

# COVID-19 and health economics/HTA challenges in a Swedish perspective

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# COVID-19 activities, early 2020 in Sweden, Europe and the US

- 31<sup>st</sup> January 2020 Sweden receives its first confirmed COVID-19 case
- 11<sup>th</sup> March the first death in COVID-19 was reported in Sweden
- Within two weeks, almost all EU and OECD countries had banned public gatherings, closed schools and workplaces, and restricted travel within the country.
- On 19<sup>th</sup> March, Stanford professor John Ioannidis, warned that decision-makers may feel compelled to impose severe restrictions without knowing what effect they have.
- 16<sup>th</sup> March, Professor Niel Ferguson, at Imperial College COVID-19 Response Team in London, estimates the pandemic could lead to 250,000 deaths in Britain and 1.2 million in the United States if communities were not shut down to completely stop the spread of the disease. Without restrictions in Sweden it could have meant 85,000 deaths.
- This led to a change in strategy by the United States and the United Kingdom.



# The Swedish corona policy has attracted a great deal of attention - in Sweden and internationally.

- Sweden are described negatively: as irresponsible, liberal, "permissive", "laissez-faire", as a warning example.
- But also positive - Sweden is a role model.

# The Swedish policy response to COVID-19 is exceptional by international comparison

Three articles in the Swedish constitution:

- The first guarantees the freedom of movement for Swedish citizens, ruling out nationwide lockdowns.
- The second establishes unique independence for public agencies, allowing them to design the policy response to the pandemic.
- The third grants exceptional powers to local government. In addition, the Swedish approach is fostered by strong trust in the government.

[Source: Sweden's Constitution Decides Its Covid-19 Exceptionalism](#)

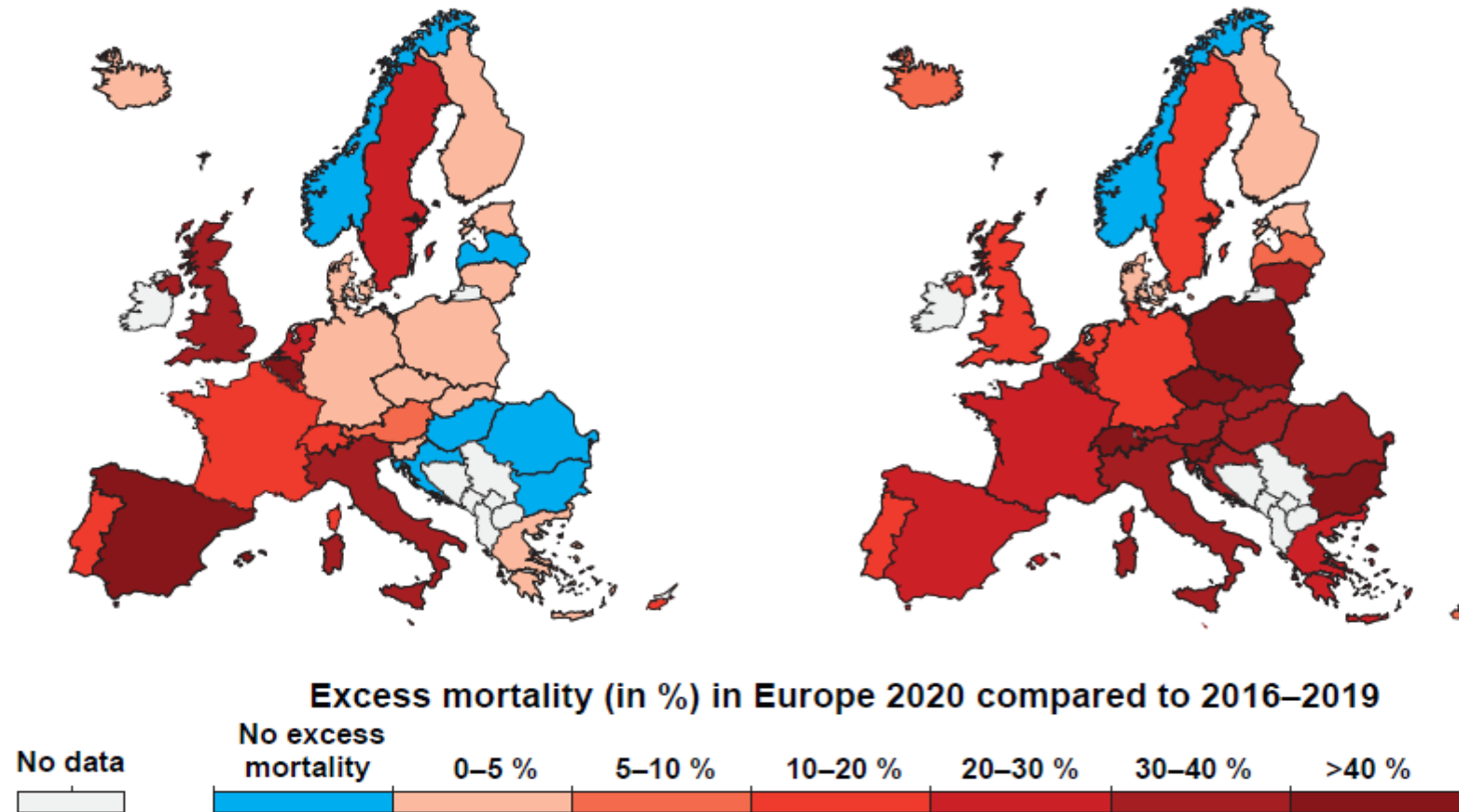
[Lars Jonung](#), 2020 Jun 10, Department of Economics, Lund University, 14 p. (Working Papers.; vol. 2020, no. 11).



