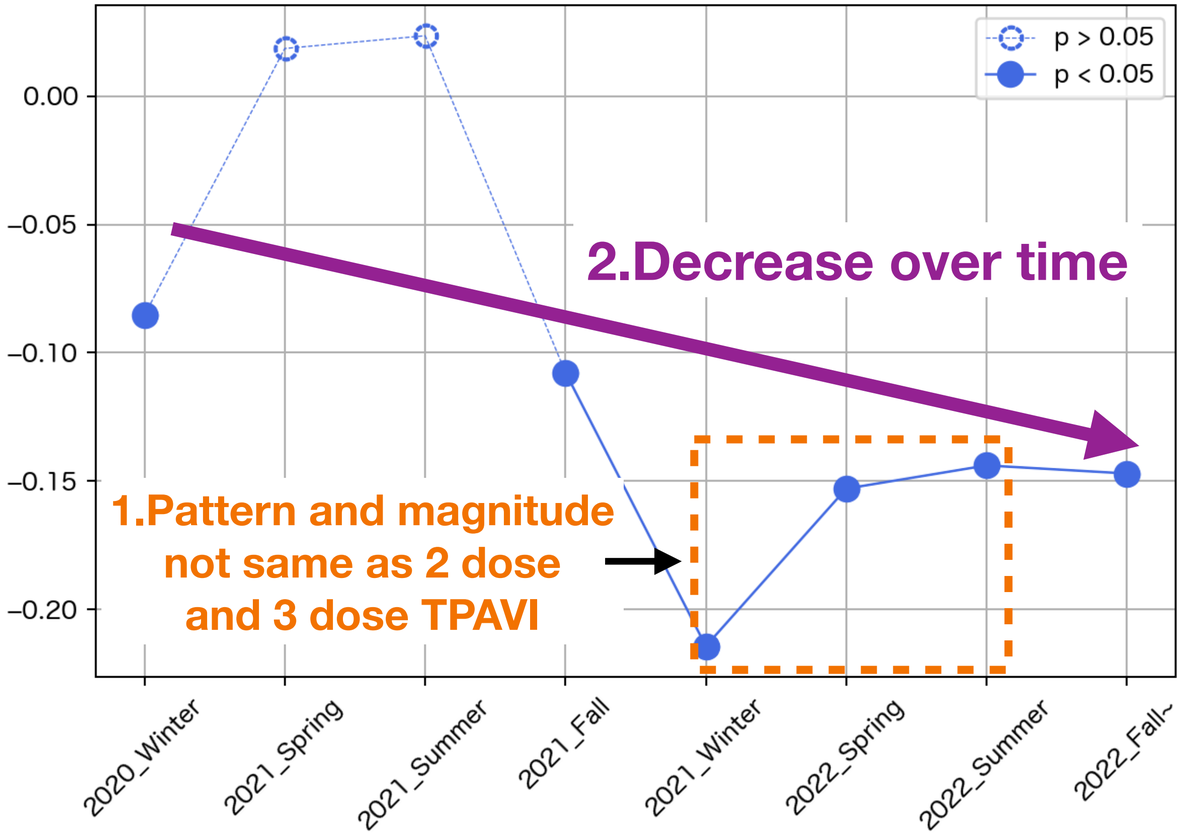
# Correlation Between TPAVIs and Excess Mortality

**Increase over time**
**& Positive in the end**



# Correlation Between TPARDs And Excess Mortality

## (Ever-infected rate related)




1. Increase pattern and magnitude between 2021_Winter and 2022_Summer not same as that of 2 dose and 3 dose TPAVIs

2. In decreasing trend over time.

   →Decreasing excess mortality.

   →Herd Immunity effect dominates.

   →Lethal post-COVID sequelae effect not obvious.

3. Increase between 2021_Winter and 2022_Summer should be seasonal. (Taking 2021_Spring and 2021_Summer into consideration)

# Discussion

- No other factors meets the conditions except TPAVIs
  - Global factor
  - Positive correlation with excess mortality in the long run
  - Positive effect on excess mortality keeps increasing gradually

→ **Causal**

# Conclusion

- Causal relation between TPAVIs and excess mortality
- Vaccination increase excess mortality at least from 10 months after 2nd dose vaccination initiation and 3rd dose vaccination initiation.

Vaccine increasing excess mortality is unacceptable.
Should be stopped immediately.

