Title: COVID-19 vaccination was associated with higher rates of COVID-19 infection, hospitalization, and death. Carlton B. Brown, 2022.

Keywords: Antibody-dependent enhancement of viral infection (ADE), vaccine-associated enhanced disease (VAED), negative vaccine effectiveness, antigenic-imprinting, vaccine failure.

Summary: At the national level (New Zealand, England, Scotland, Canada), during the Omicron wave COVID-19 vaccination did not prevent SARS-CoV-2 infection. On the contrary, in general, the COVID-19 infection rates were significantly higher in the 1-, 2-, and 3-dose COVID-19 vaccinated than in the unvaccinated. There was a significant COVID-19 death and hospitalization prevention disbenefit or no benefit at all to COVID-19 vaccination across the various dose and demographic categories. Government claims (in general) that COVID-19 vaccination prevented COVID-19 death and hospitalization despite enhanced infection rates are unsupported by the majority of its data, especially in the elderly, who accounted for most of the COVID-19 death and hospitalization burden. At the global scale (77 nations), high rates of COVID-19 vaccination were associated with significantly higher infection and death rates than low vaccination rates.

Evidentiary Document: This study supported an evidentiary document and Open Letter sent to New Zealand's Prime Minister, Minister of Health, and other Ministers. This evidentiary document provided the results of my private research into (1) negative COVID-19 vaccine effectiveness and vaccine failure in New Zealand, England, Scotland, and Canada across the Omicron wave and Globally (77 nations), (2) the evidence for toxic vaccine lots in the US Vaccine Adverse Event Reporting System (VAERS) database and its global implications, and (3) the significant evidence for SARS-CoV-2's gain-of-function origin and its impact on mechanisms of infectivity and pathogenicity (https://grandsolarminimum.com/2022/12/01/covid-19-vaccine-harm-evidence/).[1]

GLOBAL (OUR WORLD IN DATA)

The bottom line: Nations that achieved high rates of COVID-19 vaccination experienced significantly higher COVID-19 infection and death rates than nations achieving lower vaccination rates. Analysis of Our World in Data (OWID) demonstrated that high rates of COVID-19 vaccination were associated with significantly higher weighted mean infection rates per million (4.0x), death rates per million (3.2x), and vaccination rates per 100 population (4.6x) compared with low vaccination rate nations. The observed proportion of COVID-19 infections and associated

deaths was greater in high vaccination rate nations and smaller than expected in low vaccination rate nations. These group differences were highly significant.

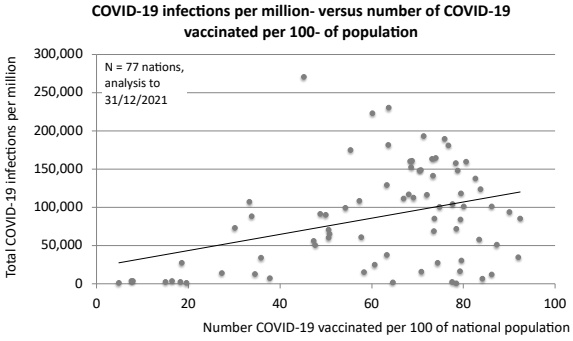
The OWID data (to 31/12/21) comprised 77 nations, 4.5 billion doses, 2.3 billion people vaccinated, 3.9 billion population, 227 million cases diagnosed, and 4.1 million deaths.[2] These 77 nations provided complete datasets (i.e., total cases and deaths per million- and total people vaccinated per hundred- of the population), which were organized into high and low vaccination rate groups (Group-1: N = 57 countries, ≥50 per 100 population. Group-2: N = 20 countries, <50 per 100 population). Group weighted mean COVID-19 infection and death rates per million and population proportions were compared using Welch's unpaired T-test and Chi-square test of independence, respectively.

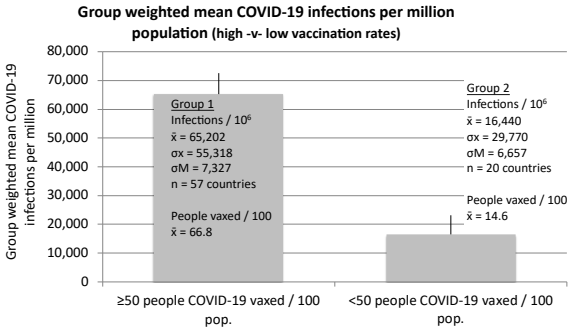
There was a weighted mean of 65,202 (SD = 55,318, standard deviation) compared with 16,440 (SD = 29,770) infections per million of population, which was associated with a weighted mean of 66.8 (SD = 9.3) and 14.6 (SD = 13.3) people vaccinated per 100 of population, for Group-1 and -2 respectively (Welch's unpaired T-test, infections per million difference, t (62) = 4.9, 2-tailed p < .00001). The observed proportion of COVID-19 infections was higher in Group 1 (high vaccination rate) and lower in Group 2 than expected, and these group differences were highly significant [Chi-square test of independence, X2 (df = 1, N = 3,877,605,243) = 19,818,764, p < .00001]. These results indicate that high vaccination rates were associated with significantly higher COVID-19 infection rates and population proportions than expected compared with low vaccination rate nations.

There was a weighted mean of 1,174 (SD = 1,094) compared with 368 (SD = 703) COVID-19-associated deaths per million of the population for Group-1 and -2, respectively (Welch's unpaired T-test, COVID-19 deaths per million difference, t (52) = 3.8, 2-tailed p < .0004). The observed proportion of COVID-19-associated deaths was higher in Group 1 (high vax-rate), and lower in Group 2 than expected, and these group differences were highly significant [Chi-square test of independence, X2 (df = 1, N = 3,877,605,243) = 280,763, p < .00001]. These results demonstrate that high vaccination rates were associated with significantly higher COVID-19-associated death rates and population proportions than expected compared with low vaccination rate nations.

The results detailed above were corroborated using a different methodology via a published *causal impact analysis*, which compared the before and after vaccination impact on infection and death rates to November 2021 (OWID data).[3] This study showed that COVID-19 vaccination had a statistically significant strong propensity to causally increase deaths per million (y1) and infections

per million (y2) over what would have been expected without vaccination. Y1 (deaths) comprised 128 countries, with a country rates increase/decrease ratio of +115/-13 and an average causal impact of +463%. Y2 (infections) included 103 countries and showed a country rates increase/decrease ratio of +105/-16 and an average causal impact of +261%.

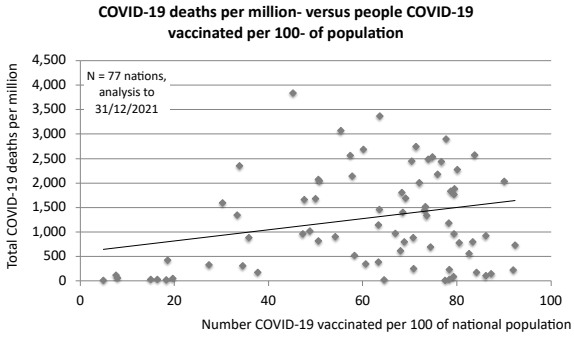


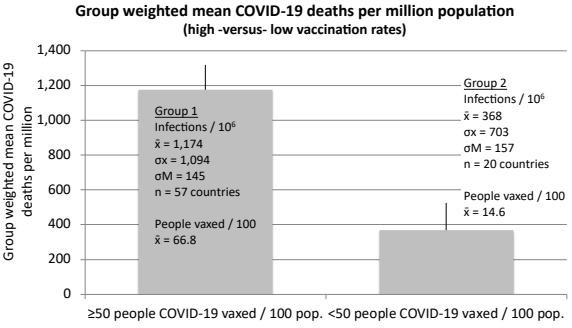


Data: OWID, https://covid.ourworldindata.org/data/owid-covid-data.xlsx. Downloaded: 27/01/2022

Group 1 -v- 2 weighted mean difference: Group 1 had a 4.0x higher weighted mean than Group 2 of Covid19 infections per million via a weighted mean 4.6x more people C19 vaccinated per 100 of population. Welch's unpaired T-test (mean infection rate difference): t (62) = 4.9, 2-tailed p < .00001.

Group weighted mean difference in COVID-19 infections per million of the population for two groups of nations organized by vaccination rates (Group-1: high vaccination rate ≥ 50.0, and Group-2: low vaccination rate <50 per 100 of the population). Group 1: n = 57 countries, mean = 65,202, standard deviation (SD) = 55,318, and standard error of the mean (SEM) = 7,327 COVID-19 infections per million of population, and a mean 66.8 people COVID-19 vaccinated per 100 population. Group 2: n = 20 countries, mean = 16,440, SD = 29,770, SEM = 6,657 COVID-19 infections per million of the national population, and a mean of 14.6 people COVID-19 vaccinated per 100 population. Welch's unpaired T-test, COVID-19 infections per million population group weighted mean difference, t (62) = 4.9, 2-tailed p < .00001.





Data: OWID, https://covid.ourworldindata.org/data/owid-covid-data.xlsx. Downloaded 27/01/2022

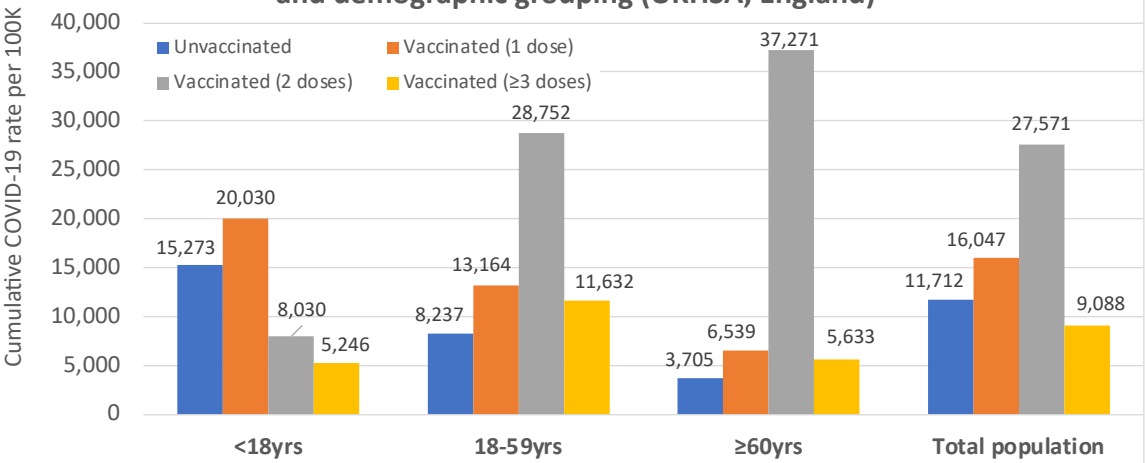
Group 1 -v- 2 weighted mean difference: Group 1 had a 3.2x higher weighted mean than Group 2 of Covid19 deaths per million via a weighted mean 4.6x more people vaccinated per 100 of population. Welch's unpaired T-test: t (52) = 3.8, 2-tailed p = .0004.

Group weighted mean difference in COVID-19-associated deaths per million of the population for two groups of nations organized by vaccination rates (Group-1: high vaccination rate ≥ 50.0, and Group-2: low vaccination rate <50 per 100 of the population). Group-1: n = 57 countries, mean = 1,174, standard deviation (SD) = 1,094, and standard error of the mean (SEM) = 145 COVID-19 associated deaths per million of population, and a mean 66.8 people COVID-19 vaccinated per 100 population. Group-2: n = 20 countries, mean = 368, SD = 703, SEM = 157 associated deaths per million of the national population, and a mean of 14.6 people COVID-19 vaccinated per 100 population. Welch's unpaired T-test, COVID-19 associated deaths per million population group weighted mean difference, t (52) = 3.8, 2-tailed p < .0004.

UK HEALTH SECURITY AGENCY (UKHSA, ENGLAND)

COVID-19 Infections: The UK Health Security Agency (UKHSA) vaccine surveillance data showed its vaccination strategy did not prevent SARS-CoV-2 infection in the England population (i.e., Omicron). Instead, this vaccination strategy (1-, 2-, and 3-doses) significantly increased the rates, proportions, and absolute risk of infection in vaccinated working-age adults (18-59yrs) and the elderly (≥60yrs) over the unvaccinated. The 2022 UKHSA data was analyzed between 08/11/2021 and 31/03/2022 (i.e., report 49 2021 - Report 13 2022).[4,5] This analysis was done using rates calculated from the raw COVID-19 case data and the vaccinated and population totals because the UKHSA's "unadjusted" COVID-19 infection, hospitalization, and death rate data for the vaccinated were significantly and non-uniformly altered over that calculable from the raw data. In contrast, their unvaccinated COVID-19 rates were broadly as calculated.

The vaccinated accounted for most COVID-19 infections (73%), with vaccinated working-age adults accounting for the highest percentage of total infections (57%). There were 4,927, 20,516, and 3,396 more COVID-19 infections per 100,000 in the 1-, 2-, and 3-dose vaccinated working-age adults, respectively than the unvaccinated (18-59yrs) and 2,835, 33,566, and 1,928 more COVID-19 infections per 100,000 in 1-, 2-, and 3-dose vaccinated elderly than the unvaccinated (≥60yrs). This corresponded with a higher rate of COVID-19 infection in working-age vaccinated adults (1-dose 1.6x, 2-dose 3.5x, and 3-dose 1.4x) and in the vaccinated elderly (1-dose 1.8x, 2-dose 10.1x, and 3-dose 1.5x) compared with the unvaccinated. There were 4,757 more infections per 100,000 in 1-dose vaccinated kids-youth compared with the unvaccinated (<18yrs), which corresponded with a 1.3x higher rate of infection over the unvaccinated. Vaccinated infection proportions were higher than and unvaccinated proportions lower than expected for working-age adults and the elderly (1-, 2-, and 3-doses) and kids-youth (1-dose), and these differences were highly significant (Chi-square test of independence, all $p < .00001$). In other words, COVID-19 vaccination failed to protect against COVID-19 infection as initially touted by the UK government, but instead, it significantly increased the risk of infection over the unvaccinated.



Method: Cumulative rate per 100K = sum COVID-19 infections from UKHSA reports week 49 (2021), and 1, 5, 9, and 13 (2022) divided by the average of NIMS weekly group vaccinated and vaccinated population totals for weeks 49-51 and 01-13 * 100,000. Each UKHSA report includes the 4 prior week's cases.
Data: Cases: https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports. Group populations: https://www.gov.uk/government/statistics/national-flu-and-covid-19-surveillance-reports-2021-to-2022-season.
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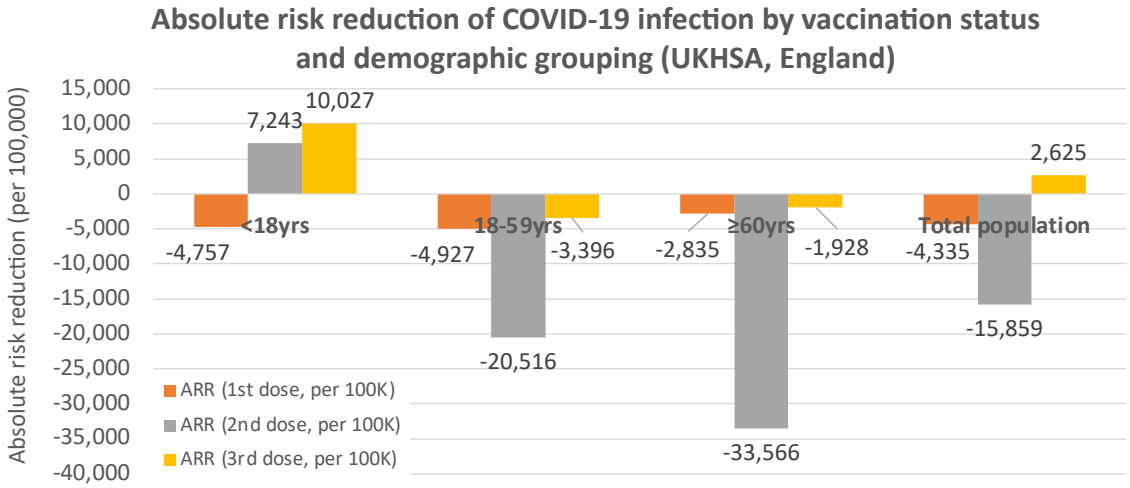
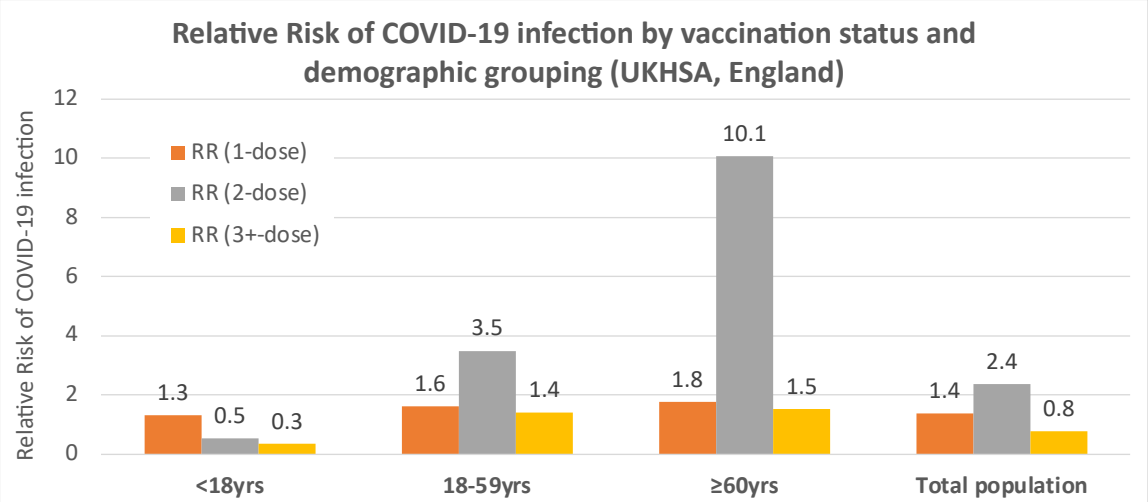
122



Method: Absolute risk reduction (ARR) = Unvaccinated risk - Vaccinated risk. Risk = Cumulative incidence per 100K = sum COVID-19 infections from UKHSA reports week 49 (2021), and 1, 5, 9, and 13 (2022) divided by the average of NIMS weekly group vaccinated and vaccinated population totals for weeks 49-51 and 01-13 * 100,000. Each UKHSA report includes the 4 prior week's cases. An absolute risk reduction (ARR) of -10,000 means the vaccinated experienced 10,000 more infections per 100K than the unvaccinated. **Data**: Cases: https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports. Group populations: https://www.gov.uk/government/statistics/national-flu-and-covid-19-surveillance-reports-2021-to-2022-season. **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

