

Supplemental Tables and Figures

Table 1: ICD-10 Diagnostic Codes Utilized to Identify New Clinical Sequelae

Hypertension	
Hypertension	I10, I11, I12, I13, I14, I15, I16
Pulmonary hypertension	I27
Cardiovascular Outcomes	
Arrhythmia	
> Cardiac Arrhythmia	I49
> Tachycardia	I47, R00.0
> Postural orthostatic tachycardia syndrome (POTs)	I49.9
Congestive heart failure	I50.3, I50.2
Cardiomyopathy	I42.4, I42.2, I42.3, I42.0, I25.5, I42.1, I43, I42.5, B33.24, A36.81, I42.9, I42.8
Myocarditis	I40, B33.22, I51.4
Coronary disease	
> Myocardial infarction	I21, I22
> Acute coronary syndrome	I20.0, I21, I24
> Cardiogenic shock	R57.0
Hypercoagulability, DVT, PE	
> Hypercoagulability	D68, I82
> Deep vein thrombosis	I82
> Pulmonary embolism	I26.0, I26.9
Stroke	
> Ischemic stroke	I63.1, I63, I64
> Hemorrhagic stroke	I60, I61, I62
Mental health	
Mental Health Diagnosis	
> Anxiety Disorder	F41.1, F41.3, F41.8, F41.9 <i>Remark: F41.0 is panic disorder, not included.</i>
> Depression diagnosis	F32, F33
> PTSD	F43.1
Neurological Outcomes	

Amnesia/Memory Difficulty	R41
Migraine	G43
Peripheral neuropathy	G62.9, G63
Encephalopathy	G93.4
Seizures	G40
Dementia	G31.0, F02, F01.5, F03
Guillain-Barre Syndrome	G61.0
Alzheimer	G30
Diabetes	
T2D diagnosis	E11
Liver	
Liver Test Abnormality	I85, B18, I86.4, K70, K71, K72, K73, K74, K75, K76
Nephrology Outcomes	
Kidney Injury	
> Chronic kidney disease	N18, I12, I13
> Acute kidney injury	N17
Pulmonary outcomes	
Respiratory Failure	
> Acute respiratory failure	J96.0
> Chronic respiratory failure	J96.1
Interstitial lung disease	J84
Dermatologic Outcomes	
Atopic Dermatitis diagnosis	L20
Urticaria	L50
Herpesviral vesicular dermatitis	B00.1
Other Outcomes	
Sleep Apnea	G47.3
Symptoms	
Anosmia	R43.0
Fatigue Diagnosis	
> Chronic Fatigue	R53.82
> Fatigue	R53
> Postviral fatigue	G93.3
Myalgia	B33, M79

Table 1a: Demographics, Co-morbidities, and Clinical Factors Among Propensity Score-Matched Adults 18 to ≤65y, UnitedHealth Group Clinical Discovery Database through October 31, 2020

	2020-matched 2020 SARS-CoV-2 Infected n(%)	2020 Comparator n(%)	2019-matched 2020 SARS-CoV-2 Infected n(%)	Matched 2019 Comparator n(%)	vLRTI-matched 2020 SARS-CoV-2 Infected n(%)	Matched Viral LRTI Comparator n(%)
Total	266586	266586	266586	266586	244276	244276
Demographic						
Age: Mean (SD)	41.7 (13.9)	41.6 (13.8)*	41.7 (13.9)	41.6 (13.8)*	41.9 (13.9)	42.8 (13.6)*
Age N (%)						
≥18 to ≤34	90497 (33.9)	91349 (34.3)	90497 (33.9)	90896 (34.1)	81254 (33.3)	72415 (29.6)
>34 to ≤50	89171 (33.4)	91259 (34.2)	89171 (33.4)	91964 (34.5)	81695 (33.4)	87955 (36.0)
> 50	86918 (32.6)	83978 (31.5)	86918 (32.6)	83726 (31.4)	81327 (33.3)	83906 (34.3)
Sex						
Male	126980 (47.6)	126653 (47.5)	126980 (47.6)	126470 (47.4)	114658 (46.9)	115036 (47.1)
SES index: Median (IQR)	52.9 (51.2 - 55.1)	52.9 (51.2 - 55.0)	52.9 (51.2 - 55.1)	52.9 (51.2 - 55.0)	53.0 (51.2 - 55.2)	53.0 (51.4 - 55.5)*
Proportion of black individuals Mean (SD)	0.13 (0.17)	0.13 (0.18)	0.13 (0.17)	0.13 (0.18)	0.12 (0.17)	0.12 (0.17)
Proportion of black individuals n(%)						
≤0.25	226443 (84.9)	226523 (85.0)	226443 (84.9)	226367 (84.9)	209234 (85.7)	209309 (85.7)
>0.25 to ≤0.50	25327 (9.5)	24138 (9.1)	25327 (9.5)	24154 (9.1)	22629 (9.3)	21829 (8.9)
>0.50 to ≤0.75	10241 (3.8)	10601 (4.0)	10241 (3.8)	10735 (4.0)	8709 (3.6)	8789 (3.6)
> 0.75	4575 (1.7)	5324 (2.0)	4575 (1.7)	5330 (2.0)	3704 (1.5)	4349 (1.8)
Proportion of Hispanic individuals Mean (SD)	0.19 (0.21)	0.19 (0.20)	0.19 (0.21)	0.19 (0.20)	0.18 (0.19)	0.18 (0.20)
Proportion of Hispanic individuals n(%)						
≤0.25	201097 (75.4)	200370 (75.2)	201097 (75.4)	200362 (75.2)	188860 (77.3)	188881 (77.3)
>0.25 to ≤0.50	39727 (14.9)	40778 (15.3)	39727 (14.9)	41028 (15.4)	35016 (14.3)	35336 (14.5)
>0.50 to ≤0.75	16934 (6.4)	16819 (6.3)	16934 (6.4)	16501 (6.2)	13739 (5.6)	13213 (5.4)
> 0.75	8828 (3.3)	8619 (3.2)	8828 (3.3)	8695 (3.3)	6661 (2.7)	6846 (2.8)
Comorbidity n(%)						

Any	120716 (45.3)	116617 (43.7)*	120716 (45.3)	116515 (43.7)*	115693 (47.4)	132954 (54.4)*
Thalassemia	226 (0.1)	194 (0.1)	226 (0.1)	229 (0.1)	212 (0.1)	213 (0.1)
AIDS/HIV	992 (0.4)	979 (0.4)	992 (0.4)	948 (0.4)	894 (0.4)	933 (0.4)
Alcohol Abuse	2959 (1.1)	2867 (1.1)	2959 (1.1)	2920 (1.1)	2825 (1.2)	2758 (1.1)
Anemia	16157 (6.1)	15523 (5.8)*	16157 (6.1)	15475 (5.8)*	15412 (6.3)	16248 (6.7)*
Rheumatoid Arthritis	6793 (2.5)	6656 (2.5)	6793 (2.5)	6480 (2.4)	6661 (2.7)	7133 (2.9)*
Cerebrovascular Disease	4342 (1.6)	4046 (1.5)	4342 (1.6)	4071 (1.5)	4204 (1.7)	4605 (1.9)*
Congestive Heart Failure	3362 (1.3)	2936 (1.1)*	3362 (1.3)	3090 (1.2)*	3265 (1.3)	3685 (1.5)*
Coagulopathy	2193 (0.8)	2032 (0.8)	2193 (0.8)	1986 (0.7)	2103 (0.9)	2621 (1.1)*
Chronic Pulmonary Disease	22236 (8.3)	21689 (8.1)	22236 (8.3)	21895 (8.2)	22020 (9.0)	23210 (9.5)*
Dementia	205 (0.1)	192 (0.1)	205 (0.1)	187 (0.1)	192 (0.1)	234 (0.1)
Depression	19656 (7.4)	19636 (7.4)	19656 (7.4)	19558 (7.3)	19038 (7.8)	20301 (8.3)*
Drug Abuse	2485 (0.9)	2439 (0.9)	2485 (0.9)	2467 (0.9)	2397 (1.0)	2722 (1.1)*
Hypertension	51908 (19.5)	51656 (19.4)	51908 (19.5)	51363 (19.3)	50231 (20.6)	54705 (22.4)*
Hypothyroidism	17335 (6.5)	17117 (6.4)	17335 (6.5)	17090 (6.4)	17058 (7.0)	17247 (7.1)
Liver Disease	9017 (3.4)	8612 (3.2)	9017 (3.4)	8682 (3.3)	8657 (3.5)	9638 (3.9)*
Moderate to Severe Liver Disease	379 (0.1)	312 (0.1)	379 (0.1)	341 (0.1)	363 (0.1)	421 (0.2)
Lymphoma	802 (0.3)	726 (0.3)	802 (0.3)	686 (0.3)	777 (0.3)	1040 (0.4)*
Fluid and Electrolyte Disorders	8493 (3.2)	7955 (3.0)*	8493 (3.2)	7972 (3.0)*	8185 (3.4)	8608 (3.5)
Metastatic Cancer	1415 (0.5)	1256 (0.5)	1415 (0.5)	1316 (0.5)	1390 (0.6)	1487 (0.6)
Myocardial Infarction	1499 (0.6)	1333 (0.5)	1499 (0.6)	1468 (0.6)	1459 (0.6)	1622 (0.7)
Other Neurological Disorders	6514 (2.4)	6283 (2.4)	6514 (2.4)	6412 (2.4)	6313 (2.6)	6854 (2.8)*
Obesity	36149 (13.6)	35930 (13.5)	36149 (13.6)	35652 (13.4)	34540 (14.1)	35405 (14.5)*
Paralysis	774 (0.3)	727 (0.3)	774 (0.3)	684 (0.3)	740 (0.3)	1118 (0.5)*
Peripheral Vascular Disease	4861 (1.8)	4398 (1.6)*	4861 (1.8)	4509 (1.7)*	4713 (1.9)	5234 (2.1)*
Psychoses	4878 (1.8)	4833 (1.8)	4878 (1.8)	4891 (1.8)	4738 (1.9)	5293 (2.2)*
Peptic Ulcer Disease	1168 (0.4)	1074 (0.4)	1168 (0.4)	1076 (0.4)	1111 (0.5)	1280 (0.5)*
Pulmonary Circulation Disorder	1022 (0.4)	901 (0.3)	1022 (0.4)	912 (0.3)	975 (0.4)	1227 (0.5)*
Renal Failure	3893 (1.5)	3600 (1.4)*	3893 (1.5)	3567 (1.3)*	3734 (1.5)	4324 (1.8)*
Solid Tumor without Metastasis	6824 (2.6)	6624 (2.5)	6824 (2.6)	6526 (2.4)	6686 (2.7)	7440 (3.0)*

Valvular Disease	6331 (2.4)	5954 (2.2)*	6331 (2.4)	6173 (2.3)	6155 (2.5)	6830 (2.8)*
Weight Loss	2909 (1.1)	2827 (1.1)	2909 (1.1)	2817 (1.1)	2766 (1.1)	3203 (1.3)*
Prior Conditions						
Alzheimers Dementia	385 (0.1)	388 (0.1)	385 (0.1)	338 (0.1)	358 (0.1)	489 (0.2)*
Asthma	15112(5.7)	14757(5.5)	15112(5.7)	14845(5.6)	14969(6.1)	14976(6.1)
Cystic Fibrosis	64 (0.0)	64 (0.0)	64 (0.0)	55 (0.0)	60 (0.0)	144 (0.1)*
Immunodeficiency	3101 (1.2)	2877 (1.1)	3101 (1.2)	2876 (1.1)	2932 (1.2)	3174 (1.3)
Pulmonary Fibrosis	488 (0.2)	434 (0.2)	488 (0.2)	433 (0.2)	480 (0.2)	615 (0.3)*
Sickle Cell Disease	273 (0.1)	224 (0.1)	273 (0.1)	240 (0.1)	249 (0.1)	282 (0.1)
Smoking	8113 (3.0)	8141 (3.1)	8113 (3.0)	8161 (3.1)	8068 (3.3)	8086 (3.3)
Type 1 Diabetes	2157 (0.8)	2015 (0.8)	2157 (0.8)	2124 (0.8)	2090 (0.9)	2408 (1.0)*
Type 2 Diabetes	22619(8.5)	21993(8.2)	22619(8.5)	21784(8.2)*	21647(8.9)	23863(9.8)*
Prior Length of Stay in Hospital (days): Mean (SD)	0.5 (5.9)	0.5 (4.3)*	0.5 (5.9)	0.4 (4.8)*	0.5 (5.4)	0.7 (8.9)*
Prior PCP visit n (%)	186313 (69.9)	170543 (64.0)*	186313 (69.9)	172404 (64.7)*	171608 (70.3)	174126 (71.3)*
Prior PCP visit: Mean (SD)	2.5 (3.5)	2.4 (3.8)*	2.5 (3.5)	2.4 (3.8)*	2.5 (3.4)	2.6 (3.4)
Prior cardiology visit: Mean (SD)	0.3 (1.7)	0.3 (1.6)*	0.3 (1.7)	0.3 (1.5)*	0.3 (1.6)	0.3 (2.0)
Prior nephrology visit: Mean (SD)	0.1 (1.6)	0.1 (1.5)*	0.1 (1.6)	0.1 (1.2)*	0.1 (1.4)	0.1 (2.3)*
Region n (%)						
South	117292 (44.0)	110703 (41.5)*	117292 (44.0)	111886 (42.0)*	108320 (44.3)	103977 (42.6)*
Midwest	54494 (20.4)	56566 (21.2)*	54494 (20.4)	56105 (21.0)*	51483 (21.1)	49625 (20.3)*
Northeast	56071 (21.0)	56947 (21.4)*	56071 (21.0)	57402 (21.5)*	50909 (20.8)	55964 (22.9)*
West	38300 (14.4)	41834 (15.7)*	38300 (14.4)	40661 (15.3)*	33157 (13.6)	34272 (14.0)*
Unknown	429 (0.2)	536 (0.2)*	429 (0.2)	532 (0.2)*	407 (0.2)	438 (0.2)*

* All P values ≤ 0.05 comparing matched SARS-CoV-2 individuals with matched comparison group.

Figure 1(a): Absolute Standardized Mean Difference before and after propensity score matching for key variables including demographic, comorbidities and previous medical utilization, with 2020 comparator group, UnitedHealth Group Clinical Discovery Database through October 31, 2020.

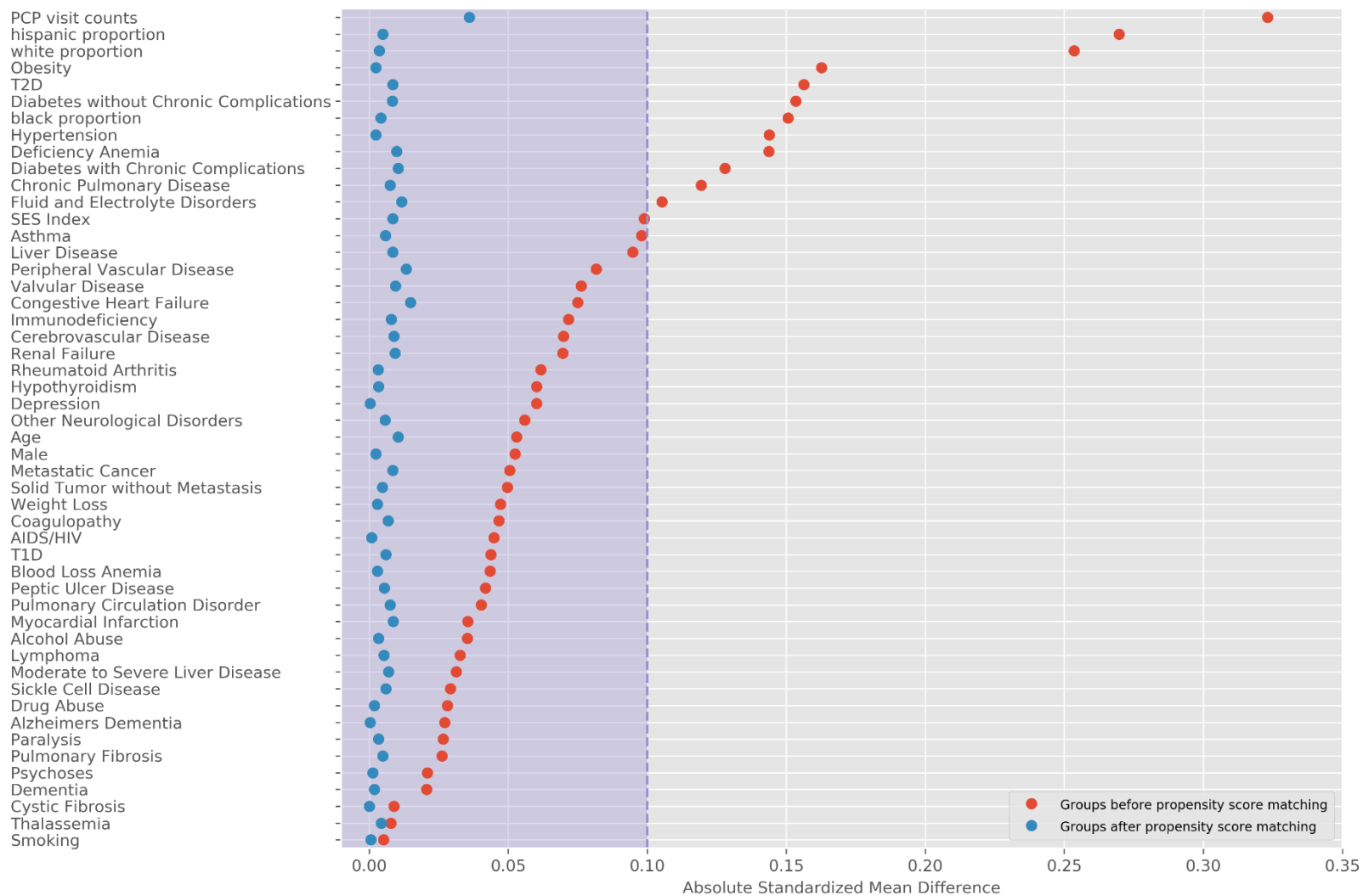


Figure 1(b): Absolute standardized mean difference before and after matching SARS-CoV-2 infection group with 2019 comparator group, UnitedHealth Group Clinical Discovery Database through October 31, 2020.

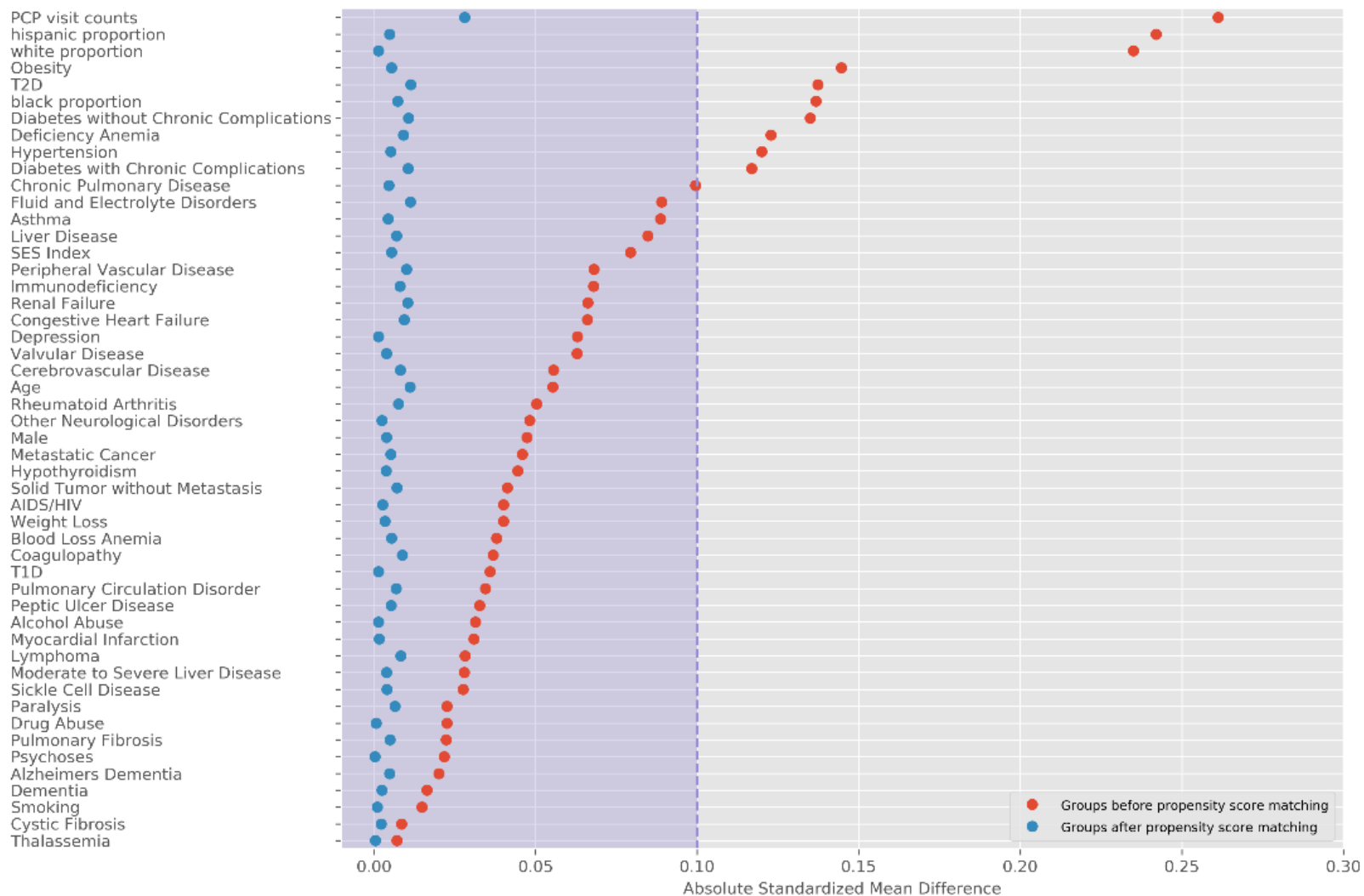


Figure 1(c): Absolute standardized mean difference before and after matching SARS-CoV-2 infection group with viral LRTI comparator group, UnitedHealth Group Clinical Discovery Database through October 31, 2020.

