

Supplemental Online Content

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

eTable 1. COVID-like illness symptoms ^a collected by self-report on questionnaire administered at online test registration by pharmacy chain.

Pharmacy chain A	Pharmacy chain B	Pharmacy chain C
Fever	Fever or cough	Fever less than 102F or feeling feverish
Coughing	Shortness of breath or difficulty breathing	New or worsening cough
Shortness of breath	Sore throat	Shortness of breath or difficulty breathing (not severe)
Recent loss of smell or taste	New loss of taste or smell	Sore throat
Sore throat	Congestion or runny nose	New loss of taste or smell
Chills	Unusual fatigue	Chills
Repeated shaking with chills	Muscle or body aches	Repeated shaking with chills
Muscle pain	Headache	Muscle pain
Headache	Nausea or vomiting	Headache
Vomiting or diarrhea	Diarrhea or vomiting	Nausea
No symptoms	Other symptoms	Vomiting
	No symptoms	Diarrhea
		None of the above

^a Test registrants could select more than one symptom. Data were aggregated when reported such that registrants were identified as either symptomatic (≥ 1 symptom) or asymptomatic (no symptoms or 'none of the above' checked).

eTable 2. Unadjusted and adjusted ^a BNT162b2 odds ratios (OR) ^b with 95% confidence intervals (CI) by time since second dose and age group, during the pre-Delta period (March 13-May 29, 2021)

Age group in years	Time since second dose (days)	Cases (Positive)	Controls (Negative)	Unadjusted			Adjusted		
				OR	Lower 95% CI	Upper 95% CI	OR	Lower 95% CI	Upper 95% CI
16-19	14-30	0	126	0	0	NA	0	0	NA
	31-60	1	88	0.04	0.01	0.31	0.05	0.01	0.39
	61-90	0	14	0	0	NA	0	0	NA
	91-120	0	2	0	0	NA	0	0	NA
20-44	14-30	25	2108	0.04	0.02	0.05	0.05	0.03	0.07
	31-60	66	2041	0.10	0.08	0.13	0.13	0.10	0.16
	61-90	67	1021	0.20	0.16	0.26	0.23	0.18	0.30
	91-120	28	521	0.16	0.11	0.24	0.21	0.14	0.30
	121-150	0	86	0	0	NA	0	0	NA
45-54	14-30	19	627	0.07	0.04	0.11	0.09	0.05	0.14
	31-60	26	634	0.09	0.06	0.14	0.12	0.08	0.18
	61-90	21	313	0.15	0.10	0.24	0.19	0.12	0.30
	91-120	9	122	0.17	0.08	0.33	0.19	0.09	0.39
	121-150	1	34	0.07	0.01	0.49	0.10	0.01	0.77
55-64	14-30	18	620	0.06	0.04	0.09	0.06	0.04	0.10
	31-60	28	709	0.08	0.05	0.12	0.09	0.06	0.14
	61-90	16	260	0.12	0.08	0.21	0.13	0.08	0.22
	91-120	8	106	0.15	0.07	0.31	0.19	0.09	0.39
	121-150	0	18	0	0	NA	0	0	NA
≥65	14-30	22	369	0.11	0.07	0.17	0.11	0.07	0.16
	31-60	40	655	0.11	0.08	0.15	0.11	0.08	0.15
	61-90	26	397	0.12	0.08	0.18	0.13	0.08	0.19
	91-120	6	115	0.09	0.04	0.21	0.11	0.05	0.26
	121-150	0	7	0	0	NA	0	0	NA
≥20 (adjusted for age group)	14-30	84	3724	0.06	0.05	0.08	0.07	0.05	0.08
	31-60	160	4039	0.11	0.09	0.13	0.12	0.10	0.14
	61-90	130	1991	0.18	0.15	0.22	0.18	0.15	0.22
	91-120	51	864	0.16	0.12	0.22	0.19	0.14	0.25
	121-150	1	145	0.02	<0.01	0.13	0.03	<0.01	0.19

OR=odds ratio; CI=Confidence interval; NA=Not applicable

^a Adjusted for race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. For models for ages ≥20 years, ORs also adjusted for age group. Tests with missing SVI excluded from adjusted analyses.

^b OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity.

eTable 3. Unadjusted and adjusted ^a BNT162b2 odds ratios (OR) ^b with 95% confidence intervals (CI) by time since second dose and age group, during the intermediate period (May 30-July 17, 2021)

Age group in years	Time since second dose (days)	Cases (Positive)	Controls (Negative)	Unadjusted			Adjusted		
				OR	Lower 95% CI	Upper 95% CI	OR	Lower 95% CI	Upper 95% CI
12-15	14-30	0	460	0	0	NA	0	0	NA
	31-60	4	280	0.07	0.03	0.19	0.06	0.02	0.16
16-19	14-30	4	334	0.05	0.02	0.15	0.06	0.02	0.15
	31-60	11	913	0.06	0.03	0.10	0.05	0.03	0.10
	61-90	20	672	0.14	0.09	0.21	0.11	0.07	0.18
	91-120	18	165	0.50	0.31	0.82	0.37	0.22	0.62
	121-150	2	25	0.37	0.09	1.55	0.36	0.08	1.56
	151-180	0	9	0	0	NA	0	0	NA
20-44	14-30	20	1777	0.05	0.03	0.08	0.06	0.04	0.09
	31-60	153	5962	0.12	0.10	0.14	0.12	0.10	0.15
	61-90	409	7650	0.24	0.22	0.27	0.22	0.19	0.24
	91-120	293	3618	0.37	0.32	0.41	0.30	0.27	0.34
	121-150	92	1480	0.28	0.23	0.35	0.27	0.22	0.34
	151-180	87	959	0.41	0.33	0.51	0.37	0.29	0.46
	181-210	22	159	0.62	0.40	0.97	0.43	0.27	0.68
45-54	14-30	13	307	0.17	0.10	0.30	0.18	0.10	0.32
	31-60	41	1161	0.14	0.10	0.19	0.15	0.11	0.21
	61-90	135	2108	0.26	0.21	0.31	0.24	0.20	0.29
	91-120	84	1097	0.31	0.24	0.39	0.27	0.21	0.34
	121-150	28	468	0.24	0.16	0.35	0.24	0.16	0.36
	151-180	28	241	0.46	0.31	0.69	0.42	0.28	0.64
	181-210	7	32	0.88	0.39	1.99	0.75	0.32	1.74
55-64	14-30	1	211	0.02	<0.01	0.12	0.02	<0.01	0.13
	31-60	30	836	0.13	0.09	0.19	0.15	0.10	0.22
	61-90	99	1784	0.21	0.17	0.25	0.20	0.16	0.25
	91-120	92	1146	0.30	0.24	0.37	0.26	0.21	0.33
	121-150	36	406	0.33	0.23	0.46	0.29	0.20	0.42
	151-180	26	178	0.54	0.36	0.82	0.46	0.29	0.71
	181-210	6	32	0.69	0.29	1.66	0.52	0.21	1.30
≥65	14-30	1	59	0.06	0.01	0.43	0.06	0.01	0.46
	31-60	11	193	0.20	0.11	0.37	0.23	0.12	0.44
	61-90	43	631	0.24	0.17	0.33	0.28	0.20	0.39
	91-120	76	1043	0.26	0.20	0.33	0.25	0.19	0.33
	121-150	88	891	0.35	0.27	0.44	0.28	0.22	0.37
	151-180	30	201	0.52	0.35	0.78	0.33	0.21	0.50
	181-210	2	11	0.64	0.14	2.89	0.67	0.14	3.16
≥20 (adjusted for age group)	14-30	35	2354	0.06	0.05	0.09	0.07	0.05	0.10
	31-60	235	8152	0.13	0.11	0.14	0.14	0.12	0.16
	61-90	686	12173	0.24	0.23	0.26	0.22	0.20	0.24
	91-120	545	6904	0.34	0.31	0.37	0.28	0.26	0.31
	121-150	244	3245	0.33	0.29	0.37	0.27	0.24	0.31

Age group in years	Time since second dose (days)	Cases (Positive)	Controls (Negative)	Unadjusted			Adjusted		
				OR	Lower 95% CI	Upper 95% CI	OR	Lower 95% CI	Upper 95% CI
≥20 (adjusted for age group)	151-180	171	1579	0.47	0.40	0.55	0.37	0.32	0.44
	181-210	37	234	0.69	0.49	0.97	0.48	0.34	0.69

OR=odds ratio; CI=Confidence interval; NA=Not applicable

^a Adjusted for race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. For models for ages ≥20 years, ORs also adjusted for age group. Tests with missing SVI excluded from adjusted analyses.

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eTable 4. Unadjusted and adjusted ^a BNT162b2 odds ratios (OR) ^b with 95% confidence intervals (CI) by time since second dose and age group, during the Delta period (July 18-October 17, 2021)

Age group in years	Time since second dose (days)	Cases (Positive)	Controls (Negative)	Unadjusted			Adjusted		
				OR	Lower 95% CI	Upper 95% CI	OR	Lower 95% CI	Upper 95% CI
12-15	14-30	43	2643	0.03	0.03	0.05	0.04	0.03	0.05
	31-60	173	5595	0.07	0.06	0.08	0.07	0.06	0.08
	61-90	278	7721	0.08	0.07	0.09	0.08	0.07	0.09
	91-120	227	6605	0.07	0.06	0.08	0.10	0.09	0.12
	121-150	38	1222	0.07	0.05	0.09	0.12	0.09	0.16
16-19	14-30	53	1612	0.06	0.05	0.08	0.06	0.05	0.08
	31-60	238	3368	0.13	0.11	0.15	0.13	0.11	0.15
	61-90	470	5859	0.15	0.14	0.16	0.14	0.13	0.16
	91-120	807	8755	0.17	0.16	0.18	0.18	0.17	0.20
	121-150	581	7313	0.15	0.14	0.16	0.18	0.16	0.19
	151-180	243	2881	0.16	0.14	0.18	0.20	0.18	0.23
	181-210	70	524	0.25	0.19	0.32	0.32	0.25	0.41
	211-240	18	146	0.23	0.14	0.37	0.31	0.19	0.50
241-270	6	41	0.27	0.12	0.64	0.38	0.16	0.89	
20-44	14-30	406	7059	0.10	0.09	0.12	0.11	0.10	0.12
	31-60	1392	13851	0.18	0.17	0.19	0.19	0.18	0.20
	61-90	3518	27610	0.23	0.22	0.24	0.23	0.23	0.24
	91-120	7530	55660	0.25	0.24	0.25	0.25	0.25	0.26
	121-150	8441	59618	0.26	0.25	0.26	0.28	0.27	0.29
	151-180	5736	40841	0.26	0.25	0.26	0.29	0.29	0.30
	181-210	2930	18897	0.28	0.27	0.29	0.33	0.32	0.34
	211-240	1509	9185	0.30	0.28	0.32	0.36	0.34	0.38
	241-270	539	3509	0.28	0.26	0.31	0.36	0.33	0.39
271-300	58	363	0.29	0.22	0.38	0.41	0.31	0.55	
45-54	14-30	128	1388	0.14	0.12	0.17	0.14	0.12	0.17
	31-60	342	2605	0.20	0.18	0.23	0.21	0.18	0.23
	61-90	875	5437	0.25	0.23	0.27	0.26	0.24	0.28
	91-120	2320	13078	0.27	0.26	0.29	0.29	0.27	0.30
	121-150	3012	16657	0.28	0.27	0.29	0.29	0.28	0.30
	151-180	2348	12453	0.29	0.28	0.30	0.31	0.29	0.32
	181-210	1202	6058	0.31	0.29	0.33	0.34	0.32	0.36
	211-240	550	2634	0.32	0.29	0.35	0.36	0.33	0.40
	241-270	204	876	0.36	0.31	0.42	0.41	0.35	0.48
271-300	21	92	0.35	0.22	0.57	0.40	0.25	0.65	
55-64	14-30	69	765	0.13	0.10	0.17	0.13	0.10	0.17
	31-60	173	1461	0.17	0.15	0.20	0.18	0.15	0.21
	61-90	543	3267	0.24	0.22	0.26	0.26	0.23	0.28
	91-120	1965	10424	0.27	0.26	0.29	0.30	0.28	0.31
	121-150	3193	16258	0.28	0.27	0.30	0.30	0.29	0.31
	151-180	2739	13241	0.30	0.29	0.31	0.31	0.30	0.33
181-210	1396	6399	0.32	0.30	0.34	0.33	0.31	0.36	

