

# Characterization of Long COVID Phenotypes and Associated Clinical Phenotypes in Administrative Claims Data

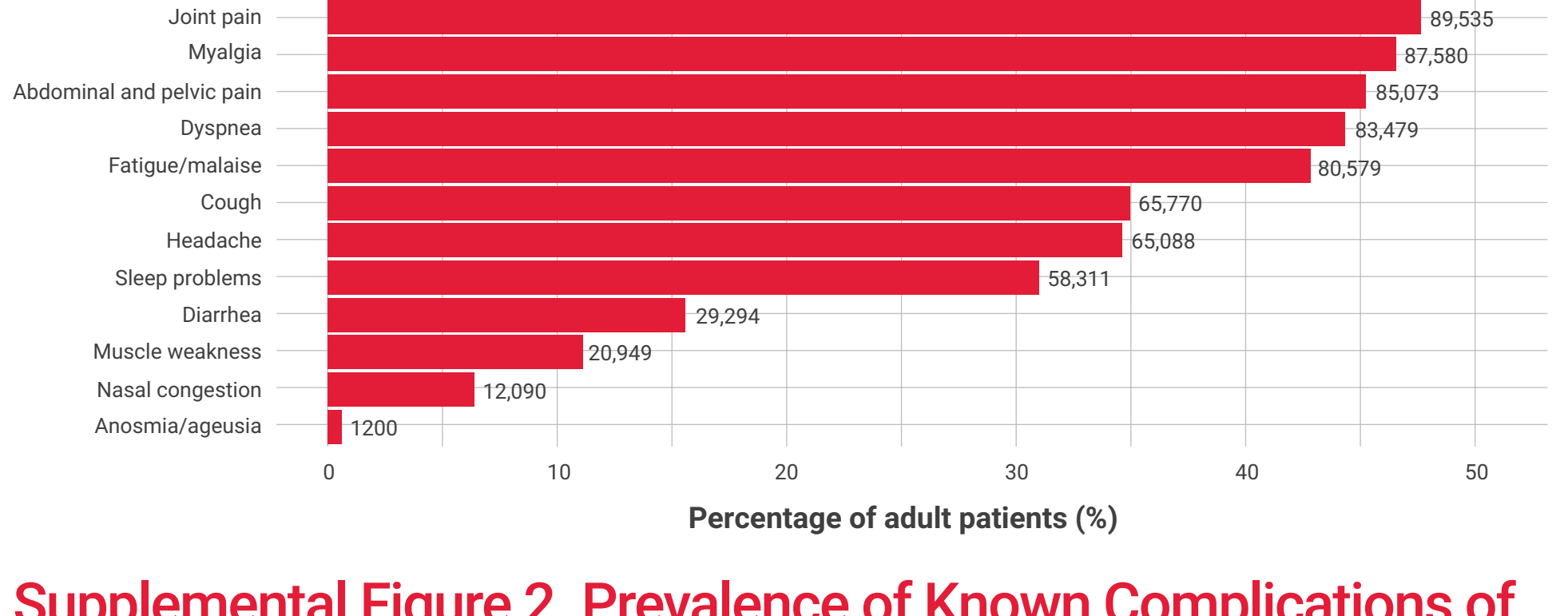
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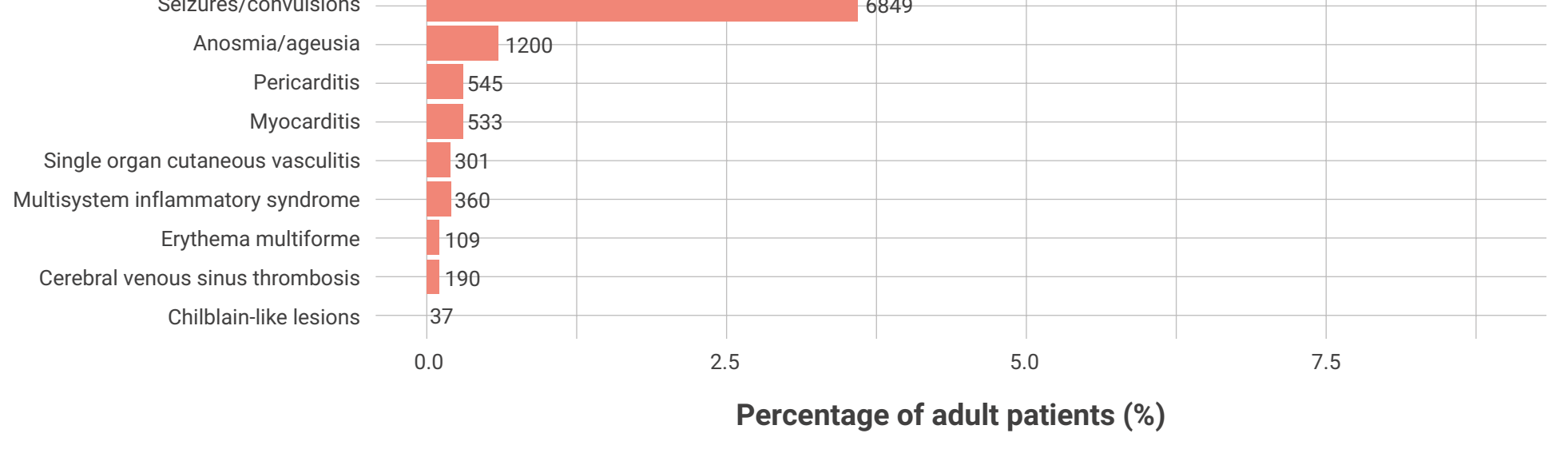
\*Presenting author

## SUPPLEMENTARY MATERIAL

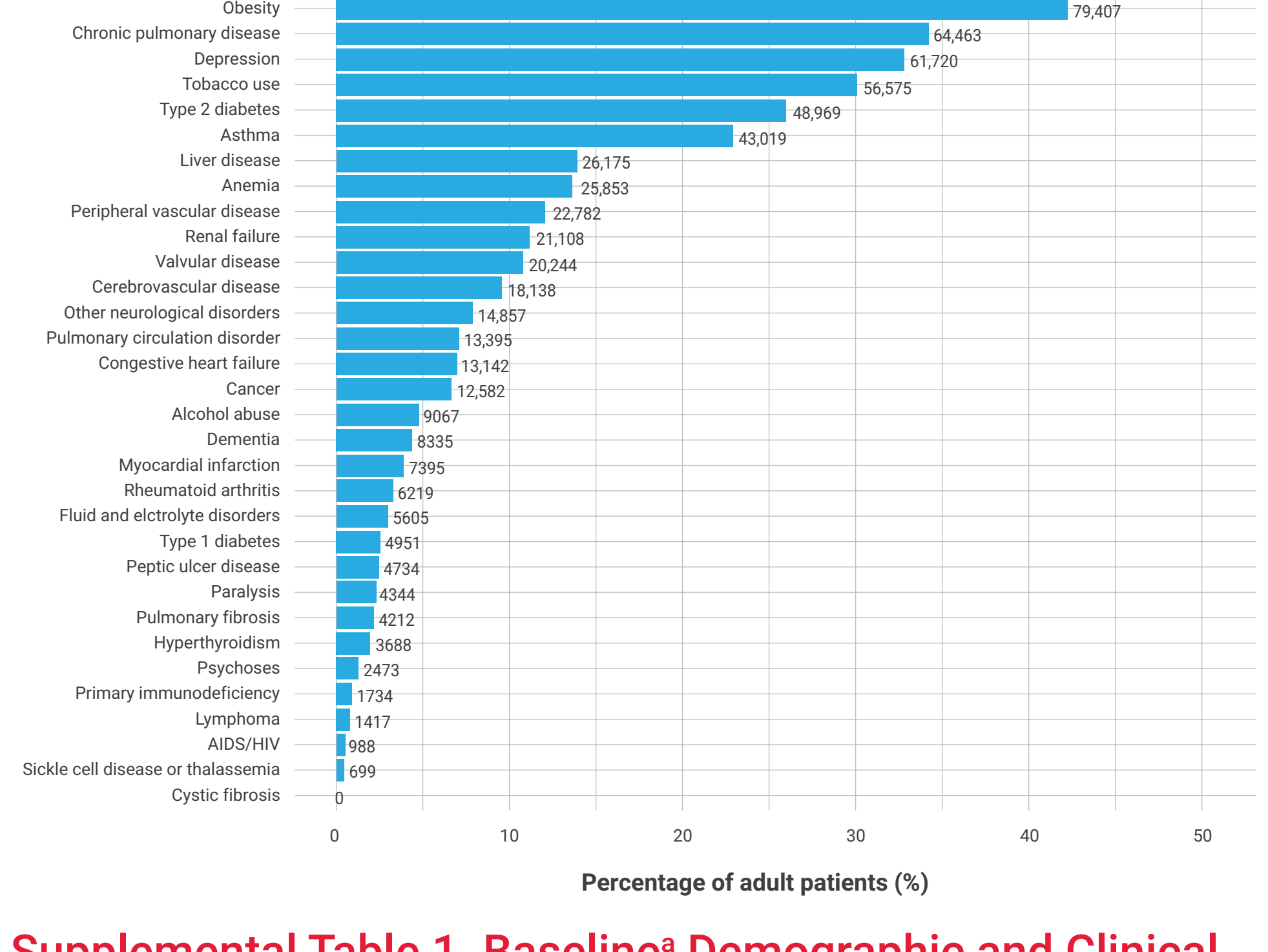
### Supplemental Figure 1. Prevalence of Long COVID Symptoms at Baseline Among All Adult Patients With Long COVID



### Supplemental Figure 2. Prevalence of Known Complications of COVID-19 at Baseline Among All Adult Patients With Long COVID



### Supplemental Figure 3. Prevalence of Other Long COVID-Related Characteristics Among All Adult Patients With Long COVID



### Supplemental Table 1. Baseline<sup>a</sup> Demographic and Clinical Characteristics Among Adult Patients Diagnosed With Long COVID Between January 1, 2021, and August 31, 2022 by Subgroup<sup>b</sup> Stratified by Sex

	CR subgroup n = 111,739		RSA subgroup n = 158,202		MN subgroup n = 146,058		DR subgroup n = 157,617	
	Female n = 69,502	Male n = 42,237	Female n = 105,560	Male n = 52,642	Female n = 99,449	Male n = 46,609	Female n = 105,370	Male n = 52,247
<b>Demographics (on index date)</b>								
<b>Age, years</b>								
Mean (SD)	55.01 (15.75)	57.26 (14.84)	49.38 (16.05)	52.93 (16.04)	50.09 (16.11)	53.63 (16.14)	49.58 (16.19)	53.19 (16.12)
Median [IQR]	55, [44, 64]	58, [48, 65]	49, [38, 60]	54, [42, 63]	50, [38, 60]	55, [43, 63]	49, [38, 60]	54, [42, 63]
<b>Age categories, years, n (%)</b>								
18-24	1504 (2.2)	805 (1.9)	5747 (5.4)	2579 (4.9)	4835 (4.9)	2047 (4.4)	5706 (5.4)	2519 (4.8)