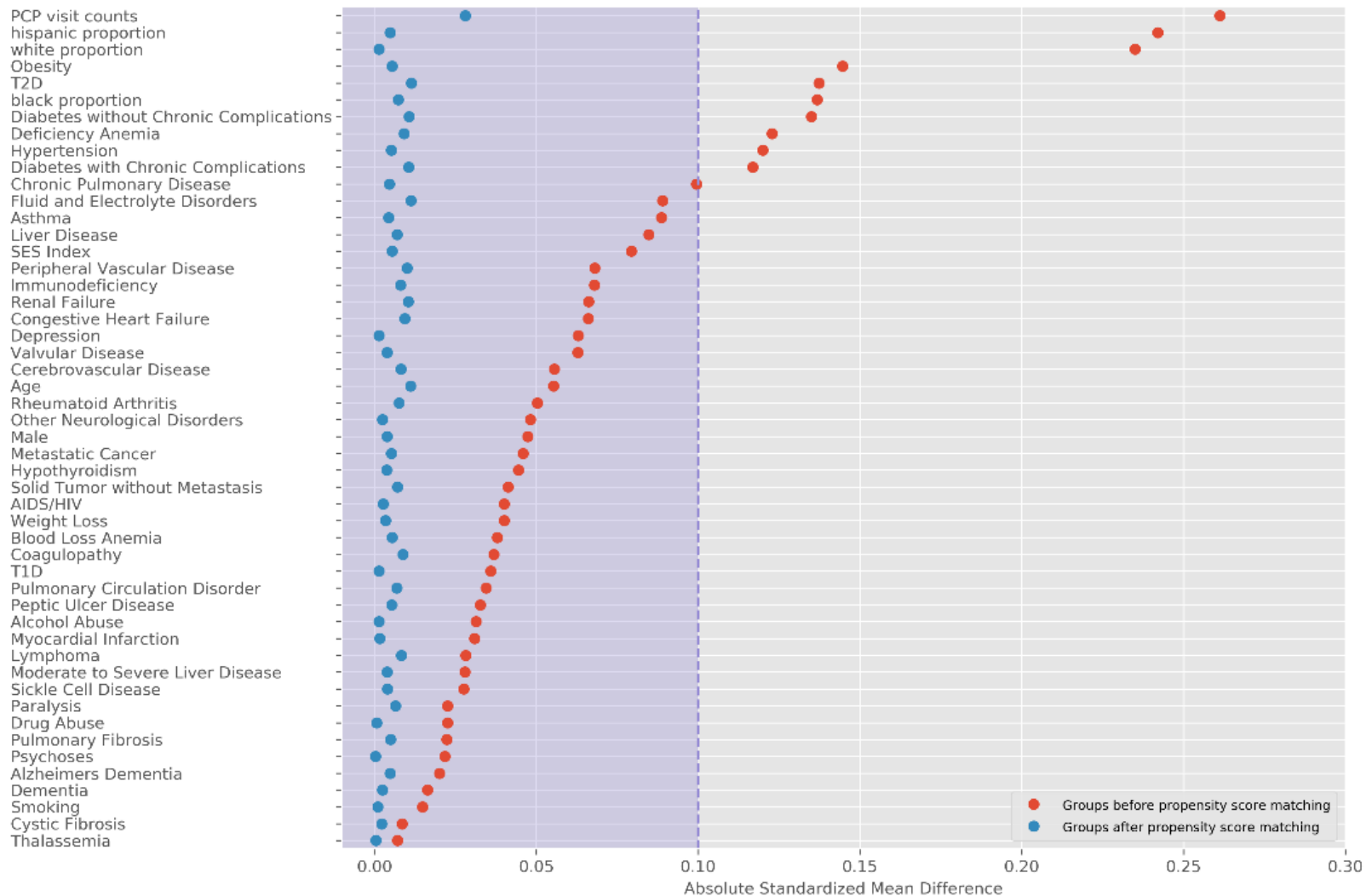


Table 2a: Incidence and Risk Difference (per 100 individuals) for Clinical Sequelae by SARS-CoV-2 Infection and Comparator Groups, UnitedHealth Group Clinical Discovery Database through October 31, 2020.

Outcome	2020 SARS-CoV-2 Infected †	2020 Comparator group †	Risk Difference (CI ††)	2019-matched 2020 SARS-CoV-2 Infected †	2019 Comparator group †	Risk Difference (CI ††)	Viral LRTI-matched 2020 SARS-CoV-2 Infected †	Viral LRTI Comparator group †	Risk Difference (CI ††)
Matched Group Size	193113 †††	193113 †††		193264 †††	193264 †††		181613 †††	181613 †††	
Follow-up period (days): median (IQR) ††††	87 (45 – 124)	87 (45 – 124)		87 (45 – 124)	87 (46 – 124)		87 (45 – 124)	87 (43 – 130)	
Hypertension									
Hypertension	2.59	1.63	0.96 (0.70 to 1.20) ***	2.59	1.70	0.88 (0.63 to 1.14) ***	2.60	2.47	0.13 (-0.18 to 0.41)
Pulmonary hypertension	0.14	0.04	0.10 (0.06 to 0.14) ***	0.14	0.05	0.08 (0.04 to 0.13) ***	0.15	0.16	-0.01 (-0.07 to 0.04)
Cardiology									
Arrhythmia	1.49	0.63	0.86 (0.73 to 1.00) ***	1.52	0.69	0.83 (0.71 to 0.97) ***	1.52	1.09	0.44 (0.26 to 0.62) ***
> Cardiac arrhythmia	0.72	0.31	0.41 (0.31 to 0.49) ***	0.72	0.37	0.35 (0.25 to 0.46) ***	0.72	0.51	0.21 (0.10 to 0.31) ***
> Tachycardia	1.07	0.42	0.65 (0.53 to 0.75) ***	1.08	0.42	0.66 (0.54 to 0.77) ***	1.11	0.77	0.34 (0.20 to 0.48) ***
> POTs	0.28	0.13	0.16 (0.10 to 0.22) ***	0.29	0.16	0.13 (0.07 to 0.20) ***	0.29	0.22	0.07 (0.01 to 0.13) ***
Congestive heart failure	0.21	0.09	0.12 (0.06 to 0.18) ***	0.21	0.10	0.11 (0.06 to 0.16) ***	0.23	0.23	0.00 (-0.06 to 0.07)
Cardiomyopathy	0.23	0.07	0.15 (0.10 to 0.20) ***	0.23	0.10	0.14 (0.09 to 0.20) ***	0.23	0.21	0.02 (-0.04 to 0.09)
Myocarditis	0.04	0.00	0.04 (0.02 to 0.07) ***	0.04	0.00	0.04 (0.02 to 0.06) ***	0.04	0.01	0.03 (0.01 to 0.05) ***
Coronary disease	0.21	0.10	0.11 (0.05 to 0.16) ***	0.21	0.12	0.08 (0.03 to 0.13) ***	0.22	0.23	-0.01 (-0.07 to 0.06)

> Myocardial infarction	0.13	0.06	0.07 (0.03 to 0.11) ***	0.13	0.08	0.06 (0.02 to 0.10) ***	0.14	0.13	0.01 (-0.04 to 0.06)
> Acute coronary syndrome	0.19	0.10	0.10 (0.05 to 0.14) ***	0.20	0.12	0.08 (0.02 to 0.13) ***	0.20	0.21	-0.01 (-0.08 to 0.05)
> Cardiogenic shock	0.02	0.01	0.02 (0.00 to 0.03) ***	0.02	0.01	0.01 (-0.00 to 0.03)	0.02	0.02	-0.00 (-0.02 to 0.02)
Hypercoagulability DVT PE	0.60	0.20	0.40 (0.33 to 0.48) ***	0.62	0.21	0.41 (0.33 to 0.50) ***	0.64	0.43	0.20 (0.11 to 0.30) ***
> Hypercoagulability	0.50	0.17	0.33 (0.26 to 0.40) ***	0.53	0.18	0.35 (0.27 to 0.43) ***	0.54	0.39	0.15 (0.05 to 0.24) ***
> Deep vein thrombosis	0.34	0.10	0.23 (0.17 to 0.30) ***	0.35	0.10	0.25 (0.20 to 0.31) ***	0.36	0.25	0.10 (0.03 to 0.18) ***
> Pulmonary embolism	0.19	0.06	0.13 (0.09 to 0.18) ***	0.19	0.06	0.13 (0.08 to 0.18) ***	0.20	0.13	0.07 (0.02 to 0.12) ***
Stroke	0.22	0.11	0.11 (0.06 to 0.17) ***	0.21	0.14	0.08 (0.03 to 0.14) ***	0.22	0.18	0.05 (-0.02 to 0.10)
> Ischemic stroke	0.19	0.09	0.10 (0.05 to 0.14) ***	0.18	0.11	0.07 (0.02 to 0.12) ***	0.19	0.15	0.04 (-0.01 to 0.09)
> Hemorrhagic stroke	0.06	0.03	0.03 (-0.00 to 0.05)	0.06	0.04	0.02 (-0.00 to 0.05)	0.06	0.05	0.01 (-0.02 to 0.04)
Mental Health									
Mental Health Diagnosis	3.54	2.62	0.92 (0.67 to 1.19) ***	3.59	2.47	1.12 (0.87 to 1.40) ***	3.70	3.12	0.57 (0.27 to 0.88) ***
> Anxiety	2.98	2.15	0.83 (0.60 to 1.02) ***	3.04	1.97	1.07 (0.84 to 1.29) ***	3.08	2.48	0.60 (0.32 to 0.84) ***
> Depression	1.60	1.26	0.33 (0.17 to 0.51) ***	1.58	1.32	0.26 (0.09 to 0.45) ***	1.65	1.63	0.03 (-0.18 to 0.20)
> PTSD	0.23	0.15	0.08 (0.03 to 0.15) ***	0.22	0.16	0.05 (-0.01 to 0.11)	0.22	0.15	0.07 (0.01 to 0.12) ***
Neurology									
Amnesia/Memory Difficulty	0.69	0.32	0.37 (0.27 to 0.45) ***	0.71	0.35	0.37 (0.26 to 0.46) ***	0.72	0.48	0.24 (0.13 to 0.34) ***
Migraine	0.76	0.58	0.18 (0.06 to 0.28) ***	0.73	0.61	0.12 (0.01 to 0.23) ***	0.77	0.78	-0.01 (-0.13 to 0.10)
Peripheral neuropathy	0.31	0.15	0.16 (0.10 to 0.23) ***	0.30	0.16	0.14 (0.07 to 0.19) ***	0.32	0.20	0.12 (0.05 to 0.20) ***
Encephalopathy	0.23	0.03	0.19 (0.14 to 0.24) ***	0.22	0.08	0.15 (0.10 to 0.20) ***	0.23	0.14	0.09 (0.03 to 0.15) ***
Seizure	0.14	0.08	0.06 (0.03 to 0.11) ***	0.13	0.10	0.03 (-0.01 to 0.07)	0.14	0.14	-0.00 (-0.05 to 0.04)

Dementia	0.04	0.01	0.02 (-0.00 to 0.04)	0.03	0.02	0.01 (-0.01 to 0.03)	0.04	0.03	0.00 (-0.02 to 0.03)
Guillain-Barre Syndrome	0.01	0.00	0.01 (-0.00 to 0.02)	0.01	0.00	0.01 (-0.00 to 0.02)	0.01	0.00	0.01 (-0.00 to 0.03)
Alzheimer	0.01	0.00	0.00 (-0.01 to 0.01)	0.00	0.00	0.00 (-0.01 to 0.01)	0.00	0.00	0.00 (-0.01 to 0.01)
Diabetes									
Type 2 Diabetes	1.04	0.57	0.47 (0.35 to 0.60) ***	0.99	0.60	0.39 (0.25 to 0.53) ***	1.05	0.77	0.28 (0.13 to 0.41)***
Liver									
Liver Test Abnormality	1.17	0.69	0.47 (0.35 to 0.59) ***	1.20	0.69	0.50 (0.38 to 0.63) ***	1.22	1.02	0.20 (0.06 to 0.33)***
Nephrology									
Kidney Injury	0.49	0.32	0.17 (0.08 to 0.25) ***	0.51	0.34	0.17 (0.08 to 0.26) ***	0.52	0.47	0.05 (-0.06 to 0.14)
> Chronic kidney disease	0.35	0.25	0.11 (0.03 to 0.17) ***	0.37	0.24	0.14 (0.06 to 0.21) ***	0.37	0.31	0.06 (-0.02 to 0.13)
> Acute kidney injury	0.37	0.15	0.23 (0.15 to 0.29) ***	0.37	0.20	0.18 (0.10 to 0.26) ***	0.38	0.33	0.05 (-0.03 to 0.14)
Respiratory									
Respiratory Failure	0.22	0.06	0.16 (0.11 to 0.21) ***	0.23	0.10	0.12 (0.07 to 0.18) ***	0.23	0.27	-0.04 (-0.11 to 0.02)
> Acute respiratory failure	0.21	0.06	0.16 (0.11 to 0.21) ***	0.21	0.10	0.12 (0.07 to 0.17) ***	0.22	0.26	-0.04 (-0.10 to 0.03)
> Chronic respiratory failure	0.17	0.02	0.15 (0.12 to 0.19) ***	0.17	0.02	0.15 (0.11 to 0.20) ***	0.18	0.11	0.07 (0.02 to 0.12)***
Interstitial lung disease	0.28	0.04	0.24 (0.19 to 0.31) ***	0.28	0.05	0.22 (0.16 to 0.28) ***	0.28	0.23	0.05 (-0.02 to 0.11)
Dermatology									
Atopic dermatitis	0.31	0.28	0.04 (-0.04 to 0.11)	0.33	0.27	0.05 (-0.02 to 0.13)	0.33	0.28	0.05 (-0.03 to 0.13)
Urticaria	0.28	0.20	0.09 (0.02 to 0.14) ***	0.28	0.25	0.03 (-0.04 to 0.08)	0.28	0.36	-0.08 (-0.15 to 0.00)
Herpesviral vesicular dermatitis	0.10	0.07	0.03 (-0.01 to 0.07)	0.11	0.10	0.00 (-0.04 to 0.05)	0.10	0.12	-0.01 (-0.06 to 0.02)
Other									
Sleep apnea	1.17	0.67	0.50 (0.35 to 0.64) ***	1.18	0.75	0.43 (0.30 to 0.55) ***	1.23	1.36	-0.13 (-0.28 to 0.05)

† Cumulative incidence by Kaplan-Meier estimator 120 days after time origin (index date+21 days), which is 141 days after index date.

†† Confidence intervals are calculated based on Bonferroni correction, i.e., (1 - 0.05/N) confidence interval.

††† Individuals were excluded if they had less than index date + 21 days of follow-up, had already been diagnosed with outcome of interest prior to index date + 21 days or their matched pair was excluded for the same reasons.

†††† The outcome observation period is the length of follow-up (in days) measured from time origin (which is index date + 21 days) to end of observation of the members

*** p value < 0.001

** p value < 0.01

* p value < 0.05

Table 2b: Incidence and Risk Difference (per 100 individuals) for Symptom Sequelae by SARS-CoV-2 Infection and Comparison Groups, UnitedHealth Group Clinical Discovery Database through October 31, 2020.

Outcome	2020 SARS-CoV-2 Infected †	2020 Comparator group †	Risk Difference (CI ††)	2019-matched 2020 SARS-CoV-2 Infected †	2019 Comparator group †	Risk Difference (CI ††)	Viral LRTI-matched 2020 SARS-CoV-2 Infected †	Viral LRTI comparator group †	Risk Difference (CI ††)
Matched Group Size	193113 †††	193113 †††		193264 †††	193264 †††		181613 †††	181613 †††	
Follow-up period (days): median (IQR) ††††	87 (45 – 124)	87 (45 – 124)		87 (45 – 124)	87 (46 – 124)		87 (45 – 124)	87 (43 – 130)	
Fatigue Diagnosis	4.64	2.38	2.26 (1.97 to 2.53) ***	4.68	2.33	2.35 (2.06 to 2.62) ***	4.84	3.63	1.20 (0.92 to 1.50) ***
> Fatigue	4.54	2.38	2.16 (1.87 to 2.47) ***	4.57	2.32	2.25 (1.98 to 2.49) ***	4.73	3.62	1.10 (0.78 to 1.45) ***
> Chronic Fatigue	0.39	0.21	0.18 (0.11 to 0.26) ***	0.40	0.24	0.16 (0.06 to 0.23) ***	0.39	0.32	0.07 (-0.01 to 0.16)
> Postviral fatigue	0.22	0.01	0.22 (0.18 to 0.25) ***	0.23	0.01	0.22 (0.18 to 0.27) ***	0.24	0.03	0.21 (0.16 to 0.26) ***
Myalgia	4.34	2.90	1.44 (1.14 to 1.73) ***	4.35	3.27	1.08 (0.80 to 1.44) ***	4.53	4.23	0.30 (-0.08 to 0.66)
Anosmia	0.23	0.04	0.19 (0.14 to 0.24) ***	0.21	0.02	0.20 (0.16 to 0.24) ***	0.22	0.04	0.18 (0.14 to 0.23) ***

† Cumulative incidence by Kaplan-Meier estimator 120 days after time origin (index date+21 days), which is 141 days after index date.

†† Confidence intervals are calculated based on Bonferroni correction, i.e., (1 - 0.05/N) confidence interval.

††† Individuals were excluded if they had less than index date + 21 days of follow-up, had already been diagnosed with outcome of interest prior to index date + 21 days or their matched pair was excluded for the same reasons.

†††† The outcome observation period is the length of follow-up (in days) measured from time origin (which is index date + 21 days) to end of observation of the members

*** p value < 0.001

** p value < 0.01

* p value < 0.05

Table 2c: Rates and Hazard Ratios for Clinical Sequelae by SARS-CoV-2 Infection and Comparison Groups, UnitedHealth Group Clinical Discovery Database through October 31, 2020.