				Unadjusted			Adjusted		
Age group in years	Time since second dose (days)	Cases (Positive)	Controls (Negative)	OR	Lower 95% CI	Upper 95% CI	OR	Lower 95% CI	Upper 95% CI
55-64	211-240	499	2304	0.31	0.28	0.35	0.35	0.31	0.38
	241-270	150	701	0.31	0.26	0.37	0.33	0.28	0.40
	271-300	6	52	0.17	0.07	0.39	0.19	0.08	0.45
≥65	14-30	51	260	0.28	0.21	0.38	0.27	0.20	0.37
	31-60	93	503	0.26	0.21	0.33	0.27	0.21	0.34
	61-90	167	888	0.27	0.23	0.32	0.28	0.24	0.34
	91-120	522	2461	0.30	0.27	0.33	0.34	0.31	0.38
	121-150	1604	7523	0.30	0.28	0.32	0.35	0.32	0.37
	151-180	2772	11499	0.34	0.32	0.36	0.36	0.34	0.38
	181-210	2447	9484	0.37	0.35	0.39	0.35	0.33	0.37
	211-240	974	3666	0.38	0.35	0.41	0.33	0.30	0.36
	241-270	105	514	0.29	0.23	0.36	0.25	0.20	0.31
271-300	1	25	0.06	0.01	0.42	0.06	0.01	0.43	
≥20 (adjusted for age group)	14-30	654	9472	0.12	0.11	0.13	0.12	0.11	0.13
	31-60	2000	18420	0.19	0.18	0.20	0.19	0.18	0.20
	61-90	5103	37202	0.24	0.23	0.25	0.24	0.24	0.25
	91-120	12337	81623	0.26	0.26	0.27	0.26	0.26	0.27
	121-150	16250	100056	0.28	0.28	0.29	0.28	0.28	0.29
	151-180	13595	78034	0.30	0.30	0.31	0.31	0.30	0.31
	181-210	7975	40838	0.34	0.33	0.35	0.34	0.33	0.35
	211-240	3532	17789	0.35	0.33	0.36	0.37	0.35	0.38
	241-270	998	5600	0.31	0.29	0.33	0.36	0.34	0.39
271-300	86	532	0.28	0.22	0.35	0.36	0.29	0.46	

OR=odds ratio; CI=Confidence interval

^a Adjusted for race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. For models for ages ≥20 years, ORs also adjusted for age group. Tests with missing SVI excluded from adjusted analyses.

^b OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity.

eTable 5. Unadjusted and adjusted ^a mRNA-1273 odds ratios (OR) ^b with 95% confidence intervals (CI) by time since second dose and age group, during the pre-Delta period (March 13-May 29, 2021)

Age group in years	Time since second dose (days)	Cases (Positive)	Controls (Negative)	Unadjusted			Adjusted		
				OR	Lower 95% CI	Upper 95% CI	OR	Lower 95% CI	Upper 95% CI
16-19	14-30	0	33	0	0	NA	0	0	NA
	31-60	0	29	0	0	NA	0	0	NA
	61-90	0	16	0	0	NA	0	0	NA
	91-120	0	8	0	0	NA	0	0	NA
20-44	14-30	5	1229	0.01	0.01	0.03	0.02	0.01	0.04
	31-60	25	1663	0.05	0.03	0.07	0.05	0.04	0.08
	61-90	30	1055	0.09	0.06	0.12	0.11	0.07	0.15
	91-120	7	388	0.06	0.03	0.12	0.08	0.04	0.17
	121-150	0	10	0	0	NA	0	0	NA
45-54	14-30	8	406	0.04	0.02	0.09	0.05	0.03	0.10
	31-60	12	582	0.05	0.03	0.08	0.06	0.03	0.10
	61-90	12	325	0.08	0.05	0.15	0.11	0.06	0.19
	91-120	2	101	0.04	0.01	0.18	0.07	0.02	0.27
	121-150	0	3	0	0	NA	0	0	NA
55-64	14-30	5	481	0.02	0.01	0.05	0.02	0.01	0.06
	31-60	9	539	0.03	0.02	0.07	0.04	0.02	0.08
	61-90	9	345	0.05	0.03	0.10	0.06	0.03	0.12
	91-120	4	86	0.09	0.03	0.26	0.12	0.04	0.34
	121-150	0	2	0	0	NA	0	0	NA
≥65	14-30	16	454	0.06	0.04	0.11	0.06	0.04	0.10
	31-60	20	816	0.04	0.03	0.07	0.04	0.03	0.07
	61-90	7	456	0.03	0.01	0.06	0.03	0.02	0.07
	91-120	1	76	0.02	0	0.17	0.03	0	0.20
	121-150	0	1	0	0	NA	0	0	NA
≥20 (adjusted by age group)	14-30	34	2570	0.04	0.03	0.05	0.04	0.03	0.05
	31-60	66	3600	0.05	0.04	0.06	0.05	0.04	0.06
	61-90	58	2181	0.07	0.06	0.10	0.08	0.06	0.10
	91-120	14	651	0.06	0.04	0.10	0.08	0.05	0.13
	121-150	0	16	0	0	NA	0	0	NA

OR=odds ratio; CI=Confidence interval; NA=Not applicable

^a Adjusted for race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. For models for ages ≥20 years, ORs also adjusted for age group. Tests with missing SVI excluded from adjusted analyses.

^b OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity.

eTable 6. Unadjusted and adjusted ^a mRNA-1273 odds ratios (OR) ^b with 95% confidence intervals (CI) by time since second dose and age group, during the intermediate period (May 30-July 17, 2021)

Age group in years	Time since second dose (days)	Cases (Positive)	Controls (Negative)	Unadjusted			Adjusted		
				OR	Lower 95% CI	Upper 95% CI	OR	Lower 95% CI	Upper 95% CI
16-19	14-30	0	91	0	0	NA	0	0	NA
	31-60	3	250	0.06	0.02	0.17	0.05	0.02	0.17
	61-90	6	163	0.17	0.07	0.38	0.15	0.06	0.34
	91-120	1	69	0.07	0.01	0.48	0.05	0.01	0.38
	121-150	1	18	0.26	0.03	1.91	0.20	0.03	1.53
	151-180	0	7	0	0	NA	0	0	NA
20-44	14-30	10	1106	0.04	0.02	0.08	0.05	0.03	0.09
	31-60	66	3759	0.08	0.06	0.10	0.08	0.06	0.10
	61-90	129	4084	0.14	0.12	0.17	0.12	0.10	0.15
	91-120	89	2154	0.19	0.15	0.23	0.17	0.14	0.21
	121-150	81	1664	0.22	0.18	0.27	0.21	0.17	0.27
	151-180	44	528	0.38	0.28	0.51	0.30	0.22	0.41
	181-210	0	2	0	0	NA	0	0	NA
45-54	14-30	3	252	0.05	0.02	0.15	0.06	0.02	0.18
	31-60	20	868	0.09	0.06	0.14	0.10	0.06	0.15
	61-90	40	1172	0.14	0.10	0.19	0.13	0.10	0.18
	91-120	28	648	0.17	0.12	0.25	0.16	0.11	0.24
	121-150	27	521	0.21	0.14	0.31	0.21	0.14	0.31
	151-180	19	176	0.43	0.27	0.70	0.39	0.24	0.63
	181-210	0	1	0	0	NA	0	0	NA
55-64	14-30	0	143	0	0	NA	0	0	NA
	31-60	9	711	0.05	0.02	0.09	0.05	0.03	0.10
	61-90	42	1231	0.13	0.09	0.17	0.13	0.09	0.17
	91-120	32	778	0.15	0.11	0.22	0.15	0.10	0.22
	121-150	24	482	0.18	0.12	0.28	0.17	0.11	0.27
	151-180	9	128	0.26	0.13	0.51	0.22	0.11	0.45
	181-210	0	1	0	0	NA	0	0	NA
≥65	14-30	1	57	0.06	0.01	0.45	0.07	0.01	0.49
	31-60	6	207	0.10	0.04	0.23	0.14	0.06	0.31
	61-90	20	557	0.13	0.08	0.20	0.14	0.09	0.23
	91-120	52	1155	0.16	0.12	0.21	0.16	0.12	0.22
	121-150	60	853	0.25	0.19	0.33	0.21	0.15	0.28
	151-180	7	123	0.20	0.09	0.43	0.14	0.06	0.31
≥20 (adjusted by age group)	14-30	14	1558	0.04	0.02	0.07	0.05	0.03	0.08
	31-60	101	5545	0.08	0.06	0.10	0.08	0.07	0.10
	61-90	231	7044	0.14	0.12	0.16	0.13	0.11	0.15
	91-120	201	4735	0.18	0.16	0.21	0.16	0.14	0.19
	121-150	192	3520	0.24	0.20	0.27	0.20	0.17	0.23
	151-180	79	955	0.36	0.29	0.45	0.27	0.21	0.34
	181-210	0	4	0	0	NA	0	0	NA

OR=odds ratio; CI=Confidence interval; NA=Not applicable

^a Adjusted for race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. For models for ages ≥ 20 years, ORs also adjusted for age group. Tests with missing SVI excluded from adjusted analyses.

