

Supplemental Questionnaire S1. Basic COVID-19 Questionnaire

Have you ever had the COVID-19 Virus Test (nasal, mouth swab, spit test)?

This is not the antibody test. [choose the one, best answer]

- ☐ No
- ☐ Yes, negative test result
- ☐ Yes, positive test result
- ☐ Don't know
- ☐ No response

Have you ever been tested for COVID-19 antibodies (blood test)?

[choose the one, best answer]

- ☐ No,
- ☐ Yes, negative for antibodies
- ☐ Yes, positive for antibodies
- ☐ Don't know
- ☐ No response

Supplemental Questionnaire S2. COVID-19 Test Questionnaire

Did you ever test positive for COVID-19?

- ☐ Yes
- ☐ No

Please select all that apply

- ☐ I tested positive for COVID-19 on a PCR test
- ☐ I tested positive for COVID-9 on an antigen (rapid) test
- ☐ I tested positive for COVID-19 antibodies

Supplemental Table S1. COVID-19 disease severity categorization.

Asymptomatic	Mild	Moderate	Severe
Individuals who test positive for SARS-CoV-2 using a virologic test (i.e., a nucleic acid amplification test (NAAT) or an antigen test) but who have no symptoms that are consistent with COVID-19.	At least 1 symptom of: fever, fatigue, headache, cough, chills, muscle aches, chest pain, sore throat, loss of smell/taste, N/V/D, congestion or runny nose Do NOT have shortness of breath or difficulty breathing Managed in an ambulatory setting or at home through telemedicine or telephone visits.	Shortness of breath and/or evidence of lower respiratory disease during clinical assessment or imaging, or was found to have SpO ₂ ≥94% on room air at sea level.	SpO ₂ ≤93% on RA and/or a respiratory rate > 30 breaths/min and/or HR > 100 BPM or self-endorsed tachycardia and/or acute respiratory distress syndrome, septic shock, cardiac dysfunction, an exaggerated inflammatory response in addition to pulmonary disease, severe illness causing cardiac, hepatic, renal, central nervous system, or thrombotic disease and/or otherwise, hospital admission, supplemental oxygen use, ICU admission or death was from COVID-19.

Supplemental Table S2. Variance inflation factor for predictors in multivariable ordinal logistic regression model.

	GVIF	Df	GVIF ^ (1/(2 * Df))
Age	1.20	1	1.09
Female	1.10	1	1.05
Race	1.09	3	1.02
Gastroesophageal Reflux Disorder	1.23	1	1.11
Obstructive Airway Disease	1.22	1	1.11
Upper Respiratory Disease	1.23	1	1.11
Obesity	1.05	1	1.03
Hypertension	1.23	1	1.11
High Cholesterol	1.16	1	1.08
Heart Disease	1.05	1	1.02
Diabetes	1.09	1	1.04
Depressive Symptoms	1.11	1	1.05

Supplemental Table S3. Proportional odds assumption diagnosis.

	X2	df	Probability
Omnibus	81.88	32	<0.001
Age	3.31	2	0.191
Female	7.81	2	0.020
Race: Black	3.53	2	0.171
Race: Hispanic	1.46	2	0.483
Race: Other	1.45	2	0.485
Gastroesophageal Reflux Disorder	3.77	2	0.152
Obstructive Airway Disease	2.68	2	0.262
Upper Respiratory Disease	2.43	2	0.297
Obesity	6.33	2	0.042
Hypertension	0.72	2	0.679
Cholesterol	2.91	2	0.234
Heart Disease	1.57	2	0.457
Diabetes	5.46	2	0.065
Depressive Symptoms	1.88	2	0.391

Supplemental Table S4. Binary severity category results.

