Untitled

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Part 1: Descriptive statistics

Table 1: Descriptive statistics by status (In-hospital mortality). In the case of continuous variables, standard errors are showed in parenthesis, otherwise it shows the proportion within the group. For the significance of the differences $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

	Survived	Died	Dif. in means
Age	41.08 (17.40)	50.45 (20.79)	-5.81 ***
Male	1998 (76.41%)	137 (78.74%)	0.37
SBP (mm Hg)	133.97 (25.29)	127.74 (41.72)	1.95
RR (breaths per minute)	20.18 (6.34)	21.30 (9.46)	-1.55
Glasgow Coma Scale	14.13 (2.52)	8.94 (5.14)	13.22 ***
Ethnicity			
Asian	165 (6.31%)	20 (11.49%)	
African American	482 (18.43%)	31 (17.82%)	
Non-Hispanic white	918 (35.11%)	65 (37.36%)	
Hispanic white	1050 (40.15%)	58 (33.33%)	
Total	2615	174	

Part 2 - 5: Predictive model

	(1)	(2)	(3)	(4)	(5)	(6)
Age	0.04***	−0.01	0.04***	0.04***	0.04***	−0.01
	(0.00)	(0.02)	(0.01)	(0.00)	(0.00)	(0.02)
Male	0.48*	0.53*	0.47*	0.47*	0.46*	0.51*
	(0.22)	(0.22)	(0.22)	(0.22)	(0.22)	(0.22)
Asian	−0.11	−0.12	−0.13	−0.11	−0.14	−0.14
	(0.36)	(0.36)	(0.36)	(0.36)	(0.36)	(0.36)
Hispanic white	−0.40	−0.42	−0.41	−0.38	−0.36	−0.39
	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)
Non-Hispanic white	−0.28	−0.29	−0.28	−0.27	−0.28	−0.29
	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)
SBP (mm Hg)	−0.01**	−0.01**		−0.01**	−0.01**	−0.01**
	(0.00)	(0.00)		(0.00)	(0.00)	(0.00)
RR (breaths per minute)	0.03***	0.03***	0.04***			
	(0.01)	(0.01)	(0.01)			
Glasgow Coma Scale (GCS)	−0.31***	−0.31***	−0.31***	−0.30***		
	(0.02)	(0.02)	(0.02)	(0.02)		
Age^2		0.00*				0.00*
		(0.00)				(0.00)
SBP^2			−0.00*			
			(0.00)			
RR^2				0.00**		
				(0.00)		
GCS^2					−0.02***	−0.02***
					(0.00)	(0.00)
(Intercept)	−0.48	0.55	−1.18*	0.05	−0.66	0.43
	(0.54)	(0.73)	(0.46)	(0.50)	(0.48)	(0.67)
AIC	969.61	967.52	975.02	973.62	970.66	967.59
BIC	1023.01	1026.85	1028.42	1027.02	1018.13	1020.99
Log Likelihood	-475.81	-473.76	-478.51	-477.81	-477.33	-474.80
Deviance	951.61	947.52	957.02	955.62	954.66	949.59
Num. obs.	2789	2789	2789	2789	2789	2789

