Supplementary Appendix

This appendix has been provided by the authors to give readers additional information about their work.

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BNT162b2 mRNA Covid-19 Vaccine in a Nationwide Mass Vaccination Setting

Noa Dagan, MD*[1,2]; Noam Barda, MD*[1,2]; Eldad Kepten, PhD[1]; Oren Miron, MA[1,3]; Shay Perchik, MA[1]; Mark A. Katz, MD[1,3,4]; Miguel A. Hernán, MD[5,6]; Marc Lipsitch, DPhil[7]; Ben Reis, PhD[8,9]; Ran D. Balicer, MD[1,3]

[1] Clalit Research Institute, Innovation Division, Clalit Health Services, Tel Aviv, Israel

[2] Department of Biomedical Informatics, Harvard Medical School, Boston, MA, USA

[3] School of Public Health, Faculty of Health Sciences, Ben Gurion University of the Negev, Be'er Sheva, Israel

[4] University of Michigan School of Public Health, Ann Arbor, Michigan, USA

[5] Departments of Epidemiology and Biostatistics, Harvard T.H. Chan School of Public Health, Boston, MA, USA

[6] Harvard-MIT Division of Health Sciences and Technology, Boston, MA, USA

[7] Center for Communicable Disease Dynamics, Department of Epidemiology and Department of Immunology and Infectious Diseases, Harvard T.H. Chan School of Public Health, Boston, MA, USA

[8] Predictive Medicine Group, Computational Health Informatics Program, Boston Children's Hospital, Boston, MA, USA

[9] Harvard Medical School, Boston, MA, USA

* These authors contributed equally.

Corresponding Author:

Ran D. Balicer, MD, PhD, MPH

Clalit Research Institute, Innovation Division, Clalit Health Services, Tel Aviv, Israel

Rbalicer@clalit.org.il

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Supplementary Methods 1 – Data Repositories

In Israel, health insurance is mandatory for all permanent residents since 1995. Each resident is obliged by law to be a member of one of four healthcare organizations dubbed “health funds”. The choice of which health fund to join is completely voluntary, and each resident is free to switch between health funds several times a year. The health funds are not allowed to condition membership on any factor, and specifically not on a person’s health.

Israeli law defines a rich set of services to be provided to each member by his or her health fund, called the “health basket”. This basket includes the full range of medical services. To provide these services, the health funds function as integrated payers-providers – directly supplying some services and purchasing the rest from external suppliers.

Data in this study comes from the electronic medical records of Clalit Health Services (CHS), the largest of these four health funds, insuring 53% of Israel’s population. CHS pools data from its many operational systems into a unified analytic data warehouse that is used for policy and research. This data repository includes detailed information on primary care, secondary care, hospitalizations, medications, laboratory results and imaging tests.

The Israel health system was digitized around the year 2000. The drop-out rate from CHS is 1-2% yearly. Owing to this early adoption of electronic medical records and the low yearly drop-out rate, CHS has good long term follow-up of patients.

Since the start of the COVID-19 pandemic, the Israeli Ministry of Health (MOH) has been collecting all COVID-19 related data centrally. These include complete data on PCR testing, vaccination status, hospitalizations, daily status definitions during hospitalization, and COVID-19 related deaths. The MOH transfers this data daily to the health funds. This allows integration of background longitudinal medical information with real-time vaccination status and all COVID-19 related outcomes for the entire CHS patient population.

This integrated data was used to generate the dataset for this study. The derivation cohort for the study consisted of the entire CHS population as of December 2020 (the beginning of the COVID-19 vaccination campaign in Israel) who were over the age of 16 and without previous positive COVID-19 PCR. These data were cross-referenced with background medical data, vaccination data and data on COVID-19 outcomes.

Supplementary Methods 2 – Author Access to the Data and Author contribution

ND, NB, OM, SP and EK saw the original data, collected it and analyzed it.

ND, NB, EK, MAK, MAH, ML, BR and RDB conceived and designed the study.

ND, NB, MAH, ML, BR and RDB wrote the manuscript.

All authors critically reviewed the manuscript and decided to proceed with publication.

RDB and BR supervised the study process.

RDB vouches for the data and analysis.

No commercial agreements pertain to this study, specifically no agreements that relate to confidentiality.

Supplementary Methods 3 – Matching Mechanism

Vaccinated and unvaccinated were matched on the following variables in the following ways:

- Age – in bins of two consecutive years.
- Sex (male, female) – exact matching.
- Place of residence – exact matching, at the level of neighborhood or small town.
- Population Sector (general Jewish, Arab, ultra-orthodox Jewish) – exact matching.
- Influenza vaccines in the past 5 years (0, 1-2, 3-4, 5) – exact matching.
- Pregnancy (yes, no) – exact matching.
- Count of pre-existing conditions considered by the CDC as risk criteria (0,1,2,3,4+) – exact matching.

We illustrate the matching process with an example: A 76 year old ultra-orthodox Jewish male from a specific neighborhood, who received 4 influenza vaccines in the last five years and has 2 comorbidities that are known risk factors for severe COVID-19, could only be matched with a similar ultra-orthodox Jewish male from the same neighborhood, aged 76-77 years, with 3-4 influenza vaccine count, and 2 comorbidities.

Selection of variables for matching was done in two stages. First, a set of variables was chosen based on domain expertise. This set was then gradually trimmed while ensuring that exchangeability was maintained. Exchangeability was evaluated using vaccine effectiveness for COVID-19 symptomatic infection in the first 14 days after the 1st dose, which was close to 0 in the RCT[1].

Matching was performed using a "rolling cohort" design. Starting from the beginning of the vaccination campaign, each day all newly vaccinated patients who complied with the study's inclusion and exclusion criteria were candidates for matching, including those who had previously been included as unvaccinated controls. They were matched with unexposed

(unvaccinated) controls that complied with the inclusion and exclusion criteria and were not previously recruited. If at a later date an unexposed control was vaccinated, he or she was censored from the unexposed group together with his or her exposed match, and a new matched unvaccinated control was sought so that this newly vaccinated individual could be included as a vaccinated person.

Supplementary Methods 4 – Outcome Periods

Risk (or cumulative incidence) is defined as the probability of developing the event between the start of follow-up and the end of the period of interest. Risk ratios can be used to compare the risks in two groups, e.g., vaccinated and unvaccinated. In the absence of confounding, a risk ratio is an effect measure on the multiplicative scale.

Studies often refer to period-specific "risks". For example, "risk during the period of 14-20 days after vaccination" is defined as the probability of the event between days 14 and 20 of follow-up among those vaccinated on day 0 and still at risk on day 14. These probabilities are discrete-time hazards rather than true risks. The ratios of period-specific hazards cannot be generally endowed with a causal interpretation, even in randomized trials, because of potentially differential selection between time zero and the beginning of the period. For example, in the presence of an effective vaccine, those at highest risk of the outcome will be preferentially depleted from the control arm compared with the vaccine arm, and thus analyses on those who have not experienced the outcome by some post-randomization time will be in a selected population in which the control group has lower average risk than the vaccine group[2,3]. This bias is exacerbated in outcomes, like SARS-CoV-2 infection, that are sometimes unobserved (e.g. not all asymptomatic infections are observed[4]). However, in our study, this selection bias is not expected for vaccinated and unvaccinated individuals who are still at-risk on day 14 of follow-up because the risks are expected to be similar in the vaccine and control groups during days 0-13[5].

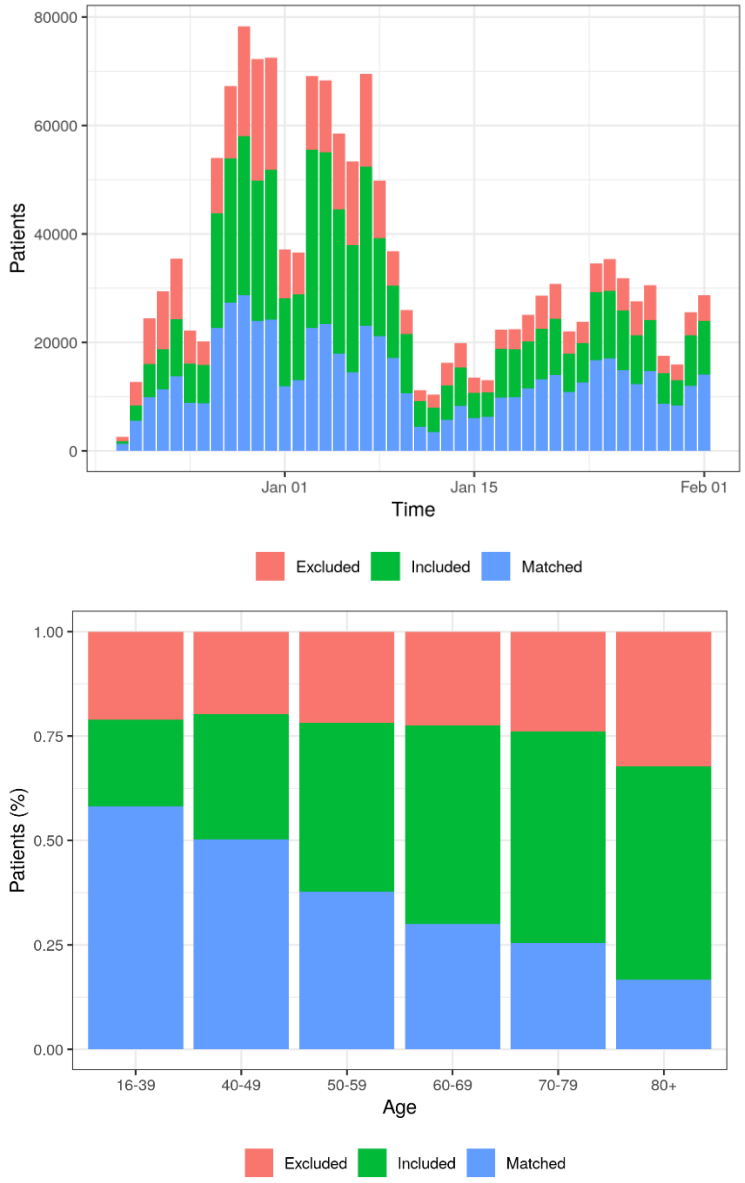
If there is little or no difference in risk during days 0-13, the difference of hazards for the period 14-20 days is expected to equal the risk difference for the period 0-20 days. However, the ratios of hazards and risks will differ. Therefore, the magnitude of "vaccine effectiveness" (which is traditionally defined as one minus the hazard ratio) is sensitive to the inclusion of the early period during which no effect is detectable. As a result, many randomized trials exclude the early period from their analyses.

In this paper, for simplicity, we informally refer to period-specific discrete-time hazards as period-specific risks and to the ratio of these quantities in the vaccinated and unvaccinated populations as risk ratios. We then present these ratios for the period that starts 14 days after baseline. Strictly speaking, the vaccine effectiveness based on this risk ratio overestimates the overall vaccine effectiveness in our study because it does not include the early follow-up period during which the vaccine has no detectable effect (and thus during which the ratio is 1). However, in a study with a longer follow-up, the relative weight of the early period would be smaller in the calculation of the overall ratio, and thus the overall "vaccine effectiveness" would be closer to the one we report for the period ≥14 days after baseline.

Randomized trials often go further and present period-specific ratios (or their corresponding estimates of "vaccine effectiveness") for periods that start long after the effect of vaccination is detectable. A causal interpretation of these ratios is not warranted because of potential selection bias. However, for comparison purposes, we present results for periods analogous to those reported in the published randomized trial of this vaccine[6].

The use of these period-specific ratios is an attempt to estimate the risk ratio from a hypothetical study in which individuals are randomly vaccinated on day 0 and in which both vaccinated and unvaccinated individuals are somehow kept unexposed to the virus until the beginning of the period[2]. Under certain assumptions, it may be argued that the period-specific ratios reported in randomized trials and in our paper are upper bound estimates of this hypothetical risk ratio, corresponding to lower-bound estimates of VE.

Figure S1 – Matching Statistics

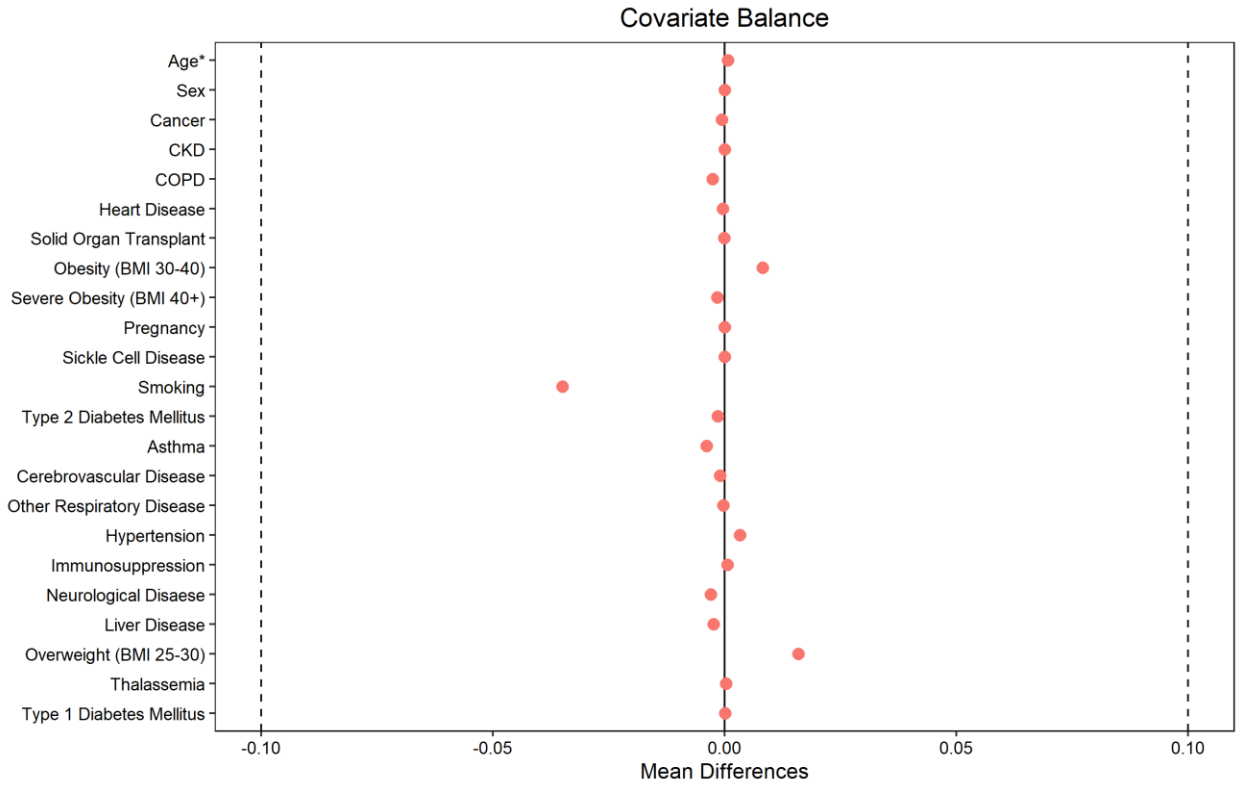


Legend:

Top: Absolute number of patients excluded, included-but-not-matched, and matched, at each day since start of the vaccination campaign.

Bottom: Proportion of patients excluded, included-but-not-matched, and matched, at each age group.

Figure S2 – Covariate Balance (Love) Plot

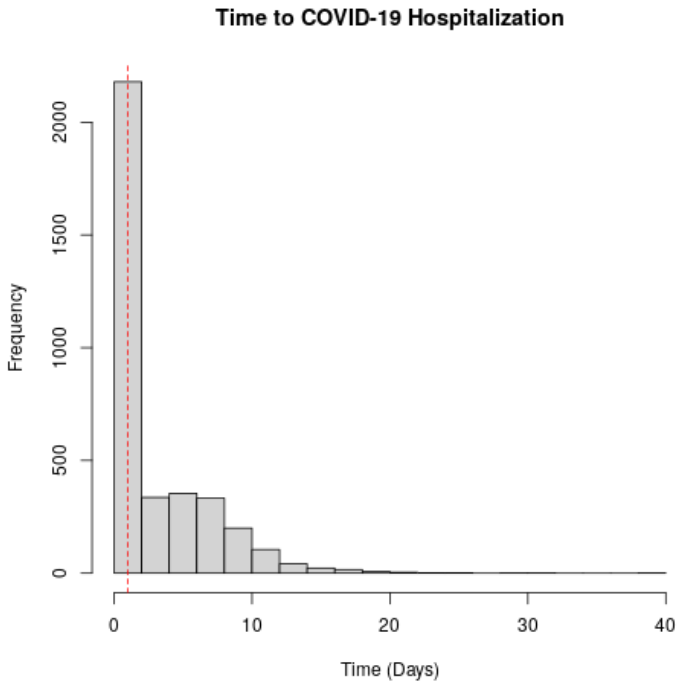


Legend: A covariate balance (Love) plot showing the difference in means for the different CDC risk criteria. A strict balance cut-off was set at 0.1[7].

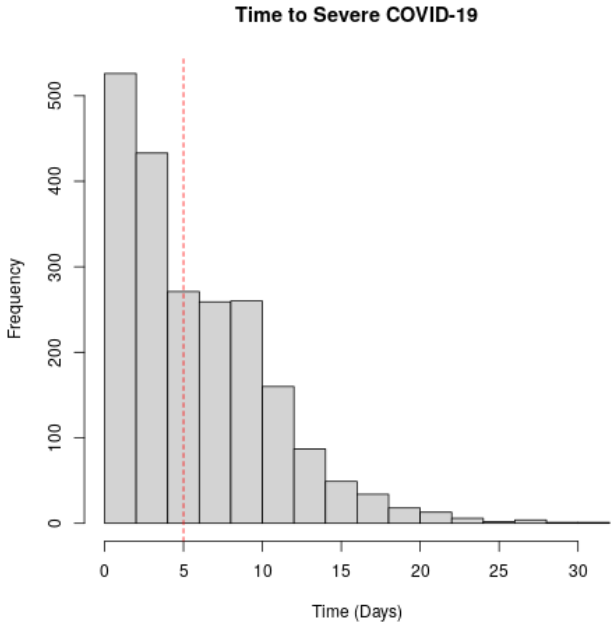
* The mean difference for age (a continuous variable) is standardized.

