

Supplementary Table 1. Distribution of percent of admitted COVID19 patients by race and ethnicity and age.

Age group	White	Latinx	African American	p-value (white and Latinx)	P-value (white and African American)	P-value (African American and Latinx)
18-25	4%	12%	4%	0.02	1.0	0.2
26-30	3.4%	12%	11%	0.003	0.04	1.0
31-35	9%	26%	11%	0.0001	0.85	0.02
36-40	11%	27%	17%	0.0025	0.34	0.13
41-45	8%	40%	19%	<0.0001	0.05	0.007
46-50	11%	34%	25%	<0.0001	0.009	0.19
51-55	16%	46%	28%	<0.0001	0.03	0.02
56-60	25%	46%	39%	<0.0001	0.03	0.40
61-65	33.5%	49%	44%	0.03	0.16	0.73
66-70	35%	63%	51%	0.0003	0.06	0.29
71-75	46%	70%	45.5%	0.02	1.0	0.08
76-80	44%	83%	63%	0.0002	0.17	0.21
81-85	52.5%	75%	73%	0.03	0.12	1.0
86-90	54%	80%	64%	0.21	0.78	0.72
>90	42%	100%	40%	0.04	1.0	0.17

Supplementary Table 2. Characteristics of all COVID-19 positive patients in the Mass General Brigham healthcare system by race and ethnicity.

	White (2404)		Latinx (1309)		African American (719)		Asian American (177)	
	Hospitalized (620)	Not hospitalized (1784)	Hospitalized (470)	Not hospitalized (839)	Hospitalized (209)	Not hospitalized (510)	Hospitalized (50)	Not hospitalized (127)
Median age (IQR, years)	72 (60-83)	53 (35-66)	52 (41-65)	40 (29-51)	60 (50-70)	46 (34-57)	61 (46-73)	48 (33-58)
Age category								
18-40 years	39 (6%)	553 (31%)	106 (22%)	434 (52%)	28 (13%)	203 (40%)	7 (14%)	51 (40%)
41-60 years	124 (20%)	623 (35%)	214 (46%)	322 (38%)	79 (38%)	211 (41%)	18 (36%)	53 (42%)
>60 years	457 (74%)	608 (34%)	150 (32%)	83 (10%)	102 (49%)	96 (19%)	25 (50%)	23 (18%)
Male Gender	343 (55%)	739 (41%)	265 (56%)	365 (43.5%)	111 (53%)	190 (37%)	31 (62%)	57 (45%)
Comorbidities								
BMI*								
<=30	373 (60%)	556 (31%)	219 (47%)	231 (27.5%)	116 (55%)	121 (24%)	38 (76%)	57 (45%)
30-40	193 (31%)	297 (16.6%)	194 (41%)	155 (18.5%)	70 (33%)	118 (23%)	9 (18%)	10 (8%)
>40	47 (8%)	931 (52%)	37 (8%)	453 (54%)	17 (9%)	271 (53%)	0 (0%)	60 (47%)
Smoking status**								
Current	32 (5%)	86 (5%)	16 (3%)	25 (3%)	13 (6%)	22 (4%)	1 (2%)	5 (4%)
Former	273 (44%)	435 (24%)	76 (16%)	107 (13%)	57 (27%)	46 (9%)	10 (20%)	13 (10%)
Never	280 (45%)	1039 (58%)	308 (66%)	593 (71%)	116 (56%)	339 (66%)	33 (66%)	92 (72%)
Comorbidities								
Diabetes mellitus	208 (34%)	214 (12%)	151 (32%)	114 (13.5%)	80 (38%)	83 (16%)	18 (36%)	16 (12.6%)
Hyperlipidemia	296 (48%)	453 (25%)	126 (27%)	127 (15%)	59 (28%)	76 (15%)	21 (42%)	27 (21%)
Hypertension	363 (59%)	533 (30%)	159 (34%)	137 (16%)	115 (55%)	145 (28%)	26 (52%)	27 (21%)
Obstructive lung disease	124 (20%)	225 (12.6%)	49 (10%)	92 (11%)	32 (15%)	57 (11%)	8 (16%)	4 (3%)
Interstitial lung disease	7 (1%)	1 (0.1%)	3 (0.6%)	1 (0.1%)	1 (0.5%)	0 (0%)	0 (0%)	0 (0%)
Coronary artery disease	98 (16%)	82 (4.5%)	23 (5%)	13 (1.5%)	11 (5%)	7 (1%)	6 (12%)	4 (3%)
CHF	55 (9%)	37 (2%)	10 (2%)	5 (0.6%)	16 (8%)	6 (1%)	2 (4%)	0 (0%)
Cerebrovascular disease	42 (7%)	44 (2.5%)	12 (3%)	11 (1%)	12 (6%)	8 (1.5%)	1 (2%)	0 (0%)
Obstructive sleep apnea	52 (8%)	74 (4%)	11 (2%)	23 (3%)	11 (5%)	7 (1%)	1 (2%)	5 (4%)
CKD	114 (18%)	59 (3%)	34 (7%)	14 (2%)	24 (11%)	17 (3%)	5 (10%)	1 (0.8%)
Transplantation	7 (1%)	0	8 (2%)	0	7 (3%)	0	0 (0%)	0 (0%)
Auto-immune diseases	36 (6%)	64 (3.5%)	15 (3%)	16 (2%)	8 (4%)	11 (2%)	0 (0%)	2 (1.6%)
Malignancy	77 (12%)	163 (9%)	19 (4%)	25 (3%)	12 (6%)	19 (4%)	0 (0%)	7 (5.5%)