25-49	23,353 (33.6)	10,723 (25.4)	47,879 (45.4)	17,883 (34.0)	44,022 (44.3)	15,382 (33.0)	47,357 (44.9)	17,509 (33.5)
50-64	28,750 (41.4)	19,507 (46.2)	36,507 (34.6)	21,634 (41.1)	35,090 (35.3)	19,189 (41.2)	36,374 (34.5)	21,443 (41.0)
≥65	15,895 (22.9)	11,202 (26.5)	15,427 (14.6)	10,546 (20.0)	15,502 (15.6)	9991 (21.4)	15,933 (15.1)	10,776 (20.6)
<b>Insurance type, n (%)</b>								
Commercial	27,201 (39.1)	20,725 (49.1)	45,678 (43.3)	27,481 (52.2)	42,857 (43.1)	23,708 (50.9)	44,977 (42.7)	26,997 (51.7)
Medicare	11,931 (17.2)	7807 (18.5)	12,179 (11.5)	7513 (14.3)	12,119 (12.2)	7100 (15.2)	12,508 (11.9)	7647 (14.6)
Medicaid	28,627 (41.2)	12,749 (30.2)	45,101 (42.7)	16,499 (31.3)	42,039 (42.3)	14,763 (31.7)	45,327 (43.0)	16,479 (31.5)
Missing	1743 (2.5)	956 (2.3)	2602 (2.5)	1149 (2.2)	2434 (2.4)	1038 (2.2)	2558 (2.4)	1124 (2.2)
<b>Clinical characteristics</b>								
<b>Charlson-Quan score (365-day baseline)</b>								
Mean (SD)	2.24 (2.41)	2.50 (2.64)	1.62 (2.16)	2.02 (2.52)	1.65 (2.20)	2.12 (2.59)	1.64 (2.16)	2.06 (2.53)
Median [IQR]	2, [0, 3]	2, [0, 4]	1, [0, 2]	1, [0, 3]	1, [0, 2]	1, [0, 3]	1, [0, 2]	1, [0, 3]
<b>Frailty score (365-day baseline)</b>								
Mean (SD)	0.18 (0.07)	0.18 (0.07)	0.16 (0.07)	0.17 (0.07)	0.16 (0.07)	0.17 (0.07)	0.16 (0.07)	0.17 (0.07)
Median [IQR]	0.17, [0.13, 0.22]	0.16, [0.13, 0.21]	0.15, [0.12, 0.19]	0.15, [0.12, 0.20]	0.15, [0.12, 0.19]	0.15, [0.12, 0.20]	0.15, [0.12, 0.19]	0.15, [0.11, 0.20]
<b>Baseline characteristics, n (%)</b>								
Asthma	21,311 (30.7)	7216 (17.1)	31,242 (29.6)	9615 (18.3)	27,856 (28.0)	7912 (17.0)	31,118 (29.5)	9514 (18.2)
Cancer	6037 (8.7)	4304 (10.2)	6885 (6.5)	4300 (8.2)	6750 (6.8)	4066 (8.7)	6959 (6.6)	4390 (8.4)