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Table 2: Statistical models

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	0.05***	0.05***	0.03***	0.11***	0.04***	0.04***	0.04***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Male	1.00	0.47*	0.47*	0.48*	1.93***	−0.15	4.09***
	(0.64)	(0.22)	(0.22)	(0.23)	(0.47)	(0.31)	(0.30)
Asian	−0.11	−0.13	−0.13	−0.10	−0.13	−0.11	0.15
	(0.36)	(0.36)	(0.36)	(0.37)	(0.37)	(0.36)	(0.35)
Hispanic white	−0.40	−0.41	−0.40	−0.30	−0.37	−0.37	−0.31
	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)	(0.25)
Non-Hispanic white	−0.27	−0.28	−0.29	−0.21	−0.29	−0.28	−0.22
	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)	(0.26)	(0.25)
SBP (mm Hg)	−0.01**		−0.01**	−0.01***		−0.01***	−0.01***
	(0.00)		(0.00)	(0.00)		(0.00)	(0.00)
RR (breaths per minute)	0.03***	0.03***		0.03***	0.04***		0.03***
	(0.01)	(0.01)		(0.01)	(0.01)		(0.01)
Glasgow Coma Scale (GCS)	−0.31***	−0.31***	−0.30***		−0.31***	−0.30***	
	(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	
Age x GCS				−0.01***			
				(0.00)			
Age x RR			0.00**				
			(0.00)				
Age x Male	−0.01						
	(0.01)						
Age x SBP		−0.00*					
		(0.00)					
Male x GCS							−0.30***
							(0.02)
Male x RR						0.03**	
						(0.01)	
Male x SBP					−0.01***		
					(0.00)		
(Intercept)	−0.88	−1.52***	0.21	−3.59***	−1.66***	0.24	−3.99***
	(0.72)	(0.44)	(0.50)	(0.53)	(0.45)	(0.50)	(0.52)
AIC	970.85	974.78	972.76	1012.31	967.58	973.69	1038.66
BIC	1030.19	1028.18	1026.16	1065.71	1020.98	1027.09	1092.06
Log Likelihood	-475.43	-478.39	-477.38	-497.15	-474.79	-477.84	-510.33
Deviance	950.85	956.78	954.76	994.31	949.58	955.69	1020.66
Num. obs.	2789	2789	2789	2789	2789	2789	2789

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Table 3: Statistical models

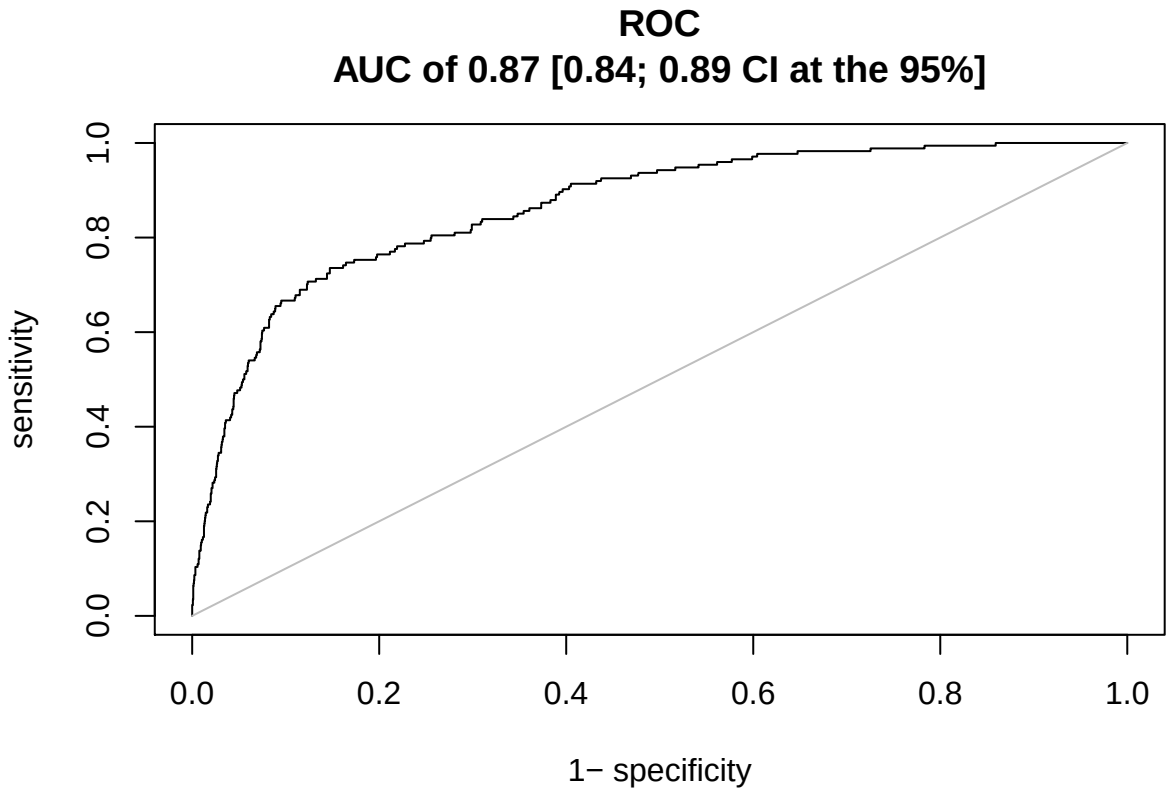
Part 6: Provide the model formula for the probability of dying in the hospital

