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Representativeness of the Komodo Healthcare Map

The representativeness of the Komodo database has been demonstrated in an internal comparative study conducted by Komodo Health. The age, sex, and geographic distributions of patients in Komodo’s 2019 patient population were compared to those from the 2019 National Health Interview Survey (NHIS), an annual national survey conducted by the Centers for Disease Control and Prevention to monitor the health of the civilian noninstitutionalized population of the United States. The demographics of Komodo patients are highly comparable to those from the contemporary NHIS population as demonstrated by the close alignment in the statistics:

	Komodo	NHIS
Breakdown by age groups, %		
Age, y		
0-9	11.7	11.3
10-19	12.0	12.3
20-29	10.9	9.6
30-39	11.6	12.6
40-49	11.5	11.3
50-59	13.7	12.8
60-69	13.8	14.4
70-79	9.4	9.9
≥80	5.5	5.6
Proportion of female patients, %	55	54
Breakdown by geographic locations, %		
Northeast	19.5	16.9
South	38.0	36.5
Midwest	21.6	22.2
West	20.9	24.4

Supplementary Tables

Table S1: Objective-specific database inclusion criteria

Description	Database	Inclusion criteria
Brand distribution for the first dose of COVID-19 vaccine	Komodo TriNetX Cerner	All individuals who had at least 1 documented COVID-19 vaccine CPT/NDC/RxNorm code between Dec 11, 2020, and database-specific data cut date ^a
Completion and adherence to 2-dose COVID-19 vaccine	Komodo TriNetX Cerner CDC ^b	
Age gaps in vaccine completion and adherence	Komodo TriNetX Cerner CDC ^b	All individuals who had at least 1 CPT/NDC/RxNorm code for COVID-19 vaccines with 2-dose schedule between Dec 11, 2020, and (Database-specific data cut date - 42d) ^c
Geographic gaps in vaccine completion and adherence	Komodo	
Racial gap in vaccine completion and adherence	TriNetX Cerner CDC ^b	
Vaccine completion and adherence by payer type	Komodo	

^aData cut-off dates were as follows: Komodo Healthcare Map, August 2, 2021; TriNetX Dataworks USA Network, August 10, 2021; Cerner Real-World EHR Data, June 30, 2021.

^bNo inclusion criteria were applied to the CDC data, as it was downloaded and used as-is.

^cData cut-off dates were as follows: Komodo, June 21, 2021; TriNetX, June 29, 2021; Cerner, May 20, 2021. CDC, Centers for Disease Control; CPT, Current Procedural Terminology; NDC, National Drug Code

