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Supplementary Materials for

SARS-CoV-2 vaccine protection and deaths among US veterans during 2021

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Materials and Methods

We examined SARS CoV-2 infections and death due to any cause in U.S. Veterans age ≥18 years and receiving care in the Veterans Health Administration (VHA), the largest integrated health system in the country. After the U.S. Food and Drug Administration issued an emergency use authorization for the Pfizer-BioNTech vaccine in December 2020, the Department of Veterans Affairs (VA) first provided vaccinations to front-line health care workers and Veterans residing in long-term care facilities in 37 of its medical centers across the U.S. As vaccine supplies increased, additional Veterans received vaccinations based on age, existing health conditions, and other factors for increased risk of severe illness or death from COVID-19, and as of October 21, 2021, more than 3.5 million Veterans have been fully vaccinated (available at: https://www.accesstocare.va.gov/Healthcare/COVID19NationalSummary).

We used the VA Corporate Data Warehouse (CDW) to identify vaccination status (fully vaccinated vs. unvaccinated), vaccine type (Pfizer-BioNTech, Moderna, Janssen), SARS CoV-2 infections, and deaths due to any cause during the period February 1, 2021 to October 1, 2021.We focused on this time period because it encompasses the time when many Veterans became fully vaccinated (i.e., vaccine eligibility extended beyond long-term care facilities) and the mid-summer 2021 surge in cases in the U.S. The VA CDW provides discrete, individual-level data, including demographics, administrative claims-based diagnosis and procedure codes, prescriptions, anthropometric measures, and free-text data including procedure notes and pathology reports; data include all 50 states and U.S. territories.

Fully vaccinated was defined as two doses of Pfizer-BioNTech or Moderna or one dose of Janssen vaccines, administered at the appropriate intervals. We excluded partial vaccinations and vaccinations that were administered off-label and/or not according to recommendation. We did not consider booster vaccines as the study period largely precedes authorization for boosters in the U.S.

SARS-CoV-2 infection was defined as the detection of SARS-CoV-2 on most recent reverse-transcriptase–polymerase-chain-reaction (RT-PCR) assay, regardless of symptoms or test setting. The reason for RT-PCR assay is not provided in the VA CDW. Veterans may have received a RT-PCR assay for many reasons, including but not limited to, concern about exposure, symptoms, as a requirement of a clinic visit or in advanced of a medical procedure, or as part of a hospital admission. We included assays received for any reason or in any clinical setting.

Deaths due to any cause (n=22,345) were identified using a combination of data from the Master Veteran Index, vital status files, and medical records (hierarchical in that order). These data include deaths that occurred both inside and outside the VHA.

Vaccine effectiveness (1- adjusted hazard ratio [aHR] x 100) against infection was estimated using Cox proportional hazards models, overall and by vaccine type (Pfizer-BioNTech vs. Moderna vs. Janssen), with vaccination status modeled as time-varying. Modeling vaccination as time-varying assigns follow-up time for Veterans before the date of full vaccination (defined as 14 days after receipt of the second dose of Pfizer-BioNTech or Moderna or one dose of Janssen vaccines) as unvaccinated time and time after the date of full vaccination as vaccinated time; those never vaccinated contribute only unvaccinated time We required Veterans to receive a RT-PCR assay to contribute vaccinated and/or unvaccinated follow-up time, such that Veterans who received a recent RT-PCR assay before vaccination contributed unvaccinated time only. Veterans in both groups were followed from February 1, 2021 until their most recent RT-PCR assay or October 1, 2021. We used calendar time as the underlying time scale to allow the baseline hazard to vary flexibly as vaccine eligibility, testing practices, non-pharmaceutical interventions, and infection transmission changed over time. As noted by others (31), models with calendar time as the underlying time scale compare those who are unvaccinated on each calendar date to those who are vaccinated on that same date.

We report aHR and 95% confidence intervals (CI), adjusted for age, sex and comorbidity. Comorbidity was measured using the Charlson comorbidity index (*26*), and a diagnosis of diabetes, chronic obstructive pulmonary disease, bronchitis, acute respiratory failure, chronic lung disease, cardiovascular disease in the two years prior to the RT-PCR assay. We also examined time dependence by including product terms for vaccination status by the log of follow-up time, with $p<0.01$ indicating statistical significance.

To illustrate findings, we plotted cumulative risk of infection using Kaplan-Meier estimation to account for censoring, overall and by vaccination status and age group (<50 years, 50-64 years, and ≥65 years). We used the same time-varying assignment described above allowing individuals to contribute time before and after vaccination and allowing for changes in RT-PCR status. Thus, as described above for Cox models, the time scale compares those who are unvaccinated on each calendar date to those who are vaccinated on that same date. We selected these age groups because they correspond to the phased-in eligibility for vaccination.

