

Patient Characteristics, training set

Characteristic	Overall, N = 9,648	Alive, N = 4,873	Dead, N = 4,775	p-value ¹
Age in years				<0.001
<i>N</i>	9,648.00	4,873.00	4,775.00	
<i>Mean (SD)</i>	64.41 (15.30)	58.78 (15.78)	70.15 (12.38)	
<i>Median (IQR)</i>	66.00 (56.00, 76.00)	60.00 (49.00, 70.00)	71.00 (62.00, 80.00)	
<i>Range</i>	17.00, 89.00	17.00, 89.00	17.00, 89.00	
Age (<65, >=65)				<0.001
<65	4,438/9,648 (46%)	2,994/4,873 (61%)	1,444/4,775 (30%)	
>=65	5,210/9,648 (54%)	1,879/4,873 (39%)	3,331/4,775 (70%)	
Sex				0.025
<i>Female</i>	3,918/9,615 (41%)	2,034/4,858 (42%)	1,884/4,757 (40%)	
<i>Male</i>	5,697/9,615 (59%)	2,824/4,858 (58%)	2,873/4,757 (60%)	
<i>Unknown</i>	33	15	18	
Diabetes Mellitus	1,999/9,648 (21%)	972/4,873 (20%)	1,027/4,775 (22%)	0.062
Hypertension	2,343/9,648 (24%)	1,157/4,873 (24%)	1,186/4,775 (25%)	0.2
Obesity	906/9,648 (9.4%)	580/4,873 (12%)	326/4,775 (6.8%)	<0.001
PreIntubationSOFA				<0.001
<i>N</i>	9,648.00	4,873.00	4,775.00	

Characteristic	Overall, N = 9,648	Alive, N = 4,873	Dead, N = 4,775	p-value ¹
<i>Mean (SD)</i>	2.67 (1.82)	2.18 (1.51)	3.16 (1.97)	
<i>Median (IQR)</i>	2.00 (2.00, 3.00)	2.00 (1.00, 3.00)	3.00 (2.00, 4.00)	
<i>Range</i>	0.00, 17.00	0.00, 12.00	0.00, 17.00	
Pre-intubation, Renal				<0.001
<i>N</i>	9,648.00	4,873.00	4,775.00	
<i>Mean (SD)</i>	0.09 (0.39)	0.06 (0.29)	0.13 (0.47)	
<i>Median (IQR)</i>	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
Pre-intubation, Hepatic				<0.001
<i>N</i>	9,648.00	4,873.00	4,775.00	
<i>Mean (SD)</i>	0.43 (0.86)	0.28 (0.72)	0.58 (0.97)	
<i>Median (IQR)</i>	0.00 (0.00, 1.00)	0.00 (0.00, 0.00)	0.00 (0.00, 1.00)	
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
Pre-intubation, Coagulation				<0.001
<i>N</i>	9,648.00	4,873.00	4,775.00	
<i>Mean (SD)</i>	0.22 (0.54)	0.15 (0.45)	0.28 (0.62)	
<i>Median (IQR)</i>	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	

Characteristic	Overall, N = 9,648	Alive, N = 4,873	Dead, N = 4,775	p-value ¹
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
Pre-intubation, Neurologic				<0.001
<i>N</i>	9,648.00	4,873.00	4,775.00	
<i>Mean (SD)</i>	0.23 (0.61)	0.14 (0.46)	0.33 (0.71)	
<i>Median (IQR)</i>	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
Pre-intubation, Cardiovascular				<0.001
<i>N</i>	9,648.00	4,873.00	4,775.00	
<i>Mean (SD)</i>	0.29 (0.58)	0.26 (0.55)	0.31 (0.60)	
<i>Median (IQR)</i>	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	0.00 (0.00, 1.00)	
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
Pre-intubation, Respiratory				<0.001
<i>N</i>	9,648.00	4,873.00	4,775.00	
<i>Mean (SD)</i>	1.41 (0.81)	1.29 (0.85)	1.53 (0.75)	
<i>Median (IQR)</i>	2.00 (1.00, 2.00)	2.00 (0.00, 2.00)	2.00 (1.00, 2.00)	
<i>Range</i>	0.00, 2.00	0.00, 2.00	0.00, 2.00	
PreIntubation_SOFACategory				<0.001

Characteristic	Overall, N = 9,648	Alive, N = 4,873	Dead, N = 4,775	p-value ¹
<i>sofa</i> <6	8,950/9,648 (93%)	4,712/4,873 (97%)	4,238/4,775 (89%)	
6 >= <i>sofa</i> <9	591/9,648 (6.1%)	143/4,873 (2.9%)	448/4,775 (9.4%)	
9 >= <i>sofa</i> <12	90/9,648 (0.9%)	17/4,873 (0.3%)	73/4,775 (1.5%)	
<i>sofa</i> >= 12	17/9,648 (0.2%)	1/4,873 (<0.1%)	16/4,775 (0.3%)	
Elixhauser score				<0.001
<i>N</i>	9,648.00	4,873.00	4,775.00	
<i>Mean (SD)</i>	1.28 (1.54)	1.21 (1.48)	1.35 (1.60)	
<i>Median (IQR)</i>	1.00 (0.00, 2.00)	1.00 (0.00, 2.00)	1.00 (0.00, 2.00)	
<i>Range</i>	0.00, 12.00	0.00, 12.00	0.00, 12.00	

¹Statistical tests performed: Wilcoxon rank-sum test; chi-square test of independence

Patient Characteristics, validation set

Characteristic	Overall, N = 4,792	Alive, N = 2,450	Dead, N = 2,342	p-value ¹
Age in years				<0.001
<i>N</i>	4,792.00	2,450.00	2,342.00	
<i>Mean (SD)</i>	64.17 (15.56)	58.65 (15.79)	69.95 (13.02)	
<i>Median (IQR)</i>	66.00 (55.00, 76.00)	60.00 (49.00, 70.00)	72.00 (62.00, 80.00)	
<i>Range</i>	17.00, 89.00	17.00, 89.00	17.00, 89.00	
Age (<65, >=65)				<0.001
<65	2,222/4,792 (46%)	1,498/2,450 (61%)	724/2,342 (31%)	
>=65	2,570/4,792 (54%)	952/2,450 (39%)	1,618/2,342 (69%)	
Sex				0.073
<i>Female</i>	1,946/4,771 (41%)	1,027/2,442 (42%)	919/2,329 (39%)	
<i>Male</i>	2,825/4,771 (59%)	1,415/2,442 (58%)	1,410/2,329 (61%)	
<i>Unknown</i>	21	8	13	
Diabetes Mellitus	983/4,792 (21%)	492/2,450 (20%)	491/2,342 (21%)	0.5
Hypertension	1,111/4,792 (23%)	566/2,450 (23%)	545/2,342 (23%)	>0.9
Obesity	467/4,792 (9.7%)	291/2,450 (12%)	176/2,342 (7.5%)	<0.001
PreIntubationSOFA				<0.001
<i>N</i>	4,792.00	2,450.00	2,342.00	

Characteristic	Overall, N = 4,792	Alive, N = 2,450	Dead, N = 2,342	p-value ¹
<i>Mean (SD)</i>	2.66 (1.81)	2.19 (1.59)	3.14 (1.89)	
<i>Median (IQR)</i>	2.00 (2.00, 3.00)	2.00 (1.00, 3.00)	3.00 (2.00, 4.00)	
<i>Range</i>	0.00, 12.00	0.00, 11.00	0.00, 12.00	
Pre-intubation, Renal				<0.001
<i>N</i>	4,792.00	2,450.00	2,342.00	
<i>Mean (SD)</i>	0.09 (0.38)	0.07 (0.32)	0.12 (0.44)	
<i>Median (IQR)</i>	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
Pre-intubation, Hepatic				<0.001
<i>N</i>	4,792.00	2,450.00	2,342.00	
<i>Mean (SD)</i>	0.43 (0.86)	0.30 (0.74)	0.56 (0.95)	
<i>Median (IQR)</i>	0.00 (0.00, 1.00)	0.00 (0.00, 0.00)	0.00 (0.00, 1.00)	
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
Pre-intubation, Coagulation				<0.001
<i>N</i>	4,792.00	2,450.00	2,342.00	
<i>Mean (SD)</i>	0.23 (0.58)	0.18 (0.50)	0.29 (0.64)	
<i>Median (IQR)</i>	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	

