

Logistic Regression, Propensity score adjusted Logistic Regression

Data dictionary

surv: Survival
sev_hyperox_cat: Exposure to severe hyperoxia (yes/no)
age: Age (years)
male: Male sex
vfvt: Initial shockable rhythm
oohca: Out-of-hospital arrest location
ih_rec: Subject treated with therapeutic hypothermia
firstpfratio: Initial P:F ratio
nightwkend: Arrest at night or weekend
ca_type: Pittsburgh Cardiac Arrest Category
cvi_01: Initial cardiovascular index
cdyn_i: Initial dynamic pulmonary compliance
meangluc: Mean of three highest glucose measurements
timetofirstwean: Hours to first adjustment in FiO2
nweans: Number of adjustments in FiO2 over 24h

Data

Outcome: surv
Predictor: sev_hyperox_cat
Covariates for the propensity score: age male vfvt oohca ih_rec firstpfratio nightwkend ca_type cvi_01 cdyn_i meangluc timetofirstwean nweans

Unadjusted Logistic Regression Model

Outcome: surv
Predictor: sev_hyperox_cat

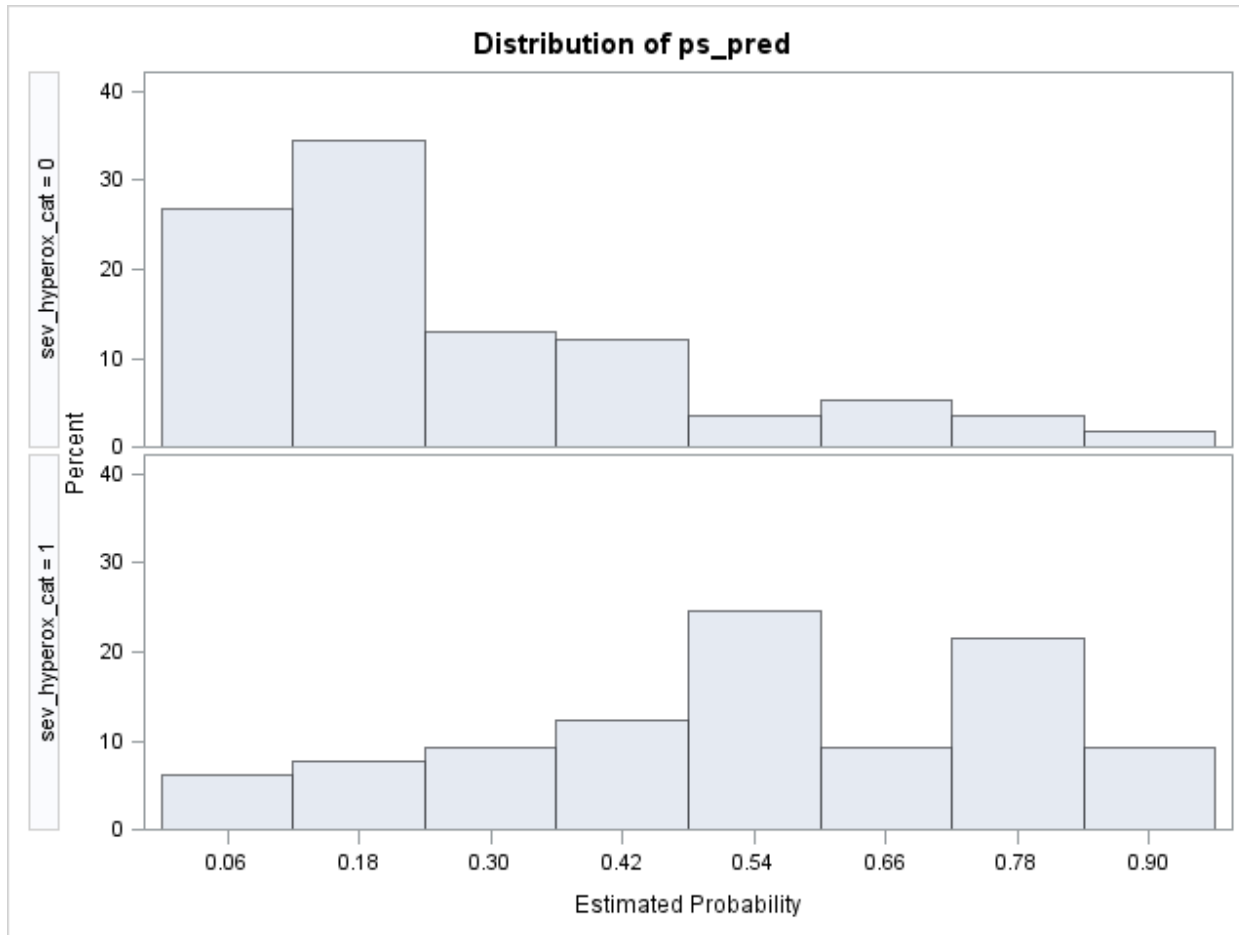
Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	0.0678	0.1842	0.1355	0.7128
sev_hyperox_cat	1	-0.6935	0.3173	4.7773	0.0288

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
sev_hyperox_cat	0.500	0.268	0.931

Propensity Scores

Ideally propensity scores should overlap entirely indicating that observations from both groups are available across the range of the PS.

Examine the distribution of propensity scores in severe and non-severe



Logistic Regression Model Adjusted by Propensity Score

Inverse probability of treatment weight was used. Individuals are weighted by the inverse probability of receiving the treatment (severe yes/no) that they actually received (Harder et al. 2010). There is a possibility of extreme propensity scores than can result in very large weights that can bias the treatment (severe yes/no) effect. Stabilization technique was used to adjust for this bias (Harder et al. 2010; Robins et al. 2000).

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	0.0505	0.2078	0.0591	0.8080
sev_hyperox_cat	1	-0.7213	0.3062	5.5489	0.0185

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
sev_hyperox_cat	0.486	0.267	0.886

There are two potential influential/outliers. After removing those,

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-0.0854	0.2151	0.1577	0.6913
sev_hyperox_cat	1	-0.8817	0.3292	7.1734	0.0074

Odds Ratio Estimates			
Effect	Point Estimate	95% Wald Confidence Limits	
sev_hyperox_cat	0.414	0.217	0.789