Figure S3 – Time from Initial PCR Swabbing to Outcomes

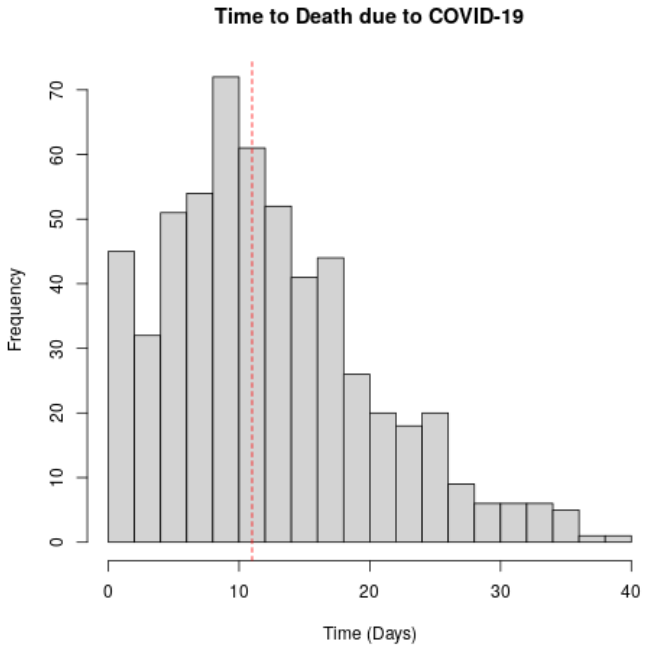
A



B

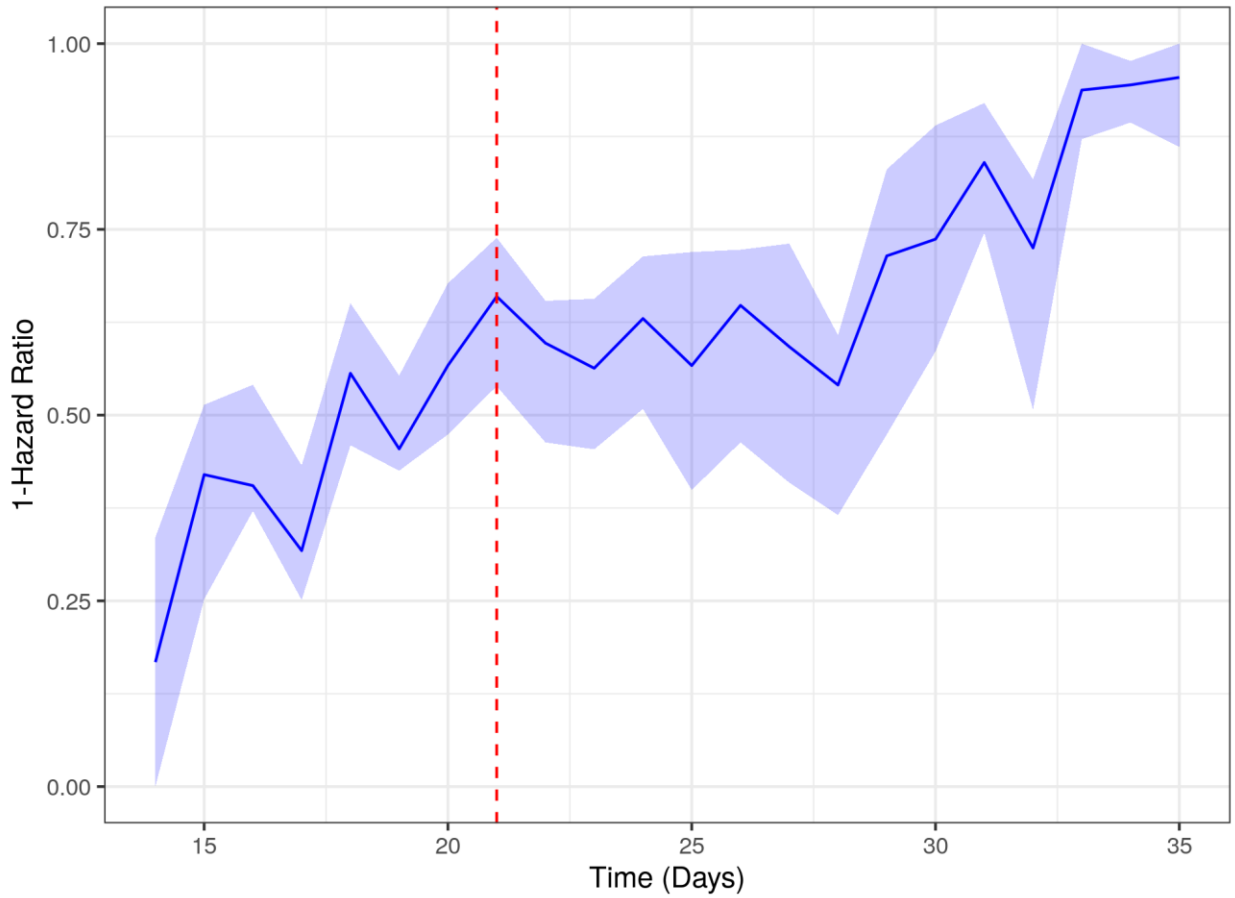


C



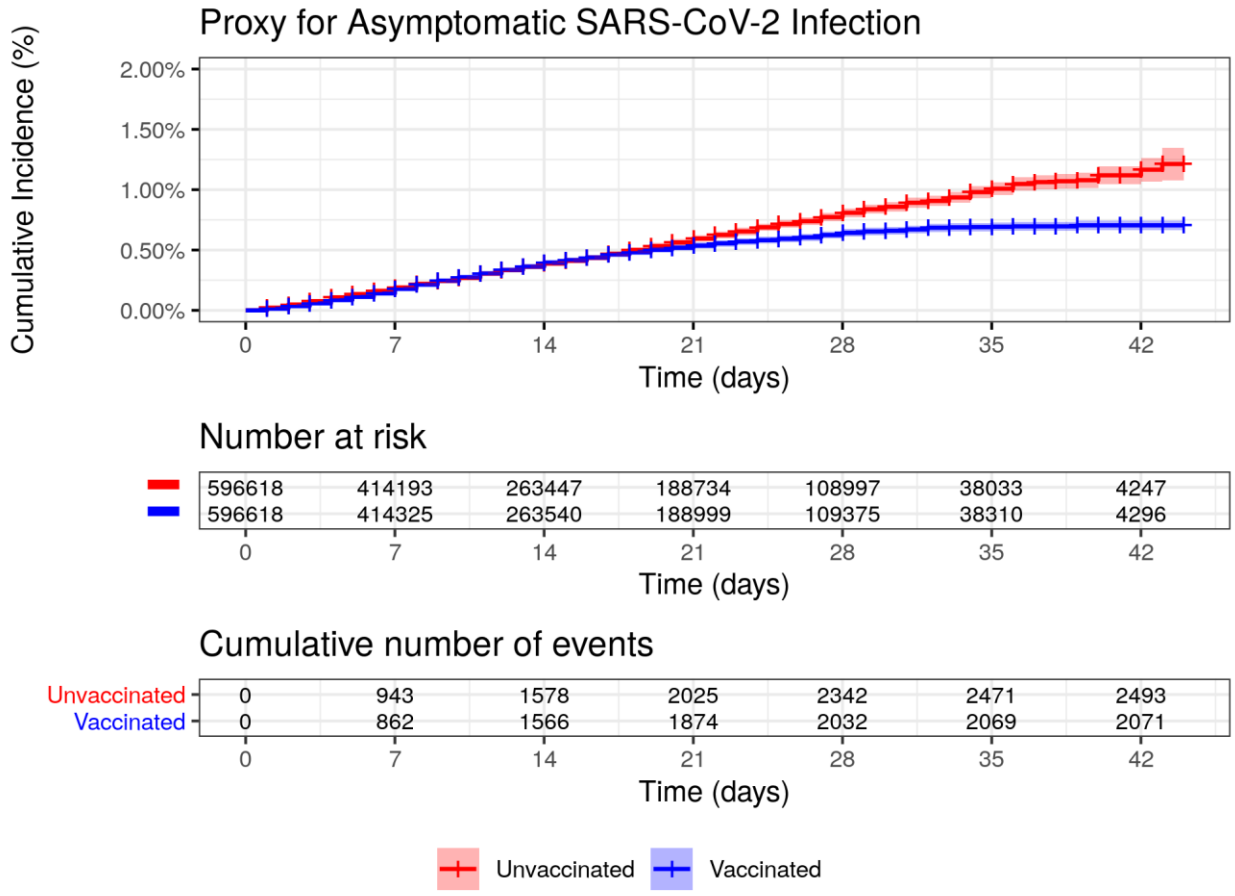
Legend: Histograms showing the distribution of time (in days) from the date the first positive PCR test was sampled until incidence of the different outcomes: hospitalization due to COVID-19 (Panel A), severe COVID-19 (Panel B) and death due to COVID-19 (Panel C). A dashed vertical red line in each plot shows the median.

Figure S4 – Daily Hazard Ratio for the Documented Infection Outcome



Legend: One-minus the hazard ratio between vaccinated and unvaccinated groups for the documented infection outcome, per day, for days 14-35 after the first dose. The shaded region is the daily 95% confidence interval, derived using the percentile bootstrap method with 500 repetitions. A vertical dashed red line denotes 21 days, the intended receipt day of the second dose.

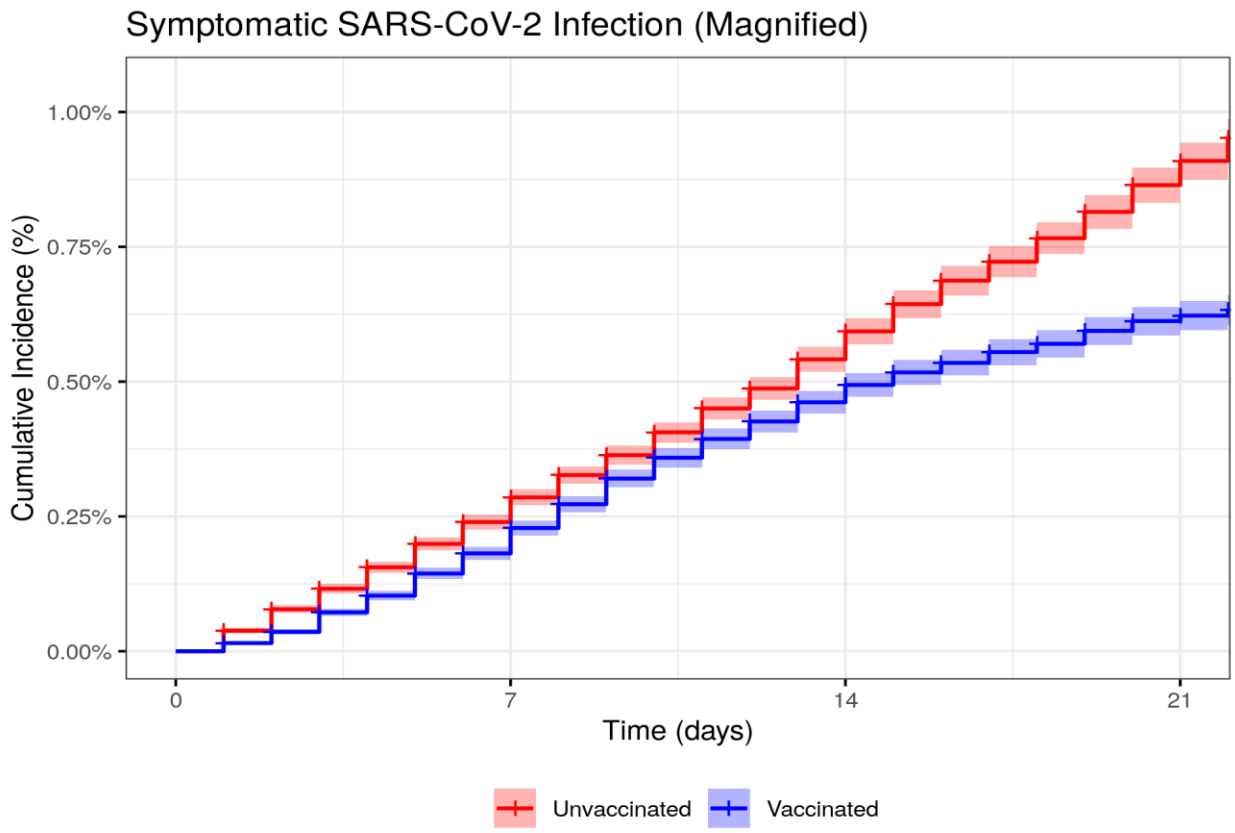
Figure S5 – Cumulative Incidence of Asymptomatic Infection Proxy



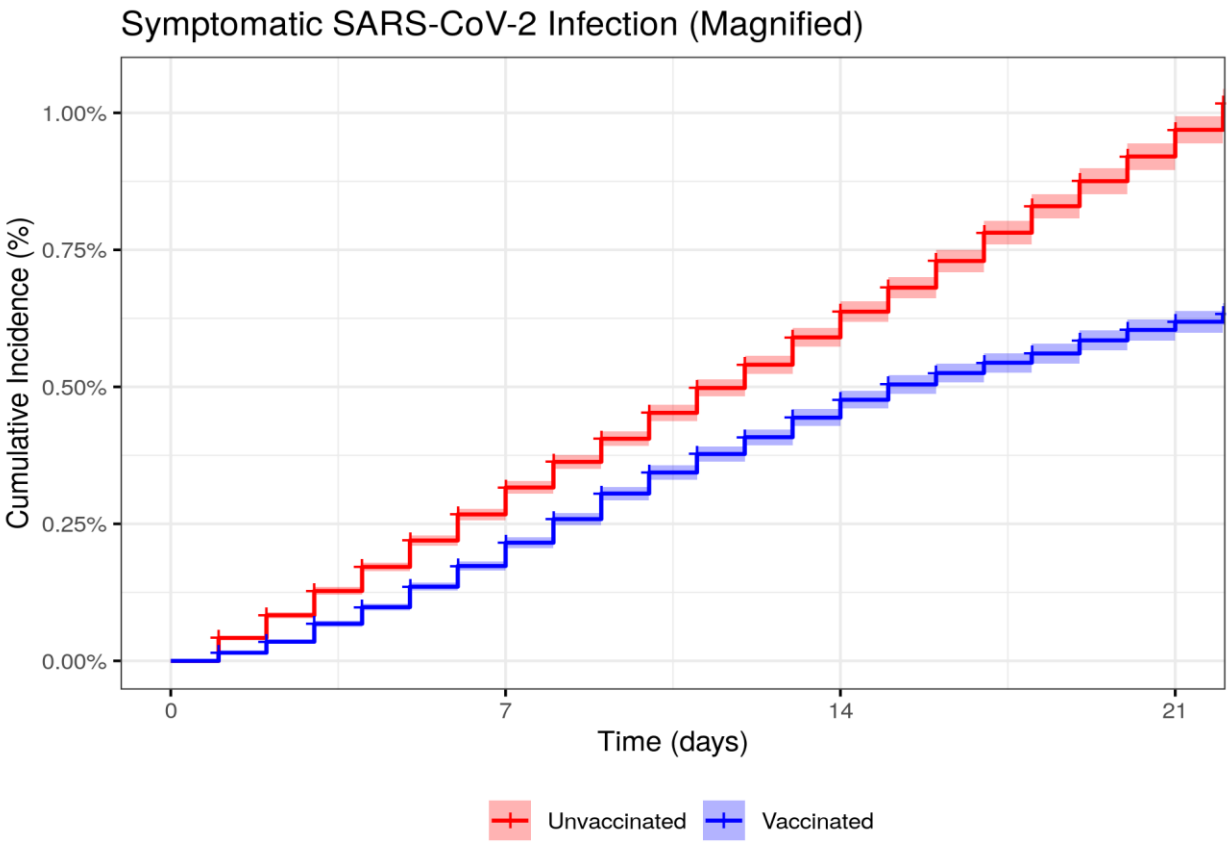
Legend: Cumulative incidence curve (one minus the Kaplan-Meier risk) for the proxy for the asymptomatic infection outcome starting from the day of the first dose. Shaded areas are 95% confidence intervals. The tables below the curve show the number at risk at each time point and the cumulative number of events. Vaccine effectiveness estimates are included in Table S3.

In the absence of systematic periodic testing for SARS-CoV-2 among asymptomatic people in Israel, documented asymptomatic infections do not account for all asymptomatic infections, and likely cannot accurately capture vaccine effectiveness for this outcome.

Figure S6 – Comparison of the Cumulative Incidence of COVID-19, Magnified on the Early Follow-up Period, Between the Final and the Minimally Matched Analysis



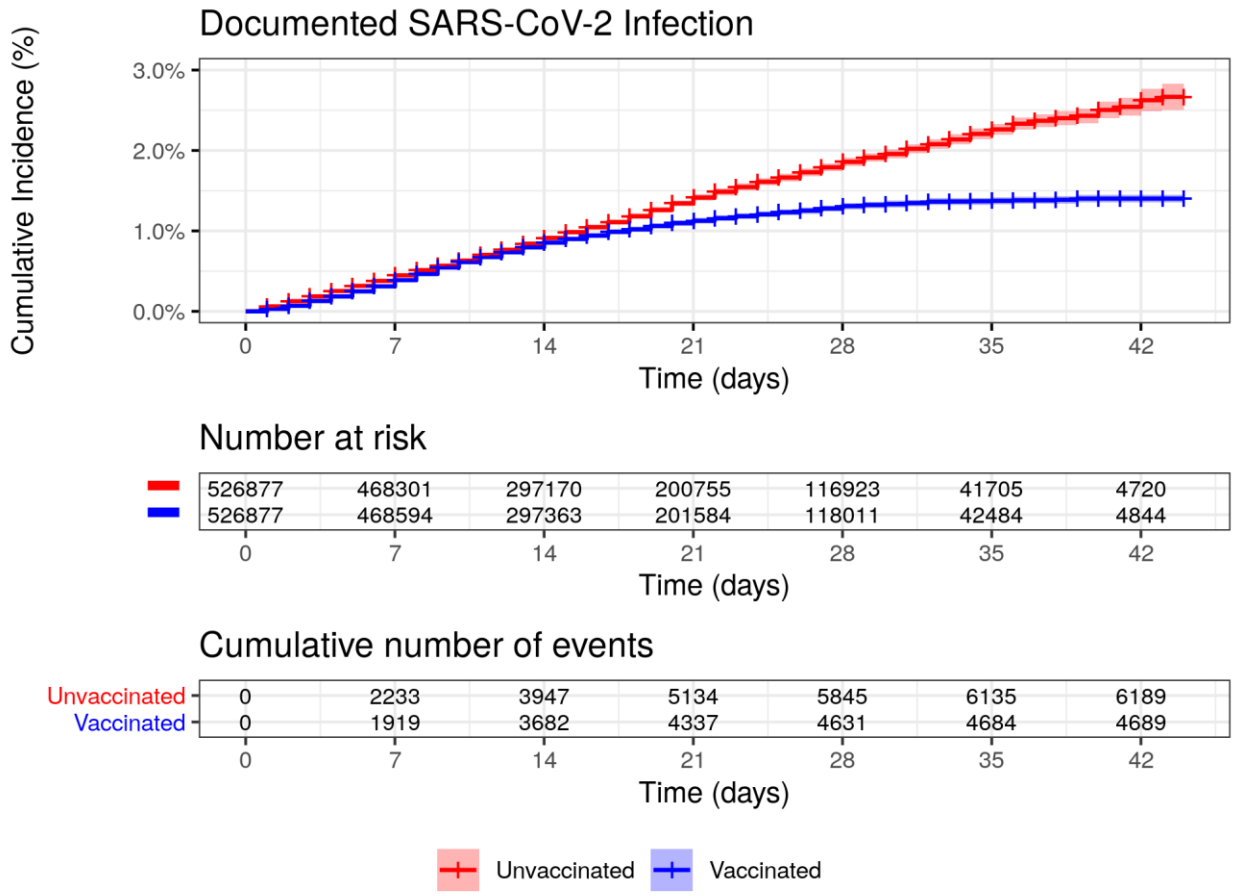
Legend: Cumulative incidence curve (one minus the Kaplan-Meier risk) for the symptomatic infection (COVID-19) outcome in the final analysis. The figure is magnified on the early follow-up period to better show when the curves diverge. Shaded areas are 95% confidence intervals.



Legend: Cumulative incidence curve (one minus the Kaplan-Meier risk) for the symptomatic infection (COVID-19) outcome when matching only on age and sex. The figure is magnified on the early follow-up period to better show when the curves diverge. Shaded areas are 95% confidence intervals.