Characteristic	Overall, N = 4,792	Alive, N = 2,450	Dead, N = 2,342	p-value ¹
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
Pre-intubation, Neurologic				<0.001
<i>N</i>	4,792.00	2,450.00	2,342.00	
<i>Mean (SD)</i>	0.25 (0.62)	0.14 (0.45)	0.36 (0.75)	
<i>Median (IQR)</i>	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
Pre-intubation, Cardiovascular				0.001
<i>N</i>	4,792.00	2,450.00	2,342.00	
<i>Mean (SD)</i>	0.27 (0.56)	0.25 (0.54)	0.30 (0.58)	
<i>Median (IQR)</i>	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	0.00 (0.00, 1.00)	
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
Pre-intubation, Respiratory				<0.001
<i>N</i>	4,792.00	2,450.00	2,342.00	
<i>Mean (SD)</i>	1.38 (0.83)	1.25 (0.87)	1.52 (0.76)	
<i>Median (IQR)</i>	2.00 (1.00, 2.00)	2.00 (0.00, 2.00)	2.00 (1.00, 2.00)	
<i>Range</i>	0.00, 2.00	0.00, 2.00	0.00, 2.00	
PreIntubation_SOFACategory				<0.001

Characteristic	Overall, N = 4,792	Alive, N = 2,450	Dead, N = 2,342	p-value ¹
<i>sofa</i> <6	4,454/4,792 (93%)	2,362/2,450 (96%)	2,092/2,342 (89%)	
6 >= <i>sofa</i> <9	283/4,792 (5.9%)	76/2,450 (3.1%)	207/2,342 (8.8%)	
9 >= <i>sofa</i> <12	53/4,792 (1.1%)	12/2,450 (0.5%)	41/2,342 (1.8%)	
<i>sofa</i> >= 12	2/4,792 (<0.1%)	0/2,450 (0%)	2/2,342 (<0.1%)	
Elixhauser score				0.008
<i>N</i>	4,792.00	2,450.00	2,342.00	
<i>Mean (SD)</i>	1.28 (1.54)	1.23 (1.53)	1.33 (1.55)	
<i>Median (IQR)</i>	1.00 (0.00, 2.00)	1.00 (0.00, 2.00)	1.00 (0.00, 2.00)	
<i>Range</i>	0.00, 11.00	0.00, 10.00	0.00, 11.00	

¹Statistical tests performed: Wilcoxon rank-sum test; chi-square test of independence; Fisher's exact test

Patient Characteristics, training + validation set

Characteristic	Overall, N = 14,440	Alive, N = 7,323	Dead, N = 7,117	p-value ¹
AGE				<0.001
<i>N</i>	14,440.00	7,323.00	7,117.00	
<i>Mean (SD)</i>	64.33 (15.38)	58.73 (15.78)	70.09 (12.60)	
<i>Median (IQR)</i>	66.00 (55.00, 76.00)	60.00 (49.00, 70.00)	72.00 (62.00, 80.00)	
<i>Range</i>	17.00, 89.00	17.00, 89.00	17.00, 89.00	
Age (<65, >=65)				<0.001
<65	6,660/14,440 (46%)	4,492/7,323 (61%)	2,168/7,117 (30%)	
>=65	7,780/14,440 (54%)	2,831/7,323 (39%)	4,949/7,117 (70%)	
Sex				0.004
<i>Female</i>	5,864/14,386 (41%)	3,061/7,300 (42%)	2,803/7,086 (40%)	
<i>Male</i>	8,522/14,386 (59%)	4,239/7,300 (58%)	4,283/7,086 (60%)	
<i>Unknown</i>	54	23	31	
Diabetes Mellitus	2,982/14,440 (21%)	1,464/7,323 (20%)	1,518/7,117 (21%)	0.049
Hypertension	3,454/14,440 (24%)	1,723/7,323 (24%)	1,731/7,117 (24%)	0.3
Obesity	1,373/14,440 (9.5%)	871/7,323 (12%)	502/7,117 (7.1%)	<0.001
PreIntubationSOFA				<0.001
<i>N</i>	14,440.00	7,323.00	7,117.00	

Characteristic	Overall, N = 14,440	Alive, N = 7,323	Dead, N = 7,117	p-value ¹
<i>Mean (SD)</i>	2.66 (1.82)	2.19 (1.54)	3.16 (1.94)	
<i>Median (IQR)</i>	2.00 (2.00, 3.00)	2.00 (1.00, 3.00)	3.00 (2.00, 4.00)	
<i>Range</i>	0.00, 17.00	0.00, 12.00	0.00, 17.00	
Pre-intubation, Renal				<0.001
<i>N</i>	14,440.00	7,323.00	7,117.00	
<i>Mean (SD)</i>	0.09 (0.39)	0.06 (0.30)	0.13 (0.46)	
<i>Median (IQR)</i>	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
Pre-intubation, Hepatic				<0.001
<i>N</i>	14,440.00	7,323.00	7,117.00	
<i>Mean (SD)</i>	0.43 (0.86)	0.29 (0.72)	0.57 (0.96)	
<i>Median (IQR)</i>	0.00 (0.00, 1.00)	0.00 (0.00, 0.00)	0.00 (0.00, 1.00)	
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
Pre-intubation, Coagulation				<0.001
<i>N</i>	14,440.00	7,323.00	7,117.00	
<i>Mean (SD)</i>	0.22 (0.56)	0.16 (0.46)	0.28 (0.63)	
<i>Median (IQR)</i>	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	

Characteristic	Overall, N = 14,440	Alive, N = 7,323	Dead, N = 7,117	p-value ¹
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
Pre-intubation, Neurologic				<0.001
<i>N</i>	14,440.00	7,323.00	7,117.00	
<i>Mean (SD)</i>	0.24 (0.61)	0.14 (0.46)	0.34 (0.72)	
<i>Median (IQR)</i>	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
Pre-intubation, Cardiovascular				<0.001
<i>N</i>	14,440.00	7,323.00	7,117.00	
<i>Mean (SD)</i>	0.28 (0.57)	0.26 (0.54)	0.31 (0.60)	
<i>Median (IQR)</i>	0.00 (0.00, 0.00)	0.00 (0.00, 0.00)	0.00 (0.00, 1.00)	
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
Pre-intubation, Respiratory				<0.001
<i>N</i>	14,440.00	7,323.00	7,117.00	
<i>Mean (SD)</i>	1.40 (0.82)	1.28 (0.86)	1.52 (0.76)	
<i>Median (IQR)</i>	2.00 (1.00, 2.00)	2.00 (0.00, 2.00)	2.00 (1.00, 2.00)	
<i>Range</i>	0.00, 2.00	0.00, 2.00	0.00, 2.00	
PreIntubation_SOFACategory				<0.001

Characteristic	Overall, N = 14,440	Alive, N = 7,323	Dead, N = 7,117	p-value ¹
<i>sofa</i> <6	13,404/14,440 (93%)	7,074/7,323 (97%)	6,330/7,117 (89%)	
6 >= <i>sofa</i> <9	874/14,440 (6.1%)	219/7,323 (3.0%)	655/7,117 (9.2%)	
9 >= <i>sofa</i> <12	143/14,440 (1.0%)	29/7,323 (0.4%)	114/7,117 (1.6%)	
<i>sofa</i> >= 12	19/14,440 (0.1%)	1/7,323 (<0.1%)	18/7,117 (0.3%)	
ElixhauserScore				<0.001
<i>N</i>	14,440.00	7,323.00	7,117.00	
<i>Mean (SD)</i>	1.28 (1.54)	1.21 (1.50)	1.35 (1.58)	
<i>Median (IQR)</i>	1.00 (0.00, 2.00)	1.00 (0.00, 2.00)	1.00 (0.00, 2.00)	
<i>Range</i>	0.00, 12.00	0.00, 12.00	0.00, 12.00	

¹Statistical tests performed: Wilcoxon rank-sum test; chi-square test of independence

Prediction of death among ventilated

Sensitivity Analysis: excluded participants with ESRD & CKD at point of admission

(Excluded participants with DNRs at admission; Excluded participants on ventilator at the Day 0)