Outcome	2020 SARS-CoV-2 Infected: incidence rate (case/person-year)	2020 Comparator: incidence rate (case/person-year) †	Hazard Ratio (95 CI ††)	2019-matched 2020 SARS-CoV-2 Infected: incidence rate (case/person-year)	2019 Comparator: incidence rate (case/person-year) †	Hazard Ratio (95 CI ††)	vLRTI-matched 2020 SARS-CoV-2 Infected: incidence rate (case/person-year)	vLRTI comparator: incidence rate (case/person-year) †	Hazard Ratio (95 CI ††)
Matched Group Size	193113 †††	193113 †††		193264 †††	193264 †††		181613 †††	181613 †††	
Follow-up period (days): median (IQR) ††††	87 (45 – 124)	87 (45 – 124)		87 (45 – 124)	87 (46 – 124)		89 (45 – 135)	87 (43 – 130)	
Hypertension									
Hypertension	0.09 (2231/26249.51)	0.05 (1374/27255.68)	1.70 (1.55 to 1.87) ***	0.09 (2240/26244.68)	0.05 (1432/27414.12)	1.59 (1.46 to 1.74) ***	0.09 (2126/24690.74)	0.08 (1921/25164.28)	1.10 (1.01 to 1.19) **
Pulmonary hypertension	0.004 (212/47079.96)	0.001 (61/47148.28)	3.20 (2.07 to 4.95) ***	0.004 (202/47071.03)	0.002 (71/47439.48)	3.14 (2.04 to 4.83) ***	0.005 (207/45384.27)	0.005 (228/46034.33)	0.91 (0.68 to 1.24)
Cardiology									
Arrhythmia	0.05 (2044/42447.53)	0.02 (840/43043.64)	2.50 (2.22 to 2.83) ***	0.05 (2080/42437.48)	0.02 (943/43347.33)	2.23 (1.99 to 2.50) ***	0.05 (1977/40010.37)	0.03 (1388/40748.83)	1.46 (1.31 to 1.62) ***
> Cardiac arrhythmia	0.02 (1017/45301.45)	0.009 (434/45575.10)	2.44 (2.05 to 2.90) ***	0.02 (1028/45289.35)	0.01 (524/45861.38)	2.01 (1.71 to 2.36) ***	0.02 (1003/43420.88)	0.02 (712/44120.85)	1.41 (1.22 to 1.64) ***
> Tachycardia	0.03 (1533/43888.32)	0.01 (571/44346.21)	2.74 (2.37 to 3.16) ***	0.04 (1564/43888.41)	0.01 (605/44668.55)	2.62 (2.27 to 3.02) ***	0.04 (1502/41594.79)	0.02 (997/42317.58)	1.52 (1.34 to 1.72) ***
> POTs	0.009 (419/46565.70)	0.004 (185/46704.19)	2.48 (1.89 to 3.25) ***	0.009 (434/46541.80)	0.005 (225/46987.87)	1.89 (1.48 to 2.42) ***	0.010 (432/44815.15)	0.007 (340/45493.60)	1.27 (1.01 to 1.59) *
Congestive heart failure	0.007 (319/46556.83)	0.003 (128/46663.40)	2.62 (1.91 to 3.59) ***	0.007 (321/46559.09)	0.003 (145/46965.40)	2.30 (1.70 to 3.10) ***	0.007 (325/44776.02)	0.007 (322/45396.49)	0.98 (0.77 to 1.25)
Cardiomyopathy	0.007 (334/46578.69)	0.002 (104/46711.85)	3.27 (2.32 to 4.62) ***	0.007 (346/46569.49)	0.003 (129/46981.84)	2.59 (1.89 to 3.55) ***	0.007 (318/44840.13)	0.006 (283/45507.81)	1.15 (0.89 to 1.48)
Myocarditis	0.002 (75/47407.34)	0.000 (4/47425.45)	20.97 (3.88 to 113.30) ***	0.002 (70/47405.34)	0.000 (2/47734.24)	42.17 (3.99 to 445.92) ***	0.001 (66/45789.39)	0.000 (15/46463.31)	4.41 (1.86 to 10.46) ***
Coronary disease	0.007 (311/46564.60)	0.003 (147/46663.40)	2.23 (1.64 to 3.03) ***	0.007 (312/46545.49)	0.004 (170/46944.96)	1.86 (1.39 to 2.47) ***	0.007 (306/44780.04)	0.007 (304/45406.27)	1.00 (0.78 to 1.28)

> Myocardial infarction	0.004 (202/46853.39)	0.002 (84/46912.81)	2.45 (1.65 to 3.65) ***	0.004 (204/46846.38)	0.002 (107/47218.00)	1.90 (1.32 to 2.73) ***	0.004 (197/45130.20)	0.004 (167/45768.08)	1.14 (0.83 to 1.58)
> Acute coronary syndrome	0.006 (292/46608.70)	0.003 (139/46699.04)	2.20 (1.60 to 3.02) ***	0.006 (296/46592.34)	0.004 (164/46987.89)	1.81 (1.35 to 2.42) ***	0.006 (286/44837.40)	0.006 (281/45469.07)	1.02 (0.79 to 1.32)
> Cardiogenic shock	0.001 (38/47372.05)	0.000 (9/47397.15)	4.49 (1.42 to 14.23) ***	0.001 (39/47373.87)	0.000 (16/47709.36)	2.51 (1.00 to 6.30) *	0.001 (37/45732.29)	0.001 (37/46400.81)	0.94 (0.46 to 1.91)
Hypercoagulability DVT PE	0.02 (877/45620.93)	0.006 (288/45897.10)	3.13 (2.55 to 3.84) ***	0.02 (904/45599.57)	0.007 (304/46166.21)	2.95 (2.42 to 3.61) ***	0.02 (876/43685.19)	0.01 (595/44390.44)	1.45 (1.23 to 1.70) ***
> Hypercoagulability	0.02 (731/45939.24)	0.005 (253/46179.03)	3.00 (2.40 to 3.74) ***	0.02 (764/45918.21)	0.006 (265/46458.84)	2.85 (2.30 to 3.54) ***	0.02 (740/44122.84)	0.01 (539/44836.13)	1.33 (1.12 to 1.59) ***
> Deep vein thrombosis	0.01 (503/46522.07)	0.003 (146/46680.61)	3.50 (2.63 to 4.65) ***	0.01 (519/46492.32)	0.003 (146/46962.45)	3.46 (2.60 to 4.59) ***	0.01 (500/44737.35)	0.008 (352/45438.00)	1.37 (1.11 to 1.69) ***
> Pulmonary embolism	0.006 (305/46844.11)	0.002 (85/46953.38)	3.57 (2.46 to 5.18) ***	0.006 (305/46844.01)	0.002 (85/47239.24)	3.63 (2.50 to 5.26) ***	0.007 (298/45063.50)	0.004 (191/45737.92)	1.55 (1.17 to 2.06) ***
Stroke	0.007 (331/46649.92)	0.003 (141/46740.95)	2.46 (1.81 to 3.35) ***	0.007 (327/46659.48)	0.004 (188/47060.20)	1.82 (1.38 to 2.40) ***	0.007 (334/44933.51)	0.005 (241/45591.04)	1.32 (1.02 to 1.71) *
> Ischemic stroke	0.006 (286/46777.38)	0.003 (120/46860.48)	2.58 (1.84 to 3.60) ***	0.006 (283/46788.71)	0.003 (152/47183.87)	1.97 (1.45 to 2.66) ***	0.006 (290/45091.61)	0.005 (213/45752.38)	1.29 (0.98 to 1.70)
> Hemorrhagic stroke	0.002 (90/47237.81)	0.001 (36/47274.08)	2.59 (1.41 to 4.74) ***	0.002 (92/47239.13)	0.001 (50/47579.10)	1.87 (1.09 to 3.22) **	0.002 (88/45577.50)	0.001 (63/46249.82)	1.37 (0.82 to 2.28)
Mental Health									
Mental Health Diagnosis	0.11 (3645/32736.86)	0.08 (2670/33085.31)	1.39 (1.30 to 1.50) ***	0.11 (3691/32839.69)	0.08 (2550/33484.42)	1.46 (1.36 to 1.57) ***	0.11 (3587/31239.04)	0.10 (3054/31741.36)	1.17 (1.09 to 1.25) ***
> Anxiety	0.09 (3339/35659.08)	0.07 (2406/35993.77)	1.42 (1.32 to 1.53) ***	0.10 (3397/35753.90)	0.06 (2239/36436.62)	1.54 (1.42 to 1.66) ***	0.10 (3289/34227.73)	0.08 (2659/34852.59)	1.24 (1.15 to 1.34) ***
> Depression	0.05 (1935/40289.18)	0.04 (1556/40395.20)	1.27 (1.15 to 1.40) ***	0.05 (1954/40330.06)	0.04 (1636/40697.83)	1.21 (1.10 to 1.34) ***	0.05 (1926/38804.30)	0.05 (1936/39265.49)	1.00 (0.90 to 1.10)
> PTSD	0.007 (313/46616.36)	0.005 (216/46671.27)	1.42 (1.09 to 1.86) ***	0.006 (302/46618.53)	0.005 (228/46961.04)	1.37 (1.05 to 1.79) **	0.007 (304/45043.43)	0.005 (222/45715.31)	1.37 (1.04 to 1.79) **
Neurologic									
Amnesia/Memory Difficulty	0.02 (1037/45562.64)	0.009 (434/45781.27)	2.48 (2.08 to 2.95) ***	0.02 (1056/45553.90)	0.01 (483/46065.83)	2.18 (1.85 to 2.58) ***	0.02 (1043/43756.61)	0.01 (653/44434.07)	1.55 (1.33 to 1.80) ***
Migraine	0.02 (1030/43668.58)	0.02 (788/43848.08)	1.29 (1.12 to 1.48) ***	0.02 (1009/43628.85)	0.02 (840/44110.31)	1.20 (1.05 to 1.38) ***	0.02 (998/41977.65)	0.02 (1039/42616.30)	0.98 (0.85 to 1.12)
Peripheral neuropathy	0.009 (436/46696.85)	0.004 (204/46799.54)	2.05 (1.59 to 2.65) ***	0.009 (412/46690.33)	0.005 (231/47110.58)	1.87 (1.46 to 2.40) ***	0.009 (427/45060.75)	0.006 (282/45765.41)	1.47 (1.16 to 1.87) ***
Encephalopathy	0.007 (341/46929.65)	0.001 (52/47042.60)	6.26 (4.02 to 9.76) ***	0.007 (331/46932.16)	0.002 (96/47344.77)	3.66 (2.57 to 5.22) ***	0.007 (329/45170.58)	0.004 (199/45829.85)	1.70 (1.29 to 2.24) ***

Sleep apnea	0.04 (1549/ 41676.21)	0.02 (891/ 42016.58)	1.78 (1.58 to 2.02) ***	0.04 (1555/ 41663.30)	0.02 (961/ 42299.37)	1.60 (1.42 to 1.81) ***	0.04 (1547/ 39876.21)	0.04 (1633/ 40393.38)	0.93 (0.84 to 1.03)
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† Denominator for incidence of each outcome is person-time for individuals at-risk starting 21 days after index date. 2 decimals are kept for incidence rates ≥ 0.01 and 3 decimals are kept for incidence rates < 0.01 .

†† Confidence intervals are calculated based on Bonferroni correction, i.e., $(1 - 0.05/N) * 100$ confidence interval.

††† Individuals were excluded if they had less than index date + 21 days of follow-up, had already been diagnosed with outcome of interest prior to index date + 21 days or their matched pair was excluded for the same reasons.

†††† The outcome observation periods length (in days) is measured from time origin (index date + 21 days) to end of observation of the member.

*** p value < 0.001

** p value < 0.01

* p value < 0.05

Table 2d: Rates and Hazard Ratios for Symptom Sequelae by SARS-CoV-2 Infection and Comparison Groups, UnitedHealth Group Clinical Discovery Database through October 31, 2020.

Outcome	2020 SARS-CoV-2 Infected: incidence rate (case/ person-year)	2020 Comparator: incidence rate (case/ person-year) †	Hazard Ratio (95 CI ††)	2019-matched 2020 SARS-CoV-2 Infected: incidence rate (case/ person-year)	2019 Comparator: incidence rate (case/ person-year) †	Hazard Ratio (95 CI ††)	vLRTI-matched 2020 SARS-CoV-2 Infected: incidence rate (case/ person-year)	vLRTI comparator: incidence rate (case/ person-year) †	Hazard Ratio (95 CI ††)
Matched Group Size	193113 †††	193113 †††		193264 †††	193264 †††		181613 †††	181613 †††	
Follow-up period (days): median (IQR) ††††	87 (45 – 124)	87 (45 – 124)		87 (45 – 124)	87 (46 – 124)		89 (45 – 135)	87 (43 – 130)	
Fatigue Diagnosis	0.15 (5177/34590.87)	0.07 (2584/35579.05)	2.11 (1.97 to 2.26) ***	0.15 (5160/34327.11)	0.07 (2594/35605.32)	2.06 (1.93 to 2.21) ***	0.15 (4875/31464.09)	0.11 (3638/32246.65)	1.36 (1.27 to 1.44) ***
> Fatigue	0.15 (5062/34689.62)	0.07 (2581/35641.79)	2.06 (1.93 to 2.21) ***	0.15 (5037/34431.62)	0.07 (2585/35671.77)	2.02 (1.88 to 2.16) ***	0.15 (4763/31582.42)	0.11 (3632/32336.83)	1.33 (1.25 to 1.41) ***
> Chronic Fatigue	0.01 (536/46341.01)	0.007 (305/46426.64)	1.78 (1.43 to 2.22) ***	0.01 (546/46313.92)	0.007 (339/46741.97)	1.60 (1.30 to 1.98) ***	0.01 (521/44685.73)	0.010 (441/45339.92)	1.17 (0.95 to 1.43)
> Postviral fatigue	0.007 (343/47241.23)	0.000 (13/47340.71)	25.65 (11.09 to 59.29) ***	0.007 (354/47237.29)	0.000 (20/47650.36)	19.65 (9.40 to 41.09) ***	0.007 (344/45604.65)	0.001 (45/46346.09)	7.46 (4.62 to 12.04) ***
Myalgia	0.14 (4609/33766.63)	0.09 (3044/34620.02)	1.55 (1.45 to 1.66) ***	0.14 (4565/33401.85)	0.10 (3464/34415.83)	1.36 (1.28 to 1.45) ***	0.14 (4311/30523.68)	0.13 (4079/31114.77)	1.06 (1.00 to 1.13)
Anosmia	0.007 (323/46633.43)	0.001 (52/46710.06)	5.37 (3.47 to 8.30) ***	0.006 (299/46651.89)	0.001 (26/47059.87)	13.12 (6.87 to 25.05) ***	0.007 (300/45069.29)	0.001 (51/45838.62)	5.78 (3.66 to 9.12) ***

† Denominator for incidence of each outcome is person-time for individuals at-risk starting 21 days after index date for outcome of interest. 2 decimals are kept for incidence rates ≥ 0.01 and 3 decimals are kept for incidence rates < 0.01 .

†† Confidence intervals are calculated based on Bonferroni correction, i.e., $(1 - 0.05/N) * 100$ confidence interval.

††† Individuals were excluded if they had less than index date + 21 days of follow-up, had already been diagnosed with outcome of interest prior to index date + 21 days or their matched pair was excluded for the same reasons.

†††† The outcome observation periods length (in days) is measured from time origin (which is index date + 21 days) to end of observation of the member.

*** p value < 0.001

** p value < 0.01

* p value < 0.05

Table 3: Rates and Hazard Ratios for New Clinical and Symptom Sequelae by Month of Follow-up, UnitedHealth Group Clinical Discovery Database through October 31, 2020.

Clinical Sequelae	Months of Follow-up*						
	-1	1 (include index date)	2	3	4	5	6
Hypertension							
SARS-CoV-2 Infection	1296/159380	3093/157402	683/99192	363/66933	195/41347	77/17484	43/5775
2020 comparator	691/159380	571/157402	393/99192	262/66933	135/41347	59/17484	24/5775
HR (95 CI)	1.88 (1.71 to 2.06)	5.48 (5.01 to 5.99)	1.75 (1.54 to 1.98)	1.40 (1.19 to 1.64)	1.46 (1.17 to 1.81)	1.34 (0.95 to 1.88)	1.81 (1.10 to 2.96)
Arrhythmia+							
SARS-CoV-2 Infection	1353/250328	5571/248546	642/156989	369/107416	170/66983	67/28212	26/9519
2020 comparator	429/250328	397/248546	219/156989	172/107416	87/66983	31/28212	14/9519
HR (95 CI)	3.16 (2.83 to 3.52)	14.20 (12.82 to 15.71)	2.94 (2.52 to 3.43)	2.15 (1.80 to 2.58)	1.96 (1.51 to 2.54)	2.17 (1.42 to 3.32)	1.87 (0.98 to 3.59)
Cardiomyopathy +							
SARS-CoV-2 Infection	123/263126	644/262916	96/170207	53/117220	36/73578	10/31293	3/10732
2020 comparator	87/263126	57/262916	33/170207	17/117220	10/73578	5/31293	1/10732
HR (95 CI)	1.41 (1.07 to 1.86)	11.31 (8.63 to 14.82)	2.91 (1.96 to 4.32)	3.12 (1.81 to 5.39)	3.60 (1.79 to 7.26)	1.99 (0.68 to 5.84)	3.01 (0.31 to 28.94)
Congestive heart failure							
SARS-CoV-2 Infection	177/263399	897/263160	107/170214	50/117157	32/73506	9/31320	6/10739

2020 comparator	62/263399	45/263160	45/170214	24/117157	18/73506	3/31320	0/10739
HR (95 CI)	2.85 (2.14 to 3.81)	19.96 (14.80 to 26.93)	2.38 (1.68 to 3.37)	2.09 (1.28 to 3.39)	1.78 (1.00 to 3.17)	2.99 (0.81 to 11.05)	
Coronary disease							
SARS-CoV-2 Infection	319/263985	1278/263604	94/170221	62/117201	29/73575	11/31307	3/10721
2020 comparator	62/263985	50/263604	39/170221	28/117201	15/73575	8/31307	4/10721
HR (95 CI)	5.15 (3.92 to 6.76)	25.61 (19.31 to 33.98)	2.41 (1.66 to 3.50)	2.22 (1.42 to 3.46)	1.94 (1.04 to 3.61)	1.37 (0.55 to 3.40)	0.75 (0.17 to 3.36)
Hypercoagulability DVT PE+							
SARS-CoV-2 Infection	427/260709	2110/260137	299/167328	147/115032	52/72067	28/30630	6/10446
2020 comparator	145/260709	119/260137	65/167328	57/115032	29/72067	9/30630	8/10446
HR (95 CI)	2.95 (2.44 to 3.56)	17.80 (14.79 to 21.41)	4.61 (3.52 to 6.03)	2.58 (1.90 to 3.51)	1.79 (1.14 to 2.83)	3.11 (1.47 to 6.59)	0.76 (0.26 to 2.18)
Mental Health Diagnosis+							
SARS-CoV-2 Infection	1943/194808	3380/191487	1134/121180	654/82379	346/51086	118/21543	49/7363
2020 comparator	1400/194808	1238/191487	746/121180	474/82379	299/51086	121/21543	36/7363
HR (95 CI)	1.39 (1.30 to 1.49)	2.75 (2.58 to 2.93)	1.52 (1.39 to 1.67)	1.38 (1.23 to 1.55)	1.16 (0.99 to 1.35)	0.98 (0.76 to 1.26)	1.37 (0.89 to 2.11)
Amnesia/Memory Difficulty							
SARS-CoV-2 Infection	471/259801	1608/259151	341/167024	159/114785	88/71891	21/30552	12/10417
2020 comparator	179/259801	182/259151	109/167024	69/114785	57/71891	25/30552	5/10417

HR (95 CI)	2.63 (2.22 to 3.13)	8.86 (7.60 to 10.33)	3.13 (2.52 to 3.89)	2.31 (1.74 to 3.06)	1.55 (1.11 to 2.16)	0.84 (0.47 to 1.50)	2.42 (0.85 to 6.86)
Migraine							
SARS-CoV-2 Infection	511/248797	689/247901	291/160128	178/109937	109/68737	45/29253	16/9987
2020 comparator	386/248797	296/247901	231/160128	138/109937	98/68737	21/29253	8/9987
HR (95 CI)	1.32 (1.16 to 1.51)	2.33 (2.03 to 2.67)	1.26 (1.06 to 1.50)	1.29 (1.03 to 1.61)	1.11 (0.85 to 1.46)	2.14 (1.27 to 3.59)	2.01 (0.86 to 4.70)
Peripheral neuropathy							
SARS-CoV-2 Infection	122/263493	177/263289	109/170751	79/117552	55/73711	21/31404	6/10767
2020 comparator	83/263493	88/263289	49/170751	36/117552	28/73711	10/31404	1/10767
HR (95 CI)	1.47 (1.11 to 1.94)	2.01 (1.56 to 2.60)	2.23 (1.59 to 3.12)	2.20 (1.48 to 3.26)	1.97 (1.25 to 3.10)	2.09 (0.98 to 4.44)	6.04 (0.72 to 50.21)
Encephalopathy							
SARS-CoV-2 Infection group	155/265385	921/265192	122/171556	59/118144	26/74135	6/31550	3/10788
2020 comparator group	38/265385	24/265192	18/171556	10/118144	4/74135	2/31550	1/10788
HR (95 CI)	4.08 (2.86 to 5.82)	38.42 (25.62 to 57.62)	6.78 (4.13 to 11.13)	5.91 (3.02 to 11.55)	6.51 (2.27 to 18.64)	2.99 (0.60 to 14.81)	3.03 (0.31 to 29.16)
Type 2 Diabetes							
SARS-CoV-2 Infection	536/215755	1629/214943	346/137676	204/93927	114/58694	54/24942	22/8444
2020 comparator	278/215755	280/214943	159/137676	110/93927	74/58694	37/24942	9/8444
HR (95 CI)	1.93 (1.67 to 2.23)	5.85 (5.15 to 6.64)	2.19 (1.81 to 2.64)	1.86 (1.48 to 2.35)	1.55 (1.16 to 2.08)	1.47 (0.97 to 2.24)	2.47 (1.14 to 5.38)

Liver Test Abnormality							
SARS-CoV-2 Infection	832 / 250678	1763 / 249453	469 / 160302	252 / 109852	168 / 68584	70 / 29063	16 / 9905
2020 comparator	394 / 250678	329 / 249453	274 / 160302	161 / 109852	88 / 68584	46 / 29063	16 / 9905
HR (95 CI)	2.11 (1.87 to 2.38)	5.38 (4.78 to 6.05)	1.72 (1.48 to 1.99)	1.57 (1.29 to 1.91)	1.91 (1.48 to 2.48)	1.52 (1.05 to 2.20)	1.01 (0.50 to 2.02)
Kidney Injury+							
SARS-CoV-2 Infection	593 / 256325	3096 / 255535	210 / 163540	120 / 112403	73 / 70436	22 / 29943	10 / 10221
2020 comparator	199 / 256325	199 / 255535	97 / 163540	87 / 112403	42 / 70436	19 / 29943	4 / 10221
HR (95 CI)	2.98 (2.54 to 3.50)	15.65 (13.56 to 18.07)	2.17 (1.70 to 2.76)	1.38 (1.05 to 1.82)	1.74 (1.19 to 2.54)	1.16 (0.64 to 2.11)	2.52 (0.79 to 8.01)
Respiratory failure+							
SARS-CoV-2 Infection	614 / 264151	9259 / 263477	102 / 164808	48 / 113354	31 / 70990	8 / 30114	4 / 10178
2020 comparator	60 / 264151	31 / 263477	22 / 164808	13 / 113354	11 / 70990	4 / 30114	3 / 10178
HR (95 CI)	10.24 (7.86 to 13.35)	304.05 (213.72 to 432.54)	4.64 (2.93 to 7.36)	3.70 (2.01 to 6.83)	2.83 (1.42 to 5.62)	2.00 (0.60 to 6.65)	1.35 (0.30 to 6.02)
Interstitial lung disease							
SARS-CoV-2 Infection	115 / 265094	575 / 264948	127 / 171619	72 / 118144	41 / 74118	14 / 31543	7 / 10806
2020 comparator	31 / 265094	34 / 264948	17 / 171619	12 / 118144	5 / 74118	2 / 31543	1 / 10806
HR (95 CI)	3.71 (2.50 to 5.52)	16.92 (11.97 to 23.91)	7.48 (4.51 to 12.40)	6.01 (3.26 to 11.07)	8.21 (3.24 to 20.77)	6.97 (1.58 to 30.69)	7.06 (0.87 to 57.30)

Atopic dermatitis							
SARS-CoV-2 Infection	183 / 261197	173 / 260842	101 / 169096	86 / 116369	49 / 72975	18 / 31045	5 / 10628
2020 comparator	172 / 261197	149 / 260842	107 / 169096	80 / 116369	42 / 72975	16 / 31045	7 / 10628
HR (95 CI)	1.06 (0.86 to 1.31)	1.16 (0.93 to 1.44)	0.94 (0.72 to 1.24)	1.08 (0.79 to 1.46)	1.17 (0.77 to 1.76)	1.12 (0.57 to 2.19)	0.72 (0.23 to 2.27)
Urticaria							
SARS-CoV-2 Infection	200 / 262026	279 / 261699	111 / 169601	79 / 116727	53 / 73163	9 / 31077	6 / 10642
2020 comparator	127 / 262026	123 / 261699	75 / 169601	65 / 116727	30 / 73163	10 / 31077	5 / 10642
HR (95 CI)	1.57 (1.26 to 1.97)	2.27 (1.83 to 2.80)	1.48 (1.10 to 1.99)	1.22 (0.88 to 1.69)	1.77 (1.13 to 2.77)	0.90 (0.36 to 2.21)	1.20 (0.37 to 3.95)
Sleep apnea							
SARS-CoV-2 Infection	548 / 238638	910 / 237669	482 / 153466	259 / 105105	156 / 65652	59 / 27826	32 / 9471
2020 comparator	422 / 238638	344 / 237669	246 / 153466	165 / 105105	97 / 65652	32 / 27826	14 / 9471
HR (95 CI)	1.30 (1.14 to 1.48)	2.65 (2.34 to 3.00)	1.96 (1.68 to 2.29)	1.57 (1.30 to 1.91)	1.61 (1.25 to 2.08)	1.85 (1.20 to 2.84)	2.31 (1.23 to 4.32)
Fatigue Diagnosis+							
SARS-CoV-2 Infection	4401 / 219007	10576 / 213409	1640 / 130171	818 / 87610	480 / 53897	201 / 22624	78 / 7555
2020 comparator	1215 / 219007	1067 / 213409	722 / 130171	487 / 87610	269 / 53897	101 / 22624	36 / 7555
HR (95 CI)	3.64 (3.42 to 3.88)	10.18 (9.56 to 10.83)	2.29 (2.10 to 2.50)	1.69 (1.51 to 1.89)	1.79 (1.54 to 2.08)	2.00 (1.57 to 2.54)	2.20 (1.48 to 3.27)

* For j month follow-up, we only consider members who had at least (j-1)*30 days follow-up period.