We examined vaccine effectiveness against death in a nested sample (n=775,536) of Veterans who were: 1) unvaccinated and received an RT-PCR assay from February 1, 2021 to September 30, 2021; or 2) fully vaccinated and received an RT-PCR assay after the date of full vaccination during the same period. We plotted cumulative risk of death due to any cause using Kaplan-Meier estimation, separately by age group <65 vs. ≥65 years) and comorbidity score (Charlson Comorbidity Index, <3 vs. ≥3) (*26*). Follow-up was accrued from the date of RT-PCR assay until death or October 1, 2021. In addition, we used Cox proportional hazards models to examine vaccine effectiveness against death during the period corresponding to the emergence and dominance of the Delta variant in the U.S. We limited the nested sample for this analysis to RT-PCR assays on or after July 1, 2021 (n=312,829) and report aHR and 95% CI.

All analyses were conducted using SAS Enterprise Guide 7.1 (SAS Institute, Cary, NC). This study was approved by the Institutional Review Board at the University of California San Francisco and the Public Health Institute, as well as the San Francisco VA Research and Development Committee.

Supplementary Table 1. Distribution of SARS-CoV-2 infection by demographics and vaccination status in 780,225 U.S. Veterans, February 1, 2021 to October 1, 2021

	Most recent RT-PCR[1]	
	Negative	Positive (%)
Vaccination status[2]		
Unvaccinated	209,439	72,638 (25.8%)
Janssen	28,717	6,945 (19.5%)
Moderna	206,420	24,342 (10.6%)
Pfizer-BioNTech	204,044	27,680 (12.0%)
Sex		
Female	91,535	20,424 (18.2%)
Male	557,085	111,181 (16.6%)
Ethnicity		
Hispanic	49,050	10,753 (18.0%)
Non-Hispanic	599,570	120,852 (16.8%)
Race		
American Indian/Alaska Native	4,884	1,087 (18.2%)
Asian	6,816	1,147 (14.4%)
Black or African American	142,197	26,282 (15.6%)
Native Hawaiian/Other Pacific Islander	5,563	1,206 (17.8%)
White	421,726	86,332 (17.0%)
Age at RT-PCR (years)		
<50	144,338	41,099 (22.2%)
50-64	185,155	37,831 (17.0%)
≥65	319,127	52,675 (14.2%)
Comorbidity score[3] (Charlson Comorbidity Index)		
0	253,896	60,263 (19.2%)
1-2	218,042	41,595 (16.0%)
3-4	102,372	16,988 (14.2%)
≥5	74,310	12,759 (14.6%)

[1]For vaccinated Veterans, RT-PCR assessed 15 days after last dose that established full vaccination status; for unvaccinated Veterans, RT-PCR assessed beginning in February 1, 2021, coincident with broadscale vaccine eligibility in the VA. [2]Vaccination status defined as: 1) a single Janssen vaccine; 2) two Moderna vaccines or 3) two Pfizer-BioNTech vaccines.[3]Pre-existing morbidity as represented by the Charlson Co-Morbidity Index reported within 2 years of first RT-PCR test or hospitalization related to first RT-PCR test.

Supplementary Table 2. Distribution of vaccine type by demographics among 498,148 fully vaccinated U.S. Veterans, February 1, 2021 to October 1, 2021

	Vaccine Type[1]		
	Janssen (%)	Moderna (%)	Pfizer (%)
Total Vaccinated	35,662 (7.2%)	230,762 (46.3%)	231,724 (46.5%)
February	30 (0.0%)	32,114 (41.3%)	45,675 (58.7%)
March	5,862 (3.6%)	86,107 (52.2%)	72,828 (44.2%)
April	10,732 (7.6%)	65,530 (46.1%)	65,852 (46.3%)
May	4,057 (7.0%)	27,986 (48.5%)	25,651 (44.5%)
June	5,844 (24.0%)	9,176 (37.7%)	9,305 (38.3%)
July	3,358 (29.6%)	3,694 (32.5%)	4,305 (37.9%)
August	3,645 (37.4%)	2,491 (25.5%)	3,621 (37.1%)
September	2,143 (20.8%)	3,664 (35.6%)	4,487 (43.6%)
Sex			
Female	3,884 (8.1%)	19,752 (41.2%)	24,295 (50.7%)
Male	31,778 (7.1%)	211,010 (46.9%)	207,429 (46.1%)
Ethnicity			
Hispanic	2,703 (6.7%)	19,659 (48.9%)	17,842 (44.4%)
Non-Hispanic	32,959 (7.2%)	211,103 (46.1%)	213,882 (46.7%)
Race			
American Indian/Alaska Native	316 (8.5%)	1,746 (47.0%)	1,657 (44.6%)
Asian	349 (6.4%)	2,382 (43.4%)	2,753 (50.2%)
Black or African American	7,499 (6.4%)	44,476 (38.2%)	64,425 (55.4%)
Native Hawaiian/Other Pacific Islander	295 (6.7%)	1,973 (44.8%)	2,131 (48.4%)
White	24,900 (7.4%)	166,448 (49.3%)	146,199 (43.3%)
Age (years)			
<50	8,855 (12.8%)	26,253 (38.0%)	33,981 (49.2%)
50-64	13,823 (10.0%)	59,240 (43.0%)	64,644 (46.9%)
≥65	12,984 (4.5%)	145,269 (49.9%)	291,352 (58.5%)