Predictors	Asymptomatic vs. Mild/Moderate/Severe			Asymptomatic/Mild vs. Moderate/Severe			Asymptomatic/Mild/Moderate vs. Severe		
	OR	95% CI	FDR-p	OR	95% CI	FDR-p	OR	95% CI	FDR-p
Age ^a	1.03	(0.81, 1.30)	0.889	1.18	(1.02, 1.36)	0.086	1.49	(1.15, 1.91)	0.007
Female	1.39	(0.67, 3.25)	0.700	1.55	(0.99, 2.43)	0.133	0.33	(0.10, 0.88)	0.112
Race: Black	0.99	(0.45, 2.50)	0.982	1.76	(1.03, 3.04)	0.115	3.55	(1.64, 7.30)	0.003
Race: Hispanic	0.86	(0.40, 2.13)	0.818	1.08	(0.64, 1.83)	0.943	1.77	(0.73, 3.85)	0.330
Race: Other	1.32	(0.37, 8.45)	0.818	1.83	(0.76, 4.59)	0.309	0.44	(0.02, 2.83)	0.586
Gastroesophageal Reflux Disorder	1.43	(0.94, 2.20)	0.423	1.39	(1.08, 1.80)	0.044	1.03	(0.64, 1.68)	0.894
Obstructive Airway Disease	1.16	(0.74, 1.86)	0.813	1.76	(1.35, 2.30)	<0.001	2.61	(1.62, 4.25)	<0.001
Upper Respiratory Disease	1.24	(0.81, 1.88)	0.679	1.27	(0.97, 1.64)	0.157	0.92	(0.56, 1.54)	0.798
Obesity	1.40	(0.95, 2.06)	0.423	1.16	(0.91, 1.47)	0.352	1.77	(1.12, 2.85)	0.046
Hypertension	1.09	(0.69, 1.74)	0.818	0.99	(0.75, 1.30)	0.943	1.18	(0.74, 1.89)	0.586
Cholesterol	1.37	(0.90, 2.12)	0.494	1.03	(0.80, 1.32)	0.943	0.84	(0.52, 1.34)	0.586
Heart Disease	1.59	(0.78, 3.67)	0.572	1.21	(0.82, 1.80)	0.477	1.19	(0.61, 2.20)	0.665
Diabetes	0.47	(0.26, 0.88)	0.112	0.95	(0.64, 1.43)	0.943	1.41	(0.75, 2.53)	0.455
Depressive Symptoms ^a	1.20	(0.94, 1.59)	0.494	1.33	(1.16, 1.54)	<0.001	1.19	(0.95, 1.47)	0.246

Note: ^a continuous variables: age and PHQ9 were standardized by subtracting the mean and dividing by the standard deviation in this analysis. The odds ratios show associations between the dependent variable and one standard deviation increase in the respective continuous independent variable.

Supplemental Table S5. Patient demographics and other conditions stratified by sub-post-acute COVID-19 sequelae status.