123



Method: Relative risk = Rate ratio = Vaccinated risk / Unvaccinated risk. Risk = Cumulative incidence per 100K = sum COVID-19 infections from UKHSA reports week 49 (2021), and 1, 5, 9, and 13 (2022) divided by the average of NIMS weekly group vaxccinated and unvaccinated population totals for weeks 49-51 and 01-13 * 100,000. Each UKHSA report includes the 4 prior week's cases. A relative risk (RR) >1.0 indicates negative vaccine effectiveness, approx. 1.0 indicates vaccine failure, <1.0 indicates a positive vaccine effectiveness. **Data**: Cases: https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports. Group populations: https://www.gov.uk/government/statistics/national-flu-and-covid-19-surveillance-reports-2021-to-2022-season. **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

124

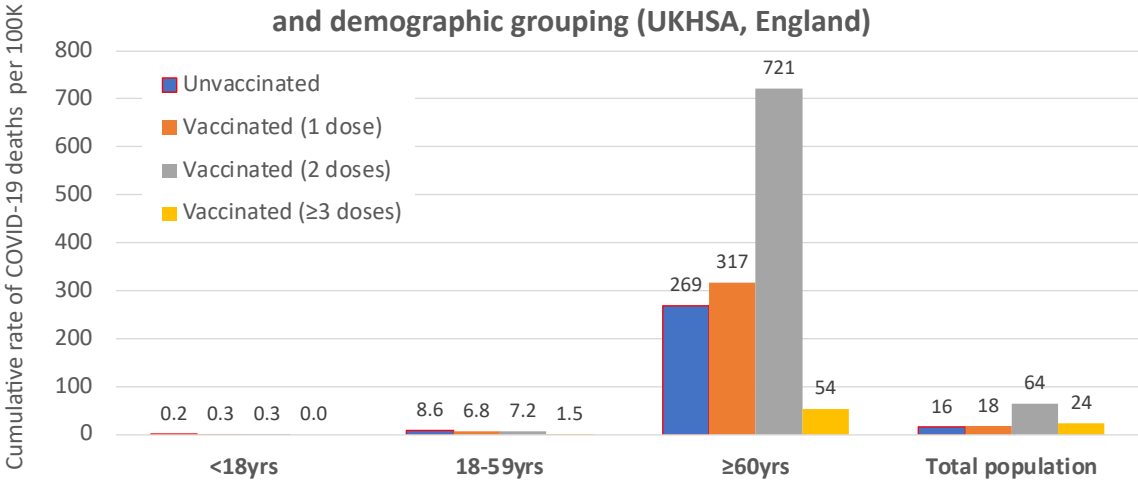
COVID-19 Infections and Demographic group totals (UKHSA, England)				
≤18yrs	Unvaccinated	1-dose	2-dose	3-dose
COVID-19 infections (cases)	1,560,287	289,208	80,855	4,731
Demographic group population - Cases	8,655,903	1,154,693	926,094	85,459
Demographic group population total	10,216,190	1,443,901	1,006,949	90,190
18-59yrs	Unvaccinated	1-dose	2-dose	3-dose
COVID-19 infections (cases)	692,801	202,426	2,657,805	1,951,630
Demographic group population - Cases	7,718,299	1,335,351	6,585,996	14,825,851
Demographic group population total	8,411,100	1,537,777	9,243,801	16,777,481
≥60yrs	Unvaccinated	1-dose	2-dose	3-dose
COVID-19 infections (cases)	33,019	9,047	336,499	690,351
Demographic group population - Cases	858,236	129,299	566,356	11,565,312
Demographic group population total	891,255	138,346	902,855	12,255,663
Total	Unvaccinated	1-dose	2-dose	3-dose
COVID-19 infections (cases)	2,286,107	500,681	3,075,159	2,646,712
Demographic group population - Cases	17,232,438	2,619,343	8,078,446	26,476,622
Demographic group population total	19,518,545	3,120,024	11,153,605	29,123,334
Cases sum the COVID-19 cases from UKHSA reports week 49 (2021), and 1, 5, 9, and 13 (2022). Each UKHSA report includes the 4 prior week's cases. Demographic totals for the period average the weekly NIMS vaxed and unvaxed demographic totals for weeks 49-51 and 01-13. Demographic group totals sum these average demographic age bands (≤18yrs, 18-59yrs, ≥60yrs)				

125

126 COVID-19 Deaths: The UKHSA COVID-19 death data showed there was a zero-to-negligible
127 COVID-19 death prevention benefit to COVID-19 vaccination in kids, youth, and working-age

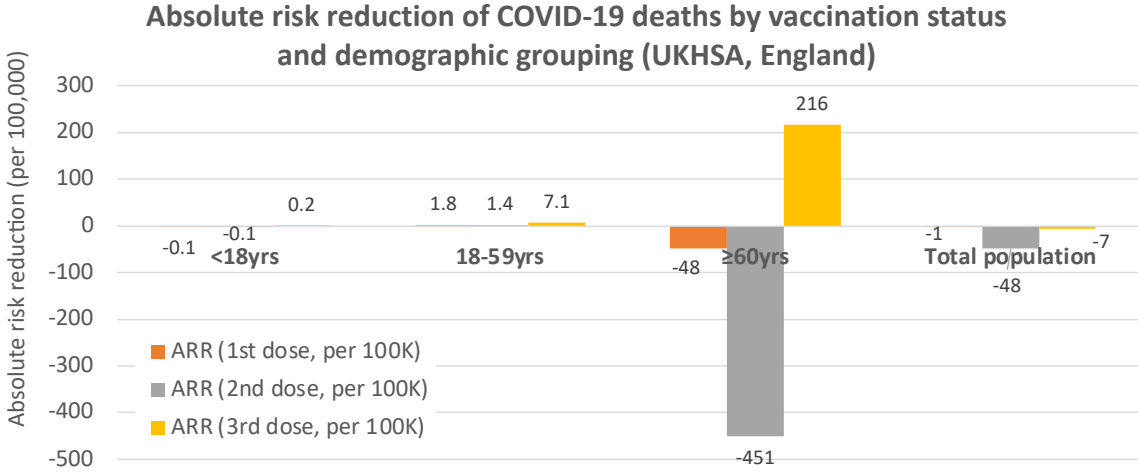
adults over the unvaccinated (1-, 2- and 3-doses), while the elderly vaccinated accounted for most of the COVID-19 deaths within 28 days of a positive COVID-19 test.[6,7] The elderly vaccinated (≥60yrs, 1-3 doses) accounted for 76.5% and the unvaccinated elderly 13.6% of all COVID-19 deaths, while the elderly accounted for 23% of the England population. There were 48 and 451 more COVID-19 deaths in the 1- and 2-dose vaccinated elderly, respectively, and 216 fewer in the 3-dose elderly vaccinated than the unvaccinated elderly. This corresponded with a 1.2x and 2.7x higher rate and 0.2x lower rate of COVID-19 death in the 1-, 2, and 3-dose vaccinated, respectively, compared with the unvaccinated. The unvaccinated COVID-19 death proportions were lower than and vaccinated COVID-19 death proportions higher than expected in the 1- and 2-dose elderly populations, with this observed-expected proportion difference being reversed (i.e., unvaccinated-higher, vaccinated-lower) for the 3-dose vaccinated elderly (Chi-square test of independence, all $p < .002$). This elderly data indicates 1- and 2-dose vaccination increased the risk of COVID-19 death while a third dose temporarily ameliorated this COVID-19 death disbenefit (i.e., until immunity waned).

Vaccinated kids and youth accounted for 0.04% and unvaccinated kids and youth 0.11% of all COVID-19 deaths, respectively, while accounting for one-fifth of England's population. In other words, the risk of COVID-19 death in those <18yrs was comparatively very low. At peak immunity, there was one more death per million in the 1- and 2-dose vaccinated kids-youth demographic and two fewer deaths per million in the 3-dose vaccinated group (<18yrs), which corresponded with a 1.4x and 1.5x higher rate of COVID-19 death in the 1- and 2-dose vaccinated kids-youth. The working-age vaccinated adults (1-3 doses) accounted for 5.7% and the unvaccinated working-age adults 4.1% of all COVID-19 deaths (18-59yrs) while accounting for 57% of the population. There were 1.8, 1.4, and 7.1 fewer deaths per 100,000 working-age adults, respectively, than the unvaccinated, which corresponded with a 1- and 2-dose COVID-19 death rate of 0.8x and a 3-dose COVID-19 death rate of 0.2x that of the unvaccinated. In working-age adults, the unvaccinated death proportions were higher than and vaccinated death proportions lower than expected for 1-3-doses (Chi-square statistic, all p-values $< .02$). In other words, at the same time, vaccination enhanced the rates and risk of COVID-19 infection in working-age adults it reduced the rates of COVID-19 death (for now) relative to the unvaccinated within 28 days of a positive COVID-19 test.



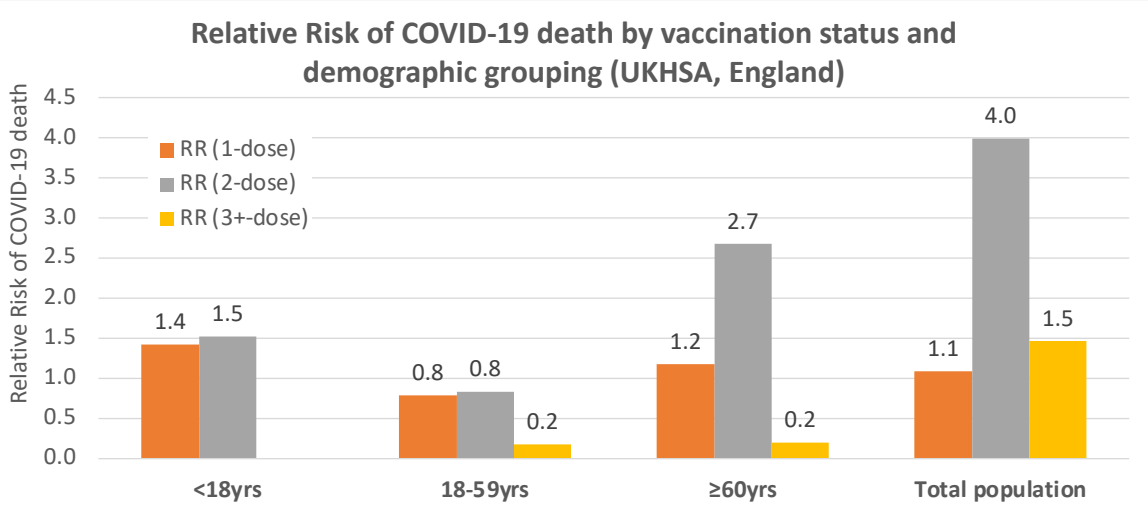
Method: Cumulative rate per 100K = sum COVID-19 deaths (≤28d of +ve test) from UKHSA reports week 49 (2021), and 1, 5, 9, and 13 (2022) divided by the average of NIMS weekly group vaccinated and vaccinated population totals for weeks 49-51 and 01-13 * 100,000. Each UKHSA report includes the 4 prior week's cases. **Data**: Cases: https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports. Group populations: https://www.gov.uk/government/statistics/national-flu-and-covid-19-surveillance-reports-2021-to-2022-season. **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

158



Method: Absolute risk reduction (ARR) = Unvaccinated risk - Vaccinated risk. Risk = Cumulative incidence per 100K = sum COVID-19 deaths (≤28d of +ve test) from UKHSA reports week 49 (2021), and 1, 5, 9, and 13 (2022) divided by the average of NIMS weekly group vaccinated and vaccinated population totals for weeks 49-51 and 01-13 * 100,000. Each UKHSA report includes the 4 prior week's cases. An absolute risk reduction (ARR) of -10 means the vaccinated experienced 10 more deaths (≤28d of +ve test) per 100K than the unvaccinated. **Data**: Cases: https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports. Group populations: https://www.gov.uk/government/statistics/national-flu-and-covid-19-surveillance-reports-2021-to-2022-season. **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

159



Method: Relative risk = Rate ratio = Vaccinated risk / Unvaccinated risk. Risk = Cumulative incidence per 100K = sum COVID-19 deaths (≤28d of +ve test) from UKHSA reports week 49 (2021), and 1, 5, 9, and 13 (2022) divided by the average of NIMS weekly group vaccinated and vaccinated population totals for weeks 49-51 and 01-13 * 100,000. Each UKHSA report includes the 4 prior week's cases. A relative risk (RR) >1.0 indicates negative vaccine effectiveness, approx. 1.0 indicates vaccine failure, <1.0 indicates a positive vaccine effectiveness. **Data**: Cases: https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports. Group populations: https://www.gov.uk/government/statistics/national-flu-and-covid-19-surveillance-reports-2021-to-2022-season. **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

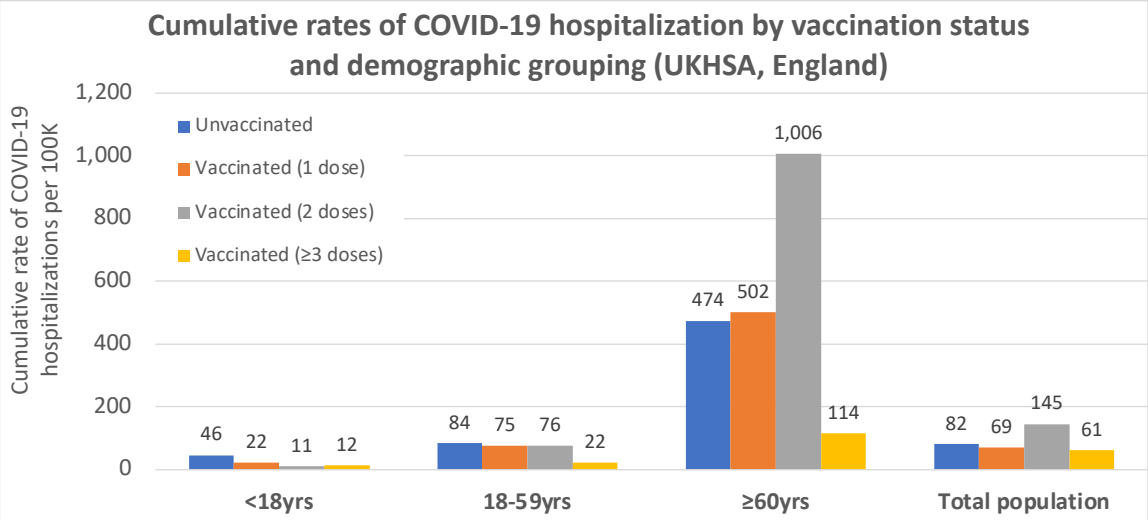
COVID-19 Deaths and Demographic group totals (UKHSA, England)				
≤18yrs	Unvaccinated	1-dose	2-dose	3-dose
COVID-19 deaths (Cases, <28d of +ve test)	20	4	3	0
Demographic group population - Cases	10,216,170	1,443,897	1,006,946	90,190
Demographic group population total	10,216,190	1,443,901	1,006,949	90,190
18-59yrs	Unvaccinated	1-dose	2-dose	3-dose
COVID-19 deaths (Cases, <28d of +ve test)	722	104	662	251
Demographic group population - Cases	8,410,378	1,537,673	9,243,139	16,777,230
Demographic group population total	8,411,100	1,537,777	9,243,801	16,777,481
≥60yrs	Unvaccinated	1-dose	2-dose	3-dose
COVID-19 deaths (Cases, <28d of +ve test)	2,401	439	6,506	6,595
Demographic group population - Cases	888,854	137,907	896,349	12,249,068
Demographic group population total	891,255	138,346	902,855	12,255,663
Total	Unvaccinated	1-dose	2-dose	3-dose
Cases	3,143	547	7,171	6,846
Total-Cases	19,515,402	3,119,477	11,146,434	29,116,488
Total	19,518,545	3,120,024	11,153,605	29,123,334

Cases sum the COVID-19 deaths (<28d of +ve test) from UKHSA reports week 49 (2021), and 1, 5, 9, and 13 (2022). Each UKHSA report includes the 4 prior week's cases. Demographic totals for the period average the weekly NIMS vaxed and unvaxed demographic totals for weeks 49-51 and 01-13. Demographic group totals sum these average demographic age bands (≤18yrs, 18-59yrs,

COVID-19 Hospitalizations: The UKHSA COVID-19 data showed a modest-large COVID-19 hospitalization disbenefit in the 1- and 2-dose elderly vaccinated and a negligible-modest COVID-19 hospitalization prevention benefit to COVID-19 vaccination in kids, youth, and working-age

adults over the unvaccinated (1-, 2- and 3-doses).[8,9] The elderly vaccinated (≥60yrs, 1-3 doses) accounted for 45.7%, the unvaccinated elderly 8.1% of all COVID-19 hospitalizations, while the elderly accounted for 23% of England's population. There were 28 and 532 more COVID-19 hospitalizations in the 1- and 2-dose vaccinated elderly, respectively, and 360 fewer hospitalizations in the 3-dose elderly vaccinated than the unvaccinated elderly. This corresponded with a 1.1x and 2.1x higher rate and 0.2x lower rate of COVID-19 hospitalization in the 1-, 2, and 3-dose elderly vaccinated, respectively, compared to the elderly unvaccinated. The unvaccinated elderly COVID-19 hospitalization proportions were lower than expected, and the 1- and 2-dose elderly vaccinated COVID-19 hospitalization proportions were higher than expected, with this proportion difference reversed (i.e., unvaccinated-higher, vaccinated-lower) for the 3-dose elderly vaccinated (Chi-square test of independence, 2- and 3-dose $p < .00001$, 1-dose $p = .16$). This elderly vaccinated data indicates 1- and 2-dose vaccination increased the risk of COVID-19 hospitalization. At the same time, a third dose temporarily ameliorated this COVID-19 hospitalization disbenefit (i.e., temporarily).

Vaccinated kids and youth accounted for 0.8% and unvaccinated kids-youth 9.0% of all COVID-19 hospitalizations while accounting for one-fifth of England's population. At peak immunity, there were 24, 35, and 34 fewer hospitalizations per 100,000 in the 1-dose, 2-dose, and 3-dose vaccinated kids-youth compared with their unvaccinated demographic, which corresponded with a 0.5x, 0.2x, and 0.3x rate of COVID-19 hospitalization compared with the unvaccinated. The working-age vaccinated adults (1-3 doses) accounted for 22.8% and the unvaccinated working-age adults 13.5% of all COVID-19 hospitalizations (18-59yrs) while accounting for 57% of the population. There were 8.8, 8.2, and 61 fewer COVID-19 hospitalizations in working-age adults per 100,000, respectively than the unvaccinated. This corresponded with a 1- and 2-dose COVID-19 hospitalization rate of 0.9x and a 3-dose rate of 0.3x that of the unvaccinated. In working-age adults, the unvaccinated COVID-19 hospitalization proportions were higher than and vaccinated COVID-19 hospitalization proportions lower than expected for 1-3 doses (Chi-square test of independence, all p-values $< .0005$). In other words, while vaccination enhanced the rates and risk of COVID-19 infection in working-age adults, it reduced the rates of COVID-19 hospitalization (for now) relative to the unvaccinated within 28 days of a positive COVID-19 test.