[1]Vaccination status defined as: 1) a single Janssen vaccine; 2) two Moderna vaccines or 3) two Pfizer-BioNTech vaccines

Supplementary Table 3A: RT-PCR Assays by Vaccination Status and Week, February 1 – October 1, 2021 (used for Figure 2A): All Ages

	Unvaccinated		Vaccinated					
			Janssen		Moderna		Pfizer-BioNTech	
Week	PCR+	PCR-	PCR+	PCR-	PCR+	PCR-	PCR+	PCR-
1	6543	17817	0	0	31	83	24	113
2	4557	16543	0	0	32	171	45	329
3	5132	20736	0	1	86	650	124	866
4	4548	18848	0	0	111	1062	146	1448
5	3176	18010	0	0	109	1402	179	1978
6	3639	16699	1	6	180	1992	236	2536
7	3739	16623	9	79	261	2611	272	2935
8	3615	14775	29	137	293	3221	330	3297
9	3607	14534	38	189	348	3853	391	4015
10	3619	13969	55	259	408	4555	485	4498
11	3231	13401	67	369	454	5009	530	5029
12	2915	11258	104	406	475	5481	569	5609
13	1608	9855	50	458	176	5513	196	5606
14	1388	9350	26	425	158	5762	183	5900
15	1178	8425	27	458	173	5920	153	6018
16	968	7427	29	462	147	5491	133	5605
17	772	6884	32	449	150	5498	147	5563
18	754	7689	30	583	135	6312	123	6384
19	675	7178	31	553	162	5984	130	6368
20	699	7284	32	626	129	6320	144	6166
21	703	6663	34	591	136	5788	145	5685
22	835	6681	39	613	150	5982	180	5831
23	1378	8265	72	794	230	7215	376	6822
24	1989	9216	91	841	371	7592	503	7187
25	2923	10112	158	874	471	7860	711	7563
26	3840	11371	258	996	756	8699	1077	8410
27	4621	11740	285	1068	896	8942	1268	8792
28	4721	6532	321	629	989	4980	1353	4568
29	4632	5112	333	525	1149	3752	1378	3252
30	4488	4574	330	478	1054	3477	1305	3012
31	3486	4015	263	439	855	3344	1009	2774
32	3136	4494	268	481	880	3696	1037	3221
33	2452	4154	180	465	758	3536	803	3081
34	1966	3993	162	462	649	3280	646	2937

NOTE: Because vaccination status was modeled as a time-varying covariate (see Materials and Methods), Veterans could contribute both vaccinated and unvaccinated time. Therefore, the total number of observations in the table does not represent the unique number of Veterans.

Supplementary Table 3B: RT-PCR Assays by Vaccination Status and Week, February 1 – October 1, 2021 (used for Figure 2B): Age <50 years

	Unvaccinated		Vaccinated					
			Janssen		Moderna		Pfizer-BioNTech	
Week	PCR+	PCR-	PCR+	PCR-	PCR+	PCR-	PCR+	PCR-
1	1598	4162	0	0	3	21	2	12
2	1136	3582	0	0	3	28	5	16
3	1316	4542	0	0	6	53	6	48
4	1266	4098	0	0	6	53	9	70
5	995	4016	0	0	9	81	8	86
6	1093	4006	0	1	10	97	13	93
7	1236	4183	1	11	23	135	18	122
8	1241	4151	9	20	18	154	25	149
9	1337	4174	6	37	20	168	23	212
10	1335	4357	11	39	33	243	43	286
11	1289	4487	12	71	43	307	35	365
12	1053	3929	18	93	28	344	63	485
13	627	3520	11	104	10	397	14	546
14	488	3447	5	83	11	475	20	575
15	411	2934	3	90	14	493	18	643
16	343	2672	2	84	16	427	19	599
17	279	2406	4	95	10	489	23	620
18	262	2691	5	134	10	524	12	733
19	240	2488	6	117	17	513	20	703
20	263	2559	7	117	16	535	23	687
21	296	2313	11	115	19	502	19	605
22	371	2437	9	118	18	521	23	716
23	631	3127	19	165	23	709	55	852
24	974	3742	21	167	48	720	77	896
25	1458	4186	36	199	65	805	106	1068
26	1870	5025	73	242	104	1002	210	1256
27	2153	5315	84	267	112	1086	204	1251
28	2104	2966	84	149	117	591	218	718
29	2082	2311	94	132	128	491	180	527
30	2032	2089	96	129	129	435	179	522
31	1528	1805	61	104	100	419	157	451
32	1342	2012	61	109	86	454	157	526
33	987	1833	43	115	76	433	115	478
34	798	1639	46	100	59	389	71	469

NOTE: Because vaccination status was modeled as a time-varying covariate (see Materials and Methods), Veterans could contribute both vaccinated and unvaccinated time. Therefore, the total number of observations in the table does not represent the unique number of Veterans.

