#### SUPPLEMENTAL APPENDIX

#### Association Between Antecedent Statin Use and Decreased Mortality in

#### **Hospitalized Patients with COVID-19**

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#### Supplemental Table 1. Mortality rate among patients discharged within 24 hours

Among 1508 patients who were in the hospital for less than 24 hours, 267 patients died. Differences in mortality rates by statin use in this excluded population.

	Statin Users	Non-Statin Users
Death	60/397 (15.1%)	207/1111 (18.6%)

Chi-squared p-value = 0.13

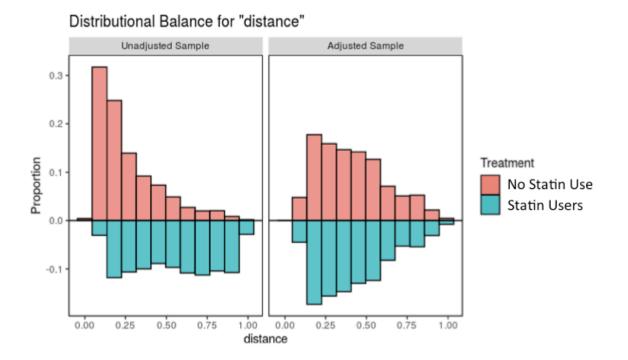
Comorbidity	ICD-10-CM codes
Hypertension	I10-13, I15-16, O10.1-10.4, O10.9
Diabetes	E08 -11, E13, O24.4
Coronary Artery Disease	I21-25, Z98.61, Z95.1
Heart Failure	109.81, 111.0, 113.0, 150, 142
Chronic Lung Disease	J40-47, J60, J66, J67.2, J67.8-67.9, J68.4, J84, G47.3
Stroke/transient ischemic	I60-64, I69, H34.1, G45
attack	
Atrial arrhythmias	I47.1, I47.9, I48.0-48.4, I48.91, i48.92, I49.9
Chronic Kidney Disease	N03, N07-08, N11, N14, N18-19, N29, I12, I13, Z99.2, E10.22, E11.22, E13.22, E08.22, O10.3, D63.1
Chronic Liver Disease	K70 – K77

### Supplemental Table 2. ICD-10-CM codes used to classify baseline conditions

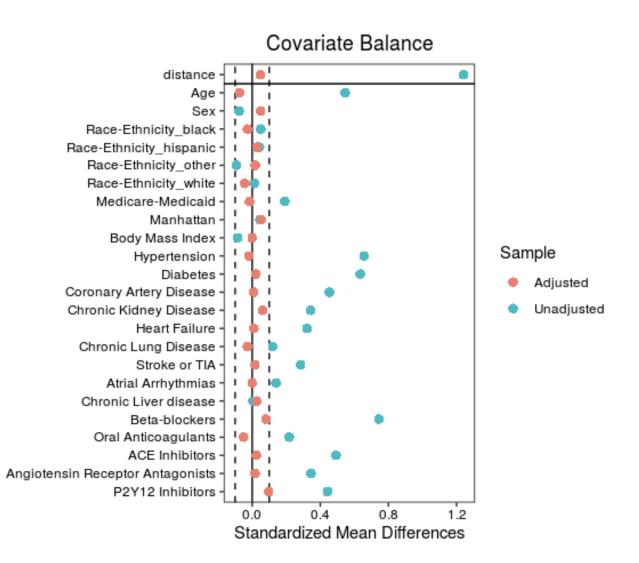
Laboratory marker	Statin Users (648)	Non-statin Users (648)		
White blood cell count	1 (0.1%)	4 (0.6%)		
Platelet count	6 (0.9%)	8 (1.2%)		
Creatinine	0	0		
AST	7 (1.0%)	10 (1.5%)		
ALT	11 (1.7%)	12 (1.9%)		
Hs-Troponin	34 (5.2%)	47 (7.3%)		
Albumin	5 (0.8%)	11 (1.7%)		
D-dimer	92 (14.2%)	111 (17.1%)		
Ferritin	38 (5.9%)	59 (9.1%)		
ESR	80 (12.3%)	74 (11.4%)		
CRP 38 (5.9%)		43 (6.6%)		

Supplemental Table 3.	Missing laboratory	markers in the pr	ropensity-matched cohort

ALT = alanine aminotransferase; AST = aspartate aminotransferase; CRP = C-reactive protein; ESR = erythrocyte sedimentation rate; hs-Troponin = high sensitivity Troponin T; IQR = interquartile range Supplemental Figure 1. Distribution of the estimated propensity score for antecedent statin use, among patients who did and did not actually receive the treatment



Supplemental Figure 2. Standardized mean differences in the unmatched and matched sample



# Supplemental Figure 3. Multivariable regression to examine association of antecedent statin use with primary endpoint (in-hospital mortality within 30 days) in study sample restricted to patients with history of hypertension, coronary artery disease and stroke or transient ischemic attack

Forest plot demonstrating the odds ratio (OR) and 95% confidence interval (CI) (N = 1516 independent patients)