Total comorbidities								
0	109 (18%)	830 (47%)	198 (42%)	483 (58%)	55 (26%)	264 (52%)	15 (30%)	78 (61%)
1-2	224 (36%)	611 (34%)	151 (32%)	247 (29%)	73 (35%)	171 (33%)	16 (32%)	34 (27%)
>2	287 (46%)	343 (19%)	121 (26%)	109 (13%)	81 (39%)	75 (15%)	19 (38%)	15 (12%)
Death	140 (23%)	4 (0.2%)	33 (7%)	0 (0%)	27 (13%)	3 (0.6%)	3 (6%)	0 (0%)

IQR=Interquartile range, COPD=chronic obstructive pulmonary disease, CHF=congestive heart failure, CKD=chronic kidney disease, ESRD=End stage renal disease

*missing for 38% of population

**missing for 16% of population

Supplementary Table 3. Univariable logistic regression model predicting hospital admission among patients with COVID-19 stratified by race

Variables	White (N=2404)	Latinx (N=1309)	African American (N=719)
Age			
18-40 years	Reference		
41-60 years	2.82 (1.95-4.16) ***	2.72 (2.07-3.59) ***	2.71 (1.71-4.41) ***
>60 years	10.66 (7.63-15.30) ***	7.39 (5.28-10.46) ***	7.70 (4.81-12.68) ***
Gender			
Female	Reference		
Male	1.75 (1.46-2.11) ***	1.68 (1.34-2.11) ***	1.91 (1.38-2.65) ***
Smoking status			
Never	Reference		
Current	1.38 (0.89-2.09)	1.23 (0.64-2.32)	1.73 (0.82-2.50)
Former	2.33 (1.91-2.85) ***	1.37 (0.99-1.89)	3.62 (2.33-5.65) ***
Last BMI (kg/m²)			
<=30	Reference		
30-40	0.97 (0.77-1.21)	1.32 (0.99-1.75)	0.62 (0.42-0.92) *
>40	1.23 (0.81-1.84)	1.12 (0.68-1.84)	1.11 (0.55-2.82)
Comorbidities			
Diabetes mellitus	3.7 (2.97-4.61) ***	3.01 (2.29-3.98) ***	3.19 (2.21-4.60) ***
Hyperlipidemia	2.68 (2.22-3.25) ***	2.05 (1.55-2.71) ***	2.25 (1.52-3.31) ***
Hypertension	3.32 (2.75-4.01) ***	2.62 (2.01-3.42) ***	3.08 (2.21-4.31) ***
Obstructive lung disease	1.73 (1.36-2.20) ***	0.95 (0.65-1.36)	1.44 (0.89-2.28)
Interstitial lung disease	20.36 (3.61-380.9) **	5.38 (0.69-108.99)	1.9 e+6
Coronary artery disease	3.89 (2.86-5.31) ***	3.27 (1.66-6.69) ***	3.99 (1.55-10.98) **
CHF	4.59 (3.01-7.09) ***	3.63 (1.28-11.70) *	6.96 (2.82-19.64) ***
Cerebrovascular disease	2.87 (1.86-4.44) ***	1.97 (0.86-4.58)	3.82 (1.56-9.89) **
Obstructive sleep apnea	2.12 (1.46-3.05) ***	0.85 (0.40-1.72)	3.99 (1.55-10.98) **
CKD	6.59 (4.76-9.21) ***	4.59 (2.49-8.93) ***	3.76 (1.99-7.27) ***
Transplantation	2.89 (0.90-9.29)	5.44 (1.61-24.6) *	10.11 (2.51-67.36) **
Auto-immune diseases	1.66 (1.08-2.50) *	1.69 (0.82-3.48)	1.81 (0.68-4.53)
Malignancy	1.41 (1.05-1.87) *	1.37 (0.74-2.51)	1.57 (0.73-3.27)