Table S2: Demographics of vaccine recipients

Demographic	Komodo					TriNetX					Cerner			
	Overall	BNT162b2	mRNA-1273	Ad26.COV2.S	Multiple Vaccines	Overall	BNT162b2	mRNA-1273	Ad26.COV2.S	Multiple Vaccines	Overall	BNT162b2	mRNA-1273	Ad26.COV2.S
N	35,036,385	17,001,191	17,160,400	748,232	126,562	1,319,537	1,082,365	213,438	23,127	607	2,158,526	1,316,052	777,015	64,259
(% of overall)	-	(48.5)	(49.0)	(2.1)	(0.4)	-	(82.0)	(16.2)	(1.8)	(≤0.1)	-	(61.0)	(36.0)	(3.0)
Age, mean	49.3	44.8	53.6	49.6	49.7	54.1	53.6	57.4	48.2	53.4	-	-	-	-
(SD)	(19.3)	(19.7)	(18.1)	(16.4)	(15.9)	(19.3)	(19.5)	(18.3)	(16.4)	(18.4)				
Age group, n (%)														
18–22	2,121,647	1,283,614	787,020	44,918	6,095	50,480	44,096	5,006	1,353	25	87,931	64,668	20,291	2,947
	(6.1)	(7.6)	(4.6)	(6.0)	(4.8)	(3.8)	(4.1)	(2.3)	(5.9)	(4.1)	(4.1)	(4.9)	(2.6)	(4.6)
23–26	1,639,178	842,359	755,220	36,349	5,250	51,345	41,919	8,223	1,186	17	77,200	54,809	20,111	2,261
	(4.7)	(5.0)	(4.4)	(4.9)	(4.1)	(3.9)	(3.9)	(3.9)	(5.1)	(2.8)	(3.6)	(4.2)	(2.6)	(3.5)
27–39	6,129,155	3,128,979	2,841,856	135,731	22,589	200,885	164,263	31,490	5,026	106	294,423	204,061	81,050	9,201
	(17.5)	(18.4)	(16.6)	(18.1)	(17.8)	(15.2)	(15.2)	(14.8)	(21.7)	(17.5)	(13.6)	(15.5)	(10.4)	(14.3)
40–64	14,975,055	7,059,354	7,444,314	401,260	70,127	486,938	399,341	75,604	11,729	264	811,085	505,714	272,669	32,289
	(42.7)	(41.5)	(43.4)	(53.6)	(55.4)	(36.9)	(36.9)	(35.4)	(50.7)	(43.5)	(37.6)	(38.4)	(35.1)	(50.3)
65–74	5,018,098	1,776,030	3,138,681	88,320	15,067	275,846	226,277	46,957	2,520	92	468,252	245,318	211,323	11,290
	(14.3)	(10.4)	(18.3)	(11.8)	(11.9)	(20.9)	(20.9)	(22.0)	(10.9)	(15.2)	(21.7)	(18.6)	(27.2)	(17.6)
75–84	2,509,277	837,560	1,636,807	29,777	5,133	163,915	128,157	34,761	942	55	275,201	142,069	128,368	4,539
	(7.2)	(4.9)	(9.5)	(4.0)	(4.1)	(12.4)	(11.8)	(16.3)	(4.1)	(9.1)	(12.8)	(10.8)	(16.5)	(7.1)
≥85	854,602	288,855	553,137	11,407	1,203	36,238	28,341	7,625	248	24	87,660	44,862	41,244	1,481
	(2.4)	(1.7)	(3.2)	(1.5)	(1.0)	(2.7)	(2.6)	(3.6)	(1.1)	(4.0)	(4.1)	(3.4)	(5.3)	(2.3)
Unknown	5,996	1,063	3,365	470	1,098	15,902	11,983	3,772	123	24	3,363	1,949	1,298	113
	(≤0.1)	(≤0.1)	(≤0.1)	(0.1)	(0.9)	(1.2)	(1.1)	(1.8)	(0.5)	(4.0)	(0.2)	(0.2)	(0.2)	(0.2)
Sex, n (%)														
Male	16,258,100	7,907,495	7,916,043	374,335	60,227	562,618	469,581	81,188	11,575	274	900,983	551,458	320,122	28,972
	(46.4)	(46.5)	(46.1)	(50.0)	(47.6)	(42.6)	(43.4)	(38.0)	(50.0)	(45.1)	(41.7)	(41.9)	(41.2)	(45.1)
Female	18,776,894	9,093,198	9,243,471	373,893	66,332	740,232	605,162	123,812	10,950	308	1,248,278	758,774	453,741	34,997
	(53.6)	(53.5)	(53.9)	(50.0)	(52.4)	(56.1)	(55.9)	(58.0)	(47.3)	(50.7)	(57.8)	(57.7)	(58.4)	(54.5)
Unknown	1,391	498	886	4	3	16,687	7,622	8,438	602	25	9,265	5,820	3,152	290
	(≤0.1)	(≤0.1)	(≤0.1)	(≤0.1)	(≤0.1)	(1.3)	(0.7)	(4.0)	(2.6)	(4.1)	(0.4)	(0.4)	(0.4)	(0.5)
Race, n (%) ^a														

