

**Patient Characteristics, training set**

Characteristic	Overall, N = 9,799	Alive, N = 4,932	Dead, N = 4,867	p-value <sup>1</sup>
<b>Age in years</b>				<0.001
<i>N</i>	9,799.00	4,932.00	4,867.00	
<i>Mean (SD)</i>	64.54 (15.28)	58.93 (15.79)	70.24 (12.37)	
<i>Median (IQR)</i>	66.00 (56.00, 76.00)	61.00 (49.00, 70.00)	72.00 (62.50, 80.00)	
<i>Range</i>	17.00, 89.00	17.00, 89.00	17.00, 89.00	
<b>Age (&lt;65, &gt;=65)</b>				<0.001
<65	4,461/9,799 (46%)	3,006/4,932 (61%)	1,455/4,867 (30%)	
>=65	5,338/9,799 (54%)	1,926/4,932 (39%)	3,412/4,867 (70%)	
<b>Sex</b>				0.012
<i>Female</i>	3,974/9,766 (41%)	2,062/4,917 (42%)	1,912/4,849 (39%)	
<i>Male</i>	5,792/9,766 (59%)	2,855/4,917 (58%)	2,937/4,849 (61%)	
<i>Unknown</i>	33	15	18	
<b>Diabetes Mellitus</b>	2,075/9,799 (21%)	1,000/4,932 (20%)	1,075/4,867 (22%)	0.030
<b>Hypertension</b>	2,437/9,799 (25%)	1,199/4,932 (24%)	1,238/4,867 (25%)	0.2
<b>Obesity</b>	934/9,799 (9.5%)	595/4,932 (12%)	339/4,867 (7.0%)	<0.001
<b>PreIntubationSOFA</b>				<0.001
<i>N</i>	9,799.00	4,932.00	4,867.00	

Characteristic	Overall, N = 9,799	Alive, N = 4,932	Dead, N = 4,867	p-value <sup>1</sup>
<i>Mean (SD)</i>	2.68 (1.83)	2.19 (1.52)	3.18 (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	
<b>Pre-intubation, Renal</b>				<0.001
<i>N</i>	9,799.00	4,932.00	4,867.00	
<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	
<b>Pre-intubation, Hepatic</b>				<0.001
<i>N</i>	9,799.00	4,932.00	4,867.00	
<i>Mean (SD)</i>	0.45 (0.87)	0.30 (0.73)	0.60 (0.98)	
<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	
<b>Pre-intubation, Coagulation</b>				<0.001
<i>N</i>	9,799.00	4,932.00	4,867.00	
<i>Mean (SD)</i>	0.22 (0.55)	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 = 9,799	Alive, N = 4,932	Dead, N = 4,867	p-value <sup>1</sup>
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
<b>Pre-intubation, Neurologic</b>				<0.001
<i>N</i>	9,799.00	4,932.00	4,867.00	
<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	
<b>Pre-intubation, Cardiovascular</b>				<0.001
<i>N</i>	9,799.00	4,932.00	4,867.00	
<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	
<b>Pre-intubation, Respiratory</b>				<0.001
<i>N</i>	9,799.00	4,932.00	4,867.00	
<i>Mean (SD)</i>	1.41 (0.81)	1.29 (0.85)	1.53 (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	
<b>PreIntubation_SOFACategory</b>				<0.001

Characteristic	Overall, N = 9,799	Alive, N = 4,932	Dead, N = 4,867	p-value <sup>1</sup>
<i>sofa</i> <6	9,076/9,799 (93%)	4,768/4,932 (97%)	4,308/4,867 (89%)	
6 >= <i>sofa</i> <9	613/9,799 (6.3%)	145/4,932 (2.9%)	468/4,867 (9.6%)	
9 >= <i>sofa</i> <12	93/9,799 (0.9%)	18/4,932 (0.4%)	75/4,867 (1.5%)	
<i>sofa</i> >= 12	17/9,799 (0.2%)	1/4,932 (<0.1%)	16/4,867 (0.3%)	
<b>Elixhauser score</b>				<0.001
<i>N</i>	9,799.00	4,932.00	4,867.00	
<i>Mean (SD)</i>	1.33 (1.61)	1.25 (1.54)	1.41 (1.67)	
<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	

<sup>1</sup>Statistical tests performed: Wilcoxon rank-sum test; chi-square test of independence

**Patient Characteristics, validation set**

Characteristic	Overall, N = 4,879	Alive, N = 2,474	Dead, N = 2,405	p-value <sup>1</sup>
<b>Age in years</b>				<0.001
<i>N</i>	4,879.00	2,474.00	2,405.00	
<i>Mean (SD)</i>	64.35 (15.56)	58.74 (15.80)	70.12 (12.99)	
<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	
<b>Age (&lt;65, &gt;=65)</b>				<0.001
<65	2,242/4,879 (46%)	1,507/2,474 (61%)	735/2,405 (31%)	
>=65	2,637/4,879 (54%)	967/2,474 (39%)	1,670/2,405 (69%)	
<b>Sex</b>				0.073
<i>Female</i>	1,979/4,857 (41%)	1,036/2,466 (42%)	943/2,391 (39%)	
<i>Male</i>	2,878/4,857 (59%)	1,430/2,466 (58%)	1,448/2,391 (61%)	
<i>Unknown</i>	22	8	14	
<b>Diabetes Mellitus</b>	1,031/4,879 (21%)	503/2,474 (20%)	528/2,405 (22%)	0.2
<b>Hypertension</b>	1,169/4,879 (24%)	583/2,474 (24%)	586/2,405 (24%)	0.5
<b>Obesity</b>	487/4,879 (10.0%)	299/2,474 (12%)	188/2,405 (7.8%)	<0.001
<b>PreIntubationSOFA</b>				<0.001
<i>N</i>	4,879.00	2,474.00	2,405.00	

Characteristic	Overall, N = 4,879	Alive, N = 2,474	Dead, N = 2,405	p-value <sup>1</sup>
<i>Mean (SD)</i>	2.67 (1.81)	2.20 (1.59)	3.17 (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	
<b>Pre-intubation, Renal</b>				<0.001
<i>N</i>	4,879.00	2,474.00	2,405.00	
<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	
<b>Pre-intubation, Hepatic</b>				<0.001
<i>N</i>	4,879.00	2,474.00	2,405.00	
<i>Mean (SD)</i>	0.45 (0.87)	0.31 (0.75)	0.58 (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	
<b>Pre-intubation, Coagulation</b>				<0.001
<i>N</i>	4,879.00	2,474.00	2,405.00	
<i>Mean (SD)</i>	0.24 (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 = 4,879	Alive, N = 2,474	Dead, N = 2,405	p-value <sup>1</sup>
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
<b>Pre-intubation, Neurologic</b>				<0.001
<i>N</i>	4,879.00	2,474.00	2,405.00	
<i>Mean (SD)</i>	0.25 (0.62)	0.14 (0.45)	0.36 (0.74)	
<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	
<b>Pre-intubation, Cardiovascular</b>				<0.001
<i>N</i>	4,879.00	2,474.00	2,405.00	
<i>Mean (SD)</i>	0.27 (0.56)	0.25 (0.53)	0.30 (0.59)	
<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	
<b>Pre-intubation, Respiratory</b>				<0.001
<i>N</i>	4,879.00	2,474.00	2,405.00	
<i>Mean (SD)</i>	1.38 (0.83)	1.25 (0.86)	1.51 (0.77)	
<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	
<b>PreIntubation_SOFACategory</b>				<0.001