* Incidence is reporting number of new cases within jth follow-up month dividing by population at-risk at jth follow-up month.

* The hazard ratio and 95 confidence interval are estimated when considering start of the jth follow-up month as time 0 and end of jth follow-up month as end of observation.

* We only considered members in the interval whose matched pair is also available in the same time interval. This criterion reduced population significantly.

+ Aggregate diagnosis includes all subdiagnoses as listed in eTable 1

Table 4a: Risk Difference (per 100 individuals) for Clinical Sequelae by Age, UnitedHealth Group Clinical Discovery Database through October 31, 2020.

Clinical Sequelae	Category	18-34 (†)	35-50 (†)	>50 (†)	p-interaction
	Matched Group Size	66425 vs 66425 ††	64758 vs 64758 ††	64011 vs 64011 ††	
Hypertension					
Hypertension	SARS-CoV-2 Group	0.83	2.83	5.40	
	2020 Comparator Group	0.49	1.77	3.54	
	Risk Difference	0.33 (0.04 to 0.55)	1.06 (0.67 to 1.8)	1.86 (0.48 to 3.09)	
	p-value	<0.001	<0.001	<0.001	<0.001
Pulmonary Hypertension					
Pulmonary Hypertension	SARS-CoV-2 Group	0.03	0.10	0.29	
	2020 Comparator Group	0.01	0.04	0.09	
	Risk Difference	0.02 (-0.02 to 0.06)	0.06 (0 to 0.15)	0.2 (0.07 to 0.32)	
	p-value	1	0.15	<0.001	<0.001
Cardiology					
Arrhythmia					
Arrhythmia	SARS-CoV-2 Group	0.97	1.46	2.21	
	2020 Comparator Group	0.44	0.62	1	
	Risk Difference	0.53 (0.32 to 0.76)	0.83 (0.62 to 1.23)	1.21 (0.94 to 1.66)	
	p-value	<0.001	<0.001	<0.001	<0.001
> Cardiac Arrhythmia					
> Cardiac Arrhythmia	SARS-CoV-2 Group	0.41	0.61	1.16	
	2020 Comparator Group	0.16	0.28	0.57	
	Risk Difference	0.25 (0.09 to 0.4)	0.34 (0.15 to 0.53)	0.59 (0.34 to 0.86)	
	p-value	<0.001	<0.001	<0.001	<0.001
> Tachycardia					
> Tachycardia	SARS-CoV-2 Group	0.75	1.08	1.50	
	2020 Comparator Group	0.35	0.43	0.58	
	Risk Difference	0.4 (0.25 to 0.63)	0.65 (0.43 to 0.93)	0.92 (0.55 to 1.09)	
	p-value	<0.001	<0.001	<0.001	<0.001
> POTs					
> POTs	SARS-CoV-2 Group	0.19	0.20	0.47	
	2020 Comparator Group	0.07	0.10	0.22	
	Risk Difference	0.13 (0.03 to 0.25)	0.1 (-0.04 to 0.17)	0.25 (0.09 to 0.39)	
	p-value	<0.001	1	<0.001	<0.001
Congestive Heart Failure					
Congestive Heart Failure	SARS-CoV-2 Group	0.03	0.16	0.49	
	2020 Comparator Group	0	0.05	0.17	
	Risk Difference	0.03 (0 to 0.06)	0.11 (0 to 0.16)	0.32 (0.2 to 0.48)	
	p-value	<0.001	0.15	<0.001	<0.001
Cardiomyopathy					
Cardiomyopathy	SARS-CoV-2 Group	0.07	0.17	0.43	
	2020 Comparator Group	0.01	0.05	0.17	
	Risk Difference	0.06 (0.02 to 0.12)	0.12 (0.01 to 0.18)	0.26 (0.14 to 0.41)	

	p-value	<0.001	<0.001	<0.001	<0.001
Myocarditis	SARS-CoV-2 Group	0.09	0.02	0.03	
	2020 Comparator Group	0	0	0	
	Risk Difference	0.08 (0.03 to 0.16)	0.02 (0 to 0.06)	0.03 (0.01 to 0.1)	
	p-value	<0.001	<0.001	<0.001	0.002
Coronary Disease	SARS-CoV-2 Group	0.03	0.14	0.47	
	2020 Comparator Group	0.01	0.09	0.21	
	Risk Difference	0.02 (-0.01 to 0.06)	0.05 (-0.02 to 0.16)	0.25 (0.07 to 0.39)	
	p-value	1	1	<0.001	<0.001
> Myocardial Infarction	SARS-CoV-2 Group	0.03	0.08	0.30	
	2020 Comparator Group	0.01	0.05	0.14	
	Risk Difference	0.02 (-0.01 to 0.05)	0.03 (-0.04 to 0.08)	0.16 (0.01 to 0.29)	
	p-value	1	1	<0.001	<0.001
> Acute Coronary Syndrome	SARS-CoV-2 Group	0.03	0.13	0.44	
	2020 Comparator Group	0.01	0.08	0.21	
	Risk Difference	0.02 (-0.01 to 0.06)	0.05 (-0.02 to 0.17)	0.23 (0.08 to 0.4)	
	p-value	0.61	1	<0.001	<0.001
> Cardiogenic Shock	SARS-CoV-2 Group	0	0.02	0.05	
	2020 Comparator Group	0	0.01	0.01	
	Risk Difference	0 (0 to 0.03)	0.01 (-0.04 to 0.04)	0.03 (-0.02 to 0.09)	
	p-value	<0.001	1	0.76	0.32
Hypercoagulability DVT PE	SARS-CoV-2 Group	0.23	0.61	1.03	
	2020 Comparator Group	0.10	0.17	0.29	
	Risk Difference	0.13 (0.03 to 0.27)	0.44 (0.26 to 0.61)	0.74 (0.47 to 0.91)	
	p-value	<0.001	<0.001	<0.001	<0.001
> Hypercoagulability	SARS-CoV-2 Group	0.20	0.50	0.88	
	2020 Comparator Group	0.09	0.17	0.27	
	Risk Difference	0.11 (0.04 to 0.25)	0.33 (0.23 to 0.53)	0.6 (0.37 to 0.77)	
	p-value	<0.001	<0.001	<0.001	<0.001
> Deep Vein Thrombosis	SARS-CoV-2 Group	0.09	0.32	0.62	
	2020 Comparator Group	0.04	0.10	0.17	
	Risk Difference	0.05 (-0.02 to 0.11)	0.23 (0.1 to 0.33)	0.45 (0.25 to 0.59)	
	p-value	1	<0.001	<0.001	<0.001
> Pulmonary Embolism	SARS-CoV-2 Group	0.08	0.18	0.33	
	2020 Comparator Group	0.01	0.05	0.07	
	Risk Difference	0.07 (0 to 0.12)	0.13 (0.05 to 0.21)	0.26 (0.15 to 0.39)	
	p-value	<0.001	<0.001	<0.001	<0.001
Stroke	SARS-CoV-2 Group	0.05	0.18	0.42	

	2020 Comparator Group	0.02	0.08	0.19	
	Risk Difference	0.03 (-0.02 to 0.08)	0.11 (0.01 to 0.21)	0.23 (0.12 to 0.41)	
	p-value	1	<0.001	<0.001	<0.001
> Ischemic Stroke	SARS-CoV-2 Group	0.05	0.15	0.37	
	2020 Comparator Group	0.02	0.07	0.18	
	Risk Difference	0.03 (-0.02 to 0.08)	0.07 (-0.03 to 0.15)	0.19 (0.08 to 0.37)	
	p-value	1	0.92	<0.001	<0.001
> Hemorrhagic Stroke	SARS-CoV-2 Group	0.01	0.06	0.11	
	2020 Comparator Group	0	0.01	0.03	
	Risk Difference	0.01 (-0.01 to 0.03)	0.05 (0.01 to 0.1)	0.08 (0 to 0.17)	
	p-value	1	<0.001	0.15	<0.001
Mental Health					
Mental Health Diagnosis	SARS-CoV-2 Group	3.87	3.90	3.29	
	2020 Comparator Group	3.24	2.75	2.35	
	Risk Difference	0.63 (0.19 to 1.61)	1.15 (0.93 to 2.38)	0.95 (0.47 to 1.58)	
	p-value	<0.001	<0.001	<0.001	0.35
> Anxiety	SARS-CoV-2 Group	3.34	3.29	2.63	
	2020 Comparator Group	2.81	2.29	1.83	
	Risk Difference	0.53 (-0.1 to 1.14)	1.01 (0.49 to 1.66)	0.79 (0.35 to 1.43)	
	p-value	0.15	<0.001	<0.001	0.84
> Depression	SARS-CoV-2 Group	1.71	1.73	1.52	
	2020 Comparator Group	1.76	1.32	1.08	
	Risk Difference	-0.05 (-0.62 to 0.32)	0.41 (-0.01 to 0.69)	0.44 (0.17 to 0.84)	
	p-value	1	0.15	<0.001	<0.001
> PTSD	SARS-CoV-2 Group	0.24	0.27	0.16	
	2020 Comparator Group	0.22	0.14	0.08	
	Risk Difference	0.03 (-0.1 to 0.15)	0.13 (0.01 to 0.25)	0.08 (-0.02 to 0.15)	
	p-value	1	<0.001	1	1
Neurologic					
Amnesia/Memory Difficulty	SARS-CoV-2 Group	0.47	0.62	1.02	
	2020 Comparator Group	0.27	0.22	0.44	
	Risk Difference	0.2 (0.13 to 0.5)	0.4 (0.27 to 0.6)	0.59 (0.38 to 0.8)	
	p-value	<0.001	<0.001	<0.001	<0.001
Migraine	SARS-CoV-2 Group	0.74	0.93	0.62	
	2020 Comparator Group	0.58	0.75	0.49	
	Risk Difference	0.16 (-0.16 to 0.35)	0.18 (-0.08 to 0.46)	0.13 (-0.07 to 0.31)	
	p-value	1	1	1	1
Peripheral Neuropathy	SARS-CoV-2 Group	0.07	0.30	0.52	

	2020 Comparator Group	0.03	0.12	0.30	
	Risk Difference	0.04 (-0.05 to 0.09)	0.18 (0.08 to 0.31)	0.22 (0.05 to 0.4)	
	p-value	1	<0.001	<0.001	<0.001
Encephalopathy	SARS-CoV-2 Group	0.06	0.16	0.47	
	2020 Comparator Group	0.02	0.05	0.11	
	Risk Difference	0.03 (-0.02 to 0.1)	0.11 (0.04 to 0.21)	0.36 (0.22 to 0.5)	
	p-value	1	<0.001	<0.001	<0.001
Seizure	SARS-CoV-2 Group	0.09	0.16	0.17	
	2020 Comparator Group	0.06	0.08	0.08	
	Risk Difference	0.03 (-0.05 to 0.13)	0.08 (-0.04 to 0.15)	0.1 (-0.01 to 0.17)	
	p-value	1	1	0.46	0.13
Dementia	SARS-CoV-2 Group	0.01	0.02	0.07	
	2020 Comparator Group	0.01	0	0.03	
	Risk Difference	0 (-0.02 to 0.02)	0.02 (0 to 0.05)	0.05 (0 to 0.1)	
	p-value	1	1	0.46	<0.001
Guillain-Barre Syndrome	SARS-CoV-2 Group	0.02	0.01	0.02	
	2020 Comparator Group	0	0	0	
	Risk Difference	0.01 (-0.01 to 0.07)	0.01 (-0.04 to 0.02)	0.01 (-0.01 to 0.05)	
	p-value	1	1	1	1
Alzheimer	SARS-CoV-2 Group	0	0	0.01	
	2020 Comparator Group	0	0	0	
	Risk Difference	0 (0 to 0)	0 (-0.01 to 0.03)	0.01 (0 to 0.04)	
	p-value	<0.001	1	<0.001	0.05
Diabetes					
Type 2 Diabetes	SARS-CoV-2 Group	0.36	1.09	1.81	
	2020 Comparator Group	0.16	0.58	1.07	
	Risk Difference	0.2 (0.05 to 0.32)	0.51 (0.17 to 0.75)	0.74 (0.39 to 1.3)	
	p-value	<0.001	<0.001	<0.001	<0.001
Liver					
Liver Test Abnormality	SARS-CoV-2 Group	0.42	1.37	1.78	
	2020 Comparator Group	0.29	0.74	1.20	
	Risk Difference	0.13 (-0.03 to 0.32)	0.63 (0.28 to 0.88)	0.58 (-0.1 to 0.74)	
	p-value	0.92	<0.001	0.15	<0.001
Nephrology					
Kidney Injury	SARS-CoV-2 Group	0.10	0.43	1.05	
	2020 Comparator Group	0.06	0.25	0.58	
	Risk Difference	0.03 (-0.04 to 0.11)	0.17 (0.01 to 0.34)	0.47 (0.14 to 0.65)	
	p-value	1	<0.001	<0.001	<0.001

> Chronic Kidney Disease	SARS-CoV-2 Group	0.05	0.28	0.77	
	2020 Comparator Group	0.03	0.16	0.45	
	Risk Difference	0.02 (-0.01 to 0.11)	0.12 (-0.05 to 0.18)	0.33 (0.16 to 0.6)	
	p-value	0.61	1	<0.001	<0.001
> Acute Kidney Injury	SARS-CoV-2 Group	0.08	0.28	0.79	
	2020 Comparator Group	0.04	0.14	0.31	
	Risk Difference	0.03 (-0.06 to 0.1)	0.14 (-0.01 to 0.23)	0.48 (0.25 to 0.66)	
	p-value	1	0.46	<0.001	<0.001
Respiratory					
Respiratory Failure	SARS-CoV-2 Group	0.05	0.16	0.49	
	2020 Comparator Group	0.02	0.06	0.14	
	Risk Difference	0.03 (-0.01 to 0.09)	0.1 (0 to 0.18)	0.35 (0.2 to 0.5)	
	p-value	0.31	0.31	<0.001	<0.001
> Acute Respiratory Failure	SARS-CoV-2 Group	0.05	0.15	0.46	
	2020 Comparator Group	0.02	0.06	0.12	
	Risk Difference	0.04 (0.01 to 0.09)	0.09 (0.03 to 0.21)	0.34 (0.2 to 0.53)	
	p-value	<0.001	<0.001	<0.001	<0.001
> Chronic Respiratory Failure	SARS-CoV-2 Group	0.02	0.11	0.39	
	2020 Comparator Group	0	0.01	0.03	
	Risk Difference	0.02 (0 to 0.06)	0.1 (0.06 to 0.18)	0.36 (0.26 to 0.5)	
	p-value	<0.001	<0.001	<0.001	<0.001
Interstitial Lung Disease	SARS-CoV-2 Group	0.04	0.19	0.57	
	2020 Comparator Group	0.01	0.03	0.09	
	Risk Difference	0.04 (-0.03 to 0.09)	0.16 (0.05 to 0.25)	0.48 (0.36 to 0.63)	
	p-value	1	<0.001	<0.001	<0.001
Dermatologic					
Atopic Dermatitis	SARS-CoV-2 Group	0.38	0.30	0.32	
	2020 Comparator Group	0.27	0.28	0.21	
	Risk Difference	0.11 (-0.05 to 0.25)	0.03 (-0.15 to 0.19)	0.11 (-0.07 to 0.21)	
	p-value	1	1	1	1
Urticaria	SARS-CoV-2 Group	0.30	0.31	0.25	
	2020 Comparator Group	0.23	0.21	0.18	
	Risk Difference	0.07 (-0.1 to 0.26)	0.11 (-0.06 to 0.2)	0.07 (-0.04 to 0.25)	
	p-value	1	1	1	1
Herpesviral Vesicular Dermatitis	SARS-CoV-2 Group	0.10	0.14	0.09	
	2020 Comparator Group	0.09	0.13	0.08	
	Risk Difference	0.01 (-0.05 to 0.1)	0.01 (-0.1 to 0.11)	0 (-0.07 to 0.08)	
	p-value	1	1	1	1

Others					
Sleep Apnea	SARS-CoV-2 Group	0.41	1.35	1.81	
	2020 Comparator Group	0.22	0.82	1.05	
	Risk Difference	0.19 (0.05 to 0.39)	0.53 (0.32 to 0.94)	0.76 (0.55 to 1.32)	
	p-value	<0.001	<0.001	<0.001	<0.001
Symptom					
Myalgia	SARS-CoV-2 Group	2.93	4.55	5.87	
	2020 Comparator Group	1.88	3.07	3.79	
	Risk Difference	1.05 (0.46 to 1.53)	1.48 (0.7 to 2.01)	2.08 (1.1 to 2.89)	
	p-value	<0.001	<0.001	<0.001	<0.001
Fatigue Diagnosis	SARS-CoV-2 Group	3.15	5.35	5.98	
	2020 Comparator Group	1.85	2.62	2.52	
	Risk Difference	1.29 (0.83 to 1.88)	2.73 (2.22 to 3.5)	3.46 (3.06 to 4.47)	
	p-value	<0.001	<0.001	<0.001	<0.001
> Fatigue	SARS-CoV-2 Group	3.09	5.22	5.82	
	2020 Comparator Group	1.85	2.61	2.51	
	Risk Difference	1.24 (0.52 to 1.58)	2.61 (1.93 to 3.31)	3.31 (2.54 to 3.97)	
	p-value	<0.001	<0.001	<0.001	<0.001
> Chronic Fatigue	SARS-CoV-2 Group	0.27	0.47	0.39	
	2020 Comparator Group	0.15	0.24	0.22	
	Risk Difference	0.12 (-0.01 to 0.22)	0.23 (0.12 to 0.45)	0.17 (-0.02 to 0.29)	
	p-value	0.76	<0.001	0.31	0.27
> Postviral Fatigue	SARS-CoV-2 Group	0.10	0.29	0.30	
	2020 Comparator Group	0	0.02	0.01	
	Risk Difference	0.1 (0.06 to 0.18)	0.27 (0.2 to 0.4)	0.28 (0.19 to 0.39)	
	p-value	<0.001	<0.001	<0.001	<0.001
Anosmia	SARS-CoV-2 Group	0.23	0.23	0.21	
	2020 Comparator Group	0.06	0.03	0.02	
	Risk Difference	0.17 (0.08 to 0.32)	0.2 (0.11 to 0.3)	0.19 (0.13 to 0.29)	
	p-value	<0.001	<0.001	<0.001	1

† Cumulative incidence by Kaplan-Meier estimator 120 days after time origin (index date+21 days), which is 141 days after index date.