Demographic	Komodo					TriNetX					Cerner			
	Overall	BNT162b2	mRNA-1273	Ad26.COVS.S	Multiple Vaccines	Overall	BNT162b2	mRNA-1273	Ad26.COVS.S	Multiple Vaccines	Overall	BNT162b2	mRNA-1273	Ad26.COVS.S
White	-	-	-	-	-	875,826 (66.4)	714,320 (66.0)	146,368 (68.6)	14,743 (63.7)	395 (65.1)	1,563,531 (72.4)	934,709 (71.0)	584,984 (75.3)	42,905 (66.8)
Black or African American	-	-	-	-	-	192,815 (14.6)	156,504 (14.5)	33,426 (15.7)	2,774 (12.0)	111 (18.3)	146,343 (6.8)	88,351 (6.7)	52,260 (6.7)	5,677 (8.8)
Asian ^b	-	-	-	-	-	87,392 (6.6)	77,317 (7.1)	8,657 (4.1)	1,394 (6.0)	24 (4.0)				
American Indian or Alaska Native ^d	-	-	-	-	-	9,565 (0.7)	8,474 (0.8)	642 (0.3)	447 (1.9)	2 (0.3)	91,898 (4.3)	55,267 (4.2)	33,695 (4.3)	2,881 (4.5)
Native Hawaiian or other Pacific Islander ^b	-	-	-	-	-	2,789 (0.2)	2,470 (0.2)	167 (0.1)	151 (0.7)	1 (0.2)				
Other	-	-	-	-	-	-	-	-	-	-	192,482 (8.9)	130,324 (9.9)	54,429 (7.0)	7,635 (11.9)
Unknown	-	-	-	-	-	151,150 (11.5)	123,280 (11.4)	24,178 (11.3)	3,618 (15.6)	74 (12.2)	164,272 (7.6)	107,401 (8.2)	51,647 (6.7)	5,161 (8.0)
Ethnicity, n (%) ^a	-	-	-	-	-									
Not Hispanic or Latino	-	-	-	-	-	945,993 (71.7)	787,253 (72.7)	141,290 (66.2)	17,146 (74.1)	304 (50.1)	1,557,040 (72.1)	905,337 (68.8)	604,474 (77.8)	46,254 (72.0)
Hispanic or Latino	-	-	-	-	-	146,944 (11.1)	133,992 (12.4)	10,603 (5.0)	2,327 (10.1)	22 (3.6)	329,321 (15.3)	236,330 (18.0)	82,326 (10.6)	10,537 (16.4)
Unknown	-	-	-	-	-	226,600 (17.2)	161,120 (14.9)	61,545 (28.8)	3,654 (15.8)	281 (46.3)	272,165 (12.6)	174,385 (13.3)	90,215 (11.6)	7,469 (11.6)
Urban/rural status, n (%) ^c														
Large central metro	9,987,328 (28.5)	5,167,106 (30.4)	4,521,939 (26.4)	264,736 (35.4)	33,547 (26.5)	-	-	-	-	-	-	-	-	-

Komodo						TriNetX					Cerner			
Demographic	Overall	BNT162b2	mRNA-1273	Ad26.COV2.S	Multiple Vaccines	Overall	BNT162b2	mRNA-1273	Ad26.COV2.S	Multiple Vaccines	Overall	BNT162b2	mRNA-1273	Ad26.COV2.S
Large fringe metro	7,706,888 (22.0)	3,698,288 (21.8)	3,837,102 (22.4)	130,304 (17.4)	41,194 (32.5)	-	-	-	-	-	-	-	-	-
Medium metro	6,737,311 (19.2)	3,139,339 (18.5)	3,463,896 (20.2)	112,283 (15.0)	21,793 (17.2)	-	-	-	-	-	-	-	-	-
Small metro	2,811,488 (8.0)	1,266,257 (7.4)	1,478,496 (8.6)	58,224 (7.8)	8,511 (6.7)	-	-	-	-	-	-	-	-	-
Micropolitan	2,318,863 (6.6)	781,047 (4.6)	1,473,611 (8.6)	56,174 (7.5)	8,031 (6.3)	-	-	-	-	-	-	-	-	-
Non-core	1,405,171 (4.0)	370,716 (2.2)	985,905 (5.7)	43,975 (5.9)	4,575 (3.6)	-	-	-	-	-	-	-	-	-
Unknown	4,069,336 (11.6)	2,578,438 (15.2)	1,399,451 (8.2)	82,536 (11.0)	8,911 (7.0)	-	-	-	-	-	-	-	-	-

^aData for race/ethnicity was only available for the TriNetX and Cerner databases.