Characteristic	Overall, N = 4,879	Alive, N = 2,474	Dead, N = 2,405	p-value <sup>1</sup>
<i>sofa</i> <6	4,530/4,879 (93%)	2,384/2,474 (96%)	2,146/2,405 (89%)	
6 >= <i>sofa</i> <9	293/4,879 (6.0%)	78/2,474 (3.2%)	215/2,405 (8.9%)	
9 >= <i>sofa</i> <12	54/4,879 (1.1%)	12/2,474 (0.5%)	42/2,405 (1.7%)	
<i>sofa</i> >= 12	2/4,879 (<0.1%)	0/2,474 (0%)	2/2,405 (<0.1%)	
<b>Elixhauser score</b>				<0.001
<i>N</i>	4,879.00	2,474.00	2,405.00	
<i>Mean (SD)</i>	1.34 (1.61)	1.26 (1.56)	1.42 (1.66)	
<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, 13.00	0.00, 10.00	0.00, 13.00	

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



**Patient Characteristics, training + validation set**

Characteristic	Overall, N = 14,678	Alive, N = 7,406	Dead, N = 7,272	p-value <sup>1</sup>
<b>AGE</b>				<0.001
<i>N</i>	14,678.00	7,406.00	7,272.00	
<i>Mean (SD)</i>	64.48 (15.37)	58.87 (15.80)	70.20 (12.57)	
<i>Median (IQR)</i>	66.00 (56.00, 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	
<b>Age (&lt;65, &gt;=65)</b>				<0.001
<65	6,703/14,678 (46%)	4,513/7,406 (61%)	2,190/7,272 (30%)	
>=65	7,975/14,678 (54%)	2,893/7,406 (39%)	5,082/7,272 (70%)	
<b>Sex</b>				0.002
<i>Female</i>	5,953/14,623 (41%)	3,098/7,383 (42%)	2,855/7,240 (39%)	
<i>Male</i>	8,670/14,623 (59%)	4,285/7,383 (58%)	4,385/7,240 (61%)	
<i>Unknown</i>	55	23	32	
<b>Diabetes Mellitus</b>	3,106/14,678 (21%)	1,503/7,406 (20%)	1,603/7,272 (22%)	0.010
<b>Hypertension</b>	3,606/14,678 (25%)	1,782/7,406 (24%)	1,824/7,272 (25%)	0.2
<b>Obesity</b>	1,421/14,678 (9.7%)	894/7,406 (12%)	527/7,272 (7.2%)	<0.001
<b>PreIntubationSOFA</b>				<0.001
<i>N</i>	14,678.00	7,406.00	7,272.00	

Characteristic	Overall, N = 14,678	Alive, N = 7,406	Dead, N = 7,272	p-value <sup>1</sup>
<i>Mean (SD)</i>	2.68 (1.82)	2.19 (1.54)	3.18 (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	
<b>Pre-intubation, Renal</b>				<0.001
<i>N</i>	14,678.00	7,406.00	7,272.00	
<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	
<b>Pre-intubation, Hepatic</b>				<0.001
<i>N</i>	14,678.00	7,406.00	7,272.00	
<i>Mean (SD)</i>	0.45 (0.87)	0.30 (0.73)	0.59 (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	
<b>Pre-intubation, Coagulation</b>				<0.001
<i>N</i>	14,678.00	7,406.00	7,272.00	
<i>Mean (SD)</i>	0.22 (0.56)	0.16 (0.47)	0.29 (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 = 14,678	Alive, N = 7,406	Dead, N = 7,272	p-value <sup>1</sup>
<i>Range</i>	0.00, 4.00	0.00, 4.00	0.00, 4.00	
<b>Pre-intubation, Neurologic</b>				<0.001
<i>N</i>	14,678.00	7,406.00	7,272.00	
<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	
<b>Pre-intubation, Cardiovascular</b>				<0.001
<i>N</i>	14,678.00	7,406.00	7,272.00	
<i>Mean (SD)</i>	0.28 (0.57)	0.25 (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	
<b>Pre-intubation, Respiratory</b>				<0.001
<i>N</i>	14,678.00	7,406.00	7,272.00	
<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	
<b>PreIntubation_SOFACategory</b>				<0.001

Characteristic	Overall, N = 14,678	Alive, N = 7,406	Dead, N = 7,272	p-value <sup>1</sup>
<i>sofa</i> <6	13,606/14,678 (93%)	7,152/7,406 (97%)	6,454/7,272 (89%)	
6 >= <i>sofa</i> <9	906/14,678 (6.2%)	223/7,406 (3.0%)	683/7,272 (9.4%)	
9 >= <i>sofa</i> <12	147/14,678 (1.0%)	30/7,406 (0.4%)	117/7,272 (1.6%)	
<i>sofa</i> >= 12	19/14,678 (0.1%)	1/7,406 (<0.1%)	18/7,272 (0.2%)	
<b>ElixhauserScore</b>				<0.001
<i>N</i>	14,678.00	7,406.00	7,272.00	
<i>Mean (SD)</i>	1.33 (1.61)	1.25 (1.55)	1.41 (1.66)	
<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, 13.00	0.00, 12.00	0.00, 13.00	

<sup>1</sup>Statistical tests performed: Wilcoxon rank-sum test; chi-square test of independence