Cardiovascular disease	60,873 (87.6)	37,872 (89.7)	66,732 (63.2)	37,709 (71.6)	64,142 (64.5)	34,030 (73.0)	67,036 (63.6)	37,566 (71.9)
Chronic kidney disease	16,015 (23.0)	13,610 (32.2)	15,807 (15.0)	13,117 (24.9)	15,422 (15.5)	12,327 (26.4)	16,023 (15.2)	13,250 (25.4)
Chronic lung disease	31,094 (44.7)	14,905 (35.3)	43,087 (40.8)	17,930 (34.1)	38,818 (39.0)	15,235 (32.7)	43,005 (40.8)	17,864 (34.2)
Chronic obstructive pulmonary disease	14,489 (20.8)	8663 (20.5)	16,543 (15.7)	9225 (17.5)	15,206 (15.3)	8116 (17.4)	16,572 (15.7)	9236 (17.7)
Coronary artery disease	4742 (6.8)	4411 (10.4)	4698 (4.5)	4248 (8.1)	4528 (4.6)	3935 (8.4)	4718 (4.5)	4243 (8.1)
Heart failure	11,613 (16.7)	8861 (21.0)	11,380 (10.8)	8530 (16.2)	10,974 (11.0)	7913 (17.0)	11,469 (10.9)	8575 (16.4)
Immunocompromised	8688 (12.5)	5150 (12.2)	10,336 (9.8)	5396 (10.3)	10,146 (10.2)	5059 (10.9)	10,404 (9.9)	5442 (10.4)
Irritable bowel syndrome	5844 (8.4)	1220 (2.9)	8172 (7.7)	1529 (2.9)	8027 (8.1)	1458 (3.1)	8294 (7.9)	1564 (3.0)
Liver disease	13,023 (18.7)	7873 (18.6)	15,477 (14.7)	8365 (15.9)	14,867 (14.9)	7666 (16.4)	15,675 (14.9)	8460 (16.2)
Other respiratory virus	1482 (2.1)	682 (1.6)	1944 (1.8)	766 (1.5)	1797 (1.8)	701 (1.5)	1963 (1.9)	775 (1.5)
Psoriasis	702 (1.0)	447 (1.1)	962 (0.9)	521 (1.0)	904 (0.9)	448 (1.0)	948 (0.9)	506 (1.0)
Psoriatic arthritis	675 (1.0)	292 (0.7)	870 (0.8)	332 (0.6)	867 (0.9)	318 (0.7)	872 (0.8)	321 (0.6)
Rheumatoid arthritis	4085 (5.9)	983 (2.3)	4711 (4.5)	1013 (1.9)	4717 (4.7)	985 (2.1)	4727 (4.5)	1016 (1.9)
Type 1 diabetes	2620 (3.8)	1814 (4.3)	2732 (2.6)	1792 (3.4)	2688 (2.7)	1702 (3.7)	2754 (2.6)	1808 (3.5)