Method: Cumulative rate per 100K = sum COVID-19 hospitalizations (≤28d of +ve test) from UKHSA reports week 49 (2021), and 1, 5, 9, and 13 (2022) divided by the average of NIMS weekly group vaccinated and vaccinated population totals for weeks 49-51 and 01-13 * 100,000. Each UKHSA report includes the 4 prior week's cases.
Data: Cases: https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports. Group populations: https://www.gov.uk/government/statistics/national-flu-and-covid-19-surveillance-reports-2021-to-2022-season.
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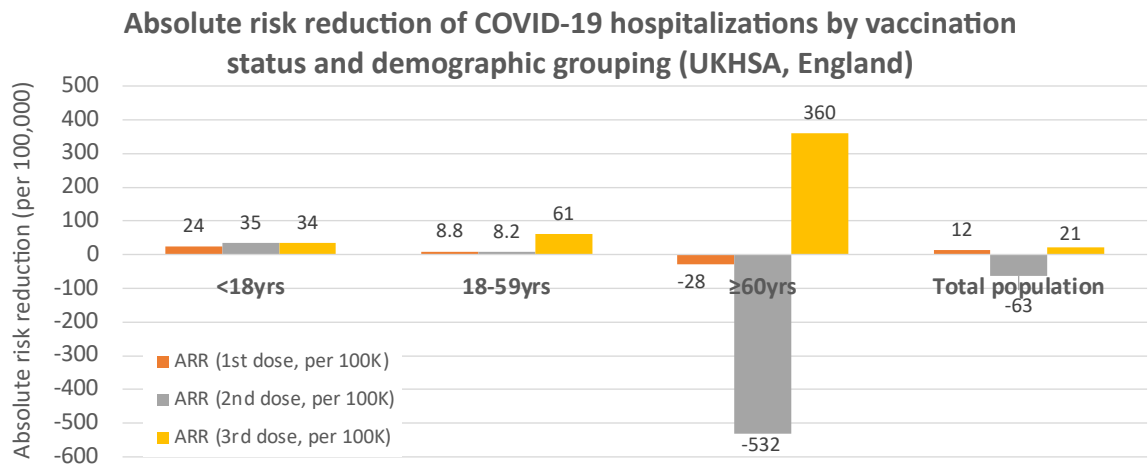
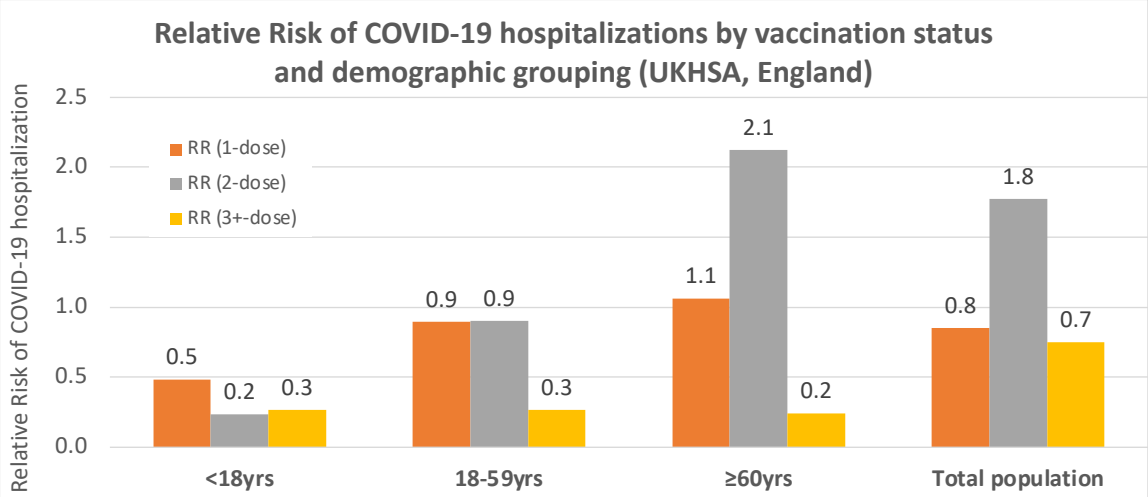
194



Method: Absolute risk reduction (ARR) = Unvaccinated risk - Vaccinated risk. Risk = Cumulative incidence per 100K = sum COVID-19 hospitalizations (≤28d of +ve test) from UKHSA reports week 49 (2021), and 1, 5, 9, and 13 (2022) divided by the average of NIMS weekly group vaccinated and vaccinated population totals for weeks 49-51 and 01-13 * 100,000. Each UKHSA report includes the 4 prior week's cases. An absolute risk reduction (ARR) of -100 means the vaccinated experienced 100 more hospitalizations per 100K than the unvaccinated. An ARR of +100 means the vaccinated experienced 100 fewer hospitalizations per 100K than the unvaccinated. **Data**: Cases: https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports. Group populations: https://www.gov.uk/government/statistics/national-flu-and-covid-19-surveillance-reports-2021-to-2022-season. **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

195



Method: Relative risk = Rate ratio = Vaccinated risk / Unvaccinated risk. Risk = Cumulative incidence per 100K = sum COVID-19 hospitalizations (≤28d of +ve test) from UKHSA reports week 49 (2021), and 1, 5, 9, and 13 (2022) divided by the average of NIMS weekly group vaccinated and vaccinated population totals for weeks 49-51 and 01-13 * 100,000. Each UKHSA report includes the 4 prior week's cases. A relative risk (RR) >1.0 indicates negative vaccine effectiveness, approx. 1.0 indicates vaccine failure, <1.0 indicates a positive vaccine effectiveness. **Data**: Cases: https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports. Group populations: https://www.gov.uk/government/statistics/national-flu-and-covid-19-surveillance-reports-2021-to-2022-season. **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

196

COVID-19 Hospitalizations and Demographic group totals (UKHSA, England)				
≤18yrs	Jnvaccinated	1-dose	2-dose	3-dose
COVID-19 hospitalizations (Cases, <28d of +ve test	4,681	317	107	11
Demographic group population - Cases	10,211,509	1,443,584	1,006,842	90,179
Demographic group population total	10,216,190	1,443,901	1,006,949	90,190
18-59yrs	Jnvaccinated	1-dose	2-dose	3-dose
COVID-19 hospitalizations (Cases, <28d of +ve test	7,043	1,152	6,985	3,738
Demographic group population - Cases	8,404,057	1,536,625	9,236,816	16,773,743
Demographic group population total	8,411,100	1,537,777	9,243,801	16,777,481
≥60yrs	Jnvaccinated	1-dose	2-dose	3-dose
COVID-19 hospitalizations (Cases, <28d of +ve test	4,223	694	9,083	14,008
Demographic group population - Cases	887,032	137,652	893,772	12,241,655
Demographic group population total	891,255	138,346	902,855	12,255,663
Total	Jnvaccinated	1-dose	2-dose	3-dose
Cases	15,947	2,163	16,175	17,757
Total-Cases	19,502,598	3,117,861	11,137,430	29,105,577
Total	19,518,545	3,120,024	11,153,605	29,123,334

Cases sum the COVID-19 hospitalizations (<28d of +ve test) from UKHSA reports week 49 (2021), and 1, 5, 9, and 13 (2022). Each UKHSA report includes the 4 prior week's cases. Demographic totals for the period average the weekly NIMS vaxed and unvaxed demographic totals for weeks 49-51 and 01-13. Demographic group totals sum these average demographic age bands (≤18yrs, 18-59yrs, ≥60yrs)

197

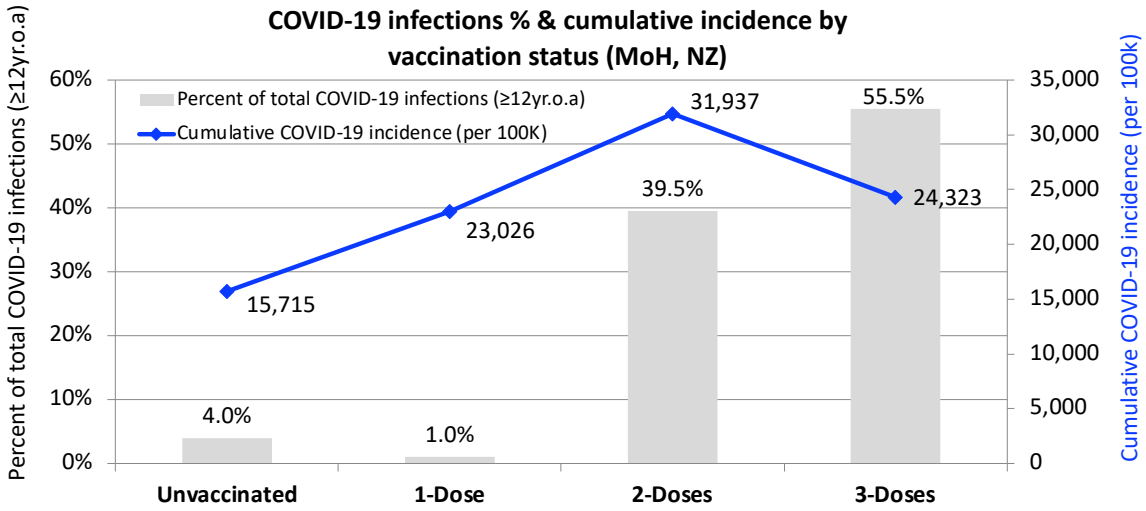
198

199 # MINISTRY OF HEALTH OF NEW ZEALAND

200

201 COVID-19 Infections: The New Zealand Ministry of Health (MoH, from 22/02/22 to 4/7/22, ≥12yr

demographics.[10] Statistics New Zealand.[11]) data shows their COVID-19 vaccination strategy did not protect the population from COVID-19 infection as originally touted but instead significantly increased the risk and rates of COVID-19 infection for all vaccine dose groups compared with the unvaccinated. The New Zealand MoH data shows the COVID-19 vaccinated population (1-3 doses) accounted for 96% of cumulative COVID-19 infections while accounting for 93.4% of the ≥12yr population (NZ Stats: 4,345,230). There were a cumulative 7,311, 16,222, and 8,608 more COVID-19 infections per 100,000 in the 1-, 2-, and 3-dose vaccinated, respectively, than the unvaccinated. This corresponded with higher rates of COVID-19 infections in the 1-dose (1.5x), 2-dose (2.0x), and 3-dose (1.5x) vaccinated compared with the unvaccinated. The observed proportion of COVID-19 infections was higher in the 1-, 2-, and 3-dose vaccinated and lower in the unvaccinated than expected. These differences were highly significant for all vaccine dose groups (Chi-square test of independence, all $p < .00001$). This data indicates that the 1-, 2-, and 3-dose vaccinated groups experienced a significantly increased risk of COVID-19 infection compared with the unvaccinated groups.



Method: Cumulative incidence per 100K = Sum new weekly cases divided by average weekly group population * 100,000 (WE: 01/03/22 - 04/07/22). New COVID-19 infections = Cumulative cases minus previous week's cumulative cases. MoH provide cumulative totals (≥12yr.o.a) since 26/02/2020 necessitating new COVID-19 cases be disaggregated from cumulative total to avoid numerator bias. **Data**: https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-data-and-statistics, https://web.archive.org/, https://infoshare.stats.govt.nz/.

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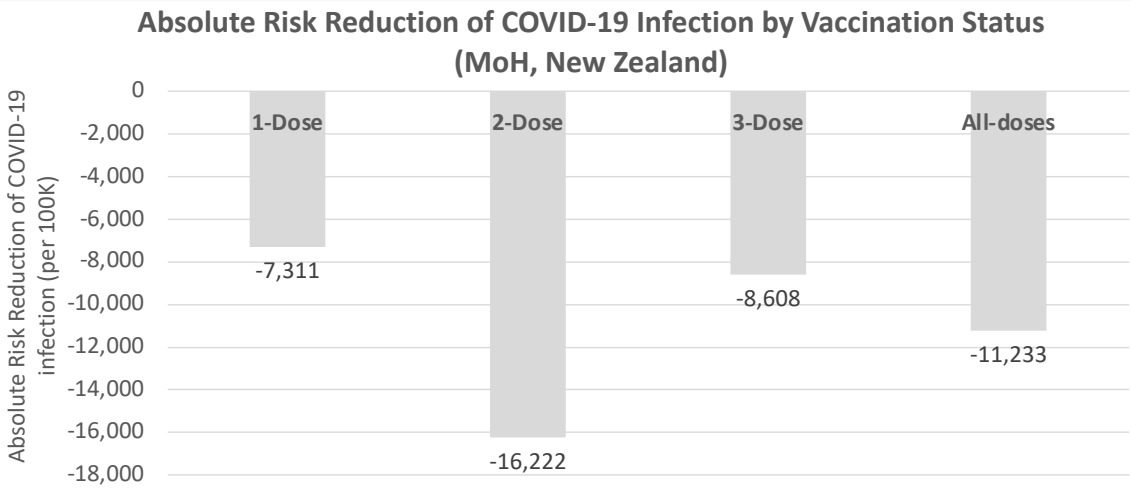

Method: Absolute risk reduction (ARR) = Unvaccinated risk - vaccinated risk. Risk = Cumulative incidence per 100K = Sum new weekly cases divided by average weekly group population * 100,000 (WE: 01/03/22 - 04/07/22). New COVID-19 infections = Cumulative cases minus previous week's cumulative cases. An ARR of -10,000 means the vaccinated experienced 10,000 more infections per 100K than the unvaccinated (i.e., the vaccinated posed a big risk to the unvaccinated).
Data: https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-data-and-statistics, https://web.archive.org/, https://infoshare.stats.govt.nz/.
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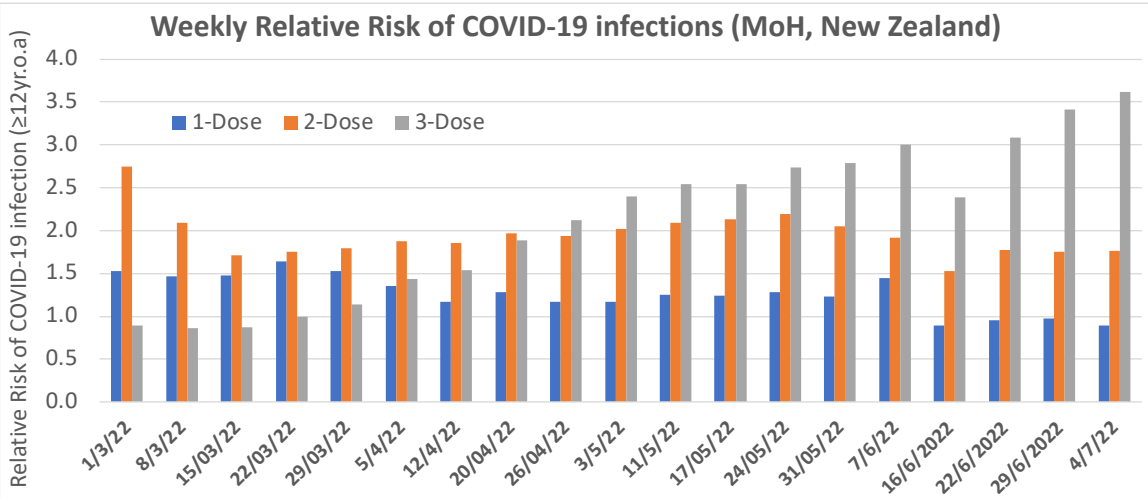
217



Method: Relative risk = Vaccinated risk / Unvaccinated risk. Risk = weekly incidence per 100K = new weekly cases divided by weekly group population * 100,000. New COVID-19 infections = Cumulative cases minus previous week's cumulative cases. A relative risk (RR) >1.0 indicates negative vaccine effectiveness, approx. 1.0 indicates vaccine failure, <1.0 indicates a positive vaccine effectiveness. **Data**: WE: 01/03/22 to WE04/07/22, https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-data-and-statistics, https://web.archive.org/, https://infoshare.stats.govt.nz/
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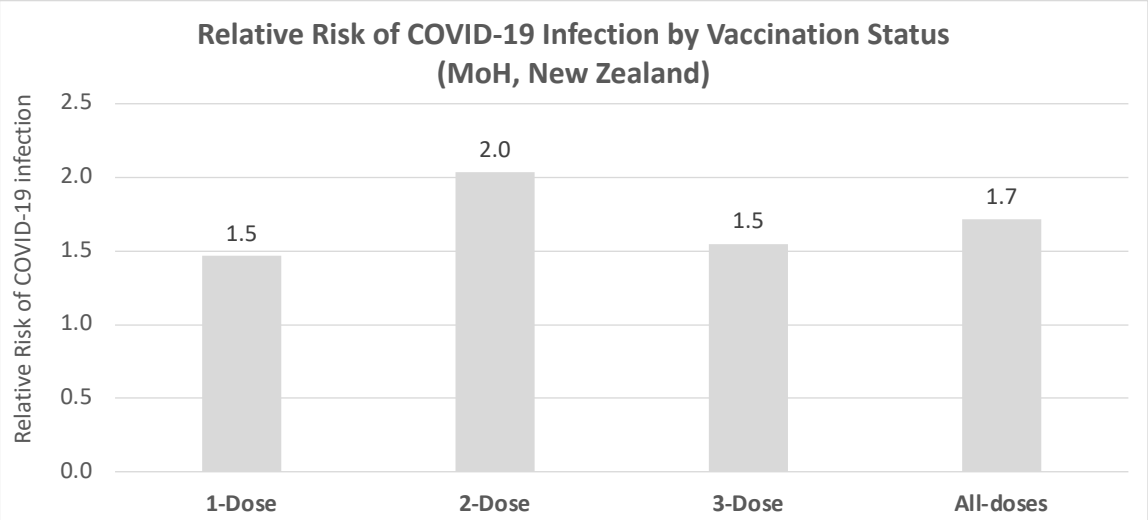
218



Method: Relative risk = Vaccinated risk / Unvaccinated risk. Risk = Cumulative incidence per 100K = Sum new weekly cases divided by average weekly group population * 100,000 (WE: 01/03/22 - 04/07/22). New COVID-19 infections = Cumulative cases minus previous week's cumulative cases. A relative risk (RR) >1.0 indicates negative vaccine effectiveness.
Data: WE01/03/22 to WE04/07/22 (19 weeks), https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-data-and-statistics, https://web.archive.org/, https://infoshare.stats.govt.nz/.
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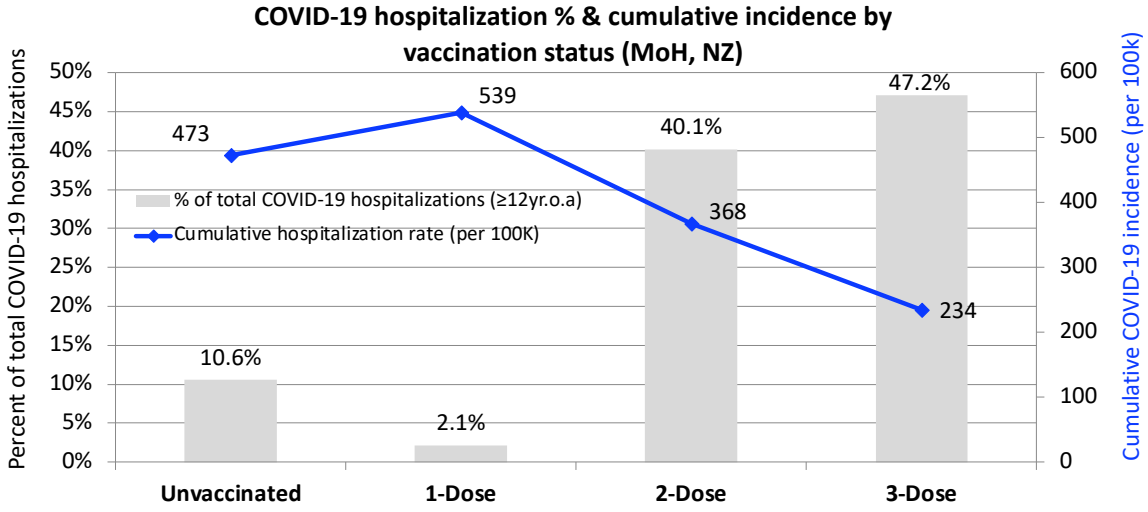
WC-01/03/22 - WE-04/07/22	Unvaccinated	1-dose	2-dose	3-dose	≥2-doses	All doses	Total
COVID-19 Infections (≥12yr.o.a)	45,309	11,745	449,320	632,161	1,081,481	1,093,226	1,138,535
Avg. Weekly Population - Cases	243,013	39,263	957,577	1,966,842	2,924,420	2,963,682	3,206,695
Avg. Weekly Group Population (≥12yr.o.a)	288,322	51,008	1,406,897	2,599,003	4,005,901	4,056,908	4,345,230
Dose group % of all COVID-19 infections	4.0%	1.0%	39.5%	55.5%			
Dose group % of New Zealand population	6.6%	1.2%	32.4%	59.8%			

COVID-19 Hospitalizations: The New Zealand Ministry of Health data (MoH, see COVID-19 infection data citation) shows the COVID-19 vaccinated population (1-3 doses) accounted for 89.4% of cumulative COVID-19 hospitalizations while accounting for 93.4% of the ≥12yr population (NZ Stats: 4,345,230). There were a cumulative 66 more COVID-19 hospitalizations per 100,000 in the 1-dose vaccinated, and 105 and 239 fewer hospitalizations per 100,000 for the 2- and 3-dose vaccinated, respectively than the unvaccinated. This corresponded with a higher rate of COVID-19 hospitalization in the 1-dose (1.1x) and a lower rate in the 2-dose (0.8x) and 3-dose (0.5x) vaccinated compared with the unvaccinated. The observed proportion of COVID-19 hospitalizations was higher in the 1-dose vaccinated and lower in the unvaccinated than expected, with this proportion difference, reversed (i.e., vaccinated-lower, unvaccinated-higher) for the 2- and 3-dose vaccinated (Chi-square test of independence, 1-dose $p = .047$, 2- and 3-dose $p < .00001$).

