Supplementary Online Content

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

eTable 1. Point Prevalences of Long COVID-19 Among Individuals Testing Positive for COVID-19 by Antigen Test or PCR, and Among All Surveyed US Adults, Weighted to Reflect US Adult Population

	Proportion of	f COVID positi	ve US adults	Proportion	of all US adul	ts
	estimate	[95% CI]	estimate	[95% CI	J
Overall	13.9%	13.3%	14.6%	1.7%	1.6%	1.7%
Gender						
Male	10.2%	9.3%	11.1%	1.3%	1.2%	1.4%
Female	17.9%	17.0%	18.8%	2.0%	1.9%	2.1%
Age						
18-29	10.2%	8.3%	12.4%	1.4%	1.1%	1.7%
30-39	10.8%	9.8%	12.1%	1.6%	1.4%	1.8%
40-49	12.6%	11.6%	13.6%	1.8%	1.7%	1.9%
50-59	20.2%	18.2%	22.4%	2.2%	2.0%	2.5%
60-69	18.3%	16.1%	20.7%	1.5%	1.3%	1.7%
70+	14.3%	11.6%	17.4%	1.0%	0.8%	1.2%
Race and Ethnicity						
Asian	7.5%	5.7%	10.0%	0.7%	0.5%	0.9%
Black	9.7%	8.2%	11.5%	1.0%	0.9%	1.2%
Hispanic	12.6%	10.8%	14.5%	2.0%	1.7%	2.4%
White	15.5%	14.7%	16.3%	1.8%	1.7%	1.9%
Other	15.3%	12.0%	19.2%	1.7%	1.3%	2.1%

eFigure 1. Logistic Regression Model for Development of Long COVID-19 Among Individuals Testing Positive for COVID-19 by Antigen Test or PCR, With Age by Decade

Variable		N	Odds ratio		р
Age	18-29	1076	•	Reference	
	30-39	3629	- `-	1.12 (0.91, 1.40)	0.295
	40-49	7049	! 	1.49 (1.22, 1.84)	<0.001
	50-59	2056	; — -	2.38 (1.92, 2.98)	<0.001
	60-69	1512	! ─■─	1.96 (1.55, 2.48)	<0.001
	70+	769	; — 	1.64 (1.24, 2.17)	<0.001
Gender	Male	6016		Reference	
	Female	10075	; - ■ -	1.88 (1.70, 2.09)	<0.001
Race	Asian	817	Ė	Reference	
	Black	1546	— 	1.06 (0.78, 1.44)	0.717
	Hispanic	1826	i— = —	1.40 (1.06, 1.89)	0.022
	Other category	477	: — -	1.86 (1.31, 2.65)	<0.001
	White	11425	; — -	1.69 (1.31, 2.22)	<0.001
Income	Less than \$25,000	3735	.	Reference	
	\$25,000 to \$74,999	6507	-≣ -	0.94 (0.84, 1.05)	0.270
	\$75,000 to \$149,999	4404	- !	0.78 (0.68, 0.89)	<0.001
	\$150,000 or more	1445	⊢■ → ;	0.73 (0.59, 0.90)	0.003
Education	High School or Less	3969		Reference	
	Some College	5309	¦- - 22	1.16 (1.04, 1.30)	0.009
	Bachelor's Degree	4100	≣- -1	0.87 (0.76, 1.00)	0.048
	Graduate Degree	2713	-	0.66 (0.56, 0.79)	<0.001
Urbanicity	Rural	2625	•	Reference	
	Suburban	9044	- -	0.99 (0.88, 1.11)	0.834
	Urban	4422	- ;	0.75 (0.65, 0.87)	<0.001
Region	Northeast	2486		Reference	
	Midwest	4091	╁∎→	1.13 (0.98, 1.32)	0.100
	South	6287	+	1.11 (0.97, 1.28)	0.146
	West	3227	- ; -	1.08 (0.92, 1.27)	0.321

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eTable 2. Long COVID-19 Symptom Frequencies by Predominant Variant at Time of Initial Illness