Type 2 diabetes	25,526 (36.7)	17,257 (40.9)	26,933 (25.5)	16,979 (32.3)	25,864 (26.0)	15,518 (33.3)	27,294 (25.9)	16,987 (32.5)
<b>Long COVID symptoms, n (%)</b>								
Abdominal and pelvic pain	38,596 (55.5)	15,324 (36.3)	56,910 (53.9)	17,981 (34.2)	54,537 (54.8)	16,607 (35.6)	57,995 (55.0)	18,333 (35.1)
Anosmia/ageusia	472 (0.7)	206 (0.5)	776 (0.7)	265 (0.5)	816 (0.8)	271 (0.6)	751 (0.7)	261 (0.5)
Cough	30,002 (43.2)	14,181 (33.6)	42,755 (40.5)	17,234 (32.7)	39,848 (40.1)	15,191 (32.6)	42,785 (40.6)	17,183 (32.9)
Diarrhea	14,715 (21.2)	6199 (14.7)	19,684 (18.6)	7143 (13.6)	19,040 (19.1)	6654 (14.3)	20,011 (19.0)	7226 (13.8)
Dyspnea	40,152 (57.8)	23,766 (56.3)	51,809 (49.1)	26,882 (51.1)	48,106 (48.4)	23,615 (50.7)	51,876 (49.2)	26,720 (51.1)
Fatigue/malaise	36,476 (52.5)	18,695 (44.3)	50,760 (48.1)	21,339 (40.5)	50,690 (51.0)	20,837 (44.7)	50,529 (48.0)	21,171 (40.5)
Headache	30,681 (44.1)	9521 (22.5)	46,266 (43.8)	11,892 (22.6)	45,805 (46.1)	11,547 (24.8)	46,064 (43.7)	11,740 (22.5)
Hypertension	51,563 (74.2)	33,497 (79.3)	52,277 (49.5)	32,111 (61.0)	50,078 (50.4)	29,014 (62.2)	52,588 (49.9)	31,985 (61.2)
Joint pain	40,671 (58.5)	19,108 (45.2)	55,764 (52.8)	22,638 (43.0)	55,131 (55.4)	21,494 (46.1)	55,750 (52.9)	22,437 (42.9)
Muscle weakness	10,929 (15.7)	6010 (14.2)	12,779 (12.1)	6301 (12.0)	13,043 (13.1)	6319 (13.6)	12,926 (12.3)	6314 (12.1)
Myalgia	41,215 (59.3)	19,024 (45.0)	55,951 (53.0)	21,846 (41.5)	55,502 (55.8)	21,067 (45.2)	56,045 (53.2)	21,684 (41.5)
Nasal congestion	5154 (7.4)	1939 (4.6)	8482 (8.0)	2752 (5.2)	7852 (7.9)	2468 (5.3)	8478 (8.0)	2727 (5.2)
Sleep problems	26,817 (38.6)	16,962 (40.2)	35,027 (33.2)	19,729 (37.5)	32,877 (33.1)	17,275 (37.1)	33,862 (32.1)	18,649 (35.7)