	Post-Acute COVID-19 Respiratory Sequelae			Post-Acute COVID-19 CNS Sequelae			Post-Acute COVID-19 Fatigue Sequelae			Post-Acute COVID-19 Muscular Sequelae		
	No (N = 1074)	Yes (N = 206)	FDR-p	No (N = 1146)	Yes (N = 134)	FDR-p	No (N = 1172)	Yes (N = 108)	FDR-p	No (N = 1246)	Yes (N = 34)	FDR-p
Age			0.232			1.000			0.368			0.642
Mean (SD)	56.7 (7.33)	57.6 (7.6)		56.9 (7.4)	56.9 (6.7)		56.8 (7.4)	57.8 (7.3)		56.9 (7.4)	55.8 (7.0)	
Gender (%)			0.560			1.000			0.490			1.000
Male	985 (91.7)	185 (89.8)		1048 (91.4)	122 (91.0)		1068 (91.1)	102 (94.4)		1139 (91.4)	31 (91.2)	
Female	89 (8.3)	21 (10.2)		98 (8.6)	12 (9.0)		104 (8.9)	6 (5.6)		107 (8.6)	3 (8.8)	
Race (%)			0.194			0.557			0.941			0.237
White	930 (88.2)	166 (83.0)		978 (87.0)	118 (90.1)		1005 (87.4)	91 (86.7)		1071 (87.6)	25 (78.1)	
Black	56 (5.3)	14 (7.0)		65 (5.8)	5 (3.8)		63 (5.5)	7 (6.7)		65 (5.3)	5 (15.6)	
Hispanic	49 (4.6)	17 (8.5)		58 (5.2)	8 (6.1)		60 (5.2)	6 (5.7)		64 (5.2)	2 (6.2)	
Other	20 (1.9)	3 (1.5)		23 (2.0)	0 (0.0)		22 (1.9)	1 (1.0)		23 (1.9)	0 (0.0)	
Acute COVID Severity (%)			<0.001			<0.001			<0.001			<0.001
Asymptomatic	129 (12.0)	0 (0.0)		128 (11.2)	1 (0.7)		128 (10.9)	1 (0.9)		129 (10.4)	0 (0.0)	
Mild	480 (44.7)	31 (15.0)		470 (41.0)	41 (30.6)		486 (41.5)	25 (23.1)		507 (40.7)	4 (11.8)	
Moderate	406 (37.8)	130 (63.1)		469 (40.9)	67 (50.0)		479 (40.9)	57 (52.8)		518 (41.6)	18 (52.9)	
Severe	59 (5.5)	45 (21.8)		79 (6.9)	25 (18.7)		79 (6.7)	25 (23.1)		92 (7.4)	12 (35.3)	
Upper Respiratory Disease (%)			<0.001			0.185			<0.001			0.160
Yes	625 (58.2)	153 (74.3)		686 (59.9)	92 (68.7)		691 (59.0)	87 (80.6)		751 (60.3)	27 (79.4)	
No	448 (41.8)	53 (25.7)		459 (40.1)	42 (31.3)		480 (41.0)	21 (19.4)		494 (39.7)	7 (20.6)	
Obstructive Airway Disease (%)			<0.001			0.085			0.114			0.130
Yes	343 (32.0)	107 (51.9)		390 (34.1)	60 (44.8)		402 (34.3)	48 (44.4)		431 (34.6)	19 (55.9)	
No	730 (68.0)	99 (48.1)		755 (65.9)	74 (55.2)		769 (65.7)	60 (55.6)		814 (65.4)	15 (44.1)	
Gastroesophageal Reflux Disorder (%)			<0.001			0.002			<0.001			0.160
Yes	499 (46.5%)	128 (62.1)		541 (47.2)	86 (64.2)		554 (47.3)	73 (67.6)		604 (48.5)	23 (67.6)	
No	574 (53.5%)	78 (37.9)		604 (52.8)	48 (35.8)		617 (52.7)	35 (32.4)		641 (51.5)	11 (32.4)	
Obesity (%)			0.521			0.783			0.490			0.642
Yes	587 (54.7%)	120 (58.3)		629 (54.9)	78 (58.2)		642 (54.8)	65 (60.2)		685 (55.0)	22 (64.7)	

No	487 (45.3%)	86 (41.7)		517 (45.1)	56 (41.8)		530 (45.2)	43 (39.8)		561 (45.0)	12 (35.3)	
Hypertension (%)			0.571			0.311			0.368			1.000
Yes	348 (32.4)	72 (35.0)		368 (32.1)	52 (38.8)		378 (32.3)	42 (38.9)		409 (32.9)	11 (32.4)	
No	725 (67.6)	134 (65.0)		777 (67.9)	82 (61.2)		793 (67.7)	66 (61.1)		836 (67.1)	23 (67.6)	
Diabetes (%)			0.232			0.915			0.091			0.642
Yes	103 (9.6)	27 (13.2)		115 (10.1)	15 (11.2)		112 (9.6)	18 (16.7)		125 (10.0)	5 (14.7)	
No	970 (90.4)	178 (86.8)		1029 (89.9)	119 (88.8)		1058 (90.4)	90 (83.3)		1119 (90.0)	29 (85.3)	
Heart Disease (%)			0.143			0.657			0.812			1.000
Yes	102 (9.6)	29 (14.1)		114 (10.0)	17 (12.8)		118 (10.1)	13 (12.1)		128 (10.3)	3 (8.8)	
No	966 (90.4)	177 (85.9)		1027 (90.0)	116 (87.2)		1049 (89.9)	94 (87.9)		1112 (89.7)	31 (91.2)	
High Cholesterol (%)			0.571			0.825			0.915			1.000
Yes	434 (40.5)	78 (37.9)		455 (39.8)	57 (42.5)		467 (39.9)	45 (41.7)		498 (40.1)	14 (41.2)	
No	637 (59.5)	128 (62.1)		688 (60.2)	77 (57.5)		702 (60.1)	63 (58.3)		745 (59.9)	20 (58.8)	
Depressive Symptoms			<0.00 1			0.085			0.001			0.209
Mean (SD)	3.15 (4.3)	4.82 (5.0)		3.30 (4.3)	4.43 (5.5)		3.26 (4.4)	5.09 (4.9)		3.36 (4.4)	5.47 (6.5)	

Supplemental Table S6. Multivariable-adjusted results for four sub-post-acute COVID-19 sequelae.

