

Table of Contents

Additional File 1: Code definitions of various clinical characteristics evaluated at baseline	2
Additional File 2: Baseline Characteristics of Individuals with COVID-19 (PCR positive for SARS COV-2 or U07.1 diagnosis code in any setting) between April 1, 2020 to March 31, 2021 and with All SES Indicators Available in the Sentinel Distributed Database, Overall and by Race	6
Additional File 3: Baseline Characteristics of Individuals with COVID-19 (PCR positive for SARS COV-2 or U07.1 diagnosis code in any setting) between April 1, 2020 to March 31, 2021 in the Sentinel Distributed Database, Overall and by COVID Hospitalization Outcome Status	15
Additional File 4: Baseline Characteristics of Individuals Hospitalized with COVID-19 (U07.1 diagnosis code in the inpatient care setting) between April 1, 2020 and March 31, 2021, and with All SES Indicators Available in the Sentinel Distributed Database, Overall and by Race	20
Additional File 5: Baseline Characteristics of Individuals Hospitalized with COVID-19 (U07.1 diagnosis code in the inpatient care setting) between April 1, 2020 and March 31, 2021 in the Sentinel Distributed Database, Overall and by Evidence of Critical COVID Outcome	28
Additional File 6: Baseline Characteristics of Individuals Hospitalized with COVID-19 (U07.1 diagnosis code in the inpatient care setting) between April 1, 2020 and March 31, 2021 in the Sentinel Distributed Database, Overall and by Evidence of Outcome of Recorded Inpatient Death	33

Additional File 1: Code definitions of various clinical characteristics evaluated at baseline

Comorbidity/Health Condition	Code Type	Codes
Adult BMI 19.9 or less	ICD-10-CM	Z68.1
Adult BMI 20-29	ICD-10-CM	Z68.2*
Adult BMI 30-39	ICD-10-CM	Z68.3*
Adult BMI 40 or greater	ICD-10-CM	Z68.4*
Alcohol Use Abuse	ICD-10-CM	F10.*, G62.1, I42.6, K29.2*, K70.*, R78.0, T51, T51.0, T51.0X*, T51.8, T51.8X*, T51.9*, Z65.8, Z71.4
Alcohol Use Abuse	ICD-10-PCS	HZ2ZZZZ, HZ30ZZZ, HZ31ZZZ, HZ32ZZZ, HZ33ZZZ, HZ34ZZZ, HZ35ZZZ, HZ36ZZZ, HZ37ZZZ, HZ38ZZZ, HZ39ZZZ, HZ3BZZZ, HZ40ZZZ, HZ41ZZZ, HZ42ZZZ, HZ43ZZZ, HZ44ZZZ, HZ45ZZZ, HZ46ZZZ, HZ47ZZZ, HZ48ZZZ, HZ49ZZZ, HZ4BZZZ, HZ50ZZZ, HZ51ZZZ, HZ52ZZZ, HZ53ZZZ, HZ54ZZZ, HZ55ZZZ, HZ56ZZZ, HZ57ZZZ, HZ58ZZZ, HZ59ZZZ, HZ5BZZZ, HZ5CZZZ, HZ5DZZZ, HZ63ZZZ, HZ83ZZZ, HZ86ZZZ, HZ88ZZZ, HZ89ZZZ, HZ93ZZZ, HZ96ZZZ, HZ98ZZZ, HZ99ZZZ
Any Cancer	ICD-10-CM	C00-C14, C15-C26, C30-C39, C40-C41, C43, C4A, C45-C49, C50, C51-C58, C60-C63, C64-C68, C69-C72, C73-C75, C76-C80, C7A, C7B, C81-C96, D03, D45, O9A.1*, R97.21, D47.1, D47.3
Asthma	ICD-10-CM	J45*
Autoimmune Conditions	ICD-10-CM	D51.0, D69.0, D86.*, E27.1-E27.4, E89.6, G02, G70, G70.0*, G73.7, H01.12*, L93.*, L94.0, L94.1, L94.3, M05.2-M05.9, M06.0-M06.3, M06.8*, M06.9, M08.0*, M08.2-M08.4, M08.8*, M08.9*, M30.*, M31.0-M31.7, M32.*, M34.*, M35.0*, M35.2
Blood Stem Cell Transplant	ICD-10-PCS	30230AZ, 30230U2, 30230U3, 30230U4, 30230X0, 30230X1, 30230X2, 30230X3, 30230X4, 30230Y0, 30230Y1, 30230Y2, 30230Y3, 30230Y4, 30233AZ, 30233U2, 30233U3, 30233U4, 30233X0, 30233X1, 30233X2, 30233X3, 30233X4, 30233Y0, 30233Y1, 30233Y2, 30233Y3, 30233Y4, 30240AZ, 30240U2, 30240U3, 30240U4, 30240X0, 30240X1, 30240X2, 30240X3, 30240X4, 30240Y0, 30240Y1, 30240Y2, 30240Y3, 30240Y4, 30243AZ, 30243U2, 30243U3, 30243U4, 30243X0, 30243X1, 30243X2, 30243X3, 30243X4, 30243Y0, 30243Y1, 30243Y2, 30243Y3, 30243Y4, 30250X0, 30250X1, 30250Y0, 30250Y1, 30253X0, 30253X1, 30253Y0, 30253Y1, 30260X0, 30260X1, 30260Y0, 30260Y1, 30263X0, 30263X1, 30263Y0, 30263Y1, 3E0Q0AZ, 3E0Q0E0, 3E0Q0E1, 3E0Q3AZ, 3E0Q3E0, 3E0Q3E1, 3E0R0AZ, 3E0R0E0, 3E0R0E1, 3E0R3AZ, 3E0R3E0, 3E0R3E1, 6A550ZT, 6A550ZV, 6A551ZT, 6A551ZV
Blood Stem Cell Transplant	CPT-4	38240, 38241, 38242, 38243
Chronic Kidney Disease	ICD-10-CM	E08.22, E08.29, E09.21, E09.22, E10.21, E10.22, E11.21, E11.22, E11.29, E13.21, E13.22, I12.0, I12.9, I13.0, I13.1, I13.10, I13.11, I13.2, K76.7, M32.14, M32.15, M35.04, N01-N08, N11-N16, N18.*, N19, N25.*, N26.1, N26.9, N28.89, N28.9, N29, Q61.02, Q61.11, Q61.19, Q61.2, Q61.3, Q61.4, Q61.5, Q61.8, Q62.0-Q62.3, R94.4, Z49.*, Z99.2
Chronic Kidney Disease	ICD-10-PCS	B50W, B50W0ZZ, B50W1ZZ, B50WYZZ, B51W, B51W0ZA, B51W0ZZ, B51W1ZA, B51W1ZZ, B51WYZA, B51WYZZ, B51WZZA, B51WZZZ
Chronic Kidney Disease	CPT-2	0507F, 4055F, 4053F, 4052F, 4054F, 0505F
Chronic Kidney Disease	CPT-4	90999, 90935, 90937, 90940, 90951, 90952, 90953, 90960, 90961, 90962, 90954, 90955, 90956, 90957, 90958, 90959, 90963, 90966, 90964, 90965, 90967, 90970, 90968, 90969, 90945, 90947, 90994, 90992, 90976, 90977, 90978, 90979, 90982, 90983, 90984, 90985, 99559, 93998, 36907, 36908, 35876, 35875, 90988, 36489, 36488, 36491, 36490, 36905, 36906, 36904, 37607, 36902, 36903, 36901, 36800, 36815, 36810, 99512, 90991, 90941, 90942, 90943, 90944, 90990, 90939, 93990, 93986, 93985, 36838, 36909, 35686, 36821, 36818, 36819, 36820, 49422, 49325, 49324, 49419, 49421, 49418, 49435

Comorbidity/Health Condition	Code Type	Codes
Chronic Kidney Disease	HCPCS	A4714, E1640, E1630, E1634, K0610, A4653, G8727, G9523, A4905, S9339, E1638, A4860, A4721, A4726, A4725, A4724, A4723, A4720, A4722, A4760, A4766, A4765, E1594, A4901, A4900, E1592, A4719, E1625, G0365, A4918, E1580, G0393, G0392, E1575, E1636, A4740, E1610, A4802, E1540, A4870, G9241, G9240, G8956, G9266, G9265, G8957, S9335, A4801, E1520, G8715, G8714, E1590, A4820, A4730, G8085, G8081, G8082, G9239, G9264, A4690, E1600, E1615, A4890, C1751, C1752, C1750, A4750, A4755, E1620, E1560, A4706, A4707, E1550, E1530, A4680, A4709, A4708
Congestive Heart Failure	ICD-10-CM	I09.81, I11.0, I13.0, I13.2, I50*, I97.13, I97.130, I97.131
Chronic Obstructive Pulmonary Disease (COPD)	ICD-10-CM	J40, J41.*, J42, J43, J43.*, J44.*, J47.*, J43, J98.2, J98.3, P25, P25.*
Coronary Artery Disease	ICD-10-CM	I20*, I23.7, I24-I25, I46*, I47.0, I47.2, I70*, T82.211A, T82.212A, T82.213A, T82.218A, Z95.1, Z95.5, Z98.61
Coronary Artery Disease	ICD-10-PCS	0270046, 027004Z, 0270056, 027005Z, 0270066, 027006Z, 0270076, 027007Z, 02700D6, 02700DZ, 02700E6, 02700EZ, 02700F6, 02700FZ, 02700G6, 02700GZ, 02700T6, 02700TZ, 02700Z6, 02700ZZ, 0270346, 027034Z, 0270356, 027035Z, 0270366, 027036Z, 0270376, 027037Z, 02703D6, 02703DZ, 02703E6, 02703EZ, 02703F6, 02703FZ, 02703G6, 02703GZ, 02703T6, 02703TZ, 0270446, 027044Z, 0270456, 027045Z, 0270466, 027046Z, 0270476, 027047Z, 02704D6, 02704DZ, 02704E6, 02704EZ
		02704F6, 02704FZ, 02704G6, 02704GZ, 02704T6, 02704TZ, 0271046, 027104Z, 0271056, 027105Z, 0271066, 027106Z, 0271076, 027107Z, 02710D6, 02710DZ, 02710E6, 02710EZ, 02710F6, 02710FZ, 02710G6, 02710GZ, 02710T6, 02710TZ, 02710Z6, 02710ZZ, 0271346, 027134Z, 0271356, 027135Z, 0271366, 027136Z, 0271376, 027137Z, 02713D6, 02713DZ, 02713E6, 02713EZ, 02713F6, 02713FZ, 02713G6, 02713GZ, 02713T6, 02713TZ, 0271446, 027144Z, 0271456, 027145Z, 0271466, 027146Z
		0271476, 027147Z, 02714D6, 02714DZ, 02714E6, 02714EZ, 02714F6, 02714FZ, 02714G6, 02714GZ, 02714T6, 02714TZ, 0272046, 027204Z, 0272056, 027205Z, 0272066, 027206Z, 0272076, 027207Z, 02720D6, 02720DZ, 02720E6, 02720EZ, 02720F6, 02720FZ, 02720G6, 02720GZ, 02720T6, 02720TZ, 02720Z6, 02720ZZ, 0272346, 027234Z, 0272356, 027235Z, 0272366, 027236Z, 0272376, 027237Z, 02723D6, 02723DZ, 02723E6, 02723EZ, 02723F6, 02723FZ, 02723G6, 02723GZ, 02723T6, 02723TZ
		0272446, 027244Z, 0272456, 027245Z, 0272466, 027246Z, 0272476, 027247Z, 02724D6, 02724DZ, 02724E6, 02724EZ, 02724F6, 02724FZ, 02724G6, 02724GZ, 02724T6, 02724TZ, 0273046, 027304Z, 0273056, 027305Z, 0273066, 027306Z, 0273076, 027307Z, 02730D6, 02730DZ, 02730E6, 02730EZ, 02730F6, 02730FZ, 02730G6, 02730GZ, 02730T6, 02730TZ, 02730Z6, 02730ZZ, 0273346, 027334Z, 0273356, 027335Z, 0273366, 027336Z, 0273376, 027337Z, 02733D6, 02733DZ, 02733E6, 02733EZ
		02733F6, 02733FZ, 02733G6, 02733GZ, 02733T6, 02733TZ, 0273446, 027344Z, 0273456, 027345Z, 0273466, 027346Z, 0273476, 027347Z, 02734D6, 02734DZ, 02734E6, 02734EZ, 02734F6, 02734FZ, 02734G6, 02734GZ, 02734T6, 02734TZ, 02C00Z6, 02C00ZZ, 02C03Z6, 02C03ZZ, 02C04Z6, 02C04ZZ, 02C10Z6, 02C10ZZ, 02C13Z6, 02C13ZZ, 02C14Z6, 02C14ZZ, 02C20Z6, 02C20ZZ, 02C23Z6, 02C23ZZ, 02C24Z6, 02C24ZZ, 02C30Z6, 02C30ZZ, 02C33Z6, 02C33ZZ, 02C34Z6, 02C34ZZ, 3E07017, 3E070PZ
		3E07317, 3E073PZ, 4A020N7, 4A020N8, 4A023N7, 4A023N8, 4A12XSH, X2C0361, X2C1361, X2C2361, X2C3361, 0210083, 0210088, 0210089, 021008C, 021008F, 021008W, 0210093, 0210098, 0210099, 021009C, 021009F, 021009W, 02100A3, 02100A8, 02100A9, 02100AC, 02100AF, 02100AW, 02100J3, 02100J8, 02100J9, 02100JC, 02100JF, 02100JW, 02100K3, 02100K8, 02100K9, 02100KC, 02100KF, 02100KW, 02100Z3, 02100Z8, 02100Z9, 02100ZC, 02100ZF, 0210483, 0210488, 0210489, 021048C
		021048F, 021048W, 0210493, 0210498, 0210499, 021049C, 021049F, 021049W, 02104A3, 02104A8, 02104A9, 02104AC, 02104AF, 02104AW, 02104J3, 02104J8, 02104J9, 02104JC, 02104JF, 02104JW, 02104K3, 02104K8, 02104K9, 02104KC, 02104KF, 02104KW, 02104Z3, 02104Z8, 02104Z9, 02104ZC, 02104ZF, 0211083, 0211088, 0211089, 021108C, 021108F, 021108W, 0211093, 0211098, 0211099, 021109C, 021109F, 021109W, 02110A3, 02110A8, 02110A9, 02110AC, 02110AF, 02110AW, 02110J3
		02110J8, 02110J9, 02110JC, 02110JF, 02110JW, 02110K3, 02110K8, 02110K9, 02110KC, 02110KF, 02110KW, 02110Z3, 02110Z8, 02110Z9, 02110ZC, 02110ZF, 0211483, 0211488, 0211489, 021148C, 021148F, 021148W, 0211493, 0211498, 0211499, 021149C, 021149F, 021149W, 02114A3, 02114A8, 02114A9, 02114AC, 02114AF, 02114AW, 02114J3, 02114J8, 02114J9, 02114JC, 02114JF, 02114JW, 02114K3, 02114K8, 02114K9, 02114KC, 02114KF, 02114KW, 02114Z3, 02114Z8, 02114Z9, 02114ZC