Supplementary Table 3C: RT-PCR Assays by Vaccination Status and Week, February 1 – October 1, 2021 (used for Figure 2C): Age 50-64 years

	Unvaccinated		Vaccinated					
			Janssen		Moderna		Pfizer-BioNTech	
Week	PCR+	PCR-	PCR+	PCR-	PCR+	PCR-	PCR+	PCR-
1	1838	5223	0	0	9	24	5	21
2	1368	4621	0	0	8	49	4	57
3	1501	5677	0	0	24	124	23	125
4	1377	5360	0	0	23	177	29	183
5	945	5335	0	0	22	209	34	293
6	1172	5165	1	3	31	275	32	340
7	1218	5277	5	29	35	367	42	434
8	1176	4967	15	61	56	478	60	514
9	1108	4985	15	78	60	595	79	748
10	1165	4921	24	119	89	808	116	971
11	982	4726	22	158	113	975	141	1148
12	916	3863	39	156	111	1233	158	1453
13	477	3290	18	182	43	1215	46	1464
14	432	3047	10	169	39	1377	38	1562
15	370	2705	8	195	36	1422	36	1627
16	289	2359	17	184	27	1345	25	1432
17	231	2220	10	180	31	1334	38	1524
18	212	2463	13	225	31	1573	37	1657
19	193	2201	12	216	39	1494	24	1729
20	214	2333	10	260	31	1545	38	1693
21	199	2125	12	236	27	1341	36	1566
22	249	2128	20	267	38	1510	44	1589
23	405	2645	17	321	45	1757	103	1869
24	567	2930	37	338	88	1953	139	1997
25	839	3319	72	355	113	2047	203	2090
26	1072	3701	99	412	178	2230	284	2345
27	1412	3760	107	438	209	2365	339	2559
28	1432	1990	111	245	236	1247	324	1265
29	1355	1519	125	212	266	906	341	890
30	1259	1365	115	181	244	833	345	769
31	1020	1204	111	164	198	838	234	689
32	904	1348	113	177	190	895	249	843
33	758	1205	72	170	165	824	203	794
34	605	1207	64	178	128	775	148	759

NOTE: Because vaccination status was modeled as a time-varying covariate (see Materials and Methods), Veterans could contribute both vaccinated and unvaccinated time. Therefore, the total number of observations in the table does not represent the unique number of Veterans.

Supplementary Table 3D: RT-PCR Assays by Vaccination Status and Week, February 1 – October 1, 2021 (used for Figure 2D): Age >65 years

	Unvaccinated		Vaccinated					
			Janssen		Moderna		Pfizer-BioNTech	
Week	PCR+	PCR-	PCR+	PCR-	PCR+	PCR-	PCR+	PCR-
1	3107	8432	0	0	19	38	17	80
2	2053	8340	0	0	21	94	36	256
3	2315	10517	0	1	56	473	95	693
4	1905	9390	0	0	82	832	108	1195
5	1236	8659	0	0	78	1112	137	1599
6	1374	7528	0	2	139	1620	191	2103
7	1285	7163	3	39	203	2108	212	2379
8	1198	5657	5	56	219	2589	245	2634
9	1162	5375	17	74	268	3090	289	3055
10	1119	4691	20	101	286	3504	326	3241
11	960	4188	33	140	298	3727	354	3516
12	946	3466	47	157	336	3904	348	3671
13	504	3045	21	172	123	3901	136	3596
14	468	2856	11	173	108	3910	125	3763
15	397	2786	16	173	123	4005	99	3748
16	336	2396	10	194	104	3719	89	3574
17	262	2258	18	174	109	3675	86	3419
18	280	2535	12	224	94	4215	74	3994
19	242	2489	13	220	106	3977	86	3936
20	222	2392	15	249	82	4240	83	3786
21	208	2225	11	240	90	3945	90	3514
22	215	2116	10	228	94	3951	113	3526
23	342	2493	36	308	162	4749	218	4101
24	448	2544	33	336	235	4919	287	4294
25	626	2607	50	320	293	5008	402	4405
26	898	2645	86	342	474	5467	583	4809
27	1056	2665	94	363	575	5491	725	4982
28	1185	1576	126	235	636	3142	811	2585
29	1195	1282	114	181	755	2355	857	1835
30	1197	1120	119	168	681	2209	781	1721
31	938	1006	91	171	557	2087	618	1634
32	890	1134	94	195	604	2347	631	1852
33	707	1116	65	180	517	2279	485	1809
34	563	1147	52	184	462	2116	427	1709

NOTE: Because vaccination status was modeled as a time-varying covariate (see Materials and Methods), Veterans could contribute both vaccinated and unvaccinated time. Therefore, the total number of observations in the table does not represent the unique number of Veterans.

