

Supplemental Table 1. The distribution of number of days from COVID-19 diagnosis to death

	<b>daysToDeath</b>	<b>avgDays</b>	<b>N</b>	<b>Prop</b>
Grp1	[1,7]	4	764	40.6%
Grp2	(7,10]	9	200	10.6%
Grp2	(10,15]	13	249	13.2%
Grp3	(15,20]	18	173	9.2%
Grp3	(20,25]	23	99	5.3%
Grp3	(25,30]	28	73	3.9%
Grp4	(30,40]	35.5	73	3.9%
Grp4	(40,50]	45.5	42	2.2%
Grp4	(50,60]	55.5	26	1.4%
Grp5	(60,70]	65.5	17	0.9%
Grp5	(70,80]	75.5	9	0.5%
Grp5	(80,90]	85.5	10	0.5%
Grp5	(90,100]	95.5	12	0.6%
Grp5	(100,110]	105.5	8	0.4%
Grp5	(110,120]	115.5	5	0.3%
Grp5	(120,130]	125.5	12	0.6%
Grp5	(130,140]	135.5	7	0.4%
Grp5	(140,150]	145.5	4	0.2%
Grp5	(150,160]	155.5	10	0.5%
Grp5	(160,170]	165.5	5	0.3%
Grp5	(170,180]	175.5	5	0.3%
Grp5	(180,190]	185.5	4	0.2%
Grp5	(190,200]	195.5	9	0.5%
Grp5	(200,250]	225.5	10	0.5%
Grp5	(250,300]	275.5	16	0.8%
Grp5	(300,365]	333	14	0.7%

Supplemental Table 2. The mean and standard deviation values for all the variables between severe and mild outcome groups

variable	Mild			Severe			Severe - Mild
	N	Mean	SD	N	Mean	SD	Difference
procalcitonin	264	0.6	3.1	233	2.3	7.7	308%
age	264	65.5	16.2	233	73.9	13.2	13%
c_reactive_protein	264	9.4	9.0	233	13.4	8.4	42%
DBP	264	78.2	11.6	233	75.6	12.4	-3%
lactic_dehydrogenase	264	378.9	183.4	233	560.1	560.3	48%
neutrophil_count	264	5.3	3.0	233	6.4	3.8	21%
d_dimer	264	2.4	4.0	233	3.8	5.1	57%
albumin	264	3.7	0.4	233	3.4	0.5	-8%
ferritin	264	909.4	1325.0	233	1662.0	2525.4	83%
SES	264	-3.6	2.7	233	-2.9	2.6	-20%
platelet_count	264	221.5	93.7	233	199.2	83.7	-10%
b_natriuretic_peptide	264	216.2	517.2	233	366.3	826.5	69%
BMI	254	30.1	7.7	229	29.6	7.9	-2%
lymphocyte_count	264	1.1	0.7	233	0.9	1.0	-14%
glucose	264	165.0	118.7	233	191.6	127.8	16%
alanine_aminotransferase	264	35.6	29.0	233	42.5	49.2	19%
Temp	262	98.7	1.2	231	98.5	1.1	0%
pctHouseholdsWithOverOnePersonPerRoom	264	0.1	0.1	233	0.1	0.1	-12%
urea_nitrogen	264	23.6	19.1	233	31.8	21.8	35%
ADI	264	124.1	20.0	233	119.8	19.1	-3%
ratioThoseMakingUnder10kToThoseMakingOver50k	264	3.3	1.2	233	3.2	1.2	-5%
creatinine	264	1.8	2.2	233	1.9	1.7	6%
alkaline_phosphatase	264	88.1	48.1	233	106.2	94.3	21%
SBP	264	130.3	18.6	233	132.1	21.3	1%
aspartate_aminotransferase	264	47.5	39.7	233	74.6	119.7	57%
pctWithWhiteCollarJobs	264	0.3	0.2	233	0.3	0.1	9%
pctUnemployed	264	0.1	0.1	233	0.1	0.1	-18%
total_protein	264	6.9	0.7	233	6.7	0.7	-4%
potassium	264	4.3	0.7	233	4.4	0.8	3%
pctWithLessThan9thGradeEducation	264	0.1	0.1	233	0.1	0.1	-14%