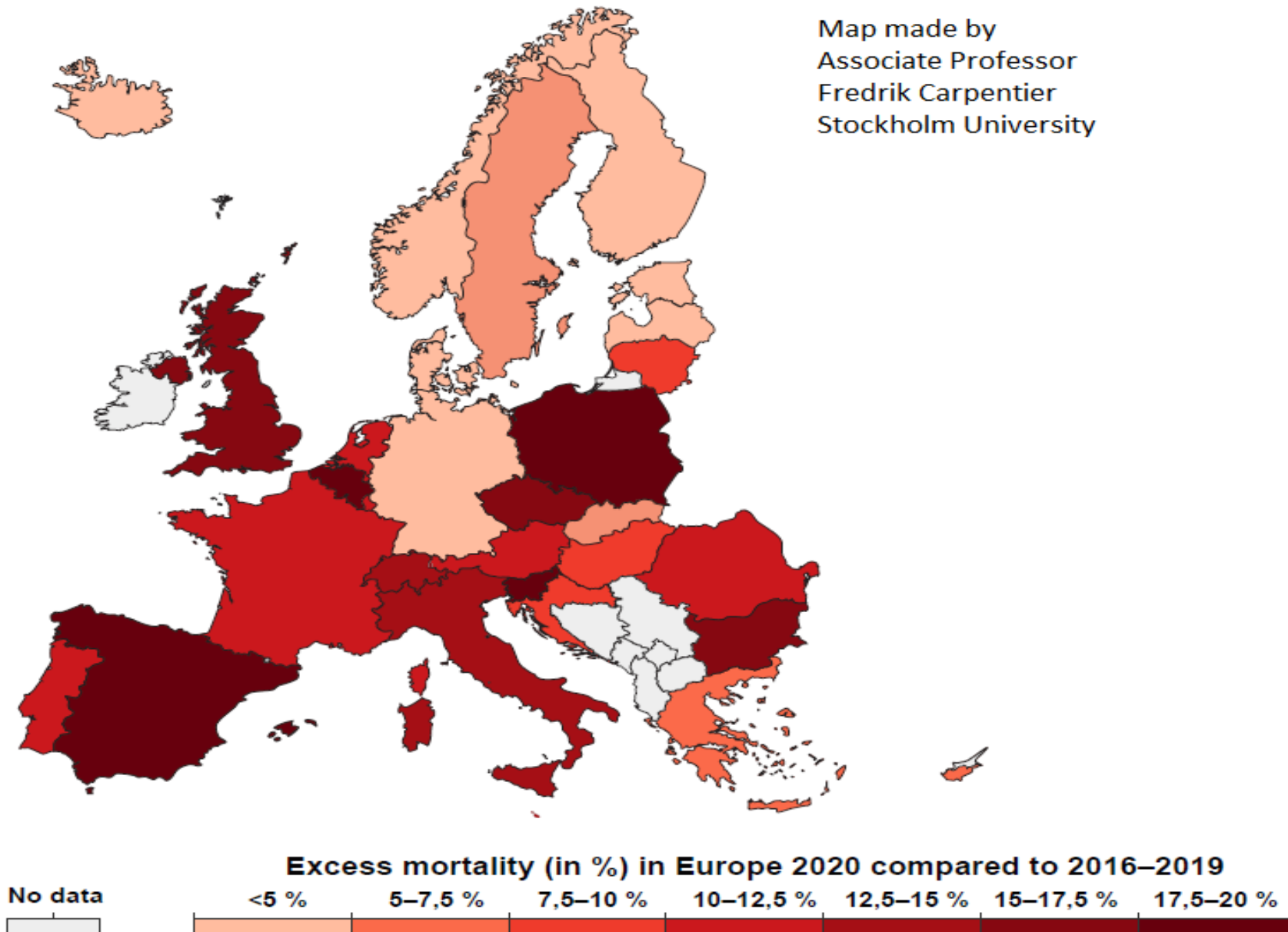
First "wave": March to May 2020

Second "wave": October to December 2020

Map made by  
Associate Professor  
Fredrik Carpentier  
Stockholm University



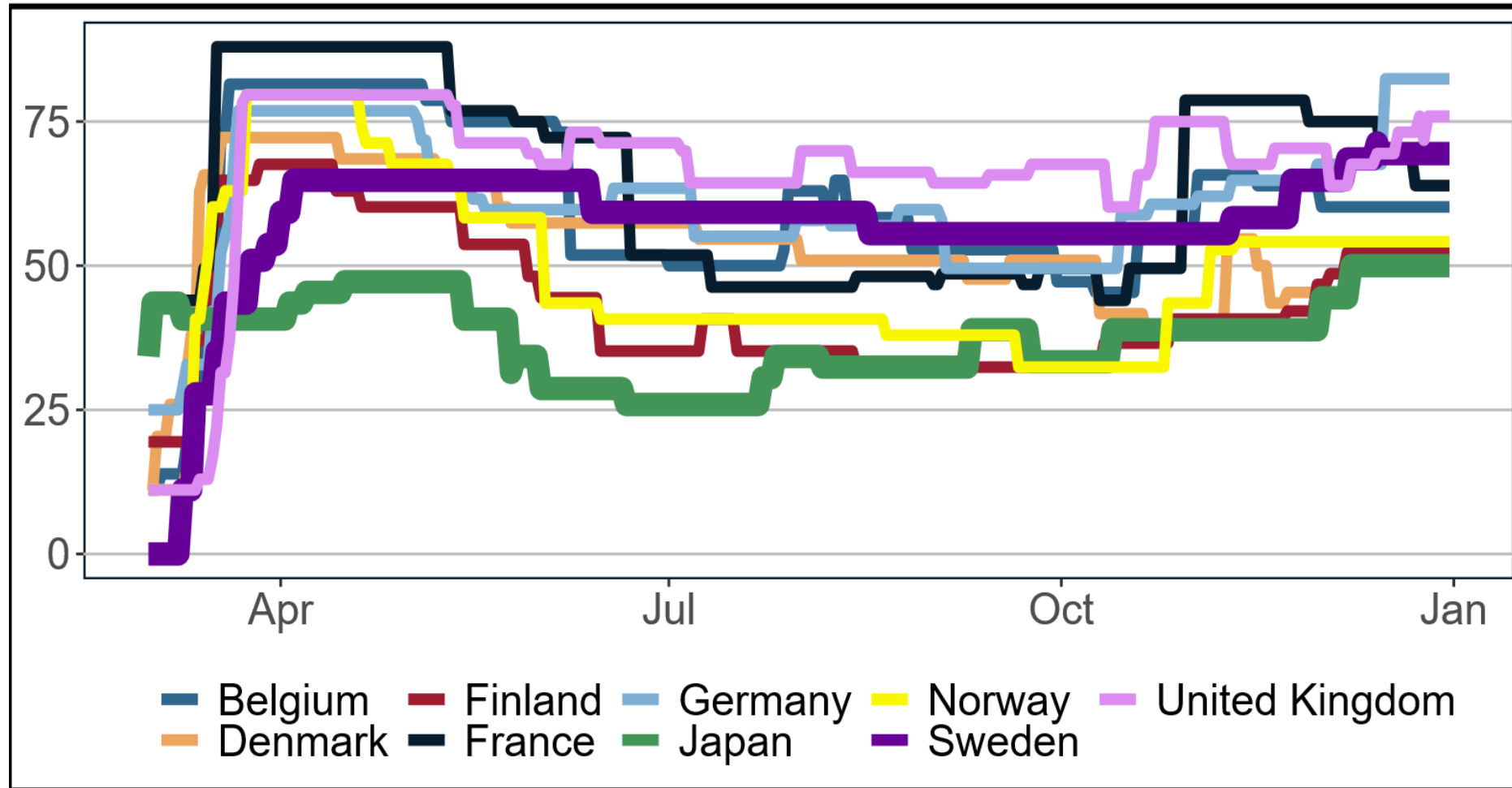
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# Low excess mortality in Sweden and Scandinavian countries

- The excess mortality rate in Sweden for 2020 is 7.9 percent compared with the average for 2015-2019.
- Sweden's excess mortality is among the lowest in Europe.
- All Nordic countries have low excess mortality compared to the rest of Europe.