# Prediction of death among ventilated

## Sensitivity Analysis: excluded participants with ESRD 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 (0.644,0.665)	0.655 (0.64,0.67)	SOFA
SOFA	0.654 (0.644,0.665)	0.655 (0.64,0.67)	SOFA
SOFA categories**	0.5	0.5	None
Pulmonary	0.572 (0.562,0.582)	0.582 (0.568,0.596)	Pulmonary sofa
Renal	0.5	0.5	None
Heme	0.542 (0.534,0.549)	0.533 (0.522,0.544)	Heme sofa
Neuro	0.563 (0.556,0.57)	0.566 (0.555,0.576)	Neuro sofa
Liver	0.586 (0.577,0.595)	0.58 (0.567,0.592)	Liver sofa
Cardio	0.521 (0.512,0.529)	0.521 (0.509,0.533)	Cardio sofa
SOFA & all components + covariates*	0.72 (0.71,0.73)	0.713 (0.698,0.727)	age, SOFA
SOFA + covariates*	0.72 (0.71,0.73)	0.713 (0.698,0.727)	age, SOFA
Pulmonary + covariates*	0.709 (0.699,0.719)	0.706 (0.692,0.72)	age, Pulmonary sofa
Renal + covariates*	0.705 (0.695,0.715)	0.701 (0.687,0.715)	age
Heme+ covariates*	0.705 (0.695,0.715)	0.701 (0.687,0.715)	age
Neuro+ covariates*	0.705 (0.695,0.715)	0.701 (0.687,0.715)	age
Liver + covariates*	0.71 (0.7,0.72)	0.706 (0.692,0.72)	age, Liver sofa
Cardio + covariates*	0.705 (0.695,0.715)	0.701 (0.687,0.715)	age
covariates*	0.705 (0.695,0.715)	0.701 (0.687,0.715)	age
SOFA + age	0.72 (0.71,0.73)	0.713 (0.698,0.727)	age, SOFA
SOFA categories + age	0.705 (0.695,0.715)	0.701 (0.687,0.715)	age
SOFA + elixhauser score	0.654 (0.644,0.665)	0.655 (0.64,0.67)	SOFA
SOFA categories + elixhauser score	0.522 (0.513,0.532)	0.52 (0.506,0.534)	elixhauser score
age	0.705 (0.695,0.715)	0.701 (0.687,0.715)	age
age + elixhauser score	0.705 (0.695,0.715)	0.701 (0.687,0.715)	age
SOFA & all components + age + elixhauser score	0.72 (0.71,0.73)	0.713 (0.698,0.727)	age, SOFA
SOFA + age + elixhauser score	0.72 (0.71,0.73)	0.713 (0.698,0.727)	age, SOFA
Pulmonary + age + elixhauser score	0.709 (0.699,0.719)	0.706 (0.692,0.72)	age, Pulmonary sofa
Renal + age + elixhauser score	0.705 (0.695,0.715)	0.701 (0.687,0.715)	age
Heme+ age + elixhauser score	0.705 (0.695,0.715)	0.701 (0.687,0.715)	age
Neuro+ age + elixhauser score	0.705 (0.695,0.715)	0.701 (0.687,0.715)	age
Liver + age + elixhauser score	0.71 (0.7,0.72)	0.706 (0.692,0.72)	age, Liver sofa

Cardio + age + elixhauser score	0.705 (0.695,0.715)	0.701 (0.687,0.715)	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 (0.54,0.55)	0.54 (0.53,0.54)	3.57 (2.96, 4.34)
	≥9 and <12			4.61 (2.82, 7.96)
	≥12			17.71 (3.61, 319.7)
Six sofa components	Pulmonary	0.67 (0.66,0.68)	0.67 (0.65,0.68)	1.52 (1.44, 1.6)
	Renal			1.47 (1.3, 1.67)
	Heme			1.44 (1.32, 1.56)
	Neuro			1.68 (1.55, 1.82)
	Liver			1.47 (1.39, 1.55)
	Cardio			0.98 (0.91, 1.06)
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)			1.15 (1.05, 1.25)
	Obesity			0.92 (0.79, 1.08)
	Diabetes			1.18 (1.05, 1.33)
	Hypertension			0.82 (0.74, 0.92)
Six sofa components+ covariates*	Pulmonary	0.75 (0.74,0.76)	0.75 (0.73,0.76)	1.5 (1.41, 1.58)
	Renal			1.61 (1.42, 1.84)
	Heme			1.38 (1.26, 1.5)
	Neuro			1.36 (1.26, 1.48)
	Liver			1.34 (1.27, 1.41)
	Cardio			1.02 (0.94, 1.1)
	age			1.06 (1.05, 1.06)
	Gender (M vs. F)			1.12 (1.02, 1.23)
	Obesity			0.92 (0.78, 1.08)

	Diabetes			1.18 (1.05, 1.33)
	Hypertension			0.82 (0.73, 0.91)
age	age	0.71 (0.7,0.72)	0.71 (0.7,0.73)	1.06 (1.05, 1.06)
age + SOFA Categories	age	0.73 (0.72,0.74)	0.72 (0.71,0.74)	1.06 (1.05, 1.06)
	>=6 & <9			3.2 (2.62, 3.92)
	>=9 and <12			4.7 (2.8, 8.3)
	>=12			21.29 (4.19, 388.98)
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			1.01 (0.99, 1.04)
SOFA + elixhauser score	SOFA	0.66 (0.65,0.67)	0.66 (0.65,0.68)	1.41 (1.37, 1.44)
	elixhauser score			1.04 (1.02, 1.07)
Categories SOFA + elixhauser score	>=6 & <9	0.56 (0.55,0.57)	0.56 (0.54,0.57)	3.53 (2.93, 4.29)
	>=9 and <12			4.55 (2.78, 7.85)
	>=12			17.45 (3.56, 315.21)
	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, 1.02)
	SOFA			1.34 (1.3, 1.38)
Pulmonary + Renal +Heme+ Neuro + Liver + Cardio + age + elixhauser score	Renal	0.75 (0.74,0.76)	0.75 (0.73,0.76)	1.63 (1.43, 1.85)
	Pulmonary			1.5 (1.41, 1.58)
	Heme			1.38 (1.26, 1.51)
	Neuro			1.37 (1.26, 1.49)
	Liver			1.35 (1.28, 1.42)
	Cardio			1.02 (0.94, 1.1)
	age			1.06 (1.05, 1.06)
	elixhauser score			1 (0.97, 1.02)

\*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) <sup>c</sup>
SOFA <sup>a</sup>	SOFA	0.66 (0.65,0.67)	0.66 (0.64,0.67)	1.41 (1.37, 1.45)
SOFA categories <sup>b</sup>	>=6 & <9	0.54 (0.54,0.55)	0.54 (0.53,0.54)	3.57 (2.96, 4.34)
	>=9 and <12			4.61 (2.82, 7.96)
	>=12			17.71 (3.61, 319.7)
Age	age	0.71 (0.7,0.72)	0.71 (0.7,0.73)	1.06 (1.05, 1.06)
Age + SOFA Categories	age	0.73 (0.72,0.74)	0.72 (0.71,0.74)	1.06 (1.05, 1.06)
	>=6 & <9			3.2 (2.62, 3.92)
	>=9 and <12			4.7 (2.8, 8.3)
	>=12			21.29 (4.19, 388.98)
Age + SOFA	age	0.75 (0.74,0.76)	0.74 (0.73,0.76)	1.06 (1.05, 1.06)
SOFA + Age + Covariates <sup>d</sup>	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)			1.15 (1.05, 1.25)
	Obesity			0.92 (0.79, 1.08)
	Diabetes			1.18 (1.05, 1.33)
	Hypertension			0.82 (0.74, 0.92)
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, 1.02)
	SOFA			1.34 (1.3, 1.38)
SOFA + elixhauser score	SOFA	0.66 (0.65,0.67)	0.66 (0.65,0.68)	1.41 (1.37, 1.44)
	elixhauser score			1.04 (1.02, 1.07)
Categories SOFA + elixhauser score	>=6 & <9	0.56 (0.55,0.57)	0.56 (0.54,0.57)	3.53 (2.93, 4.29)
	>=9 and <12			4.55 (2.78, 7.85)
	>=12			17.45 (3.56, 315.21)
	elixhauser score			1.06 (1.03, 1.09)

<sup>a</sup>SOFA and all components are the scores recorded within the 24 hours prior to the start of ventilation.