Supplemental Table. Long COVID symptoms, by predominant variant

	alpha	ancestral	delta	epsilon	omicron	Total	p value
	(N=147)	(N=1344)	(N=416)	(N=206)	(N=246)	(N=2359)	
Shortness of	58	554	149	74	102	937	0.243
breath	(39.5%)	(41.2%)	(35.8%)	(35.9%)	(41.5%)	(39.7%)	
Exercise	37	387	129	60	72	685	0.755
intolerance	(25.2%)	(28.8%)	(31.0%)	(29.1%)	(29.3%)	(29.0%)	
Fatigue	78	708	214	92	140	1232	0.128
	(53.1%)	(52.7%)	(51.4%)	(44.7%)	(56.9%)	(52.2%)	
Headache	49	457	131	68	88	793	0.829
	(33.3%)	(34.0%)	(31.5%)	(33.0%)	(35.8%)	(33.6%)	
Loss of smell	59	590	210	89	83	1031	< 0.001
	(40.1%)	(43.9%)	(50.5%)	(43.2%)	(33.7%)	(43.7%)	
Brain fog	51	548	165	85	103	952	0.655
	(34.7%)	(40.8%)	(39.7%)	(41.3%)	(41.9%)	(40.4%)	
Poor memory	33	381	114	66	70	664	0.399
	(22.4%)	(28.3%)	(27.4%)	(32.0%)	(28.5%)	(28.1%)	
(Either	58	623	184	97	117	1079	0.493
cognitive	(39.5%)	(46.4%)	(44.2%)	(47.1%)	(47.6%)	(45.7%)	
symptom)							
Dizziness	33	269	79	44	60	485	0.480
	(22.4%)	(20.0%)	(19.0%)	(21.4%)	(24.4%)	(20.6%)	
Depressed	34	319	94	49	54	550	0.970
mood	(23.1%)	(23.7%)	(22.6%)	(23.8%)	(22.0%)	(23.3%)	
Anxious mood	35	400	120	62	61	678	0.344
	(23.8%)	(29.8%)	(28.8%)	(30.1%)	(24.8%)	(28.7%)	
Sleep	40	409	125	59	75	708	0.928
disruption	(27.2%)	(30.4%)	(30.0%)	(28.6%)	(30.5%)	(30.0%)	
							0.805
Mean (SD)	3.449	3.737	3.678	3.631	3.691	3.694	
symptom	(2.758)	(2.755)	(2.708)	(2.859)	(2.627)	(2.742)	
count							

eTable 3. Characteristics of Individuals Who Tested Positive for COVID-19 by Antigen Test or PCR at Least Two Months Prior to Survey Date, Who Did or Did Not Experience Long COVID-19 Symptoms by More Stringent Definition

	No Long COVID	Long COVID	Total	p value
	(N=14086)	(N=2005)	(N=16091)	
Gender				< 0.001
Male	5528 (39.2%)	488 (24.3%)	6016 (37.4%)	
Female	8558 (60.8%)	1517 (75.7%)	10075 (62.6%)	
Age (years)				< 0.001
Mean (SD)	39.99 (15.19)	44.17 (15.07)	40.51 (15.23)	
Education				< 0.001
High School or Less	3440 (24.4%)	529 (26.4%)	3969 (24.7%)	
Some College	4480 (31.8%)	829 (41.3%)	5309 (33.0%)	
Bachelor's Degree	3656 (26.0%)	444 (22.1%)	4100 (25.5%)	
Graduate Degree	2510 (17.8%)	203 (10.1%)	2713 (16.9%)	
Income				< 0.001
Less than \$25,000	3174 (22.5%)	561 (28.0%)	3735 (23.2%)	
\$25,000 to \$74,999	5602 (39.8%)	905 (45.1%)	6507 (40.4%)	
\$75,000 to \$149,999	3995 (28.4%)	409 (20.4%)	4404 (27.4%)	
\$150,000 or more	1315 (9.3%)	130 (6.5%)	1445 (9.0%)	
Race				< 0.001
White	9879 (70.1%)	1546 (77.1%)	11425 (71.0%)	
Black	1631 (11.6%)	195 (9.7%)	1826 (11.3%)	
Hispanic	1408 (10.0%)	138 (6.9%)	1546 (9.6%)	
Asian	764 (5.4%)	53 (2.6%)	817 (5.1%)	
Other	404 (2.9%)	73 (3.6%)	477 (3.0%)	
Urbanicity				< 0.001
rural	2219 (15.8%)	406 (20.2%)	2625 (16.3%)	
suburban	7833 (55.6%)	1211 (60.4%)	9044 (56.2%)	
urban	4034 (28.6%)	388 (19.4%)	4422 (27.5%)	
Region				< 0.001
Northeast	2224 (15.8%)	262 (13.1%)	2486 (15.4%)	
Midwest	3533 (25.1%)	558 (27.8%)	4091 (25.4%)	
South	5468 (38.8%)	819 (40.8%)	6287 (39.1%)	
West	2861 (20.3%)	366 (18.3%)	3227 (20.1%)	
Vaccination status				< 0.001
Unvaccinated	11692 (83.0%)	1742 (86.9%)	13434 (83.5%)	
Partial	362 (2.6%)	52 (2.6%)	414 (2.6%)	
Complete	2032 (14.4%)	211 (10.5%)	2243 (13.9%)	
Predominant variant				< 0.001