The model with the lowest BIC is model

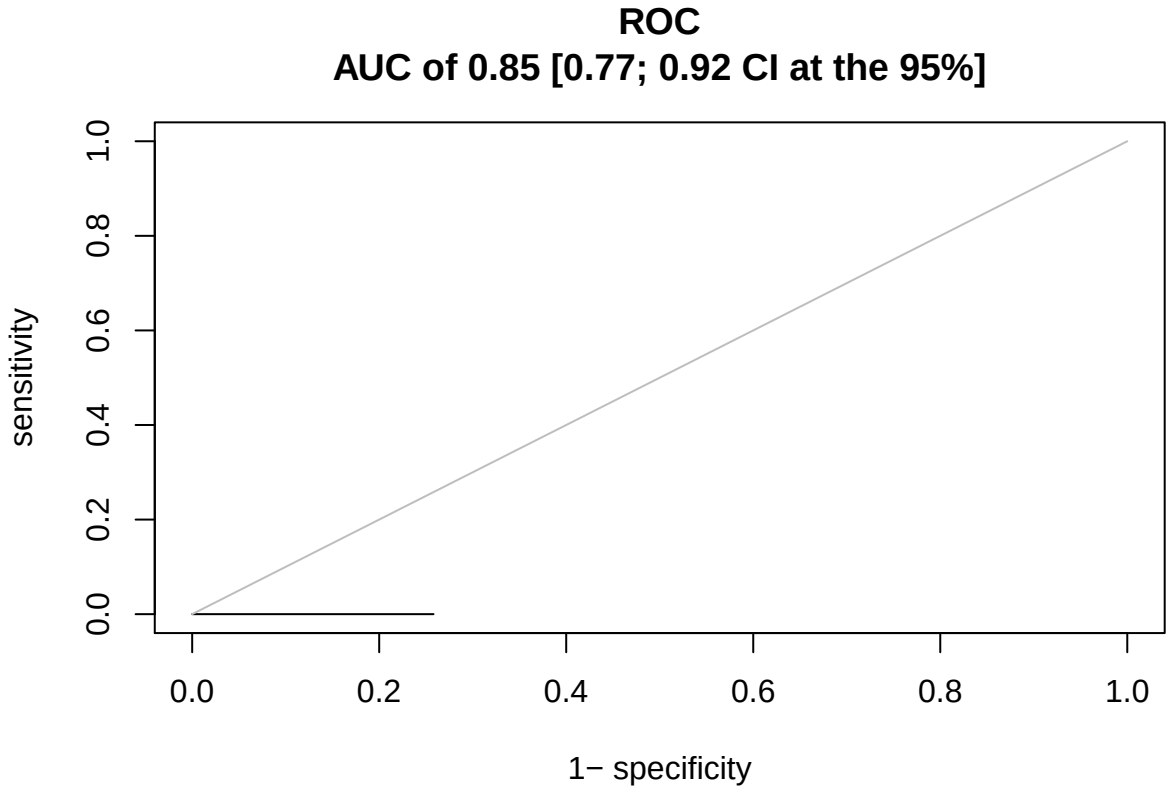
$$\begin{aligned} &-0.66 \times (\text{Intercept}) + 0.04 \times \text{Age} + 0.46 \times \text{Male} - 0.14 \times \text{Asian} \\ &\quad - 0.36 \times \text{Hispanic white} - 0.28 \times \text{Non-Hispanic white} - 0.01 \times \text{SBP (mm Hg)} - 0.02 \times \text{GCS}^2 \end{aligned} \quad (1)$$

$$\Pr(\text{die} = 1) = \text{logit}^{-1}(X\beta) \quad (2)$$

Part 7: ROC Curves



Part 8: Predictions out of sample



Awfull!