However, in the second half of this period (03/05/22 to 04/07/2022), there were a cumulative 27 and 10 more hospitalizations per 100,000 in the 1- and 2-dose vaccinated, which corresponded with a higher rate of COVID-19 hospitalization in the 1-dose (1.2x) and 2-dose (1.1x) vaccinated

compared with the unvaccinated. The observed proportion of COVID-19 hospitalizations was higher in the 1- and 2-dose dose vaccinated and lower in the unvaccinated than expected, but these differences were not statistically significant (Chi-square test of independence, 1-dose p = .18, 2-dose p = .23). This data potentially indicates that during the early phase of the Omicron wave, before vaccinee immunity had waned, there was a modest COVID-19 hospitalization prevention benefit for the 2- and 3-dose vaccinated, however, there was an increased risk of hospitalization with the 1-dose vaccinated. However, as the Omicron wave progressed and immunity waned, there was no COVID-19 hospitalization prevention benefit at best, and at worst a disbenefit, for the 1- and 2-dose vaccinated compared with the unvaccinated, while the relative risk increased for the 3-dose vaccinated from 0.5x to 0.8x.



Method: Cumulative COVID-19 hospitalization incidence per 100K = Sum new weekly hosps. divided by average weekly group population * 100,000 (WE: 01/03/22 - 04/07/22). New COVID-19 hosps. = Cumulative cases minus previous week's cumulative cases. MoH provide cumulative totals (≥12yr.o.a) since 26/02/2020 necessitating new COVID-19 cases be disaggregated from cumulative total to avoid numerator bias. **Data**: https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-data-and-statistics, https://web.archive.org/, https://infoshare.stats.govt.nz/.

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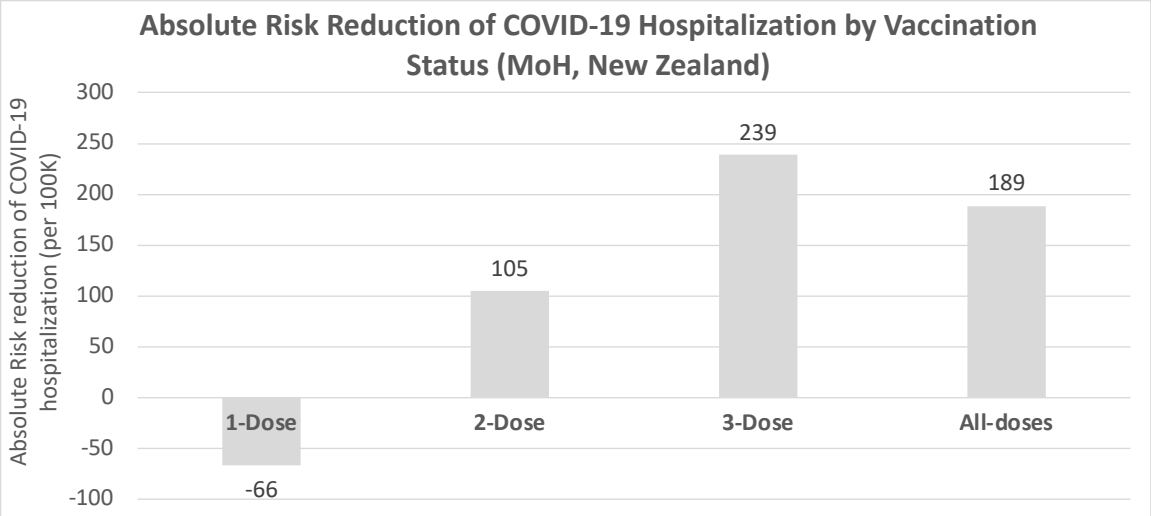

Method: Absolute risk reduction (ARR) = Unvaccinated risk - vaccinated risk. Risk = Cumulative COVID-19 hospitalization incidence per 100K = Sum new weekly COVID-19 hosps. divided by average weekly group population * 100,000 (WE: 01/03/22 - 04/07/22). New COVID-19 hosps. = Cumulative cases minus previous week's cumulative cases. An ARR of +100 means the vaccinated experienced 100 fewer hospitalizations per 100K than the unvaccinated. **Data**: https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-data-and-statistics, https://web.archive.org/, https://infoshare.stats.govt.nz/.
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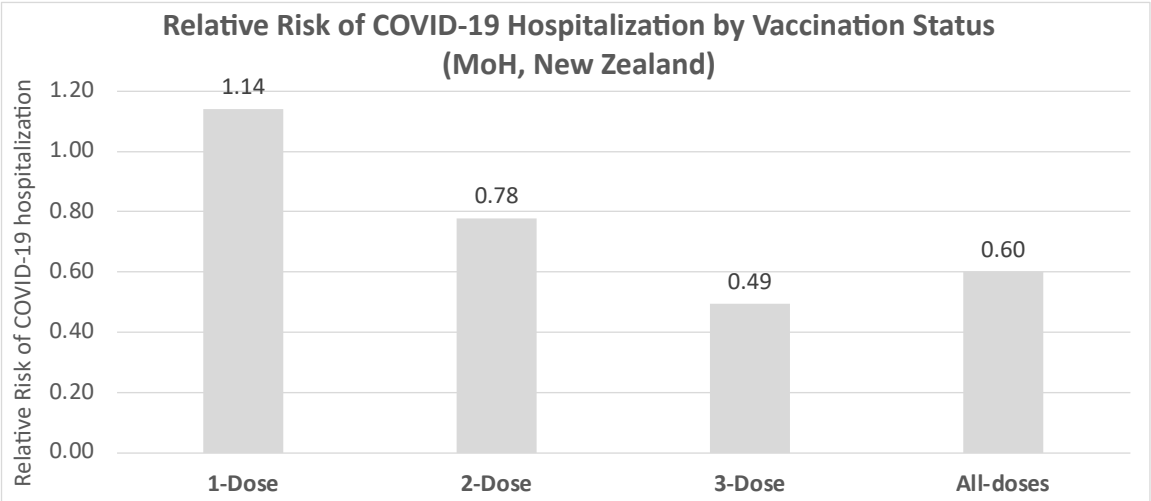
246



Method: Relative risk = Vaccinated risk / Unvaccinated risk. Risk = Cumulative COVID-19 hospitalization incidence per 100K = Sum new weekly COVID-19 hosp. cases divided by average weekly group population * 100,000 (WE: 01/03/22 - 04/07/22). New COVID-19 hosps. = Cumulative cases minus previous week's cumulative cases. A relative risk (RR) >1.0 indicates negative vaccine effectiveness, approx. 1.0 indicates vaccine failure, <1.0 indicates a positive vaccine effectiveness. **Data**: WE: 01/03/22 to 04/07/22 (19 weeks), https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-data-and-statistics, https://web.archive.org/, https://infoshare.stats.govt.nz/.
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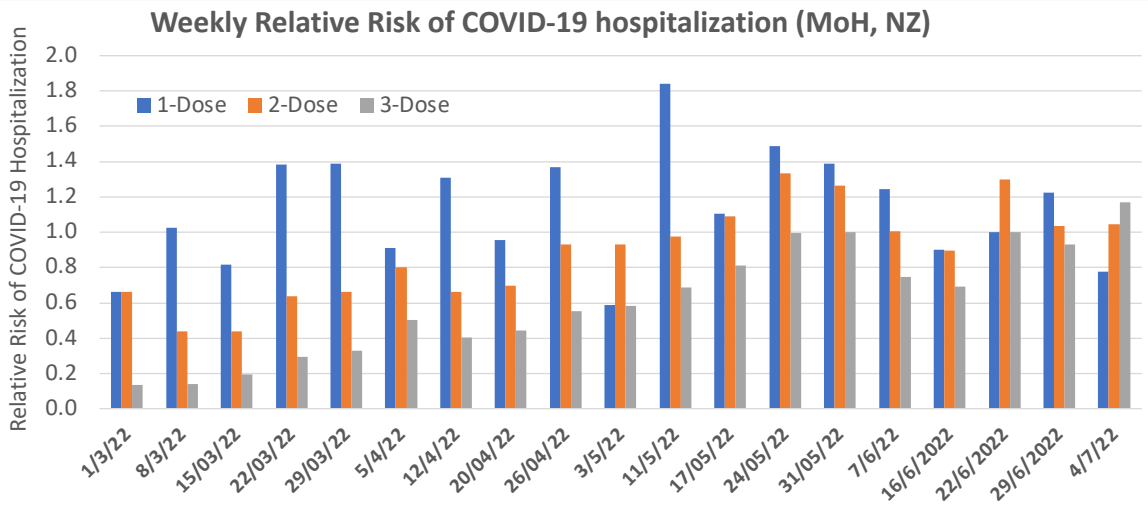
247



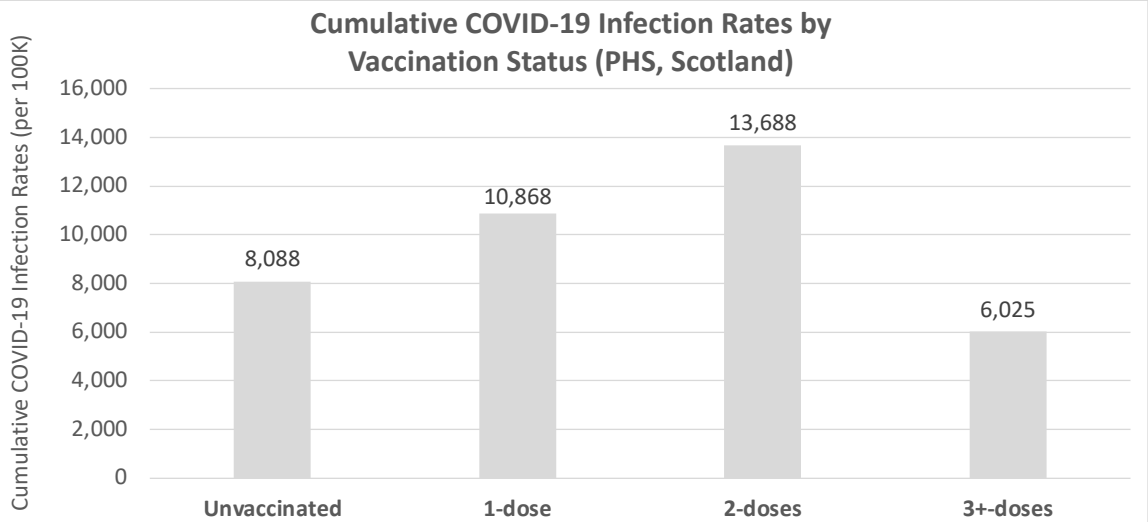
Method: Relative risk = Vaccinated risk / Unvaccinated risk. Risk = weekly COVID-19 hospitalization incidence per 100K = new weekly COVID-19 hosp. cases divided by weekly group population * 100,000. New COVID-19 hospitalizations = Cumulative cases minus previous week's cumulative cases. A relative risk (RR) >1.0 indicates negative vaccine effectiveness, approx. 1.0 indicates vaccine failure, <1.0 indicates a positive vaccine effectiveness. **Data**: WE: 01/03/22 to WE04/07/22, https://www.health.govt.nz/covid-19-novel-coronavirus/covid-19-data-and-statistics, https://web.archive.org/, https://infoshare.stats.govt.nz/ **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

WC-01/03/22 - WE-04/07/22	Unvaccinated	1-dose	2-dose	3-dose	≥2-doses	All doses	Total
COVID-19 Hospitalizations (≥12yr.o.a)	1,364	275	5,176	6,084	11,260	11,535	12,899
Avg. Weekly Population - Cases	286,958	50,733	1,401,721	2,592,919	3,994,641	4,045,373	4,332,331
Avg. Weekly Group Population (≥12yr.o.a)	288,322	51,008	1,406,897	2,599,003	4,005,901	4,056,908	4,345,230
Dose group % of all COVID-19 hospitalizations	10.6%	2.1%	40.1%	47.2%			
Dose group % of New Zealand population	6.6%	1.2%	32.4%	59.8%			

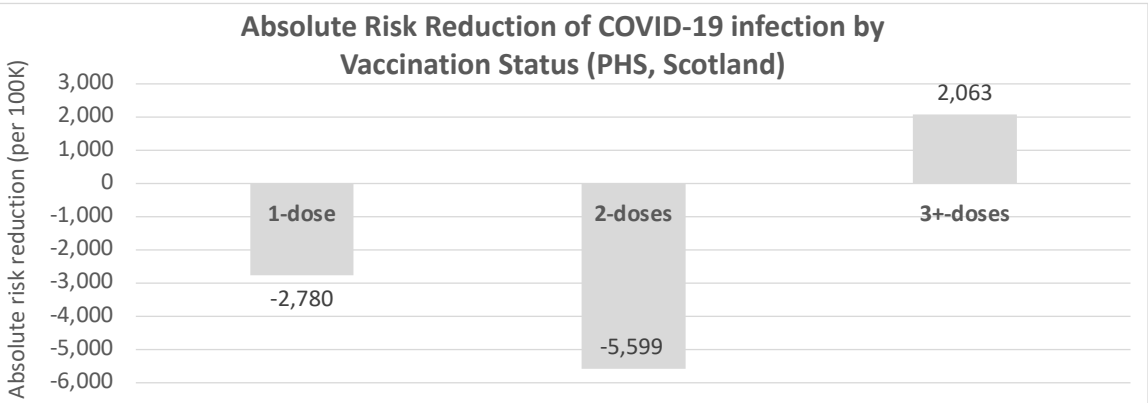
PUBLIC HEALTH SCOTLAND (PHS)

COVID-19 Infections: The Public Health Scotland (PHS,[12] Mid-2021 population estimates.[13]) data shows the vaccinated population (1-3 doses) accounted for 80.6% of all COVID-19 infections while accounting for 78.6% of the population. There were 2,780 and 5,599 more COVID-19 infections per 100,000 in the 1- and 2-dose vaccinated, respectively, and 2,063 fewer COVID-19 infections per 100,000 in the 3-dose vaccinated than the unvaccinated. This corresponded with higher rates of COVID-19 infections in the 1-dose (1.3x), and 2-dose (1.7x) vaccinated and a lower rate in the 3-dose vaccinated (0.74x) compared with the unvaccinated. The observed proportion of COVID-19 infections was higher in the 1- and 2-dose vaccinated and lower in the unvaccinated than expected, with this observed-expected proportion difference being reversed (i.e., vaccinated-lower, unvaccinated-higher) with the 3-dose vaccinated (Chi-square test of independence, all $p < .00001$). This data indicates that the 1- and 2-dose vaccinated experienced an increased risk (i.e., cumulative

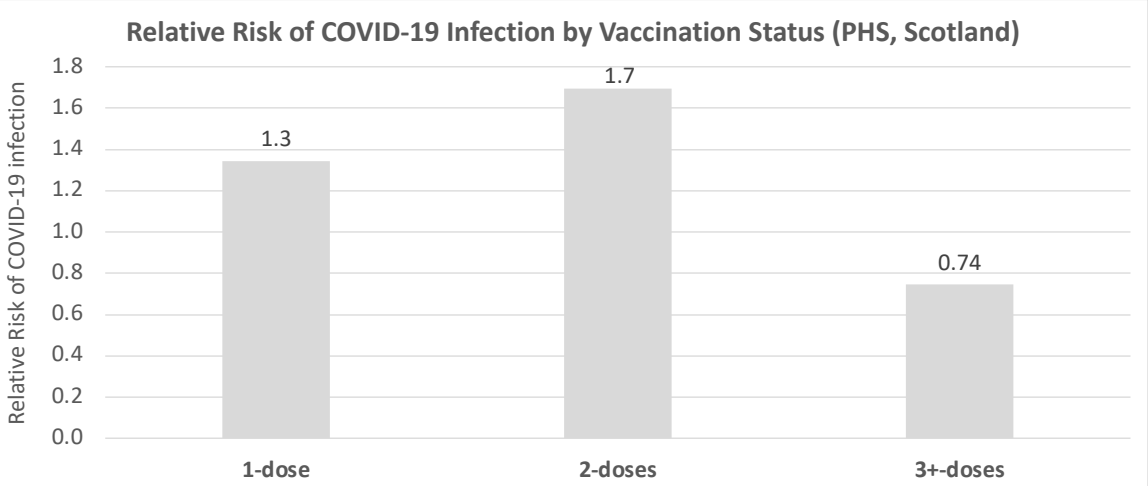
rate and proportion) of COVID-19 infection over the unvaccinated. At the same time, a third dose temporarily ameliorated this enhanced infection risk (i.e., for a duration less than the booster interval).