† Confidence intervals are calculated based on Bonferroni correction, i.e., $(1 - 0.05/N)$ confidence interval.

†† Individuals were excluded if they had less than index date + 21 days of follow-up, had already been diagnosed with outcome of interest prior to index date + 21 days or their matched pair was excluded for the same reasons.

Table 4b: Risk Differences (per 100 individuals) for Clinical Sequelae by Gender, UnitedHealth Group Clinical Discovery Database through October 31, 2020.

Clinical Sequelae	Category	Female (†)	Male (†)	p-interaction
	Matched Group Size	102482 vs 102482 ††	92593 vs 92593 ††	
Hypertension				
Hypertension	SARS-CoV-2 Group	2.30	3.03	
	2020 Comparator Group	1.58	1.92	
	Risk Difference	0.72 (0.21 to 1.07)	1.1 (0.64 to 1.73)	
	p-value	<0.001	<0.001	0.14
Pulmonary Hypertension				
Pulmonary Hypertension	SARS-CoV-2 Group	0.14	0.14	
	2020 Comparator Group	0.05	0.06	
	Risk Difference	0.1 (0.06 to 0.19)	0.08 (-0.01 to 0.15)	
	p-value	<0.001	0.1	1
Cardiology				
Arrhythmia				
Arrhythmia	SARS-CoV-2 Group	1.62	1.48	
	2020 Comparator Group	0.77	0.62	
	Risk Difference	0.85 (0.54 to 1)	0.86 (0.56 to 1.09)	
	p-value	<0.001	<0.001	1
> Cardiac Arrhythmia				
> Cardiac Arrhythmia	SARS-CoV-2 Group	0.75	0.71	
	2020 Comparator Group	0.38	0.29	
	Risk Difference	0.38 (0.2 to 0.55)	0.41 (0.2 to 0.51)	
	p-value	<0.001	<0.001	1
> Tachycardia				
> Tachycardia	SARS-CoV-2 Group	1.18	1.04	
	2020 Comparator Group	0.50	0.40	
	Risk Difference	0.68 (0.45 to 0.82)	0.64 (0.46 to 0.84)	
	p-value	<0.001	<0.001	1
> POTs				
> POTs	SARS-CoV-2 Group	0.29	0.29	
	2020 Comparator Group	0.13	0.12	
	Risk Difference	0.16 (0.02 to 0.22)	0.17 (0.05 to 0.25)	
	p-value	<0.001	<0.001	1
Congestive Heart Failure				
Congestive Heart Failure	SARS-CoV-2 Group	0.15	0.31	
	2020 Comparator Group	0.06	0.10	
	Risk Difference	0.1 (0 to 0.14)	0.21 (0.1 to 0.3)	
	p-value	0.1	<0.001	0.05
Cardiomyopathy				
Cardiomyopathy	SARS-CoV-2 Group	0.18	0.28	
	2020 Comparator Group	0.06	0.10	
	Risk Difference	0.12 (0.03 to 0.17)	0.18 (0.09 to 0.28)	

	p-value	<0.001	<0.001	0.07
Myocarditis	SARS-CoV-2 Group	0.03	0.07	
	2020 Comparator Group	0	0	
	Risk Difference	0.02 (-0.01 to 0.05)	0.06 (0.02 to 0.1)	
	p-value	0.31	<0.001	0.004
Coronary Disease	SARS-CoV-2 Group	0.15	0.30	
	2020 Comparator Group	0.07	0.17	
	Risk Difference	0.08 (-0.01 to 0.14)	0.13 (0.02 to 0.23)	
	p-value	0.31	<0.001	1
> Myocardial Infarction	SARS-CoV-2 Group	0.08	0.20	
	2020 Comparator Group	0.04	0.11	
	Risk Difference	0.04 (0 to 0.11)	0.09 (-0.04 to 0.14)	
	p-value	0.2	1	1
> Acute Coronary Syndrome	SARS-CoV-2 Group	0.14	0.28	
	2020 Comparator Group	0.07	0.16	
	Risk Difference	0.07 (0 to 0.13)	0.12 (-0.04 to 0.19)	
	p-value	0.31	1	1
> Cardiogenic Shock	SARS-CoV-2 Group	0.02	0.03	
	2020 Comparator Group	0	0.01	
	Risk Difference	0.01 (0 to 0.04)	0.02 (0 to 0.06)	
	p-value	0.51	0.1	1
Hypercoagulability DVT PE	SARS-CoV-2 Group	0.59	0.67	
	2020 Comparator Group	0.22	0.18	
	Risk Difference	0.37 (0.21 to 0.48)	0.5 (0.37 to 0.65)	
	p-value	<0.001	<0.001	0.13
> Hypercoagulability	SARS-CoV-2 Group	0.48	0.59	
	2020 Comparator Group	0.20	0.15	
	Risk Difference	0.27 (0.14 to 0.41)	0.44 (0.35 to 0.61)	
	p-value	<0.001	<0.001	<0.001
> Deep Vein Thrombosis	SARS-CoV-2 Group	0.30	0.40	
	2020 Comparator Group	0.09	0.10	
	Risk Difference	0.21 (0.12 to 0.32)	0.3 (0.19 to 0.4)	
	p-value	<0.001	<0.001	0.01
> Pulmonary Embolism	SARS-CoV-2 Group	0.20	0.20	
	2020 Comparator Group	0.04	0.06	
	Risk Difference	0.16 (0.08 to 0.22)	0.13 (0.03 to 0.2)	
	p-value	<0.001	<0.001	1
Stroke	SARS-CoV-2 Group	0.22	0.23	

	2020 Comparator Group	0.12	0.09	
	Risk Difference	0.1 (0 to 0.16)	0.14 (0.06 to 0.25)	
	p-value	<0.001	<0.001	1
> Ischemic Stroke	SARS-CoV-2 Group	0.19	0.19	
	2020 Comparator Group	0.10	0.08	
	Risk Difference	0.1 (0.01 to 0.16)	0.11 (0.02 to 0.19)	
	p-value	<0.001	<0.001	1
> Hemorrhagic Stroke	SARS-CoV-2 Group	0.05	0.07	
	2020 Comparator Group	0.03	0.01	
	Risk Difference	0.02 (-0.03 to 0.06)	0.06 (0.02 to 0.11)	
	p-value	1	<0.001	0.52
Mental Health				
Mental Health Diagnosis	SARS-CoV-2 Group	4.79	2.59	
	2020 Comparator Group	3.85	1.80	
	Risk Difference	0.94 (0.16 to 1.31)	0.79 (0.3 to 1.11)	
	p-value	<0.001	<0.001	1
> Anxiety	SARS-CoV-2 Group	3.99	2.15	
	2020 Comparator Group	3.22	1.40	
	Risk Difference	0.77 (0.21 to 1.35)	0.75 (0.46 to 1.16)	
	p-value	<0.001	<0.001	1
> Depression	SARS-CoV-2 Group	2.17	1.10	
	2020 Comparator Group	1.84	0.85	
	Risk Difference	0.34 (0 to 0.73)	0.26 (0.03 to 0.56)	
	p-value	0.1	<0.001	1
> PTSD	SARS-CoV-2 Group	0.28	0.16	
	2020 Comparator Group	0.24	0.09	
	Risk Difference	0.04 (-0.11 to 0.16)	0.07 (-0.01 to 0.18)	
	p-value	1	0.2	1
Neurologic				
Amnesia/Memory Difficulty	SARS-CoV-2 Group	0.73	0.69	
	2020 Comparator Group	0.32	0.31	
	Risk Difference	0.4 (0.24 to 0.55)	0.38 (0.21 to 0.51)	
	p-value	<0.001	<0.001	1
Migraine	SARS-CoV-2 Group	1.18	0.32	
	2020 Comparator Group	0.93	0.24	
	Risk Difference	0.25 (0.11 to 0.67)	0.08 (-0.05 to 0.2)	
	p-value	<0.001	1	0.31
Peripheral Neuropathy	SARS-CoV-2 Group	0.28	0.34	

	2020 Comparator Group	0.18	0.11	
	Risk Difference	0.1 (0 to 0.23)	0.23 (0.15 to 0.35)	
	p-value	0.1	<0.001	0.27
Encephalopathy	SARS-CoV-2 Group	0.20	0.27	
	2020 Comparator Group	0.03	0.06	
	Risk Difference	0.17 (0.13 to 0.27)	0.21 (0.11 to 0.28)	
	p-value	<0.001	<0.001	0.8
Seizure	SARS-CoV-2 Group	0.15	0.13	
	2020 Comparator Group	0.08	0.08	
	Risk Difference	0.07 (0 to 0.14)	0.05 (-0.01 to 0.13)	
	p-value	0.1	0.51	1
Dementia	SARS-CoV-2 Group	0.03	0.04	
	2020 Comparator Group	0.01	0.02	
	Risk Difference	0.02 (-0.02 to 0.07)	0.02 (-0.02 to 0.06)	
	p-value	1	1	1
Guillain-Barre Syndrome	SARS-CoV-2 Group	0.01	0.01	
	2020 Comparator Group	0	0	
	Risk Difference	0.01 (0 to 0.04)	0.01 (0 to 0.03)	
	p-value	<0.001	1	1
Alzheimer	SARS-CoV-2 Group	0.01	0	
	2020 Comparator Group	0	0	
	Risk Difference	0.01 (-0.01 to 0.02)	0 (-0.01 to 0.01)	
	p-value	1	1	1
Diabetes				
Type 2 Diabetes	SARS-CoV-2 Group	1.06	1.05	
	2020 Comparator Group	0.58	0.58	
	Risk Difference	0.48 (0.32 to 0.78)	0.47 (0.1 to 0.55)	
	p-value	<0.001	<0.001	1
Liver				
Liver Test Abnormality	SARS-CoV-2 Group	1.23	1.17	
	2020 Comparator Group	0.74	0.66	
	Risk Difference	0.49 (0.23 to 0.75)	0.51 (0.23 to 0.74)	
	p-value	<0.001	<0.001	1
Nephrology				
Kidney Injury	SARS-CoV-2 Group	0.41	0.65	
	2020 Comparator Group	0.26	0.36	
	Risk Difference	0.15 (0.03 to 0.3)	0.29 (0.08 to 0.38)	
	p-value	<0.001	<0.001	0.02

> Chronic Kidney Disease	SARS-CoV-2 Group	0.29	0.46	
	2020 Comparator Group	0.20	0.26	
	Risk Difference	0.09 (-0.04 to 0.18)	0.2 (0.09 to 0.38)	
	p-value	1	<0.001	0.07
> Acute Kidney Injury	SARS-CoV-2 Group	0.30	0.49	
	2020 Comparator Group	0.11	0.20	
	Risk Difference	0.18 (0.05 to 0.25)	0.29 (0.18 to 0.46)	
	p-value	<0.001	<0.001	0.001
Respiratory				
Respiratory Failure	SARS-CoV-2 Group	0.22	0.25	
	2020 Comparator Group	0.06	0.09	
	Risk Difference	0.16 (0.08 to 0.24)	0.16 (0.03 to 0.2)	
	p-value	<0.001	<0.001	1
> Acute Respiratory Failure	SARS-CoV-2 Group	0.22	0.23	
	2020 Comparator Group	0.05	0.09	
	Risk Difference	0.16 (0.09 to 0.25)	0.14 (0.03 to 0.21)	
	p-value	<0.001	<0.001	1
> Chronic Respiratory Failure	SARS-CoV-2 Group	0.15	0.20	
	2020 Comparator Group	0.01	0.01	
	Risk Difference	0.14 (0.07 to 0.19)	0.19 (0.13 to 0.25)	
	p-value	<0.001	<0.001	0.52
Interstitial Lung Disease	SARS-CoV-2 Group	0.23	0.32	
	2020 Comparator Group	0.06	0.06	
	Risk Difference	0.17 (0.06 to 0.22)	0.25 (0.15 to 0.35)	
	p-value	<0.001	<0.001	0.34
Dermatologic				
Atopic Dermatitis	SARS-CoV-2 Group	0.42	0.24	
	2020 Comparator Group	0.35	0.15	
	Risk Difference	0.07 (-0.15 to 0.14)	0.09 (-0.03 to 0.19)	
	p-value	1	1	1
Urticaria	SARS-CoV-2 Group	0.38	0.19	
	2020 Comparator Group	0.29	0.11	
	Risk Difference	0.09 (-0.01 to 0.26)	0.08 (0.02 to 0.18)	
	p-value	0.82	<0.001	1
Herpesviral Vesicular Dermatitis	SARS-CoV-2 Group	0.14	0.07	
	2020 Comparator Group	0.11	0.05	
	Risk Difference	0.03 (-0.02 to 0.15)	0.03 (-0.07 to 0.06)	
	p-value	1	1	1

Others				
Sleep Apnea	SARS-CoV-2 Group	0.92	1.51	
	2020 Comparator Group	0.51	0.85	
	Risk Difference	0.41 (0.11 to 0.49)	0.66 (0.39 to 0.96)	
	p-value	<0.001	<0.001	0.008
Symptom				
Myalgia	SARS-CoV-2 Group	4.94	3.91	
	2020 Comparator Group	3.47	2.52	
	Risk Difference	1.47 (0.97 to 2.39)	1.39 (0.67 to 1.77)	
	p-value	<0.001	<0.001	1
Fatigue Diagnosis	SARS-CoV-2 Group	5.62	3.96	
	2020 Comparator Group	2.93	1.76	
	Risk Difference	2.69 (2.06 to 3.12)	2.2 (1.97 to 2.96)	
	p-value	<0.001	<0.001	0.02
> Fatigue	SARS-CoV-2 Group	5.48	3.88	
	2020 Comparator Group	2.92	1.76	
	Risk Difference	2.56 (1.83 to 3.16)	2.12 (1.91 to 2.93)	
	p-value	<0.001	<0.001	0.05
> Chronic Fatigue	SARS-CoV-2 Group	0.47	0.27	
	2020 Comparator Group	0.29	0.13	
	Risk Difference	0.19 (0.03 to 0.29)	0.14 (0.03 to 0.24)	
	p-value	<0.001	<0.001	1
> Postviral Fatigue	SARS-CoV-2 Group	0.28	0.18	
	2020 Comparator Group	0.02	0	
	Risk Difference	0.26 (0.16 to 0.34)	0.17 (0.12 to 0.26)	
	p-value	<0.001	<0.001	0.04
Anosmia	SARS-CoV-2 Group	0.29	0.15	
	2020 Comparator Group	0.05	0.04	
	Risk Difference	0.24 (0.18 to 0.36)	0.11 (0.05 to 0.21)	
	p-value	<0.001	<0.001	<0.001

† Cumulative incidence by Kaplan-Meier estimator 120 days after time origin (index date+21 days), which is 141 days after index date.

† Confidence intervals are calculated based on Bonferroni correction, i.e., $(1 - 0.05/N)$ confidence interval.

†† Individuals were excluded if they had less than index date + 21 days of follow-up, had already been diagnosed with outcome of interest prior to index date + 21 days or their matched pair was excluded for the same reasons.

Table 4c: Risk Differences (per 100 individuals) for Clinical Sequelae by Pre-existing Conditions, UnitedHealth Group Clinical Discovery Database through October 31, 2020.

Clinical Sequelae	Category	No pre-existing conditions (†)	With pre-existing conditions (†)	p-interaction
	Matched Group Size	82766 vs 82766 ††	112919 vs 112919 ††	
Hypertension				
Hypertension	SARS-CoV-2 Group	2.11	3.26	
	2020 Comparator Group	1.22	2.33	
	Risk Difference	0.9 (0.65 to 1.25)	0.93 (-0.18 to 1.52)	
	p-value	<0.001	1	1
Pulmonary Hypertension				
Pulmonary Hypertension	SARS-CoV-2 Group	0.05	0.21	
	2020 Comparator Group	0.01	0.07	
	Risk Difference	0.03 (-0.02 to 0.07)	0.14 (0.08 to 0.22)	
	p-value	1	<0.001	<0.001
Cardiology				
Arrhythmia	SARS-CoV-2 Group	0.95	2.01	
	2020 Comparator Group	0.32	1.04	
	Risk Difference	0.63 (0.56 to 0.92)	0.96 (0.59 to 1.12)	
	p-value	<0.001	<0.001	<0.001
> Cardiac Arrythmia	SARS-CoV-2 Group	0.39	0.97	
	2020 Comparator Group	0.15	0.54	
	Risk Difference	0.24 (0.14 to 0.39)	0.43 (0.21 to 0.57)	
	p-value	<0.001	<0.001	0.004
> Tachycardia	SARS-CoV-2 Group	0.65	1.46	
	2020 Comparator Group	0.18	0.65	
	Risk Difference	0.46 (0.3 to 0.66)	0.81 (0.52 to 0.94)	
	p-value	<0.001	<0.001	<0.001
> POTs	SARS-CoV-2 Group	0.16	0.39	
	2020 Comparator Group	0.04	0.21	
	Risk Difference	0.11 (0.04 to 0.2)	0.18 (0.01 to 0.24)	
	p-value	<0.001	<0.001	0.27
Congestive Heart Failure				
Congestive Heart Failure	SARS-CoV-2 Group	0.08	0.34	
	2020 Comparator Group	0.01	0.14	
	Risk Difference	0.07 (0.01 to 0.11)	0.2 (0.07 to 0.27)	
	p-value	<0.001	<0.001	<0.001
Cardiomyopathy				
Cardiomyopathy	SARS-CoV-2 Group	0.08	0.34	
	2020 Comparator Group	0.03	0.15	

	Risk Difference	0.05 (0.02 to 0.13)	0.19 (0.07 to 0.27)	
	p-value	<0.001	<0.001	<0.001
Myocarditis	SARS-CoV-2 Group	0.05	0.04	
	2020 Comparator Group	0	0.01	
	Risk Difference	0.05 (0.02 to 0.09)	0.03 (-0.01 to 0.05)	
	p-value	<0.001	0.31	1
Coronary Disease	SARS-CoV-2 Group	0.08	0.32	
	2020 Comparator Group	0.03	0.15	
	Risk Difference	0.05 (0.02 to 0.13)	0.17 (0.09 to 0.33)	
	p-value	<0.001	<0.001	<0.001
> Myocardial Infarction	SARS-CoV-2 Group	0.04	0.20	
	2020 Comparator Group	0.02	0.10	
	Risk Difference	0.03 (-0.01 to 0.06)	0.11 (0.05 to 0.2)	
	p-value	0.61	<0.001	0.003
> Acute Coronary Syndrome	SARS-CoV-2 Group	0.08	0.30	
	2020 Comparator Group	0.03	0.14	
	Risk Difference	0.04 (0.01 to 0.11)	0.15 (0.1 to 0.28)	
	p-value	<0.001	<0.001	<0.001
> Cardiogenic Shock	SARS-CoV-2 Group	0.01	0.04	
	2020 Comparator Group	0	0.01	
	Risk Difference	0.01 (-0.01 to 0.03)	0.03 (0.01 to 0.08)	
	p-value	1	<0.001	0.09
Hypercoagulability DVT PE	SARS-CoV-2 Group	0.33	0.85	
	2020 Comparator Group	0.07	0.32	
	Risk Difference	0.26 (0.16 to 0.37)	0.53 (0.39 to 0.72)	
	p-value	<0.001	<0.001	<0.001
> Hypercoagulability	SARS-CoV-2 Group	0.28	0.71	
	2020 Comparator Group	0.06	0.28	
	Risk Difference	0.22 (0.11 to 0.32)	0.43 (0.24 to 0.55)	
	p-value	<0.001	<0.001	<0.001
> Deep Vein Thrombosis	SARS-CoV-2 Group	0.16	0.48	
	2020 Comparator Group	0.03	0.17	
	Risk Difference	0.14 (0.09 to 0.27)	0.31 (0.23 to 0.45)	
	p-value	<0.001	<0.001	<0.001
> Pulmonary Embolism	SARS-CoV-2 Group	0.10	0.27	
	2020 Comparator Group	0.02	0.10	
	Risk Difference	0.09 (0.04 to 0.16)	0.17 (0.07 to 0.22)	
	p-value	<0.001	<0.001	<0.001

Stroke	SARS-CoV-2 Group	0.09	0.32	
	2020 Comparator Group	0.03	0.18	
	Risk Difference	0.06 (0.02 to 0.16)	0.14 (0.03 to 0.25)	
	p-value	<0.001	<0.001	0.007
> Ischemic Stroke	SARS-CoV-2 Group	0.08	0.27	
	2020 Comparator Group	0.02	0.15	
	Risk Difference	0.05 (0.01 to 0.13)	0.13 (0.04 to 0.25)	
	p-value	<0.001	<0.001	0.002
> Hemorrhagic Stroke	SARS-CoV-2 Group	0.03	0.08	
	2020 Comparator Group	0.01	0.05	
	Risk Difference	0.02 (-0.01 to 0.04)	0.03 (-0.03 to 0.07)	
	p-value	1	1	1
Mental Health				
Mental Health Diagnosis	SARS-CoV-2 Group	3.02	4.30	
	2020 Comparator Group	2.16	3.47	
	Risk Difference	0.86 (0.57 to 1.41)	0.83 (0.06 to 1.59)	
	p-value	<0.001	<0.001	1
> Anxiety	SARS-CoV-2 Group	2.48	3.60	
	2020 Comparator Group	1.72	2.90	
	Risk Difference	0.75 (0.39 to 1.13)	0.7 (-0.13 to 1.15)	
	p-value	<0.001	0.61	1
> Depression	SARS-CoV-2 Group	0.99	2.18	
	2020 Comparator Group	0.81	1.82	
	Risk Difference	0.18 (-0.01 to 0.48)	0.35 (0.06 to 0.74)	
	p-value	0.2	<0.001	1
> PTSD	SARS-CoV-2 Group	0.14	0.28	
	2020 Comparator Group	0.08	0.20	
	Risk Difference	0.05 (-0.01 to 0.17)	0.08 (-0.01 to 0.21)	
	p-value	0.51	0.2	1
Neurologic				
Amnesia/Memory Difficulty	SARS-CoV-2 Group	0.39	0.94	
	2020 Comparator Group	0.13	0.38	
	Risk Difference	0.26 (0.11 to 0.38)	0.56 (0.42 to 0.74)	
	p-value	<0.001	<0.001	<0.001
Migraine	SARS-CoV-2 Group	0.59	0.89	
	2020 Comparator Group	0.43	0.74	
	Risk Difference	0.16 (0.01 to 0.37)	0.14 (-0.11 to 0.32)	
	p-value	<0.001	1	1