^b OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity.

eTable 7. Unadjusted and adjusted ^a mRNA-1273 odds ratios (OR) ^b with 95% confidence intervals (CI) by time since second dose and age group, during the Delta period (July 18-October 17, 2021)

Age group in years	Time since second dose (days)	Cases (Positive)	Controls (Negative)	Unadjusted			Adjusted		
				OR	Lower 95% CI	Upper 95% CI	OR	Lower 95% CI	Upper 95% CI
16-19	14-30	2	208	0.02	<0.01	0.07	0.02	<0.01	0.08
	31-60	28	586	0.09	0.06	0.13	0.09	0.06	0.13
	61-90	96	1143	0.16	0.13	0.19	0.15	0.12	0.18
	91-120	124	1583	0.15	0.12	0.17	0.15	0.13	0.18
	121-150	96	1216	0.15	0.12	0.18	0.17	0.14	0.21
	151-180	50	607	0.15	0.11	0.20	0.18	0.14	0.25
	181-210	22	193	0.21	0.14	0.33	0.26	0.17	0.41
	211-240	6	73	0.15	0.07	0.35	0.21	0.09	0.47
241-270	1	20	0.09	0.01	0.69	0.14	0.02	1.01	
20-44	14-30	118	2861	0.08	0.06	0.09	0.08	0.06	0.09
	31-60	448	7220	0.11	0.10	0.12	0.11	0.10	0.13
	61-90	1464	17794	0.15	0.14	0.16	0.15	0.14	0.16
	91-120	3027	33901	0.16	0.16	0.17	0.17	0.16	0.17
	121-150	3338	34589	0.18	0.17	0.18	0.19	0.19	0.20
	151-180	2651	26049	0.19	0.18	0.19	0.21	0.20	0.22
	181-210	1815	15043	0.22	0.21	0.23	0.26	0.25	0.27
	211-240	944	7598	0.23	0.21	0.24	0.28	0.27	0.31
241-270	277	1755	0.29	0.25	0.33	0.38	0.34	0.43	
271-300	2	10	0.36	0.08	1.66	0.43	0.09	1.99	
45-54	14-30	29	584	0.08	0.05	0.11	0.08	0.05	0.11
	31-60	117	1466	0.12	0.10	0.15	0.13	0.10	0.15
	61-90	350	3721	0.14	0.13	0.16	0.15	0.14	0.17
	91-120	957	8651	0.17	0.16	0.18	0.18	0.17	0.19
	121-150	1158	10250	0.17	0.16	0.19	0.18	0.17	0.19
	151-180	1076	8482	0.20	0.18	0.21	0.21	0.20	0.23
	181-210	716	4927	0.22	0.21	0.24	0.25	0.23	0.27
	211-240	393	2490	0.24	0.22	0.27	0.28	0.25	0.31
241-270	90	540	0.26	0.21	0.32	0.3	0.24	0.38	
271-300	0	4	0	0	NA	0	0	NA	
55-64	14-30	22	365	0.09	0.06	0.13	0.08	0.05	0.13
	31-60	74	923	0.12	0.09	0.15	0.12	0.10	0.15
	61-90	288	2655	0.16	0.14	0.18	0.17	0.15	0.19
	91-120	809	7593	0.15	0.14	0.17	0.16	0.15	0.18
	121-150	1341	10660	0.18	0.17	0.19	0.19	0.18	0.20
	151-180	1227	9496	0.19	0.18	0.20	0.20	0.18	0.21
	181-210	713	5094	0.20	0.19	0.22	0.22	0.20	0.24
	211-240	321	2267	0.20	0.18	0.23	0.23	0.20	0.26
241-270	91	468	0.28	0.22	0.35	0.31	0.24	0.39	
271-300	0	1	0	0	NA	0	0	NA	
≥65	14-30	10	105	0.14	0.07	0.26	0.13	0.07	0.25
	31-60	40	254	0.22	0.16	0.31	0.23	0.17	0.33

Age group in years	Time since second dose (days)	Cases (Positive)	Controls (Negative)	Unadjusted			Adjusted		
				OR	Lower 95% CI	Upper 95% CI	OR	Lower 95% CI	Upper 95% CI
≥65	61-90	100	648	0.22	0.18	0.27	0.24	0.19	0.29
	91-120	313	2366	0.19	0.17	0.21	0.22	0.19	0.24
	121-150	955	7175	0.19	0.17	0.20	0.22	0.20	0.23
	151-180	1740	11383	0.22	0.20	0.23	0.23	0.22	0.24
	181-210	1484	8768	0.24	0.22	0.26	0.22	0.21	0.24
	211-240	637	3554	0.25	0.23	0.28	0.22	0.19	0.24
	241-270	64	322	0.28	0.22	0.37	0.22	0.17	0.29
	271-300	0	1	0	0	NA	0	0	NA
≥20 (adjusted for age group)	14-30	179	3915	0.08	0.07	0.09	0.08	0.07	0.09
	31-60	679	9863	0.12	0.11	0.13	0.12	0.11	0.13
	61-90	2202	24818	0.15	0.15	0.16	0.16	0.15	0.16
	91-120	5106	52511	0.17	0.16	0.17	0.17	0.16	0.17
	121-150	6792	62674	0.19	0.18	0.19	0.19	0.19	0.19
	151-180	6694	55410	0.21	0.20	0.22	0.21	0.21	0.22
	181-210	4728	33832	0.24	0.24	0.25	0.25	0.24	0.26
	211-240	2295	15909	0.25	0.24	0.26	0.27	0.26	0.29
	241-270	522	3085	0.29	0.27	0.32	0.35	0.32	0.38
	271-300	2	16	0.22	0.05	0.95	0.26	0.06	1.13

OR=odds ratio; CI=Confidence interval; NA=Not applicable

^a Adjusted for race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. For models for ages ≥20 years, ORs also adjusted for age group. Tests with missing SVI excluded from adjusted analyses.

^b OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity.

eTable 8. Unadjusted and adjusted ^a Ad26.CO2V.S odds ratios (OR) ^b with 95% confidence intervals (CI) by time since dose and age group, during the pre-Delta period (March 13-May 29, 2021)

Age group in years	Time since dose (days)	Cases (Positive)	Controls (Negative)	Unadjusted			Adjusted		
				OR	Lower 95% CI	Upper 95% CI	OR	Lower 95% CI	Upper 95% CI
16-19	14-30	0	8	0	0	NA	0	0	NA
	31-60	0	21	0	0	NA	0	0	NA
	61-90	1	2	1.89	0.17	20.83	1.72	0.15	20.22
20-44	14-30	91	570	0.49	0.39	0.61	0.52	0.42	0.65
	31-60	65	659	0.30	0.23	0.39	0.39	0.30	0.50
	61-90	9	114	0.24	0.12	0.48	0.36	0.18	0.71
45-54	14-30	39	186	0.47	0.34	0.67	0.48	0.34	0.69
	31-60	34	211	0.36	0.25	0.52	0.44	0.31	0.64
	61-90	4	44	0.21	0.07	0.57	0.30	0.11	0.84
55-64	14-30	34	168	0.41	0.28	0.59	0.40	0.28	0.58
	31-60	24	190	0.26	0.17	0.39	0.27	0.18	0.42
	61-90	3	42	0.14	0.04	0.47	0.18	0.06	0.60
≥65	14-30	15	40	0.68	0.37	1.23	0.68	0.37	1.25
	31-60	19	65	0.53	0.32	0.88	0.56	0.33	0.95
	61-90	3	17	0.32	0.09	1.09	0.37	0.10	1.28
≥20 (adjusted for age group)	14-30	179	964	0.52	0.44	0.60	0.50	0.42	0.58
	31-60	142	1125	0.35	0.29	0.42	0.39	0.33	0.47
	61-90	19	217	0.24	0.15	0.39	0.31	0.20	0.50

OR=odds ratio; CI=Confidence interval; NA=Not applicable

^a Adjusted for race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. For models for ages ≥20 years, ORs also adjusted for age group. Tests with missing SVI excluded from adjusted analyses.

^b OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity.

eTable 9. Unadjusted and adjusted ^a Ad26.CO2V.S odds ratios (OR) ^b with 95% confidence intervals (CI) by time since dose and age group, during the intermediate period (May 30-July 17, 2021)

Age group in years	Time since dose (days)	Cases (Positive)	Controls (Negative)	Unadjusted			Adjusted		
				OR	Lower 95% CI	Upper 95% CI	OR	Lower 95% CI	Upper 95% CI
16-19	14-30	1	11	0.42	0.05	3.24	0.45	0.06	3.61
	31-60	1	30	0.15	0.02	1.12	0.18	0.02	1.38
	61-90	8	64	0.57	0.27	1.20	0.58	0.27	1.24
	91-120	8	39	0.94	0.44	2.02	0.79	0.36	1.73
	121-150	1	7	0.66	0.08	5.34	0.40	0.05	3.38
20-44	14-30	29	164	0.80	0.54	1.18	0.93	0.62	1.40
	31-60	47	429	0.49	0.37	0.67	0.54	0.40	0.74
	61-90	91	1112	0.37	0.30	0.46	0.41	0.33	0.51
	91-120	153	996	0.69	0.58	0.82	0.57	0.48	0.68
	121-150	23	152	0.68	0.44	1.06	0.48	0.31	0.75
45-54	14-30	5	40	0.50	0.20	1.27	0.43	0.17	1.11
	31-60	15	119	0.50	0.29	0.87	0.53	0.30	0.92
	61-90	31	292	0.42	0.29	0.62	0.45	0.30	0.66
	91-120	61	354	0.69	0.52	0.91	0.62	0.46	0.82
	121-150	13	52	1.00	0.54	1.84	0.74	0.39	1.39
55-64	14-30	6	37	0.60	0.25	1.43	0.52	0.21	1.28
	31-60	9	85	0.39	0.20	0.78	0.46	0.23	0.93
	61-90	24	227	0.39	0.26	0.60	0.40	0.26	0.63
	91-120	55	283	0.72	0.53	0.97	0.63	0.46	0.87
	121-150	14	64	0.81	0.45	1.45	0.60	0.32	1.11
≥65	14-30	0	8	0	0	NA	0	0	NA
	31-60	4	27	0.52	0.18	1.49	0.61	0.20	1.86
	61-90	11	67	0.58	0.30	1.10	0.67	0.34	1.33
	91-120	12	79	0.53	0.29	0.99	0.47	0.25	0.91
	121-150	2	27	0.26	0.06	1.10	0.22	0.05	1.01
≥20 (adjusted for age group)	14-30	40	249	0.70	0.50	0.97	0.71	0.50	1.00
	31-60	75	660	0.49	0.39	0.63	0.53	0.42	0.68
	61-90	157	1698	0.40	0.34	0.47	0.43	0.36	0.51
	91-120	281	1712	0.71	0.63	0.81	0.58	0.51	0.66
	121-150	52	295	0.77	0.57	1.03	0.52	0.39	0.71

OR=odds ratio; CI=Confidence interval; NA=Not applicable

^a Adjusted for race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. For models for ages ≥20 years, ORs also adjusted for age group. Tests with missing SVI excluded from adjusted analyses.

^b OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity.

eTable 10. Unadjusted and adjusted ^a Ad26.COVS odds ratios (OR) ^b with 95% confidence intervals (CI) by time since dose and age group, during the Delta period (July 18-October 17, 2021)

Age group in years	Time since dose (days)	Cases (Positive)	Controls (Negative)	Unadjusted			Adjusted		
				OR	Lower 95% CI	Upper 95% CI	OR	Lower 95% CI	Upper 95% CI
16-19	14-30	11	48	0.42	0.22	0.82	0.42	0.21	0.81
	31-60	28	109	0.48	0.31	0.72	0.48	0.31	0.73
	61-90	32	163	0.36	0.25	0.53	0.37	0.25	0.54
	91-120	63	268	0.44	0.33	0.57	0.42	0.32	0.55
	121-150	77	367	0.39	0.30	0.50	0.39	0.31	0.51
	151-180	62	302	0.38	0.29	0.50	0.45	0.34	0.59
	181-210	18	119	0.28	0.17	0.46	0.37	0.22	0.61
	211-240	1	4	0.46	0.05	4.15	0.63	0.07	5.71
20-44	14-30	244	716	0.62	0.54	0.72	0.61	0.53	0.71
	31-60	519	1583	0.60	0.54	0.66	0.58	0.53	0.64
	61-90	776	2568	0.55	0.51	0.60	0.54	0.50	0.59
	91-120	1384	5344	0.47	0.44	0.50	0.47	0.44	0.50
	121-150	2250	9181	0.45	0.43	0.47	0.46	0.44	0.48
	151-180	1816	7902	0.42	0.40	0.44	0.46	0.44	0.49
	181-210	778	3785	0.37	0.35	0.40	0.46	0.42	0.50
	211-240	100	432	0.42	0.34	0.52	0.55	0.44	0.69
45-54	14-30	96	213	0.69	0.55	0.88	0.68	0.53	0.87
	31-60	174	420	0.64	0.53	0.76	0.62	0.52	0.74
	61-90	297	652	0.70	0.61	0.81	0.69	0.60	0.80
	91-120	524	1404	0.58	0.52	0.64	0.59	0.53	0.65
	121-150	876	2770	0.49	0.45	0.53	0.49	0.46	0.53
	151-180	681	2433	0.43	0.40	0.47	0.45	0.42	0.50
	181-210	354	1320	0.41	0.37	0.47	0.45	0.40	0.51
	211-240	49	165	0.46	0.33	0.63	0.51	0.37	0.70
55-64	14-30	61	117	0.75	0.55	1.03	0.74	0.54	1.01
	31-60	128	269	0.69	0.56	0.85	0.67	0.54	0.83
	61-90	176	473	0.54	0.45	0.64	0.53	0.44	0.63
	91-120	350	1064	0.48	0.42	0.54	0.49	0.43	0.56
	121-150	723	2301	0.45	0.42	0.49	0.47	0.43	0.51
	151-180	684	2281	0.43	0.40	0.47	0.45	0.41	0.49
	181-210	361	1341	0.39	0.35	0.44	0.40	0.35	0.45
	211-240	51	197	0.37	0.27	0.51	0.37	0.27	0.51
≥65	14-30	24	34	1.00	0.59	1.69	0.96	0.57	1.64
	31-60	30	76	0.56	0.37	0.86	0.53	0.35	0.82
	61-90	57	148	0.55	0.40	0.74	0.57	0.42	0.78
	91-120	99	282	0.50	0.39	0.63	0.56	0.44	0.70
	121-150	196	665	0.42	0.36	0.49	0.44	0.38	0.53
	151-180	285	814	0.50	0.43	0.57	0.53	0.46	0.61
	181-210	163	470	0.49	0.41	0.59	0.47	0.39	0.57
	211-240	24	94	0.36	0.23	0.57	0.34	0.21	0.54