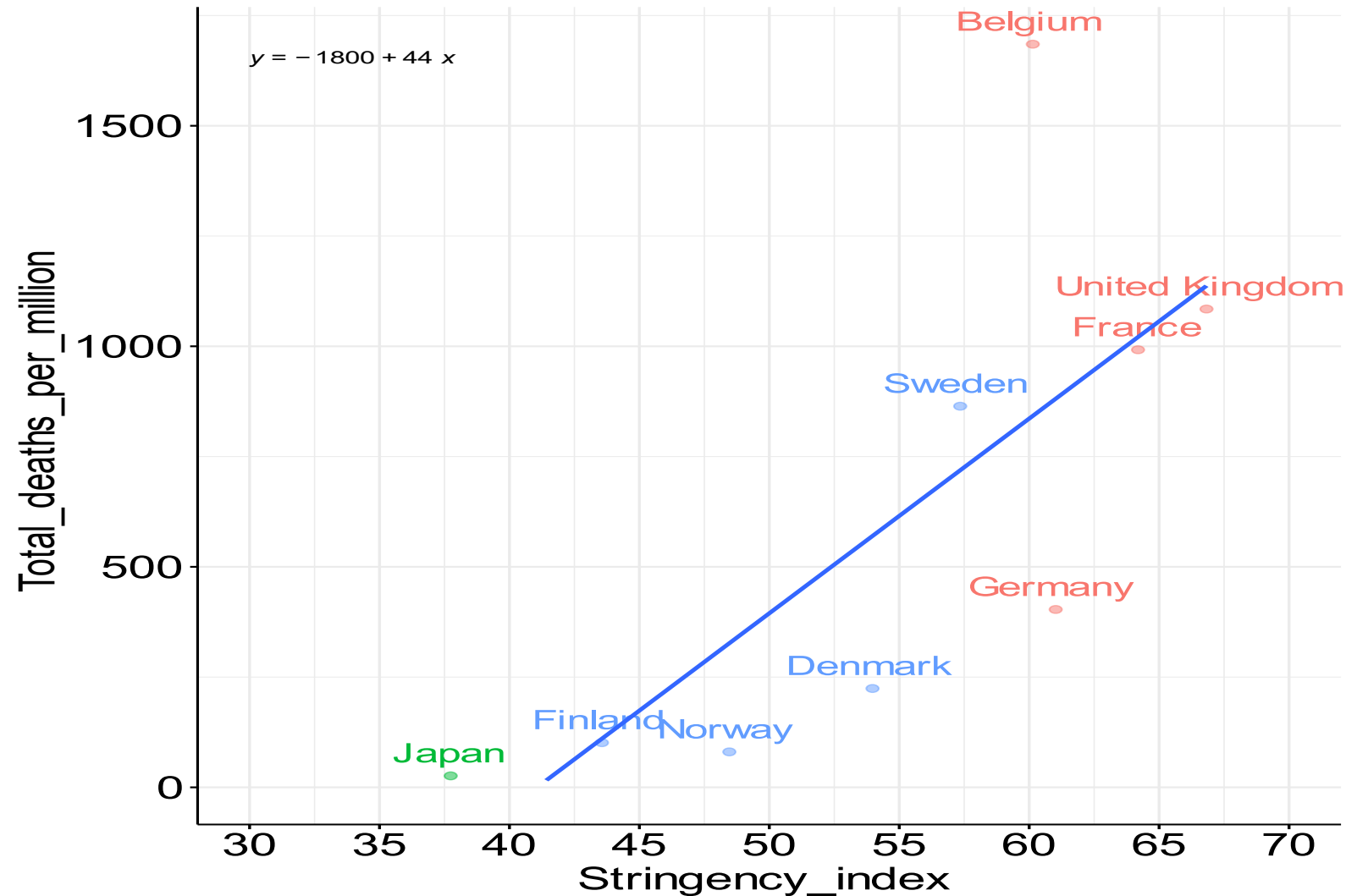
# Stringency Index, selected countries



Source: University of Oxford, <https://ourworldindata.org/policy-responses-covid>.



Correlation between degree of stringency index (average level of "lock down" during 2020) and total number of deaths with Covid-19 diagnose during 2020, Japan and some European countries.



# Three types of "costs" of COVID-19

- Health loss due to excess mortality and morbidity.
- Health loss due to Non Pharmaceutical Interventions (NPIs), i.e. lock down or restrictions, e.g. increased loneliness, reduced usual activities, ban or limit public events, encourage social distancing, ban on visiting nursing facilities, school closure, working remote, travel limitations.
- Economic consequences, e.g. GDP gap, unemployment rises.

# Research conducted in Sweden

## Objective:

- To estimate the impact of COVID-19 on excess mortality in terms of lost Quality Adjusted Life Years (QALYs)
- To estimate the health-related quality of Life, QALYs lost in the Swedish population related to Non-Pharmaceutical Interventions (NPIs).