Peripheral Neuropathy	SARS-CoV-2 Group	0.13	0.43	
	2020 Comparator Group	0.02	0.23	
	Risk Difference	0.1 (0.02 to 0.15)	0.2 (0.1 to 0.35)	
	p-value	<0.001	<0.001	0.43
Encephalopathy	SARS-CoV-2 Group	0.08	0.34	
	2020 Comparator Group	0.01	0.07	
	Risk Difference	0.07 (0.03 to 0.14)	0.27 (0.19 to 0.38)	
	p-value	<0.001	<0.001	<0.001
Seizure	SARS-CoV-2 Group	0.06	0.20	
	2020 Comparator Group	0.04	0.11	
	Risk Difference	0.02 (-0.03 to 0.09)	0.09 (0 to 0.17)	
	p-value	1	0.1	0.41
Dementia	SARS-CoV-2 Group	0.01	0.05	
	2020 Comparator Group	0	0.02	
	Risk Difference	0.01 (-0.01 to 0.03)	0.03 (0 to 0.09)	
	p-value	1	0.1	0.1
Guillain-Barre Syndrome	SARS-CoV-2 Group	0.01	0.02	
	2020 Comparator Group	0	0.01	
	Risk Difference	0.01 (-0.01 to 0.03)	0.01 (-0.01 to 0.03)	
	p-value	1	1	1
Alzheimer	SARS-CoV-2 Group	0	0.01	
	2020 Comparator Group	0	0.01	
	Risk Difference	0 (0 to 0)	0 (-0.01 to 0.02)	
	p-value	<0.001	1	1
Diabetes				
Type 2 Diabetes	SARS-CoV-2 Group	0.78	1.30	
	2020 Comparator Group	0.31	0.81	
	Risk Difference	0.46 (0.26 to 0.59)	0.49 (0.18 to 0.77)	
	p-value	<0.001	<0.001	1
Liver				
Liver Test Abnormality	SARS-CoV-2 Group	0.57	1.68	
	2020 Comparator Group	0.26	1.03	
	Risk Difference	0.31 (0.15 to 0.44)	0.65 (0.28 to 0.81)	
	p-value	<0.001	<0.001	<0.001
Nephrology				
Kidney Injury	SARS-CoV-2 Group	0.18	0.78	
	2020 Comparator Group	0.07	0.48	
	Risk Difference	0.1 (0.01 to 0.18)	0.3 (0.11 to 0.48)	

	p-value	<0.001	<0.001	<0.001
> Chronic Kidney Disease	SARS-CoV-2 Group	0.12	0.55	
	2020 Comparator Group	0.04	0.35	
	Risk Difference	0.08 (0.02 to 0.14)	0.21 (0.02 to 0.29)	
	p-value	<0.001	<0.001	0.06
> Acute Kidney Injury	SARS-CoV-2 Group	0.12	0.58	
	2020 Comparator Group	0.04	0.23	
	Risk Difference	0.08 (0.04 to 0.15)	0.35 (0.2 to 0.44)	
	p-value	<0.001	<0.001	<0.001
Respiratory				
Respiratory Failure	SARS-CoV-2 Group	0.08	0.35	
	2020 Comparator Group	0.01	0.13	
	Risk Difference	0.07 (0.02 to 0.12)	0.22 (0.13 to 0.32)	
	p-value	<0.001	<0.001	<0.001
> Acute Respiratory Failure	SARS-CoV-2 Group	0.07	0.34	
	2020 Comparator Group	0.01	0.12	
	Risk Difference	0.06 (0.03 to 0.13)	0.22 (0.11 to 0.31)	
	p-value	<0.001	<0.001	<0.001
> Chronic Respiratory Failure	SARS-CoV-2 Group	0.06	0.26	
	2020 Comparator Group	0	0.03	
	Risk Difference	0.06 (0.03 to 0.1)	0.23 (0.15 to 0.32)	
	p-value	<0.001	<0.001	<0.001
Interstitial Lung Disease	SARS-CoV-2 Group	0.12	0.39	
	2020 Comparator Group	0.01	0.09	
	Risk Difference	0.1 (0.06 to 0.19)	0.3 (0.19 to 0.4)	
	p-value	<0.001	<0.001	<0.001
Dermatologic				
Atopic Dermatitis	SARS-CoV-2 Group	0.27	0.38	
	2020 Comparator Group	0.22	0.27	
	Risk Difference	0.05 (-0.04 to 0.17)	0.11 (-0.05 to 0.23)	
	p-value	1	1	1
Urticaria	SARS-CoV-2 Group	0.22	0.34	
	2020 Comparator Group	0.15	0.27	
	Risk Difference	0.07 (-0.05 to 0.16)	0.07 (-0.03 to 0.21)	
	p-value	1	1	1
Herpesviral Vesicular Dermatitis	SARS-CoV-2 Group	0.09	0.12	
	2020 Comparator Group	0.08	0.12	
	Risk Difference	0.01 (-0.01 to 0.11)	0 (-0.06 to 0.09)	

	p-value	0.51	1	1
Others				
Sleep Apnea	SARS-CoV-2 Group	0.57	1.69	
	2020 Comparator Group	0.26	1.01	
	Risk Difference	0.31 (0.13 to 0.43)	0.68 (0.38 to 0.94)	
	p-value	<0.001	<0.001	<0.001
Symptom				
Myalgia	SARS-CoV-2 Group	3.05	5.54	
	2020 Comparator Group	1.87	3.97	
	Risk Difference	1.18 (0.52 to 1.47)	1.57 (0.82 to 2.12)	
	p-value	<0.001	<0.001	0.09
Fatigue Diagnosis	SARS-CoV-2 Group	3.43	5.93	
	2020 Comparator Group	1.41	2.98	
	Risk Difference	2.01 (1.67 to 2.57)	2.94 (2.37 to 3.5)	
	p-value	<0.001	<0.001	<0.001
> Fatigue	SARS-CoV-2 Group	3.34	5.79	
	2020 Comparator Group	1.41	2.97	
	Risk Difference	1.93 (1.51 to 2.49)	2.83 (2.36 to 3.47)	
	p-value	<0.001	<0.001	<0.001
> Chronic Fatigue	SARS-CoV-2 Group	0.28	0.45	
	2020 Comparator Group	0.11	0.24	
	Risk Difference	0.17 (0.07 to 0.3)	0.2 (0.08 to 0.31)	
	p-value	<0.001	<0.001	1
> Postviral Fatigue	SARS-CoV-2 Group	0.16	0.29	
	2020 Comparator Group	0.01	0.03	
	Risk Difference	0.16 (0.1 to 0.26)	0.26 (0.16 to 0.3)	
	p-value	<0.001	<0.001	<0.001
Anosmia	SARS-CoV-2 Group	0.21	0.23	
	2020 Comparator Group	0.03	0.05	
	Risk Difference	0.18 (0.12 to 0.29)	0.18 (0.11 to 0.26)	
	p-value	<0.001	<0.001	1

† Cumulative incidence by Kaplan-Meier estimator 120 days after time origin (index date+21 days), which is 141 days after index date.

† Confidence intervals are calculated based on Bonferroni correction, i.e., $(1 - 0.05/N)$ confidence interval.

†† Individuals were excluded if they had less than index date + 21 days of follow-up, had already been diagnosed with outcome of interest prior to index date + 21 days or their matched pair was excluded for the same reasons.

Table 4d: Risk Differences (per 100 individuals) for Clinical Sequelae by Hospitalization Status, UnitedHealth Group Clinical Discovery Database through October 31, 2020.

Clinical Sequelae	Category	Not hospitalized with COVID (†)	Hospitalized with COVID (†)	p-interaction
	Matched Group Size	176981 vs 176981 ††	18118 vs 18118 ††	
Hypertension				
Hypertension	SARS-CoV-2 Group	2.29	8.28	
	2020 Comparator Group	1.49	2.72	
	Risk Difference	0.8 (0.41 to 1.06)	5.56 (3.31 to 7.76)	
	p-value	<0.001	<0.001	<0.001
Pulmonary Hypertension				
Pulmonary Hypertension	SARS-CoV-2 Group	0.07	0.89	
	2020 Comparator Group	0.03	0.13	
	Risk Difference	0.03 (-0.01 to 0.06)	0.76 (0.48 to 1.05)	
	p-value	1	<0.001	<0.001
Cardiology				
Arrhythmia				
Arrhythmia	SARS-CoV-2 Group	1.17	6.41	
	2020 Comparator Group	0.70	0.95	
	Risk Difference	0.46 (0.31 to 0.65)	5.46 (3.96 to 6.11)	
	p-value	<0.001	<0.001	<0.001
> Cardiac Arrhythmia				
> Cardiac Arrhythmia	SARS-CoV-2 Group	0.54	2.80	
	2020 Comparator Group	0.35	0.48	
	Risk Difference	0.19 (0.1 to 0.35)	2.31 (1.58 to 2.82)	
	p-value	<0.001	<0.001	<0.001
> Tachycardia				
> Tachycardia	SARS-CoV-2 Group	0.78	5.10	
	2020 Comparator Group	0.45	0.73	
	Risk Difference	0.33 (0.19 to 0.46)	4.37 (3.16 to 5.16)	
	p-value	<0.001	<0.001	<0.001
> POTs				
> POTs	SARS-CoV-2 Group	0.20	1.27	
	2020 Comparator Group	0.13	0.21	
	Risk Difference	0.07 (0 to 0.14)	1.06 (0.51 to 1.29)	
	p-value	0.1	<0.001	<0.001
Congestive Heart Failure				
Congestive Heart Failure	SARS-CoV-2 Group	0.11	1.54	
	2020 Comparator Group	0.07	0.20	
	Risk Difference	0.04 (-0.01 to 0.09)	1.34 (0.66 to 1.55)	
	p-value	1	<0.001	<0.001
Cardiomyopathy				
Cardiomyopathy	SARS-CoV-2 Group	0.12	1.28	
	2020 Comparator Group	0.08	0.23	

	Risk Difference	0.04 (-0.01 to 0.1)	1.06 (0.71 to 1.44)	
	p-value	0.41	<0.001	<0.001
Myocarditis	SARS-CoV-2 Group	0.04	0.09	
	2020 Comparator Group	0	0.01	
	Risk Difference	0.04 (0.02 to 0.07)	0.08 (-0.06 to 0.19)	
	p-value	<0.001	1	1
Coronary Disease	SARS-CoV-2 Group	0.14	1.05	
	2020 Comparator Group	0.09	0.18	
	Risk Difference	0.05 (-0.01 to 0.12)	0.87 (0.54 to 1.27)	
	p-value	0.2	<0.001	<0.001
> Myocardial Infarction	SARS-CoV-2 Group	0.08	0.70	
	2020 Comparator Group	0.05	0.12	
	Risk Difference	0.03 (-0.03 to 0.06)	0.58 (0.3 to 0.96)	
	p-value	1	<0.001	<0.001
> Acute Coronary Syndrome	SARS-CoV-2 Group	0.13	0.94	
	2020 Comparator Group	0.09	0.17	
	Risk Difference	0.04 (0 to 0.11)	0.77 (0.47 to 1.15)	
	p-value	0.1	<0.001	<0.001
> Cardiogenic Shock	SARS-CoV-2 Group	0.01	0.20	
	2020 Comparator Group	0	0.02	
	Risk Difference	0 (-0.01 to 0.02)	0.18 (0.03 to 0.34)	
	p-value	1	<0.001	<0.001
Hypercoagulability DVT PE	SARS-CoV-2 Group	0.34	3.78	
	2020 Comparator Group	0.19	0.44	
	Risk Difference	0.16 (0.06 to 0.24)	3.34 (2.71 to 4.2)	
	p-value	<0.001	<0.001	<0.001
> Hypercoagulability	SARS-CoV-2 Group	0.28	3.15	
	2020 Comparator Group	0.17	0.37	
	Risk Difference	0.11 (0.05 to 0.21)	2.78 (2.29 to 3.62)	
	p-value	<0.001	<0.001	<0.001
> Deep Vein Thrombosis	SARS-CoV-2 Group	0.16	2.28	
	2020 Comparator Group	0.10	0.30	
	Risk Difference	0.06 (0.02 to 0.15)	1.99 (1.52 to 2.46)	
	p-value	<0.001	<0.001	<0.001
> Pulmonary Embolism	SARS-CoV-2 Group	0.10	1.25	
	2020 Comparator Group	0.04	0.14	
	Risk Difference	0.06 (0.02 to 0.1)	1.11 (0.69 to 1.39)	
	p-value	<0.001	<0.001	<0.001

Stroke	SARS-CoV-2 Group	0.14	1.12	
	2020 Comparator Group	0.09	0.29	
	Risk Difference	0.05 (0 to 0.1)	0.83 (0.4 to 1.2)	
	p-value	0.31	<0.001	<0.001
> Ischemic Stroke	SARS-CoV-2 Group	0.12	0.94	
	2020 Comparator Group	0.07	0.22	
	Risk Difference	0.04 (-0.01 to 0.09)	0.72 (0.29 to 0.97)	
	p-value	0.51	<0.001	<0.001
> Hemorrhagic Stroke	SARS-CoV-2 Group	0.03	0.38	
	2020 Comparator Group	0.02	0.08	
	Risk Difference	0.01 (-0.01 to 0.04)	0.3 (0.11 to 0.56)	
	p-value	1	<0.001	<0.001
Mental Health				
Mental Health Diagnosis	SARS-CoV-2 Group	3.48	5.92	
	2020 Comparator Group	2.70	2.89	
	Risk Difference	0.77 (0.32 to 1.09)	3.03 (1.26 to 4.19)	
	p-value	<0.001	<0.001	<0.001
> Anxiety	SARS-CoV-2 Group	2.93	4.57	
	2020 Comparator Group	2.26	2.16	
	Risk Difference	0.67 (0.4 to 1.04)	2.41 (1 to 3.16)	
	p-value	<0.001	<0.001	<0.001
> Depression	SARS-CoV-2 Group	1.49	3.33	
	2020 Comparator Group	1.28	1.47	
	Risk Difference	0.21 (0.02 to 0.45)	1.85 (0.99 to 2.85)	
	p-value	<0.001	<0.001	<0.001
> PTSD	SARS-CoV-2 Group	0.19	0.51	
	2020 Comparator Group	0.18	0.18	
	Risk Difference	0.02 (-0.06 to 0.09)	0.33 (0.05 to 0.64)	
	p-value	1	<0.001	<0.001
Neurologic				
Amnesia/Memory Difficulty	SARS-CoV-2 Group	0.50	2.90	
	2020 Comparator Group	0.30	0.43	
	Risk Difference	0.2 (0.04 to 0.24)	2.47 (1.76 to 2.96)	
	p-value	<0.001	<0.001	<0.001
Migraine	SARS-CoV-2 Group	0.75	0.90	
	2020 Comparator Group	0.61	0.58	
	Risk Difference	0.14 (-0.04 to 0.27)	0.31 (-0.03 to 0.87)	
	p-value	0.92	0.2	1

Peripheral Neuropathy	SARS-CoV-2 Group	0.21	1.23	
	2020 Comparator Group	0.14	0.35	
	Risk Difference	0.07 (-0.02 to 0.14)	0.87 (0.36 to 1.26)	
	p-value	0.82	<0.001	<0.001
Encephalopathy	SARS-CoV-2 Group	0.07	1.87	
	2020 Comparator Group	0.04	0.08	
	Risk Difference	0.03 (-0.01 to 0.08)	1.79 (1.42 to 2.31)	
	p-value	0.41	<0.001	<0.001
Seizure	SARS-CoV-2 Group	0.09	0.68	
	2020 Comparator Group	0.08	0.12	
	Risk Difference	0.01 (-0.04 to 0.06)	0.56 (0.32 to 0.88)	
	p-value	1	<0.001	<0.001
Dementia	SARS-CoV-2 Group	0.01	0.23	
	2020 Comparator Group	0.01	0.03	
	Risk Difference	0 (-0.02 to 0.02)	0.2 (0.07 to 0.3)	
	p-value	1	<0.001	<0.001
Guillain-Barre Syndrome	SARS-CoV-2 Group	0.01	0.03	
	2020 Comparator Group	0	0	
	Risk Difference	0.01 (-0.02 to 0.03)	0.03 (0 to 0.09)	
	p-value	1	<0.001	0.05
Alzheimer	SARS-CoV-2 Group	0	0.04	
	2020 Comparator Group	0	0	
	Risk Difference	0 (0 to 0.01)	0.04 (0 to 0.1)	
	p-value	1	<0.001	<0.001
Diabetes				
Type 2 Diabetes	SARS-CoV-2 Group	0.90	3.04	
	2020 Comparator Group	0.53	0.83	
	Risk Difference	0.37 (0.24 to 0.58)	2.21 (1.4 to 3.16)	
	p-value	<0.001	<0.001	<0.001
Liver				
Liver Test Abnormality	SARS-CoV-2 Group	1.01	3.30	
	2020 Comparator Group	0.63	1.36	
	Risk Difference	0.38 (0.19 to 0.52)	1.95 (1.06 to 2.58)	
	p-value	<0.001	<0.001	<0.001
Nephrology				
Kidney Injury	SARS-CoV-2 Group	0.32	3.02	
	2020 Comparator Group	0.28	0.79	
	Risk Difference	0.04 (-0.03 to 0.16)	2.22 (1.42 to 2.79)	

	p-value	1	<0.001	<0.001
> Chronic Kidney Disease	SARS-CoV-2 Group	0.21	2.06	
	2020 Comparator Group	0.19	0.70	
	Risk Difference	0.02 (-0.06 to 0.09)	1.36 (0.72 to 1.82)	
	p-value	1	<0.001	<0.001
> Acute Kidney Injury	SARS-CoV-2 Group	0.18	2.85	
	2020 Comparator Group	0.15	0.47	
	Risk Difference	0.03 (-0.04 to 0.09)	2.38 (1.67 to 3.11)	
	p-value	1	<0.001	<0.001
Respiratory				
Respiratory Failure	SARS-CoV-2 Group	0.08	2.60	
	2020 Comparator Group	0.06	0.19	
	Risk Difference	0.02 (-0.03 to 0.07)	2.41 (1.35 to 3.2)	
	p-value	1	<0.001	<0.001
> Acute Respiratory Failure	SARS-CoV-2 Group	0.07	2.58	
	2020 Comparator Group	0.05	0.18	
	Risk Difference	0.01 (-0.02 to 0.07)	2.4 (1.67 to 3.43)	
	p-value	1	<0.001	<0.001
> Chronic Respiratory Failure	SARS-CoV-2 Group	0.04	1.53	
	2020 Comparator Group	0.01	0.05	
	Risk Difference	0.04 (0.01 to 0.07)	1.48 (0.97 to 1.75)	
	p-value	<0.001	<0.001	<0.001
Interstitial Lung Disease	SARS-CoV-2 Group	0.14	1.60	
	2020 Comparator Group	0.05	0.13	
	Risk Difference	0.1 (0.02 to 0.14)	1.47 (1.14 to 1.98)	
	p-value	<0.001	<0.001	<0.001
Dermatologic				
Atopic Dermatitis	SARS-CoV-2 Group	0.34	0.27	
	2020 Comparator Group	0.24	0.26	
	Risk Difference	0.1 (0.04 to 0.24)	0.01 (-0.27 to 0.3)	
	p-value	<0.001	1	1
Urticaria	SARS-CoV-2 Group	0.28	0.33	
	2020 Comparator Group	0.22	0.16	
	Risk Difference	0.07 (0.01 to 0.19)	0.17 (-0.06 to 0.43)	
	p-value	<0.001	0.71	1
Herpesviral Vesicular Dermatitis	SARS-CoV-2 Group	0.11	0.05	
	2020 Comparator Group	0.09	0.09	
	Risk Difference	0.02 (-0.02 to 0.1)	-0.04 (-0.2 to 0.08)	

	p-value	1	1	1
Others				
Sleep Apnea	SARS-CoV-2 Group	0.90	4.30	
	2020 Comparator Group	0.64	1.17	
	Risk Difference	0.26 (0.17 to 0.49)	3.13 (2.32 to 4.11)	
	p-value	<0.001	<0.001	<0.001
Symptom				
Myalgia	SARS-CoV-2 Group	4.14	7.87	
	2020 Comparator Group	2.92	3.65	
	Risk Difference	1.22 (0.73 to 1.49)	4.22 (3.36 to 6.51)	
	p-value	<0.001	<0.001	<0.001
Fatigue Diagnosis	SARS-CoV-2 Group	4.33	10.16	
	2020 Comparator Group	2.22	2.78	
	Risk Difference	2.11 (1.73 to 2.41)	7.38 (6.87 to 9.87)	
	p-value	<0.001	<0.001	<0.001
> Fatigue	SARS-CoV-2 Group	4.22	10.01	
	2020 Comparator Group	2.22	2.76	
	Risk Difference	2.01 (1.72 to 2.39)	7.25 (6.25 to 9.66)	
	p-value	<0.001	<0.001	<0.001
> Chronic Fatigue	SARS-CoV-2 Group	0.37	0.47	
	2020 Comparator Group	0.21	0.25	
	Risk Difference	0.16 (0.09 to 0.31)	0.23 (-0.1 to 0.49)	
	p-value	<0.001	0.31	1
> Postviral Fatigue	SARS-CoV-2 Group	0.22	0.38	
	2020 Comparator Group	0.01	0.02	
	Risk Difference	0.21 (0.16 to 0.27)	0.36 (0.14 to 0.6)	
	p-value	<0.001	<0.001	0.002
Anosmia	SARS-CoV-2 Group	0.23	0.17	
	2020 Comparator Group	0.04	0.07	
	Risk Difference	0.18 (0.12 to 0.26)	0.1 (-0.08 to 0.3)	
	p-value	<0.001	1	0.69

† Cumulative incidence by Kaplan-Meier estimator 120 days after time origin (index date+21 days), which is 141 days after index date.