Supplementary Table 4. Multivariable logistic regression model predicting hospital admission among patients with COVID-19 adjusted by median household income.			
Variables	White (N=2057)	Latinx (N=1278)	African American (N=673)
Age			
18-40 years	Reference		
41-60 years	2.40 (1.56-3.70) *	2.39 (1.78-3.22) *	2.23 (1.30-3.82) *
>60 years	7.16 (4.68-10.95) *	6.90 (4.49-10.61) *	5.99 (3.27-10.98) *
Gender			
Female	Reference		
Male	1.38 (1.10-1.73) *	1.68 (1.29-2.19) *	1.67 (1.12-2.50) *
Smoking status			
Never	Reference		
Current	1.14 (0.70-1.87)	1.18 (0.66-2.12)	1.40 (0.63-3.09)
Former	1.25 (0.97-1.61)	0.80 (0.55-1.16)	2.19 (1.33-3.63) *
Last BMI (kg/m²)			
<=30	Reference		
30-40	0.85 (0.65-1.10)	1.48 (1.09-2.01) *	1.06 (0.68-1.68)
>40	1.40 (0.87-2.27)	1.64 (0.88-3.06)	2.66 (1.15-6.16) *
Comorbidities			
Diabetes mellitus	1.83 (1.35-2.49) *	2.64 (1.67-4.16) *	1.99 (1.12-3.52) *
Hyperlipidemia	0.87 (0.65-1.18)	0.96 (0.60-1.54)	0.66 (0.37-1.20)
Hypertension	0.99 (0.72-1.36)	1.21 (0.76-1.91)	0.69 (0.37-1.28)
Obstructive lung disease	1.20 (0.86-1.67)	1.06 (0.65-1.73)	1.05 (0.55-1.99)
Interstitial lung disease	2.76e+6 (2.3e-299-NA)	5.79 (0.53-63.41)	3.1e+6 (0.000-NA)
Coronary artery disease	1.43 (0.97-2.11)	1.18 (0.53-2.64)	0.67 (0.19-2.43)
CHF	1.18 (0.71-1.96)	1.64 (0.48-5.61)	2.23 (0.64-7.78)
Cerebrovascular disease	1.24 (0.74-2.09)	0.92 (0.35-2.44)	1.05 (0.37-3.02)
Obstructive sleep apnea	1.20 (0.75-1.91)	0.37 (0.14-0.94)	2.06 (0.68-6.24)
CKD	2.65 (1.78-3.95) *	1.97 (0.94-4.14)	1.47 (0.67-3.24)
Transplantation	0.65 (0.17-2.52)	4.34 (0.96-19.76)	21.01 (2.31-192.41) *
Auto-immune diseases	1.12 (0.68-1.83)	1.27 (0.55-2.94)	0.91 (0.27-3.09)
Malignancy	0.90 (0.62-1.30)	0.97 (0.45-2.08)	0.76 (0.29-1.97)
Total comorbidities			
0	Reference		
1-2	1.49 (1.02-2.18) *	0.91 (0.60-1.37)	1.62 (0.85-3.10)
>2	1.36 (0.71-2.63)	0.43 (0.17-1.08)	2.34 (0.72-7.59)
Median household income *			
More than 20 th percentile	Reference		
Less than 20 th percentile	1.29 (0.86-1.92)	0.89 (0.69-1.15)	1.09 (0.72-1.63)

* Total population with median income = 4711. 20th percentile is \$53, 335.