Part 1: Tree models

Variable	AUC (95% CI) using training set (N=10085)	AUC (95% CI) using test set (N=5037)	Variable selected by Tree models
SOFA† & all components	0.654 (0.643,0.664)	0.652 (0.637,0.667)	SOFA
SOFA	0.654 (0.643,0.664)	0.652 (0.637,0.667)	SOFA
SOFA categories**	0.5	0.5	None
Pulmonary	0.572 (0.562,0.582)	0.583 (0.569,0.597)	Pulmonary sofa
Renal	0.5	0.5	None
Heme	0.541 (0.533,0.548)	0.534 (0.523,0.544)	Heme sofa
Neuro	0.563 (0.556,0.571)	0.564 (0.554,0.575)	Neuro sofa
Liver	0.582 (0.574,0.591)	0.573 (0.56,0.585)	Liver sofa
Cardio	0.52 (0.512,0.529)	0.52 (0.508,0.532)	Cardio sofa
SOFA & all components + covariates*	0.726 (0.716,0.736)	0.716 (0.701,0.73)	age, SOFA
SOFA + covariates*	0.726 (0.716,0.736)	0.716 (0.701,0.73)	age, SOFA
Pulmonary + covariates*	0.71 (0.7,0.72)	0.705 (0.69,0.719)	age, Pulmonary sofa
Renal + covariates*	0.706 (0.696,0.716)	0.7 (0.685,0.714)	age
Heme+ covariates*	0.706 (0.696,0.716)	0.7 (0.685,0.714)	age
Neuro+ covariates*	0.706 (0.696,0.716)	0.7 (0.685,0.714)	age
Liver + covariates*	0.712 (0.702,0.722)	0.705 (0.691,0.72)	age, Liver sofa
Cardio + covariates*	0.706 (0.696,0.716)	0.7 (0.685,0.714)	age
covariates*	0.706 (0.696,0.716)	0.7 (0.685,0.714)	age
SOFA + age	0.726 (0.716,0.736)	0.716 (0.701,0.73)	age, SOFA
SOFA categories + age	0.706 (0.696,0.716)	0.7 (0.685,0.714)	age
SOFA + elixhauser score	0.654 (0.643,0.664)	0.652 (0.637,0.667)	SOFA
SOFA categories + elixhauser score	0.516 (0.508,0.524)	0.509 (0.498,0.52)	elixhauser score
age	0.706 (0.696,0.716)	0.7 (0.685,0.714)	age
age + elixhauser score	0.706 (0.696,0.716)	0.7 (0.685,0.714)	age
SOFA & all components + age + elixhauser score	0.726 (0.716,0.736)	0.716 (0.701,0.73)	age, SOFA
SOFA + age + elixhauser score	0.726 (0.716,0.736)	0.716 (0.701,0.73)	age, SOFA
Pulmonary + age + elixhauser score	0.71 (0.7,0.72)	0.705 (0.69,0.719)	age, Pulmonary sofa
Renal + age + elixhauser score	0.706 (0.696,0.716)	0.7 (0.685,0.714)	age
Heme+ age + elixhauser score	0.706 (0.696,0.716)	0.7 (0.685,0.714)	age
Neuro+ age + elixhauser score	0.706 (0.696,0.716)	0.7 (0.685,0.714)	age
Liver + age + elixhauser score	0.712 (0.702,0.722)	0.705 (0.691,0.72)	age, Liver sofa

Cardio + age + elixhauser score	0.706 (0.696,0.716)	0.7 (0.685,0.714)	age
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*covariates include age, gender, obesity, hypertension, and diabetes.

†SOFA and all components are the scores recorded within the 24 hours prior to the start of ventilation.

** Variable SOFA category is created based on SOFA variable with the cutoffs of:<6, >=6 & <9, >=9 and <12, and >=12. In the logistic regression model, sofa <6 is served as the reference group.

Part 2: Logistic regression models

Model	Variable	AUC (95% CI) using training set (N=10085)	AUC (95% CI) using test set (N=5037)	Logistic Regression Odds ratio (95% CI)†
SOFA†	SOFA	0.66 (0.65,0.67)	0.66 (0.64,0.67)	1.41 (1.37, 1.45)
SOFA categories**	>=6 & <9	0.54 (0.53,0.54)	0.54 (0.53,0.54)	3.48 (2.88, 4.24)
	>=9 and <12			4.77 (2.88, 8.37)
	>=12			17.79 (3.63, 321.16)
Six sofa components	Pulmonary	0.67 (0.66,0.68)	0.67 (0.65,0.68)	1.53 (1.45, 1.61)
	Renal			1.46 (1.29, 1.66)
	Heme			1.44 (1.32, 1.57)
	Neuro			1.68 (1.55, 1.82)
	Liver			1.47 (1.39, 1.55)
	Cardio			0.98 (0.91, 1.05)
SOFA + covariates*	SOFA	0.75 (0.74,0.76)	0.74 (0.73,0.76)	1.33 (1.3, 1.37)
	age			1.06 (1.05, 1.06)
	Gender (M vs. F)			1.14 (1.04, 1.24)
	Obesity			0.93 (0.79, 1.09)
	Diabetes			1.17 (1.04, 1.31)
	Hypertension			0.84 (0.75, 0.94)
Six sofa components+ covariates*	Pulmonary	0.75 (0.74,0.76)	0.75 (0.73,0.76)	1.5 (1.42, 1.59)
	Renal			1.6 (1.41, 1.83)
	Heme			1.38 (1.27, 1.51)
	Neuro			1.36 (1.25, 1.48)
	Liver			1.34 (1.27, 1.41)
	Cardio			1.01 (0.93, 1.1)
	age			1.06 (1.05, 1.06)
	Gender (M vs. F)			1.11 (1.01, 1.22)

	Obesity			0.92 (0.78, 1.08)
	Diabetes			1.17 (1.04, 1.32)
	Hypertension			0.83 (0.74, 0.93)
age	age	0.71 (0.7,0.72)	0.71 (0.7,0.73)	1.06 (1.06, 1.06)
age + SOFA Categories	age	0.73 (0.72,0.74)	0.72 (0.71,0.73)	1.06 (1.06, 1.06)
	>=6 & <9			3.1 (2.53, 3.81)
	>=9 and <12			4.88 (2.87, 8.76)
	>=12			21.29 (4.19, 389.17)
age + SOFA	age	0.75 (0.74,0.76)	0.74 (0.73,0.76)	1.06 (1.05, 1.06)
	SOFA			1.34 (1.3, 1.38)
age + elixhauser score	age	0.71 (0.7,0.72)	0.71 (0.7,0.73)	1.06 (1.06, 1.06)
	elixhauser score			1.02 (0.99, 1.04)
SOFA + elixhauser score	SOFA	0.66 (0.65,0.67)	0.66 (0.64,0.67)	1.41 (1.37, 1.45)
	elixhauser score			1.05 (1.02, 1.07)
Categories SOFA + elixhauser score	>=6 & <9	0.56 (0.55,0.57)	0.55 (0.54,0.57)	3.45 (2.86, 4.2)
	>=9 and <12			4.71 (2.84, 8.26)
	>=12			17.49 (3.57, 315.83)
	elixhauser score			1.06 (1.03, 1.09)
SOFA + age + elixhauser score	age	0.75 (0.74,0.76)	0.74 (0.73,0.76)	1.06 (1.05, 1.06)
	elixhauser score			1 (0.97, 1.03)
	SOFA			1.34 (1.3, 1.38)
Pulmonary + Renal +Heme+ Neuro + Liver + Cardio + age + elixhauser score	Renal	0.75 (0.74,0.76)	0.74 (0.73,0.76)	1.62 (1.42, 1.84)
	Pulmonary			1.5 (1.42, 1.58)
	Heme			1.39 (1.27, 1.52)
	Neuro			1.37 (1.26, 1.49)
	Liver			1.35 (1.28, 1.42)
	Cardio			1.01 (0.93, 1.1)
	age			1.06 (1.05, 1.06)
	elixhauser score			1 (0.97, 1.03)

*covariates include age, gender, obesity, hypertension, and diabetes.

‡ Outcome variable has two levels: deceased and discharged, where discharged is served as the reference level.

†SOFA and all components are the scores recorded within the 24 hours prior to the start of ventilation.

** Variable SOFA category is created based on SOFA variable with the cutoffs of:<6, >=6 & <9, >=9 and <12, and >=12. In the logistic regression model, sofa <6 is served as the reference group.

Short version of the above table, which has the same table format as Table 2, AUC for Prediction Models on Both Derivation and Validation Cohorts, from the drafted manuscript:

Model	Variable	AUC (95% CI) Derivation Cohort (N=10085)	AUC (95% CI) Validation Cohort (N=5037)	Logistic Regression Odds ratio (95%CI) ^c
SOFA ^a	SOFA	0.66 (0.65,0.67)	0.66 (0.64,0.67)	1.41 (1.37, 1.45)
SOFA categories ^b	>=6 & <9	0.54 (0.53,0.54)	0.54 (0.53,0.54)	3.48 (2.88, 4.24)
	>=9 and <12			4.77 (2.88, 8.37)
	>=12			17.79 (3.63, 321.16)
Age	age	0.71 (0.7,0.72)	0.71 (0.7,0.73)	1.06 (1.06, 1.06)
Age + SOFA Categories	age	0.73 (0.72,0.74)	0.72 (0.71,0.73)	1.06 (1.06, 1.06)
	>=6 & <9			3.1 (2.53, 3.81)
	>=9 and <12			4.88 (2.87, 8.76)
	>=12			21.29 (4.19, 389.17)
Age + SOFA	age	0.75 (0.74,0.76)	0.74 (0.73,0.76)	1.06 (1.05, 1.06)
	SOFA			1.34 (1.3, 1.38)
SOFA + Age + Covariates ^d	SOFA	0.75 (0.74,0.76)	0.74 (0.73,0.76)	1.33 (1.3, 1.37)
	age			1.06 (1.05, 1.06)
	Gender (M vs. F)			1.14 (1.04, 1.24)
	Obesity			0.93 (0.79, 1.09)
	Diabetes			1.17 (1.04, 1.31)
	Hypertension			0.84 (0.75, 0.94)
SOFA + age + elixhauser score	age	0.75 (0.74,0.76)	0.74 (0.73,0.76)	1.06 (1.05, 1.06)
	elixhauser score			1 (0.97, 1.03)
	SOFA			1.34 (1.3, 1.38)
SOFA + elixhauser score	SOFA	0.66 (0.65,0.67)	0.66 (0.64,0.67)	1.41 (1.37, 1.45)
	elixhauser score			1.05 (1.02, 1.07)
Categories SOFA + elixhauser score	>=6 & <9	0.56 (0.55,0.57)	0.55 (0.54,0.57)	3.45 (2.86, 4.2)
	>=9 and <12			4.71 (2.84, 8.26)
	>=12			17.49 (3.57, 315.83)
	elixhauser score			1.06 (1.03, 1.09)