† Confidence intervals are calculated based on Bonferroni correction, i.e., $(1 - 0.05/N)$ confidence interval.

†† Individuals were excluded if they had less than index date + 21 days of follow-up, had already been diagnosed with outcome of interest prior to index date + 21 days or their matched pair was excluded for the same reasons.

Table 4e: Hazard Ratio* for Clinical Sequelae by Period (Jan-June and July-October), UnitedHealth Group Clinical Discovery Database through October 31, 2020.

Clinical Sequelae	Category	Index date < 07/01/2020 (N/person-year) †	Index date >= 07/01/2020 (N/person-year) †	p-interaction
Total Matched Size		90377 vs 90377	105793 vs 105793	
Follow-up Median (IQR)		163 (134 – 194)	79 (48 – 103)	
Hypertension				
Hypertension	SARS-CoV-2 Group	0.08 (1561/18454.11)	0.08 (748/9202.06)	
	2020 Comparator Group	0.05 (1023/18966.80)	0.05 (479/9325.47)	
	Hazard Ratio (CI)	1.59 (1.42 - 1.78) ***	1.56 (1.35 - 1.82) ***	
	p values	<0.001	<0.001	1
Pulmonary hypertension	SARS-CoV-2 Group	0.004 (157/34733.09)	0.004 (64/15735.33)	
	2020 Comparator Group	0.002 (56/34912.30)	0.001 (20/15741.56)	
	Hazard Ratio (CI)	2.73 (1.65 - 4.52) ***	3.33 (1.55 - 7.18) ***	
	p values	<0.001	<0.001	1
Cardiology				
Arrhythmia	SARS-CoV-2 Group	0.05 (1517/30819.90)	0.05 (690/14504.07)	
	2020 Comparator Group	0.02 (671/31254.07)	0.02 (298/14537.65)	
	Hazard Ratio (CI)	2.26 (1.95 - 2.61) ***	2.29 (1.89 - 2.78) ***	
	p values	<0.001	<0.001	1
> Cardiac arrhythmia	SARS-CoV-2 Group	0.02 (745/33179.48)	0.02 (339/15285.98)	
	2020 Comparator Group	0.01 (358/33468.72)	0.009 (143/15289.32)	
	Hazard Ratio (CI)	2.08 (1.69 - 2.55) ***	2.31 (1.75 - 3.06) ***	
	p values	<0.001	<0.001	1
> Tachycardia	SARS-CoV-2 Group	0.04 (1172/32047.61)	0.03 (490/14888.29)	
	2020 Comparator Group	0.01 (443/32424.03)	0.01 (219/14918.38)	
	Hazard Ratio (CI)	2.60 (2.17 - 3.10) ***	2.30 (1.83 - 2.90) ***	
	p values	<0.001	<0.001	1
> POTs	SARS-CoV-2 Group	0.009 (324/34267.55)	0.009 (141/15621.75)	
	2020 Comparator Group	0.004 (151/34483.46)	0.003 (52/15629.95)	
	Hazard Ratio (CI)	2.14 (1.55 - 2.94) ***	2.63 (1.66 - 4.18) ***	
	p values	<0.001	<0.001	1
Congestive heart failure	SARS-CoV-2 Group	0.007 (241/34276.66)	0.007 (106/15593.90)	
	2020 Comparator Group	0.003 (116/34461.48)	0.002 (29/15606.72)	
	Hazard Ratio (CI)	2.07 (1.44 - 2.98) ***	3.73 (2.06 - 6.76) ***	
	p values	<0.001	<0.001	0.94

Cardiomyopathy	SARS-CoV-2 Group	0.007 (236/ 34307.08)	0.007 (105/ 15603.76)	
	2020 Comparator Group	0.003 (110/ 34500.92)	0.003 (47 / 15607.65)	
	Hazard Ratio (CI)	2.12 (1.46 - 3.09) ***	2.71 (1.61 - 4.56) ***	
	p values	<0.001	<0.001	1
Myocarditis	SARS-CoV-2 Group	0.001 (40/ 35026.30)	0.002 (34 / 15818.51)	
	2020 Comparator Group	0.000 (2/ 35191.96)	0.000 (1 / 15820.30)	
	Hazard Ratio (CI)	20.60 (1.89 - 224.01) **	42.96 (1.53 - 1205.38) *	
	p values	0.0015	0.01	1
Coronary disease	SARS-CoV-2 Group	0.007 (238/ 34326.83)	0.007 (105/ 15591.58)	
	2020 Comparator Group	0.003 (105/ 34492.73)	0.004 (55 / 15597.32)	
	Hazard Ratio (CI)	2.28 (1.56 - 3.33) ***	1.96 (1.19 - 3.24) ***	
	p values	<0.001	<0.001	1
> Myocardial infarction	SARS-CoV-2 Group	0.004 (151/ 34570.93)	0.004 (69 / 15665.05)	
	2020 Comparator Group	0.002 (61 / 34725.00)	0.002 (38 / 15666.02)	
	Hazard Ratio (CI)	2.53 (1.54 - 4.14) ***	1.87 (1.01 - 3.46) *	
	p values	<0.001	0.042	1
> Acute coronary syndrome	SARS-CoV-2 Group	0.006 (222/ 34367.27)	0.006 (99 / 15602.25)	
	2020 Comparator Group	0.003 (96 / 34531.77)	0.004 (55 / 15607.53)	
	Hazard Ratio (CI)	2.33 (1.57 - 3.47) ***	1.88 (1.13 - 3.14) **	
	p values	<0.001	0.0023	1
> Cardiogenic shock	SARS-CoV-2 Group	0.001 (30/ 34993.31)	0.001 (11 / 15814.76)	
	2020 Comparator Group	0.000 (12/ 35152.64)	0.000 (0 / 15817.40)	
	Hazard Ratio (CI)	2.40 (0.81 - 7.12)	13.99 (0.46 - 423.90)	
	p values	0.42	0.55	<0.001
Hypercoagulability DVT PE	SARS-CoV-2 Group	0.02 (704/ 33458.32)	0.02 (260 / 15345.06)	
	2020 Comparator Group	0.006 (217/ 33753.73)	0.007 (101/ 15369.33)	
	Hazard Ratio (CI)	3.21 (2.50 - 4.11) ***	2.50 (1.77 - 3.52) ***	
	p values	<0.001	<0.001	1
> Hypercoagulability	SARS-CoV-2 Group	0.02 (602/ 33720.88)	0.01 (203 / 15447.83)	
	2020 Comparator Group	0.006 (196/ 33989.63)	0.006 (87 / 15471.47)	
	Hazard Ratio (CI)	3.04 (2.33 - 3.95) ***	2.28 (1.57 - 3.31) ***	
	p values	<0.001	<0.001	1
> Deep vein thrombosis	SARS-CoV-2 Group	0.01 (397/ 34250.85)	0.010 (151 / 15594.10)	
	2020 Comparator Group	0.004 (122/ 34487.19)	0.003 (52 / 15609.98)	
	Hazard Ratio (CI)	3.31 (2.36 - 4.64) ***	2.70 (1.70 - 4.30) ***	
	p values	<0.001	<0.001	1
> Pulmonary embolism	SARS-CoV-2 Group	0.007 (227/ 34544.31)	0.007 (107 / 15658.58)	
	2020 Comparator Group	0.002 (61 / 34747.88)	0.002 (27 / 15668.56)	

	Hazard Ratio (CI)	3.72 (2.33 - 5.94) ***	3.86 (2.03 - 7.35) ***	
	p values	<0.001	<0.001	1
Stroke	SARS-CoV-2 Group	0.008 (263 / 34369.94)	0.006 (100 / 15619.68)	
	2020 Comparator Group	0.003 (109 / 34565.57)	0.003 (43 / 15622.43)	
	Hazard Ratio (CI)	2.40 (1.65 - 3.47) ***	2.64 (1.52 - 4.59) ***	
	p values	<0.001	<0.001	1
> Ischemic stroke	SARS-CoV-2 Group	0.007 (232 / 34477.01)	0.006 (87 / 15651.94)	
	2020 Comparator Group	0.003 (93 / 34671.49)	0.002 (37 / 15654.80)	
	Hazard Ratio (CI)	2.49 (1.67 - 3.71) ***	2.63 (1.44 - 4.77) ***	
	p values	<0.001	<0.001	1
> Hemorrhagic stroke	SARS-CoV-2 Group	0.002 (71 / 34881.19)	0.002 (26 / 15778.02)	
	2020 Comparator Group	0.001 (22 / 35046.24)	0.001 (12 / 15778.42)	
	Hazard Ratio (CI)	3.12 (1.42 - 6.86) ***	2.69 (0.92 - 7.86)	
	p values	<0.001	0.12	1
Mental Health				
Mental Health Diagnosis	SARS-CoV-2 Group	0.11 (2671 / 24348.67)	0.12 (1278 / 10964.56)	
	2020 Comparator Group	0.07 (1829 / 24684.53)	0.09 (963 / 11017.52)	
	Hazard Ratio (CI)	1.47 (1.34 - 1.61) ***	1.34 (1.20 - 1.50) ***	
	p values	<0.001	<0.001	1
> Anxiety	SARS-CoV-2 Group	0.09 (2442 / 26519.19)	0.10 (1169 / 11921.78)	
	2020 Comparator Group	0.06 (1691 / 26866.84)	0.07 (874 / 11983.93)	
	Hazard Ratio (CI)	1.46 (1.33 - 1.61) ***	1.33 (1.18 - 1.50) ***	
	p values	<0.001	<0.001	1
> Depression	SARS-CoV-2 Group	0.05 (1369 / 29899.01)	0.05 (723 / 13426.74)	
	2020 Comparator Group	0.04 (1060 / 30078.17)	0.04 (590 / 13443.59)	
	Hazard Ratio (CI)	1.31 (1.15 - 1.49) ***	1.25 (1.07 - 1.46) ***	
	p values	<0.001	<0.001	1
> PTSD	SARS-CoV-2 Group	0.007 (249 / 34423.08)	0.005 (75 / 15568.58)	
	2020 Comparator Group	0.005 (161 / 34598.93)	0.005 (79 / 15565.79)	
	Hazard Ratio (CI)	1.56 (1.12 - 2.17) ***	1.03 (0.65 - 1.61)	
	p values	<0.001	1	0.5
Neurologic				
Amnesia/Memory Difficulty	SARS-CoV-2 Group	0.02 (760 / 33470.58)	0.02 (360 / 15322.17)	
	2020 Comparator Group	0.009 (304 / 33732.72)	0.010 (151 / 15337.69)	
	Hazard Ratio (CI)	2.49 (2.00 - 3.10) ***	2.61 (1.95 - 3.49) ***	
	p values	<0.001	<0.001	1
Migraine	SARS-CoV-2 Group	0.02 (769 / 32074.79)	0.02 (325 / 14613.78)	
	2020 Comparator Group	0.02 (553 / 32312.96)	0.02 (266 / 14647.27)	

	Hazard Ratio (CI)	1.37 (1.14 - 1.64) ***	1.23 (0.97 - 1.55)	
	p values	<0.001	0.19	1
Peripheral neuropathy	SARS-CoV-2 Group	0.01 (356 / 34412.87)	0.007 (105 / 15620.44)	
	2020 Comparator Group	0.005 (165 / 34628.22)	0.005 (77 / 15631.03)	
	Hazard Ratio (CI)	2.16 (1.59 - 2.93) ***	1.35 (0.88 - 2.08)	
	p values	<0.001	1	0.45
Encephalopathy	SARS-CoV-2 Group	0.008 (264 / 34596.12)	0.007 (107 / 15711.65)	
	2020 Comparator Group	0.002 (61 / 34792.28)	0.001 (18 / 15723.76)	
	Hazard Ratio (CI)	4.17 (2.64 - 6.58) ***	6.25 (2.88 - 13.57) ***	
	p values	<0.001	<0.001	1
Seizure	SARS-CoV-2 Group	0.005 (169 / 34475.54)	0.004 (58 / 15620.31)	
	2020 Comparator Group	0.002 (77 / 34660.58)	0.002 (36 / 15636.87)	
	Hazard Ratio (CI)	2.13 (1.36 - 3.32) ***	1.81 (0.97 - 3.39).	
	p values	<0.001	0.088	1
Dementia	SARS-CoV-2 Group	0.002 (54 / 34965.11)	0.001 (13 / 15813.05)	
	2020 Comparator Group	0.000 (12 / 35131.87)	0.000 (6 / 15815.78)	
	Hazard Ratio (CI)	4.59 (1.62 - 13.04) ***	2.66 (0.55 - 12.90)	
	p values	<0.001	1	1
Guillain-Barre Syndrome	SARS-CoV-2 Group	0.000 (9 / 35042.30)	0.000 (6 / 15824.91)	
	2020 Comparator Group	0.000 (0 / 35202.09)	0.000 (1 / 15826.43)	
	Hazard Ratio (CI)	72344218.60 (25277507.37 - 207049132.15) ***	5.00 (0.39 - 64.15)	
	p values	<0.001	1	<0.001
Alzheimer	SARS-CoV-2 Group	0.000 (7 / 35032.21)	0.000 (2 / 15828.16)	
	2020 Comparator Group	0.000 (5 / 35192.05)	0.000 (4 / 15829.47)	
	Hazard Ratio (CI)	1.41 (0.20 - 9.69)	1.00 (0.10 - 10.28)	
	p values	1	1	1
Diabetes				
Type 2 Diabetes	SARS-CoV-2 Group	0.03 (905 / 26507.78)	0.03 (356 / 12774.68)	
	2020 Comparator Group	0.02 (519 / 26933.85)	0.02 (211 / 12873.56)	
	Hazard Ratio (CI)	1.73 (1.47 - 2.04) ***	1.90 (1.49 - 2.42) ***	
	p values	<0.001	<0.001	1
Liver				
Liver Test Abnormality	SARS-CoV-2 Group	0.04 (1197 / 31724.85)	0.03 (493 / 14713.89)	
	2020 Comparator Group	0.02 (742 / 32030.02)	0.02 (293 / 14763.49)	
	Hazard Ratio (CI)	1.64 (1.42 - 1.91) ***	1.72 (1.39 - 2.13) ***	
	p values	<0.001	<0.001	1
Nephrology				
Kidney Injury	SARS-CoV-2 Group	0.02 (530 / 32628.65)	0.02 (246 / 15035.85)	

	2020 Comparator Group	0.009 (300/ 32827.90)	0.009 (128/ 15066.30)	
	Hazard Ratio (CI)	1.73 (1.37 - 2.18) ***	2.06 (1.49 - 2.83) ***	
	p values	<0.001	<0.001	1
> Chronic kidney disease	SARS-CoV-2 Group	0.01 (395/ 33486.90)	0.01 (167 / 15296.46)	
	2020 Comparator Group	0.007 (227/ 33699.84)	0.006 (94 / 15318.45)	
	Hazard Ratio (CI)	1.69 (1.29 - 2.21) ***	1.96 (1.34 - 2.87) ***	
	p values	<0.001	<0.001	1
> Acute kidney injury	SARS-CoV-2 Group	0.01 (402/ 33606.46)	0.01 (200 / 15407.64)	
	2020 Comparator Group	0.005 (166/ 33792.91)	0.004 (65 / 15430.79)	
	Hazard Ratio (CI)	2.33 (1.74 - 3.12) ***	3.19 (2.09 - 4.87) ***	
	p values	<0.001	<0.001	1
Respiratory				
Respiratory Failure	SARS-CoV-2 Group	0.008 (247/ 32712.14)	0.007 (109/ 15223.76)	
	2020 Comparator Group	0.002 (80/ 32947.82)	0.002 (31 / 15233.42)	
	Hazard Ratio (CI)	3.00 (2.00 - 4.50) ***	3.66 (2.03 - 6.60) ***	
	p values	<0.001	<0.001	1
> Acute respiratory failure	SARS-CoV-2 Group	0.007 (234/ 32762.28)	0.007 (108/ 15240.64)	
	2020 Comparator Group	0.002 (74 / 32992.44)	0.002 (29 / 15248.57)	
	Hazard Ratio (CI)	3.08 (2.02 - 4.70) ***	3.98 (2.15 - 7.37) ***	
	p values	<0.001	<0.001	1
> Chronic respiratory failure	SARS-CoV-2 Group	0.006 (194/ 34837.45)	0.005 (87 / 15778.72)	
	2020 Comparator Group	0.001 (16/ 35050.65)	0.000 (3 / 15787.40)	
	Hazard Ratio (CI)	11.74 (5.10 - 27.00) ***	18.33 (4.60 - 72.99) ***	
	p values	<0.001	<0.001	1
Interstitial lung disease	SARS-CoV-2 Group	0.009 (307/ 34606.68)	0.008 (121/ 15707.68)	
	2020 Comparator Group	0.002 (53/ 34843.54)	0.002 (24 / 15718.75)	
	Hazard Ratio (CI)	6.02 (3.69 - 9.83) ***	4.79 (2.52 - 9.09) ***	
	p values	<0.001	<0.001	1
Dermatologic				
Atopic dermatitis	SARS-CoV-2 Group	0.01 (370/ 34110.32)	0.009 (134/ 15469.60)	
	2020 Comparator Group	0.008 (282/ 34290.65)	0.007 (109/ 15478.24)	
	Hazard Ratio (CI)	1.31 (1.01 - 1.69) *	1.22 (0.84 - 1.77)	
	p values	0.034	1	1
Urticaria	SARS-CoV-2 Group	0.008 (281/ 34218.22)	0.009 (137/ 15512.19)	
	2020 Comparator Group	0.007 (228/ 34406.74)	0.005 (82 / 15518.79)	
	Hazard Ratio (CI)	1.24 (0.93 - 1.66)	1.73 (1.16 - 2.58) ***	
	p values	0.73	<0.001	1
Herpesviral vesicular dermatitis	SARS-CoV-2 Group	0.003 (101/ 34662.32)	0.004 (56 / 15677.52)	

	2020 Comparator Group	0.003 (109 / 34820.65)	0.002 (37 / 15680.93)	
	Hazard Ratio (CI)	0.92 (0.59 - 1.46)	1.50 (0.81 - 2.77)	
	p values	1	1	1
Other				
Sleep apnea	SARS-CoV-2 Group	0.04 (1143 / 30512.97)	0.04 (492 / 14070.44)	
	2020 Comparator Group	0.02 (595 / 30863.90)	0.02 (279 / 14091.26)	
	Hazard Ratio (CI)	1.93 (1.64 - 2.26) ***	1.77 (1.44 - 2.17) ***	
	p values	<0.001	<0.001	1
Symptoms				
Fatigue Diagnosis	SARS-CoV-2 Group	0.16 (3867 / 24830.38)	0.14 (1718 / 11903.12)	
	2020 Comparator Group	0.07 (1827 / 25627.58)	0.07 (810 / 12064.19)	
	Hazard Ratio (CI)	2.17 (1.99 - 2.36) ***	2.05 (1.83 - 2.29) ***	
	p values	<0.001	<0.001	1
> Fatigue	SARS-CoV-2 Group	0.15 (3776 / 24915.78)	0.14 (1671 / 11927.04)	
	2020 Comparator Group	0.07 (1822 / 25682.81)	0.07 (810 / 12083.76)	
	Hazard Ratio (CI)	2.12 (1.95 - 2.31) ***	2.00 (1.78 - 2.24) ***	
	p values	<0.001	<0.001	1
> Chronic Fatigue	SARS-CoV-2 Group	0.01 (401 / 34163.32)	0.01 (163 / 15504.16)	
	2020 Comparator Group	0.006 (192 / 34382.68)	0.007 (107 / 15512.63)	
	Hazard Ratio (CI)	2.10 (1.58 - 2.80) ***	1.44 (1.01 - 2.06) *	
	p values	<0.001	0.031	1
> Postviral fatigue	SARS-CoV-2 Group	0.007 (261 / 34879.26)	0.008 (120 / 15782.42)	
	2020 Comparator Group	0.001 (30 / 35107.92)	0.000 (5 / 15795.46)	
	Hazard Ratio (CI)	8.40 (4.54 - 15.57) ***	28.61 (6.39 - 128.17) ***	
	p values	<0.001	<0.001	1
Myalgia	SARS-CoV-2 Group	0.14 (3474 / 23987.28)	0.12 (1376 / 11764.14)	
	2020 Comparator Group	0.09 (2231 / 24532.99)	0.08 (1000 / 11848.03)	
	Hazard Ratio (CI)	1.58 (1.46 - 1.72) ***	1.40 (1.25 - 1.56) ***	
	p values	<0.001	<0.001	0.25
Anosmia	SARS-CoV-2 Group	0.007 (254 / 34449.45)	0.005 (75 / 15570.61)	
	2020 Comparator Group	0.001 (39 / 34673.56)	0.002 (29 / 15580.87)	
	Hazard Ratio (CI)	6.61 (3.77 - 11.57) ***	2.77 (1.47 - 5.22) ***	
	p values	<0.001	<0.001	0.043

* Hazard Ratio were utilized to evaluate period effect and account for follow-up periods having variable length.