Method: Cumulative COVID-19 infection rate per 100K from 20/11/21 to 11/02/22 = Sum of weekly COVID-19 cases divided by average of the 12 weekly group population totals * 100,000.
Data: 20/11/21 to 11/02/22 (Omicron), https://publichealthscotland.scot/publications/show-all-releases?id=20580. https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/mid-2021 **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).



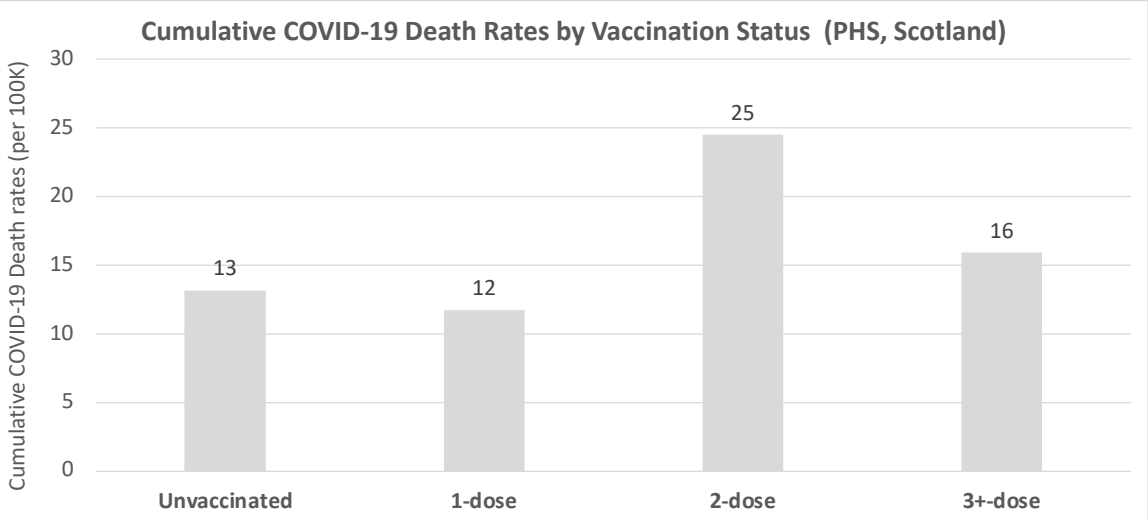
Method: Absolute risk reduction (ARR) = Unvaccinated risk - vaccinated risk. Risk = Cumulative COVID-19 infection rate per 100K from 20/11/21 to 11/02/22 = Sum of weekly COVID-19 infections divided by average of the 12 weekly group population totals * 100,000. An ARR of -1,000 = 1,000 more infections per 100K in the vaccinated over the unvaccinated. An ARR of +1,000 = 1,000 fewer infections per 100K in the vaccinated over the unvaccinated.
Data: 20/11/21 to 11/02/22 (Omicron), https://publichealthscotland.scot/publications/show-all-releases?id=20580. https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/mid-2021 **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).



Method: Relative risk = Vaccinated risk / Unvaccinated risk. Risk = Cumulative COVID-19 infection rate per 100K from 20/11/21 to 11/02/22 = Sum of weekly COVID-19 cases divided by average of the 12 weekly group population totals * 100,000. A relative risk (RR) >1.0 indicates negative vaccine effectiveness, approx. 1.0 indicates vaccine failure, <1.0 indicates a positive vaccine effectiveness.
Data: 20/11/21 to 11/02/22 (Omicron), https://publichealthscotland.scot/publications/show-all-releases?id=20580. https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/mid-2021 **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

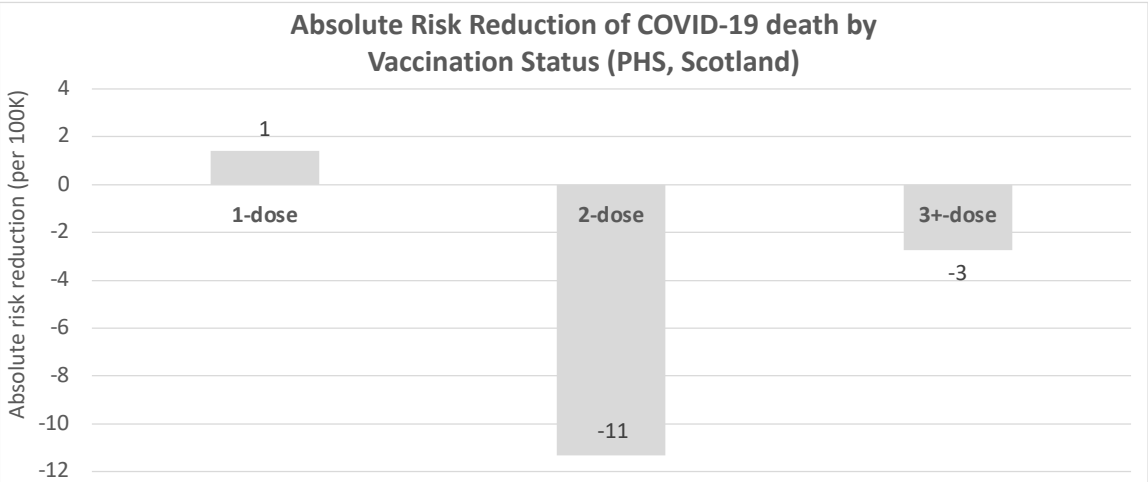
WC-20/11/21 - WE-11/02/22	Unvaccinated	1-dose	2-dose	3-dose	≥2-doses	All doses	Total
COVID-19 Infections	94,907	36,361	212,700	145,685	358,385	394,746	489,653
Avg. Weekly Population - Cases	1,078,480	298,198	1,341,267	2,272,302	3,613,569	3,911,767	4,990,247
Avg. Weekly Group Population	1,173,387	334,559	1,553,967	2,417,987	3,971,954	4,306,513	5,479,900
Dose group % of all COVID-19 infections	19.4%	7.4%	43.4%	29.8%			
Dose group % of Scotland population	21.4%	6.1%	28.4%	44.1%			

COVID-19 Deaths: The Public Health Scotland (PHS,[14] Mid-2021 population estimates.[15]) data shows the vaccinated population (1-3 doses) accounted for 83.9% of all COVID-19 deaths while accounting for 78.5% of the total population. There were 11 and 3 more COVID-19 deaths per 100,000 in the 2- and ≥3-dose vaccinated, respectively, compared with the unvaccinated. This corresponded with higher rates of COVID-19 deaths in the 2-dose (1.9x) and 3-dose (1.2x) vaccinated. The observed proportion of COVID-19 deaths was higher in the 2- and ≥3-dose vaccinated and lower in the unvaccinated than expected, and this difference was significant at the $p < .05$ level for both 2- and ≥3-dose vaccinated groups (Chi-square test of independence, 2-dose $p = < .00001$, ≥3-dose $p = 0.047$). This data indicates a significant disbenefit to vaccination on COVID-19 death rates and proportions for the fully vaccinated and those receiving ≥3-doses compared with the unvaccinated.



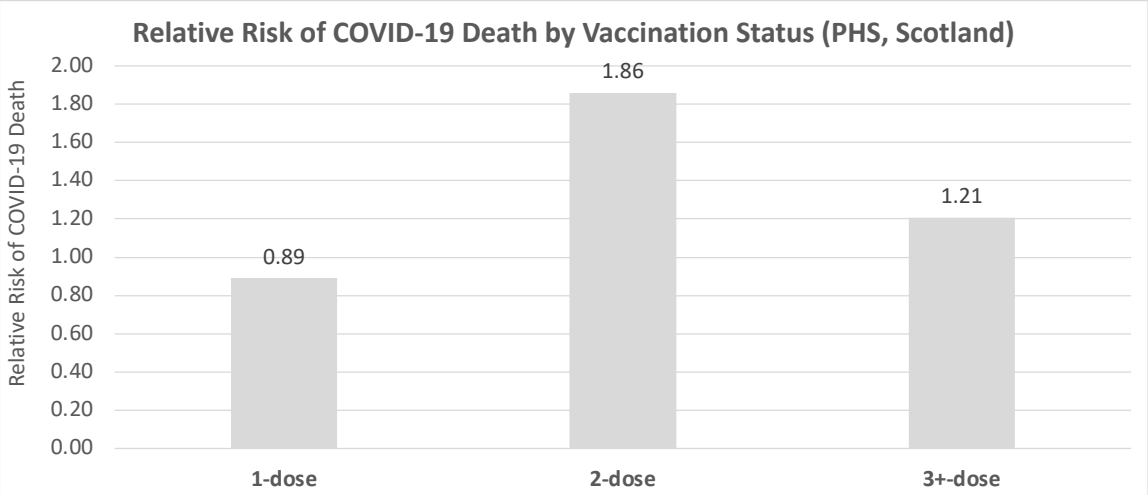
Method: Cumulative COVID-19 death rate per 100K from 20/11/21 to 11/02/22 = Sum of weekly COVID-19 deaths divided by average of the 12 weekly group population totals * 100,000.
Data: 20/11/21 to 11/02/22 (Omicron), https://publichealthscotland.scot/publications/show-all-releases?id=20580. https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/mid-2021 **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

282



Method: Absolute risk reduction (ARR) = Unvaccinated risk - vaccinated risk. Risk = Cumulative COVID-19 death rate per 100K from 20/11/21 to 11/02/22 = Sum of weekly COVID-19 deaths divided by average of the 12 weekly group population totals * 100,000. An ARR of -10 = 10 more deaths per 100K in the vaccinated over the unvaccinated. An ARR of +10 = 10 fewer deaths per 100K in the vaccinated over the unvaccinated.
Data: 20/11/21 to 04/02/22 (Omicron), https://publichealthscotland.scot/publications/show-all-releases?id=20580. https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/mid-2021 **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

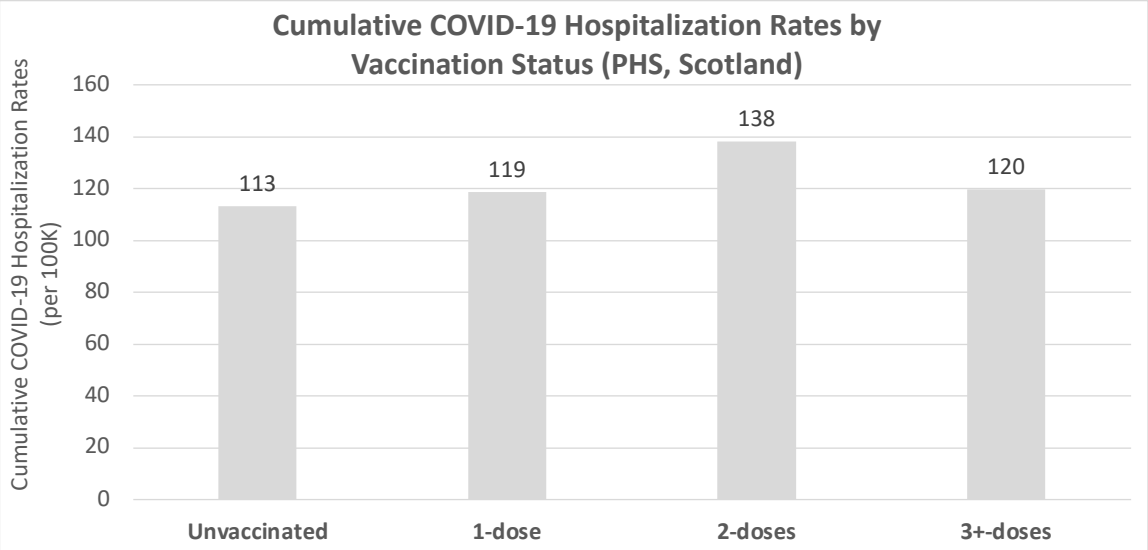
283



Method: Relative risk = Vaccinated risk / Unvaccinated risk. Risk = Cumulative COVID-19 death rate per 100K from 20/11/21 to 11/02/22 = Sum of weekly COVID-19 deaths divided by average of the 12 weekly group population totals * 100,000. A relative risk (RR) >1.0 indicates negative vaccine effectiveness, approx. 1.0 indicates vaccine failure, <1.0 indicates a positive vaccine effectiveness. **Data**: 20/11/21 to 11/02/22 (Omicron), https://publichealthscotland.scot/publications/show-all-releases?id=20580. https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/mid-2021 **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

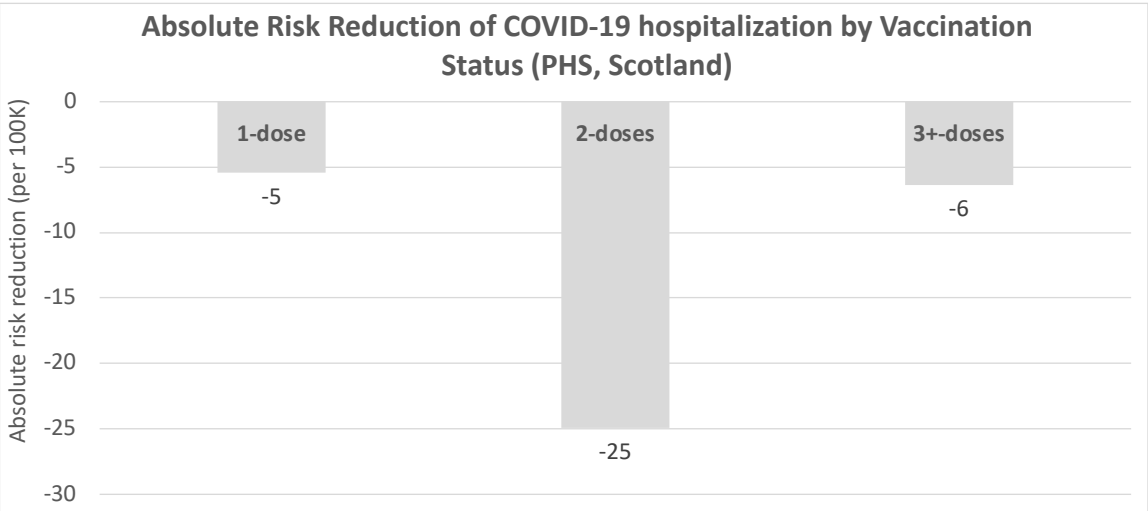
WC-20/11/21 - WE-11/02/22	Unvaccinated	1-dose	2-dose	3-dose	≥2-doses	All doses	Total
COVID-19 Deaths (Cases)	155	40	392	376	768	808	963
Avg. Weekly Population - Cases	1,176,349	340,487	1,599,363	2,362,737	3,962,101	4,302,588	5,478,937
Avg. Weekly Group Population	1,176,504	340,527	1,599,755	2,363,113	3,962,869	4,303,396	5,479,900
Dose group % of all COVID-19 deaths	16.1%	4.2%	40.7%	39.0%			
Dose group % of Scotland population	21.5%	6.2%	29.2%	43.1%			

COVID-19 Hospitalizations: The Public Health Scotland (PHS, [16] Mid-2021 population estimates[17]) data shows the vaccinated population (1-3 doses) accounted for 79.1% of all COVID-19 hospitalizations while accounting for 77.3% of the total population. There were 5, 25, and 6 more COVID-19 hospitalizations per 100,000 in the 1-, 2-, and 3-dose vaccinated, respectively. This corresponded with higher rates of COVID-19 hospitalizations in the 1-dose (1.1x), 2-dose (1.2x), and 3-dose (1.1x) vaccinated compared with the unvaccinated. The observed proportion of COVID-19 hospitalizations was higher in the 1-3 dose vaccinated and lower in the unvaccinated than expected, and this difference was significant at the $p < .05$ level for the 2-dose vaccinated (Chi-square test of independence, 1-dose $p = 0.45$, 2-dose $p = < .00001$, 3-dose $p = 0.09$). This data indicates a marginal-modest disbenefit to vaccination on COVID-19 hospitalization rates and proportions for all vaccine dose groups compared with the unvaccinated, which was significant for the 2-dose vaccinated group proportions.



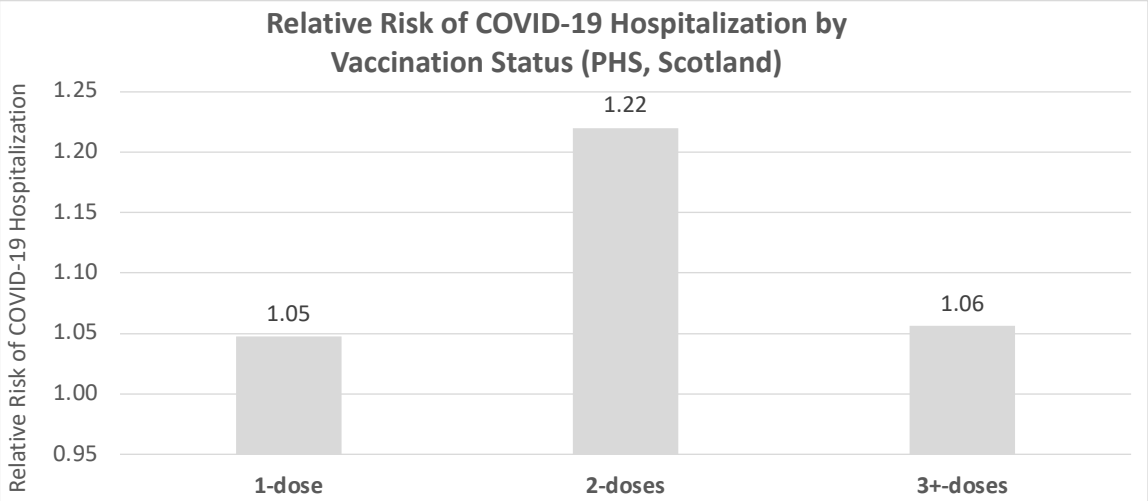
Method: Cumulative COVID-19 hospitalization rate per 100K from 20/11/21 to 11/02/22 = Sum of weekly COVID-19 hospitalization divided by average of the 12 weekly group population totals * 100,000.
Data: 20/11/21 to 11/02/22 (Omicron), https://publichealthscotland.scot/publications/show-all-releases?id=20580. https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/mid-2021 **By:** ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

299



Method: Absolute risk reduction (ARR) = Unvaccinated risk - vaccinated risk. Risk = Cumulative COVID-19 hospitalization rate per 100K from 20/11/21 to 11/02/22 = Sum of weekly COVID-19 hospitalizations divided by average of the 12 weekly group population totals * 100,000. An ARR of -10 = 10 more hospitalizations per 100K in the vaccinated over the unvaccinated. An ARR of +10 = 10 fewer hospitalizations per 100K in the vaccinated over the unvaccinated.
Data: 20/11/21 to 11/02/22 (Omicron), https://publichealthscotland.scot/publications/show-all-releases?id=20580. https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/mid-2021 **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