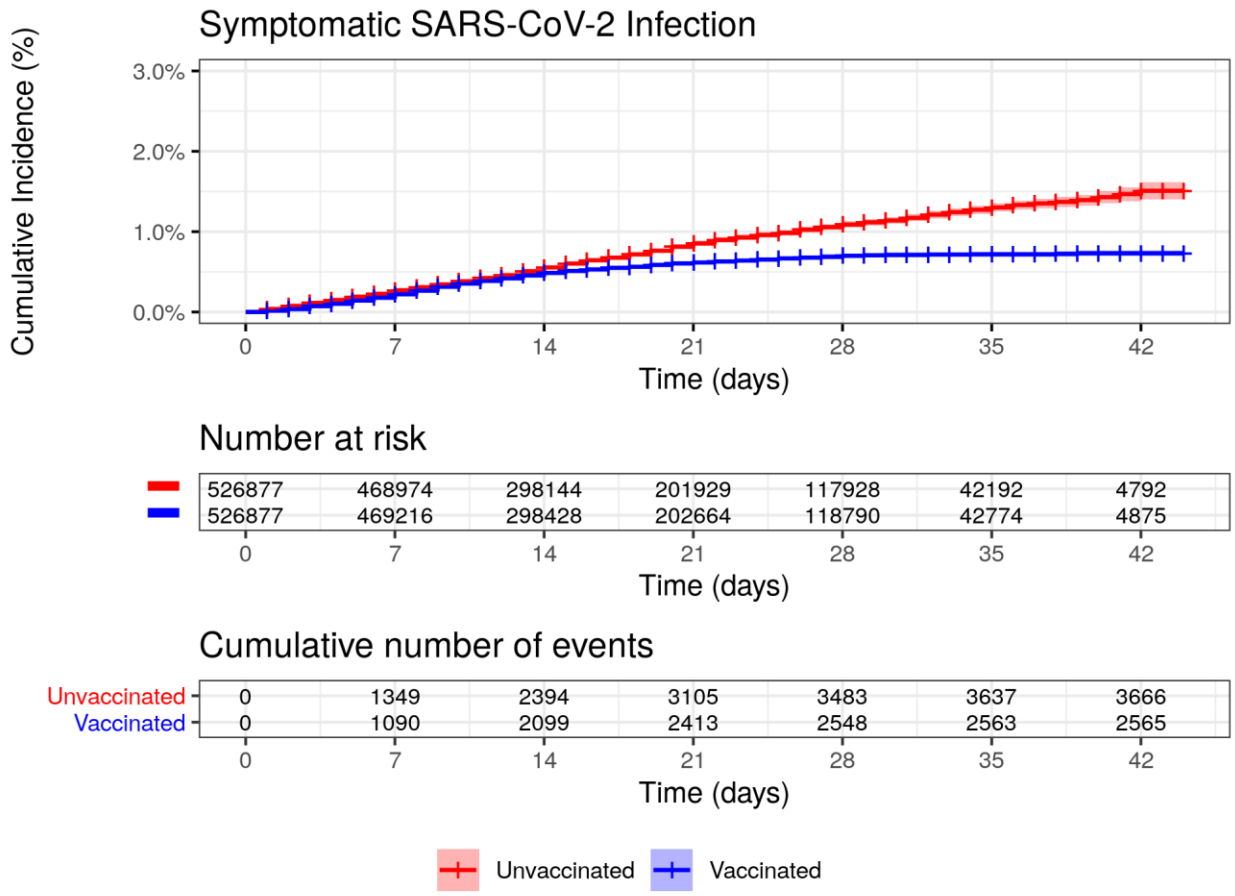
Figure S7 – Cumulative Incidence Curves when Delaying Censoring of Vaccinated Controls

A



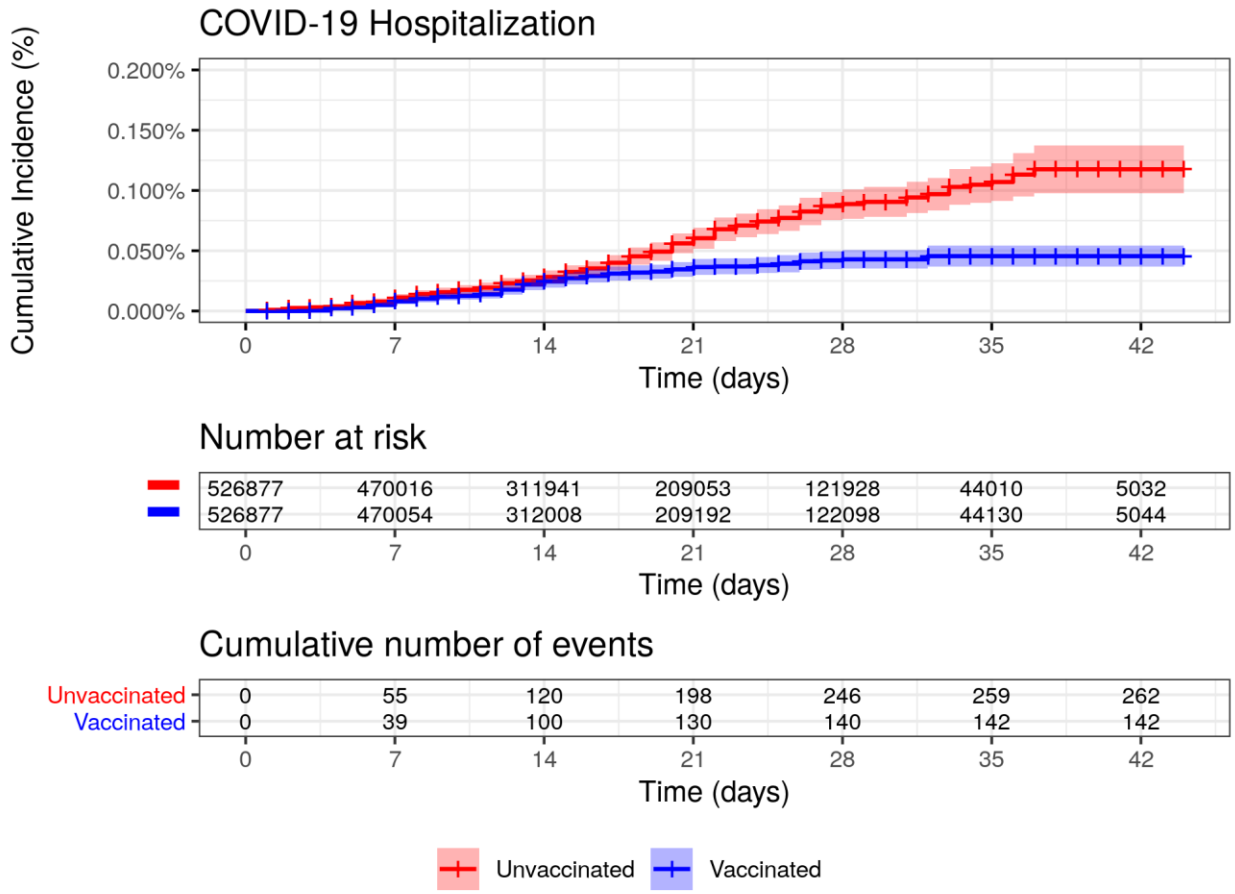
Legend: Cumulative incidence curves (one minus the Kaplan-Meier risk) for the documented infection outcome when delaying the censoring of vaccinated controls. Shaded areas are 95% confidence intervals. The tables below the curve show the number at risk at each time point and the cumulative number of events. Vaccine effectiveness estimates are included in Table S5.

B



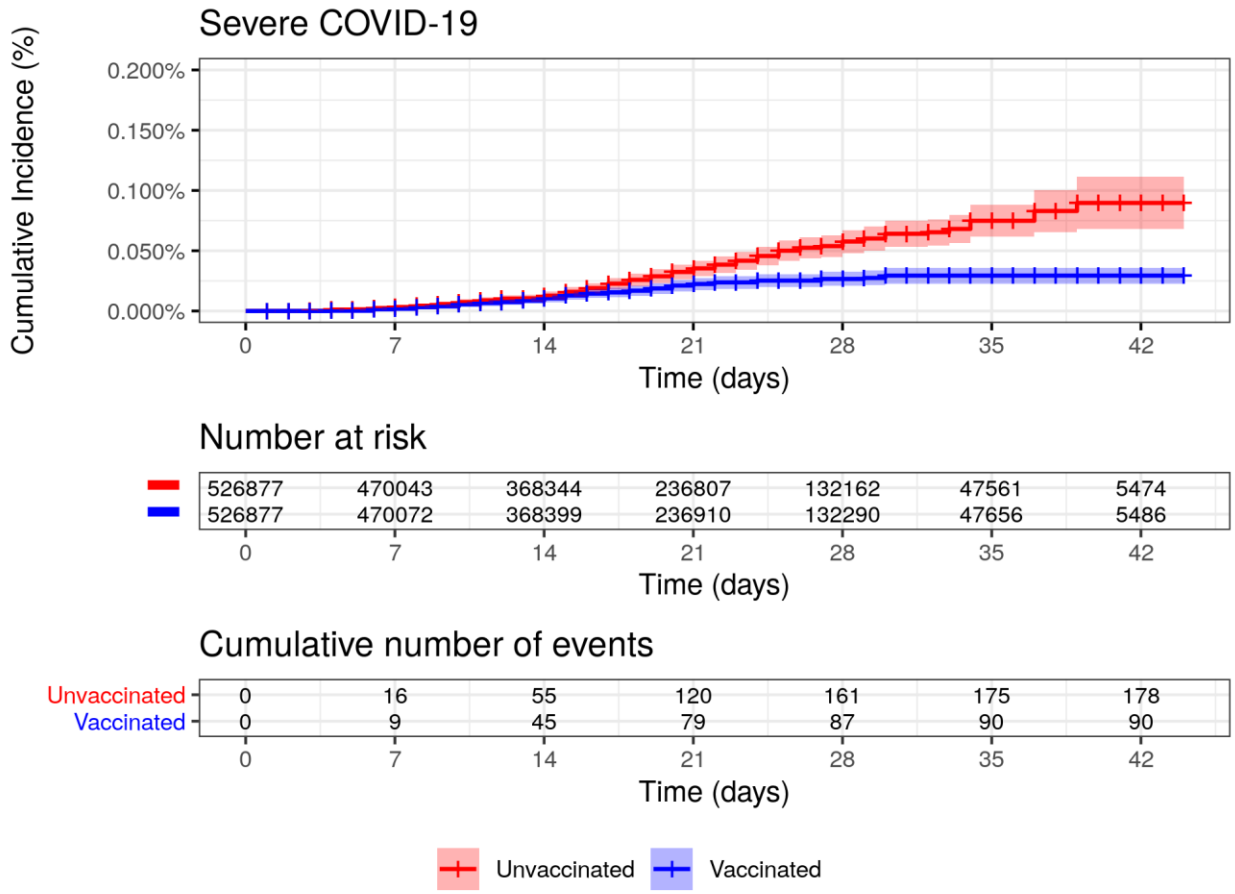
Legend: Cumulative incidence curves (one minus the Kaplan-Meier risk) for the COVID-19 (symptomatic infection) outcome when delaying the censoring of vaccinated controls. Shaded areas are 95% confidence intervals. The tables below the curve show the number at risk at each time point and the cumulative number of events. Vaccine effectiveness estimates are included in Table S5.

C



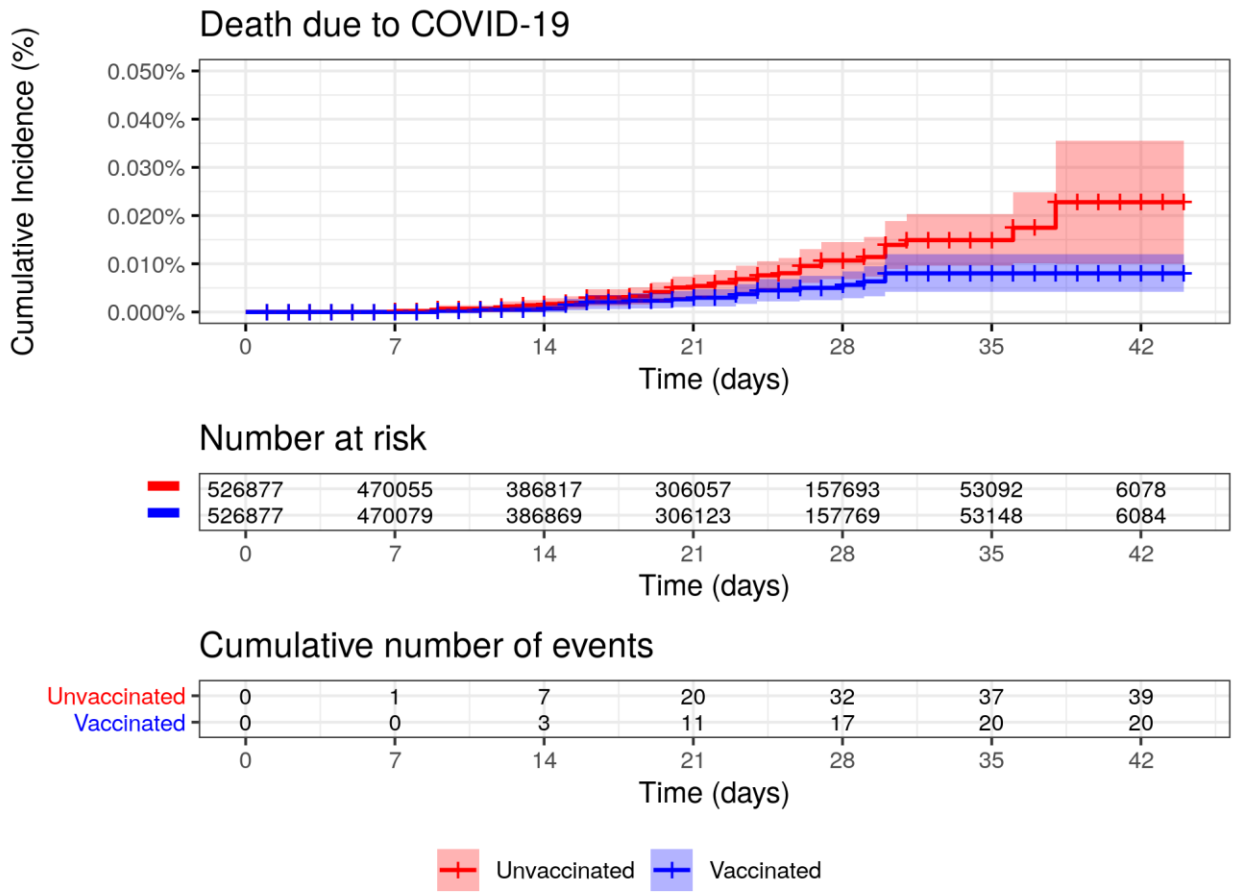
Legend: Cumulative incidence curves (one minus the Kaplan-Meier risk) for the COVID-19 hospitalization outcome when delaying the censoring of vaccinated controls. Shaded areas are 95% confidence intervals. The tables below the curve show the number at risk at each time point and the cumulative number of events. Vaccine effectiveness estimates are included in Table S5.

D



Legend: Cumulative incidence curves (one minus the Kaplan-Meier risk) for the severe COVID-19 outcome when delaying the censoring of vaccinated controls. Shaded areas are 95% confidence intervals. The tables below the curve show the number at risk at each time point and the cumulative number of events. Vaccine effectiveness estimates are included in Table S5.

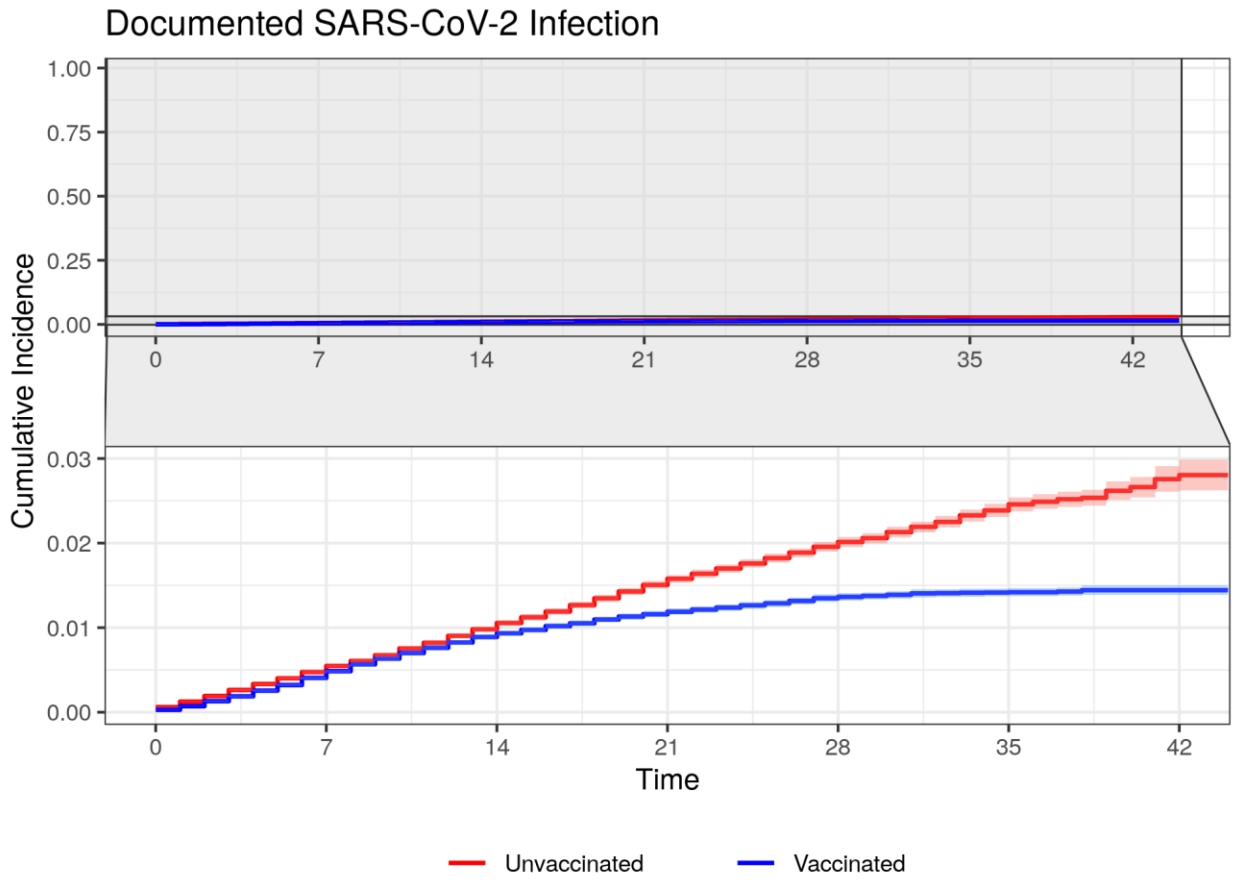
E



Legend: Cumulative incidence curves (one minus the Kaplan-Meier risk) for the COVID-19 related death outcome when delaying the censoring of vaccinated controls. Shaded areas are 95% confidence intervals. The tables below the curve show the number at risk at each time point and the cumulative number of events. Vaccine effectiveness estimates are included in Table S5.