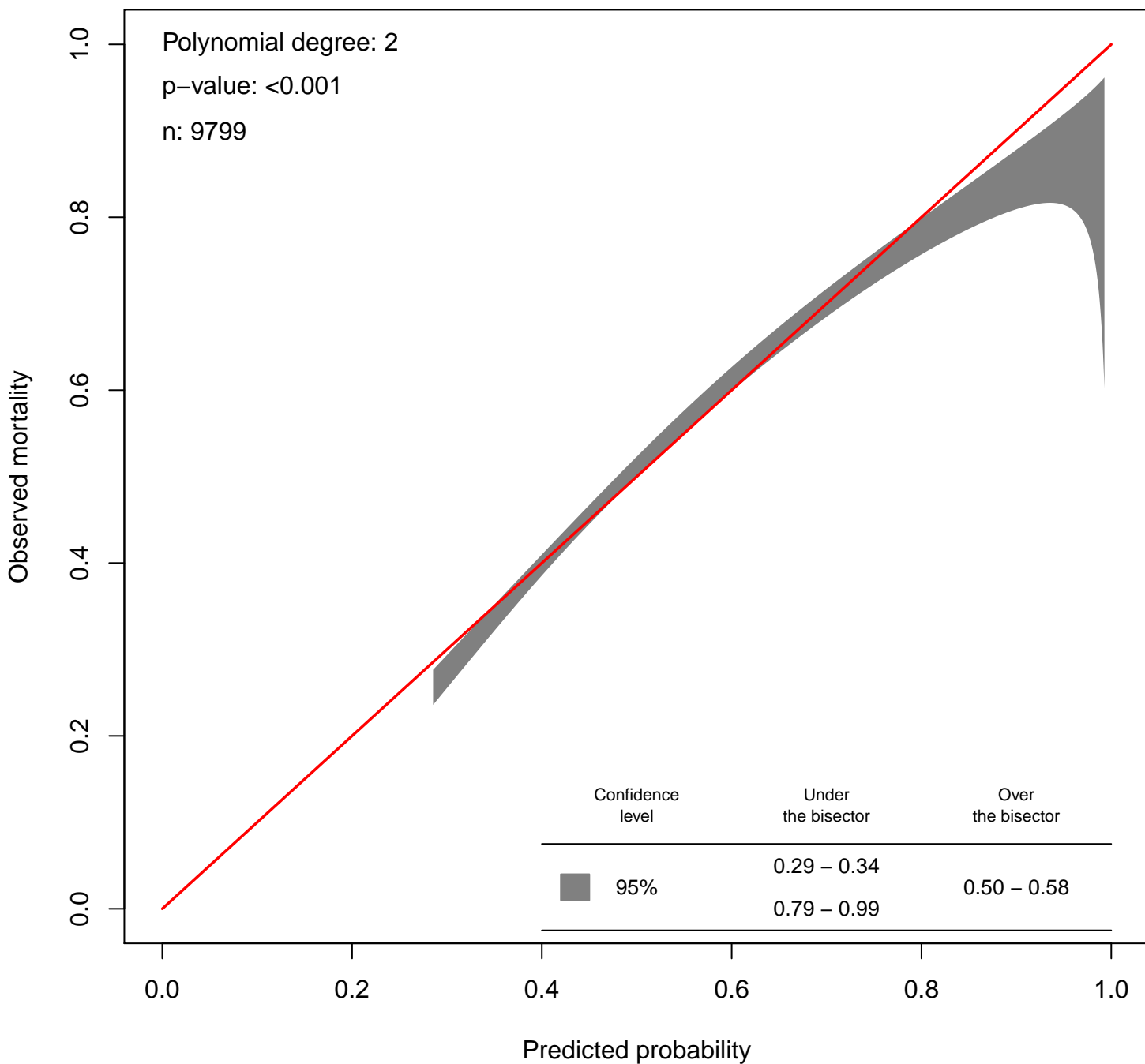
<sup>b</sup>Variable SOFA category is created based on SOFA variable with the cutoffs of: <6, >=6 & <9, >=9 and <12, and >=12. In the logistic regression model, sofa <6 is served as the reference group.

<sup>c</sup>Outcome variable has two levels: deceased and discharged, where discharged is served as the reference level.

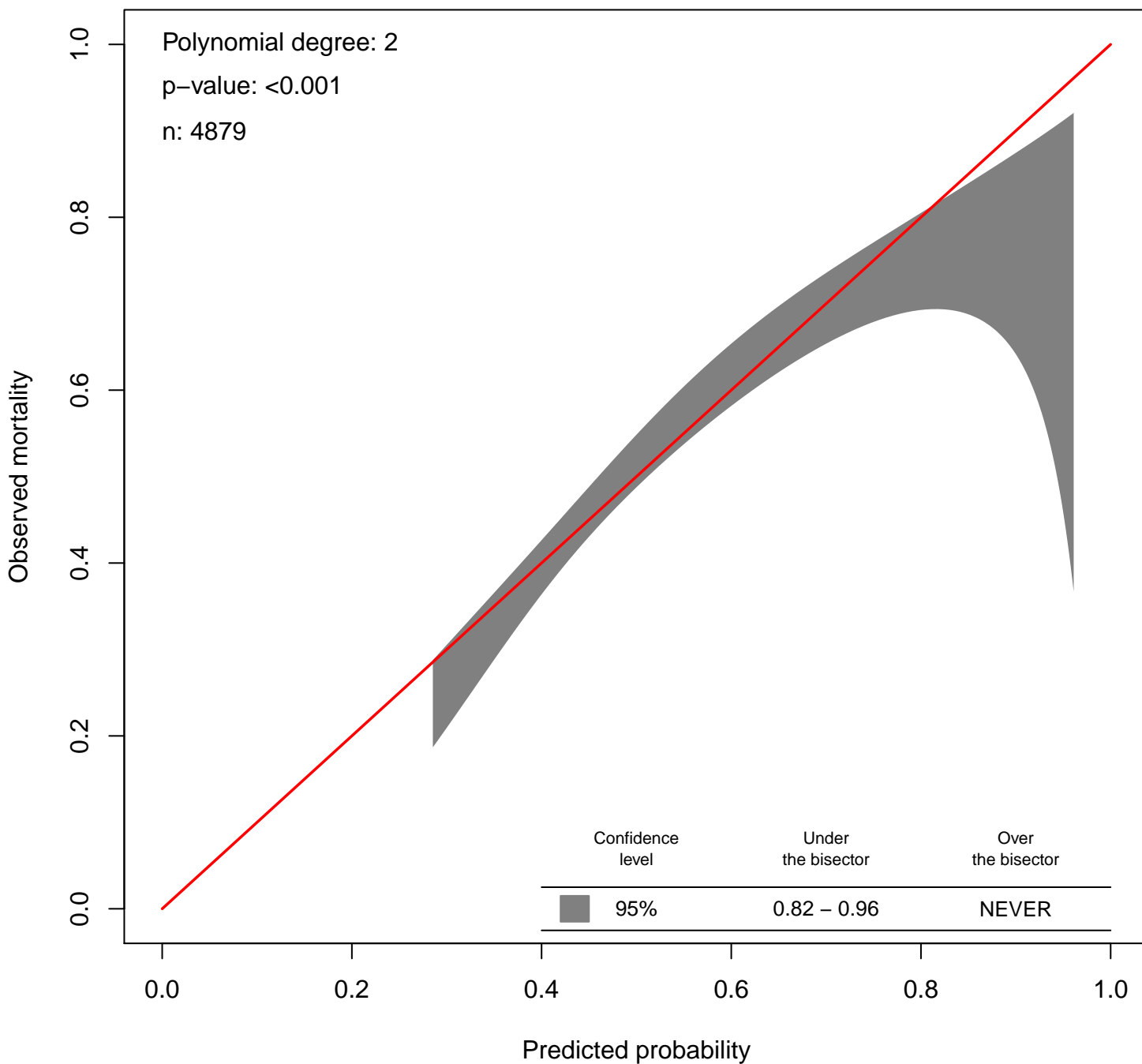
<sup>d</sup>Covariates include age, gender, obesity, hypertension, and diabetes.