300

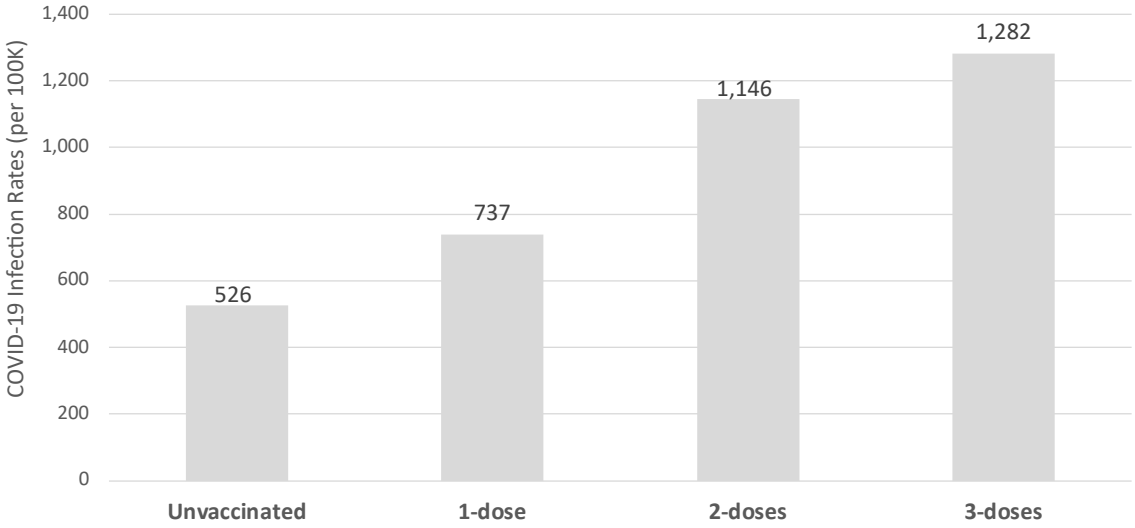


Method: Relative risk = Vaccinated risk / Unvaccinated risk. Risk = Cumulative COVID-19 hospitalization rate per 100K from 20/11/21 to 11/02/22 = Sum of weekly COVID-19 hospitalizations divided by average of the 12 weekly group population totals * 100,000. A relative risk (RR) >1.0 indicates negative vaccine effectiveness, approx. 1.0 indicates vaccine failure, <1.0 indicates a positive vaccine effectiveness.
Data: 20/11/21 to 11/02/22 (Omicron), https://publichealthscotland.scot/publications/show-all-releases?id=20580. https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/mid-2021 **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

WC-20/11/21 - WE-11/02/22	Unvaccinated	1-dose	2-dose	3-dose	≥2-doses	All doses	Total
COVID-19 Hospitalizations (Cases)	1,411	330	2,129	2,894	5,023	5,353	6,764
Avg. Weekly Population - Cases	1,243,647	277,597	1,537,566	2,414,326	3,951,892	4,229,490	5,473,136
Avg. Weekly Group Population	1,245,058	277,927	1,539,695	2,417,220	3,956,915	4,234,843	5,479,900
Dose group % of all COVID-19 hospitalizations	20.9%	4.9%	31.5%	42.8%			
Dose group % of Scotland population	22.7%	5.1%	28.1%	44.1%			

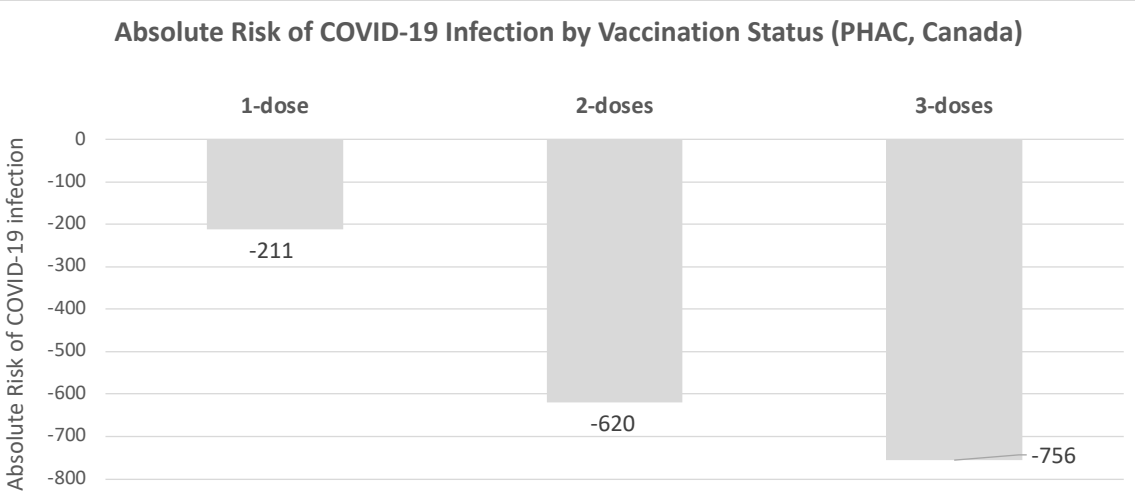
PUBLIC HEALTH AGENCY OF CANADA (PHAC)

COVID-19 Infections: The Public Health Agency of Canada data (PHAC)[18] shows the COVID-19 vaccinated population (1-3 doses, ≥5yr demographics) accounted for 84.8% of cumulative COVID-19 infections while accounting for 71.1% of the population (Statistics Canada).[19] There were a cumulative 211, 620, and 756 more COVID-19 infections per 100,000 in the 1-, 2-, and 3-dose vaccinated, respectively than the unvaccinated. This corresponded with higher rates of COVID-19 infections in the 1-dose (1.4x), 2-dose (2.2x), and 3-dose (2.4x) vaccinated compared with the unvaccinated. The observed proportion of COVID-19 infections was higher in the 1-, 2-, and 3-dose vaccinated and lower in the unvaccinated than expected. These differences were highly significant (Chi-square test of independence, all $p < .00001$). This data indicates that the 1-, 2-, and 3-dose vaccinated groups experienced an increased risk (i.e., cumulative rates and proportions) of COVID-19 infection compared with the unvaccinated.



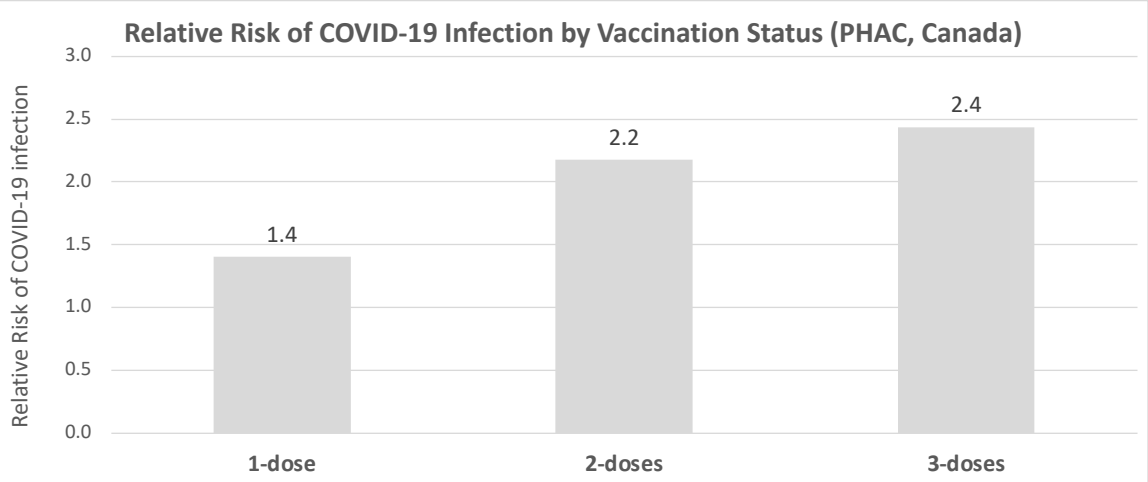
Method: Cumulative incidence 06/02/22 - 08/05/22 = sum new monthly COVID-19 cases divided by average monthly group population. New COVID-19 infections = Cumulative cases minus previous month's cumulative cases. Public Health Agency of Canada provide cumulative totals since 14/12/2020 necessitating new COVID-19 cases be disaggregated from cumulative total to avoid significant numerator bias. **Data**: https://health-infobase.canada.ca/src/data/covidLive/Epidemiological-summary-of-COVID-19-cases-in-Canada-Canada.ca.pdf, https://web.archive.org/. Data tables as of 06/02/22, 06/03/22, 10/04/22, 08/05/22 (which are different from the report dates). **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

317



Method: Absolute risk reduction (ARR) = Unvaccinated risk - vaccinated risk. Risk = Cumulative incidence 06/02/22 - 08/05/22 = sum new monthly COVID-19 infections divided by average monthly group population. New COVID-19 infections = Cumulative cases minus previous month's cumulative cases. PHAC provide cumulative totals since 14/12/2020 necessitating new COVID-19 cases be disaggregated from cumulative total to avoid significant numerator bias. An ARR of -100 = 100 more infections per 100K in the vaccinated over the unvaccinated. **Data**: https://health-infobase.canada.ca/src/data/covidLive/Epidemiological-summary-of-COVID-19-cases-in-Canada-Canada.ca.pdf, https://web.archive.org/. Data tables as of 06/02/22, 06/03/22, 10/04/22, 08/05/22 (which are different from the report dates). By: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

318



Method: Relative risk = Vaccinated risk / Unvaccinated risk. Risk = Cumulative incidence 06/02/22 - 08/05/22 = sum new monthly COVID-19 infections divided by average monthly group population. New COVID-19 infections = Cumulative cases minus previous month's cumulative cases. PHAC provide cumulative totals since 14/12/2020 necessitating new COVID-19 cases be disaggregated from cumulative total to avoid significant numerator bias. A relative risk (RR) >1.0 indicates negative vaccine effectiveness, approx. 1.0 indicates vaccine failure, <1.0 indicates a positive vaccine effectiveness.
Data: https://health-infobase.canada.ca/src/data/covidLive/Epidemiological-summary-of-COVID-19-cases-in-Canada-Canada.ca.pdf, https://web.archive.org/. Data tables as of 06/02/22, 06/03/22, 10/04/22, 08/05/22 (different from report dates).
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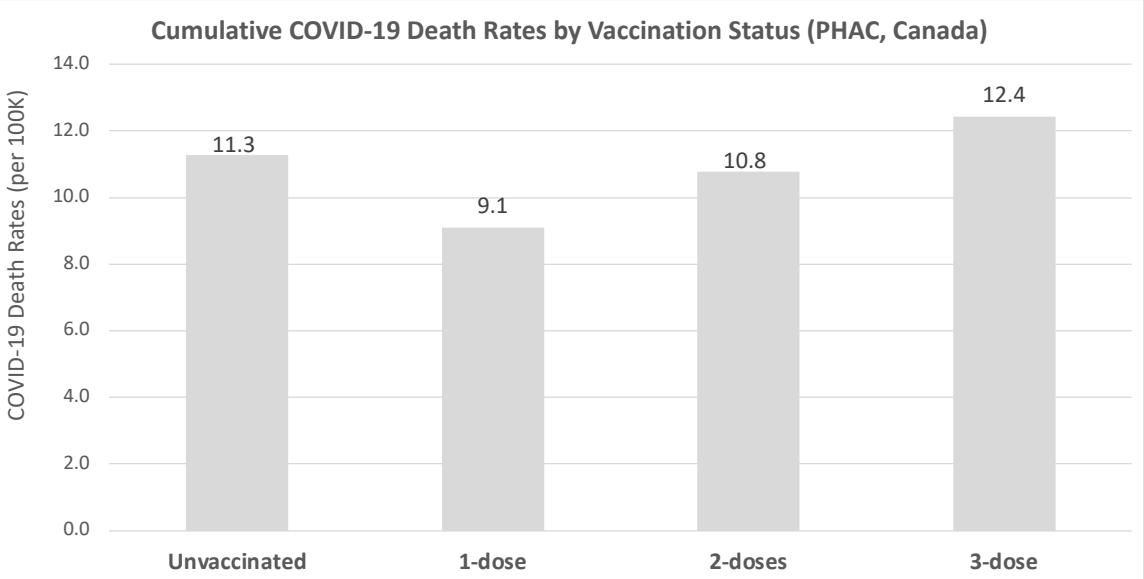
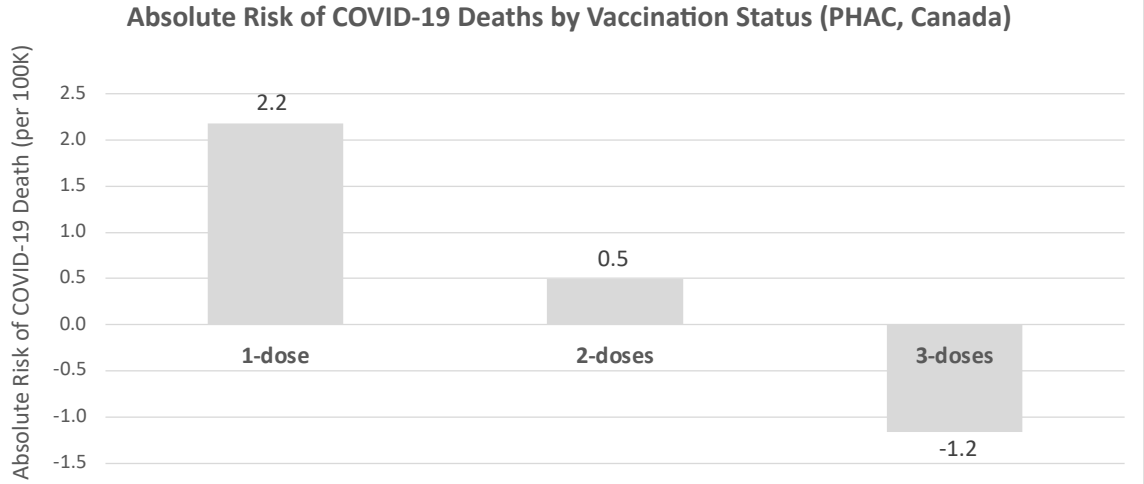
WE-06/02/22 - WE-08/05/22	Unvaccinated	1-dose	2-dose	3-dose	≥2-doses	All doses	Total
Cumulative COVID-19 Infections	53,300	8,358	117,290	174,815	292,105	300,463	353,763
Avg. Group Population - Cases	10,074,147	1,124,975	10,116,043	13,458,518	23,574,562	24,699,537	34,773,684
Avg. Group Population (3 month avg.)	10,127,447	1,133,333	10,233,333	13,633,333	23,866,667	25,000,000	35,127,447
Dose group % of all COVID-19 infections	15.1%	2.4%	33.2%	49.4%	NB: Totals exclude the partially		
Dose group % of Scotland population	28.8%	3.2%	29.1%	38.8%	protected (I<14 days after 1-dose)		

COVID-19 Deaths: The Public Health Agency of Canada COVID-19 death data (PHAC, see infection data citation, Table 2, and Statistics Canada[20]) shows the COVID-19 vaccinated population (1-3 doses) accounted for 71.5% of cumulative COVID-19 deaths while accounting for 71.1% of the population. Vaccination provided a *marginal* COVID-19 death prevention benefit (1- and 2-doses) and a disbenefit (3-doses). There were 1.2 more COVID-19 deaths per 100,000 with the 3-dose vaccinated than the unvaccinated, and 2.2 and 0.5 fewer COVID-19 deaths per 100,000 with the 1- and 2-dose vaccinated, respectively. This corresponded with a higher rate of COVID-19 deaths in the 3-dose vaccinated group (1.1x) and lower rates of COVID-19 death in the 1-dose (0.81x) and 2-dose vaccinated (0.96x) compared with the unvaccinated. The observed proportion of COVID-19 deaths was higher in the 3-dose vaccinated and lower in the unvaccinated than expected, with this observed-expected proportion difference being reversed (i.e., vaccinated-lower, unvaccinated-higher) with the 1- and 2-dose vaccinated. These differences were significant for the 3- and 1-dose groups (Chi-square test of independence, 1-dose p = .04, 2-dose p = .28, 3-dose p = .01). This data indicates the 3-dose vaccinated experienced a significantly increased risk of COVID-19 death compared with the unvaccinated (i.e., rates and proportions).



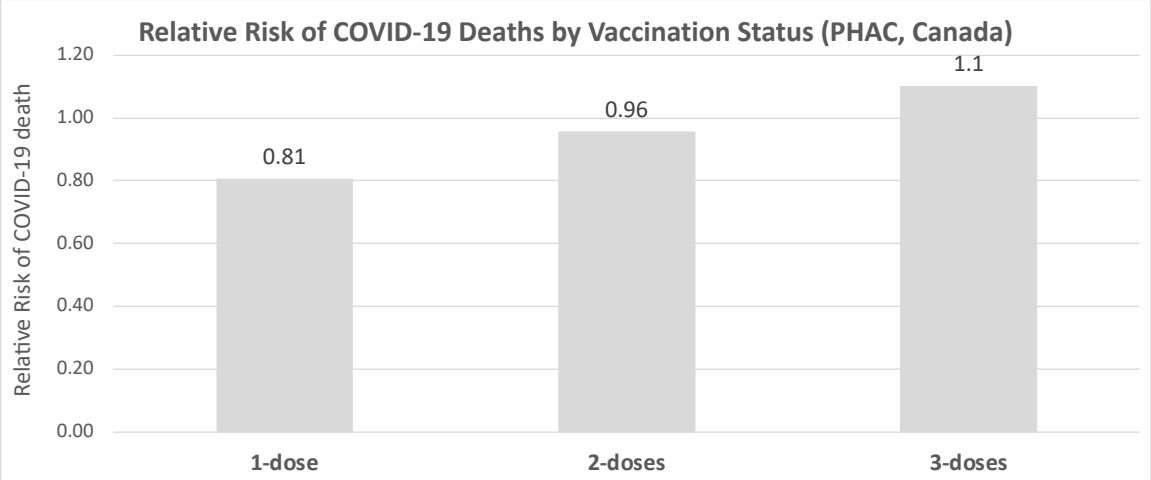
Method: Cumulative incidence 06/02/22 - 08/05/22 = sum new monthly COVID-19 deaths divided by average monthly group population. New COVID-19 deaths = Cumulative deaths minus previous month's cumulative deaths. Public Health Agency of Canada provide cumulative totals since 14/12/2020 necessitating new COVID-19 deaths be disaggregated from cumulative total to avoid significant numerator bias. **Data**: https://health-infobase.canada.ca/src/data/covidLive/Epidemiological-summary-of-COVID-19-cases-in-Canada-Canada.ca.pdf, https://web.archive.org/. Data tables as of 06/02/22, 06/03/22, 10/04/22, 08/05/22 (which are different from the report dates). **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

336



Method: Absolute risk reduction (ARR) = Unvaccinated risk - vaccinated risk. Risk = Cumulative incidence 06/02/22 - 08/05/22 = sum new monthly COVID-19 deaths divided by average monthly group population. New COVID-19 deaths = Cumulative deaths minus previous month's cumulative deaths. PHAC provide cumulative totals since 14/12/2020 necessitating new COVID-19 cases be disaggregated from cumulative total to avoid significant numerator bias. An ARR of +1 = 1 fewer COVID-19 deaths per 100K in the vaccinated over the unvaccinated. **Data**: https://health-infobase.canada.ca/src/data/covidLive/Epidemiological-summary-of-COVID-19-cases-in-Canada-Canada.ca.pdf, https://web.archive.org/. Data tables as of 06/02/22, 06/03/22, 10/04/22, 08/05/22 (which are different from the report dates). **By:** ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