Age group in years	Time since dose (days)	Cases (Positive)	Controls (Negative)	Adjusted			Unadjusted		
				OR	Lower 95% CI	Upper 95% CI	OR	Lower 95% CI	Upper 95% CI
≥20 (adjusted for age group)	14-30	425	1080	0.68	0.61	0.77	0.65	0.58	0.73
	31-60	851	2348	0.63	0.58	0.68	0.60	0.55	0.65
	61-90	1306	3841	0.59	0.56	0.63	0.57	0.53	0.60
	91-120	2357	8094	0.51	0.48	0.53	0.49	0.47	0.52
	121-150	4045	14917	0.47	0.46	0.49	0.46	0.45	0.48
	151-180	3466	13430	0.45	0.43	0.47	0.46	0.45	0.48
	181-210	1656	6916	0.42	0.39	0.44	0.46	0.44	0.49
	211-240	224	888	0.44	0.38	0.51	0.50	0.43	0.58

OR=odds ratio; CI=Confidence interval

^a Adjusted for race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. For models for ages ≥20 years, ORs also adjusted for age group. Tests with missing SVI excluded from adjusted analyses.

^b OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity.

eTable 11. Comparison of characteristics of symptomatic persons ages ≥20 years tested for SARS-CoV-2 in *Increasing Community Access to Testing (ICATT) 2.0* with laboratory-based nucleic acid amplification test (NAAT) with known and unknown vaccination status—United States, March 13–October 17, 2021

Characteristic	Known vaccination status		Unknown vaccination status	
	n	%	n	%
Total	1,756,332		144,817	
SARS-CoV-2 test result				
Negative	1,382,215	78.7%	113,649	78.5%
Positive	374,117	21.3%	31,168	21.5%
Age group in years				
20-44	1,167,367	66.5%	104,348	72.1%
45-54	260,223	14.8%	20,222	14.0%
55-64	204,047	11.6%	13,321	9.2%
65-74	96,620	5.5%	5,187	3.6%
75-84	23,963	1.4%	1,411	1.0%
≥85	4,112	0.2%	328	0.2%
Race^a				
American Indian or Alaska Native	16,237	0.9%	1,339	0.9%
Asian	106,964	6.1%	9,364	6.5%
Black or African American	195,765	11.1%	13,651	9.4%
Native Hawaiian or Other Pacific Islander	11,537	0.7%	1,154	0.8%
White	1,174,430	66.9%	83,608	57.7%
Other	121,942	6.9%	14,755	10.2%
Not Reported	129,457	7.4%	20,946	14.5%
Ethnicity^a				
Hispanic/Latino	312,052	17.8%	26,180	18.1%
Not Hispanic/Latino	1,292,573	73.6%	87,305	60.3%
Not Reported	151,707	8.6%	31,332	21.6%
Site census tract social vulnerability index (SVI)^b				
SVI <0.5 (less socially vulnerable)	787,893	44.9%	65,303	45.1%
SVI 0.5-1.0 (more socially vulnerable)	963,522	54.9%	78,754	54.4%
Missing SVI	4,917	0.3%	760	0.5%

^a Race and ethnicity were self-reported from fixed categories provided at test registration. Other race was an available option at test registration at 2 of 3 pharmacy chains.

^b Testing site census tract SVI was an available variable in ICATT data. SVI is assigned for all US census tracts by CDC/ATSDR (Agency for Toxic Substances and Disease Registry) based on US Census data. Higher SVI indicates greater social vulnerability.

eTable 12. Comparison of characteristics of symptomatic persons ages 12-19 years tested for SARS-CoV-2 in Increasing Community Access to Testing (2.0) with laboratory-based nucleic acid amplification test (NAAT) with known and unknown vaccination Status--United States, April 15-October 17, 2021 for ages 16-19 years and June 15-October 17, 2021 for ages 12-15 years

Characteristic	Known vaccination status		Unknown vaccination status	
	n	%	n	%
Total	197,105		30,183	
SARS-CoV-2 test result				
Negative	155,387	78.8%	24,476	81.1%
Positive	41,718	21.2%	5,707	18.9%
Age group in years				
12-15 ^a	80,188	40.7%	19,267	63.8%
16-19 ^b	116,917	59.3%	10,916	36.2%
Race^c				
American Indian or Alaska Native	2,504	1.3%	354	1.2%
Asian	11,418	5.8%	1,437	4.8%
Black or African American	27,758	14.1%	3,376	11.2%
Native Hawaiian or Other Pacific Islander	1,665	0.8%	214	0.7%
White	121,281	61.5%	17,395	57.6%
Other	17,157	8.7%	3,818	12.6%
Not Reported	15,322	7.8%	3,589	11.9%
Ethnicity^c				
Hispanic/Latino	50,308	25.5%	6,804	22.5%
Not Hispanic/Latino	130,434	66.2%	18,931	62.7%
Not Reported	16,363	8.3%	4,448	14.7%
Site census tract social vulnerability index (SVI)^d				
SVI <0.5 (less socially vulnerable)	85,813	43.5%	13,339	44.2%
SVI 0.5-1.0 (more socially vulnerable)	110,846	56.2%	16,783	55.6%
Missing SVI	446	0.2%	61	0.2%

^a Data from adolescents ages 12-15 years were included if their test dates occurred from June 15, 2021 (5 weeks after BNT162b2 Emergency Use Authorization [EUA] for this age group) to October 17, 2021.

^b Data for adolescents 16-19 years were included from April 15, 2021 (prior to that date ages 0-19 years were reported in aggregate to ICATT) to October 17, 2021.

^c Race and ethnicity were self-reported from fixed categories provided at test registration. Other race was an available option at test registration at 2 of 3 pharmacy chains.

^d Testing site census tract SVI was an available variable in ICATT data. SVI is assigned for all US census tracts by CDC/ATSDR (Agency for Toxic Substances and Disease Registry) based on US Census data. Higher SVI indicates greater social vulnerability.

eTable 13. Odds ratios (OR) ^a with 95% confidence intervals (CI) for day 14, mean of daily OR estimates from days 14-60 (initial OR), and end day for Figures 2, 3, and 4.

Vaccine product	Age group (years)	Pre-Delta period ^b day 14 ^c OR (95% CI)	Pre-Delta period initial OR ^d (95% CI)	Pre-Delta period end day ^e	Pre-Delta period end day OR (95% CI)	Delta ^f period day 14 OR (95% CI)	Delta period initial OR (95% CI)	Delta period end day	Delta period end day OR (95% CI)
Figure 2: Association of COVID-19 Vaccination and Symptomatic SARS-CoV-2 Infection by Day Since Vaccination Among Adults 20 Years and Older									
BNT162b2	≥20	0.04 (0.02, 0.07)	0.10 (0.09, 0.11)	111	0.16 (0.12, 0.22)	0.12 (0.11, 0.13)	0.16 (0.16, 0.17)	280	0.37 (0.33, 0.40)
mRNA-1273	≥20	0.03 (0.02, 0.07)	0.05 (0.04, 0.05)	93	0.08 (0.06, 0.12)	0.08 (0.07, 0.09)	0.10 (0.10, 0.11)	266	0.35 (0.31, 0.39)
Ad26.COVS.S	≥20	0.67 (0.48, 0.95)	0.42 (0.37, 0.47)	66	0.32 (0.23, 0.45)	0.66 (0.59, 0.73)	0.62 (0.58, 0.65)	224	0.48 (0.41, 0.56)
Figure 3: Association of COVID-19 Vaccination and Symptomatic SARS-CoV-2 Infection by Day Since Vaccination by Adult Age Group and Vaccine Product									
BNT162b2	20-44	0.02 (0.01, 0.06)	0.10 (0.08, 0.12)	107	0.19 (0.13, 0.28)	0.11 (0.10, 0.12)	0.16 (0.15, 0.16)	279	0.39 (0.35, 0.44)
BNT162b2	45-54	0.06 (0.02, 0.19)	0.12 (0.08, 0.15)	90	0.19 (0.12, 0.30)	0.13 (0.11, 0.15)	0.18 (0.16, 0.19)	275	0.42 (0.34, 0.51)
BNT162b2	55-64	0.06 (0.02, 0.17)	0.08 (0.06, 0.10)	87	0.16 (0.10, 0.26)	0.11 (0.09, 0.14)	0.16 (0.14, 0.18)	269	0.34 (0.28, 0.42)
BNT162b2	≥65	0.04 (0.01, 0.13)	0.11 (0.08, 0.14)	83	0.14 (0.09, 0.22)	0.25 (0.19, 0.32)	0.27 (0.22, 0.31)	260	0.23 (0.18, 0.29)
mRNA-1273	20-44	0.01 (<0.01, 0.05)	0.04 (0.03, 0.06)	88	0.10 (0.07, 0.16)	0.07 (0.06, 0.08)	0.10 (0.09, 0.11)	265	0.40 (0.35, 0.46)
mRNA-1273	45-54	0.03 (<0.01, 0.16)	0.05 (0.03, 0.08)	68	0.11 (0.06, 0.19)	0.07 (0.05, 0.10)	0.10 (0.09, 0.12)	257	0.30 (0.24, 0.37)
mRNA-1273	55-64	<0.01 (<0.01, 0.11)	0.03 (0.01, 0.05)	68	0.07 (0.04, 0.13)	0.09 (0.07, 0.13)	0.12 (0.09, 0.14)	258	0.28 (0.22, 0.36)
mRNA-1273	≥65	0.12 (0.05, 0.30)	0.05 (0.03, 0.06)	55	0.04 (0.02, 0.07)	0.21 (0.14, 0.31)	0.21 (0.15, 0.26)	254	0.20 (0.15, 0.26)
Ad26.COVS.S	20-44	0.90 (0.57, 1.41)	0.42 (0.34, 0.49)	60	0.30 (0.19, 0.48)	0.61 (0.53, 0.71)	0.58 (0.54, 0.63)	221	0.48 (0.39, 0.59)
Ad26.COVS.S	45-54	0.30 (0.12, 0.75)	0.45 (0.33, 0.58)	52	0.42 (0.24, 0.75)	0.68 (0.53, 0.87)	0.68 (0.59, 0.77)	219	0.50 (0.38, 0.66)