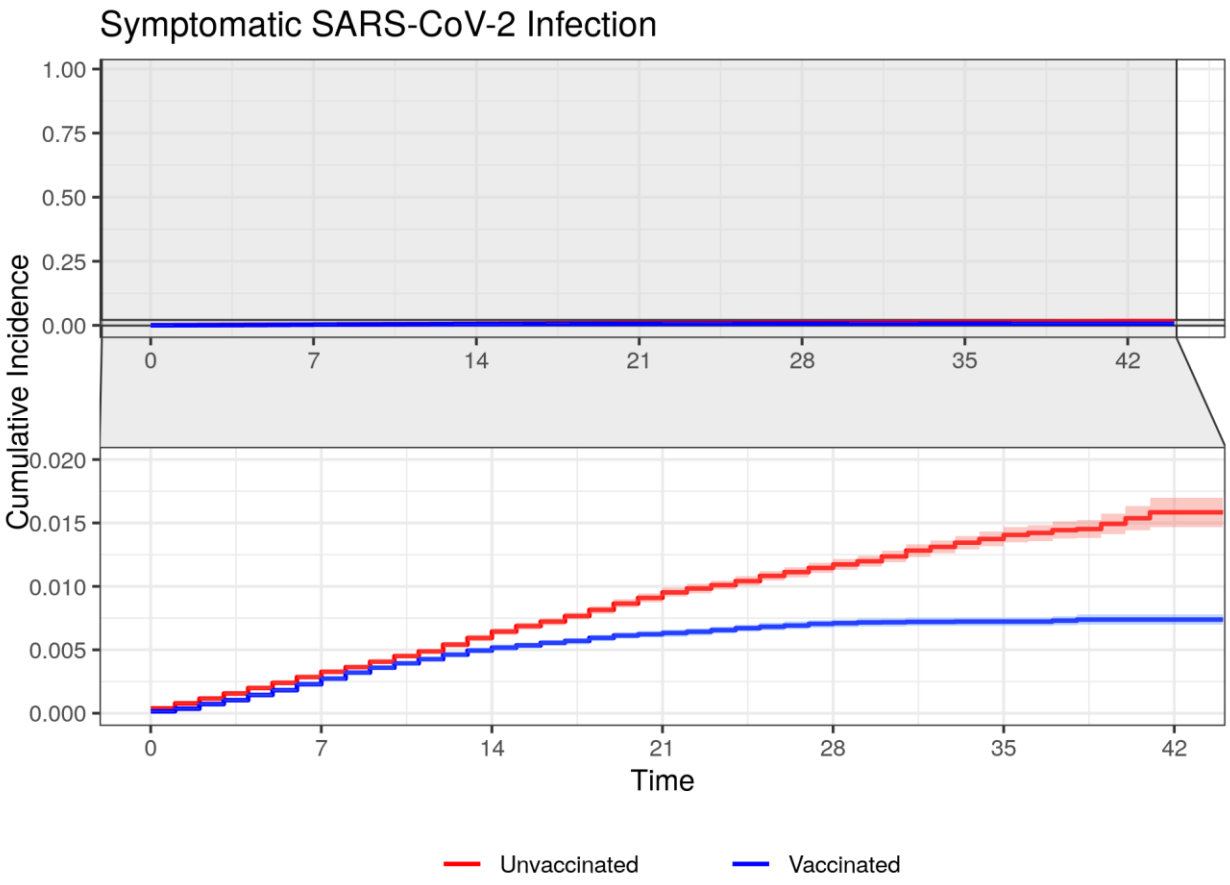
Figure S8 – Cumulative Incidence Curves for the Main Analysis on the Full Y Axis Scale

A



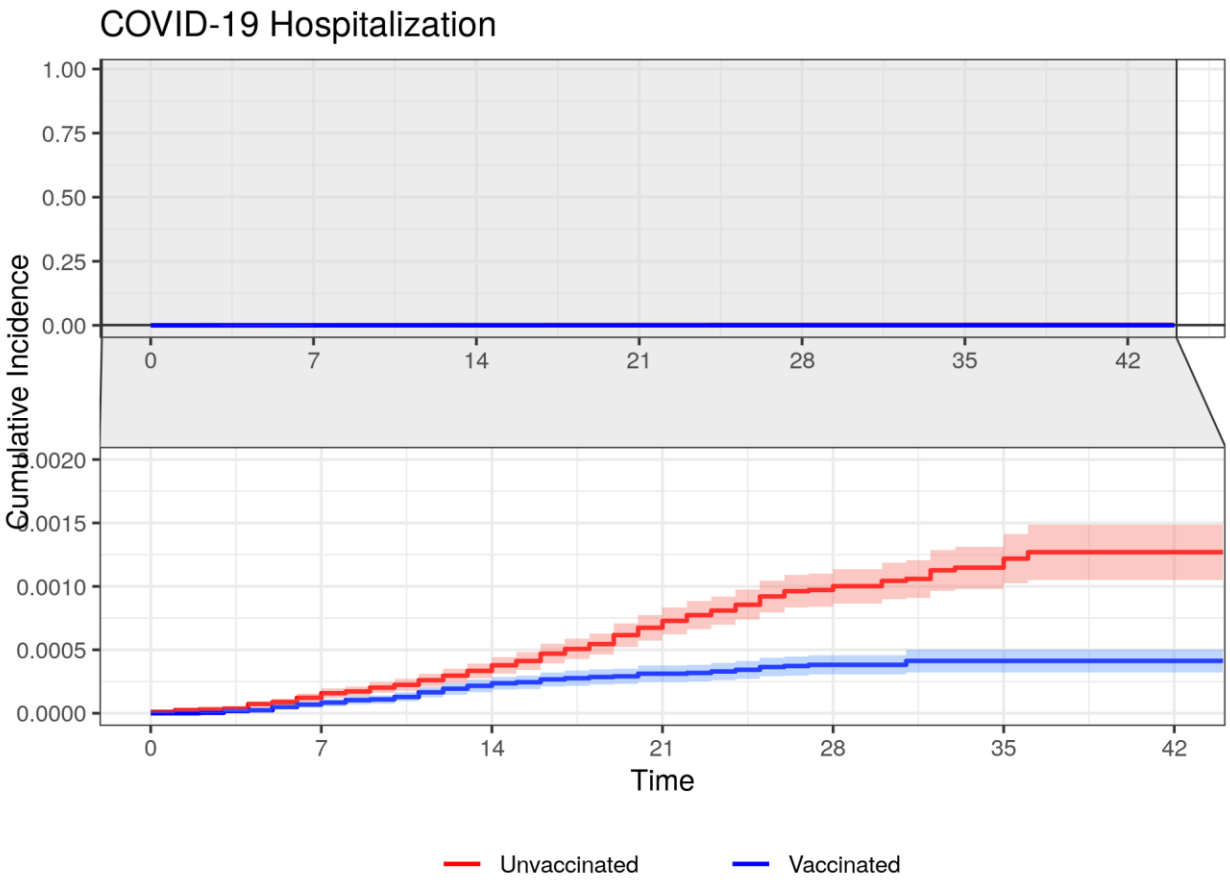
Legend: Cumulative incidence curves (one minus the Kaplan-Meier risk) for the Documented SARS-CoV-2 outcome using the full scale of the Y axis, and magnified on the area of interest (as shown in Figure 2). Shaded areas are 95% confidence intervals.

B



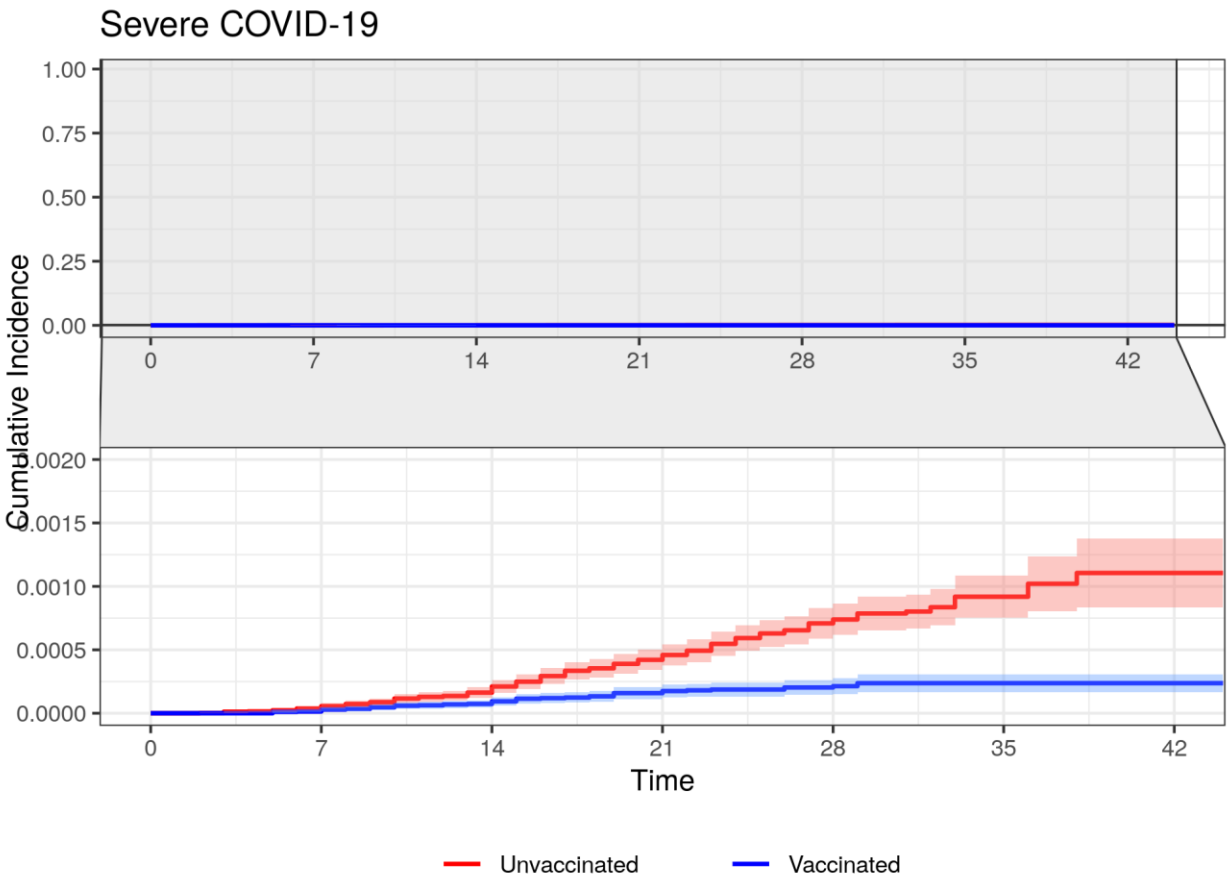
Legend: Cumulative incidence curves (one minus the Kaplan-Meier risk) for the Symptomatic SARS-CoV-2 outcome using the full scale of the Y axis, and magnified on the area of interest (as shown in Figure 2). Shaded areas are 95% confidence intervals.

C



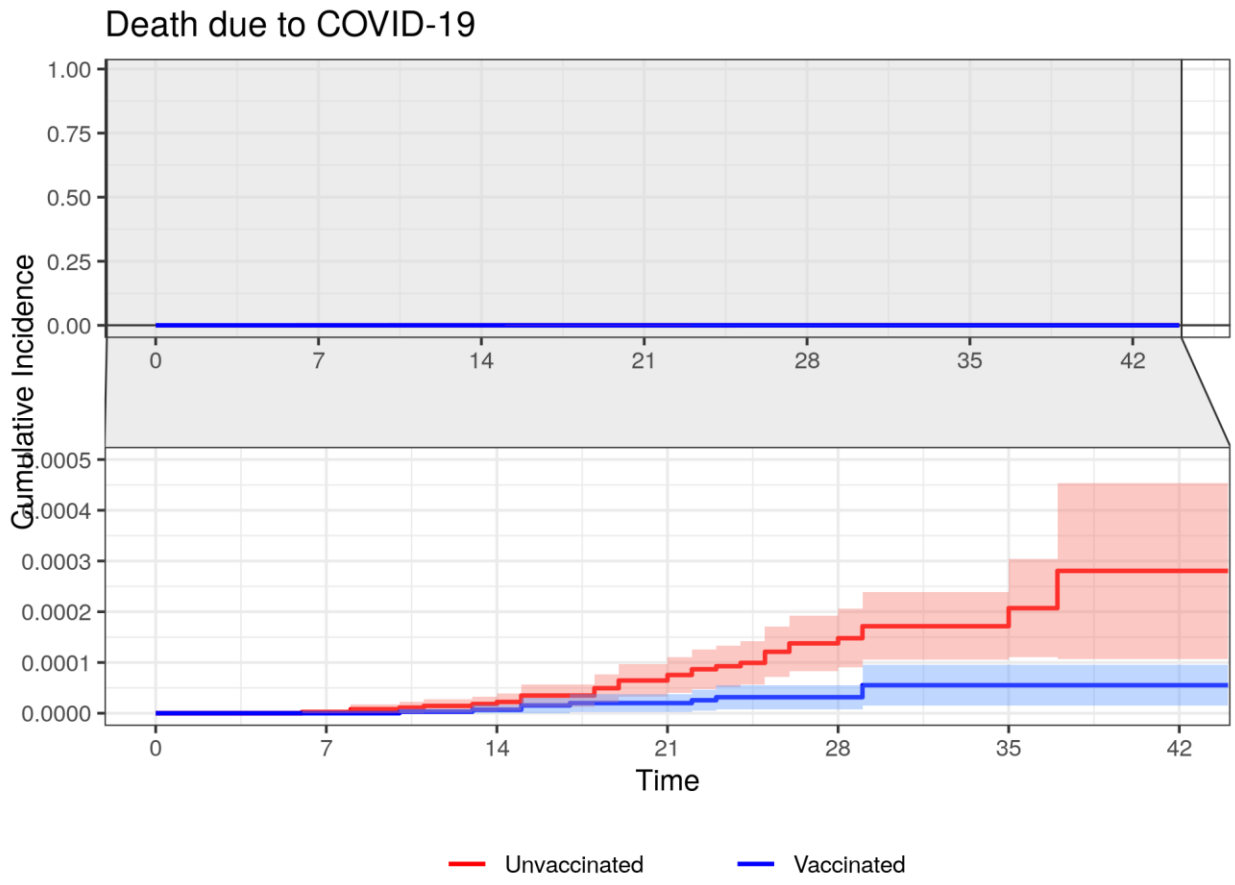
Legend: Cumulative incidence curves (one minus the Kaplan-Meier risk) for the COVID-19 Hospitalization outcome using the full scale of the Y axis, and magnified on the area of interest (as shown in Figure 2). Shaded areas are 95% confidence intervals.

D



Legend: Cumulative incidence curves (one minus the Kaplan-Meier risk) for the Severe COVID-19 outcome using the full scale of the Y axis, and magnified on the area of interest (as shown in Figure 2). Shaded areas are 95% confidence intervals.

E



Legend: Cumulative incidence curves (one minus the Kaplan-Meier risk) for the COVID-19 Death outcome using the full scale of the Y axis, and magnified on the area of interest (as shown in Figure 2). Shaded areas are 95% confidence intervals.

Table S1 – Variable Definitions

Variable	Values	Definitions[1]	Timing[2]
Outcomes			
Documented SARS-CoV-2 Infection	0/1	A PCR confirmed infection.	The date of a specimen collection that was found to be positive in a PCR test. If the PCR test was done after the beginning of a hospitalization flagged as a COVID-19 hospitalization, the infection date was set to the beginning of the hospitalization.
Asymptomatic SARS-CoV-2 Infection	0/1	A PCR-confirmed infection with no report of symptoms during referral and during initial physician questioning.	The date set for the SARS-CoV-2 infection outcome.
COVID-19 (symptomatic SARS-CoV-2 Infection)	0/1	A PCR-confirmed infection with report of symptoms during the PCR referral / during the follow-up in the community setting / COVID-19 related hospitalization / COVID-19 related death. Existing symptoms were considered when the physician or nurse checked the "symptomatic" option in the EMR, or when the following specific symptoms were recorded: fever or chills, cough, shortness of breath or difficulty breathing, sore throat, headache, weakness, congestion or runny nose, myalgia, nausea or vomiting, diarrhea, abdominal pain, loss of taste or smell, inability to eat or drink.	The date set for the SARS-CoV-2 infection outcome.
COVID-19 related hospitalization	0/1	A hospitalization that was reported to the Israeli MOH as a hospitalization of a SARS-CoV-2 infected individual.	The start date of the hospitalization.
COVID-19 related severe state	0/1	As defined by the hospitalizing institution per the Israeli MOH guidelines, consistent with the	The first date during the hospitalization in which the individual was flagged as being

		NIH criteria for severe illness or critical illness[8]: Individuals who have SpO_2 <94% on room air at sea level, a ratio of arterial partial pressure of oxygen to fraction of inspired oxygen (PaO_2/FiO_2) <300 mm Hg, respiratory frequency >30 breaths/min, or lung infiltrates >50%. Critical Illness: Individuals who have respiratory failure, septic shock, and/or multiple organ dysfunction.	in a severe or critical state.
COVID-19 related death	0/1	A death of a SARS-CoV-2 infected individual reported to the Israeli MOH.	The reported date of death.
Vaccination Periods			
Days 14-20	0/1	From 14 days and until 20 days after the first dose	After the index date
Days 21-27	0/1	From 21 days and until 27 days after the first dose	After the index date
Days 0-20	0/1	From the 1st dose and until 20 days later	After the index date
Days 0-27	0/1	From the 1st dose and until 27 days later	After the index date
Days 0-6 after the 2nd dose	0/1	From the 2nd dose and until 6 days later	After the index date
Days 7+ after the 2nd dose	0/1	From day 7 after the 2nd dose and until the end of the follow-up	After the index date
Covariates			
Age	Integer	Age in complete years	Current
Sex	Male/Female	As defined in CHS' files	Current
Place of Residence	List of places	Geo-statistical area in which the patient resides per CHS' files	Current
Health-care worker	0/1	Is patient a health-care worker per CHS' files	Current
Long-term care facility resident	0/1	Is patient a long-term care facility resident per CHS' files	Current
Confined to Home	0/1	Is patient confined to his home per CHS' files	Current
Influenza vaccinations	0/1	Did patient receive an influenza vaccine in the last 5 years	Last 5 Years
Cancer	0/1	ICD9 Code 174* ICD9 Code 175* ICD9 Code 233.0 ICD9 Code V10.3 ICD9 Proc Code 85.4* ICD9 Code 153* ICD9 Code 154*	Last 5 years

		ICD9 Code V10.5* ICD9 Code V10.6* ICD9 Code 185 ICD9 Code V10.46 ICD9 Code 162* ICD9 Code V10.1* ICD9 Code 188* ICD9 Code V10.51 ICD9 Code 183* ICD9 Code V10.43 ICD9 Code 179 ICD9 Code 182* ICD9 Code V10.42 ICD9 Code 157* ICD9 Code 191* ICD9 Code 192* ICD9 Code V10.85 ICD9 Code 151* ICD9 Code V10.04 ICD9 Code 172* ICD9 Code V10.82 ICD9 Code 201* ICD9 Code 200* ICD9 Code 202.4* ICD9 Code 204* ICD9 Code 205* ICD9 Code 206* ICD9 Code 207.1* ICD9 Code 208.1* ICD9 Code 189* ICD9 Code V10.52 ICD9 Code 160* ICD9 Code 161* ICD9 Code 164.0 ICD9 Code 195.0 ICD9 Code V10.21 ICD9 Code V10.22 ICD9 Code 180* ICD9 Code V10.41 ICD9 Code 140* ICD9 Code 141* ICD9 Code 142* ICD9 Code 143* ICD9 Code 144* ICD9 Code 145* ICD9 Code 150* ICD9 Code V10.03 ICD9 Code 155* ICD9 Code 156* ICD9 Code V10.07 ICD9 Code 170*	