Comorbidity/Health Condition	Code Type	Codes
		02114ZF, 0212083, 0212088, 0212089, 021208C, 021208F, 021208W, 0212093, 0212098, 0212099, 021209C, 021209F, 021209W, 02120A3, 02120A8, 02120A9, 02120AC, 02120AF, 02120AW, 02120J3, 02120J8, 02120J9, 02120JC, 02120JF, 02120JW, 02120K3, 02120K8, 02120K9, 02120KC, 02120KF, 02120KW, 02120Z3, 02120Z8, 02120Z9, 02120ZC, 02120ZF, 0212483, 0212488, 0212489, 021248C, 021248F, 021248W, 0212493, 0212498, 0212499, 021249C, 021249F, 021249W, 02124A3, 02124A8
		02124A9, 02124AC, 02124AF, 02124AW, 02124J3, 02124J8, 02124J9, 02124JC, 02124JF, 02124JW, 02124K3, 02124K8, 02124K9, 02124KC, 02124KF, 02124KW, 02124Z3, 02124Z8, 02124Z9, 02124ZC, 02124ZF, 0213083, 0213088, 0213089, 021308C, 021308F, 021308W, 0213093, 0213098, 0213099, 021309C, 021309F, 021309W, 02130A3, 02130A8, 02130A9, 02130AC, 02130AF, 02130AW, 02130J3, 02130J8, 02130J9, 02130JC, 02130JF, 02130JW, 02130K3, 02130K8, 02130K9, 02130KC, 02130KF
		02130KW, 02130Z3, 02130Z8, 02130Z9, 02130ZC, 02130ZF, 0213483, 0213488, 0213489, 021348C, 021348F, 021348W, 0213493, 0213498, 0213499, 021349C, 021349F, 021349W, 02134A3, 02134A8, 02134A9, 02134AC, 02134AF, 02134AW, 02134J3, 02134J8, 02134J9, 02134JC, 02134JF, 02134JW, 02134K3, 02134K8, 02134K9, 02134KC, 02134KF, 02134KW, 02134Z3, 02134Z8, 02134Z9, 02134ZC, 02134ZF, 021K0Z8, 021K0Z9, 021K0ZC, 021K0ZF, 021K0ZW, 021K4Z8, 021K4Z9, 021K4ZC, 021K4ZF
		021K4ZW, 021L08P, 021L08Q, 021L08R, 021L09P, 021L09Q, 021L09R, 021L0AP, 021L0AQ, 021L0AR, 021L0JP, 021L0JQ, 021L0JR, 021L0KP, 021L0KQ, 021L0KR, 021L0Z8, 021L0Z9, 021L0ZC, 021L0ZF, 021L0ZP, 021L0ZQ, 021L0ZR, 021L48P, 021L48Q, 021L48R, 021L49P, 021L49Q, 021L49R, 021L4AP, 021L4AQ, 021L4AR, 021L4JP, 021L4JQ, 021L4JR, 021L4KP, 021L4KQ, 021L4KR, 021L4Z8, 021L4Z9, 021L4ZC, 021L4ZF, 021L4ZP, 021L4ZQ, 021L4ZR
Coronary Artery Disease	CPT-4	93452, 93453, 93454, 93455, 93456, 93457, 93458, 93459, 93460, 93461, 92973, 92974, 92977, 92980, 92981, 92982, 92984, 92995, 92996, 33510, 33511, 33512, 33513, 33514, 33516, 33517, 33518, 33519, 33520, 33521, 33522, 33523, 33525, 33528, 33530, 33533, 33534, 33535, 33536, 33560, 33572, 33575, 35600, 33570, 34701, 34702, 34703, 34704, 34705, 34706, 34707, 34708, 34709, 34710, 34711, 34717, 34718, 34841, 34842, 34843, 34844, 34845, 34846, 34847, 34848, 35450, 35452, 35454, 35456, 35458, 35459, 35460, 35470, 35471, 35472, 35473, 35474, 35475, 35476, 35879, 36902, 36903, 36905, 36906, 36907, 36908, 37215, 37216, 37217, 37218, 37220, 37221, 37222, 37223, 37224, 37225, 37226, 37227, 37228, 37229, 37230, 37231, 37232, 37233, 37234, 37235, 37236, 37237, 37238, 37239, 37246, 37247, 37248, 37249, 61630, 61635, 75962, 75963, 75964, 75965, 75966, 75967, 75968, 75969, 75970, 75972, 75973, 75974, 75975, 75976, 75977, 75978, 75979, 92920, 92921, 92924, 92925, 92928, 92929, 92933, 92934, 92937, 92938, 92941, 92943, 92944, 92997, 92998,
Coronary Artery Disease	HCPCS	G0290, G0291, S2205, S2206, S2207, S2208, S2209, C1034, C1100, C1101, C1366, C1367, C1500, C1725, C1885, C1930, C1933, C1948, C1981, C2605, C2623, C3551, C8526, C9600, C9601, C9602, C9603, C9604, C9605, C9606, C9607, C9608, C9754, G0392, G0393
Cystic Fibrosis	ICD-10-CM	E84, E84.0, E84.1, E84.11, E84.19, E84.8, E84.9
Diabetes Mellitus	ICD-10-CM	E08-E11, E13*
Drug Abuse Dependence	ICD-10-CM	F11-F19, F55.*, O99.32*
HIV	ICD-10-CM	B20, Z21, B97.35, O98.7, O98.71, O98.711, O98.712, O98.713, O98.719, O98.72, O98.73
Hypertension	ICD-10-CM	I10-I13, I15-I16, I27.0, I27.2*, I87.3*, I97.3, N26.2
Interstitial Lung Disease	ICD-10-CM	J84*
Liver Disease	ICD-10-CM	B18*, E83.01, E83.110, E88.01, I85*, I86.4, K65.2, K70-K76, K83.01, K91.83, Z94.4
Neurologic Conditions	ICD-10-CM	D32*, D33.3, D36.11, F01, F01.5*, F02, F02.8*, F03, F03.9*, F10.27, F10.97, F13.27, F13.97, F18.17, F18.27, F18.97, F19.17, F19.27, F19.97, G10, G11.11, G12*, G20, G21, G21.1-G21.9, G23.1, G30*, G31.0, G31.09, G31.83, G32.0, G35, G40.0-G40.3, G40.4*, G40.8-G40.9, G40.B*, G45*, G60.0, G61.0, G64, G65.0, G70*, G71.0, G71.00, G71.01, G71.02, G71.09, G71.11, G71.12, G71.19, G71.2, G72.4, G72.41, G72.49, G72.9, G73.1, G80*, G91*, G95.0, H93.3, I60.7, I67.1, M33*, M48.0*, Q28, Q85.0*, S06.2*, S06.3*, Z13.850, Z82.0, Z87.820
Obesity	ICD-10-CM	E66.*, K95.*, O99.210, O99.211, O99.212, O99.213, O99.214, O99.215, O99.840, O99.841, O99.842, O99.843, O99.844, O99.845, Z68.30, Z68.31, Z68.32, Z68.33, Z68.34, Z68.35, Z68.36, Z68.37, Z68.38, Z68.39, Z68.41, Z68.42, Z68.43, Z68.44, Z68.45

Comorbidity/Health Condition	Code Type	Codes
Obesity	ICD-10-PCS	0D16079, 0D1607A, 0D1607B, 0D1607L, 0D160J9, 0D160JA, 0D160JB, 0D160JL, 0D160K9, 0D160KA, 0D160KB, 0D160KL, 0D160Z9, 0D160ZA, 0D160ZB, 0D160ZL, 0D16479, 0D1647A, 0D1647B, 0D1647L, 0D164J9, 0D164JA, 0D164JB, 0D164JL, 0D164K9, 0D164KA, 0D164KB, 0D164KL, 0D164Z9, 0D164ZA, 0D164ZB, 0D164ZL, 0D16879, 0D1687A, 0D1687B, 0D1687L, 0D168J9, 0D168JA, 0D168JB, 0D168JL, 0D168K9, 0D168KA, 0D168KB, 0D168KL, 0D168Z9, 0D168ZA, 0D168ZB, 0D168ZL, 0D19079, 0D1907A
		0D1907B, 0D190J9, 0D190JA, 0D190JB, 0D190K9, 0D190KA, 0D190KB, 0D190Z9, 0D190ZA, 0D190ZB, 0D19479, 0D1947A, 0D1947B, 0D194J9, 0D194JA, 0D194JB, 0D194K9, 0D194KA, 0D194KB, 0D194Z9, 0D194ZA, 0D194ZB, 0D19879, 0D1987A, 0D1987B, 0D198J9, 0D198JA, 0D198JB, 0D198K9, 0D198KA, 0D198KB, 0D198Z9, 0D198ZA, 0D198ZB, 0D1A07A, 0D1A07B, 0D1A0JA, 0D1A0JB, 0D1A0KA, 0D1A0KB, 0D1A0ZA, 0D1A0ZB, 0D1A47A, 0D1A47B, 0D1A4JA, 0D1A4JB, 0D1A4KA, 0D1A4KB, 0D1A4ZA, 0D1A4ZB
		0D1A87A, 0D1A87B, 0D1A8JA, 0D1A8JB, 0D1A8KA, 0D1A8KB, 0D1A8ZA, 0D1A8ZB, 0D1B07B, 0D1B0JB, 0D1B0KB, 0D1B0ZB, 0D1B47B, 0D1B4JB, 0D1B4KB, 0D1B4ZB, 0D1B87B, 0D1B8JB, 0D1B8KB, 0D1B8ZB, 0D1B8ZH, 0DB60Z3, 0DB60ZZ, 0DB63Z3, 0DB63ZZ, 0DB67Z3, 0DB67ZZ, 0DB68Z3, 0DB80ZZ, 0DBB0ZZ, 0DV64CZ, 0F190Z3, 0TRB07Z, 43645, 43644, 43770, 43842, 43843, 43847, 43846, 43845
Pulmonary Conditions	ICD-10-CM	A22.1, A37.01, A37.11, A37.81, A37.91, A48.1, B25.0, B44.0, B77.81, J09.X1, J10.00, J10.01, J10.08, J11.00, J11.08, J12.*, J13, J14, J15.*, J16.0, J16.8, J17, J18.*, J69.0, J69.1, J69.8, J80, J95.4, J95.5, J95.851, J95.859, J95.88, J95.89, J96.*
Sickle Cell Disease	ICD-10-CM	D57.*
Smoking	ICD-10-CM	F17.21, F17.210, F17.211, F17.213, F17.218, F17.219, F17.29, F17.290, F17.291, F17.293, F17.298, F17.299, Z71.6, Z72.0, Z87.891
Smoking	CPT-2	4001F, 4004F, 1034F
Smoking	CPT-4	99406, 99407
Smoking	HCPCS	S4995, G9016, S9453, G0436, G9458, G9276
Solid Organ Transplant	ICD-10-PCS	02Y, 02YA, 02YA0Z0, 02YA0Z1, 02YA0Z2, 07Y, 07YM, 07YM0Z0, 07YM0Z1, 07YM0Z2, 07YP, 07YP0Z0, 07YP0Z1, 07YP0Z2, 0BY, 0BYC, 0BYC0Z0, 0BYC0Z1, 0BYC0Z2, 0BYD, 0BYD0Z0, 0BYD0Z1, 0BYD0Z2, 0BYF, 0BYF0Z0, 0BYF0Z1, 0BYF0Z2, 0BYG, 0BYG0Z0, 0BYG0Z1, 0BYG0Z2, 0BYH, 0BYH0Z0, 0BYH0Z1, 0BYH0Z2, 0BYJ, 0BYJ0Z0, 0BYJ0Z1, 0BYJ0Z2, 0BYK, 0BYK0Z0, 0BYK0Z1, 0BYK0Z2, 0BYL, 0BYL0Z0, 0BYL0Z1, 0BYL0Z2, 0BYM, 0BYM0Z0, 0BYM0Z1, 0BYM0Z2, 0DY, 0DY5, 0DY50Z0, 0DY50Z1, 0DY50Z2, 0DY6, 0DY60Z0, 0DY60Z1, 0DY60Z2, 0DY8, 0DY80Z0, 0DY80Z1, 0DY80Z2, 0DYE, 0DYE0Z0, 0DYE0Z1, 0DYE0Z2, 0FY, 0FY0, 0FY00Z0, 0FY00Z1, 0FY00Z2, 0FYG, 0FYG0Z0, 0FYG0Z1, 0FYG0Z2, 0TY, 0TY0, 0TY00Z0, 0TY00Z1, 0TY00Z2, 0TY1, 0TY10Z0, 0TY10Z1, 0TY10Z2, 0UY, 0UY0, 0UY00Z0, 0UY00Z1, 0UY00Z2, 0UY1, 0UY10Z0, 0UY10Z1, 0UY10Z2, 0UY9, 0UY90Z0, 0UY90Z1, 0UY90Z2, 0WY, 0WY2, 0WY20Z0, 0WY20Z1, 0XY, 0XYJ, 0XYJ0Z0, 0XYJ0Z1, 0XYK, 0XYK0Z0, 0XYK0Z1
Solid Organ Transplant	CPT-3	0141T, 0142T, 0143T, 0584T, 0586T, 0585T
Solid Organ Transplant	CPT-4	23440, 29868, 32851, 32852, 32853, 32854, 33927, 33935, 33945, 43625, 44135, 44136, 47135, 47136, 48160, 48554, 50340, 50360, 50365, 50366, 50380, 60510, 60512, 65710, 65720, 65725, 65730, 65740, 65745, 65750, 65755, 65756, 65767, 65780, 65781, 65782, 76776, 76778, 81495, 81595, 0055U, 0087U, 0088U
Solid Organ Transplant	HCPCS	G0341, G0342, G0343, S2052, S2053, S2054, S2060, S2065, S2102, S2103, S2109, S2152
Vascular Disease	ICD-10-CM	I01*, I02.0, I05-I09, I10-I16, I20-I25, I26-I28, I30-I52, I70-I79, I80-I89, I95-I99