<b>Known complications of COVID-19 infection, n (%)</b>								
Anosmia/ageusia	472 (0.7)	206 (0.5)	776 (0.7)	265 (0.5)	816 (0.8)	271 (0.6)	751 (0.7)	261 (0.5)
Cerebral venous sinus thrombosis	111 (0.2)	52 (0.1)	121 (0.1)	48 (0.1)	128 (0.1)	49 (0.1)	126 (0.1)	48 (0.1)
Chilblain-like lesions	10 (0.0)	10 (0.0)	21 (0.0)	14 (0.0)	18 (0.0)	11 (0.0)	21 (0.0)	11 (0.0)
Coagulopathy	8147 (11.7)	6664 (15.8)	8599 (8.1)	6649 (12.6)	8295 (8.3)	6238 (13.4)	8685 (8.2)	6678 (12.8)
Erythema multiforme	61 (0.1)	23 (0.1)	76 (0.1)	24 (0.0)	69 (0.1)	22 (0.0)	77 (0.1)	25 (0.0)
Multisystem inflammatory syndrome	202 (0.3)	102 (0.2)	228 (0.2)	108 (0.2)	221 (0.2)	106 (0.2)	231 (0.2)	108 (0.2)
Myocarditis	265 (0.4)	232 (0.5)	266 (0.3)	222 (0.4)	259 (0.3)	212 (0.5)	268 (0.3)	224 (0.4)
Pericarditis	285 (0.4)	208 (0.5)	295 (0.3)	212 (0.4)	280 (0.3)	200 (0.4)	296 (0.3)	215 (0.4)
Seizures/convulsions	3449 (5.0)	1919 (4.5)	4213 (4.0)	2092 (4.0)	4206 (4.2)	2033 (4.4)	4218 (4.0)	2101 (4.0)
Single organ cutaneous vasculitis	174 (0.3)	78 (0.2)	193 (0.2)	82 (0.2)	191 (0.2)	74 (0.2)	194 (0.2)	84 (0.2)
Thrombosis or thrombocytopenia	8384 (12.1)	6925 (16.4)	8758 (8.3)	6871 (13.1)	8446 (8.5)	6427 (13.8)	8837 (8.4)	6911 (13.2)
<b>Other long COVID-related characteristics, n (%)</b>								
AIDS/HIV	313 (0.5)	423 (1.0)	378 (0.4)	489 (0.9)	379 (0.4)	468 (1.0)	382 (0.4)	488 (0.9)
Alcohol abuse	2799 (4.0)	3827 (9.1)	4020 (3.8)	4322 (8.2)	3740 (3.8)	3960 (8.5)	3926 (3.7)	4269 (8.2)
Anemia	14,212 (20.4)	5846 (13.8)	17,482 (16.6)	5842 (11.1)	17,038 (17.1)	5604 (12.0)	17,674 (16.8)	5917 (11.3)