† 2 decimals are kept for incidence rates ≥ 0.01 and 3 decimals are kept for incidence rates < 0.01 .

Table 5a: Incidence and Risk Difference (per 100 individuals) for Clinical Sequelae by SARS-CoV-2 Infection and Comparison Group (Index + 14 days), UnitedHealth Group Clinical Discovery Database through October 31, 2020.

Outcome	2020 SARS-CoV-2 Infected †	2020 Comparator group †	Risk Difference (CI ††)	2019-matched 2020 SARS-CoV-2 Infected †	2019 Comparator group †	Risk Difference (CI ††)	Viral LRTI-matched 2020 SARS-CoV-2 Infected †	Viral LRTI comparator group †	Risk Difference (CI ††)
Matched Group Size	213357 †††	213357 †††		213828 †††	213828 †††		199683 †††	199683 †††	
Follow-up period (days): median (IQR) ††††	91 (45 – 127)	92 (46 – 128)		91 (45 – 127)	91 (45 – 128)		92 (43 – 135)	90 (42 – 134)	
Hypertension									
Hypertension	2.66	1.60	1.07 (0.81 to 1.30) ***	2.69	1.70	0.98 (0.74 to 1.22) ***	2.68	2.55	0.13 (-0.15 to 0.40)
Pulmonary hypertension	0.15	0.05	0.10 (0.06 to 0.14) ***	0.14	0.05	0.09 (0.05 to 0.13) ***	0.15	0.17	-0.02 (-0.08 to 0.02)
Cardiology									
Arrhythmia	1.60	0.64	0.96 (0.82 to 1.10) ***	1.62	0.70	0.91 (0.80 to 1.05) ***	1.66	1.15	0.50 (0.35 to 0.66) ***
> Cardiac arrhythmia	0.74	0.31	0.43 (0.34 to 0.53) ***	0.75	0.37	0.38 (0.28 to 0.47) ***	0.76	0.53	0.23 (0.13 to 0.32) ***
> Tachycardia	1.17	0.43	0.74 (0.64 to 0.84) ***	1.17	0.44	0.74 (0.62 to 0.84) ***	1.21	0.82	0.39 (0.26 to 0.50) ***
> POTs	0.31	0.13	0.18 (0.13 to 0.24) ***	0.31	0.16	0.15 (0.09 to 0.20) ***	0.32	0.24	0.08 (0.01 to 0.15) ***
Congestive heart failure	0.22	0.10	0.12 (0.08 to 0.16) ***	0.22	0.10	0.12 (0.07 to 0.17) ***	0.24	0.25	-0.01 (-0.07 to 0.04)
Cardiomyopathy	0.24	0.07	0.17 (0.12 to 0.21) ***	0.24	0.10	0.15 (0.10 to 0.21) ***	0.24	0.22	0.02 (-0.05 to 0.08)
Myocarditis	0.05	0.00	0.05 (0.03 to 0.06) ***	0.05	0.00	0.05 (0.03 to 0.06) ***	0.05	0.01	0.04 (0.02 to 0.05) ***

Coronary disease	0.22	0.10	0.12 (0.07 to 0.17) ***	0.22	0.12	0.10 (0.05 to 0.15) ***	0.23	0.23	-0.00 (-0.05 to 0.05)
> Myocardial infarction	0.14	0.06	0.08 (0.04 to 0.12) ***	0.14	0.08	0.06 (0.03 to 0.10) ***	0.14	0.13	0.01 (-0.04 to 0.06)
> Acute coronary syndrome	0.21	0.10	0.11 (0.07 to 0.16) ***	0.20	0.12	0.09 (0.04 to 0.13) ***	0.21	0.21	-0.00 (-0.06 to 0.05)
> Cardiogenic shock	0.03	0.01	0.03 (0.01 to 0.04) ***	0.03	0.01	0.02 (0.00 to 0.03) ***	0.03	0.03	0.00 (-0.02 to 0.02)
Hypercoagulability DVT PE	0.68	0.20	0.48 (0.40 to 0.56) ***	0.70	0.21	0.48 (0.40 to 0.58) ***	0.72	0.47	0.25 (0.16 to 0.35) ***
> Hypercoagulability	0.58	0.18	0.40 (0.32 to 0.47) ***	0.59	0.18	0.41 (0.34 to 0.48) ***	0.61	0.43	0.18 (0.09 to 0.27) ***
> Deep vein thrombosis	0.40	0.10	0.29 (0.22 to 0.36) ***	0.40	0.10	0.30 (0.25 to 0.36) ***	0.41	0.28	0.13 (0.06 to 0.21) ***
> Pulmonary embolism	0.23	0.06	0.16 (0.13 to 0.20) ***	0.23	0.06	0.17 (0.12 to 0.21) ***	0.24	0.15	0.10 (0.05 to 0.16) ***
Stroke	0.24	0.10	0.13 (0.08 to 0.18) ***	0.24	0.14	0.10 (0.04 to 0.15) ***	0.24	0.19	0.05 (-0.01 to 0.10)
> Ischemic stroke	0.20	0.09	0.11 (0.06 to 0.17) ***	0.20	0.11	0.09 (0.04 to 0.13) ***	0.20	0.16	0.04 (-0.01 to 0.10)
> Hemorrhagic stroke	0.07	0.03	0.04 (0.01 to 0.07) ***	0.07	0.03	0.04 (0.01 to 0.07) ***	0.07	0.05	0.01 (-0.02 to 0.04)
Mental Health									
Mental Health Diagnosis	3.71	2.61	1.10 (0.84 to 1.38) ***	3.72	2.46	1.25 (1.02 to 1.53) ***	3.82	3.17	0.65 (0.34 to 0.96) ***
> Anxiety	3.15	2.16	0.98 (0.76 to 1.19) ***	3.16	1.98	1.18 (0.97 to 1.41) ***	3.21	2.51	0.69 (0.47 to 0.92) ***
> Depression	1.61	1.25	0.37 (0.23 to 0.53) ***	1.63	1.31	0.32 (0.17 to 0.47) ***	1.68	1.63	0.05 (-0.13 to 0.22)
> PTSD	0.23	0.15	0.08 (0.02 to 0.13) ***	0.21	0.16	0.05 (-0.00 to 0.10) ***	0.23	0.16	0.07 (0.01 to 0.13) ***
Neurologic									
Amnesia/Memory Difficulty	0.72	0.31	0.41 (0.32 to 0.52) ***	0.74	0.35	0.39 (0.30 to 0.46) ***	0.76	0.49	0.27 (0.18 to 0.38) ***
Migraine	0.77	0.58	0.18 (0.08 to 0.30) ***	0.75	0.62	0.13 (0.04 to 0.24) ***	0.78	0.79	-0.01 (-0.12 to 0.11)
Peripheral neuropathy	0.29	0.15	0.14 (0.08 to 0.21) ***	0.29	0.16	0.13 (0.07 to 0.19) ***	0.30	0.19	0.11 (0.05 to 0.17) ***

Fatigue Diagnosis	4.85	2.35	2.50 (2.23 to 2.78) ***	4.93	2.38	2.55 (2.28 to 2.78) ***	5.08	3.77	1.31 (1.02 to 1.59) ***
> Fatigue	4.73	2.34	2.38 (2.13 to 2.61) ***	4.79	2.36	2.43 (2.16 to 2.67) ***	4.94	3.75	1.19 (0.88 to 1.53) ***
> Chronic Fatigue	0.38	0.21	0.17 (0.11 to 0.25) ***	0.39	0.23	0.16 (0.09 to 0.23) ***	0.39	0.32	0.07 (-0.02 to 0.15)
> Postviral fatigue	0.24	0.01	0.23 (0.19 to 0.27) ***	0.26	0.01	0.24 (0.20 to 0.30) ***	0.26	0.04	0.22 (0.18 to 0.27) ***
Myalgia	4.34	2.82	1.52 (1.25 to 1.80) ***	4.38	3.26	1.12 (0.84 to 1.41) ***	4.51	4.29	0.23 (-0.06 to 0.51)
Anosmia	0.25	0.04	0.21 (0.16 to 0.26) ***	0.24	0.02	0.22 (0.17 to 0.26) ***	0.25	0.04	0.21 (0.17 to 0.25) ***

† Cumulative incidence by Kaplan-Meier estimator 120 days after time origin (index date+14 days), which is 134 days after index date.

†† Confidence intervals are calculated based on Bonferroni correction, i.e., (1 - 0.05/N) confidence interval.

††† Individuals were excluded if they had less than index date + 14 days of follow-up, had already been diagnosed with outcome of interest prior to index date + 14 days or their matched pair was excluded for the same reasons.

†††† The follow-up period (days) is measured from time origin (index date + 14 days) to end of observation of the member.

*** p value < 0.001
** p value < 0.01
* p value < 0.05

Table 5b: Incidence and Risk Difference (per 100 individuals) for Clinical Sequelae by SARS-CoV-2 Infection and 2020 Comparison Group (Index+28 days), UnitedHealth Group Clinical Discovery Database through October 31, 2020.

Outcome	2020 SARS-CoV-2 Infected †	2020 Comparator group †	Risk Difference (CI ††)	2019-matched 2020 SARS-CoV-2 Infected †	2019 Comparator group †	Risk Difference (CI ††)	Viral LRTI-matched 2020 SARS-CoV-2 Infected †	Viral LRTI comparator group †	Risk Difference (CI ††)
Matched Group Size	175435 †††	175435 †††		175826 †††	175826 †††		165673 †††	165673 †††	
Follow-up period (days): median (IQR) ††††	82 (45 – 122)	84 (46 – 121)		82 (45 – 122)	82 (45 – 121)		85 (44 – 129)	83 (41 – 124)	
Hypertension									
Hypertension	2.55	1.68	0.87 (0.60 to 1.13) ***	2.60	1.69	0.91 (0.64 to 1.19) ***	2.62	2.39	0.23 (-0.05 to 0.57)
Pulmonary hypertension	0.14	0.04	0.10 (0.06 to 0.16) ***	0.13	0.05	0.08 (0.03 to 0.12) ***	0.14	0.16	-0.01 (-0.07 to 0.04)
Cardiology									
Arrhythmia	1.41	0.64	0.76 (0.63 to 0.90) ***	1.44	0.71	0.73 (0.56 to 0.86) ***	1.45	1.07	0.38 (0.20 to 0.55) ***
> Cardiac arrhythmia	0.70	0.32	0.38 (0.27 to 0.49) ***	0.70	0.39	0.32 (0.21 to 0.43) ***	0.70	0.50	0.19 (0.08 to 0.31) ***
> Tachycardia	0.99	0.44	0.55 (0.44 to 0.67) ***	1.00	0.42	0.58 (0.46 to 0.69) ***	1.04	0.74	0.30 (0.14 to 0.42) ***
> POTs	0.27	0.13	0.14 (0.08 to 0.20) ***	0.27	0.15	0.11 (0.04 to 0.17) ***	0.28	0.22	0.06 (-0.01 to 0.12)
Congestive heart failure	0.21	0.09	0.12 (0.07 to 0.18) ***	0.20	0.10	0.10 (0.05 to 0.16) ***	0.22	0.21	0.01 (-0.05 to 0.07)
Cardiomyopathy	0.22	0.07	0.14 (0.10 to 0.20) ***	0.22	0.09	0.13 (0.07 to 0.18) ***	0.22	0.20	0.02 (-0.03 to 0.09)
Myocarditis	0.04	0.00	0.04 (0.02 to 0.06) ***	0.04	0.00	0.04 (0.02 to 0.06) ***	0.04	0.01	0.03 (0.01 to 0.05) ***

Coronary disease	0.20	0.10	0.10 (0.04 to 0.16) ***	0.20	0.13	0.08 (0.02 to 0.13) ***	0.22	0.21	0.00 (-0.06 to 0.07)
> Myocardial infarction	0.12	0.06	0.06 (0.02 to 0.11) ***	0.13	0.08	0.05 (0.01 to 0.09) ***	0.13	0.12	0.01 (-0.04 to 0.06)
> Acute coronary syndrome	0.19	0.10	0.09 (0.04 to 0.16) ***	0.19	0.12	0.07 (0.01 to 0.14) ***	0.20	0.20	-0.00 (-0.07 to 0.07)
> Cardiogenic shock	0.02	0.00	0.02 (0.00 to 0.03) ***	0.02	0.01	0.01 (-0.00 to 0.03)	0.03	0.02	0.00 (-0.02 to 0.03)
Hypercoagulability DVT PE	0.57	0.20	0.37 (0.28 to 0.46) ***	0.58	0.20	0.38 (0.30 to 0.47) ***	0.60	0.40	0.20 (0.11 to 0.29) ***
> Hypercoagulability	0.48	0.17	0.31 (0.23 to 0.39) ***	0.50	0.17	0.32 (0.24 to 0.40) ***	0.52	0.37	0.15 (0.04 to 0.26) ***
> Deep vein thrombosis	0.31	0.10	0.21 (0.14 to 0.28) ***	0.31	0.09	0.22 (0.14 to 0.28) ***	0.33	0.23	0.10 (0.03 to 0.18) ***
> Pulmonary embolism	0.18	0.06	0.12 (0.08 to 0.17) ***	0.17	0.06	0.11 (0.07 to 0.17) ***	0.18	0.12	0.06 (0.01 to 0.12) ***
Stroke	0.21	0.10	0.11 (0.06 to 0.16) ***	0.20	0.14	0.06 (-0.00 to 0.13)	0.21	0.17	0.04 (-0.02 to 0.11)
> Ischemic stroke	0.18	0.08	0.10 (0.05 to 0.15) ***	0.17	0.12	0.05 (0.00 to 0.10)	0.19	0.15	0.04 (-0.02 to 0.10)
> Hemorrhagic stroke	0.05	0.03	0.02 (-0.01 to 0.05)	0.05	0.04	0.01 (-0.01 to 0.04)	0.05	0.04	0.01 (-0.02 to 0.04)
Mental Health									
Mental Health Diagnosis	3.45	2.62	0.84 (0.58 to 1.11) ***	3.50	2.45	1.06 (0.80 to 1.34) ***	3.66	3.13	0.52 (0.23 to 0.83) ***
> Anxiety	2.92	2.15	0.77 (0.49 to 1.03) ***	2.99	1.94	1.05 (0.83 to 1.28) ***	3.05	2.49	0.56 (0.31 to 0.80) ***
> Depression	1.54	1.28	0.26 (0.08 to 0.44) ***	1.55	1.32	0.23 (0.05 to 0.40) ***	1.63	1.63	0.01 (-0.19 to 0.22)
> PTSD	0.23	0.13	0.10 (0.04 to 0.17) ***	0.22	0.16	0.05 (-0.01 to 0.12)	0.22	0.16	0.07 (0.01 to 0.13) ***
Neurologic									
Amnesia/Memory Difficulty	0.66	0.31	0.34 (0.24 to 0.43) ***	0.68	0.35	0.33 (0.24 to 0.45) ***	0.70	0.45	0.24 (0.14 to 0.35) ***
Migraine	0.73	0.57	0.16 (0.03 to 0.28) ***	0.71	0.61	0.10 (-0.04 to 0.20)	0.75	0.78	-0.03 (-0.16 to 0.09)
Peripheral neuropathy	0.32	0.15	0.17 (0.09 to 0.24) ***	0.31	0.16	0.16 (0.08 to 0.22) ***	0.33	0.21	0.12 (0.03 to 0.20) ***
Encephalopathy	0.20	0.03	0.17 (0.13 to 0.22) ***	0.20	0.07	0.13 (0.09 to 0.18) ***	0.21	0.13	0.08 (0.01 to 0.13) ***

Fatigue Diagnosis	4.50	2.38	2.11 (1.85 to 2.39) ***	4.48	2.29	2.20 (1.93 to 2.46) ***	4.70	3.55	1.14 (0.80 to 1.49) ***
> Fatigue	4.41	2.38	2.03 (1.75 to 2.32) ***	4.39	2.28	2.11 (1.83 to 2.44) ***	4.60	3.54	1.05 (0.70 to 1.36) ***
> Chronic Fatigue	0.40	0.22	0.19 (0.11 to 0.27) ***	0.41	0.23	0.18 (0.11 to 0.27) ***	0.40	0.33	0.06 (-0.02 to 0.15)
> Postviral fatigue	0.21	0.01	0.20 (0.16 to 0.25) ***	0.21	0.01	0.20 (0.15 to 0.25) ***	0.21	0.02	0.19 (0.15 to 0.24) ***
Myalgia	4.39	2.89	1.50 (1.21 to 1.90) ***	4.36	3.25	1.12 (0.79 to 1.47) ***	4.58	4.21	0.36 (0.01 to 0.69) ***
Anosmia	0.21	0.04	0.17 (0.11 to 0.22) ***	0.21	0.02	0.19 (0.14 to 0.25) ***	0.21	0.04	0.18 (0.12 to 0.23) ***

† Cumulative incidence by Kaplan-Meier estimator 120 days after time origin (index date+28 days), which is 148 days after index date.

†† Confidence intervals are calculated based on Bonferroni correction, i.e., $(1 - 0.05/N)$ confidence interval.

††† Individuals were excluded if they had less than index date + 28 days of follow-up, had already been diagnosed with outcome of interest prior to index date + 28 days or their matched pair was excluded for the same reasons.

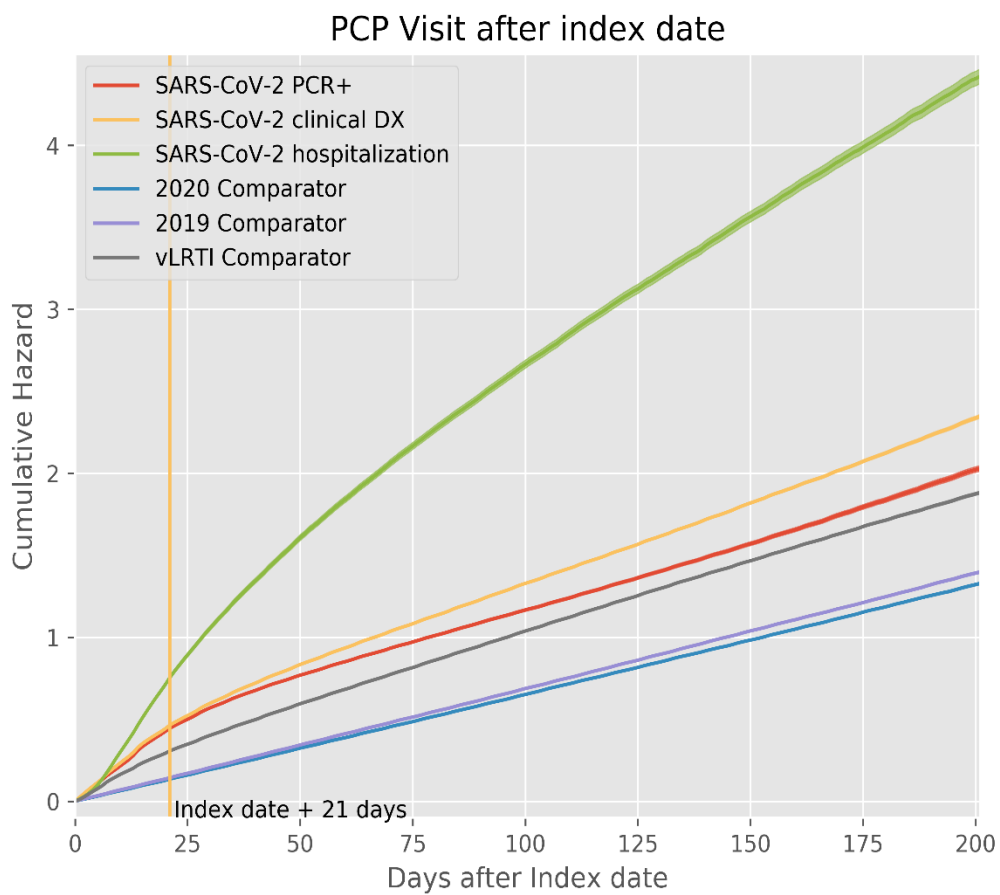
†††† The follow-up period (days) is measured from time origin (index date + 28 days) to end of observation of the member.

*** p value < 0.001

** p value < 0.01

* p value < 0.05

Figure 2: Cumulative Hazard Rate of PCP Visit by SARS-CoV-2 Diagnostic Method and Three Comparator Groups, UnitedHealth Group Clinical Research Discovery Database through October 31, 2020.



* PCP visits were considered as recurring events and Nelson-Aalen estimator for matched groups was applied.