^bIn the Cerner database, Asian, Hawaiian Native, Pacific Islander, American Indian, and Alaskan Native were grouped together.

^cUrban/rural status was only available in the Komodo database.

Table S3: Distribution of between-dose intervals for the Komodo, TriNetX, and Cerner databases

n (%)	Komodo		TriNetX		Cerner	
	BNT162b2	mRNA-1273	BNT162b2	mRNA-1273	BNT162b2	mRNA-1273
Early (before recommended interval)	109,753 (0.8)	162,962 (1.2)	2,996 (0.3)	3,759 (2.3)	4,476 (0.4)	24,187 (3.6)
During recommended interval ^a	12,143,306 (88.6)	12,770,442 (91.6)	857,253 (89.3)	146,928 (91.4)	1,087,972 (90.7)	578,542 (86.6)
After the recommended interval, but within the allowable interval	1,369,058 (10.0)	849,551 (6.1)	95,988 (10.0)	8,620 (5.4)	102,674 (8.6)	59,483 (8.9)
Late (outside the allowable interval)	76,593 (0.6)	151,814 (1.2)	4,274 (0.4)	1,465 (0.9)	4,660 (0.4)	5,642 (0.8)

^aRecommended interval is within ± 4 days of the brand-specific recommended second dose schedule.

Table S4: Rates (%) of adherence and completion stratified by age (years) in the Komodo, TriNetX, and Cerner databases.

Age, years	18-22	23-26	27-39	40-64	65-74	75-84	>85	Unknown
Adherence								
Komodo								
Overall	75.7	76.9	78.4	80.1	81.8	82.6	81.5	43.2
BNT162b2	75.7	77.0	78.7	80.3	84.5	85.9	84.0	54.7
mRNA-1273	75.8	76.7	78.0	79.8	80.2	80.9	80.2	39.5
TriNetX								
Overall	81.2	80.4	81.3	86.1	88.3	88.0	87.1	83.7
BNT162b2	83.0	82.9	84.8	89.5	90.0	89.2	88.4	85.4
mRNA-1273	65.3	67.4	62.5	67.9	79.7	83.6	82.3	78.2
Cerner								
Overall	87.1	88.3	88.5	87.7	87.0	86.7	85.3	86.9
BNT162b2	89.5	90.6	90.8	90.6	91.1	90.7	88.7	88.6
mRNA-1273	79.4	82.1	82.7	82.2	82.2	82.2	81.7	83.6
Completion								
Komodo								
Overall	77.5	78.6	79.9	81.6	83.0	83.7	82.8	51.4
BNT162b2	77.0	78.3	79.8	81.5	85.3	86.6	84.8	58.7
mRNA-1273	78.2	78.9	80.0	81.7	81.7	82.3	81.7	49.1
TriNetX								
Overall	82.7	81.9	82.5	87.1	88.9	88.7	88.0	84.9
BNT162b2	84.4	84.1	85.8	90.1	90.5	89.7	89.1	86.1
mRNA-1273	67.4	70.7	65.7	70.9	81.5	85.1	84.2	81.0
Cerner								
Overall	88.0	89.3	89.5	88.9	89.7	90.1	88.5	88.1
BNT162b2	90.1	91.2	91.4	91.3	91.9	91.6	89.7	89.2
mRNA-1273	81.6	84.1	84.7	84.5	87.1	88.5	87.3	86.5

Table S5: Rates (%) of adherence and completion stratified by index month in the Komodo, TriNetX, and Cerner databases. Individuals included in Komodo and TriNetX databases were identified from December 2020 to June 2021. Individuals included in the Cerner database were identified from November 2020 to May 2021