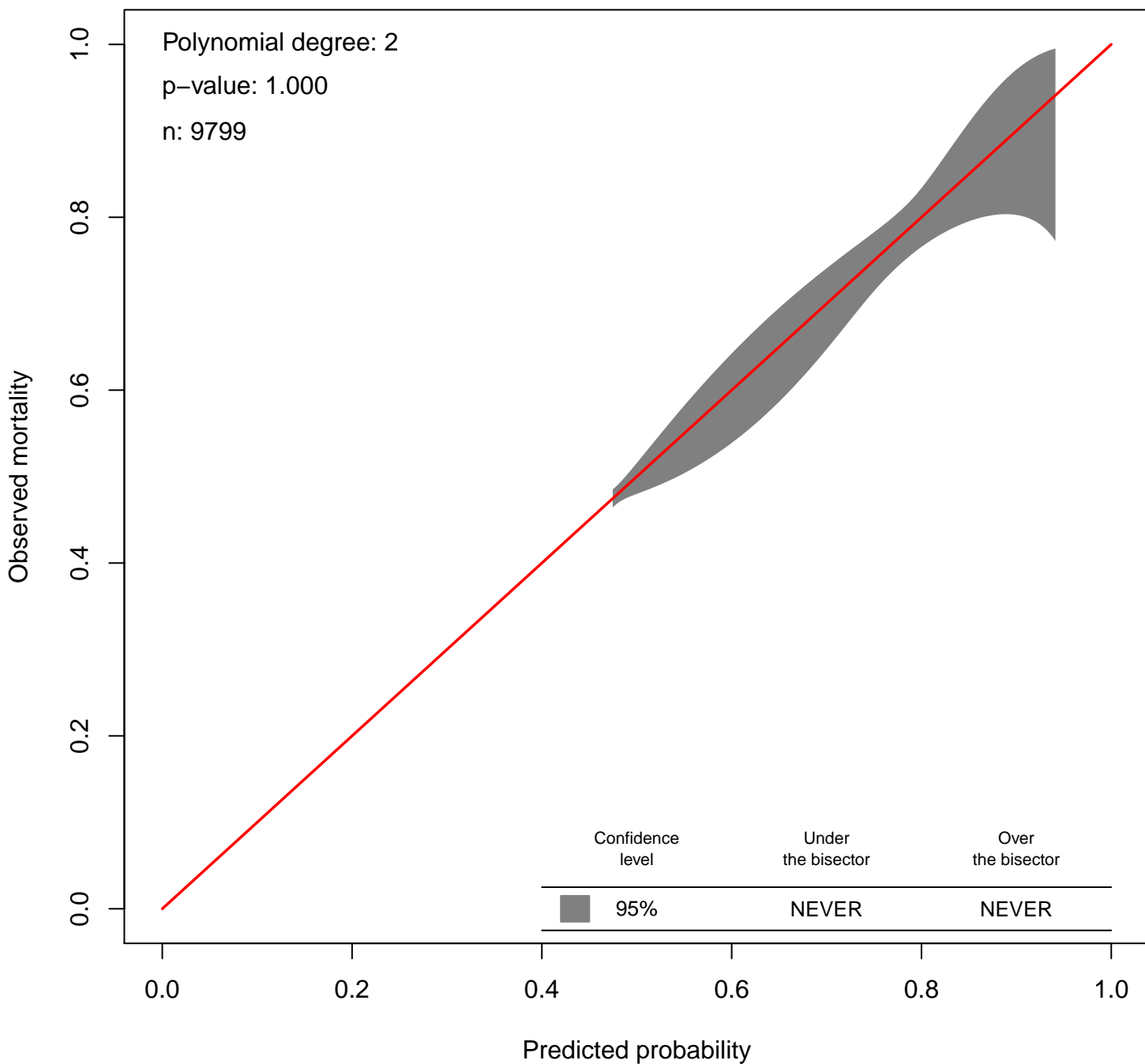
# SOFA (continuous), training set



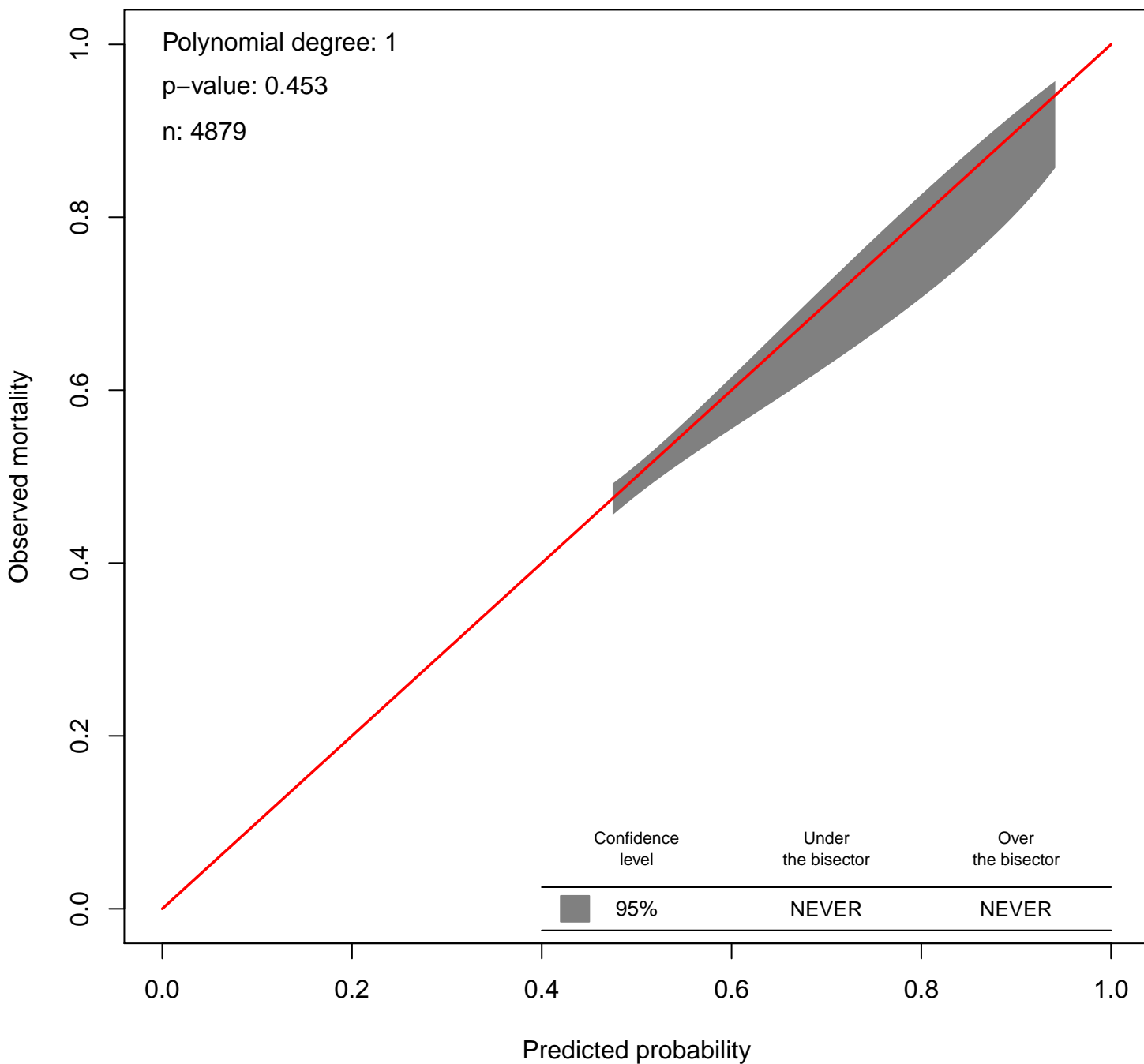
## SOFA (continuous), validation set