Vaccine product	Age group (years)	Pre-Delta period ^b day 14 ^c OR (95% CI)	Pre-Delta period initial OR ^d (95% CI)	Pre-Delta period end day ^e	Pre-Delta period end day OR (95% CI)	Delta ^f period day 14 OR (95% CI)	Delta period initial OR (95% CI)	Delta period end day	Delta period end day OR (95% CI)
Ad26.COVS.S	55-64	0.52 (0.23, 1.18)	0.30 (0.21, 0.39)	49	0.22 (0.12, 0.39)	0.77 (0.57, 1.03)	0.67 (0.55, 0.78)	219	0.36 (0.27, 0.47)
Ad26.COVS.S	≥65	1.33 (0.35, 5.10)	0.64 (0.38, 0.90)	43	0.65 (0.33, 1.27)	0.93 (0.56, 1.55)	0.74 (0.52, 0.97)	216	0.39 (0.27, 0.55)
Figure 4: Association of COVID-19 Vaccination and Symptomatic SARS-CoV-2 Infection by Day Since Vaccination by Adolescent Age Group and Vaccine Product									
BNT162b2	12-15	NA ^g	NA ^g	NA ^g	NA ^g	0.03 (0.02, 0.05)	0.06 (0.05, 0.06)	127	0.11 (0.08, 0.15)
BNT162b2	16-19	NA ^g	NA ^g	NA ^g	NA ^g	0.06 (0.05, 0.08)	0.10 (0.09, 0.11)	231	0.38 (0.27, 0.53)
mRNA-1273 ^h	16-19	NA ^g	NA ^g	NA ^g	NA ^g	0.01 (<0.01, 0.04)	0.06 (0.04, 0.08)	203	0.23 (0.17, 0.31)
Ad26.COVS.S ^h	16-19	NA ^g	NA ^g	NA ^g	NA ^g	0.48 (0.25, 0.94)	0.46 (0.30, 0.62)	184	0.43 (0.31, 0.58)

OR=odds ratio; CI=confidence interval; NA=Not applicable

^a OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity. ORs adjusted for race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. For models for ages ≥20 years, ORs also adjusted for age group. Tests with missing SVI excluded from adjusted analyses.

^b Pre-Delta period: March 13-May 29, 2021.

^c Day 14 after second dose for BNT162b2 and mRNA-1273 or after the dose for Ad26.COVS.S.

^d Initial OR is the mean of the daily OR estimates on days 14-60 following receipt of the second dose for BNT162b2 and mRNA-1273 or after the dose for Ad26.COVS.S. It summarizes the OR during the initial period after vaccination.

^e End day defined as the day after which ≤10 cases remained for each product-, age-group- and period-specific model.

^f Delta period: July 18-October 17, 2021.

^g For adolescent age groups (12-15 and 16-19 years) in the pre-Delta period, data were too sparse to estimate ORs by day since vaccination.

^h mRNA-1273 and Ad26.COVS.S were only authorized for persons ages ≥18 years.

eTable 14. Significance testing for comparisons of mean of daily odds ratios (OR)^a estimates from days 14-60 after vaccination (initial OR) between vaccine products (BNT162b2, mRNA-1273, and Ad26.COVS) and time periods (pre-Delta vs. Delta) for adults ages ≥20 years

	Vaccine product			p-value ^d for comparison of initial OR for different vaccine products by pre-Delta or Delta period
	BNT162b2	mRNA-1273	Ad26.COVS	
Initial OR^b (95% CI) for pre-Delta period^c	0.10 (0.09, 0.11)	0.05 (0.04, 0.05)	0.42 (0.37, 0.47)	BNT162b2 vs. mRNA1273: p<0.001 BNT162b2 vs. Ad26.COVS: p<0.001 mRNA1273 vs. Ad26.COVS: p<0.001
Initial OR (95% CI) for Delta period^e	0.16 (0.16, 0.17)	0.10 (0.10, 0.11)	0.62 (0.58, 0.65)	BNT162b2 vs. mRNA1273: p<0.001 BNT162b2 vs. Ad26.COVS: p<0.001 mRNA1273 vs. Ad26.COVS: p<0.001
p-value^d for comparison of initial OR in pre-Delta vs. Delta period by vaccine product	p<0.001	p<0.001	p<0.001	

OR=odds ratio; CI=Confidence interval

^a OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity. ORs adjusted for age group, race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. Tests with missing SVI excluded from adjusted analyses.

^b Initial OR is the mean of the daily OR estimates on days 14-60 following receipt of the second dose for BNT162b2 and mRNA-1273 or after the dose for Ad26.COVS. It summarizes the OR during the initial period after vaccination.

^c Pre-Delta period: March 13-May 29, 2021.

^d Two-sided p-values comparing the magnitude of the association between vaccination and infection across products and study periods for adults ages ≥20 years were corrected for multiple comparisons using Benjamini-Hochberg false discovery rate (FDR), and results with FDR-adjusted p-value <0.001 were considered significant.

^e Delta period: July 18-October 17, 2021.

eTable 15. Characteristics of included adolescent cases and controls ages 12-19 years tested for SARS-CoV-2 in Increasing Community Access To Testing (ICATT) 2.0 -- United States, April 15-October 17, 2021 for ages 16-19 years and June 15-October 17, 2021 for ages 12-15 years

Characteristic	SARS-CoV-2 positive cases		SARS-CoV-2 negative controls	
	n	%	n	%
Total	39,422		140,690	
Age group in years				
12-15 ^a	14,988	38.0%	56,216	40.0%
16-19 ^b	24,434	62.0%	84,474	60.0%
Sex ^c	n=39,357		n=140,183	
Female	20,696	52.6%	76,108	54.3%
Male	18,644	47.4%	64,002	45.7%
Other	17	0.0%	73	0.1%
Race ^d	n=36,083		n=130,151	
American Indian/Alaska Native	531	1.5%	1,748	1.3%
Asian	1,137	3.2%	9,075	7.0%
Black or African American	7,035	19.5%	18,487	14.2%
Native Hawaiian or Other Pacific Islander	356	1.0%	1,168	0.9%
White	23,957	66.4%	87,117	66.9%
Other	3,067	8.5%	12,556	9.6%
Ethnicity ^d	n=35,927		n=129,144	
Hispanic/Latino	10,007	27.9%	35,287	27.3%
Region ^e				
New England	828	2.1%	6,666	4.7%
Mid-Atlantic	3,696	9.4%	19,713	14.0%
South Atlantic	8,829	22.4%	21,943	15.6%
East North Central	6,197	15.7%	25,051	17.8%
East South Central	2,728	6.9%	5,363	3.8%
West North Central	1,854	4.7%	7,833	5.6%
West South Central	4,147	10.5%	9,351	6.6%
Mountain	3,046	7.7%	12,897	9.2%
Pacific	8,054	20.4%	31,613	22.5%
Puerto Rico	43	0.1%	260	0.2%
Site census tract social vulnerability index (SVI) ^f	n=39,363		n=140,349	
SVI <0.5 (less socially vulnerable)	15,045	38.2%	63,123	45.0%
SVI 0.5-1.0 (more socially vulnerable)	24,318	61.8%	77,226	55.0%
Vaccination status				
Unvaccinated	35,369	89.7%	75,442	53.6%
Ad26.COVS fully vaccinated ^{g, h}	312	0.8%	1,562	1.1%

Characteristic	SARS-CoV-2 positive cases		SARS-CoV-2 negative controls	
	n	%	n	%
mRNA fully vaccinated ^g	3,741	9.5%	63,686	45.3%
BNT162b2 fully vaccinated ^g	3,305	8.4%	57,373	40.8%
mRNA-1273 fully vaccinated ^{g, h}	436	1.1%	6,313	4.5%
Periodⁱ				
Pre-Delta (March 13–May 29, 2021)	871	2.2%	3,625	2.6%
Intermediate (May 30–July 17, 2021)	1,552	3.9%	10,442	7.4%
Delta (July 18–October 17, 2021)	36,999	93.9%	126,623	90.0%

^a Data from adolescents ages 12-15 years were included if their test dates occurred from June 15, 2021 (5 weeks after BNT162b2 Emergency Use Authorization [EUA] for this age group) to October 17, 2021.

^b Data for adolescents 16-19 years were included from April 15, 2021 (prior to that date ages 0-19 years were reported in aggregate to ICATT) to October 17, 2021.

^c Tests with missing sex (n= 572) were combined with other sex to retain those tests in regression models.

^d Race and ethnicity were self-reported from fixed categories provided at test registration. Other race was an available option at test registration at 2 of 3 pharmacy chains. Unknown race (n= 13,878) and ethnicity (n=15,041) were coded as categorical levels within each variable to retain those tests in regression models.

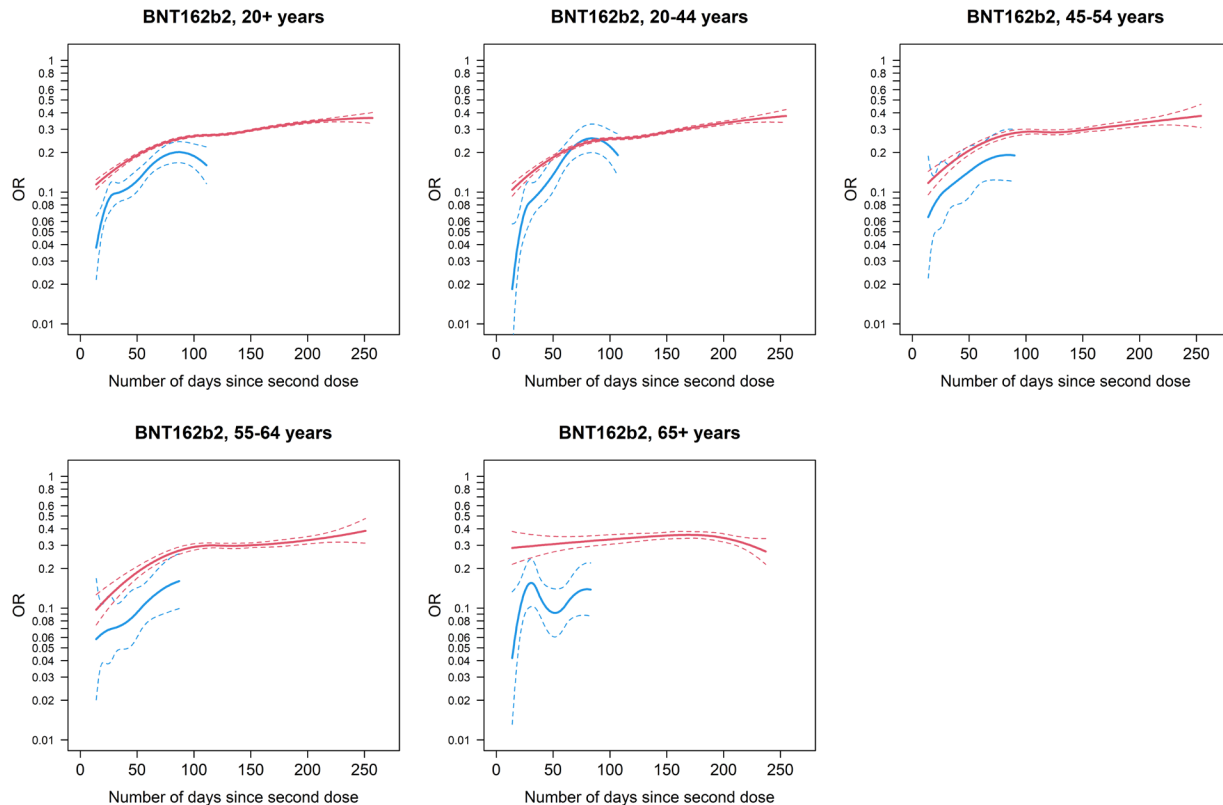
^e Regions defined as: New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont), Mid-Atlantic (New Jersey, New York, and Pennsylvania), South Atlantic (Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, District of Columbia, and West Virginia), East North Central (Illinois, Indiana, Michigan, Ohio, and Wisconsin), East South Central (Alabama, Kentucky, Mississippi, and Tennessee), West North Central (Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota), West South Central (Arkansas, Louisiana, Oklahoma, and Texas), Mountain (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming), Pacific (Alaska, California, Hawaii, Oregon, and Washington), and Puerto Rico.

