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VACO Index prediction of short-term COVID-19 mortality

Supplementary File 2: VACO Index Calculation of Predicted COVID-19 30-day Mortality

Variable	Coefficient	Z	P-value	OR	95% CI
Age, years					
20-49	-2.228678713	-2.83	0.005	0.11	0.02 - 0.50
50-54	0.0		-	1.00	-
55-59	0.400599289	0.97	0.334	1.49	0.66 - 3.36
60-64	0.941322019	2.50	0.013	2.56	1.22 - 5.37
65-69	1.295007128	3.49	<0.001	3.65	1.77 - 7.55
70-74	1.629533438	4.55	<0.001	5.10	2.53 - 10.3
75-79	1.763345763	4.72	<0.001	5.83	2.81 - 12.12
80-89	1.927443543	4.96	<0.001	6.87	3.21 - 14.72
≥90	2.018752269	4.39	<0.001	7.53	3.06 - 18.54
Sex					
Female	0.0	-	-	1.00	-
Male	0.322291449	0.88	0.377	1.38	0.68 - 2.82
CCI and Age Interaction Term					
Age <85					
CCI					
0	0.0	-	-	-	-
1-3	0.612122574	2.76	0.006	1.84	1.19 - 2.85
4-5	0.825072847	3.36	0.001	2.28	1.41 - 3.69
6-9	0.956099733	3.84	<0.001	2.60	1.60 - 4.24
≥10	1.395164653	4.25	<0.001	4.04	2.12 - 7.68
Age 85+, any CCI	1.529325519	4.79	<0.001	4.62	2.47 - 8.63
MI or PVD					
No	0.0	-	-	1.00	-
Yes	0.267265312	2.18	0.029	1.31	1.03 - 1.66
Constant	-4.216058062	-8.41	<0.001	0.01	0.01 - 0.04

Abbreviations: OR = odds ratio; CI = confidence interval; CCI =Charlson comorbidity index; MI = myocardial infarction; PVD = peripheral vascular disease

Calculation of predicted mortality risk:

$$\text{coefficient}_{\text{sum}} = \text{Age}_{\text{coefficient}} + \text{Sex}_{\text{coefficient}} + \text{CCI_Age}_{\text{coefficient}} + \text{MI_PVD}_{\text{coefficient}} + \text{Constant}_{\text{coefficient}}$$

$$\text{Odds}_{\text{calc}} = \exp(\text{coefficient}_{\text{sum}})$$

$$\text{risk}_{\text{pred}} = \text{Odds}_{\text{calc}} / (1 + \text{Odds}_{\text{calc}})$$

Example: 77 year old male with CCI = 5, but no history of MI or PVD

$$\text{coefficient}_{\text{sum}} = 1.763345763 + 0.322291449 + 0.825072847 + 0.0 + (-4.216058062) = -1.305348004$$

$$\text{Odds}_{\text{calc}} = \exp(-1.305348004) = 0.271078182$$

$$\text{risk}_{\text{pred}} = 0.271078182 / (1 + 0.271078182) = 0.213266333 = 21\%$$