Footnote:

Footnote: * indicates a wildcard search for all indented codes within a parent prefix. For example, Z68.2* represents all codes in the parent Z68.2 node such as Z68.20, Z68.21, Z68.22, Z68.23, Z68.24, Z68.25, Z68.26, Z68.27, Z68.28, Z68.29

Additional File 2: Baseline Characteristics of Individuals with COVID-19 (PCR positive for SARS COV-2 or U07.1 diagnosis code in any setting) between April 1, 2020 to March 31, 2021 and with All SES Indicators Available in the Sentinel Distributed Database, Overall and by Race

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
	Number/Mean	Percent/Standard Deviation	Number/Mean	Percent/Standard Deviation	Number/Mean	Percent/Standard Deviation	Number/Mean	Percent/Standard Deviation	Number/Mean	Percent/Standard Deviation	Number/Mean	Percent/Standard Deviation	Number/Mean	Percent/Standard Deviation	Number/Mean	Percent/Standard Deviation
Patient Characteristics																
Unique patients	770,924	N/A	14,519	N/A	76,638	N/A	2,740	N/A	4,163	N/A	356,084	N/A	316,780	N/A	454,144	N/A
Demographic Characteristics																
Age (years)	56.1	19.5	49.3	15.3	64.4	14.0	56.5	15.3	67.3	9.9	64.3	15.4	45.0	21.0	63.8	15.2
Age																
0-5 years	6,786	0.9%	108	0.7%	78	0.1%	7	0.3%	3	0.1%	800	0.2%	5,790	1.8%	996	0.2%
6-11 years	10,352	1.3%	119	0.8%	138	0.2%	12	0.4%	5	0.1%	1,331	0.4%	8,747	2.8%	1,605	0.4%
12-18 years	26,823	3.5%	286	2.0%	402	0.5%	56	2.0%	18	0.4%	4,629	1.3%	21,432	6.8%	5,391	1.2%
19-29 years	77,963	10.1%	2,120	14.6%	2,689	3.5%	240	8.8%	132	3.2%	19,691	5.5%	53,091	16.8%	24,872	5.5%
30-39 years	77,074	10.0%	2,883	19.9%	4,676	6.1%	285	10.4%	153	3.7%	22,419	6.3%	46,658	14.7%	30,416	6.7%
40-49 years	80,476	10.4%	2,284	15.7%	5,615	7.3%	365	13.3%	217	5.2%	24,747	6.9%	47,248	14.9%	33,228	7.3%

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
50-64 years	151,575	19.7%	2,537	17.5%	16,183	21.1%	682	24.9%	522	12.5%	61,860	17.4%	69,791	22.0%	81,784	18.0%
65-74 years	185,123	24.0%	2,775	19.1%	28,419	37.1%	646	23.6%	1,902	45.7%	113,143	31.8%	38,238	12.1%	146,885	32.3%
≥ 75 years	154,752	20.1%	1,407	9.7%	18,438	24.1%	447	16.3%	1,211	29.1%	107,464	30.2%	25,785	8.1%	128,967	28.4%
Sex																
Female	417,159	54.1%	7,406	51.0%	46,573	60.8%	1,587	57.9%	1,955	47.0%	192,590	54.1%	167,048	52.7%	250,111	55.1%
Male	353,765	45.9%	7,113	49.0%	30,065	39.2%	1,153	42.1%	2,208	53.0%	163,494	45.9%	149,732	47.3%	204,033	44.9%
Race																
American Indian or Alaska Native	2,740	0.4%	0	0.0%	0	0.0%	2,740	100.0%	0	0.0%	0	0.0%	0	0.0%	2,740	0.6%
Asian	14,519	1.9%	14,519	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	14,519	3.2%
Black or African American	76,638	9.9%	0	0.0%	76,638	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	76,638	16.9%
Native Hawaiian or Other Pacific Islander	4,163	0.5%	0	0.0%	0	0.0%	0	0.0%	4,163	100.0%	0	0.0%	0	0.0%	4,163	0.9%
Unknown	316,780	41.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	316,780	100.0%	0	0.0%
White	356,084	46.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	356,084	100.0%	0	0.0%	356,084	78.4%
Hispanic origin																
Yes	48,004	6.2%	1,380	9.5%	793	1.0%	671	24.5%	134	3.2%	4,713	1.3%	40,313	12.7%	7,691	1.7%
No	280,330	36.4%	4,080	28.1%	52,464	68.5%	1,330	48.5%	3,590	86.2%	217,921	61.2%	945	0.3%	279,385	61.5%

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
Unknown	442,590	57.4%	9,059	62.4%	23,381	30.5%	739	27.0%	439	10.5%	133,450	37.5%	275,522	87.0%	167,068	36.8%
Month-Year of Cohort Entry																
April 2020	21,923	2.8%	610	4.2%	5,025	6.6%	78	2.8%	138	3.3%	8,796	2.5%	7,276	2.3%	14,647	3.2%
May 2020	18,459	2.4%	433	3.0%	2,713	3.5%	55	2.0%	105	2.5%	8,495	2.4%	6,658	2.1%	11,801	2.6%
June 2020	30,583	4.0%	619	4.3%	3,771	4.9%	115	4.2%	157	3.8%	12,091	3.4%	13,830	4.4%	16,753	3.7%
July 2020	63,350	8.2%	1,115	7.7%	8,780	11.5%	226	8.2%	386	9.3%	24,472	6.9%	28,371	9.0%	34,979	7.7%
August 2020	39,647	5.1%	710	4.9%	5,033	6.6%	128	4.7%	231	5.5%	17,154	4.8%	16,391	5.2%	23,256	5.1%
September 2020	35,410	4.6%	560	3.9%	3,152	4.1%	137	5.0%	170	4.1%	16,569	4.7%	14,822	4.7%	20,588	4.5%
October 2020	60,467	7.8%	875	6.0%	4,505	5.9%	244	8.9%	276	6.6%	30,037	8.4%	24,530	7.7%	35,937	7.9%
November 2020	121,808	15.8%	2,154	14.8%	8,191	10.7%	461	16.8%	616	14.8%	60,000	16.8%	50,386	15.9%	71,422	15.7%
December 2020	159,316	20.7%	2,991	20.6%	13,262	17.3%	576	21.0%	822	19.7%	76,785	21.6%	64,880	20.5%	94,436	20.8%
January 2021	128,297	16.6%	2,510	17.3%	12,966	16.9%	471	17.2%	783	18.8%	60,286	16.9%	51,281	16.2%	77,016	17.0%
February 2021	52,106	6.8%	1,095	7.5%	5,516	7.2%	146	5.3%	295	7.1%	23,873	6.7%	21,181	6.7%	30,925	6.8%
March 2021	39,558	5.1%	847	5.8%	3,724	4.9%	103	3.8%	184	4.4%	17,526	4.9%	17,174	5.4%	22,384	4.9%
Census Bureau (CB) Region																
Midwest	143,876	18.7%	1,436	9.9%	10,110	13.2%	258	9.4%	705	16.9%	73,490	20.6%	57,877	18.3%	85,999	18.9%

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
Northeast	90,764	11.8%	2,340	16.1%	7,252	9.5%	112	4.1%	272	6.5%	34,919	9.8%	45,869	14.5%	44,895	9.9%
South	401,953	52.1%	5,003	34.5%	54,827	71.5%	1,233	45.0%	1,875	45.0%	186,929	52.5%	152,086	48.0%	249,867	55.0%
West	134,331	17.4%	5,740	39.5%	4,449	5.8%	1,137	41.5%	1,311	31.5%	60,746	17.1%	60,948	19.2%	73,383	16.2%
CB Region (Invalid)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
CB Region (Missing)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
CB Region (Other)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Urbanicity																
Urban (population >= 50,000)	529,595	68.7%	13,434	92.5%	56,679	74.0%	1,585	57.8%	3,300	79.3%	218,903	61.5%	235,694	74.4%	293,901	64.7%
Suburban (population 2,500 - 49,999)	7,537	1.0%	36	0.2%	955	1.2%	24	0.9%	22	0.5%	3,955	1.1%	2,545	0.8%	4,992	1.1%
Rural (population < 2,500)	233,785	30.3%	1,049	7.2%	19,003	24.8%	1,131	41.3%	841	20.2%	133,223	37.4%	78,538	24.8%	155,247	34.2%
Zip Code Unknown or Urbanicity Not Available	7	0.0%	0	0.0%	1	0.0%	0	0.0%	0	0.0%	3	0.0%	3	0.0%	4	0.0%
Proxies for Socioeconomic Status (SES)																
Average Median Household Income ²	68,019.2	26,550.0	83,700.0	31,115.5	53,534.1	20,949.6	61,096.0	22,499.9	67,312.3	25,110.5	67,827.0	24,719.7	71,090.0	28,484.2	65,877.1	24,886.1
Average Median Home Value ²	257,584.7	197,296.3	412,125.3	275,422.3	192,027.0	134,508.0	222,156.8	143,479.6	269,914.0	183,200.4	245,306.8	180,425.4	280,307.6	219,301.5	241,734.7	179,571.9
Average Percent Unemployment ²	5.3	2.7	4.8	1.9	7.3	3.8	6.1	3.5	5.5	2.6	5.0	2.4	5.1	2.5	5.4	2.8
Missingness in Proxies for Socioeconomic Status (SES)																
Median Household Income Available	770,924	100.0%	14,519	100.0%	76,638	100.0%	2,740	100.0%	4,163	100.0%	356,084	100.0%	316,780	100.0%	454,144	100.0%
Median Home Value Available	770,924	100.0%	14,519	100.0%	76,638	100.0%	2,740	100.0%	4,163	100.0%	356,084	100.0%	316,780	100.0%	454,144	100.0%