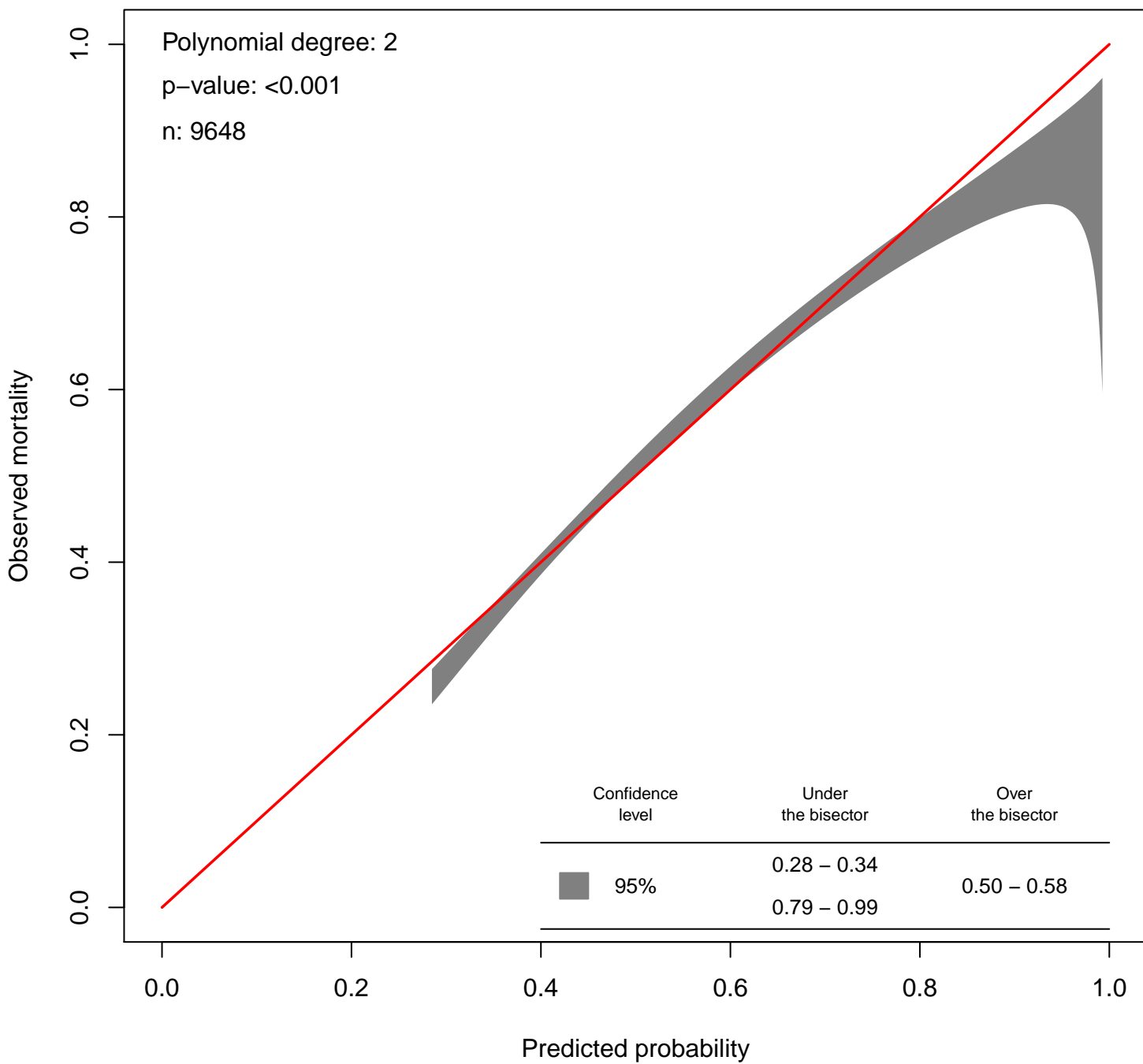
^aSOFA and all components are the scores recorded within the 24 hours prior to the start of ventilation.

^bVariable SOFA category is created based on SOFA variable with the cutoffs of:<6, >=6 & <9, >=9 and <12, and >=12. In the logistic regression model, sofa <6 is served as the reference group.

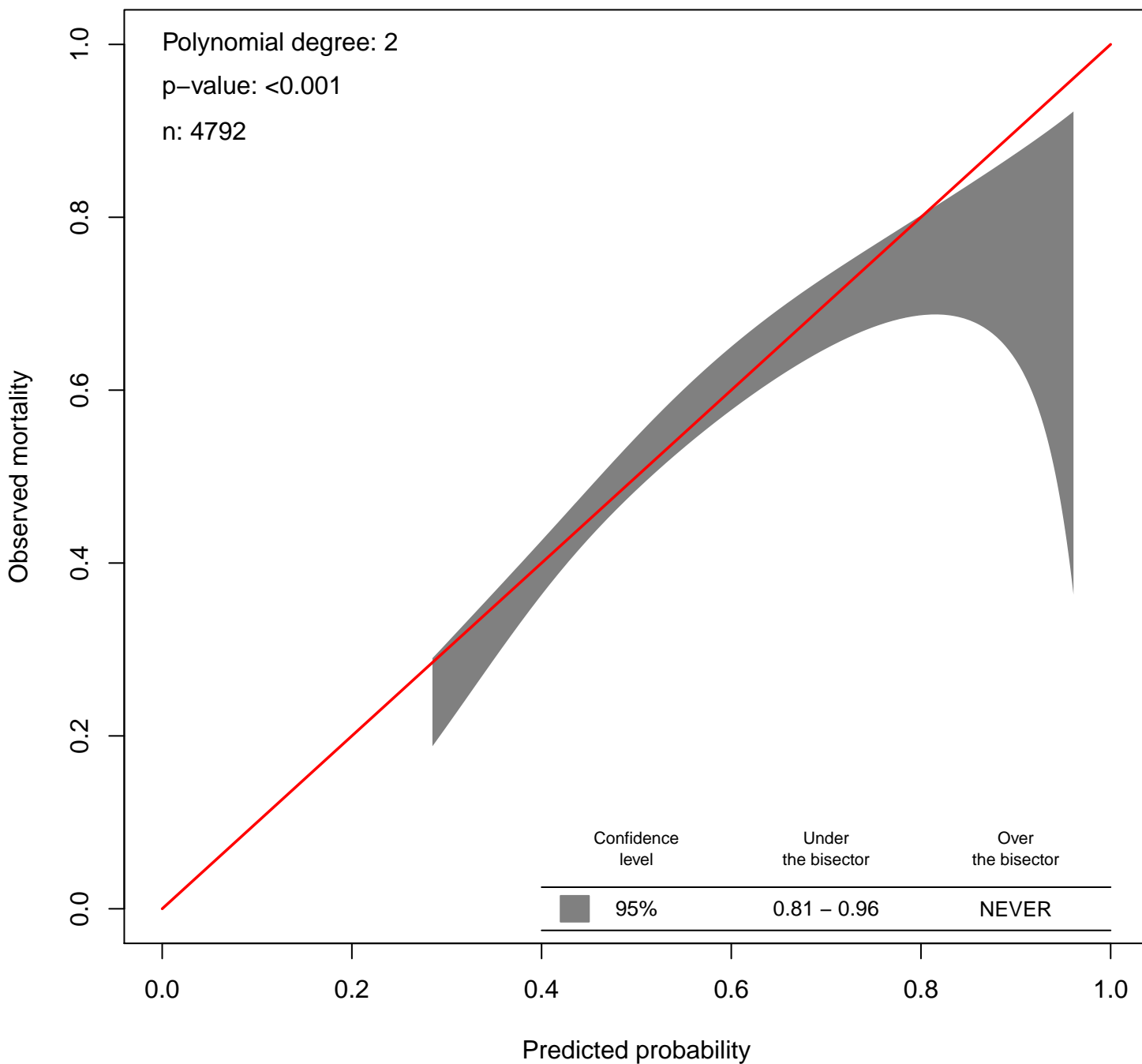
^cOutcome variable has two levels: deceased and discharged, where discharged is served as the reference level.