^f Testing site census tract SVI was an available variable in ICATT data. SVI is assigned for all US census tracts by CDC/ATSDR (Agency for Toxic Substances and Disease Registry) based on US Census data. Tests with missing SVI (n=400) were included in unadjusted analyses but not included in adjusted analyses. All data for Puerto Rico were missing SVI, and therefore records from Puerto Rico were dropped from the adjusted analyses.

^g Fully vaccinated: 2 doses of an mRNA vaccine or 1 dose of the Ad26.COVID.S vaccine ≥ 14 days prior to SARS-CoV-2 test date.

^h mRNA-1273 and Ad26.COVID.S COVID-19 vaccines were only authorized for those ages ≥ 18 years during these time periods.

ⁱ Time periods defined based on the percentage of the Delta variant among US sequenced SARS-COV-2 specimens: pre-Delta (<14%: March 13–May 29, 2021), intermediate (14-90%: May 30–July 17, 2021), and Delta (>90%: July 18–October 17, 2021).



eFigure 1. Sensitivity analysis restricting to tests performed through September 23, 2021: association of BNT162b2 vaccination and symptomatic infection by day since vaccination by adult age group. a. Adults ages ≥ 20 years adjusted by age group. b. Adults ages 20-44 years. c. Adults ages 45-54 years. d. Adults ages 55-64 years. e. Adults ages ≥ 65 years.

This sensitivity analysis was conducted restricting the BNT162b2 model for adults ages ≥ 20 years during the Delta period to tests performed through September 23, 2021 (prior to initial booster dose recommendation for BNT162b2). Panels display odds ratios (OR), plotted on a logarithmic scale, for prior COVID-19 vaccination (by vaccine product) and SARS-CoV-2 test positivity by day since vaccination (starting at day 14 since second dose) in pre-Delta (March 13-May 29, 2021; shown in blue) and Delta (July 18-September 23; shown in red) periods with 95% confidence intervals (CI). OR adjusted for race, ethnicity, sex, testing site state, testing site census tract social vulnerability index (SVI), and calendar date as a continuous variable. For models for ages ≥ 20 years, ORs also adjusted for age group. Tests with missing SVI excluded from adjusted analyses. For this figure, the presented (fitted) curves were truncated on the day after which ≤ 10 cases remained for each product-and age-group-specific model, beyond which CIs widened.

Odds ratios (OR) ^a (95% CI) for day 14 and end day for eFigure 1.

Vaccine product	Age group (years)	Pre-Delta ^b period day 14 ^c OR (95% CI)	Pre-Delta period end day ^d	Pre-Delta period end day OR (95% CI)	Delta ^e period day 14 OR (95% CI)	Delta period end day	Delta period end day OR (95% CI)
BNT162b2	≥20	0.04 (0.02, 0.07)	111	0.16 (0.12, 0.22)	0.11 (0.11, 0.12)	257	0.37 (0.33, 0.40)
BNT162b2	20-44	0.02 (0.01, 0.06)	107	0.19 (0.13, 0.28)	0.10 (0.09, 0.12)	255	0.38 (0.34, 0.42)
BNT162b2	45-54	0.06 (0.02, 0.19)	90	0.19 (0.12, 0.30)	0.12 (0.10, 0.14)	254	0.38 (0.31, 0.46)
BNT162b2	55-64	0.06 (0.02, 0.17)	87	0.16 (0.10, 0.26)	0.10 (0.07, 0.13)	251	0.39 (0.31, 0.48)
BNT162b2	≥65	0.04 (0.01, 0.13)	83	0.14 (0.09, 0.22)	0.29 (0.21, 0.38)	237	0.27 (0.21, 0.34)

OR=odds ratio; CI=confidence interval; NA=Not applicable

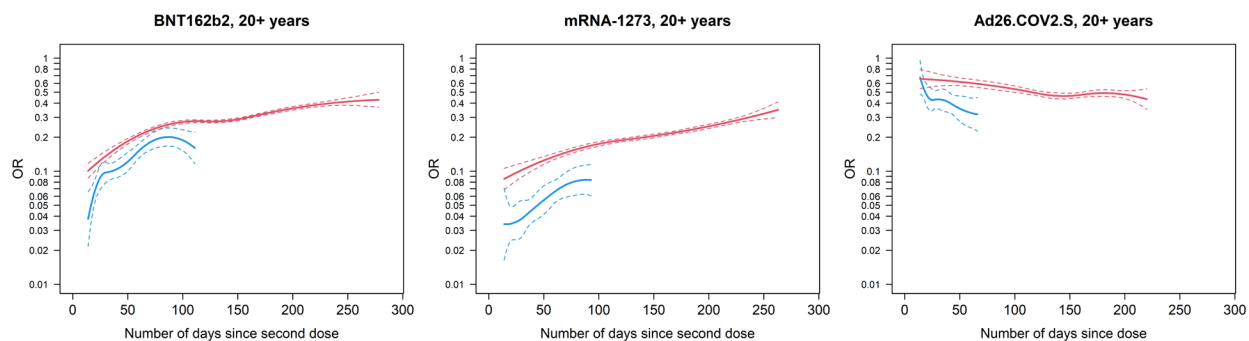
^a OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity. ORs adjusted for race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. For models for ages ≥20 years, ORs also adjusted for age group. Tests with missing SVI excluded from adjusted analyses.

^b Pre-Delta period: March 13-May 29, 2021.

^c Day 14 after second dose for BNT162b2.

^d End day defined as the day after which ≤10 cases remained for each age-group- and period-specific model.

^e Delta period (restricted): July 18-September 23, 2021.



eFigure 2. Sensitivity analysis excluding pharmacy chain C: association of COVID-19 vaccination and symptomatic infection by day since vaccination among adults ages ≥ 20 years.

a. BNT162b2 vaccine. b. mRNA-1273 vaccine. c. Ad26.COVS.2 vaccine.

Panels display odds ratios (OR), plotted on a logarithmic scale, for prior COVID-19 vaccination (by vaccine product) and SARS-CoV-2 test positivity by day since vaccination (starting at day 14 since second mRNA dose or Ad26.COVS.2 dose) in pre-Delta (March 13-May 29, 2021; shown in blue) and Delta (July 18-October 17; shown in red) periods with 95% confidence intervals (CI). OR adjusted for age group, race, ethnicity, sex, testing site state, testing site census tract social vulnerability index (SVI), and calendar date as a continuous variable. Tests with missing SVI excluded from adjusted analyses. For this figure, the presented (fitted) curves were truncated on the day after which ≤ 10 cases remained, beyond which CIs widened.

Odds ratios (ORs) ^a (95% CI) for day 14 and end day for eFigure 2.

Vaccine product	Age group (years)	Pre-Delta ^b period day 14 ^c OR (95% CI)	Pre-Delta period end day ^d	Pre-Delta period end day OR (95% CI)	Delta ^e period day 14 OR (95% CI)	Delta period end day	Delta period end day OR (95% CI)
BNT162b2	≥ 20	0.04 (0.02, 0.07)	111	0.16 (0.12, 0.22)	0.10 (0.09, 0.12)	278	0.43 (0.37, 0.50)
mRNA-1273	≥ 20	0.03 (0.02, 0.07)	93	0.08 (0.06, 0.12)	0.09 (0.07, 0.11)	263	0.35 (0.30, 0.41)
Ad26.COVS.2	≥ 20	0.67 (0.48, 0.95)	66	0.32 (0.23, 0.45)	0.66 (0.54, 0.80)	220	0.43 (0.35, 0.53)

OR=odds ratio; CI=confidence interval; NA=Not applicable

^a OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity. ORs adjusted for age group race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. Tests with missing SVI excluded from adjusted analyses.

^b Pre-Delta period: March 13-May 29, 2021.

^c Day 14 after second dose for BNT162b2 and mRNA-1273 or after the dose for Ad26.COVS.2.

^d End day defined as the day after which ≤ 10 cases remained for each product- and period-specific model.

^e Delta period: July 18-October 17, 2021.

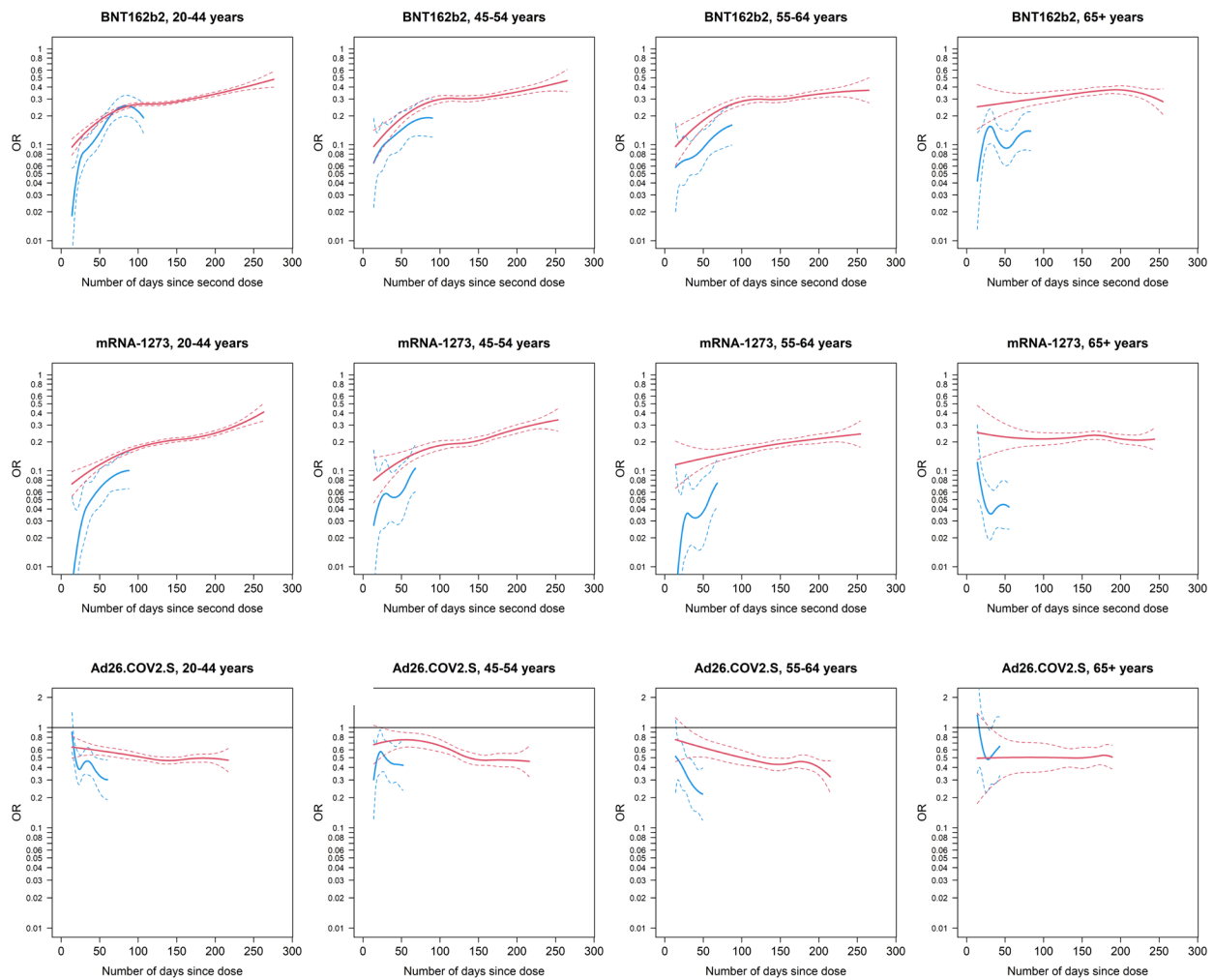


Figure 3. Sensitivity analysis excluding pharmacy chain C: association of COVID-19 vaccination and symptomatic infection by day since vaccination by adult age group and vaccine product.