Financial_Strength	264	91.4	12.1	233	92.2	11.1	1%
RR	263	18.6	11.2	226	18.9	3.5	2%
PulseO2	264	98.0	1.7	229	97.4	2.5	-1%
medianFamilyIncome	264	58477.1	34844.2	233	59657.9	27976.1	2%
pctOwnerOccupiedHousing	264	0.2	0.3	233	0.3	0.2	18%
sodium	264	136.8	4.4	233	136.6	6.2	0%
Economic_Hardship_and_Inequality	264	123.5	21.2	233	119.3	20.6	-3%
pctWithAtLeastHSEducation	264	0.7	0.1	233	0.8	0.1	4%
medianHouseValue	264	480892	246654	233	451188	261510	-6%
pctFamiliesInPoverty	264	0.2	0.2	233	0.2	0.2	-11%
monocyte_count	264	0.6	0.4	233	0.5	0.3	-12%
chloride	264	100.6	5.0	233	101.2	6.7	1%
carbon_dioxide	264	23.3	4.6	233	21.6	4.9	-7%
medianMortgage	264	2237.4	862.3	233	2282.5	882.2	2%
pctHouseholdsWithChildrenThatAreSingleParent	264	0.6	0.3	233	0.6	0.3	-3%
calcium	264	8.5	0.7	233	8.2	0.8	-3%
bilirubin_total	264	0.7	0.5	233	0.8	0.7	18%
egfr_ckd	247	61.2	31.2	220	50.4	27.7	-18%
anion_gap	264	12.8	4.0	233	13.8	4.0	7%
HR	264	87.8	16.4	232	87.0	16.9	-1%
medianRent	264	1233.0	374.5	233	1263.8	353.3	2%
pctLivingBelow150PctFederalPovertyLevel	264	0.4	0.2	233	0.3	0.2	-8%
Educational_Attainment	264	77.1	21.1	233	82.3	20.8	7%

ADI, area deprivation index; BMI, body mass index; CKD, chronic kidney disease; DBP, diastolic blood pressure; eGFR, estimated glomerular filtration rate; HR, heart rate; RR, respiratory rate; SBP, systolic blood pressure; SES, socioeconomic status.

Supplemental Table 3: Effect of addition and subtraction of variables to the specific Model C

Model	AUC	Sensitivity	Specificity	PPV	NPV	N_Features	N_Train	N_Test	Prevalence	Accuracy
C	0.83	77%	81%	78%	80%	10	348	149	47%	79.2%
C+BMI	0.83	83%	72%	73%	82%	12	338	145	47%	77.2%
C+creatinine	0.83	77%	81%	78%	80%	12	348	149	47%	79.2%
C+egfr	0.79	85%	65%	68%	83%	12	327	140	47%	74.3%
C+gender	0.83	77%	81%	78%	80%	12	348	149	47%	79.2%
C+glucose	0.83	77%	81%	78%	80%	12	348	149	47%	79.2%
C+HR	0.8	80%	75%	74%	81%	12	347	149	47%	77.2%
C+lymphocyte_count	0.83	77%	81%	78%	80%	12	348	149	47%	79.2%
C+PulseO2	0.8	78%	73%	72%	79%	12	345	148	46%	75.7%
C+race	0.83	77%	81%	78%	80%	12	348	149	47%	79.2%
C+ratio_AST_ALT	0.82	79%	80%	77%	81%	12	348	149	47%	79.2%
C+RR	0.82	81%	73%	72%	82%	12	342	147	46%	76.9%
C+SBP	0.83	77%	81%	78%	80%	12	348	149	47%	79.2%
C+Temp	0.8	81%	63%	66%	79%	12	345	148	47%	71.6%
C-age	0.78	74%	72%	70%	76%	10	348	149	47%	73.2%
C-albumin	0.75	59%	80%	72%	68%	10	350	150	47%	70.0%
C-BNP	0.76	64%	77%	67%	75%	10	524	225	42%	71.6%
C-CRP	0.79	79%	71%	71%	79%	10	349	150	47%	74.7%
C-ddimer	0.83	90%	59%	67%	87%	10	351	150	47%	74.0%
C-ferritin	0.78	69%	78%	73%	74%	10	354	151	47%	73.5%
C-LD	0.67	59%	65%	60%	64%	10	364	156	46%	62.2%
C-procalcitonin	0.78	69%	75%	69%	76%	10	452	194	44%	72.7%

ALT, alanine aminotransferase; AST, aspartate aminotransferase; AUC, area under the curve BMI, body mass index; BNP, B-type natriuretic peptide; CRP, C-reactive protein; DBP, diastolic blood pressure; eGFR, estimated glomerular filtration rate; HR, heart rate; LD, lactic dehydrogenase; NPV, negative predictive value; PPV, positive predictive value;RR, respiratory rate; SBP, systolic blood pressure; SES, socioeconomic status.

Supplemental Table 4. Coefficients for the selected models

	<b>Model B</b>	<b>Model C</b>	<b>Model D</b>
(Intercept)	1.64189	-0.36268	1.83516
age	0.02280	0.02031	0.03000
albumin	-0.68819	-0.50079	-0.84818
b_natriuretic_peptide	0.00000	0.00000	Not included
c_reactive_protein	Not included	0.01415	0.04005
d_dimer	Not included	0.00000	Not included
DBP	-0.01586	-0.00048	-0.01835
ferritin	0.00009	0.00002	0.00005
lactic_dehydrogenase	0.00183	0.00182	0.00106
platelet_count	-0.00217	-0.00072	-0.00307
procalcitonin	0.03444	0.01928	0.04059
SES	0.07171	0.07191	0.05324

DBP, diastolic blood pressure; SES, socioeconomic status.