### Sources:

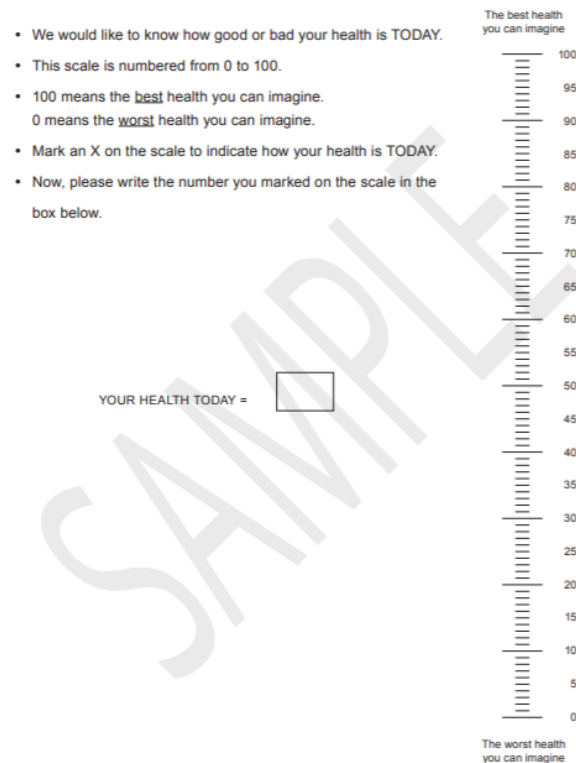
**Persson U**, Olofsson S, Yan Gu N, Gong C L, Jiao X and Hay J. [Quality-of-Life in the Swedish general population during Covid-19 – based on measurement pre- and post pandemic outbreak](#). Lund, Sweden: IHE Report 2020:7

**Persson U**, Olofsson S, Keel G. [Disease burden associated with Covid-19 in Sweden – QALYs lost due to excess mortality](#). Lund, Sweden: IHE Report 2020:8



# Measurement of health-related Quality of Life Years (QALYs) lost

## Visual Analogue Scale (VAS)



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## EQ-5D-5L (indirect Time-Trade-Off)

Under each heading, please tick the ONE box that best describes your health TODAY.

### MOBILITY

- I have no problems in walking about
- I have slight problems in walking about
- I have moderate problems in walking about
- I have severe problems in walking about
- I am unable to walk about

### SELF-CARE

- I have no problems washing or dressing myself
- I have slight problems washing or dressing myself
- I have moderate problems washing or dressing myself
- I have severe problems washing or dressing myself
- I am unable to wash or dress myself

### USUAL ACTIVITIES (e.g. work, study, housework, family or leisure activities)

- I have no problems doing my usual activities
- I have slight problems doing my usual activities
- I have moderate problems doing my usual activities
- I have severe problems doing my usual activities
- I am unable to do my usual activities

### PAIN / DISCOMFORT

- I have no pain or discomfort
- I have slight pain or discomfort
- I have moderate pain or discomfort
- I have severe pain or discomfort
- I have extreme pain or discomfort

### ANXIETY / DEPRESSION

- I am not anxious or depressed
- I am slightly anxious or depressed
- I am moderately anxious or depressed
- I am severely anxious or depressed
- I am extremely anxious or depressed