	No Long COVID	Long COVID	Total	p value
	(N=14086)	(N=2005)	(N=16091)	
alpha	992 (7.0%)	126 (6.3%)	1118 (6.9%)	
ancestral	7590 (53.9%)	1139 (56.8%)	8729 (54.2%)	
delta	2140 (15.2%)	350 (17.5%)	2490 (15.5%)	
epsilon	1386 (9.8%)	171 (8.5%)	1557 (9.7%)	
omicron	1978 (14.0%)	219 (10.9%)	2197 (13.7%)	

eFigure 2. Logistic Regression Model for Development of Long COVID-19 Among Individuals Testing Positive for COVID-19 by Antigen Test or PCR, With Age by Decade, Limited to Individuals With Index Infection January 2021 or Later

Variable		N	Odds ratio		р
Age		7362	<u> </u>	1.16 (1.11, 1.21)	< 0.001
Gender	Male	2575	•	Reference	
	Female	4787	i 🖶	1.89 (1.62, 2.22)	< 0.001
Income	Less than \$25,000	1832	ii ii	Reference	
	\$25,000 to \$74,999	3109	-	0.91 (0.77, 1.07)	0.258
	\$75,000 to \$149,999	1855		0.78 (0.63, 0.96)	0.018
	\$150,000 or more	566	 !	0.68 (0.48, 0.94)	0.022
Education	High School or Less	1962		Reference	
	Some College	2492	- -	1.24 (1.05, 1.47)	0.011
	Bachelor's Degree	1880	- = ¦	0.88 (0.71, 1.07)	0.206
	Graduate Degree	1028	- -	0.77 (0.59, 1.01)	0.059
Race	Asian	431		Reference	
	Black	734	⊹ ∎—	1.26 (0.79, 2.05)	0.341
	Hispanic	790	+B- B- 	1.47 (0.94, 2.37)	0.105
	Other category	218	— — —	2.27 (1.32, 3.94)	0.003
	White	5189		2.01 (1.35, 3.12)	< 0.001
Urbanicity	Rural	1240	Ė	Reference	
•	Suburban	4241	- 	0.99 (0.83, 1.18)	0.871
	Urban	1881		0.70 (0.55, 0.88)	0.003
Region	Northeast	1198	Ė	Reference	
•	Midwest	1744	- 	1.14 (0.91, 1.43)	0.275
	South	2967	- 	1.12 (0.91, 1.39)	0.285
	West	1453		1.11 (0.87, 1.41)	0.423
Prior vaccinations	None	4705	•	Reference	
	Partial	414		0.94 (0.69, 1.25)	0.659
	Complete	2243	- 	0.73 (0.60, 0.88)	< 0.001
Predominant Variant	epsilon	1557	•	Reference	
	alpha	1118	-	1.09 (0.86, 1.38)	0.461
	delta	2490	!- -	1.33 (1.09, 1.61)	0.004
	omicron	2197	-	0.94 (0.75, 1.18)	0.595

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eFigure 3. Logistic Regression Model for Development of More Stringently Defined Long COVID-19 Among Individuals Testing Positive for COVID-19 by Antigen Test or PCR