Asthma	21,311 (30.7)	7216 (17.1)	31,242 (29.6)	9615 (18.3)	27,856 (28.0)	7912 (17.0)	31,118 (29.5)	9514 (18.2)
Cerebrovascular disease	10,102 (14.5)	6716 (15.9)	10,203 (9.7)	6443 (12.2)	10,232 (10.3)	6304 (13.5)	10,364 (9.8)	6539 (12.5)
Chronic pulmonary disease	31,088 (44.7)	14,900 (35.3)	43,079 (40.8)	17,926 (34.1)	38,811 (39.0)	15,230 (32.7)	42,997 (40.8)	17,860 (34.2)
Congestive heart failure	7211 (10.4)	5758 (13.6)	7025 (6.7)	5549 (10.5)	6783 (6.8)	5154 (11.1)	7081 (6.7)	5577 (10.7)
Cystic fibrosis	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Dementia	4686 (6.7)	3085 (7.3)	4649 (4.4)	2949 (5.6)	4844 (4.9)	3056 (6.6)	4775 (4.5)	3010 (5.8)
Depression	29,992 (43.2)	10,782 (25.5)	43,561 (41.3)	13,184 (25.0)	40,821 (41.0)	11,967 (25.7)	42,328 (40.2)	12,604 (24.1)
Fluid and electrolyte disorders	2925 (4.2)	2484 (5.9)	2961 (2.8)	2460 (4.7)	2863 (2.9)	2355 (5.1)	2988 (2.8)	2479 (4.7)
Hypertension	51,563 (74.2)	33,497 (79.3)	52,277 (49.5)	32,111 (61.0)	50,078 (50.4)	29,014 (62.2)	52,588 (49.9)	31,985 (61.2)
Hyperthyroidism	2107 (3.0)	524 (1.2)	2725 (2.6)	563 (1.1)	2645 (2.7)	523 (1.1)	2741 (2.6)	564 (1.1)
Lymphoma	624 (0.9)	568 (1.3)	703 (0.7)	597 (1.1)	680 (0.7)	564 (1.2)	703 (0.7)	608 (1.2)
Myocardial infarction	3676 (5.3)	3519 (8.3)	3619 (3.4)	3377 (6.4)	3498 (3.5)	3116 (6.7)	3635 (3.4)	3375 (6.5)
Obesity	38,428 (55.3)	19,650 (46.5)	49,819 (47.2)	21,700 (41.2)	46,566 (46.8)	19,069 (40.9)	49,749 (47.2)	21,350 (40.9)
Other neurological disorders	7418 (10.7)	4568 (10.8)	8865 (8.4)	4813 (9.1)	8925 (9.0)	4741 (10.2)	8896 (8.4)	4846 (9.3)
Paralysis	2252 (3.2)	1719 (4.1)	2361 (2.2)	1681 (3.2)	2389 (2.4)	1715 (3.7)	2385 (2.3)	1728 (3.3)
Peptic ulcer disease	2488 (3.6)	1						