Month	Nov '20	Dec '20	Jan '21	Feb '21	Mar '21	Apr '21	May '21	Jun '21
Adherence								
Komodo								
Overall	N/A	75.6	84.6	81.0	86.0	77.3	69.3	64.3
BNT162b2	N/A	73.1	82.4	84.4	87.9	78.3	70.5	64.0
mRNA-1273	N/A	78.7	85.7	79.0	84.3	76.1	67.1	65.3
TriNetX								
Overall	N/A	73.1	81.3	88.3	91.3	84.4	77.7	61.2
BNT162b2	N/A	77.2	85.1	90.3	92.8	86.1	80.3	66.2
mRNA-1273	N/A	63.3	73.5	79.8	78.2	60.6	52.0	19.6
Cerner								
Overall	95.1	93.2	89.1	87.8	88.5	83.9	74.5	N/A
BNT162b2	96.4	95.1	92.4	91.4	91.8	87.5	78.4	N/A
mRNA-1273	91.4	88.7	85.4	83.6	82.0	74.7	61.5	N/A
Completion								
Komodo								
Overall	N/A	77.2	86.4	82.4	87.2	78.8	71.1	65.8
BNT162b2	N/A	74.1	83.6	85.5	88.8	79.3	71.9	65.1
mRNA-1273	N/A	80.8	87.7	80.6	85.8	78.1	69.7	68.0
TriNetX								
Overall	N/A	73.9	83.1	88.8	91.8	85.9	78.5	61.8
BNT162b2	N/A	77.8	85.7	90.7	93.2	87.6	81.1	66.8
mRNA-1273	N/A	64.5	77.9	81.0	79.7	62.4	53.2	19.8
Cerner								
Overall	96.5	94.9	91.8	90.7	89.8	84.9	75.3	N/A
BNT162b2	97.2	95.9	93.4	92.1	92.4	88.0	78.8	N/A
mRNA-1273	94.1	92.5	89.9	88.9	84.7	76.9	63.8	N/A

Supplementary Figures

Figure S1: Recommended timeline for receipt of 2 doses of mRNA COVID-19 vaccines

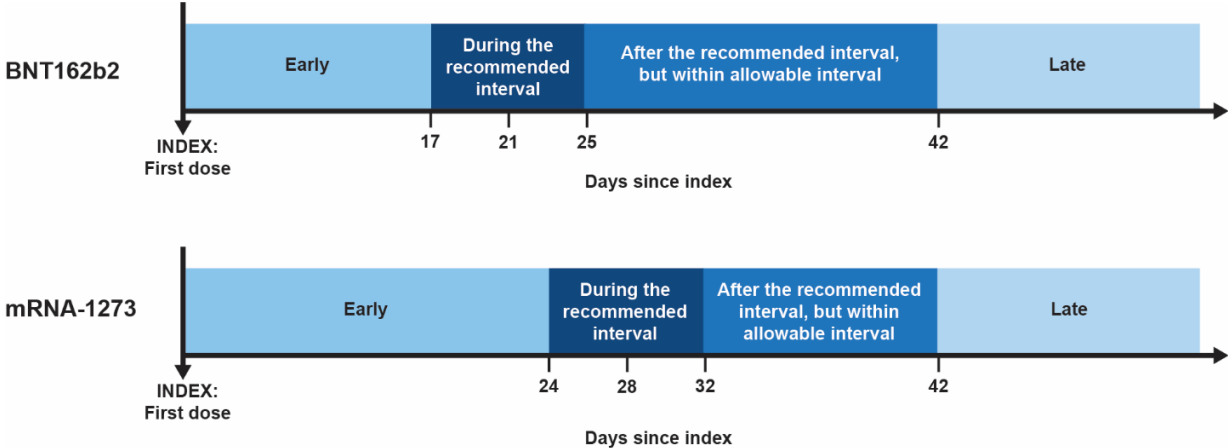


Figure S2: (A) Adherence and (B) completion stratified by urban/rural status (Komodo)