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
Percent Unemployment Available	770,924	100.0%	14,519	100.0%	76,638	100.0%	2,740	100.0%	4,163	100.0%	356,084	100.0%	316,780	100.0%	454,144	100.0%
All SES Indicators Available	770,924	100.0%	14,519	100.0%	76,638	100.0%	2,740	100.0%	4,163	100.0%	356,084	100.0%	316,780	100.0%	454,144	100.0%
Recorded History Of Prior to Index Event (-183, -1)																
Adult BMI 19.9 or less	5,886	0.8%	130	0.9%	869	1.1%	11	0.4%	53	1.3%	3,441	1.0%	1,382	0.4%	4,504	1.0%
Adult BMI 20-29	71,744	9.3%	1,316	9.1%	9,070	11.8%	159	5.8%	698	16.8%	39,394	11.1%	21,107	6.7%	50,637	11.1%
Adult BMI 30-39	79,563	10.3%	603	4.2%	13,137	17.1%	250	9.1%	504	12.1%	41,701	11.7%	23,368	7.4%	56,195	12.4%
Adult BMI 40 or greater	33,395	4.3%	138	1.0%	7,083	9.2%	132	4.8%	144	3.5%	16,382	4.6%	9,516	3.0%	23,879	5.3%
Alcohol or Drug Abuse	18,895	2.5%	103	0.7%	2,977	3.9%	103	3.8%	113	2.7%	10,614	3.0%	4,985	1.6%	13,910	3.1%
Alcohol Use Abuse	11,912	1.5%	74	0.5%	1,827	2.4%	70	2.6%	73	1.8%	6,720	1.9%	3,148	1.0%	8,764	1.9%
Any Cancer	48,883	6.3%	496	3.4%	7,435	9.7%	152	5.5%	322	7.7%	29,311	8.2%	11,167	3.5%	37,716	8.3%
Asthma	47,038	6.1%	646	4.4%	7,474	9.8%	241	8.8%	251	6.0%	23,075	6.5%	15,351	4.8%	31,687	7.0%
Autoimmune Conditions	21,481	2.8%	193	1.3%	3,975	5.2%	101	3.7%	153	3.7%	11,812	3.3%	5,247	1.7%	16,234	3.6%
Blood Stem Cell Transplant	54	0.0%	1	0.0%	7	0.0%	0	0.0%	1	0.0%	21	0.0%	24	0.0%	30	0.0%
Chronic Kidney Disease	107,424	13.9%	1,242	8.6%	20,476	26.7%	383	14.0%	964	23.2%	63,483	17.8%	20,876	6.6%	86,548	19.1%
Congestive Heart Failure	62,730	8.1%	434	3.0%	12,576	16.4%	175	6.4%	440	10.6%	38,394	10.8%	10,711	3.4%	52,019	11.5%
Chronic Obstructive Pulmonary Disease (COPD)	75,921	9.8%	492	3.4%	11,291	14.7%	263	9.6%	426	10.2%	49,928	14.0%	13,521	4.3%	62,400	13.7%

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
Coronary Artery Disease	121,447	15.8%	1,203	8.3%	18,197	23.7%	389	14.2%	1,000	24.0%	77,402	21.7%	23,256	7.3%	98,191	21.6%
Cystic Fibrosis	101	0.0%	1	0.0%	7	0.0%	0	0.0%	0	0.0%	56	0.0%	37	0.0%	64	0.0%
Diabetes Mellitus	174,771	22.7%	2,855	19.7%	32,436	42.3%	817	29.8%	1,730	41.6%	93,529	26.3%	43,404	13.7%	131,367	28.9%
Drug Abuse Dependence	8,664	1.1%	42	0.3%	1,466	1.9%	46	1.7%	46	1.1%	4,751	1.3%	2,313	0.7%	6,351	1.4%
HIV	2,432	0.3%	30	0.2%	801	1.0%	16	0.6%	10	0.2%	759	0.2%	816	0.3%	1,616	0.4%
Hypertension	337,780	43.8%	4,355	30.0%	54,686	71.4%	1,205	44.0%	2,582	62.0%	192,572	54.1%	82,380	26.0%	255,400	56.2%
Interstitial Lung Disease	8,957	1.2%	96	0.7%	1,249	1.6%	29	1.1%	75	1.8%	5,736	1.6%	1,772	0.6%	7,185	1.6%
Liver Disease	31,122	4.0%	534	3.7%	3,900	5.1%	148	5.4%	273	6.6%	17,021	4.8%	9,246	2.9%	21,876	4.8%
Neurologic Conditions	86,150	11.2%	602	4.1%	12,346	16.1%	294	10.7%	533	12.8%	55,092	15.5%	17,283	5.5%	68,867	15.2%
Obesity	150,806	19.6%	1,102	7.6%	26,135	34.1%	556	20.3%	848	20.4%	76,839	21.6%	45,326	14.3%	105,480	23.2%
Pulmonary Conditions	43,084	5.6%	455	3.1%	7,143	9.3%	181	6.6%	315	7.6%	25,804	7.2%	9,186	2.9%	33,898	7.5%
Sickle Cell Disease	795	0.1%	5	0.0%	532	0.7%	1	0.0%	4	0.1%	40	0.0%	213	0.1%	582	0.1%
Smoking	92,818	12.0%	634	4.4%	14,083	18.4%	370	13.5%	591	14.2%	57,426	16.1%	19,714	6.2%	73,104	16.1%
Solid Organ or Stem Cell Transplant	596	0.1%	15	0.1%	117	0.2%	0	0.0%	6	0.1%	279	0.1%	179	0.1%	417	0.1%
Solid Organ Transplant	542	0.1%	14	0.1%	110	0.1%	0	0.0%	5	0.1%	258	0.1%	155	0.0%	387	0.1%
Vascular Disease	374,655	48.6%	4,792	33.0%	57,179	74.6%	1,311	47.8%	2,803	67.3%	214,607	60.3%	93,963	29.7%	280,692	61.8%
Recorded Use Of Prior to Index Event (-183, -1)																
Chemotherapy	11,694	1.5%	144	1.0%	1,865	2.4%	46	1.7%	83	2.0%	6,639	1.9%	2,917	0.9%	8,777	1.9%

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
Glucocorticoids Inhaled	43,597	5.7%	504	3.5%	5,929	7.7%	167	6.1%	193	4.6%	25,024	7.0%	11,780	3.7%	31,817	7.0%
Glucocorticoids NonSystemic	91,594	11.9%	1,504	10.4%	11,866	15.5%	336	12.3%	586	14.1%	49,613	13.9%	27,689	8.7%	63,905	14.1%
Glucocorticoids Ophthalmic	9,848	1.3%	165	1.1%	1,535	2.0%	38	1.4%	94	2.3%	5,441	1.5%	2,575	0.8%	7,273	1.6%
Glucocorticoids Systemic	181,417	23.5%	2,044	14.1%	22,356	29.2%	699	25.5%	939	22.6%	99,264	27.9%	56,115	17.7%	125,302	27.6%
Glucocorticoids Topical	44,155	5.7%	918	6.3%	5,366	7.0%	155	5.7%	344	8.3%	22,694	6.4%	14,678	4.6%	29,477	6.5%
Immune Modulators	21,788	2.8%	301	2.1%	2,988	3.9%	73	2.7%	151	3.6%	12,383	3.5%	5,892	1.9%	15,896	3.5%
Immunosuppressants	12,715	1.6%	159	1.1%	2,126	2.8%	64	2.3%	95	2.3%	6,821	1.9%	3,450	1.1%	9,265	2.0%
Recent Use Of Certain Treatments (-30, 0)																
Angiotensin-converting enzyme (ACE) inhibitors	49,578	6.4%	596	4.1%	6,118	8.0%	232	8.5%	348	8.4%	27,780	7.8%	14,504	4.6%	35,074	7.7%
Angiotensin receptor blockers (ARBs)	44,630	5.8%	877	6.0%	7,405	9.7%	183	6.7%	344	8.3%	23,174	6.5%	12,647	4.0%	31,983	7.0%
Vasopressors	2,235	0.3%	35	0.2%	418	0.5%	3	0.1%	23	0.6%	1,258	0.4%	498	0.2%	1,737	0.4%
Comorbidity Burden (-183,-1)																
Charlson/Elixhauser combined comorbidity score3	1.2	2.4	0.6	1.6	2.1	3.0	1.2	2.3	1.7	2.7	1.6	2.6	0.6	1.7	1.7	2.7
Symptoms at Diagnosis (-1, 14)																
Cough	160,591	20.8%	2,825	19.5%	17,476	22.8%	547	20.0%	956	23.0%	77,858	21.9%	60,929	19.2%	99,662	21.9%
Diarrhea	31,347	4.1%	386	2.7%	4,264	5.6%	125	4.6%	187	4.5%	17,323	4.9%	9,062	2.9%	22,285	4.9%
Dyspnea/Short of Breath	162,847	21.1%	2,503	17.2%	24,793	32.4%	696	25.4%	1,214	29.2%	88,973	25.0%	44,668	14.1%	118,179	26.0%

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
Fever	94,747	12.3%	1,885	13.0%	11,766	15.4%	324	11.8%	585	14.1%	44,388	12.5%	35,799	11.3%	58,948	13.0%
Headache	9,208	1.2%	154	1.1%	1,153	1.5%	39	1.4%	54	1.3%	3,436	1.0%	4,372	1.4%	4,836	1.1%
Malaise or Fatigue	99,622	12.9%	1,320	9.1%	14,033	18.3%	320	11.7%	647	15.5%	55,895	15.7%	27,407	8.7%	72,215	15.9%
Multisystem Inflammatory Syndrome	99	0.0%	0	0.0%	17	0.0%	0	0.0%	0	0.0%	41	0.0%	41	0.0%	58	0.0%
Myalgia	20,229	2.6%	413	2.8%	1,912	2.5%	81	3.0%	101	2.4%	8,641	2.4%	9,081	2.9%	11,148	2.5%
Nasal Congestion	19,750	2.6%	204	1.4%	1,316	1.7%	60	2.2%	51	1.2%	8,569	2.4%	9,550	3.0%	10,200	2.2%
Nausea or Vomiting	35,972	4.7%	384	2.6%	4,851	6.3%	153	5.6%	221	5.3%	19,391	5.4%	10,972	3.5%	25,000	5.5%
Smell or Taste Disturbance	16,365	2.1%	230	1.6%	1,402	1.8%	55	2.0%	61	1.5%	6,062	1.7%	8,555	2.7%	7,810	1.7%
Sore Throat	27,398	3.6%	498	3.4%	1,476	1.9%	83	3.0%	126	3.0%	10,518	3.0%	14,697	4.6%	12,701	2.8%
Health Service Utilization Intensity (-183,-1)																
Mean number of ambulatory encounters	8.6	11.8	6.1	9.5	11.2	15.5	7.9	11.1	9.7	13.1	10.0	12.0	6.4	10.1	10.1	12.6
Mean number of emergency room encounters	0.5	1.7	0.2	1.2	0.9	2.5	0.7	2.0	0.5	1.4	0.6	1.8	0.3	1.2	0.6	1.9
Mean number of inpatient hospital encounters	0.1	0.4	0.0	0.3	0.2	0.6	0.1	0.5	0.1	0.5	0.1	0.5	0.1	0.3	0.1	0.5
Mean number of non-acute institutional encounters	0.0	0.3	0.0	0.1	0.1	0.3	0.0	0.3	0.0	0.3	0.1	0.3	0.0	0.2	0.1	0.3
Mean number of other ambulatory encounters	1.6	5.8	0.9	4.0	2.4	7.7	2.1	5.9	1.7	5.8	2.2	6.7	0.8	3.6	2.2	6.8
Mean number of filled prescriptions	12.6	16.3	7.3	10.0	17.2	17.6	13.9	17.3	13.8	14.2	15.6	18.0	8.3	13.1	15.6	17.8
Mean number of generics dispensed	5.4	5.1	3.6	3.7	7.6	5.5	5.6	5.3	6.5	4.8	6.5	5.4	3.7	4.4	6.6	5.4

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
Mean number of unique drug classes dispensed	5.1	4.7	3.3	3.4	7.1	5.0	5.2	4.9	6.1	4.4	6.2	4.9	3.5	4.0	6.2	4.9

Footnotes: 1Value represents standard deviation where no % follows the value. 2These variables were calculated only among those with a known SES information. 3The Charlson/Elixhauser Combined Comorbidity Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date. (Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759) N/A: Not Applicable

Additional File 3: Baseline Characteristics of Individuals with COVID-19 (PCR positive for SARS COV-2 or U07.1 diagnosis code in any setting) between April 1, 2020 to March 31, 2021 in the Sentinel Distributed Database, Overall and by COVID Hospitalization Outcome Status

Patient Characteristics	Overall		Evidence of outcome		No evidence of outcome	
	Number/Mean	Percent/ Standard Deviation1	Number/Mean	Percent/ Standard Deviation1	Number/Mean	Percent/ Standard Deviation1
Unique patients	841,628	N/A	129,802	N/A	711,826	N/A
Demographic Characteristics						
Age (years)	55.2	19.7	71.6	13.1	52.2	19.7
Age						
0-5 years	8,231	1.0%	72	0.1%	8,159	1.1%
6-11 years	12,438	1.5%	40	0.0%	12,398	1.7%
12-18 years	31,580	3.8%	165	0.1%	31,415	4.4%
19-29 years	89,419	10.6%	1,178	0.9%	88,241	12.4%
30-39 years	86,781	10.3%	2,586	2.0%	84,195	11.8%
40-49 years	90,333	10.7%	4,845	3.7%	85,488	12.0%
50-64 years	168,258	20.0%	21,298	16.4%	146,960	20.6%
65-74 years	193,277	23.0%	43,725	33.7%	149,552	21.0%
≥ 75 years	161,311	19.2%	55,893	43.1%	105,418	14.8%
Sex						
Female	454,938	54.1%	62,673	48.3%	392,265	55.1%
Male	386,690	45.9%	67,129	51.7%	319,561	44.9%
Race						
American Indian or Alaska Native	2,853	0.3%	533	0.4%	2,320	0.3%
Asian	16,783	2.0%	1,923	1.5%	14,860	2.1%
Black or African American	80,325	9.5%	23,007	17.7%	57,318	8.1%
Native Hawaiian or Other Pacific Islander	4,353	0.5%	1,154	0.9%	3,199	0.4%
Unknown	354,640	42.1%	30,398	23.4%	324,242	45.6%
White	382,674	45.5%	72,787	56.1%	309,887	43.5%
Hispanic origin						