^dCovariates include age, gender, obesity, hypertension, and diabetes.

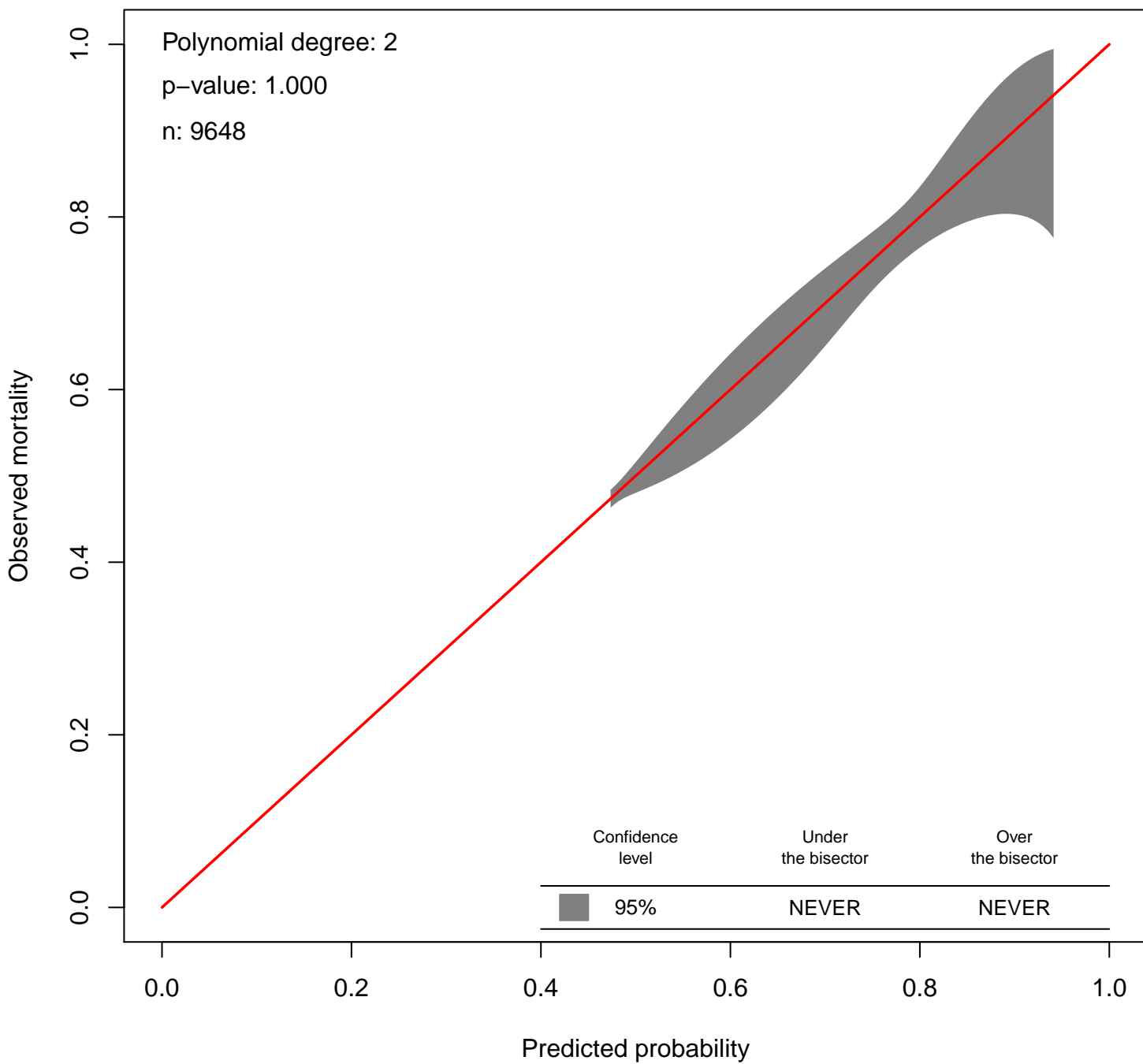
SOFA (continuous), training set



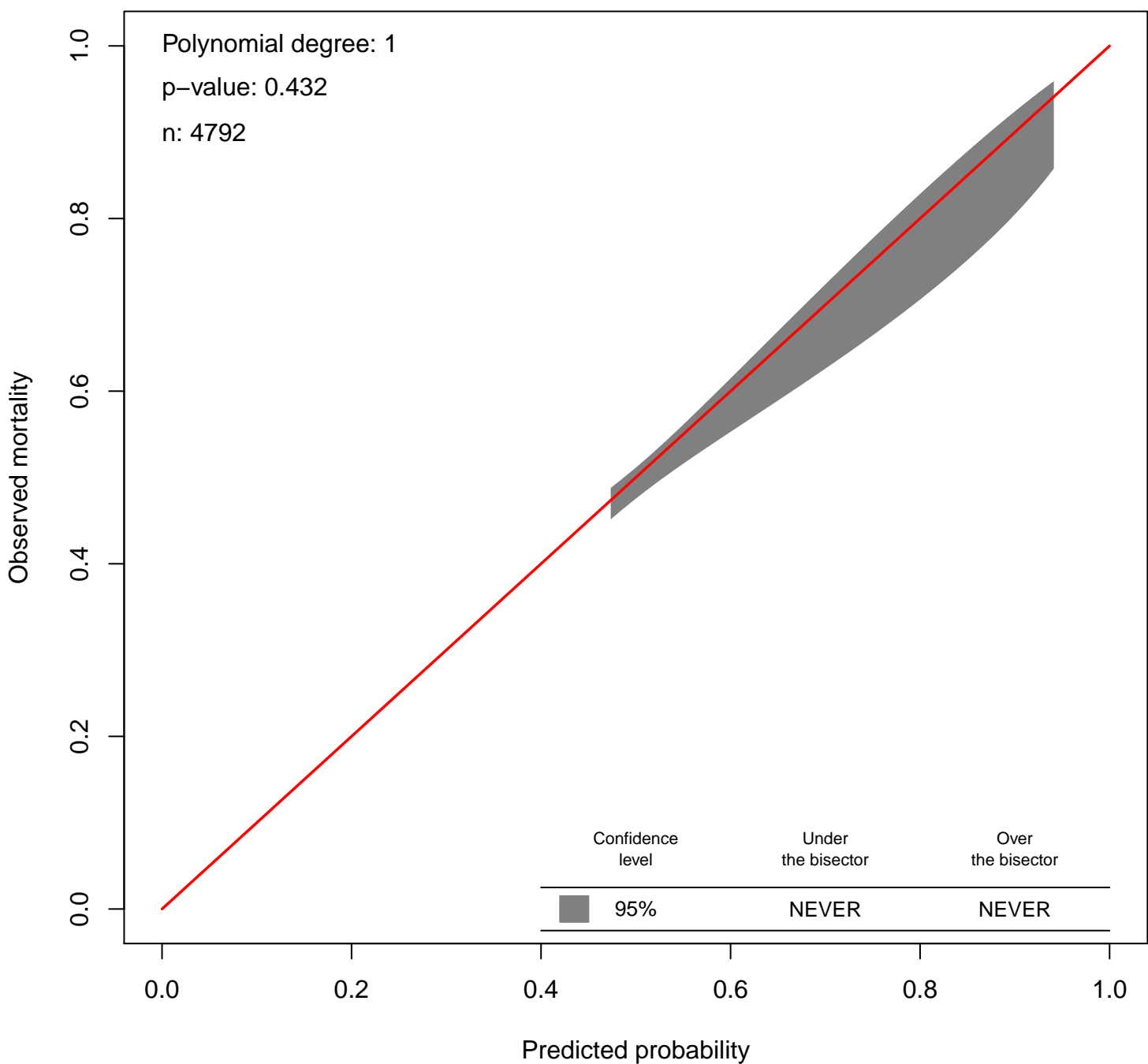
SOFA (continuous), validation set