Auto-immune diseases	11 (6%)	25 (6%)	7 (4%)	8 (3%)	4 (6%)	4 (3%)	0 (0%)	0 (0%)
Malignancy	21 (11%)	56 (13%)	10 (5.5%)	9 (3%)	4 (6%)	8 (6%)	0 (0%)	0 (0%)
Total comorbidities								
0	28 (15%)	81 (18.5%)	79 (43%)	119 (41%)	17 (25%)	38 (27%)	1 (8%)	14 (37%)
1-2	60 (33%)	164 (38%)	51 (28%)	100 (35%)	23 (34%)	50 (35.5%)	6 (50%)	10 (26%)
>2	96 (52%)	191 (44%)	52 (28.5%)	69 (24%)	28 (41%)	53 (37.5%)	5 (42%)	14 (37%)
Outcome								
Death	60 (33%)	80 (18%)	27 (15%)	6 (2%)	15 (22%)	12 (8.5%)	1 (8%)	2 (5%)
Discharged to home	27 (15%)	232 (53%)	43 (24%)	256 (89%)	14 (20.5%)	101 (72%)	0 (0%)	32 (84%)
Discharged to SNF	15 (8%)	67 (15%)	6 (3%)	13 (4.5%)	3 (%)	12 (8.5%)	0 (0%)	2 (5%)
Discharged to rehab/STF	17 (9%)	16 (4%)	13 (7%)	5 (2%)	5 (7%)	3 (2%)	3 (25%)	0 (0%)
Still in hospital	65 (35%)	41 (9%)	93 (51%)	8 (3%)	31 (45.5%)	13 (9%)	8 (67%)	2 (5%)

Supplementary table 6. Multivariable logistic regression model predicting ICU admission among hospitalized patients with COVID-19 adjusted for median household income.

Variables	White (N=561)	Latinx (N=457)	African American (N=201)
Age			
18-40 years	Reference		
41-60 years	1.03 (0.39-2.77)	1.40 (0.81-2.41)	2.76 (0.78-9.72)
>60 years	1.27 (0.49-3.27)	2.67 (1.41-5.06) *	5.24 (1.39-19.72) *
Gender			
Female	Reference		
Male	1.27 (0.85-1.89)	1.41 (0.92-2.15)	1.91 (0.92-3.97)
Smoking status			
Never	Reference		
Current	1.40 (0.55-3.59)	1.82 (0.66-5.01)	1.30 (0.32-5.21)
Former	1.38 (0.90-2.12)	1.01 (0.56-1.82)	1.85 (0.85-4.02)
Last BMI (kg/m²)			
<=30	Reference		
30-40	1.19 (0.78-1.84)	1.39 (0.90-2.15)	1.51 (0.67-3.41)
>40	1.13 (0.54-2.39)	3.08 (1.30-7.30) *	2.46 (0.63-9.66)
Comorbidities			
Diabetes mellitus	1.08 (0.68-1.73)	0.73 (0.38-1.40)	2.71 (1.04-7.06) *
Hyperlipidemia	1.00 (0.62-1.63)	1.48 (0.73-3.01)	0.94 (0.39-2.23)
Hypertension	0.95 (0.55-1.66)	0.82 (0.41-1.61)	0.34 (0.12-0.99) *
Obstructive lung disease	1.03 (0.61-1.75)	0.31 (0.13-0.73) *	0.83 (0.28-2.42)
Interstitial lung disease	0.79 (0.12-5.34)	2.12 (0.15-30.47)	1.7e+7 (0.000 – NA)
Coronary artery disease	0.49 (0.27-0.88) *	0.53 (0.19-1.52)	0.60 (0.10-3.48)
CHF	1.50 (0.77-2.93)	0.90 (0.19-4.27)	2.32 (0.57-9.36)
Cerebrovascular disease	0.67 (0.30-1.48)	0.36 (0.08-1.57)	0.49 (0.11-2.29)
Obstructive sleep apnea	1.58 (0.79-3.16)	0.17 (0.03-1.01)	0.75 (0.14-4.11)
CKD	1.12 (0.67-1.90)	0.48 (0.19-1.20)	1.47 (0.49-4.45)
Transplantation	4.4e-7 (0.0000-NA)	3.48 (0.66-18.28)	2.75 (0.47-16.04)
Auto-immune diseases	0.72 (0.32-1.62)	1.48 (0.44-5.01)	1.79 (0.29-10.89)
Malignancy	0.79 (0.43-1.48)	0.96 (0.32-2.91)	0.79 (0.17-3.59)
Total comorbidities			
0	Reference		
1-2	1.10 (0.54-2.25)	0.94 (0.48-1.85)	1.29 (0.41-4.07)
>2	1.48 (0.49-4.47)	1.59 (0.41-6.16)	1.12 (0.17-7.32)
Median Household income *			
More than 20 th percentile	reference		
Less than 20 th percentile	2.50 (1.39-4.52) *	1.11 (0.74-1.66)	1.09 (0.53-2.24)

* Total population with median income = 4711. 20th percentile is \$53, 335.

Supplementary Table 7. Median household income by zip code and race and ethnic distribution of COVID-19 patients.