	Overall		Evidence of outcome		No evidence of outcome	
Yes	52,568	6.2%	5,569	4.3%	46,999	6.6%
No	283,161	33.6%	76,659	59.1%	206,502	29.0%
Unknown	505,899	60.1%	47,574	36.7%	458,325	64.4%
Month-Year of Cohort Entry						
April 2020	27,111	3.2%	7,267	5.6%	19,844	2.8%
May 2020	22,097	2.6%	3,426	2.6%	18,671	2.6%
June 2020	32,987	3.9%	4,243	3.3%	28,744	4.0%
July 2020	66,695	7.9%	10,684	8.2%	56,011	7.9%
August 2020	43,119	5.1%	6,738	5.2%	36,381	5.1%
September 2020	38,451	4.6%	5,285	4.1%	33,166	4.7%
October 2020	65,215	7.7%	9,738	7.5%	55,477	7.8%
November 2020	131,906	15.7%	20,458	15.8%	111,448	15.7%
December 2020	171,908	20.4%	26,620	20.5%	145,288	20.4%
January 2021	138,781	16.5%	21,015	16.2%	117,766	16.5%
February 2021	57,294	6.8%	8,538	6.6%	48,756	6.8%
March 2021	46,064	5.5%	5,790	4.5%	40,274	5.7%
Census Bureau (CB) Region						
Midwest	144,132	17.1%	27,709	21.3%	116,423	16.4%
Northeast	157,687	18.7%	16,283	12.5%	141,404	19.9%
South	403,464	47.9%	70,443	54.3%	333,021	46.8%
West	134,564	16.0%	15,159	11.7%	119,405	16.8%
CB Region (Invalid)	561	0.1%	62	0.0%	499	0.1%
CB Region (Missing)	675	0.1%	43	0.0%	632	0.1%
CB Region (Other)	545	0.1%	103	0.1%	442	0.1%
Urbanicity						
Urban (population >= 50,000)	590,496	70.2%	83,349	64.2%	507,147	71.2%
Suburban (population 2,500 - 49,999)	8,156	1.0%	1,551	1.2%	6,605	0.9%
Rural (population < 2,500)	241,194	28.7%	44,692	34.4%	196,502	27.6%
Zip Code Unknown or Urbanicity Not Available	1,782	0.2%	210	0.2%	1,572	0.2%
Proxies for Socioeconomic Status (SES)						
Average Median Household Income2	68,000.1	26,556.9	59,577.3	21,749.3	69,621.8	27,243.1

	Overall		Evidence of outcome		No evidence of outcome	
Average Median Home Value ²	257,527.4	197,349.8	199,388.5	130,960.7	268,720.9	206,703.1
Average Percent Unemployment ²	5.3	2.7	5.9	3.2	5.2	2.7
Missingness in Proxies for Socioeconomic Status (SES)						
Median Household Income Available	771,807	91.7%	124,636	96.0%	647,171	90.9%
Median Home Value Available	771,570	91.7%	124,576	96.0%	646,994	90.9%
Percent Unemployment Available	772,942	91.8%	124,852	96.2%	648,090	91.0%
All SES Indicators Available	770,924	91.6%	124,455	95.9%	646,469	90.8%
Recorded History Of Prior to Index Event (-183, -1)						
Adult BMI 19.9 or less	6,271	0.7%	1,799	1.4%	4,472	0.6%
Adult BMI 20-29	76,667	9.1%	16,208	12.5%	60,459	8.5%
Adult BMI 30-39	83,949	10.0%	20,299	15.6%	63,650	8.9%
Adult BMI 40 or greater	34,973	4.2%	10,010	7.7%	24,963	3.5%
Alcohol or Drug Abuse	20,122	2.4%	5,332	4.1%	14,790	2.1%
Alcohol Use Abuse	12,763	1.5%	3,378	2.6%	9,385	1.3%
Any Cancer	51,856	6.2%	15,726	12.1%	36,130	5.1%
Asthma	50,991	6.1%	10,689	8.2%	40,302	5.7%
Autoimmune Conditions	22,663	2.7%	5,921	4.6%	16,742	2.4%
Blood Stem Cell Transplant	64	0.0%	18	0.0%	46	0.0%
Chronic Kidney Disease	111,502	13.2%	42,327	32.6%	69,175	9.7%
Congestive Heart Failure	65,171	7.7%	27,409	21.1%	37,762	5.3%
Chronic Obstructive Pulmonary Disease (COPD)	78,865	9.4%	28,929	22.3%	49,936	7.0%
Coronary Artery Disease	126,840	15.1%	42,949	33.1%	83,891	11.8%
Cystic Fibrosis	118	0.0%	23	0.0%	95	0.0%
Diabetes Mellitus	183,790	21.8%	57,176	44.0%	126,614	17.8%
Drug Abuse Dependence	9,183	1.1%	2,435	1.9%	6,748	0.9%
HIV	2,605	0.3%	498	0.4%	2,107	0.3%
Hypertension	356,107	42.3%	95,245	73.4%	260,862	36.6%
Interstitial Lung Disease	9,233	1.1%	3,601	2.8%	5,632	0.8%
Liver Disease	33,090	3.9%	8,834	6.8%	24,256	3.4%
Neurologic Conditions	90,725	10.8%	27,589	21.3%	63,136	8.9%

	Overall		Evidence of outcome		No evidence of outcome	
Obesity	159,821	19.0%	39,515	30.4%	120,306	16.9%
Pulmonary Conditions	45,451	5.4%	17,790	13.7%	27,661	3.9%
Sickle Cell Disease	870	0.1%	303	0.2%	567	0.1%
Smoking	97,027	11.5%	29,516	22.7%	67,511	9.5%
Solid Organ or Stem Cell Transplant	644	0.1%	251	0.2%	393	0.1%
Solid Organ Transplant	580	0.1%	233	0.2%	347	0.0%
Vascular Disease	395,995	47.1%	102,708	79.1%	293,287	41.2%
Recorded Use Of Prior to Index Event (-1 83, -1)						
Chemotherapy	12,323	1.5%	4,187	3.2%	8,136	1.1%
Glucocorticoids Inhaled	46,355	5.5%	13,558	10.4%	32,797	4.6%
Glucocorticoids NonSystemic	98,245	11.7%	23,690	18.3%	74,555	10.5%
Glucocorticoids Ophthalmic	10,427	1.2%	2,520	1.9%	7,907	1.1%
Glucocorticoids Systemic	192,542	22.9%	44,090	34.0%	148,452	20.9%
Glucocorticoids Topical	47,825	5.7%	9,585	7.4%	38,240	5.4%
Immune Modulators	23,000	2.7%	7,010	5.4%	15,990	2.2%
Immunosuppressants	13,385	1.6%	3,893	3.0%	9,492	1.3%
Recent Use Of Certain Treatments (-30, 0)						
Angiotensin-converting enzyme (ACE) inhibitors	52,106	6.2%	11,858	9.1%	40,248	5.7%
Angiotensin receptor blockers (ARBs)	47,339	5.6%	11,220	8.6%	36,119	5.1%
Vasopressors	2,343	0.3%	1,475	1.1%	868	0.1%
Comorbidity Burden (-183,-1)						
Charlson/Elixhauser combined comorbidity score ³	1.2	2.3	2.8	3.3	0.9	2.0
Symptoms at Diagnosis (-1, 14)						
Cough	170,838	20.3%	40,337	31.1%	130,501	18.3%
Diarrhea	32,923	3.9%	14,648	11.3%	18,275	2.6%
Dyspnea/Short of Breath	170,822	20.3%	98,452	75.8%	72,370	10.2%
Fever	101,366	12.0%	35,351	27.2%	66,015	9.3%
Headache	9,883	1.2%	1,995	1.5%	7,888	1.1%
Malaise or Fatigue	108,347	12.9%	45,188	34.8%	63,159	8.9%

	Overall		Evidence of outcome		No evidence of outcome	
Multisystem Inflammatory Syndrome	106	0.0%	79	0.1%	27	0.0%
Myalgia	21,536	2.6%	3,440	2.7%	18,096	2.5%
Nasal Congestion	21,064	2.5%	1,508	1.2%	19,556	2.7%
Nausea or Vomiting	37,557	4.5%	14,670	11.3%	22,887	3.2%
Smell or Taste Disturbance	17,387	2.1%	1,520	1.2%	15,867	2.2%
Sore Throat	29,710	3.5%	2,239	1.7%	27,471	3.9%
Health Service Utilization Intensity						
Mean number of ambulatory encounters	8.5	11.7	13.1	16.8	7.7	10.3
Mean number of emergency room encounters	0.5	1.6	1.0	2.6	0.4	1.4
Mean number of inpatient hospital encounters	0.1	0.4	0.3	0.7	0.1	0.4
Mean number of non-acute institutional encounters	0.0	0.3	0.1	0.4	0.0	0.2
Mean number of other ambulatory encounters	1.5	5.6	3.4	8.9	1.2	4.7
Mean number of filled prescriptions	12.2	16.0	20.3	20.0	10.7	14.9
Mean number of generics dispensed	5.2	5.0	8.6	6.0	4.6	4.7
Mean number of unique drug classes dispensed	4.9	4.6	8.0	5.4	4.4	4.3

Footnotes: 1Value represents standard deviation where no % follows the value. 2These variables were calculated only among those with a known SES information. 3The Charlson/Elixhauser Combined Comorbidity Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date. (Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759) N/A: Not Applicable

Additional File 4: Baseline Characteristics of Individuals Hospitalized with COVID-19 (U07.1 diagnosis code in the inpatient care setting) between April 1, 2020 and March 31, 2021, and with All SES Indicators Available in the Sentinel Distributed Database, Overall and by Race

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
	Number/Mean	Percent/Standard Deviation	Number/Mean	Percent/Standard Deviation	Number/Mean	Percent/Standard Deviation	Number/Mean	Percent/Standard Deviation	Number/Mean	Percent/Standard Deviation	Number/Mean	Percent/Standard Deviation	Number/Mean	Percent/Standard Deviation	Number/Mean	Percent/Standard Deviation
Patient Characteristics																
Unique patients	128,167	N/A	1,844	N/A	22,995	N/A	541	N/A	1,154	N/A	72,172	N/A	29,461	N/A	98,706	N/A
Demographic Characteristics																
Age (years)	71.8	13.0	68.0	12.8	71.1	11.5	68.9	11.5	73.3	8.8	74.6	11.0	65.6	16.6	73.6	11.3
Age																
0-5 years	70	0.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	8	0.0%	62	0.2%	8	0.0%
6-11 years	41	0.0%	0	0.0%	1	0.0%	0	0.0%	0	0.0%	3	0.0%	37	0.1%	4	0.0%
12-18 years	169	0.1%	0	0.0%	6	0.0%	0	0.0%	0	0.0%	22	0.0%	141	0.5%	28	0.0%
19-29 years	1,162	0.9%	24	1.3%	89	0.4%	7	1.3%	2	0.2%	222	0.3%	818	2.8%	344	0.3%
30-39 years	2,502	2.0%	105	5.7%	342	1.5%	9	1.7%	11	1.0%	548	0.8%	1,487	5.0%	1,015	1.0%
40-49 years	4,643	3.6%	122	6.6%	719	3.1%	29	5.4%	22	1.9%	1,291	1.8%	2,460	8.4%	2,183	2.2%
50-64 years	20,680	16.1%	283	15.3%	4,128	18.0%	113	20.9%	99	8.6%	8,782	12.2%	7,275	24.7%	13,405	13.6%
65-74 years	43,280	33.8%	703	38.1%	9,282	40.4%	211	39.0%	508	44.0%	24,464	33.9%	8,112	27.5%	35,168	35.6%

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
≥ 75 years	55,620	43.4%	607	32.9%	8,428	36.7%	172	31.8%	512	44.4%	36,832	51.0%	9,069	30.8%	46,551	47.2%
Sex																
Female	62,192	48.5%	794	43.1%	12,855	55.9%	290	53.6%	429	37.2%	34,362	47.6%	13,462	45.7%	48,730	49.4%
Male	65,975	51.5%	1,050	56.9%	10,140	44.1%	251	46.4%	725	62.8%	37,810	52.4%	15,999	54.3%	49,976	50.6%
Race																
American Indian or Alaska Native	541	0.4%	0	0.0%	0	0.0%	541	100.0%	0	0.0%	0	0.0%	0	0.0%	541	0.5%
Asian	1,844	1.4%	1,844	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1,844	1.9%
Black or African American	22,995	17.9%	0	0.0%	22,995	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	22,995	23.3%
Native Hawaiian or Other Pacific Islander	1,154	0.9%	0	0.0%	0	0.0%	0	0.0%	1,154	100.0%	0	0.0%	0	0.0%	1,154	1.2%
Unknown	29,461	23.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	29,461	100.0%	0	0.0%
White	72,172	56.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	72,172	100.0%	0	0.0%	72,172	73.1%
Hispanic origin																
Yes	5,507	4.3%	82	4.4%	50	0.2%	53	9.8%	6	0.5%	239	0.3%	5,077	17.2%	430	0.4%
No	78,104	60.9%	1,050	56.9%	18,458	80.3%	409	75.6%	1,115	96.6%	57,006	79.0%	66	0.2%	78,038	79.1%
Unknown	44,556	34.8%	712	38.6%	4,487	19.5%	79	14.6%	33	2.9%	14,927	20.7%	24,318	82.5%	20,238	20.5%
Month-Year of Cohort Entry																
April 2020	6,117	4.8%	137	7.4%	2,025	8.8%	22	4.1%	50	4.3%	2,670	3.7%	1,213	4.1%	4,904	5.0%
May 2020	3,284	2.6%	56	3.0%	869	3.8%	17	3.1%	36	3.1%	1,663	2.3%	643	2.2%	2,641	2.7%

