Public Health Scotland

Dear Steven Hammer

Freedom of Information Reference: 2021-000654

Thank you for your information request of 15th June 2021.

"I would like to know how the figures for expected deaths in the vaccinated age groups published at https://beta.isdscotland.org/find-publications-and-data/population-health/covid-19/covid-19-statistical-report/ published on 6 June 2021 were calculated. Please could you release an MS Excel file, R script or similar file format showing how the expected deaths for each age group quoted in Tables 1 and 2 on pages 8 and 9 were calculated?"

I confirm that Public Health Scotland holds the information you have requested and that this can be provided to you. I enclose the following documents:

- R Script Document Titled FOI 2021-000654

This document outlines the analysis used to calculate the expected number of deaths in the 28 days following a Covid-19 Vaccination (number of days between vaccine and death/censor is 0-27, where 0 is the day of vaccination). Further details on the methodology are also included below.

The rate_day variable was first calculated to give the background mortality rate. This was derived based on the 5-year average number of deaths and mid-year population estimates before the pandemic started, and was age, sex and month specific.

For the vaccinated cohort, the number of persondays post vaccination date was then stratified by 5-year age group (agegp2), sex and month. Covid-19 vaccination started in December 2020 and data was only available for the publication up until May 2021 so the months included were 1, 2, 3, 4, 5 and 12 (see line 77 of the R script).

The persondays in each age/sex/month combination were then multiplied by the corresponding rate_day to derive the expected number of death for each age/sex/month combination (see line 92: exp_event = persondays * rate_day column). Finally, the expected number of deaths was summed for the age groups reported in the published tables.

Please note that the script outlines the steps to calculate the expected number of deaths following a dose 1 vaccination as shown in Table 1 of the publication. The steps to calculate the expected deaths following a dose 2 vaccination are very similar. This involved changing the date of the first dose (date_vacc_1) to the date of the second dose

in line 41, 43, 50 and 51, and omitting the code to censor persondays at the date of the second dose (lines 56 – 59).

If you are unhappy with our response to your request, you have the right to request a review. Your request should be made within 40 working days of receipt of this correspondence, and we will reply within 20 working days of receipt. The review will be undertaken by a reviewer who was not involved in the original decision-making process. The reviewer can be contacted as follows:

The FOI Reviewer
Public Health Scotland
Gyle Square
1 South Gyle Crescent
Edinburgh
EH12 9EB
Email: phs.foi@phs.scot

If our decision is unchanged following a review and you remain dissatisfied, you have the right to make a formal complaint to the Scottish Information Commissioner within six months of receipt of our review response. You can do this by using the Scottish Information Commissioner's Office online appeals service at www.itspublicknowledge.info/Appeal. If you remain dissatisfied with the Commissioner's response, you then have the option to appeal to the Court of Session on a point of law.

Encl: FOI 2021-000654

Yours sincerely

Scott Heald
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Public Health Scotland