Income category *	Total		White		Latinx		African American		Asian American		Others	
	Total (4703)**	Admitted (1389)	Total (2050)	Admitted (561)	Total (1277)	Admitted (457)	Total (673)	Admitted (201)	Total (163)	Admitted (48)	Total (540)	Admitted (131)
≤25	17 (0.4%)	7 (0.5%)	4 (0.2%)	3 (0.5%)	11 (1%)	2 (0.4%)	1 (0.1%)	1 (0.5%)	0 (0%)	0 (0%)	1 (0.2%)	1 (1%)
25-50	536 (11%)	163 (12%)	100 (5%)	36 (6%)	226 (18%)	67 (15%)	137 (20%)	43 (21%)	19 (12%)	6 (13%)	54 (10%)	11 (8%)
50-75	2031 (43%)	708 (51%)	612 (30%)	212 (38%)	764 (60%)	299 (65%)	352 (52%)	101 (50%)	52 (32%)	20 (42%)	251 (46%)	76 (58%)
75-100	1088 (23%)	267 (19%)	595 (29%)	122 (22%)	226 (18%)	73 (16%)	106 (16%)	35 (17%)	40 (24.5%)	10 (21%)	121 (22%)	27 (21%)
100-125	649 (14%)	162 (12%)	455 (22%)	116 (21%)	41 (3%)	13 (3%)	55 (8%)	18 (9%)	19 (12%)	3 (6%)	79 (15%)	12 (9%)
125-150	188 (4%)	51 (4%)	135 (6.5%)	40 (7%)	4 (0.3%)	2 (0.4%)	18 (2.7%)	3 (1.5%)	12 (7%)	4 (8%)	19 (3.5%)	2 (1.5%)
>150	194 (4%)	40 (3%)	149 (7.2%)	32 (6%)	5 (0.4%)	1 (0.2%)	4 (0.6%)	0 (0%)	21 (13%)	5 (10%)	15 (3%)	2 (1.5%)

* Median income obtained by zip code-level census data and is presented in thousand dollars.

** Median income data not available for 487 patients who were not from Massachusetts

Supplementary Table 8. Population density in square miles by zip code and race and ethnic distribution of COVID-19 patients.

	Total		White		Latinx		African American	
Population density	Positive cases (4703)	Admitted (1389)	Positive cases (2050)	Admitted (561)	Positive cases (1277)	Admitted (457)	Positive cases (673)	Admitted (201)
<=500	122 (2.6%)	26 (2%)	94 (4.5%)	22 (4%)	7 (0.5%)	0 (0%)	0 (0%)	0 (0%)
500-1000	267 (5.6%)	50 (3%)	219 (10.6%)	39 (7%)	5 (0.4%)	1 (0.2%)	10 (1.4%)	0 (0%)
1000-2500	635 (13.5%)	107 (8%)	429 (21%)	76 (13.5%)	49 (4%)	6 (1.3%)	55 (8%)	14 (7%)
2500-5000	656 (14%)	164 (12%)	402 (19.6%)	113 (20%)	87 (7%)	25 (5.5%)	80 (12%)	13 (6%)
5000-10000	1200 (25.5%)	443 (32%)	471 (23%)	177 (31.5%)	392 (30.6%)	158 (34.5%)	170 (25%)	56 (28%)
>10000	1823 (39%)	608 (44%)	435 (21%)	134 (24%)	737 (58%)	267 (58.4%)	358 (53%)	118 (59%)

** Median household and population density data not available for 479 patients who were not from Massachusetts

Supplementary Table 9. Characteristics of immunocompromised patients with COVID-19.				
Characteristics	Solid organ transplant (N=22)	HIV (N=31)	Lymphoma (N=33)	Leukemia (N=25)
Median age (IQR)- years	56 (15.75)	57 (13)	63 (23)	73 (19)
Male	15 (68%)	17 (55%)	16 (48%)	16 (64%)
Race				
White	7 (32%)	10 (32%)	22 (67%)	20 (80%)
Latinx	8 (36%)	4 (13%)	6 (18%)	2 (8%)
African American	7 (32%)	16 (52%)	3 (9%)	2 (8%)
Others		1 (3%)	2 (6%)	1 (4%)
Median time from transplant (months)	36.5	-	-	-
Median last CD4+ T-cells (cells/mm³)	-	429	-	-
Hospitalized	17 (77%)	7 (23%)	8 (24%)	9 (36%)
Required supplemental oxygen on admission	9 (53%)	6 (86%)	8 (100%)	9 (100%)
Outcome				
Discharged	11 (65%)	6 (86%)	3 (38%)	4 (44%)
Death	3 (18%)	0 (0%)	3 (38%)	3 (33%)
Still in hospital	4 (24%)	1 (14%)	2 (25%)	2 (22%)