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
June 2020	3,853	3.0%	73	4.0%	1,011	4.4%	15	2.8%	46	4.0%	1,840	2.5%	868	2.9%	2,985	3.0%
July 2020	10,577	8.3%	130	7.0%	2,701	11.7%	33	6.1%	124	10.7%	4,970	6.9%	2,619	8.9%	7,958	8.1%
August 2020	7,102	5.5%	74	4.0%	1,559	6.8%	23	4.3%	62	5.4%	3,754	5.2%	1,630	5.5%	5,472	5.5%
September 2020	5,256	4.1%	43	2.3%	818	3.6%	17	3.1%	42	3.6%	3,051	4.2%	1,285	4.4%	3,971	4.0%
October 2020	9,184	7.2%	92	5.0%	1,247	5.4%	42	7.8%	58	5.0%	5,598	7.8%	2,147	7.3%	7,037	7.1%
November 2020	19,254	15.0%	252	13.7%	2,394	10.4%	84	15.5%	156	13.5%	11,690	16.2%	4,678	15.9%	14,576	14.8%
December 2020	25,859	20.2%	368	20.0%	3,765	16.4%	121	22.4%	226	19.6%	15,409	21.4%	5,970	20.3%	19,889	20.1%
January 2021	21,992	17.2%	354	19.2%	3,727	16.2%	121	22.4%	227	19.7%	12,853	17.8%	4,710	16.0%	17,282	17.5%
February 2021	9,446	7.4%	154	8.4%	1,779	7.7%	31	5.7%	78	6.8%	5,323	7.4%	2,081	7.1%	7,365	7.5%
March 2021	6,243	4.9%	111	6.0%	1,100	4.8%	15	2.8%	49	4.2%	3,351	4.6%	1,617	5.5%	4,626	4.7%
Census Bureau (CB) Region																
Midwest	28,436	22.2%	271	14.7%	3,634	15.8%	55	10.2%	233	20.2%	16,665	23.1%	7,578	25.7%	20,858	21.1%
Northeast	12,005	9.4%	213	11.6%	1,721	7.5%	12	2.2%	62	5.4%	5,162	7.2%	4,835	16.4%	7,170	7.3%
South	72,144	56.3%	679	36.8%	16,784	73.0%	240	44.4%	527	45.7%	41,301	57.2%	12,613	42.8%	59,531	60.3%
West	15,582	12.2%	681	36.9%	856	3.7%	234	43.3%	332	28.8%	9,044	12.5%	4,435	15.1%	11,147	11.3%
CB Region (Invalid)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
CB Region (Missing)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
CB Region (Other)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Urbanicity																

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
Urban (population >= 50,000)	81,580	63.7%	1,700	92.2%	16,673	72.5%	234	43.3%	924	80.1%	41,274	57.2%	20,775	70.5%	60,805	61.6%
Suburban (population 2,500 - 49,999)	1,519	1.2%	7	0.4%	292	1.3%	6	1.1%	5	0.4%	918	1.3%	291	1.0%	1,228	1.2%
Rural (population < 2,500)	45,066	35.2%	137	7.4%	6,029	26.2%	301	55.6%	225	19.5%	29,980	41.5%	8,394	28.5%	36,672	37.2%
Zip Code Unknown or Urbanicity Not Available	2	0.0%	0	0.0%	1	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.0%	1	0.0%
Proxies for Socioeconomic Status (SES)																
Average Median Household Income ²	59,642.1	21,790.3	74,312.9	26,438.3	49,821.0	18,812.9	52,968.6	18,463.8	64,793.0	23,512.0	61,387.7	21,137.5	62,034.1	22,953.9	58,928.2	21,369.5
Average Median Home Value ²	199,835.9	131,672.4	322,685.3	196,328.0	170,627.7	114,732.6	170,280.6	106,737.1	253,585.6	175,105.9	198,495.2	122,403.7	216,666.3	150,759.4	194,812.5	124,798.8
Average Percent Unemployment ²	5.8	3.1	5.2	2.0	7.8	4.0	7.2	4.7	5.6	2.6	5.3	2.6	5.6	2.9	5.9	3.2
Missingness in Proxies for Socioeconomic Status (SES)																
Median Household Income Available	128,167	100.0%	1,844	100.0%	22,995	100.0%	541	100.0%	1,154	100.0%	72,172	100.0%	29,461	100.0%	98,706	100.0%
Median Home Value Available	128,167	100.0%	1,844	100.0%	22,995	100.0%	541	100.0%	1,154	100.0%	72,172	100.0%	29,461	100.0%	98,706	100.0%
Percent Unemployment Available	128,167	100.0%	1,844	100.0%	22,995	100.0%	541	100.0%	1,154	100.0%	72,172	100.0%	29,461	100.0%	98,706	100.0%
All SES Indicators Available	128,167	100.0%	1,844	100.0%	22,995	100.0%	541	100.0%	1,154	100.0%	72,172	100.0%	29,461	100.0%	98,706	100.0%
Recorded History Of Prior to Index Event (-183, -1)																
Adult BMI 19.9 or less	1,897	1.5%	29	1.6%	405	1.8%	2	0.4%	25	2.2%	1,127	1.6%	309	1.0%	1,588	1.6%
Adult BMI 20-29	16,385	12.8%	304	16.5%	3,128	13.6%	30	5.5%	222	19.2%	9,703	13.4%	2,998	10.2%	13,387	13.6%
Adult BMI 30-39	20,590	16.1%	131	7.1%	4,476	19.5%	53	9.8%	150	13.0%	11,751	16.3%	4,029	13.7%	16,561	16.8%

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
Adult BMI 40 or greater	10,338	8.1%	36	2.0%	2,645	11.5%	37	6.8%	45	3.9%	5,390	7.5%	2,185	7.4%	8,153	8.3%
Alcohol or Drug Abuse	5,479	4.3%	17	0.9%	1,171	5.1%	30	5.5%	37	3.2%	3,196	4.4%	1,028	3.5%	4,451	4.5%
Alcohol Use Abuse	3,439	2.7%	14	0.8%	733	3.2%	20	3.7%	21	1.8%	2,016	2.8%	635	2.2%	2,804	2.8%
Any Cancer	15,785	12.3%	149	8.1%	3,085	13.4%	55	10.2%	116	10.1%	9,448	13.1%	2,932	10.0%	12,853	13.0%
Asthma	11,284	8.8%	146	7.9%	2,564	11.2%	56	10.4%	83	7.2%	5,982	8.3%	2,453	8.3%	8,831	8.9%
Autoimmune Conditions	5,996	4.7%	37	2.0%	1,425	6.2%	35	6.5%	55	4.8%	3,369	4.7%	1,075	3.6%	4,921	5.0%
Blood Stem Cell Transplant	16	0.0%	0	0.0%	2	0.0%	0	0.0%	0	0.0%	8	0.0%	6	0.0%	10	0.0%
Chronic Kidney Disease	43,397	33.9%	511	27.7%	9,818	42.7%	146	27.0%	420	36.4%	24,957	34.6%	7,545	25.6%	35,852	36.3%
Congestive Heart Failure	28,483	22.2%	207	11.2%	6,327	27.5%	84	15.5%	206	17.9%	17,053	23.6%	4,606	15.6%	23,877	24.2%
Chronic Obstructive Pulmonary Disease (COPD)	30,446	23.8%	190	10.3%	5,208	22.6%	104	19.2%	189	16.4%	19,945	27.6%	4,810	16.3%	25,636	26.0%
Coronary Artery Disease	44,283	34.6%	456	24.7%	8,066	35.1%	141	26.1%	373	32.3%	27,695	38.4%	7,552	25.6%	36,731	37.2%
Cystic Fibrosis	22	0.0%	0	0.0%	1	0.0%	0	0.0%	0	0.0%	16	0.0%	5	0.0%	17	0.0%
Diabetes Mellitus	57,693	45.0%	872	47.3%	12,989	56.5%	283	52.3%	614	53.2%	31,439	43.6%	11,496	39.0%	46,197	46.8%
Drug Abuse Dependence	2,533	2.0%	5	0.3%	567	2.5%	15	2.8%	18	1.6%	1,442	2.0%	486	1.6%	2,047	2.1%
HIV	502	0.4%	2	0.1%	241	1.0%	0	0.0%	2	0.2%	140	0.2%	117	0.4%	385	0.4%
Hypertension	96,573	75.3%	1,201	65.1%	19,744	85.9%	365	67.5%	872	75.6%	55,748	77.2%	18,643	63.3%	77,930	79.0%
Interstitial Lung Disease	3,959	3.1%	41	2.2%	649	2.8%	16	3.0%	34	2.9%	2,478	3.4%	741	2.5%	3,218	3.3%
Liver Disease	9,177	7.2%	115	6.2%	1,571	6.8%	50	9.2%	96	8.3%	5,322	7.4%	2,023	6.9%	7,154	7.2%

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
Neurologic Conditions	28,489	22.2%	207	11.2%	5,165	22.5%	96	17.7%	208	18.0%	17,937	24.9%	4,876	16.6%	23,613	23.9%
Obesity	40,071	31.3%	266	14.4%	9,032	39.3%	137	25.3%	250	21.7%	21,978	30.5%	8,408	28.5%	31,663	32.1%
Pulmonary Conditions	28,943	22.6%	342	18.5%	4,858	21.1%	133	24.6%	216	18.7%	16,536	22.9%	6,858	23.3%	22,085	22.4%
Sickle Cell Disease	305	0.2%	2	0.1%	224	1.0%	0	0.0%	0	0.0%	14	0.0%	65	0.2%	240	0.2%
Smoking	32,021	25.0%	205	11.1%	5,964	25.9%	128	23.7%	226	19.6%	20,262	28.1%	5,236	17.8%	26,785	27.1%
Solid Organ or Stem Cell Transplant	249	0.2%	7	0.4%	62	0.3%	0	0.0%	4	0.3%	119	0.2%	57	0.2%	192	0.2%
Solid Organ Transplant	233	0.2%	7	0.4%	60	0.3%	0	0.0%	4	0.3%	111	0.2%	51	0.2%	182	0.2%
Vascular Disease	104,226	81.3%	1,282	69.5%	20,497	89.1%	400	73.9%	932	80.8%	60,596	84.0%	20,519	69.6%	83,707	84.8%
Recorded Use Of Prior to Index Event (-183, -1)																
Chemotherapy	4,150	3.2%	42	2.3%	798	3.5%	13	2.4%	37	3.2%	2,390	3.3%	870	3.0%	3,280	3.3%
Glucocorticoids Inhaled	14,304	11.2%	149	8.1%	2,411	10.5%	48	8.9%	81	7.0%	8,846	12.3%	2,769	9.4%	11,535	11.7%
Glucocorticoids NonSystemic	24,189	18.9%	340	18.4%	4,190	18.2%	79	14.6%	190	16.5%	14,508	20.1%	4,882	16.6%	19,307	19.6%
Glucocorticoids Ophthalmic	2,492	1.9%	45	2.4%	514	2.2%	8	1.5%	28	2.4%	1,402	1.9%	495	1.7%	1,997	2.0%
Glucocorticoids Systemic	50,415	39.3%	557	30.2%	8,298	36.1%	204	37.7%	360	31.2%	30,043	41.6%	10,953	37.2%	39,462	40.0%
Glucocorticoids Topical	9,431	7.4%	173	9.4%	1,618	7.0%	31	5.7%	105	9.1%	5,529	7.7%	1,975	6.7%	7,456	7.6%
Immune Modulators	7,020	5.5%	99	5.4%	1,294	5.6%	31	5.7%	58	5.0%	3,957	5.5%	1,581	5.4%	5,439	5.5%
Immunosuppressants	3,881	3.0%	45	2.4%	847	3.7%	23	4.3%	38	3.3%	2,116	2.9%	812	2.8%	3,069	3.1%
Recent Use Of Certain Treatments (-30, 0)																

