Request for expertise: can the excess mortality from 2020 and 2021 be (partly) explained by delayed care?

Dear Sabine, Roderik and Jan,

As you know, Ronald and I have been working for some time to assess the plausibility of delayed care as an explanation for the excess mortality of 2020 and 2021. Specifically, we are looking at the influence of delayed screening, and delayed care, for breast cancer, cervical cancer, and colon cancer patients. In the picture below, you can see mortality and excess mortality in the Netherlands. You can also see when population screening was halted and resumed. To the best of our knowledge, there never was a full stop on cancer care of already diagnosed cancer patients.

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**Figure 1.** Mortality and expected mortality. Also indicated is the period when screening stopped and the restart for each of the three population studies. Each study was restarted at a different time. The aim of this study is to link delayed care for each of the three groups to excess mortality as observed.

The purpose of this document is equivalent to that of an expert report in a court case. In summary, we would like you to look at the data that we provide, combine it with your clinical expertise, and provide us with your expert opinion. Of course, you may also use data that you deem relevant and that we are not aware of.

Based on the aim of this project, we will present you with four hypothetical scenarios. For each of these scenarios we would like you to indicate **if the scenario is plausible given the data available to you**. Hence, it could very well be that your answer is that the current data does not enable you to provide a clear answer. If a clear answer cannot be provided it is key that you indicate what is missing and what the consequence is for your answer.

We would like to ask you to separately write down your answer in such a way that we can include it in the report. Please remember that the purpose of your reports is equivalent to that of court case expert reports. We will therefore publish these reports unedited in the appendix of the ZonMw report. For this we would like to receive your written confirmation.

The four possible scenarios for which we would like to use your expertise are:

1. There is no excess mortality in 2020 and 2021.
2. The excess mortality from 2020 and 2021 can be explained by Covid-19.
3. The excess mortality from 2020 and 2021 can be explained by the temporary cessation of population screening.
4. The excess mortality from 2020 and 2021 can be explained by delayed care of already diagnosed cancer patients.

Of course, you are free to add your own scenarios.

Kind regards,

Ronald Meester and Marc Jacobs

## Hypothesis 1: There is no excess mortality in 2020 and 2021.

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**Figure 2**. All-cause mortality for the Netherlands from 2015 tot 2023.

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**Figure 3**. Excess mortality for the Netherlands from 2020 to 2023 indicated as percentages.

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**Figure 4.** Excess mortality for the Netherlands from 2020 to 2023 for three age groups. The bar charts show the difference between observed and the mean expected mortality.

**Figure 5.** Estimated cumulative excess mortality based on two models (WHO and The Economist).

Hypothesis 2: The excess mortality from 2020 and 2021 can be explained by Covid-19.

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**Figure 6.** Percentage of total mortality attributed to Covid-19.

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**Figure 7.** Total, expected, excess and Covid-19 mortality. A positive bar chart shows that the excess mortality cannot be fully explained by Covid-19. A negative bar-chart hints at a decrease in other causes of death.

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**Figure 8.** Causes of death from 1950 to 2022 for the Netherlands. Highlighted are cancer, covid, and the flu.

**Figure 9.** Causes of death from 1950 to 2022 for the Netherlands. Highlighted are cancer, covid, and the flu.

Hypothesis 3: The excess mortality from 2020 and 2021 can be explained by the temporary cessation of population screening.

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**Figure 10.** Percentage screening for breast, cervical and colon cancer in the Netherland from 2004 to 2021.

**Figure 11.** Cancer mortality for colon, breast and cervical cancer pre- and during Covid.

**Figure 12**.Death by colon cancer from 1950 to 2022 per age group and sex.

**Figure 13.** Death by colon cancer from 1989 to 2022 per age group and sex.

**Figure 14.** Survival for colon cancer based on TNM stage and sex from 2010 onwards.

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**Figure 15.** Number of deaths by cervical cancer from 1950 to 2022 by age category.

**Figure 16.** Number of deaths for cervical cancer by year (1989 to 2021), age group, and covid period.

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**Figure 17.** Number of breast cancer death from 1950 to 2022 by age category.

**Figure 18**. Number of breast cancer death by year (1989 to 2021), age and period.

**Figure 19**. Breast cancer survival by TNM stage from 2010 onwards.

Hypothesis 4: The excess mortality from 2020 and 2021 can be explained by delayed care of already diagnosed cancer patients.

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**Figure 20.** Average expenditure of health care costs per person across age and years.

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**Figure 21**. Health care expenditure from 2011 till 2021 for type of care.

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**Figure 22.** Cost for specialist medical care by year, age category and sex for 10 random postal codes.

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**Figure 23.** Health care expenditure per year, per sex, and per type of care excluding specialist medical care.