Supplementary Table 3E: Vital Status by Vaccination Status, RT-PCR Assay, and from RT-PCR Assay, Beginning February 1, 2021 (used for Figure 3A): Age <65 years

	Unvaccinated				Vaccinated			
	PCR-		PCR +		PCR-		PCR +	
Weeks from RT-PCR Assay	Deaths	Non-Deaths	Deaths	Non-Deaths	Deaths	Non-Deaths	Deaths	Non-Deaths
1	95	3932	74	1811	55	3747	11	677
2	164	3002	192	1731	92	2839	14	673
3	133	3285	173	2217	107	3068	9	853
4	120	2923	126	2497	91	2729	11	861
5	119	3297	88	3203	97	2990	17	1101
6	102	3622	43	3329	89	3315	4	1129
7	80	4648	27	3380	87	4457	7	1082
8	78	8459	23	3397	83	8480	5	1048
9	68	8036	15	2778	74	8075	3	937
10	64	6770	8	2157	66	7172	1	594
11	44	5949	8	1413	62	6678	1	404
12	50	5024	9	950	71	6266	3	258
13	43	3845	8	562	41	5276	4	149
14	33	3669	7	453	33	4941	0	124
15	29	4015	9	427	32	5466	2	122
16	25	3741	4	380	31	5513	0	117
17	21	4035	5	403	32	5674	1	106
18	21	3502	6	417	24	5048	3	114
19	12	3672	4	519	28	5028	1	105
20	20	3951	8	638	19	5668	1	114
21	18	4394	4	731	15	5747	1	122
22	18	4301	3	848	22	5737	0	139
23	20	4562	1	1404	14	5989	1	414
24	12	4845	4	1554	10	5869	1	362
25	12	4476	4	1634	14	5935	0	307
26	9	4255	3	1522	15	5556	0	198

NOTE: Numbers in table correspond to Kaplan-Meier curves shown in Figure 3 which were truncated at 26 weeks to avoid incomplete follow-up and sparse data. Therefore, the total number of observations in the table does not represent the total nested sample given in Materials and Methods.

Supplementary Table 3F: Vital Status by Vaccination Status, RT-PCR Assay, and Week from RT-PCR Assay, Beginning February 1, 2021 (used for Figure 3B): Age ≥65 years

	Unvaccinated				Vaccinated			
	PCR-		PCR +		PCR-		PCR +	
Weeks from RT-PCR Assay	Deaths	Non-Deaths	Deaths	Non-Deaths	Deaths	Non-Deaths	Deaths	Non-Deaths
1	390	1542	348	708	459	5760	102	1241
2	698	1100	725	661	996	4267	237	1046
3	614	1102	670	821	959	4360	210	1300
4	530	953	401	852	813	3870	128	1210
5	436	1038	227	1059	756	4114	82	1508
6	355	1190	147	1032	665	4368	63	1648
7	301	1405	92	1011	564	5961	29	1488
8	276	2367	58	872	500	10820	19	1330
9	216	2280	63	729	449	10616	23	1084
10	192	2166	40	477	375	9777	17	692
11	180	2097	41	348	324	9563	13	517
12	163	2033	46	260	300	9179	16	395
13	114	1691	24	175	254	7676	17	203
14	113	1719	26	160	222	7698	13	170
15	87	1820	30	179	219	8341	12	166
16	67	1854	28	193	191	8207	7	197
17	65	1822	25	213	173	8563	8	167
18	55	1564	21	188	129	7364	8	195
19	56	1557	22	244	134	7657	12	186
20	50	1784	16	276	112	8222	10	220
21	52	1710	16	307	103	8228	8	230
22	44	1732	16	332	103	8179	10	259
23	33	1777	17	523	92	8422	6	682
24	28	1761	13	515	70	8391	2	646
25	28	1821	10	559	73	8179	2	585
26	15	1637	15	513	48	7925	5	541

NOTE: Numbers in table correspond to Kaplan-Meier curves shown in Figure 3 which were truncated at 26 weeks to avoid incomplete follow-up and sparse data. Therefore, the total number of observations in the table does not represent the total nested sample given in Materials and Methods.