		ICD9 Code V10.81 ICD9 Code 193 ICD9 Code V10.87 ICD9 Code 171* ICD9 Code 176* ICD9 Code 184* ICD9 Code 186* ICD9 Code 187* ICD9 Code V10.4* ICD9 Code 203* ICD9 Code 273.3 ICD9 Code 152* ICD9 Code 158* ICD9 Code 159* ICD9 Code 163* ICD9 Code 164* ICD9 Code 165* ICD9 Code 181 ICD9 Code 190* ICD9 Code 192.8 ICD9 Code 196* ICD9 Code 197* ICD9 Code 198* ICD9 Code 199*	
Chronic Kidney Disease	0/1	ICD Proc Code 39.95 ICD Proc Code 54.98 ICD9 Code 996.81 ICD9 Code V42.0 ICD Proc Code 55.6* ICD9 Code 403._1 ICD9 Code 404._2 ICD9 Code 404._3 ICD9 Code 585* ICD9 Code 586 ICD9 Code 250.4* ICD9 Code 274.1* ICD9 Code 440.1 ICD9 Code 581* ICD9 Code 582* ICD9 Code 583* ICD9 Code 587 ICD9 Code 588* ICD9 Code 589*	Ever
Chronic Obstructive Pulmonary Disease	0/1	ICD9 Code 491* ICD9 Code 492* ICD9 Code 496	Ever
Heart Conditions	0/1	ICD9 Code 410* ICD9 Code 411* ICD9 Code 412 ICD9 Code 413* ICD9 Code 414*	Ever

		ICD9 Code 429.2, 429.7* ICD9 Code V45.81, V45.82 ICD9 Proc Code 36.0* ICD9 Proc Code 36.1* ICD9 Code 428* ICD9 Code 398.91 ICD9 Code 402._1 ICD9 Code 404._1, ICD9 Code 404._3 ICD9 Code 416.9 ICD9 Code 514 ICD9 Code 425* ICD9 Code 416*	
Solid Organ Transplant Recipient	0/1	ICD9 Code 996.81 ICD9 Code V42.0 ICD Proc Code 55.6* ICD9 Code V42.7 ICD Proc Code 50.5* ICD9 Code V42.1 ICD9 Code V43.2 ICD Proc Code 37.5 ICD9 Code V42.83 ICD Proc Code 52.8* ICD9 Code V42.6 ICD Proc Code 33.5* ICD Proc Code 33.6	Ever
Obesity	0/1	Body Mass Index (BMI) 30-40	Latest measurement in last 5 years not taken during pregnancy
Severe Obesity	0/1	Body Mass Index (BMI) 40+	Latest measurement in last 5 years not taken during pregnancy
Pregnancy	0/1	Internal Clalit Registry	Current
Sickle Cell Disease	0/1	ICD9 Code 282.6*	Ever
Smoking	0/1	Internal Clalit Registry	Last recorded value
Type 2 Diabetes Mellitus	0/1	HbA1C > 6.5 ATC Codes A10[A,B] ICD9 Code 250* ICD9 Code 357.2 ICD9 Code 362.0* **And not:** ICD9 Code 250._1, 250._3	For diagnosis codes, Ever For drugs, 4 or more dispensed in last 12 months
Asthma	0/1	ICD9 Code 493*	Ever
Cerebrovascular Disease	0/1	ICD9 Code 362.34 ICD9 Code 430 ICD9 Code 431 ICD9 Code 432* ICD9 Code 433*	Ever

		ICD9 Code 434* ICD9 Code 435* ICD9 Code 436* ICD9 Code 438*	
Other Respiratory Disease	0/1	ICD9 Code 277.0* ICD9 Code 494* ICD9 Code 515	Ever
Hypertension	0/1	ICD9 Code 401* ICD9 Code 402* ICD9 Code 403* ICD9 Code 404* ICD9 Code 405*	Ever
Immunocompromised State	0/1	**Any of:** ICD9 Code 042* ICD9 Code 043* ICD9 Code 044* ICD9 Code 795.71 ICD9 Code V08 ICD9 Code V42.8* ICD9 Proc Code 41.0* **Or at least 2 of:** ATC4 Code H02AB ATC4 Code H02BX ATC4 Code M01BA **Or at least 2 of:** ATC2 Code L04	For diagnosis codes, Ever For drugs, 4 or more dispensed in last 12 months
Neurologic Conditions	0/1	ICD9 Code 290.* ICD9 Code 294* ICD9 Code 310.1 ICD9 Code 331* ATC Codes N06DA02, N06DA03 ICD9 Code 358* ICD9 Code 332.[0,1] ICD9 Code 345* ICD9 Code 340 ATC Codes L03AB07, L03AB08, L04AA07 ICD9 Code 343* ICD9 Code 333.4 ICD9 Code 334* ICD9 Code 356* ICD9 Code 138 ICD9 Code 335* ICD9 Code 730.7* ICD9 V12.02 ICD9 Code 228.02 ICD9 Code 307.23 ICD9 Code 330.9 ICD9 Code 331.3*	For diagnosis codes, Ever For drugs, 4 or more dispensed in last 12 months

		ICD9 Code 331.4 ICD9 Code 333* ICD9 Code 334* ICD9 Code 336* ICD9 Code 337 ICD9 Code 335.1* ICD9 Code 359.0 ICD9 Code 359.21 ICD9 Code 357.0 ICD9 Code 237.7* ICD9 Code 742.8[1,2]	
Liver Disease	0/1	ICD9 Code 070.22 ICD9 Code 070.23 ICD9 Code 070.32 ICD9 Code 070.33 ICD9 Code 070.44 ICD9 Code 070.54 ICD9 Code V02.61 ICD9 Code V02.62 ICD9 Code 571* ICD9 Code 275.1 ICD9 Code 277.4 ICD9 Code 452 ICD9 Code 453.0 ICD9 Code 571.8 ICD9 Code 571.9 ICD9 Code 572*	Ever
Overweight	0/1	Body Mass Index (BMI) 25-30	Latest measurement in last 5 years not taken during pregnancy
Thalassemia	0/1	ICD9 Code 282.4*	Ever
Type 1 Diabetes Mellitus	0/1	ICD9 Code 250._1, 250._3	Ever
Count of pre-existing conditions considered by the CDC as risk criteria	Integer	Summation of 1 point for each of the following: • Cancer • CKD • Heart Disease • Sickle Cell Disease • Asthma • Cerebrovascular Disease • Hypertension • Neurological Disease • Liver Disease • Thalassemia • COPD or other respiratory disease • Type 1 or 2 Diabetes Mellitus	Based on the variables above

		• Solid organ transplant recipient or immunodeficiency • Obesity or severe obesity	

Abbreviations: COVID-19, Corona virus disease 2019; TND, Test-Negative Design; MOH, Ministry of Heath; CHS, Clalit Health Services; ICD, International Classification of Disease; ATC, Anatomic therapeutic chemical; NDC, National drug code.

[1]Additional confirmation of the diagnostic codes was done by checking the matching of the free text within the diagnosis description field.

[2] Covariates were extracted at the beginning of the calendar month in which the index date occurred.

Legend: Names, potential values, definitions and time periods for all variables used in the study. Variables were defined using internal CHS registries, ICD9 codes and ATC codes.

Table S2 – Vaccinated Individuals: Total, Eligible and Matched

Variable	Full N = 1,503,216	Eligible N = 1,163,534	Matched N = 596,618
Basic Demographics			
Age Groups			
16-39	366,453 (24%)	289,306 (25%)	213,090 (36%)
40-49	260,102 (17%)	208,784 (18%)	130,752 (22%)
50-59	226,385 (15%)	177,131 (15%)	85,609 (14%)
60-69	294,328 (20%)	228,424 (20%)	88,153 (15%)
70-79	223,227 (15%)	169,991 (15%)	56,946 (9.5%)
80+	132,721 (8.8%)	89,898 (7.7%)	22,068 (3.7%)
Sex			
F	772,597 (51%)	585,369 (50%)	298,059 (50%)
M	730,587 (49%)	578,165 (50%)	298,559 (50%)
CDC Risk Factor Count			
0	631,229 (42%)	506,635 (44%)	338,384 (57%)
1	370,888 (25%)	292,520 (25%)	140,779 (24%)
2	216,821 (14%)	165,081 (14%)	55,766 (9.3%)
3	139,046 (9.2%)	101,784 (8.7%)	29,273 (4.9%)
4+	145,232 (9.7%)	97,514 (8.4%)	32,416 (5.4%)
CDC "Certain" Risk Criteria			
Cancer	51,054 (3.4%)	34,892 (3.0%)	11,595 (1.9%)
Chronic Kidney Disease	159,296 (11%)	114,564 (9.8%)	40,587 (6.8%)
Chronic Obstructive Pulmonary Disease	48,994 (3.3%)	34,321 (2.9%)	11,131 (1.9%)
Heart Disease	168,810 (11%)	119,111 (10%)	38,913 (6.5%)
Solid Organ Transplant	2,804 (0.2%)	1,789 (0.2%)	435 (<0.1%)
Obesity (BMI 30-40)	327,237 (22%)	250,697 (22%)	105,476 (18%)
Obesity (BMI 40+)	29,394 (2.0%)	21,932 (1.9%)	8,920 (1.5%)
Pregnancy	8,179 (0.5%)	5,236 (0.5%)	1,508 (0.3%)
Sickle Cell Disease	264 (<0.1%)	203 (<0.1%)	109 (<0.1%)
Smoking	224,144 (15%)	179,335 (15%)	97,881 (16%)
Type 2 Diabetes	261,246 (17%)	190,914 (16%)	65,343 (11%)
CDC "Possible" Risk Criteria			
Asthma	106,627 (7.1%)	80,411 (6.9%)	29,814 (5.0%)
Cerebrovascular Disease	81,354 (5.4%)	55,599 (4.8%)	17,792 (3.0%)
Other Respiratory Disease	8,926 (0.6%)	6,304 (0.5%)	2,014 (0.3%)
Hypertension	422,586 (28%)	309,112 (27%)	103,028 (17%)
Immunosuppression	67,492 (4.5%)	45,688 (3.9%)	16,180 (2.7%)
Neurological Disease	111,084 (7.4%)	74,792 (6.4%)	24,111 (4.0%)
Liver Disease	37,286 (2.5%)	26,963 (2.3%)	9,699 (1.6%)
Obesity (BMI 25-30)	541,780 (36%)	423,347 (36%)	212,778 (36%)

Variable	Full N = 1,503,216	Eligible N = 1,163,534	Matched N = 596,618
Thalassemia	9,827 (0.7%)	7,616 (0.7%)	3,967 (0.7%)
Type 1 Diabetes	10,885 (0.7%)	7,613 (0.7%)	2,406 (0.4%)

Legend: Comparison of the characteristics of the entire CHS vaccinated population, the vaccinated population that was eligible for the study per the inclusion and exclusion criteria and the vaccinated population that was eventually used as the exposed group in the study following the matching process.

Abbreviations: CDC, Centers for disease control and prevention; BMI, Body mass index;

Table S3 – Vaccine Effectiveness for Asymptomatic Infection Proxy

Period	Asymptomatic Infection Proxy	
	1-RR	RD
14 - 20	29% (17%-39%)	0.51 (0.27-0.75)
21 - 27	52% (41%-60%)	0.93 (0.68-1.16)
0 - 20	8% (1%-14%)	0.44 (0.07-0.80)
0 - 27	19% (13%-24%)	1.49 (0.99-1.95)
0 – end of follow-up	42% (34%-49%)	5.08 (3.78-6.72)
2nd - 2nd+6	59% (48%-69%)	1.06 (0.80-1.36)
2nd+7 - end of follow-up	90% (83%-94%)	3.82 (2.46-5.45)

Legend: Estimates and 95% confidence intervals for one minus the risk ratio and the risk difference per 1,000 patients for the asymptomatic infection outcome over different time periods for different populations. Confidence intervals were estimated using the percentile bootstrap method with 500 repetitions. Estimates were only calculated for cells with more than 10 outcomes across both groups. The cumulative incidence curve is included in Figure S5.

Abbreviations: RR, Risk ratio; RD: Risk difference.

Table S4 – Vaccine Effectiveness Estimates for Additional Periods

Period	Documented Infection		Symptomatic Infection		Hospitalization		Severe Disease		Death	
	1-RR	RD	1-RR	RD	1-RR	RD	1-RR	RD	1-RR	RD
0 - 20	21% (17%-24%)	2.96 (2.43-3.51)	29% (25%-33%)	2.52 (2.14-2.92)	53% (38%-62%)	0.33 (0.21-0.43)	59% (42%-72%)	0.23 (0.14-0.32)	69% (24%-93%)	0.04 (0.01-0.08)
0 - 27	30% (27%-34%)	5.71 (5.05-6.50)	38% (34%-41%)	4.21 (3.70-4.73)	61% (51%-69%)	0.59 (0.44-0.73)	69% (57%-79%)	0.45 (0.33-0.58)	77% (51%-93%)	0.11 (0.05-0.17)
0 - End of follow-up	49% (45%-53%)	13.61 (11.78-15.65)	53% (49%-57%)	8.46 (7.34-9.69)	68% (57%-75%)	0.86 (0.62-1.10)	79% (69%-86%)	0.87 (0.61-1.14)	80% (49%-94%)	0.23 (0.08-0.41)
2nd-2nd+6	70% (64%-75%)	2.73 (2.34-3.12)	77% (71%-83%)	1.61 (1.33-1.88)	88% (73%-98%)	0.25 (0.16-0.36)	96% (86%-100%)	0.24 (0.16-0.32)	100%*	0.08 (0.03-0.12)

*No events were recorded in the vaccinated group, precluding estimation of the confidence interval.

Legend: Estimates and 95% confidence intervals for one minus the risk ratio and the risk difference per 1,000 patients for different outcomes over different time periods for different populations. Confidence intervals were estimated using the percentile bootstrap method with 500 repetitions. Estimates were only calculated for cells with more than 10 outcomes across both groups.

Abbreviations: RR, Risk ratio; RD, Risk difference.

Table S5 – Risk Ratios and Risk Differences for the Sensitivity Analysis when Delaying Censoring of Vaccinated Controls

Period	Documented Infection		Symptomatic Infection		Hospitalization		Severe Disease		Death	
	1-RR (95-CI)	RD (95-CI)	1-RR (95-CI)	RD (95-CI)	1-RR (95-CI)	RD (95-CI)	1-RR (95-CI)	RD (95-CI)	1-RR (95-CI)	RD (95-CI)
Days 14-20 after 1st dose	43% (38%-49%)	1.87 (1.56-2.18)	54% (48%-60%)	1.40 (1.18-1.66)	64% (44%-77%)	0.18 (0.11-0.26)	46% (23%-67%)	0.09 (0.04-0.16)	44% (-36%-83%)	0.01 (-0.01-0.04)
Days 21-27 after 1st dose	60% (54%-66%)	2.30 (1.96-2.61)	65% (58%-71%)	1.32 (1.09-1.57)	79% (59%-91%)	0.21 (0.13-0.29)	77% (54%-91%)	0.14 (0.08-0.20)	62% (-5%-91%)	0.03 (-0.00-0.07)
Day 7 after 2nd dose - end of follow-up	92% (87%-95%)	8.12 (6.42-10.01)	95% (89%-99%)	4.43 (3.23-6.03)	89% (60%-100%)	0.23 (0.10-0.38)	92% (70%-100%)	0.24 (0.09-0.42)	NA	NA

Legend: Estimates and 95% confidence intervals for one minus the risk ratio and the risk difference per 1,000 patients for different outcomes over different time periods for the entire study population in the analysis delaying censoring of vaccinated controls. This analysis does not allow vaccinated controls to re-enroll as exposed, so individuals do not contribute time to both study groups. Confidence intervals were estimated using the percentile bootstrap method with 500 repetitions. Estimates were only calculated for cells with more than 10 outcomes across both groups. Cumulative incidence curves are included in Figure S7.

Abbreviations: RR: Risk ratio; RD: Risk difference; NA: Not available.

Table S6 – Full Analysis Results

Period	Documented Infection		Symptomatic Infection		Hospitalization		Severe Disease		Death	
	1-RR	RD	1-RR	RD	1-RR	RD	1-RR	RD	1-RR	RD
Full										
0 - 20	21% (17%-24%)	2.96 (2.43-3.51)	29% (25%-33%)	2.52 (2.14-2.92)	53% (38%-62%)	0.33 (0.21-0.43)	59% (42%-72%)	0.23 (0.14-0.32)	69% (24%-93%)	0.04 (0.01-0.08)
0 - 27	30% (27%-34%)	5.71 (5.05-6.50)	38% (34%-41%)	4.21 (3.70-4.73)	61% (51%-69%)	0.59 (0.44-0.73)	69% (57%-79%)	0.45 (0.33-0.58)	77% (51%-93%)	0.11 (0.05-0.17)
0 - End of follow-up	49% (45%-53%)	13.61 (11.78-15.65)	53% (49%-57%)	8.46 (7.34-9.69)	68% (57%-75%)	0.86 (0.62-1.10)	79% (69%-86%)	0.87 (0.61-1.14)	80% (49%-94%)	0.23 (0.08-0.41)
14 - 20	46% (40%-51%)	2.06 (1.70-2.40)	57% (50%-63%)	1.54 (1.28-1.80)	74% (56%-86%)	0.21 (0.13-0.29)	62% (39%-80%)	0.14 (0.07-0.21)	72% (19%-100%)	0.03 (0.01-0.07)
21 - 27	60% (53%-66%)	2.31 (1.96-2.69)	66% (57%-73%)	1.34 (1.09-1.62)	78% (61%-91%)	0.22 (0.13-0.31)	80% (59%-94%)	0.18 (0.10-0.27)	84% (44%-100%)	0.06 (0.02-0.11)
2nd - 2nd+6	70% (64%-75%)	2.73 (2.34-3.12)	77% (71%-83%)	1.61 (1.33-1.88)	88% (73%-98%)	0.25 (0.16-0.36)	96% (86%-100%)	0.24 (0.16-0.32)	100%*	0.08 (0.03-0.12)
2nd+7 - end of follow-up	92% (88%-95%)	8.58 (6.22-11.18)	94% (87%-98%)	4.61 (3.29-6.53)	87% (55%-100%)	0.22 (0.08-0.39)	92% (75%-100%)	0.32 (0.13-0.52)	NA	NA
Males										
0 - 20	15% (10%-21%)	2.08 (1.31-2.90)	23% (16%-30%)	1.79 (1.20-2.35)	44% (21%-60%)	0.28 (0.12-0.44)	55% (29%-74%)	0.24 (0.10-0.38)	71% (-6%-100%)	0.06 (-0.00-0.12)
0 - 27	27% (23%-32%)	4.99 (4.06-5.96)	34% (29%-39%)	3.49 (2.83-4.23)	49% (33%-63%)	0.46 (0.27-0.68)	66% (49%-78%)	0.46 (0.29-0.61)	78% (41%-97%)	0.13 (0.04-0.21)
0 - End of follow-up	44% (38%-50%)	11.78 (9.39-14.52)	46% (40%-52%)	6.31 (5.14-7.63)	60% (43%-72%)	0.82 (0.47-1.24)	75% (59%-85%)	0.93 (0.56-1.43)	85% (52%-98%)	0.35 (0.08-0.81)
14 - 20	41% (32%-50%)	1.71 (1.22-2.21)	52% (41%-61%)	1.26 (0.90-1.62)	71% (40%-90%)	0.18 (0.07-0.27)	66% (38%-86%)	0.17 (0.07-0.27)	73% (-21%-100%)	0.05 (-0.01-0.11)
21 - 27	57% (48%-65%)	2.25 (1.76-2.75)	62% (49%-72%)	1.30 (0.92-1.67)	50% (-12%-82%)	0.11 (-0.02-0.24)	82% (55%-100%)	0.18 (0.08-0.29)	85% (21%-100%)	0.07 (0.01-0.14)
2nd - 2nd+6	67% (59%-74%)	2.63 (2.09-3.16)	71% (59%-80%)	1.48 (1.09-1.84)	66% (14%-93%)	0.14 (0.02-0.28)	91% (68%-100%)	0.19 (0.09-0.30)	NA	NA
2nd+7 - end of follow-up	91% (80%-96%)	7.33 (4.48-10.84)	88% (71%-98%)	2.90 (1.87-4.02)	84% (30%-100%)	0.36 (0.05-0.70)	90% (63%-100%)	0.50 (0.12-0.98)	NA	NA
Females										
0 - 20	25% (21%-30%)	3.83 (3.11-4.67)	34% (29%-39%)	3.23 (2.62-3.84)	61% (43%-74%)	0.37 (0.22-0.51)	65% (38%-81%)	0.22 (0.11-0.34)	65% (-98%-100%)	0.03 (-0.01-0.07)
0 - 27	33% (29%-37%)	6.43 (5.43-7.47)	41% (36%-46%)	4.92 (4.20-5.62)	73% (61%-81%)	0.71 (0.50-0.90)	73% (55%-84%)	0.45 (0.28-0.63)	76% (32%-100%)	0.09 (0.02-0.17)