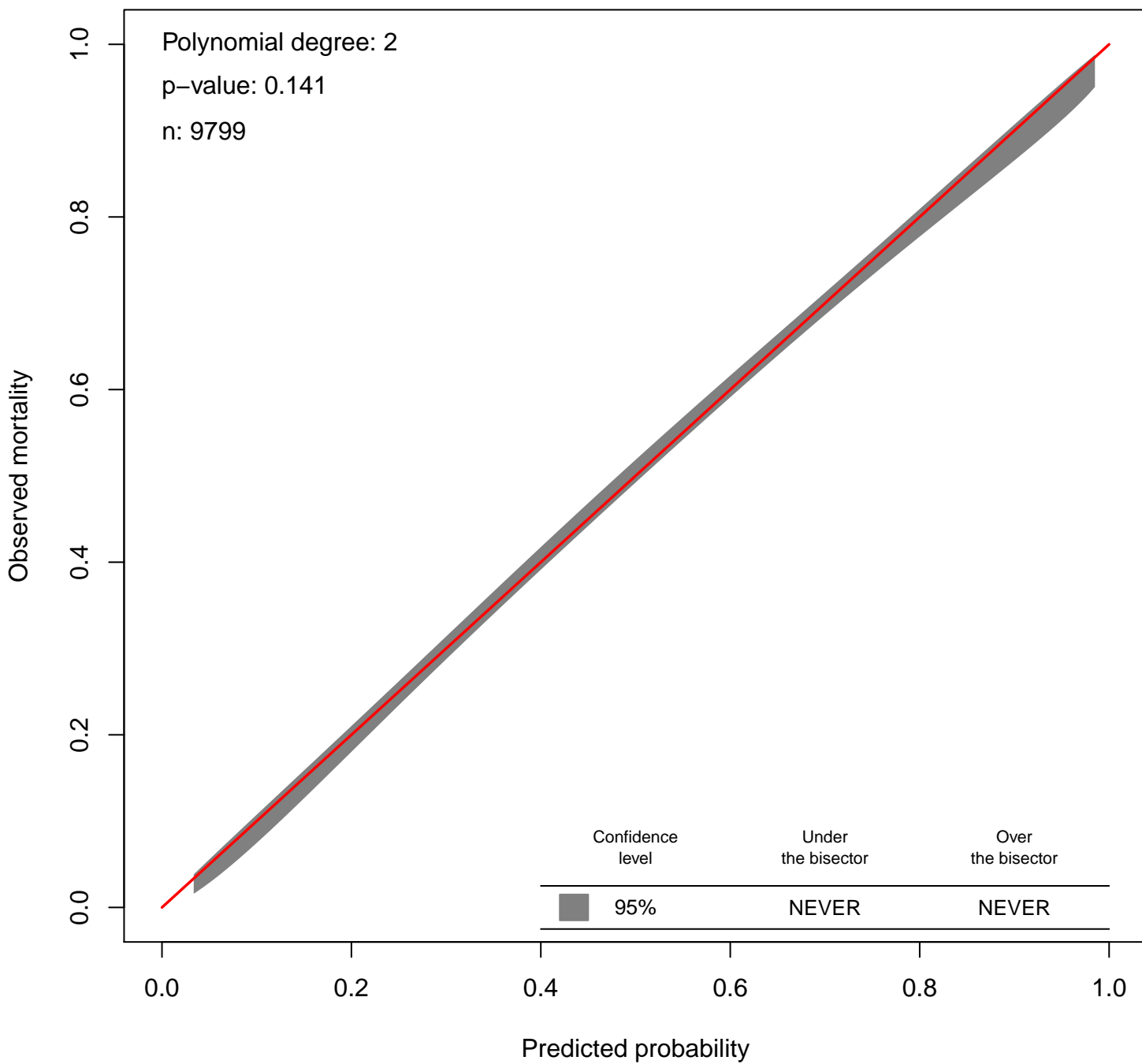
# SOFA categories, training set



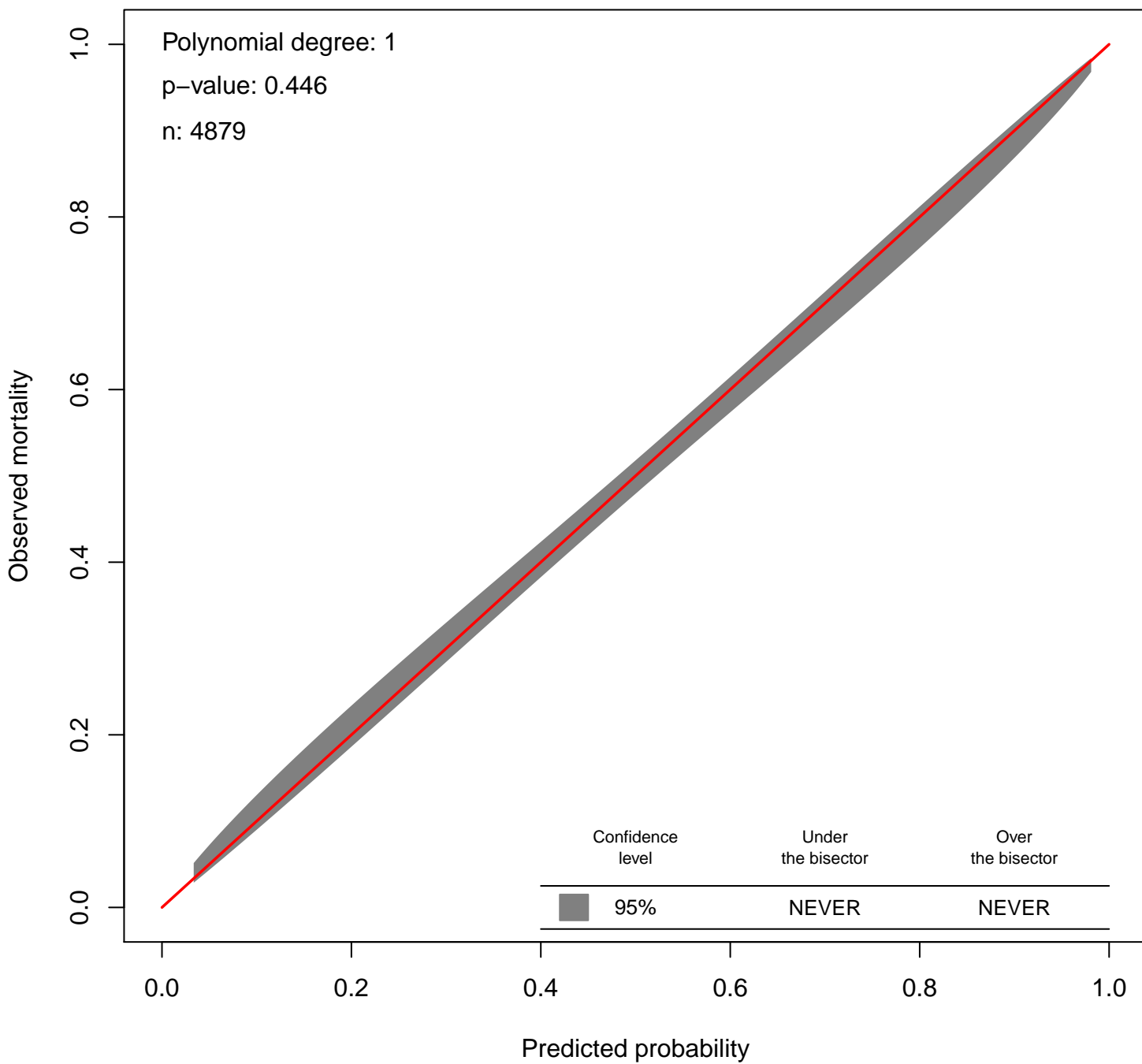
# SOFA categories, validation set