Supplementary Table 3G: Vital Status by Vaccination Status, RT-PCR Assay, and Week from RT-PCR Assay, Beginning February 1, 2021 (used for Figure 3C): Charlson Comorbidity Index score <3

	Unvaccinated				Vaccinated			
	PCR-		PCR +		PCR-		PCR +	
Weeks from RT-PCR Assay	Deaths	Non-Deaths	Deaths	Non-Deaths	Deaths	Non-Deaths	Deaths	Non-Deaths
1	238	4881	209	2203	195	7051	31	1239
2	382	3725	485	2080	384	5387	80	1133
3	339	3953	462	2656	375	5588	80	1454
4	294	3515	294	2945	292	4982	46	1362
5	236	3961	178	3766	296	5372	27	1787
6	202	4375	103	3902	261	5795	17	1841
7	179	5423	60	3897	219	7462	10	1723
8	164	9542	34	3792	196	13031	5	1593
9	120	9084	35	3153	174	12549	8	1390
10	122	7782	18	2374	148	11097	9	866
11	105	6890	23	1580	123	10559	6	630
12	106	5954	18	1078	114	9972	2	423
13	63	4620	10	651	102	8305	4	214
14	69	4401	15	514	95	8069	5	189
15	53	4856	18	524	87	8871	3	185
16	49	4602	10	482	79	8953	1	208
17	44	4854	10	513	76	9263	2	181
18	41	4199	7	509	60	8090	2	192
19	38	4388	11	651	69	8288	3	186
20	32	4778	10	777	44	9218	1	196
21	38	5230	8	878	42	9298	3	198
22	24	5155	8	1025	53	9298	5	248
23	22	5385	8	1666	37	9615	1	637
24	23	5656	6	1769	33	9503	0	605
25	21	5339	7	1879	27	9610	1	504
26	14	5047	7	1747	21	9078	1	410

NOTE: Numbers in table correspond to Kaplan-Meier curves shown in Figure 3 which were truncated at 26 weeks to avoid incomplete follow-up and sparse data. Therefore, the total number of observations in the table does not represent the total nested sample given in Materials and Methods.

Supplementary Table 3H: Vital Status by Vaccination Status, RT-PCR Assay, and Week from RT-PCR Assay, Beginning February 1, 2021 (used for Figure 3D): Charlson Comorbidity Index score ≥3

	Unvaccinated				Vaccinated			
	PCR-		PCR +		PCR-		PCR +	
Weeks from RT-PCR Assay	Deaths	Non-Deaths	Deaths	Non-Deaths	Deaths	Non-Deaths	Deaths	Non-Deaths
1	247	593	213	316	319	2456	82	679
2	480	377	432	312	704	1719	171	586
3	408	434	381	382	691	1840	139	699
4	356	361	233	404	612	1617	93	709
5	319	374	137	496	557	1732	72	822
6	255	437	87	459	493	1888	50	936
7	202	630	59	494	432	2956	26	847
8	190	1284	47	477	387	6269	19	785
9	164	1232	43	354	349	6142	18	631
10	134	1154	30	260	293	5852	9	420
11	119	1156	26	181	263	5682	8	291
12	107	1103	37	132	257	5473	17	230
13	94	916	22	86	193	4647	17	138
14	77	987	18	99	160	4570	8	105
15	63	979	21	82	164	4936	11	103
16	43	993	22	91	143	4767	6	106
17	42	1003	20	103	129	4974	7	92
18	35	867	20	96	93	4322	9	117
19	30	841	15	112	93	4397	10	105
20	38	957	14	137	87	4672	10	138
21	32	874	12	160	76	4677	6	154
22	38	878	11	155	72	4618	5	150
23	31	954	10	261	69	4796	6	459
24	17	950	11	300	47	4757	3	403
25	19	958	7	314	60	4504	1	388
26	10	845	11	288	42	4403	4	329

NOTE: Numbers in table correspond to Kaplan-Meier curves shown in Figure 3 which were truncated at 26 weeks to avoid incomplete follow-up and sparse data. Therefore, the total number of observations in the table does not represent the total nested sample given in Materials and Methods.

Supplementary Table 3I: Vital Status by Vaccination Status, RT-PCR Assay, and Week from RT-PCR Assay, Beginning July 1, 2021 (used for Figure S1A): Age <65 years

	Unvaccinated				Vaccinated			
	PCR-		PCR +		PCR-		PCR +	
Weeks from RT-PCR Assay	Deaths	Non-Deaths	Deaths	Non-Deaths	Deaths	Non-Deaths	Deaths	Non-Deaths
1	30	3932	35	1811	19	3747	10	677
2	33	3002	127	1731	42	2839	11	673
3	17	3285	104	2217	32	3068	7	853
4	27	2923	85	2497	34	2729	6	861
5	19	3297	44	3203	24	2990	13	1101
6	19	3622	24	3329	33	3315	1	1129
7	16	4648	9	3380	17	4457	5	1082
8	12	8459	5	3397	22	8480	2	1048

NOTE: Numbers in table correspond to Kaplan-Meier curves shown in Supplementary Figure 1 which included RT-PCR results beginning July 1, 2021 onward to examine the time period corresponding to the dominance of the Delta variant. Owing to the shorter follow-up period these curves were truncated at 8 weeks to avoid incomplete follow-up and sparse data.