0 - End of follow-up	52% (48%-56%)	15.39 (13.03-17.70)	59% (53%-63%)	10.52 (8.71-12.60)	77% (64%-85%)	0.89 (0.60-1.20)	83% (71%-91%)	0.81 (0.51-1.26)	68% (-3%-95%)	0.11 (-0.00-0.22)
14 - 20	50% (41%-57%)	2.39 (1.84-2.86)	60% (52%-68%)	1.81 (1.43-2.19)	75% (53%-90%)	0.23 (0.12-0.36)	58% (13%-84%)	0.12 (0.01-0.22)	68% (-100%-100%)	0.02 (-0.01-0.05)
21 - 27	63% (55%-71%)	2.38 (1.91-2.91)	69% (58%-78%)	1.38 (1.02-1.71)	96% (84%-100%)	0.33 (0.20-0.47)	79% (48%-100%)	0.18 (0.07-0.32)	NA	NA
2nd - 2nd+6	73% (65%-79%)	2.82 (2.29-3.37)	83% (75%-89%)	1.74 (1.37-2.11)	100%*	0.36 (0.22-0.50)	100%*	0.28 (0.16-0.41)	NA	NA
2nd+7 - end of follow-up	93% (88%-97%)	9.75 (6.84-13.48)	96% (90%-100%)	6.22 (3.60-9.56)	NA	NA	NA	NA	NA	NA
Ages 16-39										
0 - 20	21% (16%-27%)	3.22 (2.36-4.31)	29% (23%-36%)	2.42 (1.80-3.08)	49% (-65%-92%)	0.04 (-0.02-0.13)	NA	NA	NA	NA
0 - 27	32% (27%-36%)	6.54 (5.35-7.78)	38% (32%-44%)	4.03 (3.30-4.79)	33% (-104%-78%)	0.04 (-0.06-0.14)	NA	NA	NA	NA
0 - End of follow-up	50% (44%-55%)	15.09 (12.49-18.22)	56% (49%-61%)	8.34 (6.74-10.01)	50% (-85%-85%)	0.08 (-0.06-0.22)	NA	NA	NA	NA
14 - 20	49% (41%-57%)	2.29 (1.74-2.88)	57% (46%-68%)	1.38 (0.99-1.80)	74% (-46%-100%)	0.04 (-0.01-0.09)	NA	NA	NA	NA
21 - 27	64% (54%-72%)	2.80 (2.20-3.48)	67% (52%-78%)	1.27 (0.89-1.73)	NA	NA	NA	NA	NA	NA
2nd - 2nd+6	72% (64%-80%)	3.19 (2.53-3.91)	79% (68%-88%)	1.44 (1.04-1.86)	NA	NA	NA	NA	NA	NA
2nd+7 - end of follow-up	94% (87%-97%)	8.72 (5.72-12.69)	99% (96%-100%)	4.06 (2.76-5.66)	NA	NA	NA	NA	NA	NA
Ages 40-69										
0 - 20	21% (16%-25%)	2.99 (2.28-3.70)	29% (24%-34%)	2.59 (2.06-3.17)	58% (40%-70%)	0.36 (0.21-0.51)	62% (38%-79%)	0.22 (0.11-0.33)	NA	NA
0 - 27	30% (25%-34%)	5.60 (4.68-6.48)	38% (33%-43%)	4.39 (3.67-5.20)	70% (58%-79%)	0.75 (0.53-0.97)	77% (64%-88%)	0.52 (0.34-0.70)	NA	NA
0 - End of follow-up	48% (43%-53%)	13.35 (10.87-16.09)	52% (45%-58%)	8.49 (6.87-10.54)	74% (62%-82%)	1.07 (0.74-1.41)	84% (73%-92%)	1.03 (0.62-1.59)	NA	NA
14 - 20	47% (40%-55%)	2.13 (1.69-2.66)	59% (50%-67%)	1.68 (1.32-2.05)	90% (77%-98%)	0.29 (0.19-0.40)	75% (49%-92%)	0.17 (0.08-0.26)	NA	NA
21 - 27	58% (49%-67%)	2.19 (1.67-2.70)	65% (53%-74%)	1.38 (1.03-1.80)	90% (77%-100%)	0.37 (0.24-0.51)	92% (76%-100%)	0.23 (0.12-0.35)	NA	NA
2nd - 2nd+6	70% (61%-76%)	2.64 (2.14-3.20)	78% (70%-85%)	1.75 (1.38-2.16)	100%*	0.41 (0.26-0.57)	100%*	0.30 (0.18-0.41)	NA	NA
2nd+7 - end of follow-up	90% (82%-95%)	8.96 (6.16-13.05)	90% (75%-98%)	5.01 (2.53-8.67)	NA	NA	NA	NA	NA	NA
Ages 70+										
0 - 20	19% (4%-31%)	1.94 (0.37-3.35)	30% (16%-42%)	2.52 (1.16-3.81)	47% (24%-66%)	1.15 (0.50-1.87)	58% (31%-76%)	1.08 (0.44-1.71)	59% (-39%-92%)	0.24 (-0.07-0.56)

0 - 27	26% (14%-37%)	3.54 (1.76-5.37)	36% (25%-48%)	3.91 (2.44-5.57)	51% (29%-66%)	1.67 (0.81-2.48)	60% (39%-75%)	1.62 (0.83-2.38)	70% (28%-91%)	0.65 (0.17-1.12)
0 - End of follow-up	47% (36%-56%)	9.59 (6.54-12.75)	54% (41%-63%)	8.47 (5.50-11.26)	57% (34%-71%)	2.29 (1.13-3.45)	68% (50%-82%)	2.49 (1.47-3.68)	75% (38%-93%)	1.37 (0.38-2.51)
14 - 20	22% (-9%-44%)	0.81 (-0.28-1.89)	44% (19%-64%)	1.36 (0.48-2.36)	38% (-48%-71%)	0.33 (-0.23-0.80)	50% (-6%-76%)	0.50 (-0.04-0.99)	68% (-31%-100%)	0.20 (-0.04-0.45)
21 - 27	50% (19%-72%)	1.40 (0.42-2.35)	64% (37%-83%)	1.35 (0.62-2.22)	49% (-87%-91%)	0.22 (-0.17-0.61)	62% (1%-92%)	0.49 (0.00-0.95)	79% (9%-100%)	0.41 (0.02-0.79)
2nd - 2nd+6	58% (32%-76%)	1.68 (0.71-2.65)	69% (38%-86%)	1.46 (0.59-2.26)	62% (-32%-100%)	0.29 (-0.07-0.66)	90% (58%-100%)	0.64 (0.25-1.12)	100%*	0.60 (0.25-1.02)
2nd+7 - end of follow-up	95% (87%-100%)	6.10 (3.43-9.61)	98% (90%-100%)	4.77 (2.14-7.70)	NA	NA	NA	NA	NA	NA
No Risk Criteria										
0 - 20	20% (16%-25%)	2.82 (2.12-3.56)	26% (20%-32%)	2.00 (1.51-2.52)	61% (29%-79%)	0.12 (0.04-0.20)	52% (-22%-88%)	0.04 (-0.01-0.11)	NA	NA
0 - 27	31% (27%-35%)	5.77 (4.93-6.63)	37% (31%-42%)	3.69 (3.02-4.28)	69% (47%-84%)	0.25 (0.13-0.37)	76% (41%-94%)	0.13 (0.05-0.21)	NA	NA
0 - End of follow-up	47% (43%-53%)	12.61 (10.61-15.10)	51% (45%-56%)	6.87 (5.63-8.25)	75% (56%-87%)	0.32 (0.18-0.49)	87% (67%-96%)	0.26 (0.12-0.42)	NA	NA
14 - 20	49% (42%-56%)	2.13 (1.69-2.59)	55% (45%-63%)	1.32 (0.98-1.67)	92% (67%-100%)	0.09 (0.04-0.14)	65% (-65%-100%)	0.03 (-0.01-0.07)	NA	NA
21 - 27	66% (58%-73%)	2.49 (1.99-2.98)	73% (62%-82%)	1.27 (0.92-1.64)	76% (29%-100%)	0.11 (0.02-0.20)	100%*	0.08 (0.03-0.14)	NA	NA
2nd - 2nd+6	73% (66%-79%)	2.78 (2.32-3.27)	82% (74%-89%)	1.50 (1.16-1.80)	81% (33%-100%)	0.11 (0.03-0.21)	100%*	0.06 (0.01-0.11)	NA	NA
2nd+7 - end of follow-up	91% (83%-96%)	7.67 (4.90-11.07)	93% (78%-100%)	3.54 (1.79-5.90)	NA	NA	NA	NA	NA	NA
One or Two Risk Criteria										
0 - 20	20% (14%-26%)	3.04 (2.02-4.09)	32% (25%-39%)	3.07 (2.32-3.93)	37% (9%-58%)	0.24 (0.04-0.45)	56% (23%-78%)	0.22 (0.08-0.39)	NA	NA
0 - 27	29% (24%-34%)	5.79 (4.56-7.12)	39% (33%-44%)	4.89 (3.95-5.69)	55% (33%-70%)	0.54 (0.28-0.83)	62% (39%-79%)	0.39 (0.18-0.60)	NA	NA
0 - End of follow-up	52% (45%-58%)	16.10 (12.90-19.90)	57% (50%-64%)	10.93 (8.49-14.09)	60% (41%-74%)	0.76 (0.40-1.17)	74% (49%-88%)	0.76 (0.32-1.44)	NA	NA
14 - 20	43% (32%-53%)	2.05 (1.41-2.73)	57% (45%-66%)	1.74 (1.25-2.24)	67% (36%-88%)	0.22 (0.08-0.36)	62% (9%-91%)	0.14 (0.01-0.28)	NA	NA
21 - 27	56% (45%-65%)	2.43 (1.77-3.16)	62% (47%-73%)	1.56 (1.05-2.06)	93% (72%-100%)	0.32 (0.16-0.48)	70% (13%-94%)	0.15 (0.02-0.28)	NA	NA
2nd - 2nd+6	69% (59%-77%)	3.09 (2.38-3.80)	75% (64%-83%)	1.87 (1.36-2.35)	100%*	0.35 (0.20-0.52)	100%*	0.28 (0.13-0.43)	NA	NA
2nd+7 - end of follow-up	95% (88%-98%)	10.53 (6.73-14.40)	95% (88%-100%)	6.21 (3.82-8.95)	NA	NA	NA	NA	NA	NA
Three or More Risk Criteria										

0 - 20	25% (13%-36%)	3.59 (1.71-5.39)	35% (23%-47%)	3.76 (2.26-5.36)	60% (44%-74%)	1.87 (1.13-2.63)	63% (42%-79%)	1.39 (0.75-2.09)	67% (10%-94%)	0.35 (0.03-0.70)
0 - 27	29% (18%-39%)	5.30 (2.95-7.48)	38% (26%-48%)	5.04 (3.16-6.85)	62% (46%-75%)	2.74 (1.79-3.73)	71% (56%-84%)	2.51 (1.71-3.42)	72% (37%-93%)	0.74 (0.26-1.23)
0 - End of follow-up	42% (32%-50%)	10.55 (7.19-14.04)	49% (37%-59%)	8.72 (5.70-11.85)	68% (53%-78%)	3.87 (2.49-5.36)	77% (65%-87%)	4.12 (2.80-5.69)	77% (43%-93%)	1.62 (0.43-3.10)
14 - 20	37% (12%-55%)	1.60 (0.43-2.76)	62% (43%-77%)	2.19 (1.20-3.18)	70% (37%-90%)	0.87 (0.35-1.43)	62% (29%-84%)	0.80 (0.28-1.34)	64% (-34%-100%)	0.24 (-0.05-0.55)
21 - 27	37% (-1%-62%)	1.03 (-0.03-2.02)	47% (11%-73%)	0.97 (0.16-1.86)	62% (1%-92%)	0.50 (0.01-0.99)	81% (48%-100%)	0.85 (0.33-1.43)	78% (14%-100%)	0.39 (0.05-0.80)
2nd - 2nd+6	49% (13%-72%)	1.30 (0.29-2.31)	65% (31%-85%)	1.35 (0.49-2.20)	78% (30%-100%)	0.67 (0.18-1.17)	93% (70%-100%)	1.00 (0.51-1.55)	100%*	0.52 (0.20-0.91)
2nd+7 - end of follow-up	86% (72%-95%)	5.83 (3.16-9.03)	89% (68%-98%)	3.97 (1.41-6.68)	NA	NA	88% (50%-100%)	1.62 (0.34-3.14)	NA	NA
Obesity										
0 - 20	24% (14%-33%)	4.29 (2.32-6.42)	33% (22%-44%)	4.09 (2.43-5.77)	71% (47%-86%)	1.09 (0.54-1.64)	66% (31%-88%)	0.71 (0.24-1.24)	NA	NA
0 - 27	28% (19%-38%)	6.51 (4.17-9.37)	37% (26%-48%)	5.62 (3.57-7.61)	74% (53%-88%)	1.56 (0.88-2.24)	74% (50%-90%)	1.05 (0.50-1.61)	NA	NA
0 - End of follow-up	52% (40%-61%)	19.55 (12.21-27.55)	62% (51%-72%)	16.19 (10.80-23.46)	80% (57%-92%)	2.92 (1.51-4.95)	88% (69%-96%)	3.45 (1.21-6.47)	NA	NA
14 - 20	49% (32%-65%)	2.50 (1.40-3.75)	65% (48%-79%)	2.31 (1.32-3.33)	85% (51%-100%)	0.57 (0.23-1.00)	60% (-17%-92%)	0.37 (-0.05-0.84)	NA	NA
21 - 27	48% (19%-66%)	2.02 (0.69-3.25)	50% (11%-73%)	1.25 (0.18-2.27)	82% (-4%-100%)	0.41 (-0.01-0.85)	100%*	0.21 (0.07-0.51)	NA	NA
2nd - 2nd+6	62% (35%-80%)	2.73 (1.28-4.20)	74% (48%-90%)	2.10 (1.04-3.23)	100%*	0.55 (0.21-1.00)	100%*	0.33 (0.07-0.73)	NA	NA
2nd+7 - end of follow-up	95% (88%-100%)	12.43 (6.03-20.70)	98% (91%-100%)	9.60 (4.03-17.39)	NA	NA	NA	NA	NA	NA
Type II Diabetes Mellitus										
0 - 20	17% (1%-29%)	2.55 (0.11-4.61)	23% (5%-39%)	2.58 (0.53-4.65)	55% (30%-74%)	1.59 (0.70-2.53)	62% (32%-82%)	1.45 (0.56-2.39)	84% (18%-100%)	0.42 (0.05-0.87)
0 - 27	24% (9%-36%)	4.50 (1.60-7.08)	30% (13%-42%)	4.02 (1.58-6.22)	59% (37%-78%)	2.33 (1.20-3.69)	64% (38%-81%)	2.11 (1.03-3.16)	86% (53%-100%)	1.08 (0.40-1.81)
	41% (27%-52%)	10.91 (6.39-15.48)	45% (29%-58%)	8.47 (4.48-12.87)	70% (49%-83%)	4.28 (2.12-6.43)	80% (61%-90%)	4.69 (2.34-7.69)	93% (74%-100%)	2.52 (0.81-4.84)
14 - 20	25% (-10%-51%)	1.17 (-0.36-2.74)	48% (14%-68%)	1.94 (0.49-3.28)	78% (31%-100%)	0.84 (0.18-1.53)	68% (19%-94%)	0.81 (0.17-1.54)	76% (-68%-100%)	0.25 (-0.07-0.65)
21 - 27	49% (2%-78%)	1.29 (0.04-2.67)	60% (10%-84%)	1.18 (0.12-2.27)	62% (-83%-100%)	0.37 (-0.17-0.89)	54% (-79%-100%)	0.38 (-0.23-1.08)	87% (43%-100%)	0.66 (0.12-1.24)
2nd - 2nd+6	68% (36%-88%)	2.01 (0.74-3.34)	76% (34%-95%)	1.63 (0.43-2.77)	100%*	0.53 (0.12-0.99)	100%*	0.80 (0.28-1.46)	NA	NA

2nd+7 - end of follow-up	91% (71%-100%)	6.85 (3.31-11.33)	91% (68%-100%)	5.06 (1.84-8.96)	NA	NA	NA	NA	NA	NA
Hypertension										
0 - 20	18% (6%-30%)	2.25 (0.68-3.99)	27% (12%-40%)	2.44 (0.98-3.94)	54% (32%-70%)	1.32 (0.65-1.99)	63% (36%-82%)	1.09 (0.49-1.72)	79% (26%-100%)	0.33 (0.06-0.63)
0 - 27	26% (15%-37%)	4.28 (2.30-6.46)	35% (23%-45%)	4.18 (2.60-5.83)	61% (43%-74%)	2.13 (1.28-2.98)	70% (52%-82%)	2.04 (1.18-2.92)	76% (32%-95%)	0.62 (0.16-1.03)
0 - End of follow-up	47% (36%-55%)	11.61 (8.11-15.62)	52% (40%-61%)	9.45 (6.08-12.95)	68% (52%-79%)	3.15 (1.93-4.44)	78% (64%-88%)	3.44 (2.10-4.92)	78% (35%-94%)	1.31 (0.28-2.64)
14 - 20	28% (2%-49%)	1.12 (0.08-2.26)	45% (16%-64%)	1.33 (0.37-2.22)	59% (17%-83%)	0.57 (0.12-1.04)	61% (25%-85%)	0.61 (0.17-1.11)	73% (1%-100%)	0.23 (0.00-0.50)
21 - 27	45% (15%-66%)	1.49 (0.42-2.53)	59% (31%-79%)	1.47 (0.60-2.39)	67% (11%-93%)	0.47 (0.05-0.89)	76% (35%-96%)	0.76 (0.24-1.21)	73% (-2%-100%)	0.29 (-0.00-0.63)
2nd - 2nd+6	61% (39%-77%)	2.07 (1.10-3.05)	70% (49%-85%)	1.69 (0.83-2.60)	84% (52%-100%)	0.67 (0.25-1.19)	93% (72%-100%)	0.94 (0.50-1.49)	100%*	0.34 (0.11-0.64)
2nd+7 - end of follow-up	93% (85%-99%)	7.67 (4.35-11.72)	95% (84%-100%)	5.60 (2.97-8.92)	NA	NA	NA	NA	NA	NA

*No events were recorded in the vaccinated group, precluding estimation of the confidence interval.