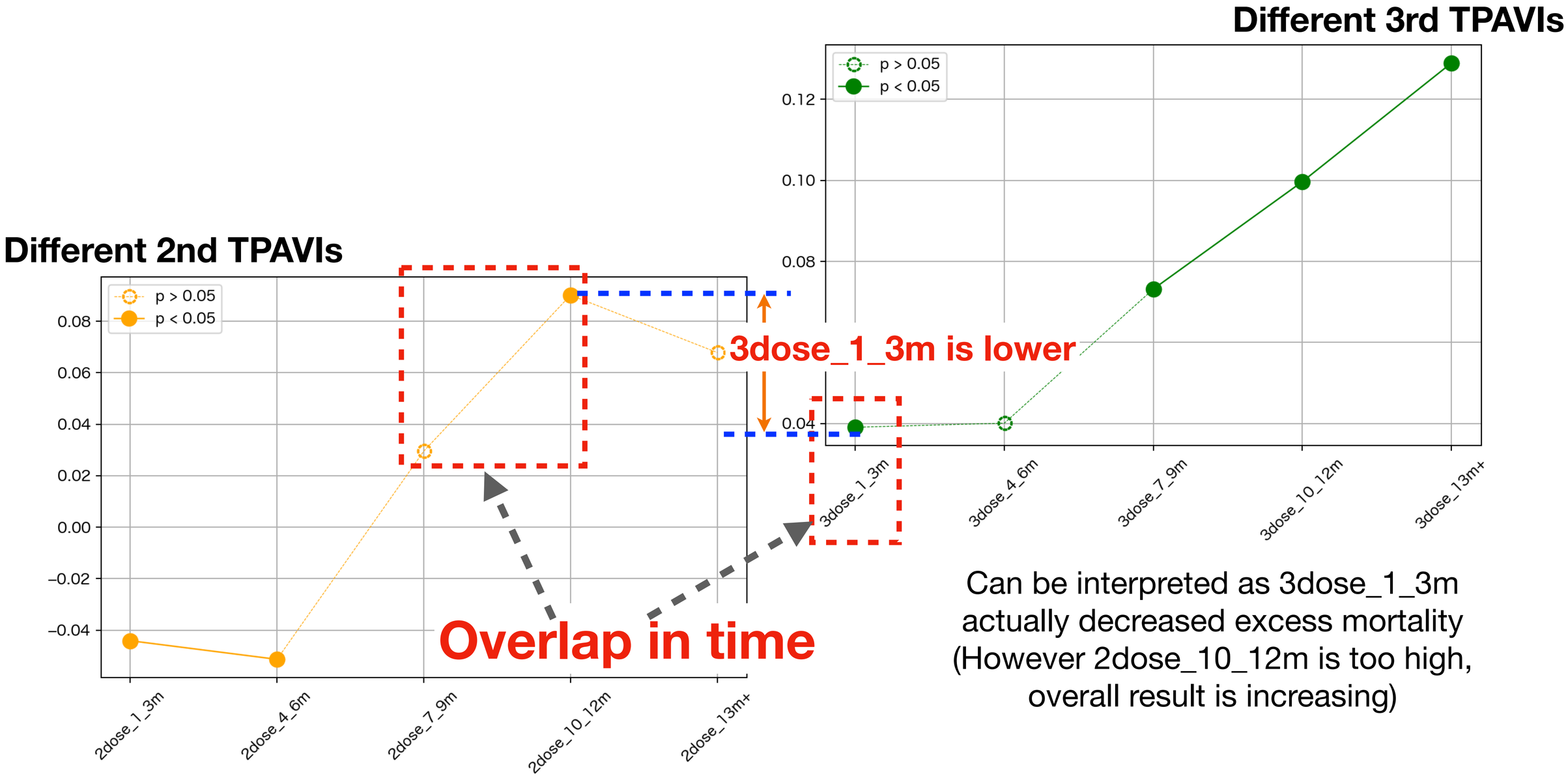
# More Details

Paper : https://osf.io/rczfu/

Open source code: https://github.com/SakuraDataAnalyst/00vaccine-data-analysis.git

# Appendix

# Why 3dose_1_3m Is Positive?




Can be interpreted as 3dose_1_3m actually decreased excess mortality (However 2dose_10_12m is too high, overall result is increasing)