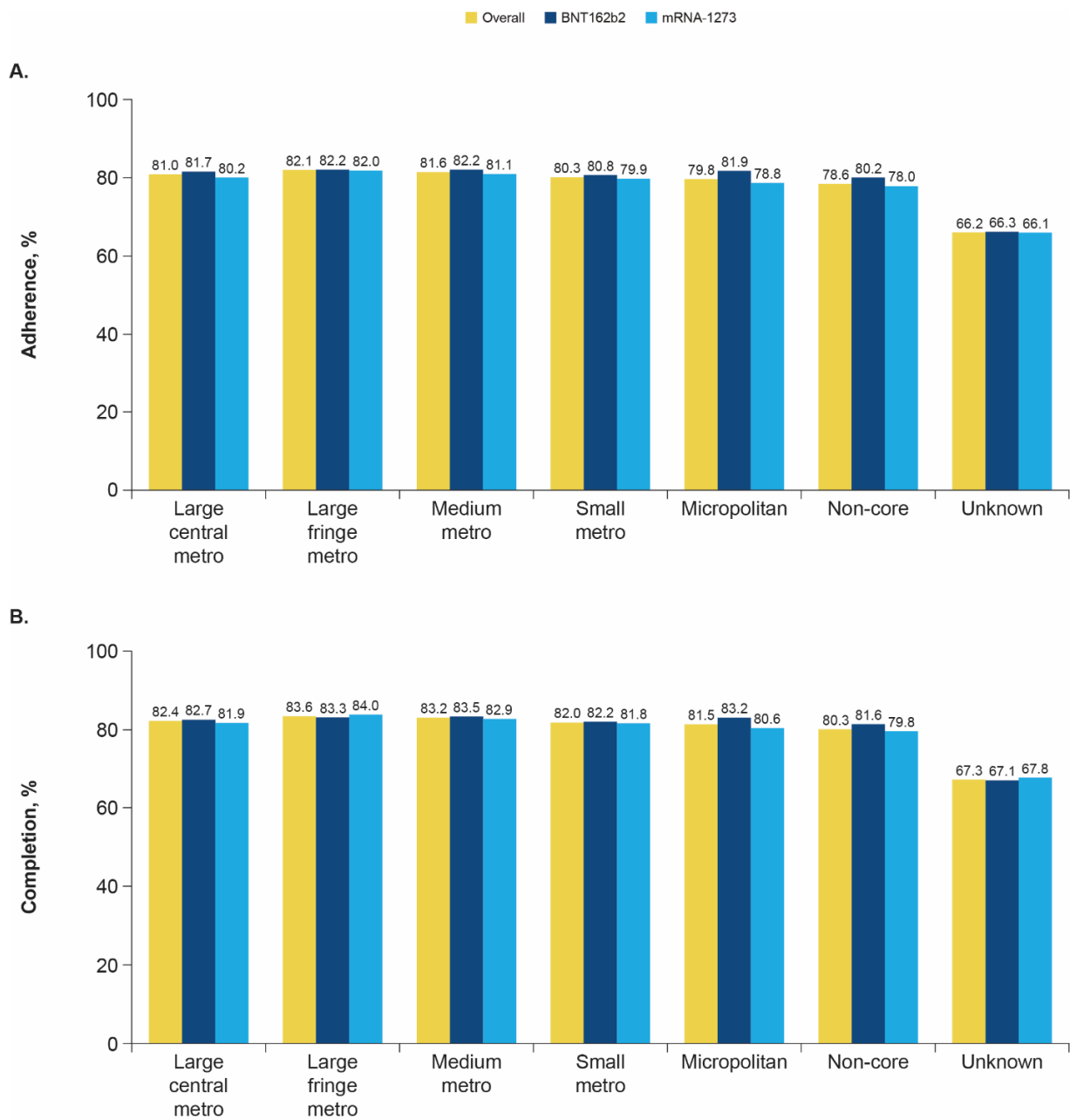