Legend: Estimates and 95% confidence intervals for one minus the risk ratio and the risk difference per 1,000 patients for different outcomes over different time periods for different populations. Confidence intervals were estimated using the percentile bootstrap method with 500 repetitions. Estimates were only calculated for cells with more than 10 outcomes across both groups. This table contains all analyses performed in the study.

Abbreviations: RR, Risk ratio; RD, Risk difference; NA: Not available.

Table S7 – Life Tables using the Kaplan-Meier Approach

The following life tables were used to compute the cumulative incidence curves in the main analysis and in the sensitivity analysis in which censoring of vaccinated controls was delayed (Figure S7, Table S5). These tables are not sufficient to reproduce the VE estimates as these depend on a sub-cohort of matched pairs that were not censored prior to the beginning of the follow-up period of interest.

	Main Analysis										Sensitivity Analysis when Delaying Censoring of Vaccinated Controls									
	Unvaccinated					Vaccinated					Unvaccinated					Vaccinated				
Time (Days)	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence
Documented SARS-CoV-2 Infection																				
1	596618	359	60	39285	0.001	596618	172	29	39274	0.000	526877	324	61	10992	0.001	526877	161	31	10988	0.000
2	556974	367	66	32763	0.001	557172	235	42	32764	0.001	515561	334	65	9750	0.001	515728	200	39	9754	0.001
3	523844	346	66	27489	0.002	524173	313	60	27476	0.001	505477	304	60	6717	0.002	505774	300	59	6717	0.001
4	496009	356	72	25898	0.003	496384	287	58	25893	0.002	498456	332	67	6943	0.003	498757	283	57	6952	0.002
5	469755	332	71	29741	0.003	470204	317	67	29729	0.003	491181	315	64	12117	0.003	491522	311	63	12136	0.002
6	439682	297	68	26333	0.004	440158	292	66	26339	0.003	478749	297	62	10151	0.004	479075	299	62	10182	0.003
7	413052	305	74	27705	0.005	413527	349	84	27668	0.004	468301	327	70	12239	0.004	468594	365	78	12238	0.004
8	385042	278	72	26874	0.005	385510	308	80	26869	0.005	455735	295	65	34229	0.005	455991	347	76	34267	0.005
9	357890	216	60	24338	0.006	358333	291	81	24344	0.006	421211	229	54	30105	0.006	421377	344	82	30134	0.005
10	333336	228	68	19339	0.007	333698	227	68	19313	0.006	390877	253	65	25185	0.006	390899	263	67	25167	0.006
11	313769	251	80	17049	0.008	314158	209	67	17005	0.007	365439	261	71	22369	0.007	365469	232	63	22345	0.007
12	296469	200	67	18147	0.008	296944	184	62	18130	0.008	342809	219	64	23392	0.008	342892	204	59	23363	0.007
13	278122	229	82	16268	0.009	278630	178	64	16272	0.008	319198	239	75	21789	0.008	319325	199	62	21763	0.008
14	261625	207	79	14683	0.010	262180	171	65	14670	0.009	297170	218	73	20096	0.009	297363	174	59	20082	0.009
15	246735	185	75	12471	0.011	247339	109	44	12447	0.009	276856	200	72	16804	0.010	277107	128	46	16748	0.009
16	234079	159	68	11860	0.011	234783	94	40	11863	0.010	259852	167	64	15174	0.010	260231	111	43	15156	0.009
17	222060	153	69	8795	0.012	222826	102	46	8765	0.010	244511	153	63	11660	0.011	244964	114	47	11647	0.010
18	213112	164	77	8665	0.013	213959	72	34	8643	0.011	232698	171	73	10969	0.012	233203	74	32	10936	0.010
19	204283	167	82	9741	0.013	205244	93	45	9723	0.011	221558	175	79	11504	0.013	222193	94	42	11487	0.011
20	194375	158	81	7664	0.014	195428	69	35	7657	0.011	209879	174	83	8950	0.013	210612	76	36	8952	0.011
21	186553	147	79	6316	0.015	187702	52	28	6298	0.012	200755	147	73	7340	0.014	201584	58	29	7316	0.011
22	180090	134	74	6158	0.016	181352	54	30	6151	0.012	193268	142	73	7124	0.015	194210	62	32	7121	0.012
23	173798	105	60	10041	0.016	175147	45	26	10057	0.012	186002	111	60	10903	0.015	187027	48	26	10905	0.012

	Main Analysis										Sensitivity Analysis when Delaying Censoring of Vaccinated Controls									
	Unvaccinated					Vaccinated					Unvaccinated					Vaccinated				
Time (Days)	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence
24	163652	102	62	13852	0.017	165045	40	24	13889	0.012	174988	115	66	14405	0.016	176074	41	23	14429	0.012
25	149698	90	60	15716	0.018	151116	40	26	15801	0.013	160468	87	54	16250	0.017	161604	42	26	16314	0.012
26	133892	88	66	16045	0.018	135275	33	24	16163	0.013	144131	96	67	16415	0.017	145248	31	21	16498	0.013
27	117759	77	65	10473	0.019	119079	34	29	10516	0.013	127620	80	63	10617	0.018	128719	34	26	10674	0.013
28	107209	75	70	11454	0.020	108529	35	32	11516	0.013	116923	80	68	11983	0.019	118011	36	31	12031	0.013
29	95680	56	59	13515	0.020	96978	16	16	13635	0.014	104860	58	55	14331	0.019	105944	15	14	14437	0.013
30	82109	38	46	12187	0.021	83327	10	12	12300	0.014	90471	41	45	12804	0.020	91492	10	11	12889	0.013
31	69884	51	73	6756	0.021	71017	9	13	6804	0.014	77626	51	66	7368	0.020	78593	10	13	7409	0.013
32	63077	40	63	5915	0.022	64204	11	17	6008	0.014	70207	41	58	6526	0.021	71174	13	18	6604	0.014
33	57122	34	60	10391	0.023	58185	2	3	10548	0.014	63640	38	60	11395	0.021	64557	1	2	11523	0.014
34	46697	37	79	9496	0.023	47635	2	4	9604	0.014	52207	37	71	10465	0.022	53033	2	4	10547	0.014
35	37164	22	59	10005	0.024	38029	1	3	10209	0.014	41705	24	58	10978	0.023	42484	2	5	11157	0.014
36	27137	20	74	8283	0.025	27819	1	4	8461	0.014	30703	22	72	9278	0.023	31325	2	6	9435	0.014
37	18834	6	32	5733	0.025	19357	0	0	5895	0.014	21403	8	37	6409	0.024	21888	0	0	6562	0.014
38	13095	4	31	1778	0.025	13462	1	7	1825	0.014	14986	5	33	2036	0.024	15326	1	7	2077	0.014
39	11313	2	18	1828	0.025	11636	2	17	1872	0.014	12945	4	31	2084	0.024	13248	2	15	2120	0.014
40	9483	8	84	2854	0.026	9762	0	0	2942	0.014	10857	8	74	3293	0.025	11126	0	0	3378	0.014
41	6621	3	45	2486	0.027	6820	0	0	2558	0.014	7556	3	40	2833	0.025	7748	0	0	2904	0.014
42	4132	4	97	2092	0.028	4262	0	0	2165	0.014	4720	4	85	2358	0.026	4844	0	0	2430	0.014
43	2036	1	49	1531	0.028	2097	0	0	1576	0.014	2358	1	42	1748	0.027	2414	0	0	1789	0.014
44	504	0	0	504	0.028	521	0	0	521	0.014	609	0	0	609	0.027	625	0	0	625	0.014
Asymptomatic SARS-CoV-2 Infection																				
1	596618	132	22	39286	0.000	596618	82	14	39278	0.000	526877	123	23	10992	0.000	526877	75	14	10988	0.000
2	557200	145	26	32768	0.000	557258	119	21	32769	0.000	515762	135	26	9755	0.000	515814	99	19	9756	0.000
3	524287	147	28	27499	0.001	524370	123	23	27492	0.001	505872	121	24	6721	0.001	505959	114	23	6719	0.001
4	496641	158	32	25914	0.001	496755	133	27	25909	0.001	499030	150	30	6953	0.001	499126	133	27	6956	0.001
5	470569	128	27	29763	0.001	470713	124	26	29763	0.001	491927	113	23	12132	0.001	492037	116	24	12144	0.001
6	440678	118	27	26367	0.002	440826	127	29	26374	0.001	479682	124	26	10176	0.002	479777	130	27	10190	0.001
7	414193	115	28	27743	0.002	414325	154	37	27726	0.002	469382	118	25	12264	0.002	469457	162	35	12268	0.002
8	386335	118	31	26929	0.002	386445	137	35	26928	0.002	457000	121	26	34324	0.002	457027	145	32	34347	0.002
9	359288	83	23	24402	0.002	359380	120	33	24402	0.002	422555	82	19	30191	0.002	422535	136	32	30207	0.002
10	334803	86	26	19369	0.003	334858	97	29	19363	0.003	392282	99	25	25242	0.002	392192	106	27	25235	0.003
11	315348	111	35	17070	0.003	315398	99	31	17051	0.003	366941	114	31	22417	0.003	366851	110	30	22404	0.003

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12	298167	89	30	18208	0.003	298248	87	29	18211	0.003	344410	96	28	23473	0.003	344337	95	28	23459	0.003
13	279870	78	28	16345	0.004	279950	78	28	16332	0.004	320841	78	24	21877	0.003	320783	82	26	21860	0.003
14	263447	70	27	14742	0.004	263540	86	33	14739	0.004	298886	79	26	20173	0.004	298841	80	27	20169	0.004
15	248635	59	24	12535	0.004	248715	51	21	12512	0.004	278634	65	23	16869	0.004	278592	60	22	16838	0.004
16	236041	56	24	11932	0.004	236152	52	22	11931	0.004	261700	60	23	15256	0.004	261694	61	23	15235	0.004
17	224053	74	33	8833	0.005	224169	57	25	8815	0.005	246384	73	30	11709	0.004	246398	65	26	11697	0.004
18	215146	70	33	8703	0.005	215297	39	18	8696	0.005	234602	74	32	11018	0.005	234636	43	18	11008	0.005
19	206373	66	32	9804	0.005	206562	43	21	9786	0.005	223510	74	33	11577	0.005	223585	41	18	11561	0.005
20	196503	60	31	7709	0.006	196733	33	17	7701	0.005	211859	68	32	8998	0.005	211983	36	17	8998	0.005
21	188734	62	33	6344	0.006	188999	33	17	6340	0.005	202793	62	31	7375	0.006	202949	35	17	7362	0.005
22	182328	55	30	6194	0.006	182626	35	19	6191	0.006	195356	57	29	7164	0.006	195552	36	18	7165	0.005
23	176079	51	29	10135	0.007	176400	27	15	10135	0.006	188135	54	29	10990	0.006	188351	28	15	10995	0.005
24	165893	57	34	13980	0.007	166238	19	11	13990	0.006	177091	60	34	14532	0.007	177328	18	10	14541	0.006
25	151856	42	28	15899	0.007	152229	17	11	15912	0.006	162499	44	27	16422	0.007	162769	19	12	16427	0.006
26	135915	32	24	16255	0.007	136300	17	12	16289	0.006	146033	36	25	16602	0.007	146323	16	11	16621	0.006
27	119628	41	34	10590	0.008	119994	23	19	10596	0.006	129395	40	31	10729	0.007	129686	21	16	10748	0.006
28	108997	39	36	11585	0.008	109375	20	18	11613	0.006	118626	42	35	12106	0.008	118917	21	18	12130	0.006
29	97373	29	30	13718	0.008	97742	11	11	13763	0.007	106478	28	26	14523	0.008	106766	9	8	14558	0.006
30	83626	17	20	12382	0.009	83968	5	6	12411	0.007	91927	20	22	12988	0.008	92199	6	7	13006	0.006
31	71227	24	34	6853	0.009	71552	8	11	6860	0.007	78919	25	32	7460	0.008	79187	9	11	7471	0.006
32	64350	10	16	6015	0.009	64684	9	14	6050	0.007	71434	12	17	6619	0.009	71707	10	14	6647	0.006
33	58325	17	29	10588	0.009	58625	2	3	10629	0.007	64803	18	28	11584	0.009	65050	1	2	11607	0.007
34	47720	21	44	9666	0.010	47994	1	2	9683	0.007	53201	21	39	10627	0.009	53442	1	2	10640	0.007
35	38033	11	29	10243	0.010	38310	1	3	10291	0.007	42553	12	28	11205	0.010	42801	2	5	11249	0.007
36	27779	11	40	8470	0.010	28018	1	4	8534	0.007	31336	12	38	9458	0.010	31550	2	6	9512	0.007
37	19298	3	16	5876	0.011	19483	0	0	5937	0.007	21866	4	18	6550	0.010	22036	0	0	6611	0.007
38	13419	1	7	1816	0.011	13546	0	0	1832	0.007	15312	2	13	2075	0.010	15425	0	0	2088	0.007
39	11602	1	9	1873	0.011	11714	1	9	1886	0.007	13235	1	8	2130	0.010	13337	1	7	2139	0.007
40	9728	4	41	2923	0.011	9827	0	0	2960	0.007	11104	4	36	3364	0.011	11197	0	0	3397	0.007
41	6801	0	0	2554	0.011	6867	0	0	2571	0.007	7736	0	0	2901	0.011	7800	0	0	2921	0.007
42	4247	2	47	2156	0.012	4296	0	0	2183	0.007	4835	2	41	2422	0.011	4879	0	0	2447	0.007
43	2089	1	48	1570	0.012	2113	0	0	1589	0.007	2411	1	41	1787	0.012	2432	0	0	1804	0.007
44	518	0	0	518	0.012	524	0	0	524	0.007	623	0	0	623	0.012	628	0	0	628	0.007

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Symptomatic SARS-CoV-2 Infection																				
1	596618	227	38	39287	0.000	596618	90	15	39277	0.000	526877	201	38	10993	0.000	526877	86	16	10988	0.000
2	557104	222	40	32773	0.001	557251	116	21	32769	0.000	515683	199	39	9759	0.001	515803	101	20	9758	0.000
3	524109	199	38	27499	0.001	524366	190	36	27482	0.001	505725	183	36	6725	0.001	505944	186	37	6718	0.001
4	496411	198	40	25910	0.002	496694	154	31	25906	0.001	498817	182	36	6952	0.001	499040	150	30	6956	0.001
5	470303	204	43	29775	0.002	470634	193	41	29762	0.001	491683	202	41	12151	0.002	491934	195	40	12156	0.001
6	440324	179	41	26377	0.002	440679	165	37	26374	0.002	479330	173	36	10183	0.002	479583	169	35	10198	0.002
7	413768	190	46	27743	0.003	414140	195	47	27720	0.002	468974	209	45	12274	0.003	469216	203	43	12267	0.002
8	385835	160	41	26933	0.003	386225	171	44	26928	0.003	456491	174	38	34306	0.003	456746	202	44	34321	0.003
9	358742	133	37	24410	0.004	359126	171	48	24410	0.003	422011	147	35	30188	0.003	422223	208	49	30198	0.003
10	334199	142	42	19376	0.004	334545	130	39	19351	0.004	391676	154	39	25231	0.004	391817	157	40	25217	0.004
11	314681	140	44	17079	0.005	315064	110	35	17051	0.004	366291	147	40	22406	0.004	366443	122	33	22392	0.004
12	297462	111	37	18215	0.005	297903	97	33	18190	0.004	343738	123	36	23460	0.005	343929	109	32	23438	0.004
13	279136	151	54	16323	0.005	279616	100	36	16337	0.005	320155	161	50	21850	0.005	320382	117	37	21837	0.005
14	262662	137	52	14745	0.006	263179	85	32	14731	0.005	298144	139	47	20166	0.006	298428	94	31	20154	0.005
15	247780	126	51	12511	0.006	248363	58	23	12505	0.005	277839	135	49	16850	0.006	278180	68	24	16821	0.005
16	235143	103	44	11901	0.007	235800	42	18	11902	0.005	260854	107	41	15216	0.006	261291	50	19	15218	0.005
17	223139	79	35	8813	0.007	223856	45	20	8798	0.006	245531	80	33	11681	0.007	246023	49	20	11675	0.005
18	214247	94	44	8703	0.008	215013	33	15	8687	0.006	233770	97	41	11008	0.007	234299	31	13	10983	0.006
19	205450	101	49	9774	0.008	206293	50	24	9774	0.006	222665	101	45	11540	0.008	223285	53	24	11538	0.006
20	195575	98	50	7693	0.009	196469	36	18	7693	0.006	211024	106	50	8989	0.008	211694	40	19	8990	0.006
21	187784	85	45	6342	0.009	188740	19	10	6326	0.006	201929	85	42	7363	0.009	202664	23	11	7351	0.006
22	181357	79	44	6193	0.010	182395	19	10	6188	0.006	194481	85	44	7156	0.009	195290	26	13	7152	0.006
23	175085	54	31	10105	0.010	176188	18	10	10121	0.006	187240	57	30	10970	0.009	188112	20	11	10965	0.006
24	164926	45	27	13931	0.010	166049	21	13	13957	0.007	176213	55	31	14483	0.010	177127	23	13	14498	0.007
25	150950	48	32	15830	0.010	152071	23	15	15902	0.007	161675	43	27	16358	0.010	162606	23	14	16417	0.007
26	135072	56	41	16182	0.011	136146	16	12	16266	0.007	145274	60	41	16544	0.010	146166	15	10	16608	0.007
27	118834	36	30	10556	0.011	119864	11	9	10592	0.007	128670	40	31	10702	0.011	129543	13	10	10740	0.007
28	108242	36	33	11568	0.011	109261	15	14	11602	0.007	117928	38	32	12090	0.011	118790	15	13	12114	0.007
29	96638	27	28	13639	0.012	97644	5	5	13714	0.007	105800	30	28	14456	0.011	106661	6	6	14526	0.007
30	82972	21	25	12313	0.012	83925	5	6	12398	0.007	91314	21	23	12924	0.011	92129	4	4	12991	0.007
31	70638	27	38	6806	0.012	71522	1	1	6849	0.007	78369	26	33	7415	0.012	79134	1	1	7447	0.007
32	63805	30	47	5986	0.013	64672	2	3	6046	0.007	70928	29	41	6597	0.012	71686	3	4	6649	0.007