a. BNT162b2 vaccine for adults ages 20-44 years. b. BNT162b2 vaccine for adults ages 45-54 years. c. BNT162b2 vaccine for adults ages 55-64 years. d. BNT162b2 vaccine for adults ages ≥ 65 years. e. mRNA-1273 vaccine for adults ages 20-44 years. f. mRNA-1273 vaccine for adults ages 45-54 years. g. mRNA-1273 vaccine for adults ages 55-64 years. h. mRNA-1273 vaccine for adults ages ≥ 65 years. i. Ad26.COVS vaccine for adults ages 20-44 years. j. Ad26.COVS vaccine for adults ages 45-54 years. k. Ad26.COVS vaccine for adults ages 55-64 years. l. Ad26.COVS vaccine for adults ages ≥ 65 years.

Panels display odds ratios (OR), plotted on a logarithmic scale, for prior COVID-19 vaccination (by vaccine product) and SARS-CoV-2 test positivity by day since vaccination (starting at day 14 since second mRNA dose or Ad26.COVS dose) in pre-Delta (March 13-May 29, 2021; shown in blue) and Delta (July 18-October 17; shown in red) periods with 95% confidence intervals (CI). OR adjusted for race, ethnicity, sex, testing site state, testing site census tract social vulnerability index (SVI), and calendar date as a continuous variable. Tests with missing SVI excluded from adjusted analyses. For this figure, the presented (fitted) curves were truncated on the day after which ≤ 10 cases remained for each product-

age-group-, and period-specific model, beyond which CIs widened. For Ad26.COVS.S, the y-axis truncated at 2.0, and data points above 2.0 are not shown.

Odds ratios (ORs) ^a (95% CI) for day 14 and end day for eFigure 3.

Vaccine product	Age group (years)	Pre-Delta ^b period day 14 ^c OR (95% CI)	Pre-Delta period end day ^d	Pre-Delta period end day OR (95% CI)	Delta ^e period day 14 OR (95% CI)	Delta period end day	Delta period end day OR (95% CI)
BNT162b2	20-44	0.02 (0.01, 0.06)	107	0.19 (0.13, 0.28)	0.09 (0.08, 0.11)	276	0.48 (0.40, 0.58)
BNT162b2	45-54	0.06 (0.02, 0.19)	90	0.19 (0.12, 0.30)	0.10 (0.06, 0.14)	265	0.47 (0.36, 0.61)
BNT162b2	55-64	0.06 (0.02, 0.17)	87	0.16 (0.10, 0.26)	0.10 (0.06, 0.15)	265	0.37 (0.27, 0.50)
BNT162b2	≥65	0.04 (0.01, 0.13)	83	0.14 (0.09, 0.22)	0.25 (0.15, 0.43)	255	0.28 (0.21, 0.38)
mRNA-1273	20-44	<0.01 (<0.01, 0.05)	88	0.10 (0.07, 0.16)	0.07 (0.05, 0.10)	263	0.41 (0.33, 0.51)
mRNA-1273	45-54	0.03 (<0.01, 0.16)	68	0.11 (0.06, 0.19)	0.08 (0.05, 0.14)	253	0.34 (0.26, 0.44)
mRNA-1273	55-64	<0.01 (<0.01, 0.11)	68	0.07 (0.04, 0.13)	0.12 (0.07, 0.20)	254	0.24 (0.18, 0.33)
mRNA-1273	≥65	0.12 (0.05, 0.30)	55	0.04 (0.02, 0.07)	0.25 (0.13, 0.48)	244	0.21 (0.16, 0.28)
Ad26.COVS.S	20-44	0.90 (0.57, 1.41)	60	0.30 (0.19, 0.48)	0.64 (0.49, 0.82)	217	0.47 (0.36, 0.62)
Ad26.COVS.S	45-54	0.30 (0.12, 0.75)	52	0.42 (0.24, 0.75)	0.68 (0.43, 1.05)	216	0.46 (0.32, 0.65)
Ad26.COVS.S	55-64	0.52 (0.23, 1.18)	49	0.22 (0.12, 0.39)	0.76 (0.46, 1.25)	215	0.32 (0.22, 0.47)
Ad26.COVS.S	≥65	1.34 (0.35, 5.11)	43	0.65 (0.33, 1.27)	0.49 (0.17, 1.39)	189	0.51 (0.39, 0.66)

OR=odds ratio; CI=confidence interval; NA=Not applicable

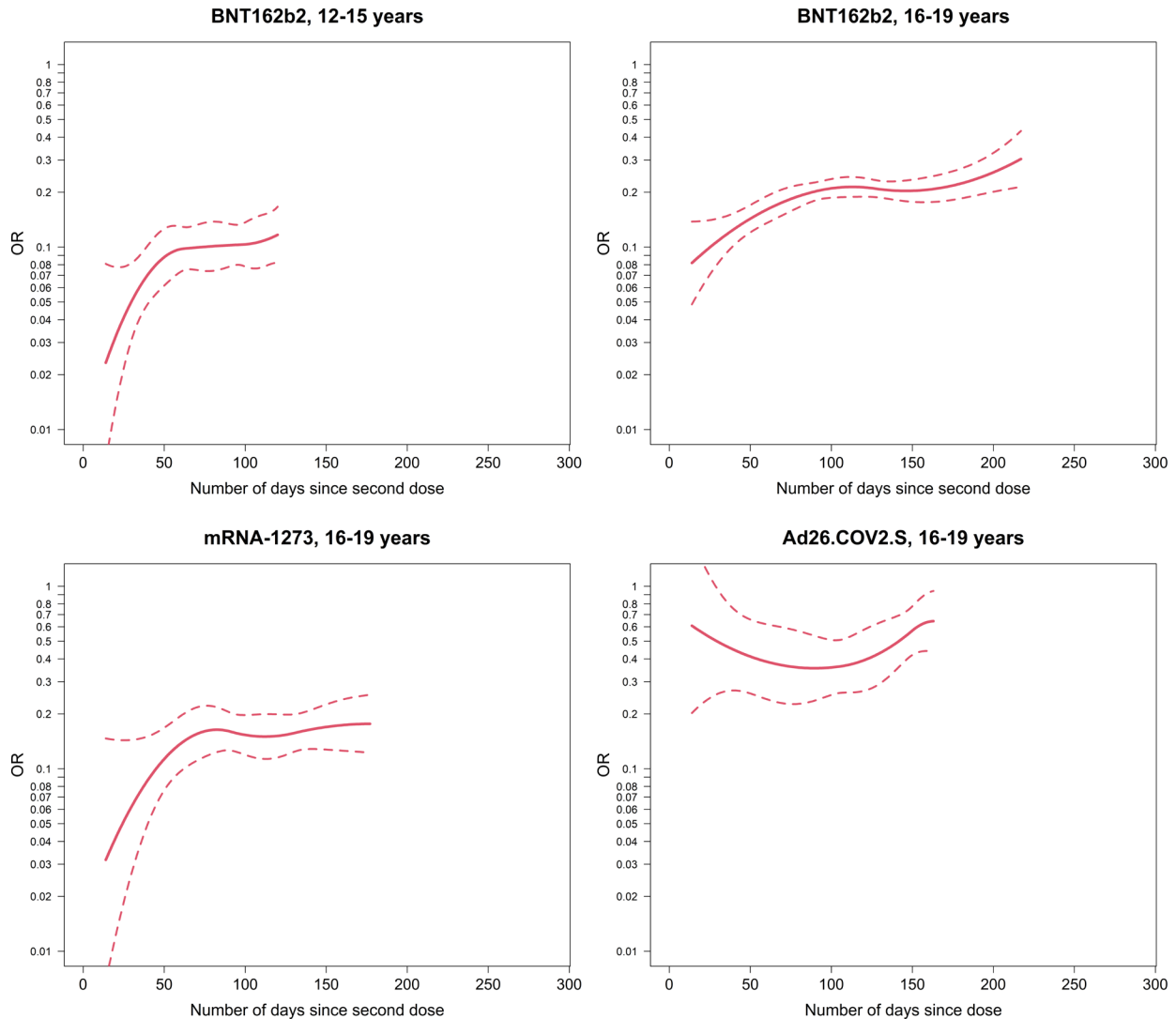
^a OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity. ORs adjusted for race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. Tests with missing SVI excluded from adjusted analyses.

^b Pre-Delta period: March 13-May 29, 2021.

^c Day 14 after second dose for BNT162b2 and mRNA-1273 or after the dose for Ad26.COVS.S.

^d End day defined as the day after which ≤10 cases remained for each product-, age-group- and period-specific model.

^e Delta period: July 18-October 17, 2021.



eFigure 4. Sensitivity analysis excluding pharmacy chain C: association of COVID-19 vaccination and symptomatic infection by day since vaccination by adolescent age group and vaccine product

a. BNT162b2 vaccine for adolescents ages 12-15 years. b. BNT162b2 vaccine for adolescents ages 16-19 years. c. mRNA-1273 vaccine for adolescents ages 16-19 years. d. Ad26.COV2.S vaccine for adolescents ages 16-19 years.

Panels display odds ratios (OR), plotted on a logarithmic scale, for prior COVID-19 vaccination (by vaccine product) and SARS-CoV-2 test positivity by day since vaccination (starting at day 14 since second mRNA dose or Ad26.COV2.S dose) in the Delta period (July 18-October 17, 2021) with 95% confidence intervals. OR adjusted for race, ethnicity, sex, testing site state, testing site census tract social vulnerability index (SVI), and calendar date as a continuous variable. Tests with missing SVI excluded from adjusted analyses. For this figure, the presented (fitted) curves were truncated on the day after which ≤ 10 cases remained for each product-and age-group-specific model, beyond which CIs widened.

mRNA-1273 and Ad26.COVS COVID-19 vaccines were only authorized for those ages ≥ 18 years during the Delta period. The y-axis was truncated at 1.0, and data points above 1.0 are not shown.

ORs ^a (95% CI) for day 14 and end day for eFigure 4.