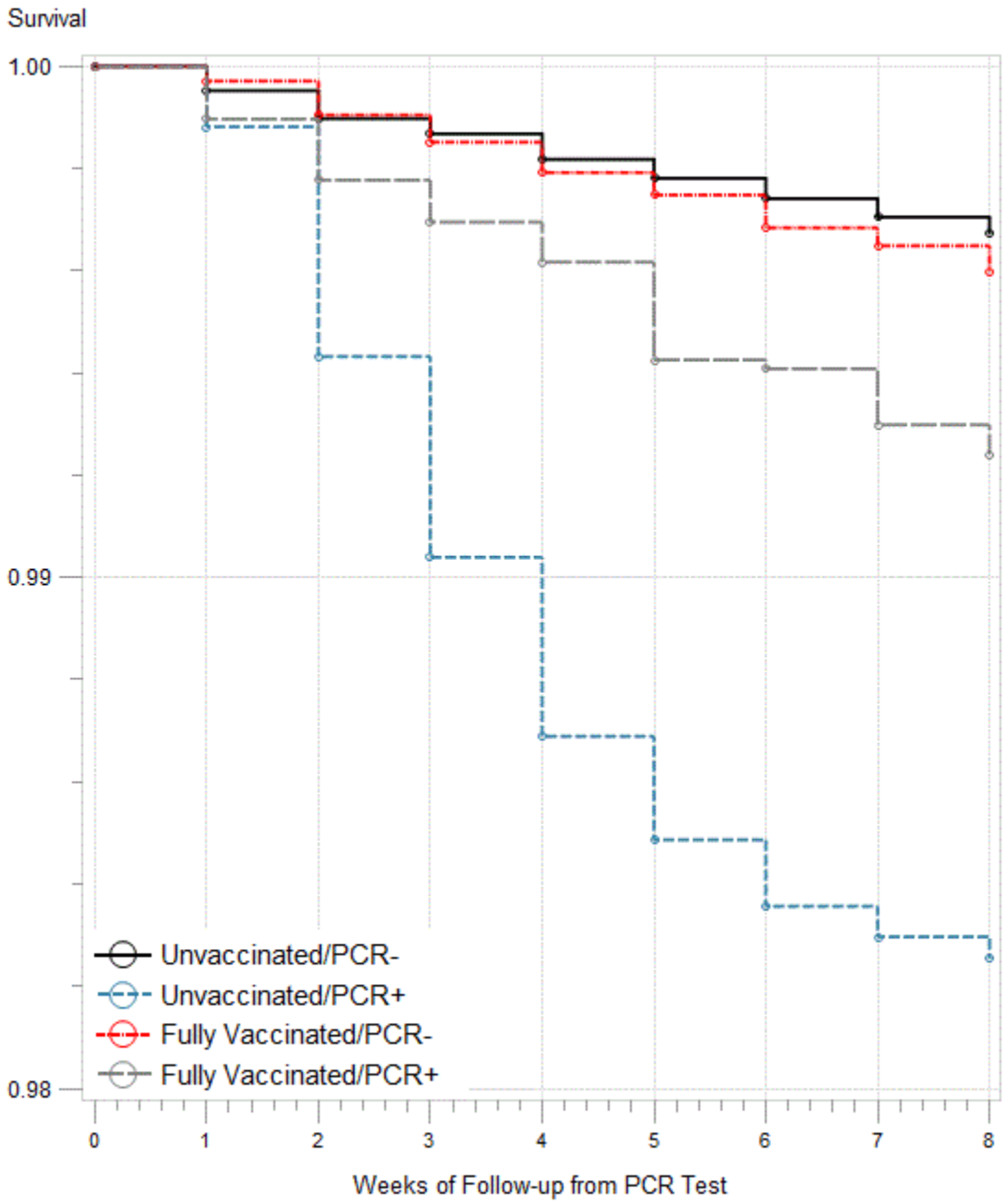
Supplementary Table 3J: Vital Status by Vaccination Status, RT-PCR Assay, and Week from RT-PCR Assay, Beginning July 1, 2021 (used for Figure S1B): Age ≥65 years

	Unvaccinated				Vaccinated			
	PCR-		PCR +		PCR-		PCR +	
Weeks from RT-PCR Assay	Deaths	Non-Deaths	Deaths	Non-Deaths	Deaths	Non-Deaths	Deaths	Non-Deaths
1	79	1542	131	708	178	5760	64	1241
2	133	1100	345	661	383	4267	185	1046
3	86	1102	323	821	333	4360	149	1300
4	105	953	177	852	255	3870	92	1210
5	75	1038	83	1059	230	4114	51	1508
6	55	1190	38	1032	182	4368	27	1648
7	58	1405	25	1011	158	5961	15	1488
8	40	2367	8	872	119	10820	10	1330