	Post-acute COVID-19 Respiratory Sequelae			Post-acute COVID-19–Central Nervous System Sequelae			Post-acute COVID-19 Fatigue Sequelae			Post-acute COVID-19 Muscular Sequelae		
	aRR	95% CI	FDR-p	aRR	95% CI	FDR-p	aRR	95% CI	FDR-p	aRR	95% CI	FDR-p
Severity Asymptomatic	<0.01	(<0.01, <0.01)	<0.001	0.11	(0.02, 0.78)	0.136	0.17	(0.02, 1.24)	0.231	<0.01	(0.00, 0.00)	<0.001
Severity Moderate	3.56	(2.41, 5.25)	<0.001	1.43	(0.97, 2.10)	0.228	1.83	(1.15, 2.93)	0.045	4.48	(1.29, 15.51)	0.072
Severity Severe	5.84	(3.81, 8.95)	<0.001	2.76	(1.71, 4.47)	<0.001	4.01	(2.31, 6.94)	<0.001	15.00	(3.87, 58.23)	<0.001
Age	1.06	(0.92, 1.22)	0.553	0.92	(0.77, 1.10)	0.752	1.11	(0.91, 1.36)	0.573	0.69	(0.45, 1.06)	0.259
Female	1.06	(0.70, 1.61)	0.876	1.21	(0.69, 2.10)	0.846	0.67	(0.29, 1.56)	0.590	0.73	(0.21, 2.55)	0.836
Race: Black	1.01	(0.62, 1.63)	0.978	0.47	(0.17, 1.27)	0.388	1.19	(0.57, 2.49)	0.814	2.91	(1.03, 8.22)	0.147
Race: Hispanic	1.45	(0.98, 2.16)	0.217	0.99	(0.51, 1.91)	0.989	0.99	(0.45, 2.18)	0.971	0.90	(0.19, 4.27)	0.934
Race: Other	0.76	(0.24, 2.42)	0.800	<0.01	(<0.01, <0.01)	<0.001	0.46	(0.06, 3.51)	0.663	<0.01	(<0.01, <0.01)	<0.001
Gastroesophageal Reflux Disorder	1.14	(0.86, 1.51)	0.518	1.43	(0.99, 2.07)	0.221	1.42	(0.92, 2.20)	0.260	1.08	(0.49, 2.40)	0.934
Obstructive Airway Disease	1.18	(0.91, 1.54)	0.390	1.01	(0.72, 1.41)	0.989	0.81	(0.56, 1.16)	0.496	1.28	(0.65, 2.51)	0.737
Upper Respiratory Disease	1.31	(0.96, 1.79)	0.266	1.11	(0.76, 1.62)	0.895	2.29	(1.34, 3.93)	0.017	1.86	(0.74, 4.65)	0.412
Obesity	0.96	(0.75, 1.23)	0.868	0.93	(0.67, 1.31)	0.922	0.96	(0.65, 1.41)	0.896	0.87	(0.40, 1.88)	0.853

Hypertension	0.99	(0.75, 1.29)	0.962	1.18	(0.82, 1.70)	0.752	1.10	(0.74, 1.63)	0.814	0.73	(0.36, 1.47)	0.693
High Cholesterol	0.87	(0.67, 1.13)	0.497	1.03	(0.72, 1.46)	0.989	0.96	(0.65, 1.42)	0.896	1.53	(0.72, 3.23)	0.539
Heart Disease	1.28	(0.91, 1.81)	0.307	1.11	(0.69, 1.80)	0.922	1.10	(0.62, 1.93)	0.881	0.77	(0.24, 2.53)	0.836
Diabetes	1.19	(0.84, 1.69)	0.497	0.96	(0.58, 1.59)	0.989	1.55	(0.95, 2.53)	0.231	1.25	(0.49, 3.18)	0.836
Depressive Symptoms	1.13	(1.02, 1.26)	0.079	1.09	(0.93, 1.28)	0.752	1.21	(1.06, 1.38)	0.029	1.26	(0.95, 1.66)	0.259