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
Angiotensin-converting enzyme (ACE) inhibitors	11,574	9.0%	128	6.9%	1,977	8.6%	60	11.1%	101	8.8%	6,718	9.3%	2,590	8.8%	8,984	9.1%
Angiotensin receptor blockers (ARBs)	10,880	8.5%	213	11.6%	2,376	10.3%	46	8.5%	113	9.8%	5,787	8.0%	2,345	8.0%	8,535	8.6%
Vasopressors	2,033	1.6%	42	2.3%	400	1.7%	6	1.1%	27	2.3%	1,125	1.6%	433	1.5%	1,600	1.6%
Comorbidity Burden (-183,-1)																
Charlson/Elixhauser combined comorbidity score3	3.0	3.4	1.9	2.8	3.5	3.5	2.4	3.1	2.7	3.3	3.2	3.4	2.3	3.1	3.3	3.4
Symptoms at Diagnosis (-1, 14)																
Cough	31,342	24.5%	515	27.9%	5,499	23.9%	101	18.7%	311	26.9%	17,471	24.2%	7,445	25.3%	23,897	24.2%
Diarrhea	13,217	10.3%	165	8.9%	2,370	10.3%	58	10.7%	101	8.8%	7,786	10.8%	2,737	9.3%	10,480	10.6%
Dyspnea/Short of Breath	96,964	75.7%	1,422	77.1%	17,035	74.1%	421	77.8%	880	76.3%	55,293	76.6%	21,913	74.4%	75,051	76.0%
Fever	29,325	22.9%	511	27.7%	5,817	25.3%	97	17.9%	278	24.1%	15,598	21.6%	7,024	23.8%	22,301	22.6%
Headache	1,562	1.2%	31	1.7%	318	1.4%	6	1.1%	22	1.9%	773	1.1%	412	1.4%	1,150	1.2%
Malaise or Fatigue	42,856	33.4%	489	26.5%	7,981	34.7%	139	25.7%	365	31.6%	25,839	35.8%	8,043	27.3%	34,813	35.3%
Multisystem Inflammatory Syndrome	86	0.1%	0	0.0%	18	0.1%	0	0.0%	0	0.0%	29	0.0%	39	0.1%	47	0.0%
Myalgia	2,052	1.6%	36	2.0%	328	1.4%	10	1.8%	20	1.7%	1,109	1.5%	549	1.9%	1,503	1.5%
Nasal Congestion	659	0.5%	4	0.2%	105	0.5%	1	0.2%	4	0.3%	379	0.5%	166	0.6%	493	0.5%
Nausea or Vomiting	13,031	10.2%	131	7.1%	2,354	10.2%	55	10.2%	97	8.4%	7,580	10.5%	2,814	9.6%	10,217	10.4%
Smell or Taste Disturbance	1,106	0.9%	17	0.9%	224	1.0%	6	1.1%	14	1.2%	575	0.8%	270	0.9%	836	0.8%
Sore Throat	1,116	0.9%	21	1.1%	168	0.7%	4	0.7%	10	0.9%	618	0.9%	295	1.0%	821	0.8%

	Overall		Asian		Black or African American		American Indian or Alaska Native		Native Hawaiian or Other Pacific Islander		White		Unknown Race		Known Race (Asian or Black or African American or American Indian or Alaska Native or Native Hawaiian or Other Pacific Islander or White)	
Health Service Utilization Intensity (-183,-1)																
Mean number of ambulatory encounters	13.7	16.9	10.9	16.5	14.9	20.0	11.0	14.6	12.3	16.8	13.9	15.8	12.4	17.0	14.1	16.9
Mean number of emergency room encounters	1.3	2.7	0.8	2.1	1.5	3.3	1.5	3.1	1.0	1.9	1.3	2.7	1.2	2.4	1.4	2.8
Mean number of inpatient hospital encounters	0.3	0.7	0.1	0.5	0.3	0.8	0.3	0.8	0.2	0.7	0.3	0.8	0.2	0.7	0.3	0.8
Mean number of non-acute institutional encounters	0.1	0.5	0.0	0.3	0.1	0.5	0.1	0.4	0.1	0.3	0.1	0.5	0.1	0.4	0.1	0.5
Mean number of other ambulatory encounters	3.7	9.2	2.0	6.9	4.1	10.3	3.7	8.3	2.7	7.8	4.1	9.7	2.4	6.8	4.1	9.8
Mean number of filled prescriptions	21.0	20.4	14.8	14.4	21.8	19.9	21.2	23.6	17.0	16.4	22.2	21.0	18.0	19.1	21.9	20.7
Mean number of generics dispensed	9.0	6.1	7.2	4.9	9.5	5.9	8.1	6.6	8.1	5.3	9.4	6.2	7.7	5.7	9.4	6.1
Mean number of unique drug classes dispensed	8.4	5.5	6.7	4.4	8.8	5.3	7.5	6.0	7.5	4.9	8.8	5.7	7.2	5.2	8.8	5.6

Footnotes: 1Value represents standard deviation where no % follows the value. 2These variables were calculated only among those with a known SES information. 3The Charlson/Elixhauser Combined Comorbidity Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date. (Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759) N/A: Not Applicable

Additional File 5: Baseline Characteristics of Individuals Hospitalized with COVID-19 (U07.1 diagnosis code in the inpatient care setting) between April 1, 2020 and March 31, 2021 in the Sentinel Distributed Database, Overall and by Evidence of Critical COVID Outcome

Patient Characteristics	Overall		Evidence of outcome		No evidence of outcome	
	Number/Mean	Percent/ Standard Deviation ¹	Number/Mean	Percent/ Standard Deviation ¹	Number/Mean	Percent/ Standard Deviation ¹
Unique patients	133,773	N/A	77,349	N/A	56,424	N/A
Demographic Characteristics						
Age (years)	71.6	13.1	72.1	12.3	71.0	14.2
Age						
0-5 years	78	0.1%	27	0.0%	51	0.1%
6-11 years	43	0.0%	16	0.0%	27	0.0%
12-18 years	187	0.1%	65	0.1%	122	0.2%
19-29 years	1,268	0.9%	438	0.6%	830	1.5%
30-39 years	2,723	2.0%	1,107	1.4%	1,616	2.9%
40-49 years	5,002	3.7%	2,638	3.4%	2,364	4.2%
50-64 years	21,935	16.4%	12,735	16.5%	9,200	16.3%
65-74 years	44,797	33.5%	26,698	34.5%	18,099	32.1%
≥ 75 years	57,740	43.2%	33,625	43.5%	24,115	42.7%
Sex						
Female	64,820	48.5%	35,124	45.4%	29,696	52.6%
Male	68,953	51.5%	42,225	54.6%	26,728	47.4%
Race						
American Indian or Alaska Native	550	0.4%	305	0.4%	245	0.4%
Asian	1,984	1.5%	1,146	1.5%	838	1.5%
Black or African American	23,583	17.6%	14,137	18.3%	9,446	16.7%
Native Hawaiian or Other Pacific Islander	1,188	0.9%	750	1.0%	438	0.8%
Unknown	31,330	23.4%	17,658	22.8%	13,672	24.2%
White	75,138	56.2%	43,353	56.0%	31,785	56.3%
Hispanic origin						

	Overall		Evidence of outcome		No evidence of outcome	
Yes	5,757	4.3%	3,507	4.5%	2,250	4.0%
No	78,836	58.9%	46,393	60.0%	32,443	57.5%
Unknown	49,180	36.8%	27,449	35.5%	21,731	38.5%
Month-Year of Cohort Entry						
April 2020	7,011	5.2%	4,200	5.4%	2,811	5.0%
May 2020	3,624	2.7%	2,201	2.8%	1,423	2.5%
June 2020	3,963	3.0%	2,598	3.4%	1,365	2.4%
July 2020	10,709	8.0%	6,757	8.7%	3,952	7.0%
August 2020	7,234	5.4%	4,455	5.8%	2,779	4.9%
September 2020	5,374	4.0%	3,199	4.1%	2,175	3.9%
October 2020	9,445	7.1%	5,501	7.1%	3,944	7.0%
November 2020	20,025	15.0%	11,208	14.5%	8,817	15.6%
December 2020	26,996	20.2%	15,251	19.7%	11,745	20.8%
January 2021	22,864	17.1%	12,728	16.5%	10,136	18.0%
February 2021	9,868	7.4%	5,621	7.3%	4,247	7.5%
March 2021	6,660	5.0%	3,630	4.7%	3,030	5.4%
Census Bureau (CB) Region						
Midwest	28,500	21.3%	15,824	20.5%	12,676	22.5%
Northeast	16,960	12.7%	8,979	11.6%	7,981	14.1%
South	72,471	54.2%	43,222	55.9%	29,249	51.8%
West	15,626	11.7%	9,197	11.9%	6,429	11.4%
CB Region (Invalid)	66	0.0%	40	0.1%	26	0.0%
CB Region (Missing)	46	0.0%	17	0.0%	29	0.1%
CB Region (Other)	104	0.1%	70	0.1%	34	0.1%
Urbanicity						
Urban (population >= 50,000)	86,049	64.3%	51,189	66.2%	34,860	61.8%
Suburban (population 2,500 - 49,999)	1,598	1.2%	914	1.2%	684	1.2%
Rural (population < 2,500)	45,908	34.3%	25,118	32.5%	20,790	36.8%
Zip Code Unknown or Urbanicity Not Available	218	0.2%	128	0.2%	90	0.2%
Proxies for Socioeconomic Status (SES)						
Average Median Household Income2	59,622.2	21,799.8	58,985.9	21,350.7	60,495.3	22,364.7

	Overall		Evidence of outcome		No evidence of outcome	
Average Median Home Value ²	199,788.4	131,753.5	196,061.4	124,651.5	204,903.1	140,480.7
Average Percent Unemployment ²	5.9	3.2	5.9	3.2	5.7	3.2
Missingness in Proxies for Socioeconomic Status (SES)						
Median Household Income Available	128,353	95.9%	74,253	96.0%	54,100	95.9%
Median Home Value Available	128,297	95.9%	74,211	95.9%	54,086	95.9%
Percent Unemployment Available	128,581	96.1%	74,376	96.2%	54,205	96.1%
All SES Indicators Available	128,167	95.8%	74,146	95.9%	54,021	95.7%
Recorded History Of Prior to Index Event (-183, -1)						
Adult BMI 19.9 or less	1,971	1.5%	1,189	1.5%	782	1.4%
Adult BMI 20-29	16,905	12.6%	10,095	13.1%	6,810	12.1%
Adult BMI 30-39	21,226	15.9%	12,876	16.6%	8,350	14.8%
Adult BMI 40 or greater	10,665	8.0%	6,575	8.5%	4,090	7.2%
Alcohol or Drug Abuse	5,740	4.3%	3,589	4.6%	2,151	3.8%
Alcohol Use Abuse	3,622	2.7%	2,312	3.0%	1,310	2.3%
Any Cancer	16,462	12.3%	9,842	12.7%	6,620	11.7%
Asthma	11,819	8.8%	6,704	8.7%	5,115	9.1%
Autoimmune Conditions	6,218	4.6%	3,673	4.7%	2,545	4.5%
Blood Stem Cell Transplant	18	0.0%	11	0.0%	7	0.0%
Chronic Kidney Disease	44,858	33.5%	28,299	36.6%	16,559	29.3%
Congestive Heart Failure	29,504	22.1%	19,169	24.8%	10,335	18.3%
Chronic Obstructive Pulmonary Disease (COPD)	31,467	23.5%	19,640	25.4%	11,827	21.0%
Coronary Artery Disease	45,907	34.3%	28,802	37.2%	17,105	30.3%
Cystic Fibrosis	25	0.0%	12	0.0%	13	0.0%
Diabetes Mellitus	59,820	44.7%	36,729	47.5%	23,091	40.9%
Drug Abuse Dependence	2,639	2.0%	1,577	2.0%	1,062	1.9%
HIV	525	0.4%	321	0.4%	204	0.4%
Hypertension	100,360	75.0%	59,695	77.2%	40,665	72.1%
Interstitial Lung Disease	4,061	3.0%	2,703	3.5%	1,358	2.4%
Liver Disease	9,595	7.2%	5,863	7.6%	3,732	6.6%
Neurologic Conditions	29,662	22.2%	17,085	22.1%	12,577	22.3%

	Overall		Evidence of outcome		No evidence of outcome	
Obesity	41,509	31.0%	25,023	32.4%	16,486	29.2%
Pulmonary Conditions	30,122	22.5%	18,687	24.2%	11,435	20.3%
Sickle Cell Disease	324	0.2%	188	0.2%	136	0.2%
Smoking	33,087	24.7%	20,096	26.0%	12,991	23.0%
Solid Organ or Stem Cell Transplant	258	0.2%	173	0.2%	85	0.2%
Solid Organ Transplant	240	0.2%	162	0.2%	78	0.1%
Vascular Disease	108,364	81.0%	64,231	83.0%	44,133	78.2%
Recorded Use Of Prior to Index Event (-1 83, -1)						
Chemotherapy	4,333	3.2%	2,598	3.4%	1,735	3.1%
Glucocorticoids Inhaled	14,855	11.1%	9,009	11.6%	5,846	10.4%
Glucocorticoids NonSystemic	25,166	18.8%	15,094	19.5%	10,072	17.9%
Glucocorticoids Ophthalmic	2,574	1.9%	1,562	2.0%	1,012	1.8%
Glucocorticoids Systemic	52,230	39.0%	30,900	39.9%	21,330	37.8%
Glucocorticoids Topical	9,855	7.4%	5,860	7.6%	3,995	7.1%
Immune Modulators	7,270	5.4%	4,409	5.7%	2,861	5.1%
Immunosuppressants	4,005	3.0%	2,416	3.1%	1,589	2.8%
Recent Use Of Certain Treatments (-30, 0)						
Angiotensin-converting enzyme (ACE) inhibitors	12,029	9.0%	6,919	8.9%	5,110	9.1%
Angiotensin receptor blockers (ARBs)	11,314	8.5%	6,723	8.7%	4,591	8.1%
Vasopressors	2,142	1.6%	2,016	2.6%	126	0.2%
Comorbidity Burden (-183,-1)						
Charlson/Elixhauser combined comorbidity score ³	3.0	3.4	3.3	3.5	2.7	3.2
Symptoms at Diagnosis (-1, 14)						
Cough	32,719	24.5%	18,330	23.7%	14,389	25.5%
Diarrhea	13,778	10.3%	7,404	9.6%	6,374	11.3%
Dyspnea/Short of Breath	101,121	75.6%	61,673	79.7%	39,448	69.9%
Fever	30,892	23.1%	18,573	24.0%	12,319	21.8%
Headache	1,630	1.2%	929	1.2%	701	1.2%
Malaise or Fatigue	44,610	33.3%	25,355	32.8%	19,255	34.1%