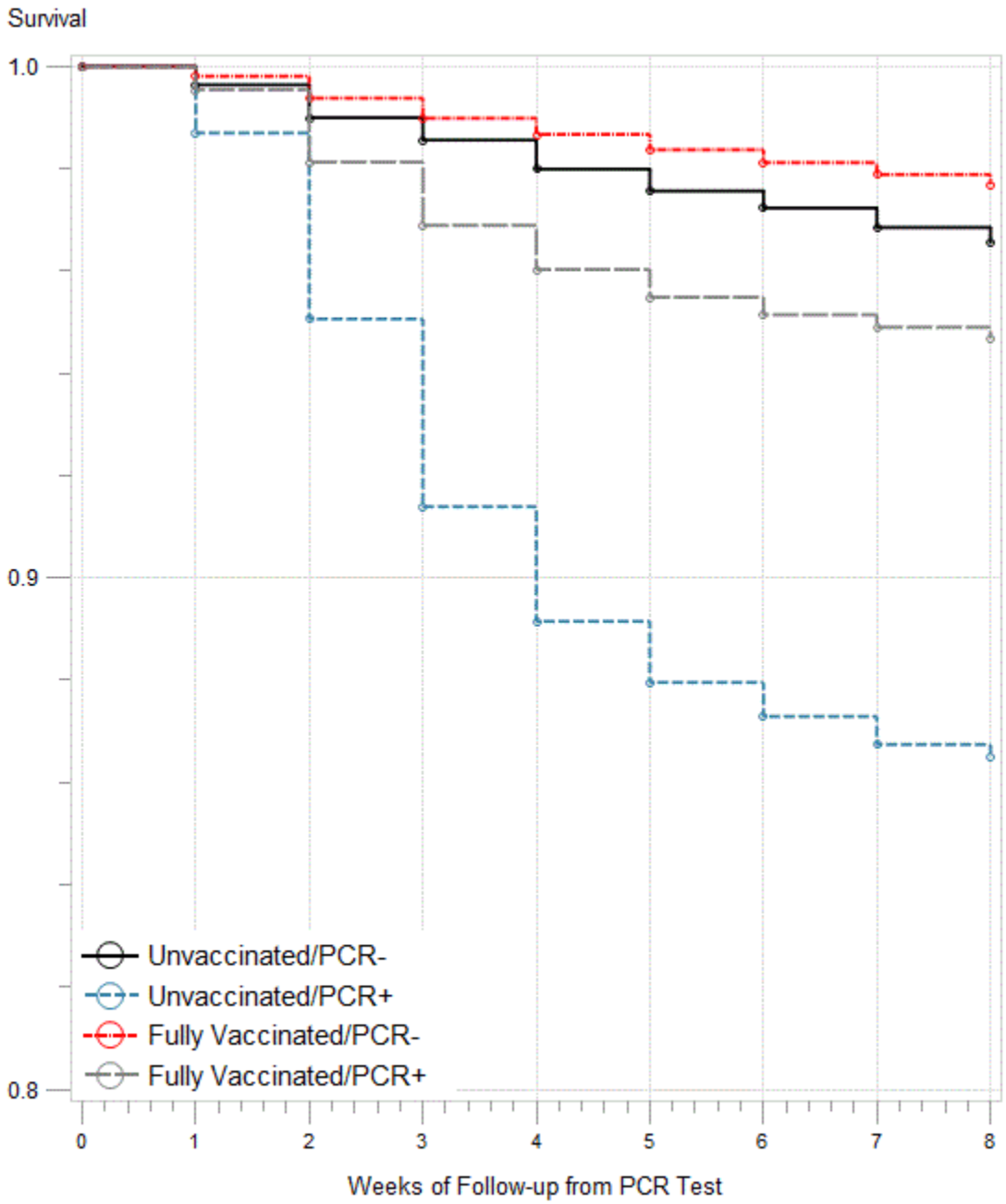
NOTE: Numbers in table correspond to Kaplan-Meier curves shown in Supplementary Figure 1 which included RT-PCR results beginning July 1, 2021 onward to examine the time period corresponding to the dominance of the Delta variant. Owing to the shorter follow-up period these curves were truncated at 8 weeks to avoid incomplete follow-up and sparse data.

Supplementary Figure 1. Kaplan-Meier curves illustrating cumulative risk of death due to any cause by vaccination status and RT-PCR assay for the period beginning July 1, 2021, corresponding to the emergence and dominance of the Delta variant in the U.S.: A) age <65 years; B) age ≥65 years

A. Age <65 years



B. Age ≥65 years



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