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33	57789	17	29	10508	0.013	58624	0	0	10633	0.007	64302	20	31	11508	0.012	65034	0	0	11619	0.007
34	47264	16	34	9594	0.013	47991	1	2	9691	0.007	52774	16	30	10566	0.013	53415	1	2	10640	0.007
35	37654	11	29	10140	0.014	38299	0	0	10303	0.007	42192	12	28	11111	0.013	42774	0	0	11250	0.007
36	27503	9	33	8387	0.014	27996	0	0	8515	0.007	31069	10	32	9380	0.013	31524	0	0	9497	0.007
37	19107	3	16	5820	0.014	19481	0	0	5932	0.007	21679	4	18	6500	0.014	22027	0	0	6602	0.007
38	13284	3	23	1796	0.014	13549	1	7	1831	0.007	15175	3	20	2053	0.014	15425	1	6	2085	0.007
39	11485	1	9	1845	0.015	11717	1	9	1881	0.007	13119	3	23	2102	0.014	13339	1	7	2132	0.007
40	9639	4	41	2901	0.015	9835	0	0	2959	0.007	11014	4	36	3340	0.014	11206	0	0	3399	0.007
41	6734	3	45	2527	0.015	6876	0	0	2588	0.007	7670	3	39	2875	0.015	7807	0	0	2932	0.007
42	4204	2	48	2132	0.016	4288	0	0	2179	0.007	4792	2	42	2397	0.015	4875	0	0	2445	0.007
43	2070	0	0	1556	0.016	2109	0	0	1584	0.007	2393	0	0	1774	0.015	2430	0	0	1800	0.007
44	514	0	0	514	0.016	525	0	0	525	0.007	619	0	0	619	0.015	630	0	0	630	0.007
COVID-19 Hospitalization																				
1	596618	6	1	39288	0.000	596618	0	0	39281	0.000	526877	5	1	10993	0.000	526877	0	0	10988	0.000
2	557324	8	1	32778	0.000	557337	0	0	32774	0.000	515879	8	2	9764	0.000	515889	0	0	9760	0.000
3	524538	3	1	27509	0.000	524563	2	0	27498	0.000	506107	3	1	6729	0.000	506129	2	0	6720	0.000
4	497026	3	1	25926	0.000	497063	7	1	25922	0.000	499375	4	1	6962	0.000	499407	9	2	6960	0.000
5	471097	17	4	29797	0.000	471134	3	1	29796	0.000	492409	13	3	12166	0.000	492438	4	1	12164	0.000
6	441283	7	2	26411	0.000	441335	11	2	26408	0.000	480230	6	1	10208	0.000	480270	10	2	10206	0.000
7	414865	14	3	27780	0.000	414916	8	2	27775	0.000	470016	16	3	12299	0.000	470054	14	3	12297	0.000
8	387071	14	4	26988	0.000	387133	6	2	26985	0.000	457701	13	3	14208	0.000	457743	10	2	14207	0.000
9	360069	5	1	24470	0.000	360142	7	2	24465	0.000	443480	7	2	33764	0.000	443526	7	2	33764	0.000
10	335594	10	3	19404	0.000	335670	2	1	19401	0.000	409709	8	2	26725	0.000	409755	3	1	26722	0.000
11	316180	7	2	17100	0.000	316267	6	2	17097	0.000	382976	7	2	23650	0.000	383030	5	1	23645	0.000
12	299073	11	4	18275	0.000	299164	11	4	18270	0.000	359319	13	4	24732	0.000	359380	14	4	24727	0.000
13	280787	10	4	16400	0.000	280883	8	3	16393	0.000	334574	8	2	22625	0.000	334639	14	4	22617	0.000
14	264377	10	4	14802	0.000	264482	6	2	14798	0.000	311941	9	3	20560	0.000	312008	8	3	20551	0.000
15	249565	11	4	12571	0.000	249678	5	2	12566	0.000	291372	12	4	18913	0.000	291449	8	3	18910	0.000
16	236983	8	3	11970	0.000	237107	2	1	11969	0.000	272447	8	3	16706	0.000	272531	5	2	16703	0.000
17	225005	13	6	8847	0.000	225136	5	2	8845	0.000	255733	12	5	12540	0.000	255823	5	2	12532	0.000
18	216145	8	4	8738	0.001	216286	2	1	8739	0.000	243181	13	5	11875	0.000	243286	2	1	11872	0.000
19	207399	8	4	9834	0.001	207545	2	1	9834	0.000	231293	9	4	12520	0.000	231412	2	1	12523	0.000
20	197557	14	7	7735	0.001	197709	1	1	7736	0.000	218764	15	7	9696	0.001	218887	4	2	9691	0.000

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21	189808	11	6	6369	0.001	189972	4	2	6365	0.000	209053	9	4	7601	0.001	209192	4	2	7595	0.000
22	183428	10	5	6226	0.001	183603	0	0	6226	0.000	201443	15	7	7971	0.001	201593	1	0	7973	0.000
23	177192	8	5	10195	0.001	177377	1	1	10196	0.000	193457	6	3	11401	0.001	193619	0	0	11402	0.000
24	166989	6	4	14049	0.001	167180	2	1	14053	0.000	182050	6	3	15075	0.001	182217	2	1	15074	0.000
25	152934	7	5	16003	0.001	153125	2	1	16010	0.000	166969	5	3	16960	0.001	167141	2	1	16963	0.000
26	136924	9	7	16376	0.001	137113	3	2	16388	0.000	150004	8	5	17087	0.001	150176	3	2	17098	0.000
27	120539	5	4	10667	0.001	120722	1	1	10667	0.000	132909	6	5	10975	0.001	133075	1	1	10976	0.000
28	109867	1	1	11690	0.001	110054	1	1	11691	0.000	121928	2	2	12217	0.001	122098	1	1	12222	0.000
29	98176	3	3	13823	0.001	98362	0	0	13833	0.000	109709	2	2	15186	0.001	109875	0	0	15193	0.000
30	84350	0	0	12493	0.001	84529	0	0	12502	0.000	94521	0	0	13431	0.001	94682	0	0	13439	0.000
31	71857	3	4	6895	0.001	72027	0	0	6902	0.000	81090	3	4	7586	0.001	81243	0	0	7594	0.000
32	64959	1	2	6079	0.001	65125	2	3	6085	0.000	73501	2	3	6735	0.001	73649	2	3	6740	0.000
33	58879	4	7	10690	0.001	59038	0	0	10709	0.000	66764	4	6	11844	0.001	66907	0	0	11860	0.000
34	48185	1	2	9752	0.001	48329	0	0	9768	0.000	54916	1	2	10905	0.001	55047	0	0	10917	0.000
35	38432	0	0	10355	0.001	38561	0	0	10380	0.000	44010	1	2	11632	0.001	44130	0	0	11652	0.000
36	28077	2	7	8551	0.001	28181	0	0	8581	0.000	32377	2	6	9749	0.001	32478	0	0	9779	0.000
37	19524	1	5	5945	0.001	19600	0	0	5971	0.000	22626	1	4	6819	0.001	22699	0	0	6843	0.000
38	13578	0	0	1831	0.001	13629	0	0	1838	0.000	15806	0	0	2127	0.001	15856	0	0	2134	0.000
39	11747	0	0	1886	0.001	11791	0	0	1892	0.000	13679	0	0	2185	0.001	13722	0	0	2189	0.000
40	9861	0	0	2962	0.001	9899	0	0	2977	0.000	11494	0	0	3470	0.001	11533	0	0	3486	0.000
41	6899	0	0	2590	0.001	6922	0	0	2601	0.000	8024	0	0	2992	0.001	8047	0	0	3003	0.000
42	4309	0	0	2187	0.001	4321	0	0	2197	0.000	5032	0	0	2527	0.001	5044	0	0	2537	0.000
43	2122	0	0	1594	0.001	2124	0	0	1596	0.000	2505	0	0	1860	0.001	2507	0	0	1862	0.000
44	528	0	0	528	0.001	528	0	0	528	0.000	645	0	0	645	0.001	645	0	0	645	0.000
Severe COVID-19																				
1	596618	0	0	39288	0.000	596618	0	0	39281	0.000	526877	0	0	10993	0.000	526877	0	0	10988	0.000
2	557330	0	0	32778	0.000	557337	0	0	32774	0.000	515884	0	0	9764	0.000	515889	0	0	9760	0.000
3	524552	1	0	27509	0.000	524563	0	0	27498	0.000	506120	1	0	6729	0.000	506129	0	0	6720	0.000
4	497042	5	1	25926	0.000	497065	0	0	25922	0.000	499390	5	1	6962	0.000	499409	1	0	6960	0.000
5	471111	1	0	29797	0.000	471143	0	0	29796	0.000	492423	1	0	12166	0.000	492448	0	0	12164	0.000
6	441313	4	1	26411	0.000	441347	5	1	26409	0.000	480256	5	1	10208	0.000	480284	6	1	10206	0.000
7	414898	6	1	27781	0.000	414933	1	0	27778	0.000	470043	4	1	12299	0.000	470072	2	0	12297	0.000
8	387111	7	2	26988	0.000	387154	6	2	26986	0.000	457740	5	1	14208	0.000	457773	6	1	14207	0.000

	Main Analysis										Sensitivity Analysis when Delaying Censoring of Vaccinated Controls									
	Unvaccinated					Vaccinated					Unvaccinated					Vaccinated				
Time (Days)	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence
9	360116	6	2	24473	0.000	360162	2	1	24468	0.000	443527	6	1	14087	0.000	443560	3	1	14083	0.000
10	335637	5	1	19405	0.000	335692	4	1	19401	0.000	429434	7	2	10735	0.000	429474	7	2	10733	0.000
11	316227	9	3	17100	0.000	316287	4	1	17097	0.000	418692	6	1	9052	0.000	418734	5	1	9048	0.000
12	299118	4	1	18275	0.000	299186	1	0	18271	0.000	409634	6	1	11731	0.000	409681	3	1	11724	0.000
13	280839	2	1	16400	0.000	280914	2	1	16396	0.000	397897	1	0	29552	0.000	397954	5	1	29550	0.000
14	264437	7	3	14804	0.000	264516	1	0	14798	0.000	368344	8	2	24873	0.000	368399	7	2	24868	0.000
15	249626	12	5	12573	0.000	249717	5	2	12569	0.000	343463	11	3	22171	0.000	343524	8	2	22167	0.000
16	237041	9	4	11971	0.000	237143	5	2	11969	0.000	321281	10	3	20613	0.000	321349	5	2	20616	0.000
17	225061	10	4	8848	0.000	225169	1	0	8848	0.000	300658	11	4	16690	0.000	300728	3	1	16686	0.000
18	216203	9	4	8738	0.000	216320	1	0	8739	0.000	283957	9	3	16113	0.000	284039	4	1	16110	0.000
19	207456	4	2	9836	0.000	207580	2	1	9837	0.000	267835	8	3	17518	0.000	267925	5	2	17519	0.000
20	197616	7	4	7735	0.000	197741	5	3	7736	0.000	250309	9	4	13493	0.000	250401	6	2	13485	0.000
21	189874	6	3	6370	0.000	190000	0	0	6366	0.000	236807	7	3	10611	0.000	236910	3	1	10606	0.000
22	183498	7	4	6228	0.000	183634	3	2	6227	0.000	226189	7	3	10551	0.000	226301	3	1	10551	0.000
23	177263	6	3	10197	0.000	177404	1	1	10198	0.000	215631	7	3	14295	0.000	215747	0	0	14295	0.000
24	167060	9	5	14052	0.001	167205	1	1	14054	0.000	201329	8	4	17925	0.000	201452	3	1	17926	0.000
25	152999	7	5	16007	0.001	153150	0	0	16012	0.000	183396	8	4	19497	0.001	183523	0	0	19497	0.000
26	136985	5	4	16380	0.001	137138	0	0	16390	0.000	163891	4	2	19476	0.001	164026	0	0	19483	0.000
27	120600	3	2	10668	0.001	120748	2	2	10670	0.000	144411	2	1	12247	0.001	144543	2	1	12251	0.000
28	109929	6	5	11690	0.001	110076	0	0	11695	0.000	132162	5	4	13521	0.001	132290	0	0	13525	0.000
29	98233	3	3	13827	0.001	98381	1	1	13837	0.000	118636	3	3	16285	0.001	118765	1	1	16293	0.000
30	84403	4	5	12495	0.001	84543	2	2	12502	0.000	102348	4	4	14454	0.001	102471	2	2	14460	0.000
31	71904	0	0	6897	0.001	72039	0	0	6902	0.000	87890	0	0	8394	0.001	88009	0	0	8400	0.000
32	65007	1	2	6080	0.001	65137	0	0	6087	0.000	79496	1	1	7307	0.001	79609	0	0	7313	0.000
33	58926	2	3	10699	0.001	59050	0	0	10711	0.000	72188	2	3	12949	0.001	72296	0	0	12957	0.000
34	48225	4	8	9754	0.001	48339	0	0	9768	0.000	59237	4	7	11672	0.001	59339	0	0	11683	0.000
35	38467	0	0	10366	0.001	38571	0	0	10382	0.000	47561	0	0	12459	0.001	47656	0	0	12471	0.000
36	28101	0	0	8556	0.001	28189	0	0	8586	0.000	35102	0	0	10507	0.001	35185	0	0	10536	0.000
37	19545	2	10	5952	0.001	19603	0	0	5972	0.000	24595	2	8	7391	0.001	24649	0	0	7409	0.000
38	13591	0	0	1832	0.001	13631	0	0	1838	0.000	17202	0	0	2293	0.001	17240	0	0	2299	0.000
39	11759	1	9	1886	0.001	11793	0	0	1893	0.000	14909	1	7	2370	0.001	14941	0	0	2375	0.000
40	9872	0	0	2968	0.001	9900	0	0	2977	0.000	12538	0	0	3799	0.001	12566	0	0	3808	0.000
41	6904	0	0	2594	0.001	6923	0	0	2601	0.000	8739	0	0	3265	0.001	8758	0	0	3272	0.000

	Main Analysis										Sensitivity Analysis when Delaying Censoring of Vaccinated Controls									
	Unvaccinated					Vaccinated					Unvaccinated					Vaccinated				
Time (Days)	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence
42	4310	0	0	2188	0.001	4322	0	0	2197	0.000	5474	0	0	2748	0.001	5486	0	0	2757	0.000
43	2122	0	0	1594	0.001	2125	0	0	1597	0.000	2726	0	0	2017	0.001	2729	0	0	2020	0.000
44	528	0	0	528	0.001	528	0	0	528	0.000	709	0	0	709	0.001	709	0	0	709	0.000
Death due to COVID-19																				
1	596618	0	0	39288	0.000	596618	0	0	39281	0.000	526877	0	0	10993	0.000	526877	0	0	10988	0.000
2	557330	0	0	32778	0.000	557337	0	0	32774	0.000	515884	0	0	9764	0.000	515889	0	0	9760	0.000
3	524552	0	0	27509	0.000	524563	0	0	27498	0.000	506120	0	0	6729	0.000	506129	0	0	6720	0.000
4	497043	0	0	25926	0.000	497065	0	0	25922	0.000	499391	0	0	6962	0.000	499409	0	0	6960	0.000
5	471117	0	0	29797	0.000	471143	0	0	29796	0.000	492429	0	0	12166	0.000	492449	0	0	12164	0.000
6	441320	0	0	26411	0.000	441347	0	0	26409	0.000	480263	0	0	10208	0.000	480285	0	0	10206	0.000
7	414909	1	0	27781	0.000	414938	0	0	27778	0.000	470055	1	0	12299	0.000	470079	0	0	12297	0.000
8	387127	0	0	26988	0.000	387160	0	0	26987	0.000	457755	0	0	14208	0.000	457782	0	0	14208	0.000
9	360139	2	1	24474	0.000	360173	0	0	24468	0.000	443547	2	0	14087	0.000	443574	1	0	14083	0.000
10	335663	0	0	19406	0.000	335705	0	0	19401	0.000	429458	0	0	10736	0.000	429490	0	0	10733	0.000
11	316257	1	0	17100	0.000	316304	1	0	17097	0.000	418722	0	0	9052	0.000	418757	1	0	9048	0.000
12	299156	1	0	18276	0.000	299206	0	0	18271	0.000	409670	2	0	11732	0.000	409708	0	0	11724	0.000
13	280879	0	0	16400	0.000	280935	0	0	16397	0.000	397936	1	0	11118	0.000	397984	0	0	11115	0.000
14	264479	1	0	14804	0.000	264538	1	0	14800	0.000	386817	1	0	9695	0.000	386869	1	0	9691	0.000
15	249674	1	0	12575	0.000	249737	0	0	12570	0.000	377121	1	0	8353	0.000	377177	3	1	8350	0.000
16	237098	3	1	11973	0.000	237167	2	1	11970	0.000	368767	4	1	8323	0.000	368824	2	1	8321	0.000
17	225122	0	0	8851	0.000	225195	0	0	8848	0.000	360440	0	0	5231	0.000	360501	0	0	5229	0.000
18	216271	0	0	8740	0.000	216347	1	0	8740	0.000	355209	1	0	5169	0.000	355272	1	0	5169	0.000
19	207531	3	1	9837	0.000	207606	0	0	9837	0.000	350039	3	1	24537	0.000	350102	0	0	24540	0.000
20	197691	3	2	7738	0.000	197769	0	0	7737	0.000	325499	3	1	19439	0.000	325562	1	0	19438	0.000
21	189950	0	0	6370	0.000	190032	0	0	6368	0.000	306057	1	0	16460	0.000	306123	1	0	16459	0.000
22	183580	2	1	6229	0.000	183664	0	0	6228	0.000	289596	2	1	16199	0.000	289663	0	0	16199	0.000
23	177349	2	1	10199	0.000	177436	1	1	10199	0.000	273395	2	1	20397	0.000	273464	2	1	20397	0.000
24	167148	1	1	14057	0.000	167236	1	1	14058	0.000	252996	2	1	25016	0.000	253065	2	1	25017	0.000
25	153090	1	1	16012	0.000	153177	0	0	16013	0.000	227978	1	0	27309	0.000	228046	0	0	27310	0.000
26	137077	3	2	16391	0.000	137164	0	0	16392	0.000	200668	3	1	25815	0.000	200736	1	0	25812	0.000
27	120683	2	2	10673	0.000	120772	0	0	10671	0.000	174850	2	1	17155	0.000	174923	0	0	17154	0.000
28	110008	0	0	11698	0.000	110101	0	0	11699	0.000	157693	0	0	17984	0.000	157769	1	1	17984	0.000
29	98310	1	1	13842	0.000	98402	0	0	13841	0.000	139709	1	1	20598	0.000	139784	1	1	20593	0.000

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	Unvaccinated					Vaccinated					Unvaccinated					Vaccinated				
Time (Days)	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence	Number at Risk	Number of Events	Discrete Time Hazard per 100,000	Number Censored	Cumulative Incidence
30	84467	2	2	12503	0.000	84561	2	2	12508	0.000	119110	3	3	17947	0.000	119190	2	2	17950	0.000
31	71962	0	0	6903	0.000	72051	0	0	6905	0.000	101160	1	1	10663	0.000	101238	0	0	10667	0.000
32	65059	0	0	6084	0.000	65146	0	0	6088	0.000	90496	0	0	9199	0.000	90571	0	0	9205	0.000
33	58975	0	0	10704	0.000	59058	0	0	10713	0.000	81297	0	0	14861	0.000	81366	0	0	14868	0.000
34	48271	0	0	9761	0.000	48345	0	0	9770	0.000	66436	0	0	13344	0.000	66498	0	0	13350	0.000
35	38510	0	0	10377	0.000	38575	0	0	10383	0.000	53092	0	0	14166	0.000	53148	0	0	14169	0.000
36	28133	1	4	8569	0.000	28192	0	0	8586	0.000	38926	1	3	11820	0.000	38979	0	0	11836	0.000
37	19563	0	0	5960	0.000	19606	0	0	5974	0.000	27105	0	0	8242	0.000	27143	0	0	8254	0.000
38	13603	1	7	1833	0.000	13632	0	0	1838	0.000	18863	1	5	2496	0.000	18889	0	0	2501	0.000
39	11769	0	0	1889	0.000	11794	0	0	1894	0.000	16366	0	0	2568	0.000	16388	0	0	2571	0.000
40	9880	0	0	2970	0.000	9900	0	0	2977	0.000	13798	0	0	4164	0.000	13817	0	0	4170	0.000
41	6910	0	0	2594	0.000	6923	0	0	2601	0.000	9634	0	0	3556	0.000	9647	0	0	3563	0.000
42	4316	0	0	2193	0.000	4322	0	0	2197	0.000	6078	0	0	3053	0.000	6084	0	0	3057	0.000
43	2123	0	0	1595	0.000	2125	0	0	1597	0.000	3025	0	0	2228	0.000	3027	0	0	2230	0.000
44	528	0	0	528	0.000	528	0	0	528	0.000	797	0	0	797	0.000	797	0	0	797	0.000

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