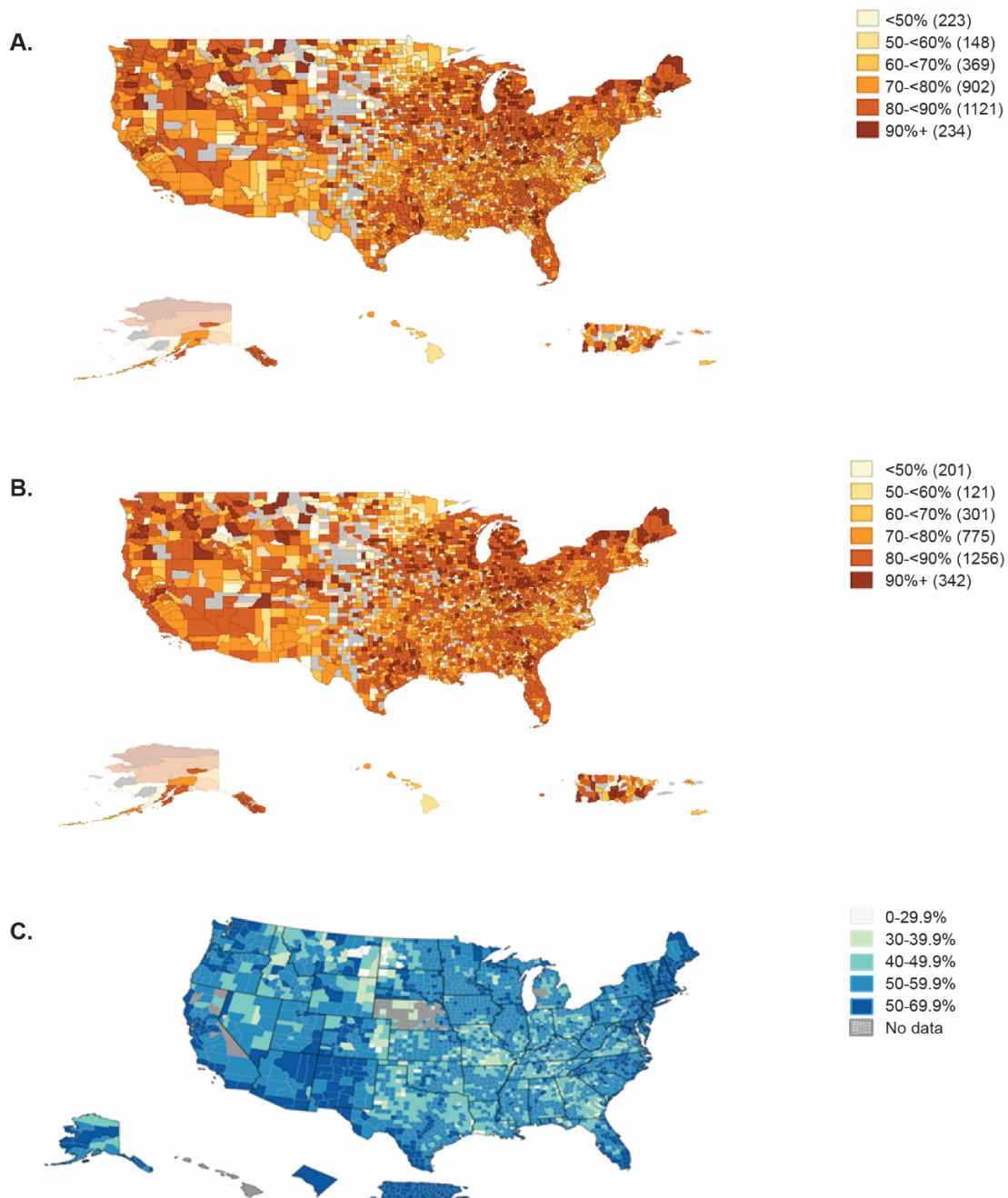