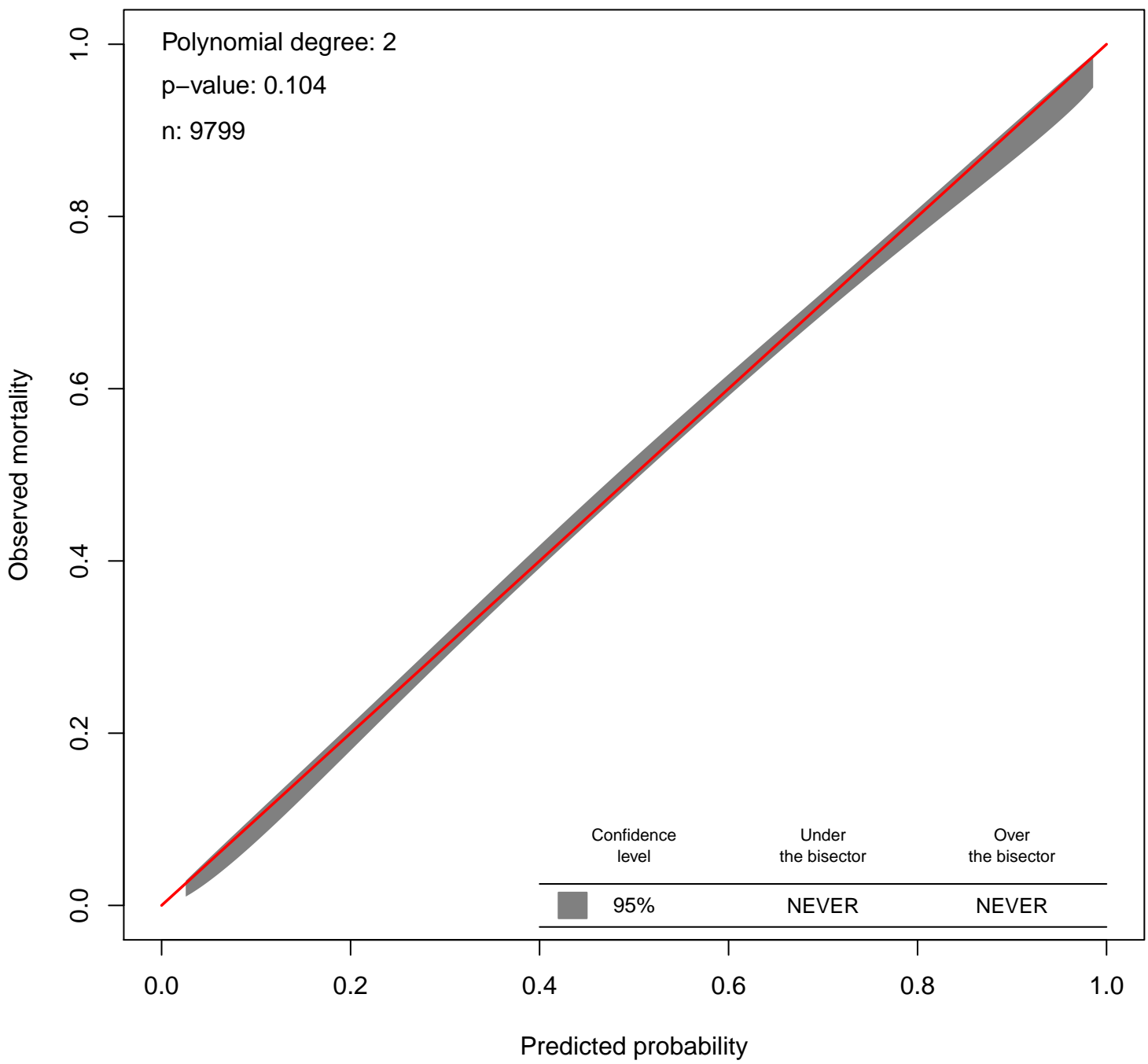
## SOFA + Age, training set



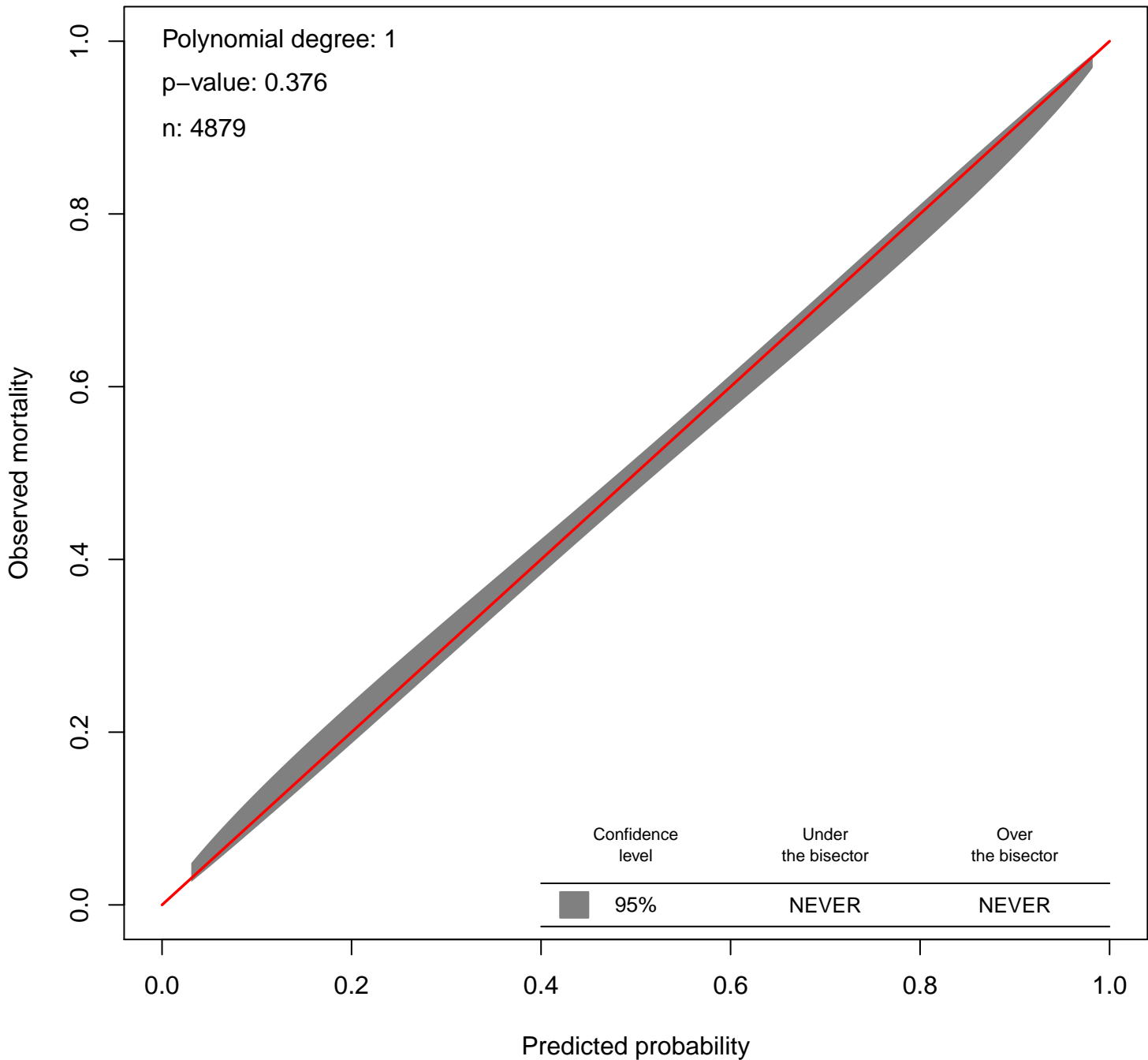
## SOFA + Age, validation set



