

$$\text{Prob}\{\text{NeedHospOutcome} == \text{"NeedforHospitalization"}\} = \frac{1}{1 + \exp(-X\beta)}, \text{ where}$$

$$\begin{aligned} X\hat{\beta} = & 18.35 \\ & +0.04795\text{Age} + 0.001157(\text{Age} - 5.75)_+^3 - 0.001774(\text{Age} - 8.805)_+^3 \\ & +0.0006178(\text{Age} - 14.52)_+^3 \\ & -0.2555\{\text{Male}\} \\ & -0.111\{\text{Non} - \text{Caucasian}\} \\ & +0.001315\text{BMI} - 5.175 \times 10^{-5}(\text{BMI} - 14.3)_+^3 + 7.351 \times 10^{-5}(\text{BMI} - 18)_+^3 \\ & -2.176 \times 10^{-5}(\text{BMI} - 26.8)_+^3 \\ & +0.05014\{\text{Daytime sx} > 2/\text{wk}\} \\ & -0.02035\{\text{Nocturnal sx or awakening}\} \\ & +0.1193\{\text{Activity limitation}\} \\ & +0.1185\{\text{Albuterol tx} > 2/\text{wk}\} \\ & +0.08591\{\text{Asthma exacerbation past yr}\} \\ & -0.03173\{\text{SCM} - \text{SS retractions}\} \\ & +0.3027\{\text{IC retractions}\} \\ & -0.03225\{\text{SC retractions}\} \\ & +0.01323\{\text{Exp phase 1 : 2}\} + 0.6207\{\text{Exp phase} \leq 1 : 3\} \\ & +0.1752\{\text{Exp wheeze}\} + 0.2141\{\text{Ins} + \text{Exp wheeze}\} - 0.2187 \text{SpO2inRA} \end{aligned}$$

and $\{c\} = 1$ if subject is in group c , 0 otherwise; $(x)_+ = x$ if $x > 0$, 0 otherwise.

$$\text{Prob}\{\text{HospOutcome} == \text{"Hospitalization"}\} = \frac{1}{1 + \exp(-X\beta)}, \text{ where}$$

$$\begin{aligned} X\hat{\beta} = & 30.54 \\ & -0.000699\text{Age} + 0.002133(\text{Age} - 5.75)_+^3 - 0.003272(\text{Age} - 8.805)_+^3 \\ & +0.001139(\text{Age} - 14.52)_+^3 \\ & -0.0922\{\text{Male}\} \\ & +0.07674\{\text{Non} - \text{Caucasian}\} \\ & -0.03873\text{BMI} + 0.000358(\text{BMI} - 14.3)_+^3 - 0.0005086(\text{BMI} - 18)_+^3 \\ & +0.0001505(\text{BMI} - 26.8)_+^3 \\ & +0.08969\{\text{Daytime sx} > 2/\text{wk}\} \\ & -0.09587\{\text{Nocturnal sx or awakening}\} \\ & +0.08967\{\text{Activity limitation}\} \\ & +0.04107\{\text{Albuterol tx} > 2/\text{wk}\} \\ & +0.1057\{\text{Asthma exacerbation past yr}\} \\ & +0.1046\{\text{SCM} - \text{SS retractions}\} \\ & +0.4562\{\text{IC retractions}\} \\ & +0.002604\{\text{SC retractions}\} \\ & +0.2454\{\text{Exp phase 1 : 2}\} + 0.6973\{\text{Exp phase} \leq 1 : 3\} \\ & +0.3258\{\text{Exp wheeze}\} + 0.7349\{\text{Ins} + \text{Exp wheeze}\} - 0.3399 \text{SpO2inRA} \end{aligned}$$

and $\{c\} = 1$ if subject is in group c , 0 otherwise; $(x)_+ = x$ if $x > 0$, 0 otherwise.