				Odds ratio
	Odds Ratio	Lower Cl	Upper CI	0.51.01.52.0 3.0 4.0
Statins	0.438	0.312	0.614	+ ;
Age (third to first quartile)	4.251	3.049	5.926	
Male Sex	1.314	0.958	1.803	
Medicare or Medicaid Insurance	0.997	0.718	1.384	↓ <u>+</u>
Manhattan Residence	1.041	0.764	1.419	↓ <u>+</u>
BMI (third to first quartile)	1.22	1.014	1.468	<b>↓</b>
Hypertension	1.093	0.543	2.201	
Diabetes	1.698	1.239	2.326	
Coronary Artery Disease	1.374	0.93	2.03	
Chronic Kidney Disease	1.053	0.715	1.55	
Heart Failure	1.124	0.715	1.768	<b>_</b>
Chronic Lung Disease	1.078	0.739	1.572	
Stroke	1.139	0.74	1.752	
Atrial Arrhythmias	1.699	1.04	2.775	• • • • • • • • • • • • • • • • • • •
Liver Disease	0.857	0.383	1.917	
Beta-Blockers	0.849	0.59	1.221	
Oral Anticoagulants	0.377	0.23	0.62	<b>→</b>
P2Y12 Inhibitors	0.454	0.24	0.86	
ACE Inhibitors	1.218	0.757	1.96	
Angiotensin Receptor Blockers	1.553	0.98	2.462	• • • • • • • • • • • • • • • • • • •
Non-Hispanic White	0.742	0.434	1.269	
Non-Hispanic Black	1.25	0.772	2.026	
Other/missing Race	1.123	0.791	1.594	

**Supplemental Figure 4. Multivariable regression to examine association of statin use** (modified definition)\* with primary endpoint (in-hospital mortality within 30 days) Forest plot demonstrating the odds ratio (OR) and 95% confidence interval (CI) (N = 2626 independent patients)

				Odds ratio
	Odds Ratio	Lower CI	Upper CI	0.51.01.52.0 3.0 4.0
Statins	0.595	0.467	0.758	+
Age (third to first quartile)	5.072	4.096	6.279	
Male Sex	1.46	1.167	1.827	<b>  →</b> -
Medicare or Medicaid Insurance	1.131	0.89	1.436	
Manhattan Residence	1.047	0.838	1.308	+
BMI (third to first quartile)	1.043	0.962	1.13	•
Hypertension	0.818	0.637	1.051	→ +
Diabetes	1.35	1.061	1.719	<b>↓</b>
Coronary Artery Disease	1.222	0.875	1.708	<b>↓</b>
Chronic Kidney Disease	1.137	0.827	1.564	
Heart Failure	1.391	0.977	1.981	
Chronic Lung Disease	1.007	0.754	1.346	<b>↓ +</b>
Stroke	1.185	0.826	1.701	
Atrial Arrhythmias	1.688	1.155	2.468	
Liver Disease	0.916	0.491	1.707	
Beta-Blockers	0.713	0.533	0.955	
Oral Anticoagulants	0.386	0.266	0.562	+
P2Y12 Inhibitors	0.431	0.247	0.753	↓
ACE Inhibitors	1.151	0.801	1.652	
Angiotensin Receptor Blockers	1.317	0.881	1.968	
Non-Hispanic White	0.897	0.611	1.316	
Non-Hispanic Black	0.968	0.676	1.387	
Other/missing Race	1.053	0.821	1.351	+

\*In this analysis, patients were classified as statin users if they were either prescribed outpatient statin use per the electronic medical record or received statins during hospitalization

## Supplemental Figure 5. Multivariable regression to examine association of inpatient statin use with primary endpoint (in-hospital mortality within 30 days)

Forest plot demonstrating the odds ratio (OR) and 95% confidence interval (CI) (N = 2626 independent patients)

				Odds ratio
	Odds Ratio	Lower CI	Upper Cl	0.51.01.52.0 3.0 4.0
Inpatient statins	0.562	0.439	0.721	•
Age (third to first quartile)	5.03	4.071	6.216	· · · · · · · · · · · · · · · · · · ·
Male Sex	1.467	1.173	1.834	· · · · · · · · · · · · · · · · · · ·
Medicare or Medicaid Insurance	1.131	0.891	1.435	
Manhattan Residence	1.035	0.83	1.291	↓
BMI (third to first quartile)	1.049	0.966	1.14	•
Hypertension	0.821	0.639	1.054	
Diabetes	1.342	1.057	1.705	
Coronary Artery Disease	1.247	0.892	1.743	
Chronic Kidney Disease	1.152	0.838	1.584	
Heart Failure	1.415	0.993	2.016	
Chronic Lung Disease	0.997	0.747	1.331	<b>↓</b>
Stroke	1.218	0.849	1.745	
Atrial Arrhythmias	1.723	1.181	2.514	
Liver Disease	0.913	0.49	1.699	
Beta-Blockers	0.695	0.52	0.928	<b>→</b>
Oral Anticoagulants	0.382	0.263	0.555	◆ }
P2Y12 Inhibitors	0.439	0.251	0.766	<b>→</b> ¦
ACE Inhibitors	1.089	0.762	1.557	
Angiotensin Receptor Blockers	1.28	0.858	1.909	
Non-Hispanic White	0.902	0.616	1.322	
Non-Hispanic Black	0.962	0.672	1.377	
Other/missing Race	1.054	0.822	1.351	+