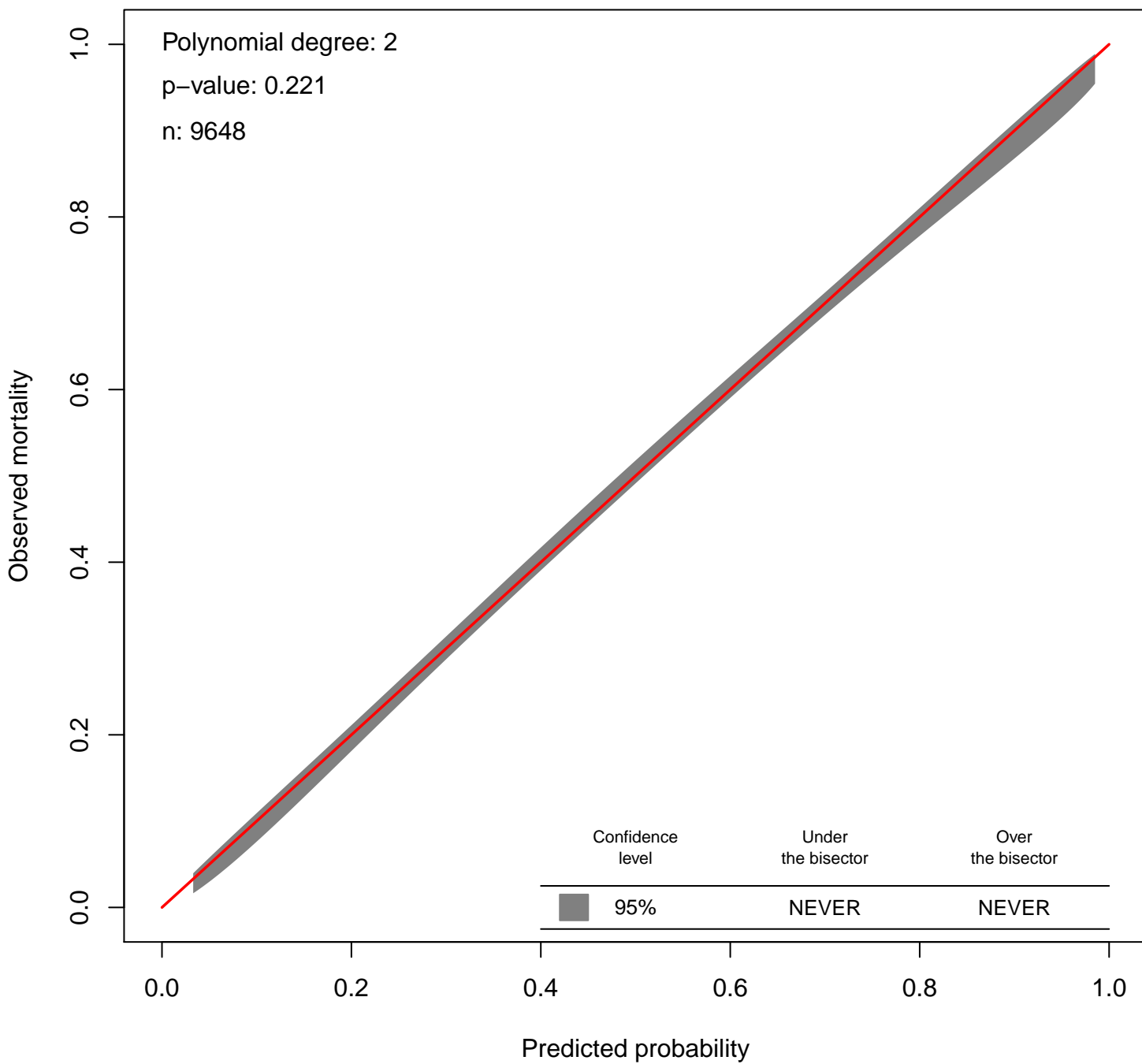
SOFA categories, training set



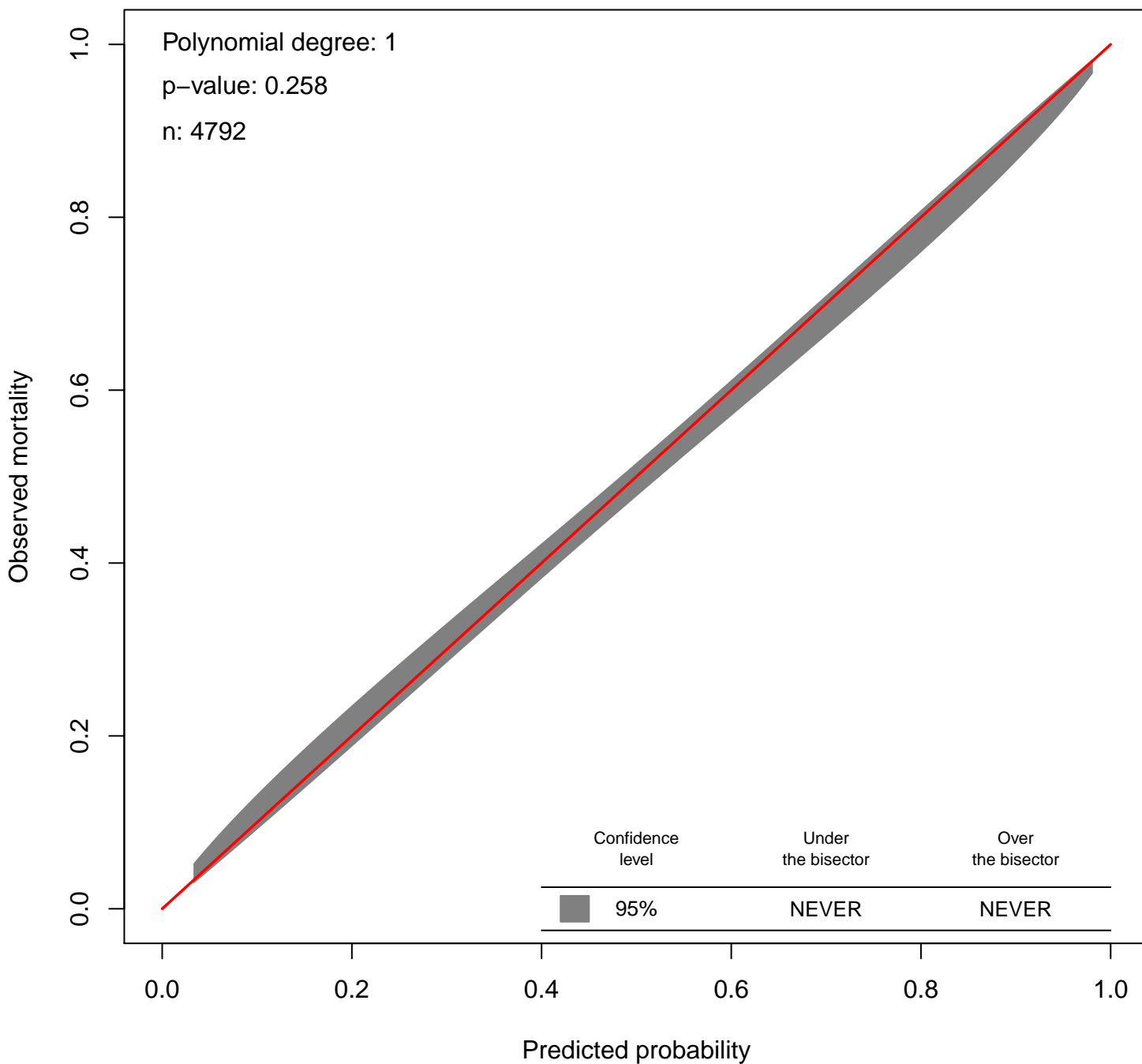
SOFA categories, validation set



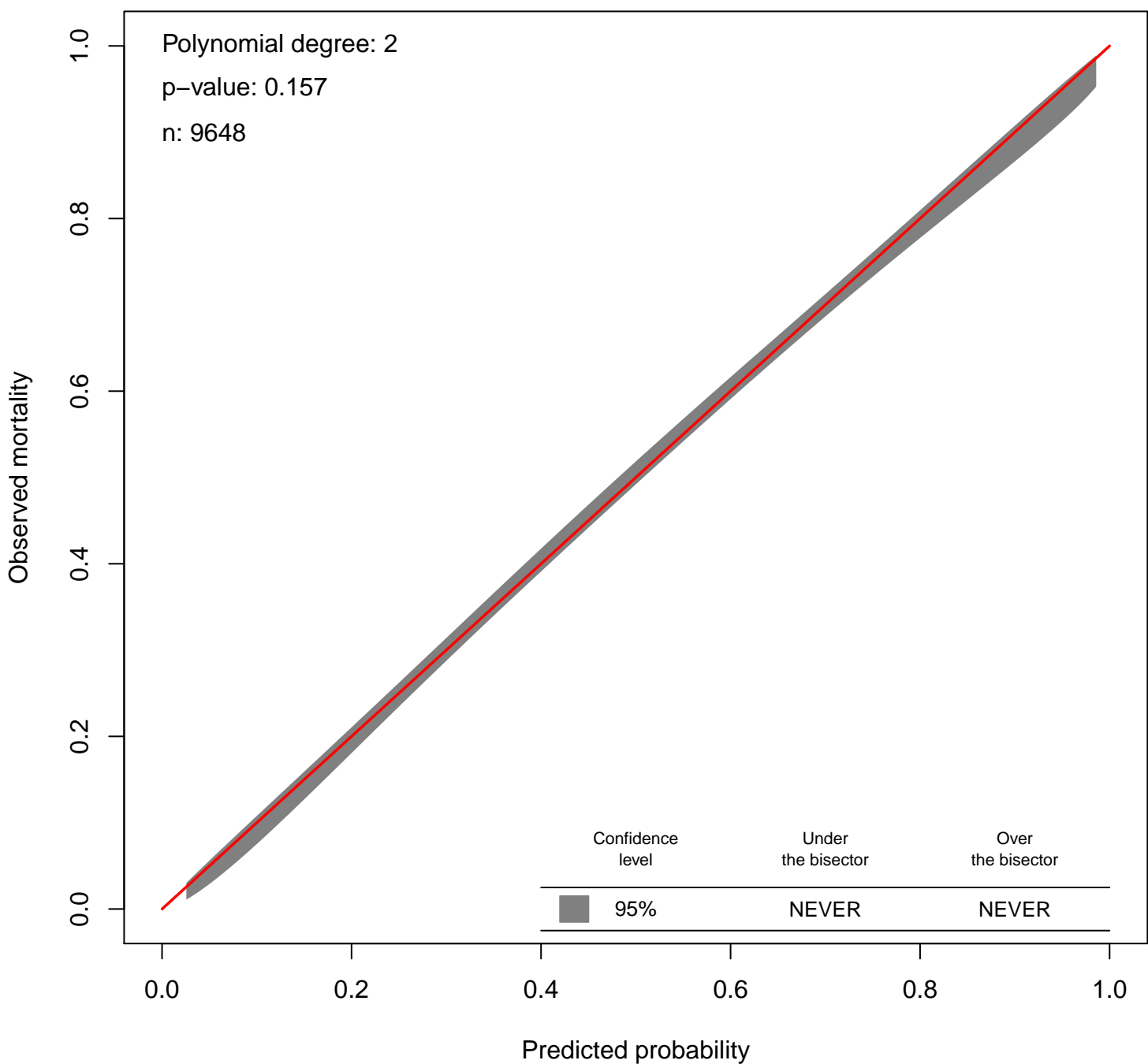