	Overall		Evidence of outcome		No evidence of outcome	
Multisystem Inflammatory Syndrome	93	0.1%	61	0.1%	32	0.1%
Myalgia	2,140	1.6%	1,050	1.4%	1,090	1.9%
Nasal Congestion	689	0.5%	371	0.5%	318	0.6%
Nausea or Vomiting	13,522	10.1%	7,378	9.5%	6,144	10.9%
Smell or Taste Disturbance	1,137	0.8%	561	0.7%	576	1.0%
Sore Throat	1,164	0.9%	615	0.8%	549	1.0%
Health Service Utilization Intensity (-183,-1)						
Mean number of ambulatory encounters	13.7	17.0	14.7	18.9	12.5	13.9
Mean number of emergency room encounters	1.3	2.8	1.4	2.9	1.3	2.6
Mean number of inpatient hospital encounters	0.3	0.8	0.3	0.8	0.2	0.7
Mean number of non-acute institutional encounters	0.1	0.5	0.1	0.5	0.1	0.4
Mean number of other ambulatory encounters	3.6	9.1	3.8	9.5	3.3	8.5
Mean number of filled prescriptions	20.9	20.3	21.5	20.8	19.9	19.7
Mean number of generics dispensed	8.9	6.0	9.2	6.1	8.5	5.9
Mean number of unique drug classes dispensed	8.3	5.5	8.6	5.6	8.0	5.3

Footnotes: 1Value represents standard deviation where no % follows the value. 2These variables were calculated only among those with a known SES information. 3The Charlson/Elixhauser Combined Comorbidity Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date. (Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759) N/A: Not Applicable

Additional File 6: Baseline Characteristics of Individuals Hospitalized with COVID-19 (U07.1 diagnosis code in the inpatient care setting) between April 1, 2020 and March 31, 2021 in the Sentinel Distributed Database, Overall and by Evidence of Outcome of Recorded Inpatient Death

Patient Characteristics	Overall		Evidence of outcome		No evidence of outcome	
	Number/Mean	Percent/ Standard Deviation ¹	Number/Mean	Percent/ Standard Deviation ¹	Number/Mean	Percent/ Standard Deviation ¹
Unique patients	133,773	N/A	19,002	N/A	114,771	N/A
Demographic Characteristics						
Age (years)	71.6	13.1	76.6	10.0	70.8	13.4
Age						
0-5 years	78	0.1%	1	0.0%	77	0.1%
6-11 years	43	0.0%	0	0.0%	43	0.0%
12-18 years	187	0.1%	1	0.0%	186	0.2%
19-29 years	1,268	0.9%	10	0.1%	1,258	1.1%
30-39 years	2,723	2.0%	47	0.2%	2,676	2.3%
40-49 years	5,002	3.7%	205	1.1%	4,797	4.2%
50-64 years	21,935	16.4%	1,721	9.1%	20,214	17.6%
65-74 years	44,797	33.5%	6,051	31.8%	38,746	33.8%
≥ 75 years	57,740	43.2%	10,966	57.7%	46,774	40.8%
Sex						
Female	64,820	48.5%	7,748	40.8%	57,072	49.7%
Male	68,953	51.5%	11,254	59.2%	57,699	50.3%
Race						
American Indian or Alaska Native	550	0.4%	93	0.5%	457	0.4%
Asian	1,984	1.5%	285	1.5%	1,699	1.5%
Black or African American	23,583	17.6%	3,356	17.7%	20,227	17.6%
Native Hawaiian or Other Pacific Islander	1,188	0.9%	207	1.1%	981	0.9%
Unknown	31,330	23.4%	3,636	19.1%	27,694	24.1%
White	75,138	56.2%	11,425	60.1%	63,713	55.5%
Hispanic origin						

	Overall		Evidence of outcome		No evidence of outcome	
Yes	5,757	4.3%	741	3.9%	5,016	4.4%
No	78,836	58.9%	12,208	64.2%	66,628	58.1%
Unknown	49,180	36.8%	6,053	31.9%	43,127	37.6%
Month-Year of Cohort Entry						
April 2020	7,011	5.2%	1,436	7.6%	5,575	4.9%
May 2020	3,624	2.7%	545	2.9%	3,079	2.7%
June 2020	3,963	3.0%	520	2.7%	3,443	3.0%
July 2020	10,709	8.0%	1,565	8.2%	9,144	8.0%
August 2020	7,234	5.4%	986	5.2%	6,248	5.4%
September 2020	5,374	4.0%	734	3.9%	4,640	4.0%
October 2020	9,445	7.1%	1,258	6.6%	8,187	7.1%
November 2020	20,025	15.0%	2,928	15.4%	17,097	14.9%
December 2020	26,996	20.2%	4,071	21.4%	22,925	20.0%
January 2021	22,864	17.1%	3,276	17.2%	19,588	17.1%
February 2021	9,868	7.4%	1,256	6.6%	8,612	7.5%
March 2021	6,660	5.0%	427	2.2%	6,233	5.4%
Census Bureau (CB) Region						
Midwest	28,500	21.3%	4,059	21.4%	24,441	21.3%
Northeast	16,960	12.7%	2,458	12.9%	14,502	12.6%
South	72,471	54.2%	10,264	54.0%	62,207	54.2%
West	15,626	11.7%	2,204	11.6%	13,422	11.7%
CB Region (Invalid)	66	0.0%	13	0.1%	53	0.0%
CB Region (Missing)	46	0.0%	2	0.0%	44	0.0%
CB Region (Other)	104	0.1%	2	0.0%	102	0.1%
Urbanicity						
Urban (population >= 50,000)	86,049	64.3%	11,816	62.2%	74,233	64.7%
Suburban (population 2,500 - 49,999)	1,598	1.2%	222	1.2%	1,376	1.2%
Rural (population < 2,500)	45,908	34.3%	6,947	36.6%	38,961	33.9%
Zip Code Unknown or Urbanicity Not Available	218	0.2%	17	0.1%	201	0.2%
Proxies for Socioeconomic Status (SES)						
Average Median Household Income2	59,622.2	21,799.8	57,853.1	20,972.4	59,917.4	21,925.5

	Overall		Evidence of outcome		No evidence of outcome	
Average Median Home Value ²	199,788.4	131,753.5	193,204.9	131,186.2	200,887.1	131,835.1
Average Percent Unemployment ²	5.9	3.2	6.0	3.2	5.8	3.2
Missingness in Proxies for Socioeconomic Status (SES)						
Median Household Income Available	128,353	95.9%	18,355	96.6%	109,998	95.8%
Median Home Value Available	128,297	95.9%	18,349	96.6%	109,948	95.8%
Percent Unemployment Available	128,581	96.1%	18,388	96.8%	110,193	96.0%
All SES Indicators Available	128,167	95.8%	18,332	96.5%	109,835	95.7%
Recorded History Of Prior to Index Event (-183, -1)						
Adult BMI 19.9 or less	1,971	1.5%	377	2.0%	1,594	1.4%
Adult BMI 20-29	16,905	12.6%	2,584	13.6%	14,321	12.5%
Adult BMI 30-39	21,226	15.9%	3,196	16.8%	18,030	15.7%
Adult BMI 40 or greater	10,665	8.0%	1,429	7.5%	9,236	8.0%
Alcohol or Drug Abuse	5,740	4.3%	835	4.4%	4,905	4.3%
Alcohol Use Abuse	3,622	2.7%	596	3.1%	3,026	2.6%
Any Cancer	16,462	12.3%	2,864	15.1%	13,598	11.8%
Asthma	11,819	8.8%	1,415	7.4%	10,404	9.1%
Autoimmune Conditions	6,218	4.6%	908	4.8%	5,310	4.6%
Blood Stem Cell Transplant	18	0.0%	4	0.0%	14	0.0%
Chronic Kidney Disease	44,858	33.5%	8,203	43.2%	36,655	31.9%
Congestive Heart Failure	29,504	22.1%	5,711	30.1%	23,793	20.7%
Chronic Obstructive Pulmonary Disease (COPD)	31,467	23.5%	5,342	28.1%	26,125	22.8%
Coronary Artery Disease	45,907	34.3%	8,179	43.0%	37,728	32.9%
Cystic Fibrosis	25	0.0%	3	0.0%	22	0.0%
Diabetes Mellitus	59,820	44.7%	9,625	50.7%	50,195	43.7%
Drug Abuse Dependence	2,639	2.0%	289	1.5%	2,350	2.0%
HIV	525	0.4%	62	0.3%	463	0.4%
Hypertension	100,360	75.0%	15,582	82.0%	84,778	73.9%
Interstitial Lung Disease	4,061	3.0%	885	4.7%	3,176	2.8%
Liver Disease	9,595	7.2%	1,551	8.2%	8,044	7.0%
Neurologic Conditions	29,662	22.2%	5,131	27.0%	24,531	21.4%

	Overall		Evidence of outcome		No evidence of outcome	
Obesity	41,509	31.0%	5,970	31.4%	35,539	31.0%
Pulmonary Conditions	30,122	22.5%	5,009	26.4%	25,113	21.9%
Sickle Cell Disease	324	0.2%	37	0.2%	287	0.3%
Smoking	33,087	24.7%	5,396	28.4%	27,691	24.1%
Solid Organ or Stem Cell Transplant	258	0.2%	35	0.2%	223	0.2%
Solid Organ Transplant	240	0.2%	31	0.2%	209	0.2%
Vascular Disease	108,364	81.0%	16,698	87.9%	91,666	79.9%
Recorded Use Of Prior to Index Event (-1 83, -1)						
Chemotherapy	4,333	3.2%	766	4.0%	3,567	3.1%
Glucocorticoids Inhaled	14,855	11.1%	2,231	11.7%	12,624	11.0%
Glucocorticoids NonSystemic	25,166	18.8%	3,859	20.3%	21,307	18.6%
Glucocorticoids Ophthalmic	2,574	1.9%	425	2.2%	2,149	1.9%
Glucocorticoids Systemic	52,230	39.0%	7,756	40.8%	44,474	38.8%
Glucocorticoids Topical	9,855	7.4%	1,546	8.1%	8,309	7.2%
Immune Modulators	7,270	5.4%	1,291	6.8%	5,979	5.2%
Immunosuppressants	4,005	3.0%	637	3.4%	3,368	2.9%
Recent Use Of Certain Treatments (-30, 0)						
Angiotensin-converting enzyme (ACE) inhibitors	12,029	9.0%	1,720	9.1%	10,309	9.0%
Angiotensin receptor blockers (ARBs)	11,314	8.5%	1,623	8.5%	9,691	8.4%
Vasopressors	2,142	1.6%	1,151	6.1%	991	0.9%
Comorbidity Burden (-183,-1)						
Charlson/Elixhauser combined comorbidity score ³	3.0	3.4	3.9	3.7	2.9	3.3
Symptoms at Diagnosis (-1, 14)						
Cough	32,719	24.5%	3,879	20.4%	28,840	25.1%
Diarrhea	13,778	10.3%	1,445	7.6%	12,333	10.7%
Dyspnea/Short of Breath	101,121	75.6%	16,012	84.3%	85,109	74.2%
Fever	30,892	23.1%	4,408	23.2%	26,484	23.1%
Headache	1,630	1.2%	158	0.8%	1,472	1.3%
Malaise or Fatigue	44,610	33.3%	5,549	29.2%	39,061	34.0%

	Overall		Evidence of outcome		No evidence of outcome	
Multisystem Inflammatory Syndrome	93	0.1%	8	0.0%	85	0.1%
Myalgia	2,140	1.6%	152	0.8%	1,988	1.7%
Nasal Congestion	689	0.5%	59	0.3%	630	0.5%
Nausea or Vomiting	13,522	10.1%	1,310	6.9%	12,212	10.6%
Smell or Taste Disturbance	1,137	0.8%	76	0.4%	1,061	0.9%
Sore Throat	1,164	0.9%	103	0.5%	1,061	0.9%
Health Service Utilization Intensity (-183,-1)						
Mean number of ambulatory encounters	13.7	17.0	15.6	18.9	13.4	16.6
Mean number of emergency room encounters	1.3	2.8	1.4	2.9	1.3	2.8
Mean number of inpatient hospital encounters	0.3	0.8	0.4	0.8	0.3	0.7
Mean number of non-acute institutional encounters	0.1	0.5	0.2	0.5	0.1	0.4
Mean number of other ambulatory encounters	3.6	9.1	4.3	9.9	3.5	9.0
Mean number of filled prescriptions	20.9	20.3	23.7	22.6	20.4	19.9
Mean number of generics dispensed	8.9	6.0	9.7	6.1	8.8	6.0
Mean number of unique drug classes dispensed	8.3	5.5	9.1	5.5	8.2	5.5

Footnotes: 1Value represents standard deviation where no % follows the value. 2These variables were calculated only among those with a known SES information. 3The Charlson/Elixhauser Combined Comorbidity Score is calculated based on comorbidities observed during a requester-defined window around the exposure episode start date. (Gagne JJ, Glynn RJ, Avorn J, Levin R, Schneeweiss S. A combined comorbidity score predicted mortality in elderly patients better than existing scores. J Clin Epidemiol. 2011;64(7):749-759) N/A: Not Applicable