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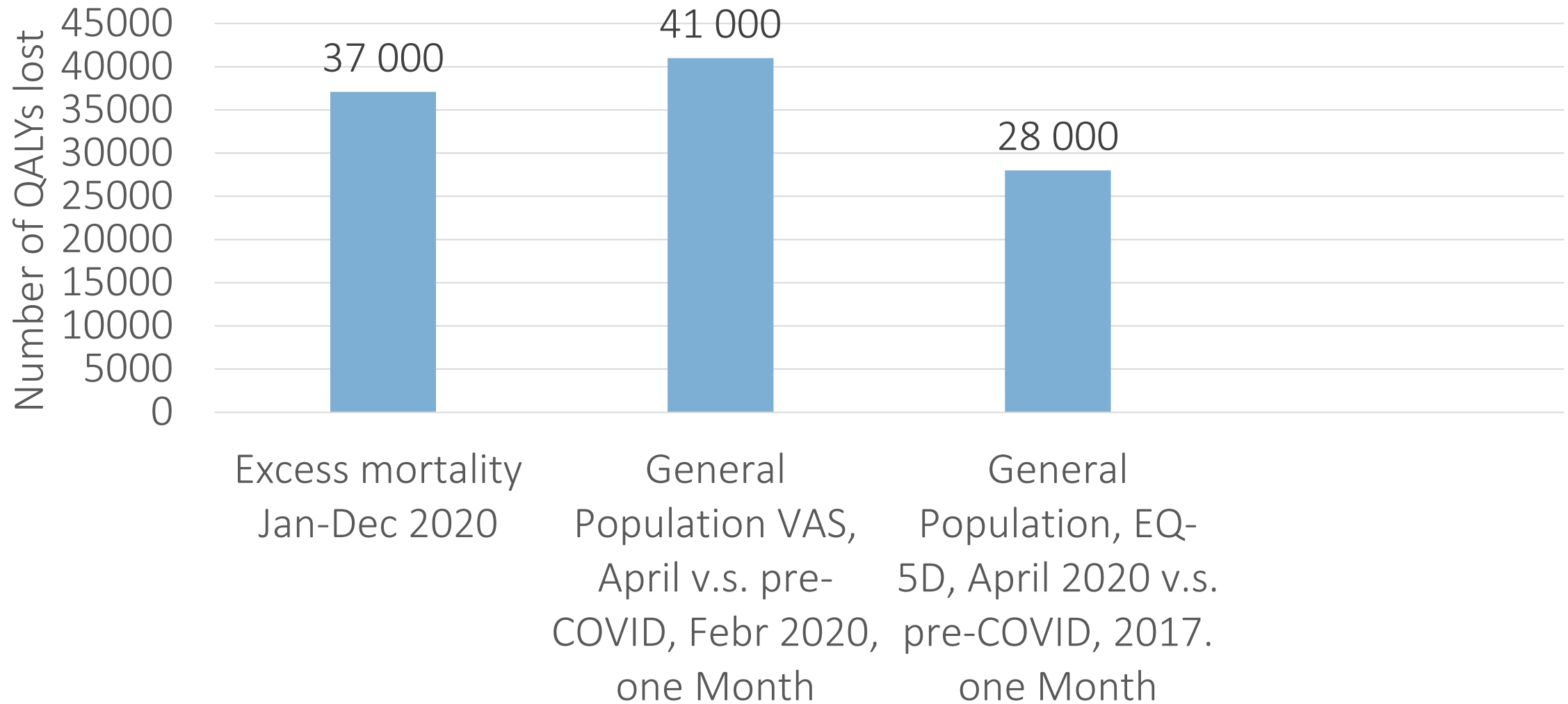
# Methods to estimate QALY lost due to excess mortality

- Estimate excess mortality, by comparing total deaths in Sweden 2020 versus the average number of deaths during the same period 2015-2019.
- Estimate the number of life years lost for individuals died in 2020 assuming same life expectancy as the general population at same age and gender
- Estimate the Quality of Life (QoL) lost for dead by assuming same QoL as general population at same age and gender

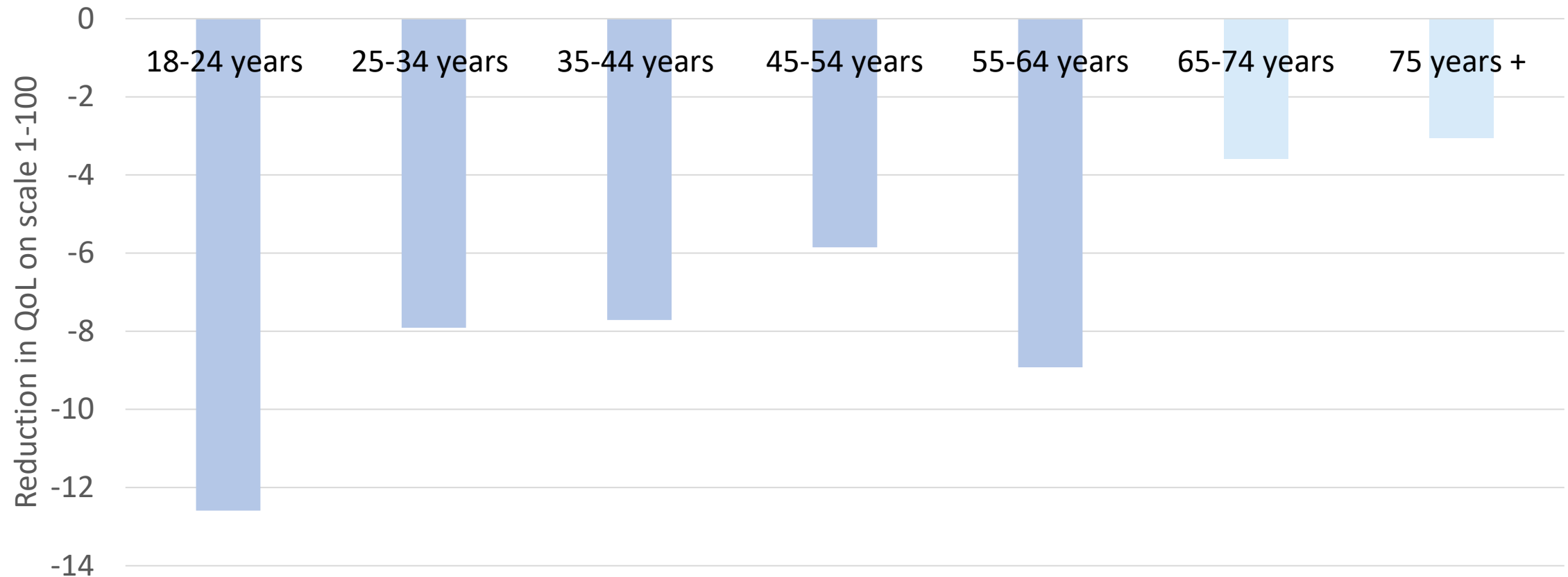
# Methods (cont.) to estimate QALY lost due to Non Pharmaceutical Interventions (NPIs)