Variable		N	Odds ratio		р
Age		16091	_	1.18 (1.14, 1.21)	<0.001
Gender	Male	6016	•	Reference	
	Female	10075	¦ =	1.83 (1.64, 2.05)	<0.001
Race	Asian	817	Ė	Reference	
	Black	1546	 ■	1.07 (0.77, 1.51)	0.688
	Hispanic	1826	╎⊷■─	1.48 (1.08, 2.05)	0.017
	Other category	477	┆┝═╾	2.01 (1.38, 2.95)	<0.001
	White	11425	i ⊢■ ─	1.74 (1.31, 2.35)	< 0.001
Income	Less than \$25,000	3735		Reference	
	\$25,000 to \$74,999	6507	=	0.91 (0.81, 1.02)	0.106
	\$75,000 to \$149,999	4404	- ■ - ¦	0.70 (0.61, 0.81)	<0.001
	\$150,000 or more	1445		0.77 (0.62, 0.95)	0.016
Education	High School or Less	3969	•	Reference	
	Some College	5309	¦æ	1.19 (1.05, 1.34)	0.005
	Bachelor's Degree	4100	₽	0.92 (0.80, 1.06)	0.274
	Graduate Degree	2713		0.70 (0.58, 0.84)	< 0.001
Urbanicity	Rural	2625	•	Reference	
	Suburban	9044	+	0.96 (0.85, 1.09)	0.536
	Urban	4422		0.73 (0.62, 0.86)	<0.001
Region	Northeast	2486	•	Reference	
	Midwest	4091	+ = -	1.16 (0.99, 1.36)	0.074
	South	6287	¦ ■-	1.14 (0.98, 1.33)	0.087
	West	3227	- 1	1.11 (0.94, 1.32)	0.226

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eFigure 4. Logistic Regression Model for Development of Long COVID-19 by More Stringent Definition Among Individuals Testing Positive for COVID-19 by Antigen Test or PCR, Including Predominant Variant and Vaccination Status

Variable		N	Odds ratio		F
Age		16091	! ■	1.19 (1.15, 1.22)	<0.001
Gender	Male	6016	•	Reference	
	Female	10075		1.85 (1.66, 2.08)	< 0.001
Income	Less than \$25,000	3735		Reference	
	\$25,000 to \$74,999	6507	- = ¦	0.91 (0.81, 1.03)	0.129
	\$75,000 to \$149,999	4404	-■ -	0.71 (0.61, 0.82)	<0.00
	\$150,000 or more	1445	⊢ ∎ − ı	0.77 (0.62, 0.95)	0.018
Education	High School or Less	3969	•	Reference	
	Some College	5309	,- ≣ -	1.19 (1.06, 1.35)	0.004
	Bachelor's Degree	4100	-	0.95 (0.82, 1.09)	0.44
	Graduate Degree	2713	 !	0.71 (0.59, 0.86)	< 0.00
Race	Asian	817		Reference	
	Black	1546	-	1.02 (0.74, 1.44)	0.88
	Hispanic	1826	<u> </u>	1.41 (1.03, 1.95)	0.03
	Other category	477		1.94 (1.33, 2.84)	< 0.00
	White	11425	i ∎	1.67 (1.26, 2.25)	< 0.00
Urbanicity	Rural	2625		Reference	
•	Suburban	9044	-	0.98 (0.86, 1.11)	0.699
	Urban	4422	- 	0.74 (0.63, 0.87)	< 0.00
Region	Northeast	2486		Reference	
_	Midwest	4091	⊹= -	1.12 (0.96, 1.32)	0.15
	South	6287	- ⊤∰	1.11 (0.95, 1.29)	0.18
	West	3227		1.09 (0.92, 1.30)	0.33
Prior vaccinations	None	13434	•	Reference	
	Partial	414		0.97 (0.70, 1.31)	0.82
	Complete	2243	≣ i	0.69 (0.57, 0.84)	< 0.00
Predominant Variant	ancestral	8729		Reference	
	epsilon	1557	- -	0.80 (0.67, 0.95)	0.01
	alpha	1118	⊢≣ ⊷	0.91 (0.74, 1.10)	0.33
	delta	2490	- 1	1.09 (0.94, 1.26)	0.234
	omicron	2197	- -	0.84 (0.69, 1.02)	0.079