337



Method: Relative risk = Vaccinated risk / Unvaccinated risk. Risk = Cumulative death incidence 06/02/22 - 08/05/22 = sum new monthly COVID-19 deaths divided by average monthly group population. New COVID-19 deaths = Cumulative deaths minus previous month's cumulative deaths. PHAC provide cumulative totals since 14/12/2020 necessitating new COVID-19 cases be disaggregated from cumulative total to avoid significant numerator bias. A relative risk (RR) >1.0 indicates negative vaccine effectiveness, approx. 1.0 indicates vaccine failure, <1.0 indicates a positive vaccine effectiveness.
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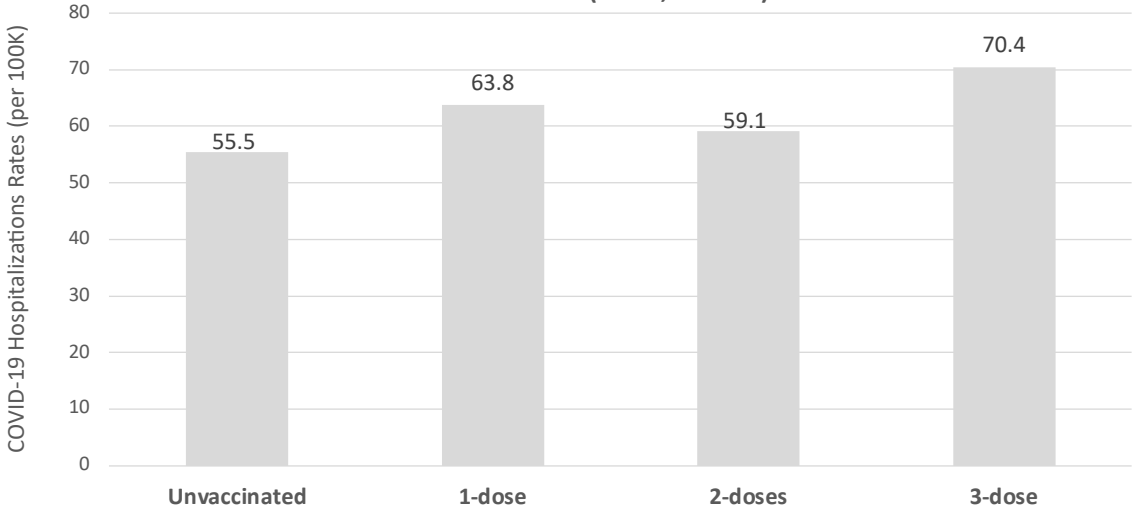
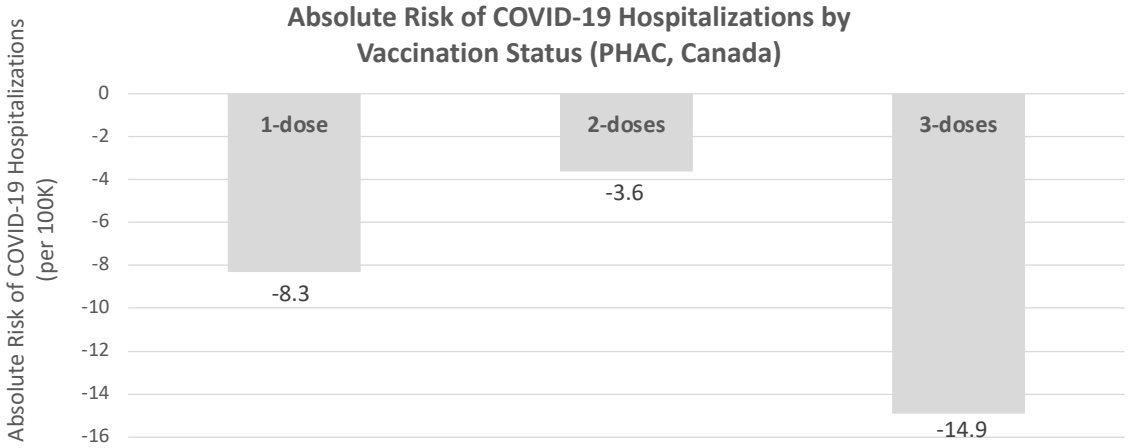
WE-06/02/22 - WE-08/05/22	Unvaccinated	1-dose	2-dose	3-dose	≥2-doses	All doses	Total
Cumulative COVID-19 deaths (cases)	1,141	103	1,102	1,694	2,796	2,899	4,040
Avg. Group Population - Cases	10,126,306	1,133,230	10,232,231	13,631,639	23,863,871	24,997,101	35,123,407
Avg. Group Population (3 month avg.)	10,127,447	1,133,333	10,233,333	13,633,333	23,866,667	25,000,000	35,127,447
Dose group % of all COVID-19 deaths	28.2%	2.5%	27.3%	41.9%	NB: Totals exclude the partially		
Dose group % of Scotland population	28.8%	3.2%	29.1%	38.8%	protected (I<14 days after 1-dose)		

COVID-19 Hospitalizations: The Public Health Agency of Canada data (PHAC, see infection data citation, Table 2, and Statistics Canada[21]) shows the COVID-19 vaccinated population (1-3 doses) accounted for 74.2% of cumulative COVID-19 hospitalizations while accounting for 71.1% of the population. There were a cumulative 8.3, 3.6, and 14.9 more COVID-19 hospitalizations per 100,000 in the 1-, 2-, and 3-dose vaccinated, respectively, than the unvaccinated. This corresponded with higher rates of COVID-19 hospitalizations in the 1-dose (1.1x), 2-dose (1.1x), and 3-dose (1.3x) vaccinated compared with the unvaccinated. The observed proportion of COVID-19 hospitalizations was higher in the 1-, 2-, and 3-dose vaccinated and lower in the unvaccinated than expected. These differences were highly significant (Chi-square test of independence, all $p < .0007$). This data indicates the 1-, 2-, and 3-dose vaccinated groups experienced a significantly increased risk of COVID-19 hospitalizations compared with the unvaccinated (i.e., cumulative rates and proportions).



Method: Cumulative incidence 06/02/22 - 08/05/22 = sum new monthly COVID-19 Hospitalizations divided by average monthly group population. New COVID-19 Hosps. = Cumulative hosps. minus previous month's cumulative hosps. Public Health Agency of Canada provide cumulative totals since 14/12/2020 necessitating new COVID-19 hosps. be disaggregated from cumulative total to avoid significant numerator bias. **Data**: https://health-infobase.canada.ca/src/data/covidLive/Epidemiological-summary-of-COVID-19-cases-in-Canada-Canada.ca.pdf, https://web.archive.org/. Data tables as of 06/02/22, 06/03/22, 10/04/22, 08/05/22 (which are different from the report dates). **By**: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

352



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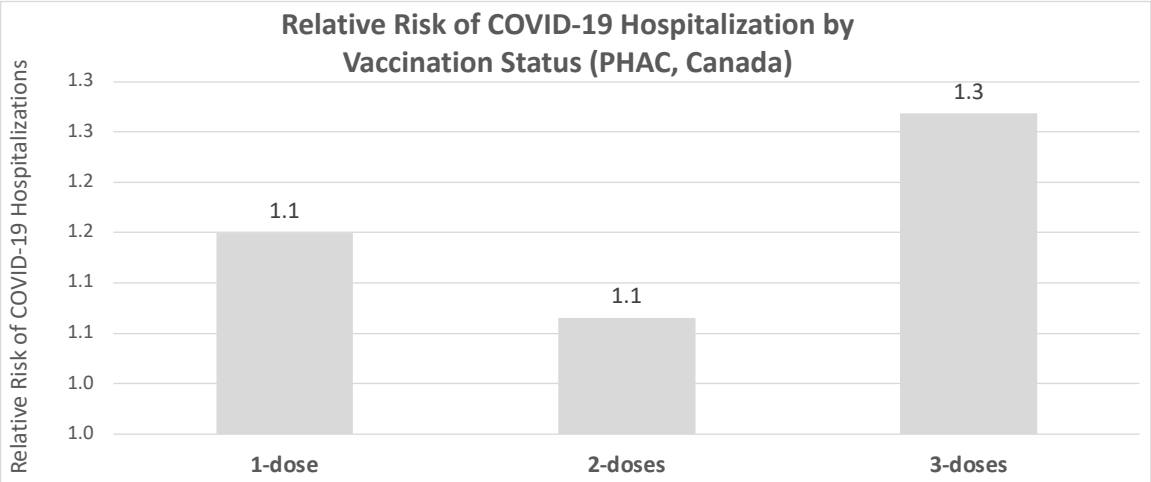
353



Method: Relative risk = Vaccinated risk / Unvaccinated risk. Risk = Cumulative COVID-19 hospitalization incidence 06/02/22 - 08/05/22 = sum new monthly COVID-19 hosps. divided by average monthly group population. New COVID-19 hosps. = Cumulative hosps. minus previous month's cumulative hosps. PHAC provide cumulative totals since 14/12/2020 necessitating new COVID-19 cases be disaggregated from cumulative total to avoid significant numerator bias. A relative risk (RR) >1.0 indicates negative vaccine effectiveness, approx. 1.0 indicates vaccine failure, <1.0 indicates a positive vaccine effectiveness.
Data: https://health-infobase.canada.ca/src/data/covidLive/Epidemiological-summary-of-COVID-19-cases-in-Canada-Canada.ca.pdf, https://web.archive.org/. Data tables as of 06/02/22, 06/03/22, 10/04/22, 08/05/22 (different from report dates).
By: ©Carlton B. Brown, 11/09/2022, CC-BY-SA-4.0 https://grandsolarminimum.com (see blogs).

WE-06/02/22 - WE-08/05/22	Unvaccinated	1-dose	2-dose	3-dose	≥2-doses	All doses	Total
Cumulative COVID-19 hospitalizations (cases)	5,620	723	6,049	9,597	15,646	16,369	21,989
Avg. Group Population - Cases	10,121,827	1,132,610	10,227,284	13,623,736	23,851,021	24,983,631	35,105,458
Avg. Group Population (3 month avg.)	10,127,447	1,133,333	10,233,333	13,633,333	23,866,667	25,000,000	35,127,447
Dose group % of all COVID-19 cases	25.6%	3.3%	27.5%	43.6%	NB: Totals exclude the partially		
Dose group % of Scotland population	28.8%	3.2%	29.1%	38.8%	protected (I<14 days after 1-dose)		

NUMERATOR & DENOMINATOR BIAS EVIDENT IN HEALTHCARE AGENCIES' CALCULABLE CASE RATES

The following details the significant numerator and denominator biases evident in all of these healthcare agencies' calculable unvaccinated COVID-19 infection, hospitalization, and mortality case rates (i.e., New Zealand, Scotland, Canada), or in the supposedly "unadjusted" rates they provided (England). These evident biases consequentially diminished-eliminated the underlying negative vaccine effectiveness and thus obscured the vaccine-induced harm at the national level.

Four main methods were evident by which bias manifest, including the: (1) provision of national healthcare database population totals that underestimated the total population relative to the most recent Government estimates/census, from which a residual underestimated unvaccinated population total was calculable (i.e., New Zealand, Scotland) (**denominator bias**), (2) use of cumulative case totals that bundled 2020-2021 cases arising before high vaccination rates into the

2022 unvaccinated data (i.e., Canada, New Zealand) (**numerator bias**), (3) provision of vaccinated demographic rates of infection and disease as "unadjusted" that had been non-uniformly altered without specifying their reasons and assumptions (i.e., England) (**altered "unadjusted" rates**), (4) use of vaccinated and unvaccinated definitions that failed to reflect ADE biology and its impact on early (i.e., first dose) and late (i.e., waned immunity) infection, hospitalization, and death risk (i.e., all nations) (**definition bias**).

Any discussion on enhanced rates of COVID-19 infection and disease before its dismissal as inherent bias consequent to vaccinated and unvaccinated group differences by healthcare agencies (i.e., *social behavior interactions, testing behaviors, vaccination prioritization, natural immunity, etc.*) in my view must first and foremost reflect **three more dominating rate-critical issues**. Firstly, the significant numerator and denominator bias in evidence as summarized above and detailed in section 1.1.5.1. Secondly, the 3-decades of scientific evidence about **antibody-dependent enhancement of virus infection** (ADE) common to **three other coronaviruses** and their spike protein-based vaccine prototypes means ADE should have been at the forefront of explanations (section 1.1.6). In my view, this ADE differential diagnosis should have ensured this phenomenon was a key healthcare agency priority for clinical **research and informed consent guidelines**. Thirdly, the damning evidence that certain Governments and their affiliates had sustainedly invested vast resources in ***gain-of-function*** genetic modification of coronavirus spike proteins to *specifically bypass the need for a zoonosis and enhance human infection and disease rates* while then working to censor-suppress its role in the origin of the COVID-19 pandemic (Part-2).

The above overview gives a broader context specifically to the England and Scotland healthcare agencies' argument structuring and its conspicuous buttressing. In the final reports in which the UKHSA (31/03/2022[22]) and PHS (16/02/2022[23]) provided COVID-19 cases by vaccination status, they both emphatically cautioned the public not to use their data for vaccine effectiveness calculations. Instead, the UKHSA referred people to Table 5, and the PHS referred people to UKHSA reports 4 and 6,[24] among other publications. These reports provided a list of largely non-peer-reviewed vaccine efficacy publications that heavily biased Alpha and Delta strains using relatively small studies and highly selected populations that failed to represent the national-level outcomes (i.e., **confirmation bias**). Their **argument buttressing was conspicuously devoid** of any discussion on the multi-decade foundational biology of coronavirus ADE and more generally, about antigenic imprinting to explain the negative vaccine effectiveness and vaccine failure, respectively. In my view, historical vaccine effectiveness publications are **irrelevant when discussing current data** for coronaviruses in the face of ADE and antigenic imprinting, both

manifested by new strains that are **antigenically distinct** from the vaccine strain (section 1.1.6-8).

Significant Numerator and Denominator Bias Evident in Healthcare Agency Calculable Unvaccinated COVID-19 Case Rates

The following details the significant numerator and denominator bias evident in government healthcare agencies' calculable COVID-19 case rates, which consequentially diminished-eliminated the negative vaccine effectiveness harm signal and vaccine failure in need of urgent investigation (i.e., ADE, VAED, and antigenic imprinting).

New Zealand (Ministry of Health, MoH): The MoH provided its data as cumulative totals since 26th February 2020 necessitating disaggregation of the Omicron wave data using the web archived data to prevent numerator bias in any spot rate calculations. The MoH provided its Health Service User (HSU 2020[25]) population estimates for the ≥12yr population total (i.e., 4,209,057 on 01/07/2020),[26] not the more recent and larger Statistics New Zealand (NZ-Stats) ≥12yr population estimates (4,345,230 on 31/12/21),[27] from which the residual unvaccinated population total was calculable. Which population total one uses for calculating the residual unvaccinated population is critical given the extremely high vaccination rates in New Zealand. This issue dominates any discussion on the statistical bias. The MoH's provision of the HSU 2020 ≥12yr population total in its tables ("Vaccination uptake by ethnicity") effectively halved the residual unvaccinated population compared with NZ Stats. This would double the calculable crude unvaccinated rates and thus **essentially eliminate negative vaccine effectiveness** in all but the 2-dose vaccinated.

The average weekly residual unvaccinated population between March 01 and July 04, 2022, was 288,322 derived using the NZ-Stats ≥12yr population total minus the COVID-19 Immunization Register (CIR) vaccinated total (i.e., NZ-Stats-minus-CIR-all-doses) and 152,149 using the HSU ≥12yr population total minus the CIR vaccinated total (i.e., HSU-minus-CIR-all-doses). During the brunt of the Omicron wave and study period, there were 45,309 cumulative new COVID-19 infections in the ≥12yr unvaccinated population yielding an unvaccinated cumulative rate per 100,000 of 15,715 (NZ-Stats-minus-CIR-all-doses) and 29,779 (HSU-minus-CIR-all-doses). As such, the crude unvaccinated cumulative rate was increased by a **factor of 1.9** over the rates derived using the NZ-Stats population. The 1-, 2-, and 3-dose cumulative infection rates were 23,026, 31,937, and 24,323 per 100,000, respectively. The cumulative rate ratios for the 1-dose were 0.8x (NZ-Stats 1.5x), 2-doses 1.1x (NZ-Stats 2.0x), and 3-doses 0.8x (NZ-Stats 1.5x). I concluded that HSU2020 eliminated the negative vaccine effectiveness in need of **urgent MoH investigation**. This helps explain why the National Immunization Programme website shows **no funding has**

435 **been awarded** to investigate the predictable antibody-dependent enhancement of virus infection,
436 vaccine-associated enhanced disease, or antigenic imprinting in New Zealand thus far.[28]

437 Of **great concern** with regards to denominator bias in calculable COVID-19 rates was that between
438 August 04[29] and 11.59 pm August 08, 2022, the MoH switched from HSU2020 to HSU 2021,[30]
439 resulting in its 12+ population total increasing from 4,209,057 to 4,452,797 **(+243,740 people)**,
440 which then exceeded the NZ-Stats 2021 12+ population by 107,567 people. By recalculating
441 COVID-19 case rates using both HSU2020 and 2021 populations between 01/03/2022 – and
442 04/07/2022 (i.e., my main study period), the crude unvaccinated cumulative infection and
443 hospitalization rates were **2.6 times greater** using HSU2020 than HSU2021. By using HSU2020,
444 the negative vaccine effectiveness for COVID-19 infection and hospitalizations were **essentially**
445 **eliminated** in all but the 2-dose infection group. Whereas **pronounced negative vaccine**
446 **effectiveness** was evident for COVID-19 infections and hospitalizations in all doses except the 3-
447 dose hospitalization group using HSU2021. What a difference a few months makes.

448 The COVID-19 infection rate ratios for the 1-, 2-, and 3-dose vaccinated were 0.8x (2.0x), 1.1x
449 (2.8x), and 0.8x (2.1x) respectively using HSU2020 (no brackets) versus HSU2021 (in brackets).
450 The COVID-19 hospitalization rate ratios (RR) for the 1-, 2-, and 3-dose vaccinated were 0.6x
451 (1.6x), 0.4x (1.1x), and 0.3x (0.7x) respectively using HSU2020 (no brackets) versus HSU2021 (in
452 brackets). An RR > 1.0 indicates negative vaccine effectiveness, along with other measures (i.e.,
453 plus a -ARR and Chi-Square observed-v-expected proportion differences). These rate ratios
454 corresponded with 11,581, 20,492, and 12,878 more COVID-19 infections in the 1-, 2-, and 3-dose
455 vaccinated, respectively, and 195 and 23 more hospitalizations in the 1- and 2-dose vaccinated, and
456 110 fewer COVID-19 hospitalizations in the 3-dose vaccinated, per 100,000, over the unvaccinated
457 by using HSU2021. Had the MoH provided the HSU2021 population total during the brunt of the
458 Omicron wave it would have been highly evident (more than with NZ Stats) there was a problem
459 with negative vaccine efficacy in preventing COVID-19 infections and hospitalizations. In
460 consequence, New Zealanders were **not warned of the life-long health risks** of antibody-
461 dependent enhancement of virus infection during their vaccination informed consent. At the same
462 time, doctors who knew about these issues were threatened with medical deregistration for not
463 following government guidelines (i.e., NZDSOS).