Figure S3: (A) Adherence and (B) completion by county in the Komodo database and (C) nationwide COVID-19 vaccination coverage by county showing the percent of the total United States population with at least one dose (Source: freely available from the Centers for Disease Control and Prevention website: https://covid.cdc.gov/covid-data-tracker/#county-view?list_select_state=all_states&list_select_county=all_counties&data-type=Vaccinations&metric=Administered_Dose1_Pop_Pct&null=Vaccinations).



In panels (A) and (B), counties without data ($n = 236$) and counties with a patient count under 50 ($n = 257$) have been grayed out. Panel (C) is sourced from the Centers for Disease Control and Prevention; reference to specific commercial products, manufacturers, companies, or trademarks does not constitute its endorsement or recommendation by the U.S. Government, Department of Health and Human Services, or Centers for Disease Control and Prevention.

Figure S4: (A) Adherence and (B) completion by index month, stratified by age

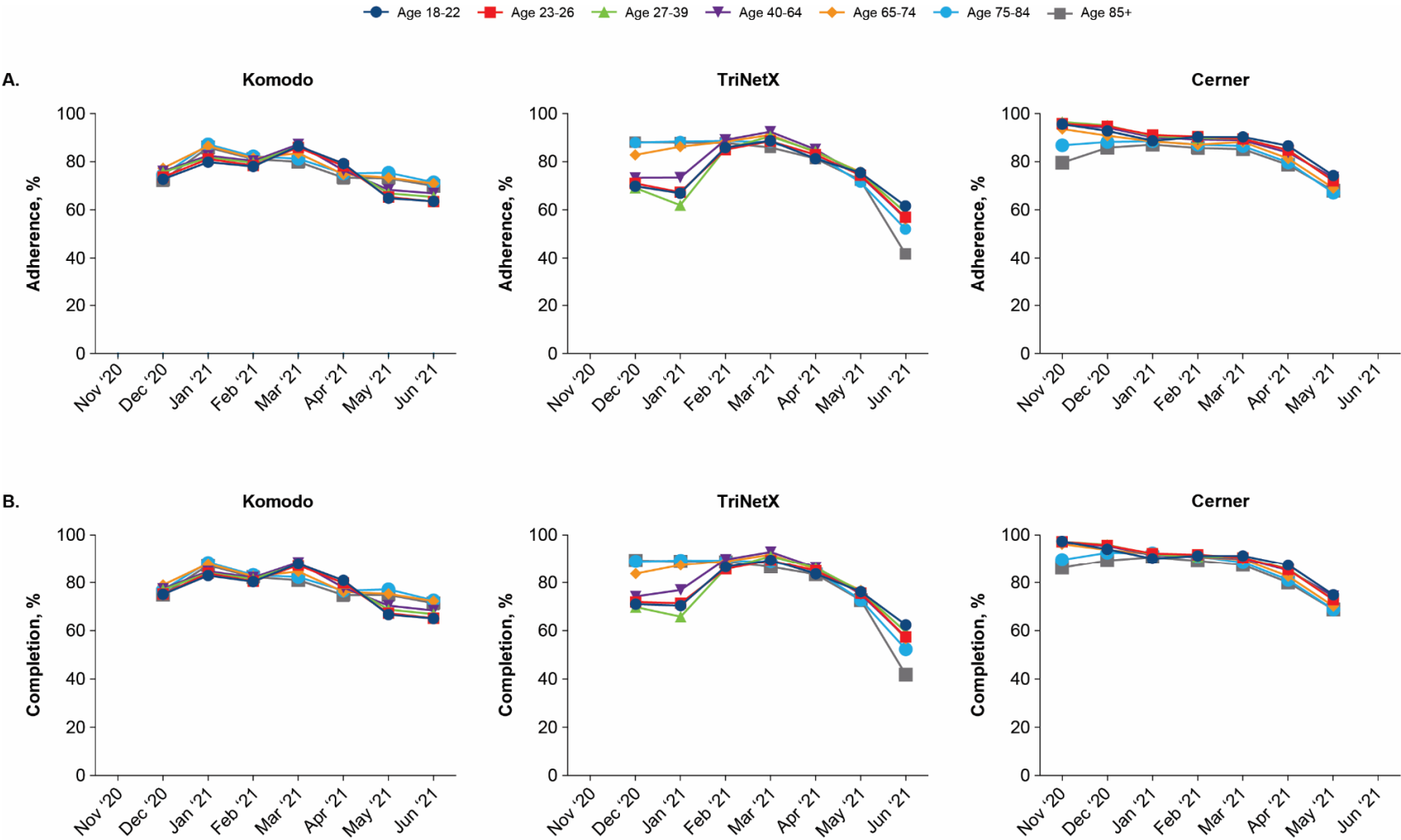


Figure S5: (A) Adherence and (B) completion by index month, stratified by race