SOFA + Age, training set



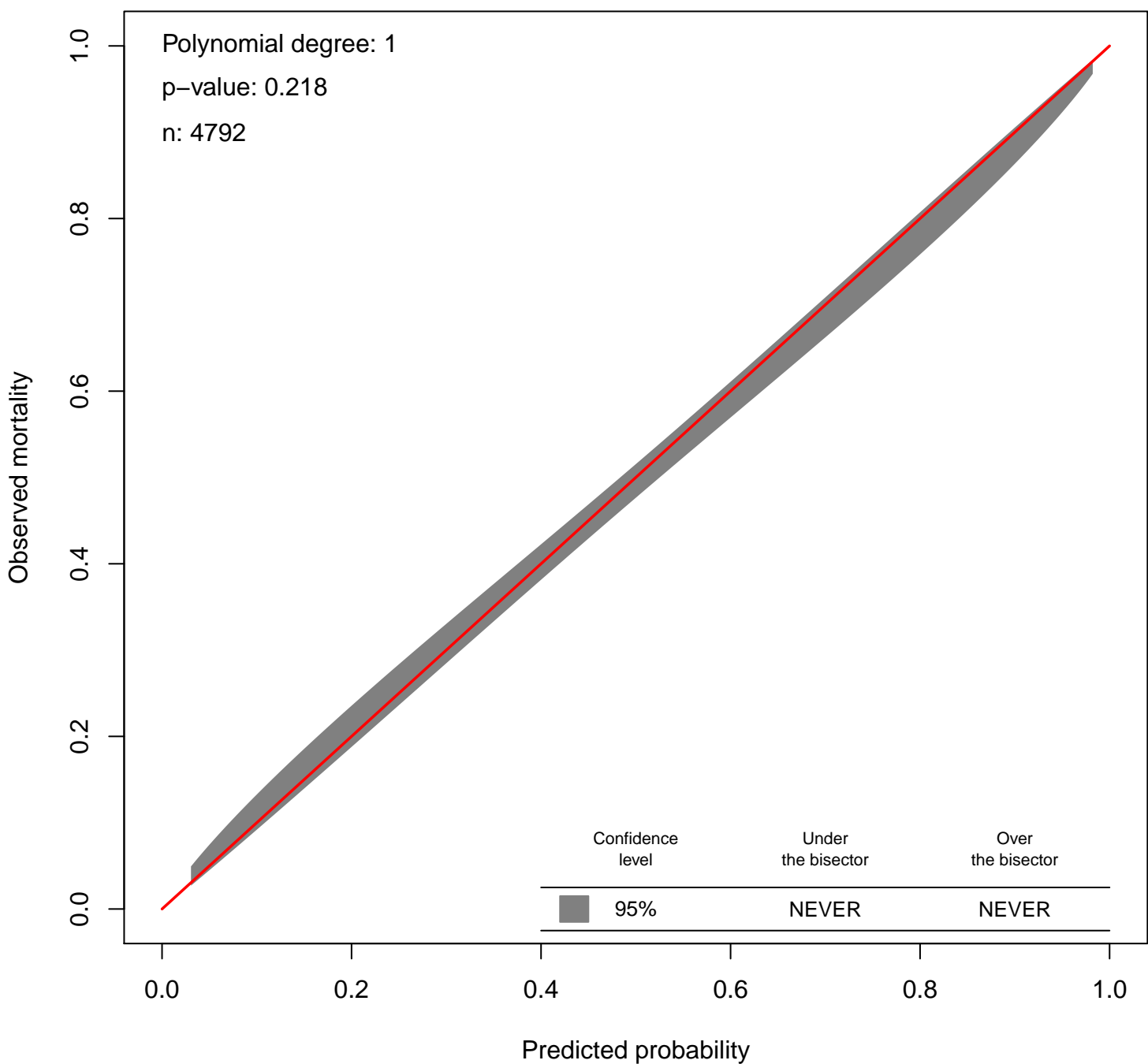
SOFA + Age, validation set



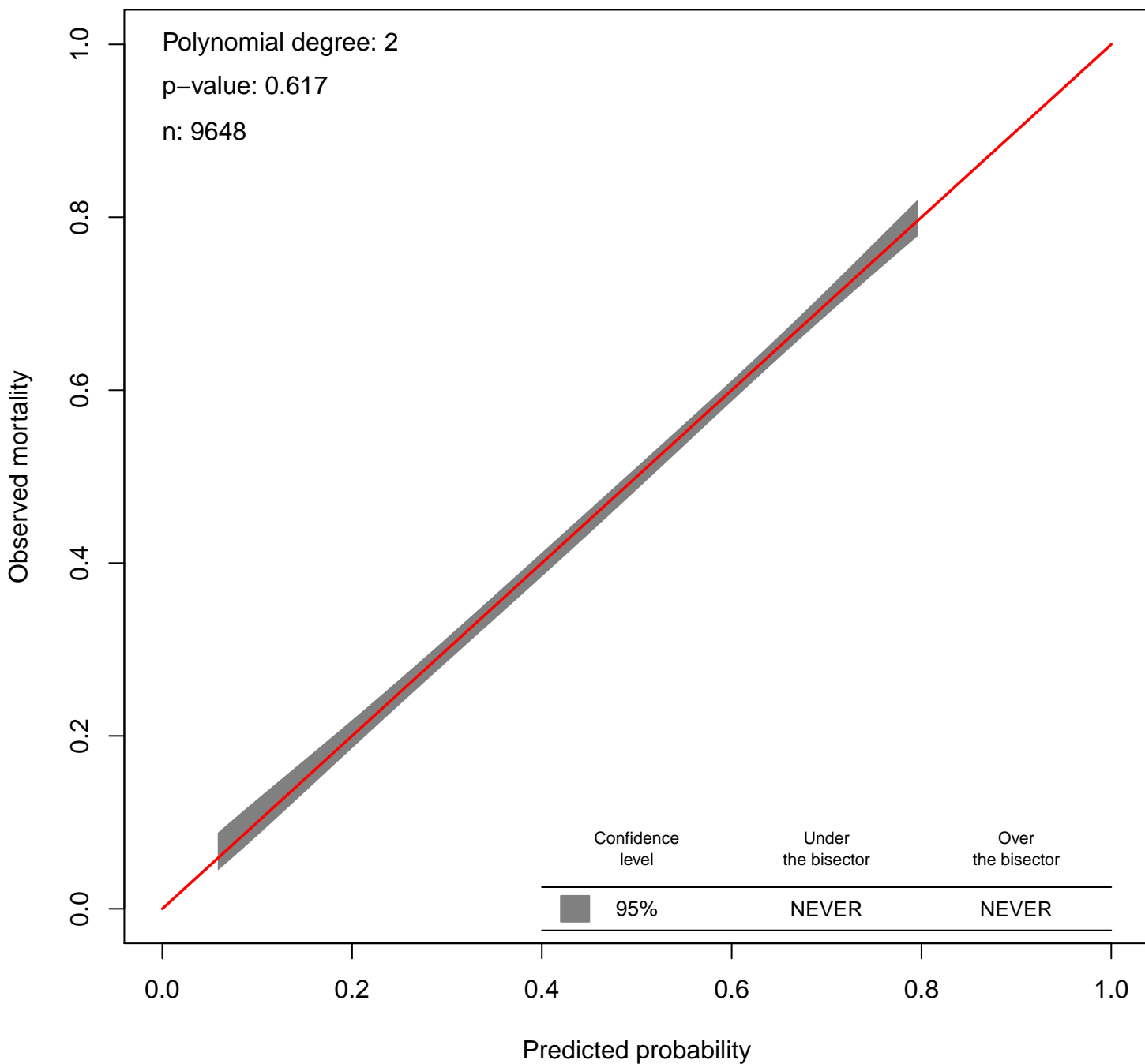
SOFA + Covariates (age + gender + obesity +diabetes + hypertension), training set