	COVID-19 Infections				COVID-19 Hospitalizations			
	Unvaccinated	1-Dose	2-Dose	3-Dose	Unvaccinated	1-Dose	2-Dose	3-Dose
Case rate (per 100K, HSU2020)	29,779	23,026	31,937	24,323	896	539	368	234
Case rate (per 100K, NZ Stats)	15,715	23,026	31,937	24,323	473	539	368	234
Case rate (per 100K, HSU2021)	11,445	23,026	31,937	24,323	345	539	368	234
HSU2020 / HSU2021 (Unvaxed rate multiplier)	2.6				2.6			
ARR (per 100K, HSU2020)		6,753	-2,158	5,456		357	529	662
ARR (per 100K, NZ Stats)		-7,311	-16,222	-8,608		-66	105	239
ARR (per 100K, HSU2021)		-11,581	-20,492	-12,878		-195	-23	110
Relative Risk (HSU2020)		0.8	1.1	0.8		0.6	0.4	0.3
Relative Risk (NZ Stats)		1.5	2.0	1.5		1.1	0.8	0.5
Relative Risk (HSU2021)		2.0	2.8	2.1		1.6	1.1	0.7
Population size	**Unvaccinated**	**Total**						
HSU2020	152,149	4,209,057						
NZ Stats	288,322	4,345,230						
HSU2021	395,889	4,452,797						

Of **serious concern** is that the MoH provided the HSU population total knowing its shortcomings (see Excel page "HSU Population" summary table).[31] The MoH confirmed the HSU total was not a total population estimate because it included only people who received health services or were PHO enrolled in a given year only. The HSU was known to miss highly marginalized groups and young people aged 15-45 years, especially males and people of Asian and MELAA ethnicity, whereas COVID-19 does not miss anyone. This would make any residual unvaccinated population calculations using HSU totals extremely sensitive to these deficiencies. In my view, it should have been obvious what the impact would be of using the HSU2020 versus NZ Stats populations on increasing the calculable unvaccinated case rates.

The MoH claimed without providing evidence that the use of the HSU database prevented numerator denominator bias by ensuring the same source of demographic information is used in the numerator and the denominator. As demonstrated above, the provision of the smaller HSU population total created the **significant denominator bias (1.9x)** evident in the calculable unvaccinated rates versus the NZ Stats population total. Given these well-known HSU population shortcomings and their obvious impact on residual unvaccinated COVID-19 rate denominator bias, the **MoH still requested Stats NZ to peer review** the methods used to create the HSU population and its suitability as a denominator for measuring COVID-19 vaccine coverage, and wider use (i.e., rate calculations).[32] In my view, that latter act should be a key point for **investigation**.

England (UKHSA): The UKHSA provided vaccinated demographic rates of infection, hospitalization, and death as "unadjusted" that had been **non-uniformly adjusted** without explanation. From reports 49 (2021) to 2 (2022), there was a **large-to-massive disparity** between the provided "unadjusted" case rates and my calculated 2-dose vaccinated COVID-19 infection (>18yr demographics), hospitalization (>30 or 40yr demographics), and death rates (>40 or 50yr demographics). The UKHSA significantly reduced their provided vaccinated case rates while leaving the unvaccinated case rates largely unchanged, but even with this act, it was insufficient to

hide the rapidly deteriorating 2-dose negative vaccine effectiveness. From week 3 in 2022 the UKHSA then switched from providing 2-dose to ≥3-dose case rates, which removed the major deterioration in 2-dose Omicron infection, hospitalization, and death rates from ready public view.

From week 3 to 13 2022, the ≥3-dose vaccinated COVID-19 infection rates (>18yr demographics) were still significantly higher than the unvaccinated rates, highlighting the negative vaccine effectiveness of ≥3-doses. Reports 3-13, 2022, highlight COVID-19 infection rates in the younger demographics were modified while making no-negligible alterations to the unvaccinated COVID-19 infection rates or the vaccinated and unvaccinated COVID-19 hospitalization and death rates (all demographics). In my view, this lack of alterations in most of the unadjusted rate data validated my crude rate calculation methodology, while exposing biased-unexplained altered UKHSA rate data. My methodology used the UKHSA's raw case data for COVID-19 infections, hospitalizations, and deaths ("Reports 49-13 Table: *Unadjusted rates of COVID-19 infection, hospitalization, and death in vaccinated and unvaccinated populations*"[33]) and the National Immunization Management Service COVID-19 vaccinated population data as used by the UKHSA (NIMS, "Report Table 49-13: *Provisional cumulative COVID-19 vaccine uptake by age in England*").[34] As of 01/04/22 UKHSA no longer provided case data by vaccination status, making it **impossible** to monitor for evidence of negative vaccine effectiveness and thus *antibody-dependent enhancement of infection*.

Scotland (Public Health Scotland, PHS): The PHS used its Community Health Index dataset, representing those currently registered with a GP practice in Scotland. The PHS declared the limitations of this database for deriving the residual unvaccinated population total but did not alter its rate calculation methodology to mitigate this shortcoming. The PHS data (weekly reports ending 05/11/21 to 11/02/22) displayed a highly variable population total every week and between each of its three data tables within a week (i.e., COVID-19 infections, acute hospitalizations, and deaths). There was also a major unexplained decrease in the unvaccinated population between the report ends 17/12/21 and 31/12/21 without a corresponding increase in the vaccinated population, which had the effect of reducing the total population by circa ten percent in one week. This unjustified act consequentially diminished the calculable 2-dose negative vaccine effectiveness.

During my period of assessment (reports ending 05/11/21-11/02/22) there was a mean population total of 5,557,878 (COVID-19 infection tables), 5,442,343 (COVID-19 acute hospitalization tables), and 5,857,333 (COVID-19 death tables), with a minimum-maximum total population difference of 558,948 (infection tables), 848,320 (hospitalization tables), and 20,292 (death tables) within each category, and a minimum-maximum difference of mean population totals between the COVID-19 infection, hospitalization, and death tables of 414,991 – where there should be no

difference. Furthermore, there was a **precipitous decrease** in the mean unvaccinated and population totals between the two sub-periods 05/11/21-17/12/21 and 24/12/21-11/02/22, **devoid of explanation**. The mean unvaccinated population declined by 607,949 while the mean vaccinated population correspondingly increased by only 58,125, resulting in a mean population decline of 549,824 (COVID-19 infection tables). Similarly, there was a mean decrease in the unvaccinated, vaccinated, and total populations of 717,072, 49,381, and 766,452, respectively, between these two sub-periods for the COVID-19 acute hospitalization tables. While the mean total population derived from the COVID-19 death tables was 5,857,333 versus the Scotland mid-2021 census population estimate of 5,479,900, the difference between the two sub-periods was only 11,157. In other words, the PHS unvaccinated totals, all PHS-provided age-adjusted rates, and COVID-19 infection, hospitalization, and death rate narratives should be treated with **extreme caution**, in my opinion.

Further compounding this extreme denominator bias, the PHS age-standardized its COVID-19 acute hospitalization and death rate data using the aged 2013 European Standard Population (ESP) data. Age standardization is typically used to weight incidence and mortality data to ensure comparability between countries and over time to reflect different population age structures.[35] The PHS justified its use of age standardization for its weekly data by claiming the unvaccinated were younger than those receiving two or more COVID-19 vaccine doses and that older individuals were more likely to be hospitalized than younger individuals. While vaccination rates were moderately lower in those aged <50yrs by this stage of the pandemic (pg.35),[36] as the UKHSA data demonstrated it was the ≥50-year demographics who dominated COVID-19 deaths (i.e., vaccinated 79%, vaccinated/unvaccinated 96%) and hospitalizations (i.e., vaccinated 53%, vaccinated/unvaccinated 65%), arguably making the need for age standardization a moot point. Scotland could have provided us demographic-specific data like the UKHSA did, which would have provided greater transparency on its data and conclusions. In my view, age standardization was another means for introducing unspecified numerator and denominator bias into rate calculations. The PHS stopped providing case data by vaccination status as of 16/02/22, making it **impossible** to monitor for evidence of negative vaccine effectiveness and thus *antibody-dependent enhancement of infection*.

Canada: The Public Health Agency of Canada (PHAC) provided cumulative case data since 14 December 2020 (i.e., the start of their vaccination campaign) rather than weekly or monthly new case data. Figure 5 in each report ("*Distribution of confirmed COVID-19 cases reported to PHAC by vaccination status as of*," i.e., May 08, 2022[37]) shows the cumulative unvaccinated percentage of COVID-19 cases, hospitalizations, and deaths as 45.0%, 55.9%, and 56.7% respectively, along

with the vaccinated percentages. However, when unvaccinated percentages were calculated using the difference between May 08 and April 11 (i.e., new cases in one month), 2022, these percentages become 19.3% (2.3x less), 22.4% (2.5x less), and 30.5% (1.9x less) respectively. I concluded the use of cumulative data since 14/12/20 **biased** higher unvaccinated percentages and rates, which consequentially diminished or eliminated negative vaccine effectiveness.

In Table 3 ("*Risk of severe outcomes among unvaccinated cases, compared to fully vaccinated cases and cases fully vaccinated with an additional dose, April 11, 2022, to May 08, 2022*", ≥5yr of age) PHAC provided 4-week age-standardized rate ratios for COVID-19 hospitalizations for the 2-dose (3x) and 3-dose (5x), and COVID-19 deaths for the 2-dose (5x) and 3-dose (7x) (i.e., unvaccinated compared to vaccinated). PHAC provided an **associated narrative** stating, "*From April 11, 2022, to May 08, 2022, compared to fully vaccinated cases, unvaccinated cases were 3 times more likely to be hospitalized and 5 times more likely to die as a result of their illness. Compared to cases fully vaccinated with an additional dose, unvaccinated cases were 5 times more likely to be hospitalized and 7 times more likely to die due to their illness, during this same 4-week period (Table 3).*" **However**, according to my analysis, the only way one can approximate the PHAC narrative associated with Table 3 is to calculate rate ratios using the **cumulative data since 14/12/2020** and not new cases between April 11 and May 08, 2022, **as stated in Table 3s' legends**.

By using the cumulative raw data for rate analysis as of May 08, 2022, then the unvaccinated had a 2.7x and 5.2x higher rate of COVID-19 hospitalization, and a 3.1x and 5.2x higher rate of COVID-19 death than the 2-dose and 3-dose vaccinated respectively. My calculated cumulative rate ratios were similar in outcome to PHAC's age-standardized COVID-19 hospitalization rate ratios, while their age-adjusted COVID-19 death rate ratios were moderately higher (see above). However, when the **new cases** between April 11 and May 08, 2022 (i.e., as stated in the Table 3 legend) were used to calculate rate ratios, then the conclusion was **fundamentally different** from that provided by PHAC. That is, the 2-dose and 3-dose vaccinated experienced a 1.1x and 1.7x higher rate of COVID-19 hospitalization and a 0.8x and 1.0x rate of COVID-19 death than the unvaccinated. In other words, PHAC's age-adjusted rates and associated narrative, presumably **derived using the cumulative data** since 14/12/2020, **obscured the higher rates** of COVID-19 hospitalization in the 2- and 3-dose vaccinated and the 3-dose vaccine failure in COVID-19 death prevention (i.e., the COVID-19 death rate ratio was 1.0x the unvaccinated) between April 11 and May 08, 2022. PHAC also failed to communicate the higher rates of COVID-19 infection in the 2- and 3-dose vaccinated (i.e., 1.2x and 2.1x the unvaccinated, respectively). This issue was the same for all Table 3s in the PHAC reports used for rate analysis in sections 1.1.2-4 (March 24,[38] April

29,[39] May 27,[40] 2022).

Case definition bias: a crucially important form of COVID-19 infection rate bias relates to the definition of the unvaccinated and vaccinated, which failed to reflect the biology of ADE and the infection risk impact of low-rising and low-waning levels of antibody immunity (sections 1.1.6.2 and 1.1.7). The UKHSA, PHS, and PHAC defined the vaccinated (2-doses) and boosted (≥3-doses) as those ≥14 days after their second or third/fourth vaccinations, respectively, while **transferring** the <14-day case risk to the previous vaccinated or unvaccinated group. The UKHSA and PHS defined the first dose as those who received one dose ≥21 days before the specimen date (PHAC ≥14 days). The partially vaccinated were those who received one dose before the specimen date (UKHSA <20 days, PHAC <14 days), while the PHS called these **unvaccinated**. The MoH definitions were less clear. In general, these definitions ignore the biology of antibody-dependent enhancement (ADE) of virus infection in which ADE is observed in the presence of low concentrations of non-neutralizing and/or infectivity-enhancing antibodies that one would putatively observe with rising immunity shortly after the first vaccine dose. All countries assessed showed evidence of higher crude rates of COVID-19 infection in the 1-dose vaccinated than the unvaccinated (i.e., England 1.4x, Scotland 1.3x, Canada 1.4x, and New Zealand 1.5x). This suggests these governments' definition of the vaccinated was inappropriate for capturing the gamut of risks against COVID-19 infection in the face of **predictable ADE**.

Furthermore, as a general comment in all nations assessed, the case definitions for COVID-19 death and acute hospitalization fail to reflect an all-cause morbidity and mortality definition. Instead, healthcare agencies have isolated a very narrow 28-day window to assess serious disease outcomes after the majority of vaccine-induced toxicity and harm had already occurred (i.e., *c.50% within two weeks of vaccination, via my VAERS reconnaissance analysis to November 2021*). In my view, any government narrative based on this narrow window is a **best-case**, which excludes the serious-severe vaccine adverse events and the 21-14-day periods after primary and booster immunizations when ADE could arise, and the longer inter-booster period when protective immunity has waned.

Healthcare Agencies' Argument Buttressing to Invalidate Negative Vaccine Efficacy

The UKHSA and PHS inform us the vaccination status of cases, hospital inpatients and deaths should not be used to assess vaccine effectiveness because of inherent biases consequent to vaccinated and unvaccinated population differences (i.e., *social behavioral interactions, testing behaviors, vaccination prioritization, and natural immunity*).[41] How this innate bias compares with the denominator and numerator bias evident in government surveillance data or the use of

supposedly "unadjusted" rates can't be assessed from their quantitatively unsubstantiated statements of opinion. This section **teases inherent bias apart** focused on the formulas: absolute risk reduction (ARR) = unvaccinated rate – vaccinated rate, and rate ratio (RR) = vaccinated rate / unvaccinated rate. A negative vaccine effectiveness would be indicated by a negative ARR or a RR>1.0.

Social behavior bias: Any implied negative vaccine efficacy artifact would suggest the unvaccinated engaged in behaviors that lowered their case rates to less than the vaccinated, and/or the vaccinated engaged in behaviors that increased their case rates. This would imply the unvaccinated maintained social distancing and wore masks more frequently, and *stayed away from people, public transportation, public events, dense populations, and work.* This would also imply that the vaccinated may have believed or trusted their government's narrative that they were protected and thus engaged in risky behaviors that increased their infection rates above the unvaccinated. This would imply they were less stringent in maintaining their social distancing and wearing masks, *increased their socialization rates, increased their use rates of public transport, and more frequently visited public superspreader events.* **Does this sound right?**

Natural infection bias: The UKHSA and PHS suggested prior infection could have increased background rates of naturally acquired immunity in the unvaccinated, thus lowering unvaccinated case rates to create negative vaccine efficacy. This argument **topples in New Zealand** because our population was still experiencing its first true pandemic wave of community transmission (i.e., not previously infected). Yet, according to my calculations, negative vaccine efficacy was already evident during the initial Omicron wave. In the Northern Hemisphere, nucleoprotein antibody seroprevalence indicative of natural infection confirmed rates increased from 18.1% (UKHSA Report 36, August 2021) to 36% (UKHSA, Report 12, February 2022). Yet, the statistically significant negative vaccine efficacy was already evident in August 2021 (UKHSA report 36) and all subsequent reports that disclosed case rates by vaccination status. It **should be noted** these reports were available to the Ministry of Health just after Auckland's August 2021 lockdown and the ensuing mandated and induced national vaccination campaign.

Testing bias: This would imply the unvaccinated were less likely, and/or the vaccinated more likely to be tested (i.e., *even though they were vaccinated and supposedly protected*) while potentially being impacted by their government's potential use of high false-positive PCR diagnostic methods using cycle thresholds >35 (see section 1.7.2, i.e., bogus case generator). To convert a 2-dose negative vaccine efficacy (-ARR%, RR >1.0) to a vaccine failure (ARR = 0, RR = 1.0), one would need to increase the unvaccinated COVID-19 case rates by 2.4x (England), 1.7x (Scotland), 2.2x

(Canada), and 2.0x (New Zealand), meaning testing rates would need to increase significantly more than these case rate multiples. In this scenario, there would have been no benefit to vaccination, **only harm**. Testing bias would also assume the unvaccinated were able to avoid COVID-19 testing (i.e., for work, school, public gatherings, crossing county, and country borders, etc.). While I have no verifiable evidence, claims arose on social media from May 2021 that at least one government healthcare agency not detailed in this specific analysis was using different PCR cycle thresholds between the vaccinated and unvaccinated with vaccinated reinfections. In the fullness of time, it will be important to understand if using differential PCR cycle thresholds impacted case rates more widely.

CITATIONS

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2 Mathieu, E., Ritchie, H., Ortiz-Ospina, E. et al. A global database of COVID-19 vaccinations. Nat Hum Behav (2021). Our World in Data file: https://covid.ourworldindata.org/data/owid-covid-data.xlsx. Downloaded 27/01/2022.

3 Hannah Ritchie, Lucas Rodés-Guirao, Edouard Mathieu, and Max Roser. 2021. "Coronavirus Pandemic (COVID-19, data to 2021-11-15)." Our World in Data. https://vector-news.github.io/editorials/CausalAnalysisReport_html.html

4 Table titled: "COVID-19 cases by vaccination status between weeks X and Y", for weeks 49-51, 2021, and weeks 1-13, 2022. https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports

5 Table titled: "Provisional cumulative COVID-19 vaccine uptake by age in England", for weeks 49-51, 2021, and weeks 1-13, 2022. https://www.gov.uk/government/statistics/national-flu-and-covid-19-surveillance-reports-2021-to-2022-season

6 Table titled: "COVID-19 deaths (a) within 28 days of positive specimen or with COVID-19 reported on the death certificate, by vaccination status between weeks X and Y", for weeks 49-51, 2021, and weeks 1-13, 2022. https://www.gov.uk/government/publications/covid-19-vaccine-weekly-surveillance-reports

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