- **Web survey 1 (Pre-pandemic outbreak)**
  - February 2020
  - 1016 out of 3096 (response rate: 33%) – internet panel
  - Visual Analogue Scale (VAS)
- **Web survey 2 (Post-pandemic outbreak)**
  - April 2020
  - 1003 out of 4 792 (response rate: 21 %) – internet panel
  - VAS and EQ-5D-5L

# Results: QALY- lost

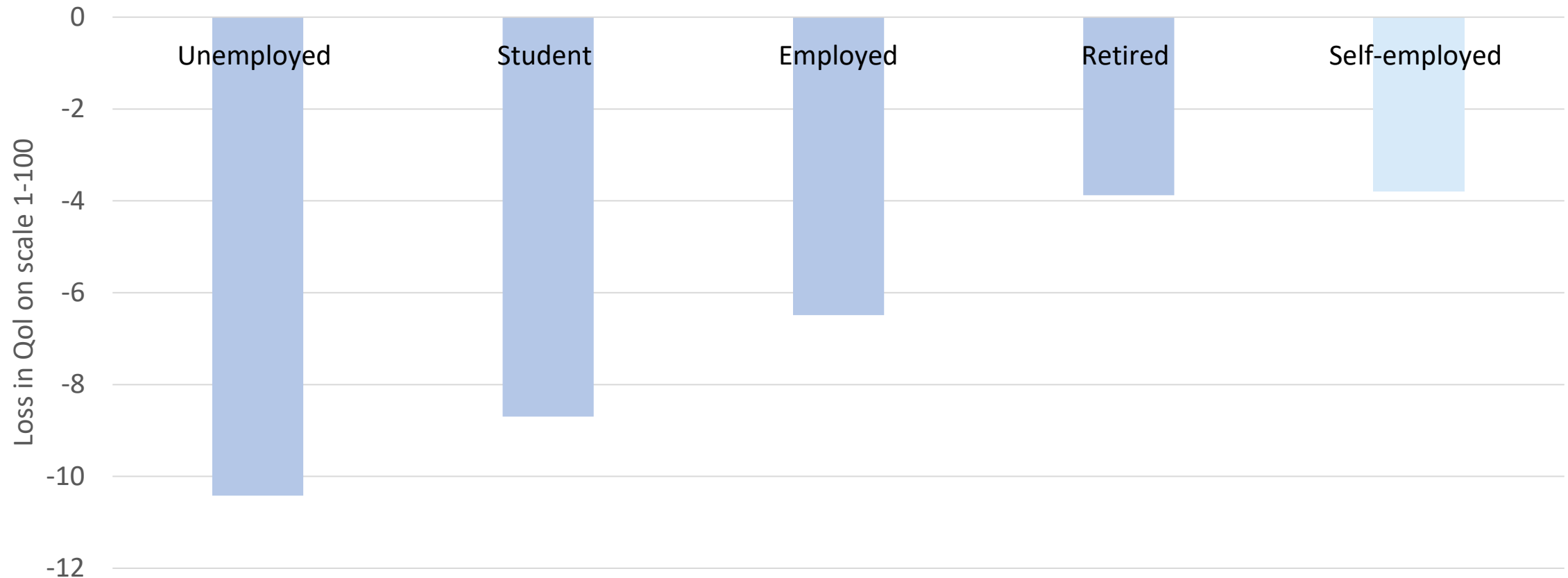


# Loss in QoL between Feb and April 2020 (with controls) – VAS, by age (light blue = not significant)





# QoL between Loss in Feb and April 2020 (with controls) – VAS, by occupation (light blue = not significant)



# Results continued...

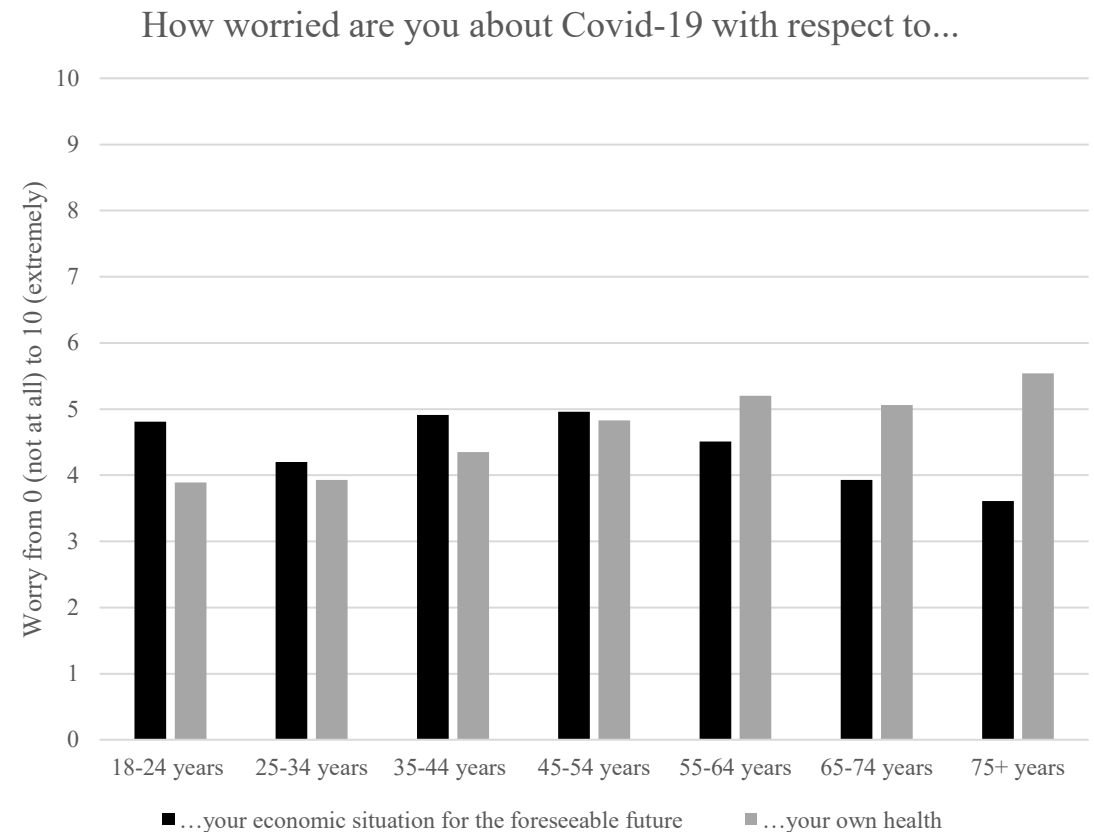
- Impact on QoL (VAS) in April 2020 (with controls) of:

Worry about economy:

-0.846,  $p < 0.01$ .

- Worry about health:

-0.606,  $p < 0.05$ .



# Results:

## Three types of "costs" of COVID-19 in Sweden 2020

- Health loss due to excess mortality :  
€150 million per month (overestimated, life expectancy shorter than GP)
- Health loss due to Non-Pharmaceutical Interventions (NPIs), i.e. lock down or restrictions:  
€1,400 million per month (Conservative estimate)
- Macro-Economic consequences:  
€2,500 million per month (estimated by The Riksbank, Sweden's central bank)

# Estimating the value of COVID-19 vaccine, example

- Assuming vaccine may reduce time with NPIs by three months
- Reduced QALY loss: 3 months x 28 000 QALYs
- Value of a QALY in Sweden is €50 000
- Monetary value of reducing NPI time by three months is € 1,400 million (28 000 x €50 000)
- 8 million adult individuals x 2 injections = 16 million doses
- Value per dose € 87.5 (value for reducing GDP loss and mortality not included)
  
- Cost per adm €25, price per vaccine €5 - €15

# Discussion

- Today it is too early to evaluate the Corona policy
- “In a few years, when we have better data, our forecast is that the mandatory shutdown policy will appear to be a gigantic failure”.
- However, we can't be sure there will be some truly comprehensive and open evaluation of the shutdown policy. It was what we learned from the millennium bug: few want to be reminded that they participated in a mass hysteria.

[Source: Coronaviruset i Sverige. "Nedstängningar gör mer skada än nytta"](#)  
[Lars Jonung](#), Ulf Persson & Roger Svensson, 2021 Jan 27, Svenska  
Dagbladet 1 p.



# Thank You!