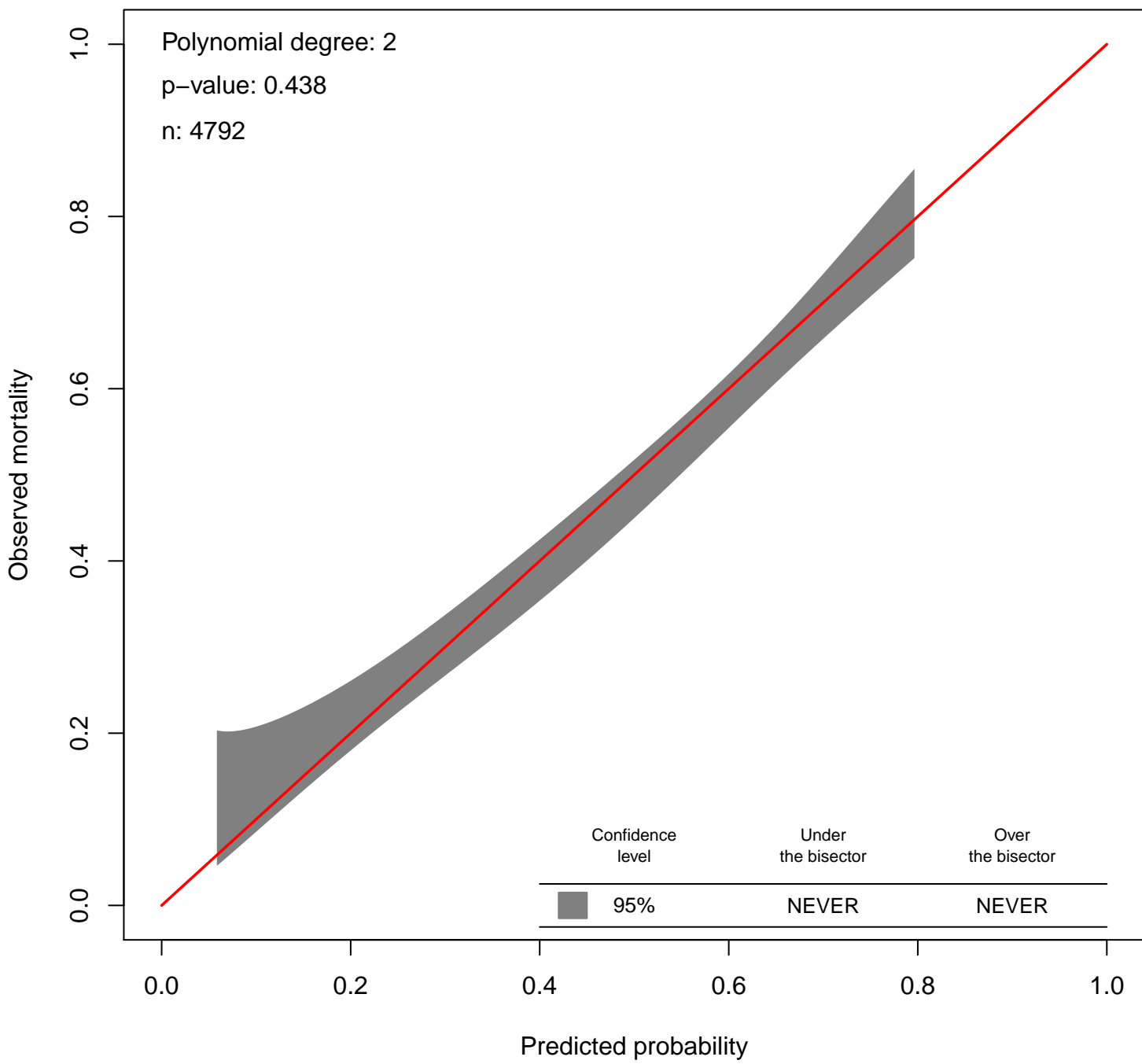
SOFA + Covariates (age + gender + obesity +diabetes + hypertension), validation set



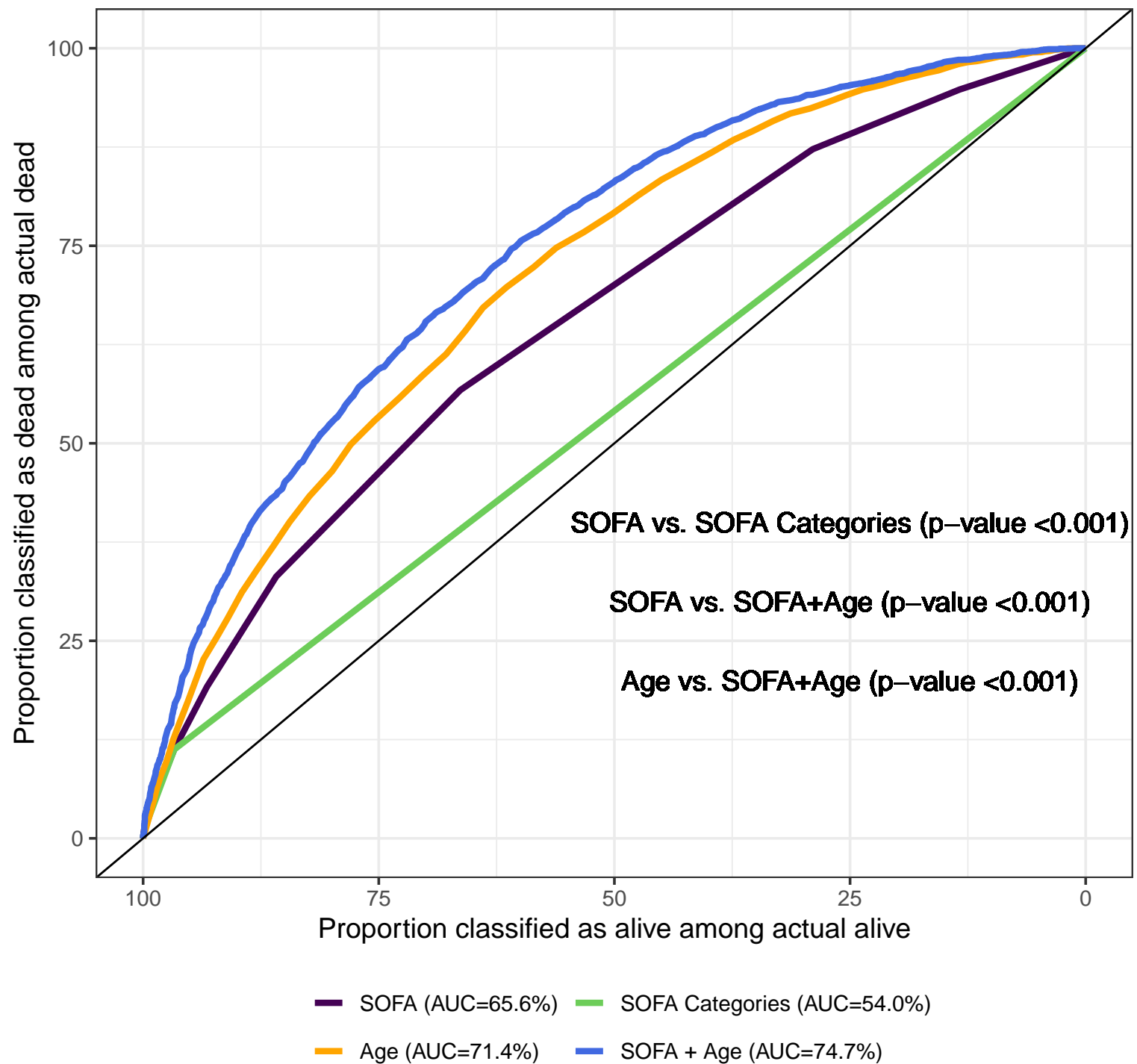
Age, training set



Age, validation set



ROC for in-hospital mortality among ventilated — training set



ROC for in-hospital mortality among ventilated — validation set