Vaccine product	Age group (years)	Delta period ^b day 14 ^c OR (95% CI)	Delta period end day ^d	Delta period end day OR (95% CI)
BNT162b2	12-15	0.02 (0.01, 0.08)	120	0.12 (0.08, 0.17)
BNT162b2	16-19	0.08 (0.05, 0.14)	217	0.30 (0.21, 0.43)
mRNA-1273	16-19	0.03 (0.01, 0.15)	177	0.18 (0.12, 0.25)
Ad26.COVS	16-19	0.61 (0.20, 1.83)	163	0.64 (0.44, 0.94)

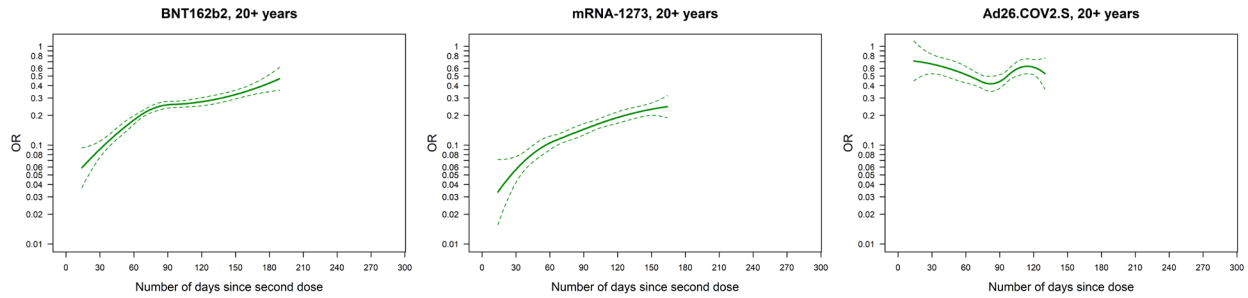
OR=odds ratio; CI=confidence interval; NA=Not applicable

^a OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity. ORs adjusted for race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. Tests with missing SVI excluded from adjusted analyses.

^b Delta period: July 18-October 17, 2021

^c Day 14 after second dose for BNT162b2 and mRNA-1273 or after the dose for Ad26.COVS.

^d End day defined as the day after which ≤ 10 cases remained for each product- and age-group-specific model.



eFigure 5. Association of COVID-19 vaccination and symptomatic infection by day since vaccination among adults ages ≥ 20 years during the intermediate period (May 30-July 17, 2021). a. BNT162b2 vaccine. b. mRNA-1273 vaccine. c. Ad26.COVS.2 vaccine.

Intermediate period defined as May 30-July 17, 2021. Panels display odds ratios (OR), plotted on a logarithmic scale, for prior COVID-19 vaccination (by vaccine product) and SARS-CoV-2 test positivity by day since vaccination (starting at day 14 since second mRNA dose or Ad26.COVS.2 dose) with 95% confidence intervals (CI). OR adjusted for age group, race, ethnicity, sex, testing site state, testing site census tract social vulnerability index (SVI), and calendar date as a continuous variable. Tests with missing SVI excluded from adjusted analyses. For this figure, the presented (fitted) curves were truncated on the day after which ≤ 10 cases remained for each product-specific model, beyond which CIs widened. The y-axis was truncated at 1.0, and data points above 1.0 are not shown.

Odds ratios (OR)^a (95% CI) for day 14 and end day for eFigure 5.

Vaccine product	Age group (years)	Intermediate period ^b day 14 ^c OR (95% CI)	Intermediate period end day ^d	Intermediate period end day OR (95% CI)
BNT162b2	≥ 20	0.06 (0.04, 0.09)	189	0.47 (0.36, 0.61)
mRNA-1273	≥ 20	0.03 (0.02, 0.07)	164	0.25 (0.19, 0.32)
Ad26.COVS.2	≥ 20	0.71 (0.45, 1.13)	130	0.53 (0.37, 0.76)

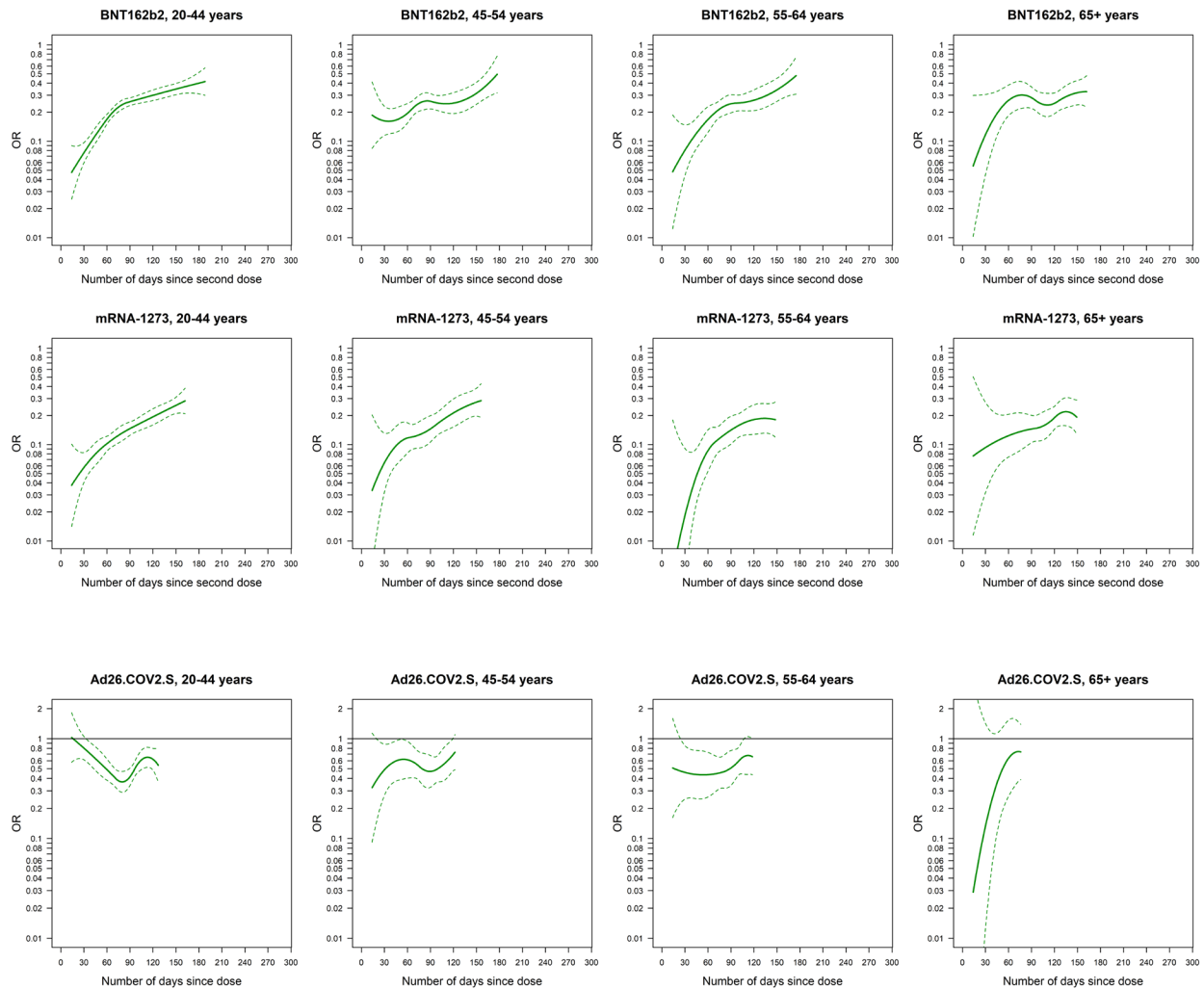
OR=odds ratio; CI=confidence interval; NA=Not applicable

^a OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity. ORs adjusted for age group, race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. Tests with missing SVI excluded from adjusted analyses.

^b Intermediate period: May 30-July 17, 2021.

^c Day 14 after second dose for BNT162b2 and mRNA-1273 or after the dose for Ad26.COVS.2.

^d End day defined as the day after which ≤ 10 cases remained for each product-specific model.



eFigure 6. Association of COVID-19 vaccination and symptomatic infection by day since vaccination by adult age group and vaccine product during the intermediate period (May 30-July 17, 2021).

a. BNT162b2 vaccine for adults ages 20-44 years. b. BNT162b2 vaccine for adults ages 45-54 years. c. BNT162b2 vaccine for adults ages 55-64 years. d. BNT162b2 vaccine for adults ages ≥ 65 years. e. mRNA-1273 vaccine for adults ages 20-44 years. f. mRNA-1273 vaccine for adults ages 45-54 years. g. mRNA-1273 vaccine for adults ages 55-64 years. h. mRNA-1273 vaccine for adults ages ≥ 65 years. i. Ad26.COVS vaccine for adults ages 20-44 years. j. Ad26.COVS vaccine for adults ages 45-54 years. k. Ad26.COVS vaccine for adults ages 55-64 years. l. Ad26.COVS vaccine for adults ages ≥ 65 years.

Intermediate period defined as May 30-July 17, 2021. Panels display odds ratios (OR), plotted on a logarithmic scale, for prior COVID-19 vaccination (by vaccine product) and SARS-CoV-2 test positivity by day since vaccination (starting at day 14 since second mRNA dose or Ad26.COVS dose) with 95% confidence intervals (CI). OR adjusted for race, ethnicity, sex, testing site state, testing site census tract social vulnerability index (SVI), and calendar date as a continuous variable. Tests with missing SVI excluded from adjusted analyses. For this figure, the presented (fitted) curves were truncated on the

day after which ≤10 cases remained for each product-and age-group-specific model, beyond which CIs widened. For Ad26.COVS.S (panels i-l), the Y-axis was truncated at 2.0, and ORs above 2.0 are not shown.

Odds ratios (ORs) ^a (95% CI) for day 14 and end day for eFigure 6.

Vaccine product	Age group (years)	Intermediate period ^b day 14 ^c OR (95% CI)	Intermediate period end day ^d	Intermediate period end day OR (95% CI)
BNT162b2	20-44	0.05 (0.03, 0.09)	188	0.42 (0.30, 0.58)
BNT162b2	45-54	0.19 (0.08, 0.41)	177	0.49 (0.32, 0.77)
BNT162b2	55-64	0.05 (0.01, 0.19)	175	0.48 (0.31, 0.75)
BNT162b2	≥65	0.06 (0.01, 0.30)	162	0.33 (0.22, 0.48)
mRNA-1273	20-44	0.04 (0.01, 0.10)	162	0.28 (0.21, 0.38)
mRNA-1273	45-54	0.03 (0.01, 0.20)	156	0.29 (0.19, 0.43)
mRNA-1273	55-64	<0.01 (<0.01, 0.18)	148	0.18 (0.12, 0.28)
mRNA-1273	≥65	0.08 (0.01, 0.51)	149	0.19 (0.13, 0.29)
Ad26.COVS.S	20-44	1.03 (0.58, 1.82)	127	0.54 (0.36, 0.81)
Ad26.COVS.S	45-54	0.32 (0.09, 1.13)	122	0.73 (0.49, 1.10)
Ad26.COVS.S	55-64	0.51 (0.16, 1.59)	118	0.66 (0.44, 1.00)
Ad26.COVS.S	≥65	0.03 (<0.01, 3.67)	76	0.74 (0.39, 1.39)

OR=odds ratio; CI=confidence interval; NA=Not applicable

^a OR for prior COVID-19 vaccination and SARS-CoV-2 test positivity. ORs adjusted for race, ethnicity, sex, testing site state, testing site census tract SVI, and calendar date as a continuous variable. Tests with missing SVI excluded from adjusted analyses.

^b Intermediate period: May 30-July 17, 2021.

^c Day 14 after second dose for BNT162b2 and mRNA-1273 or after the dose for Ad26.COVS.S.

^d End day defined as the day after which ≤10 cases remained for each product- and age-group-specific model.