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

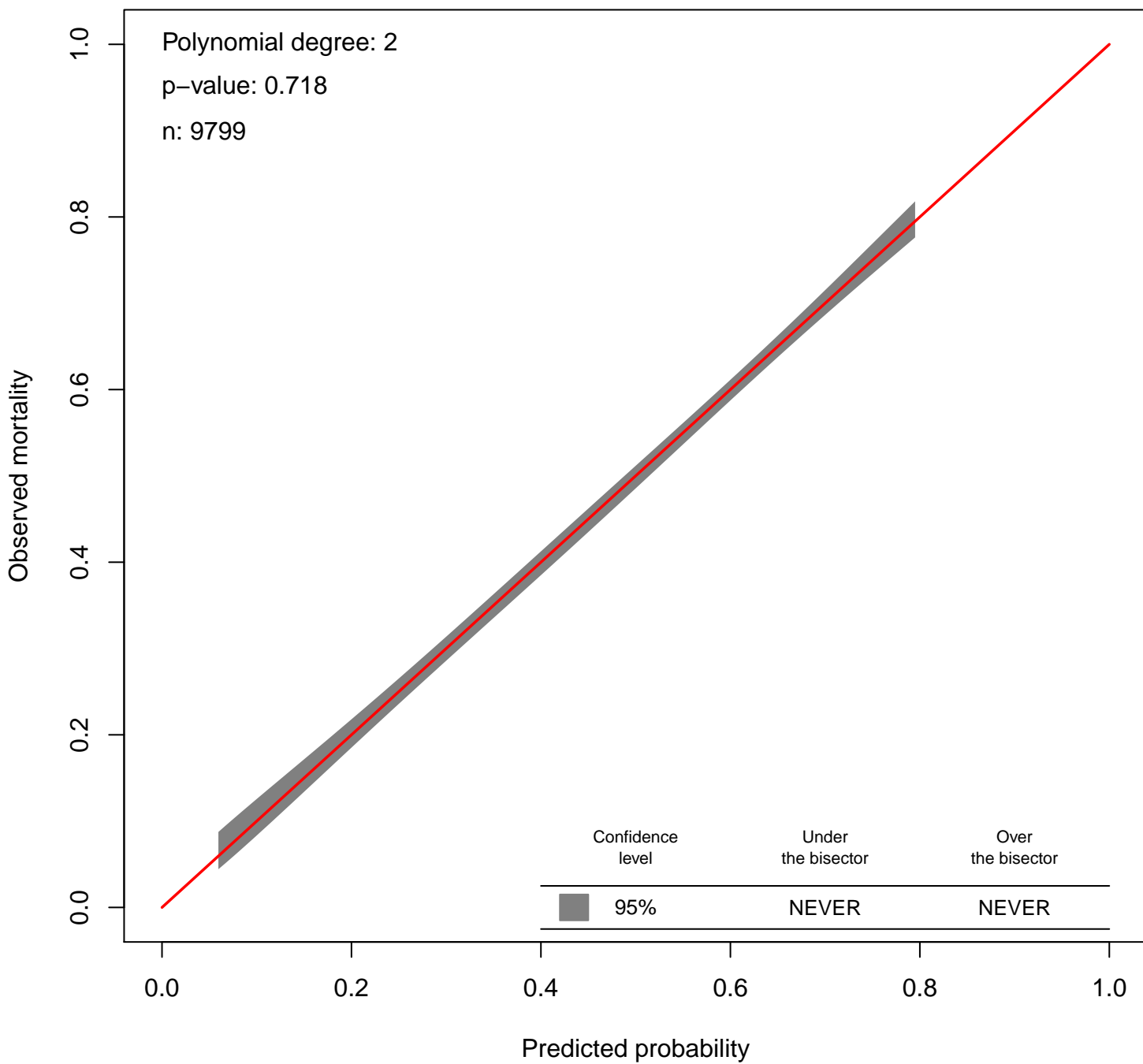


**SOFA + Covariates (age + gender + obesity +diabetes + hypertension), validation set**

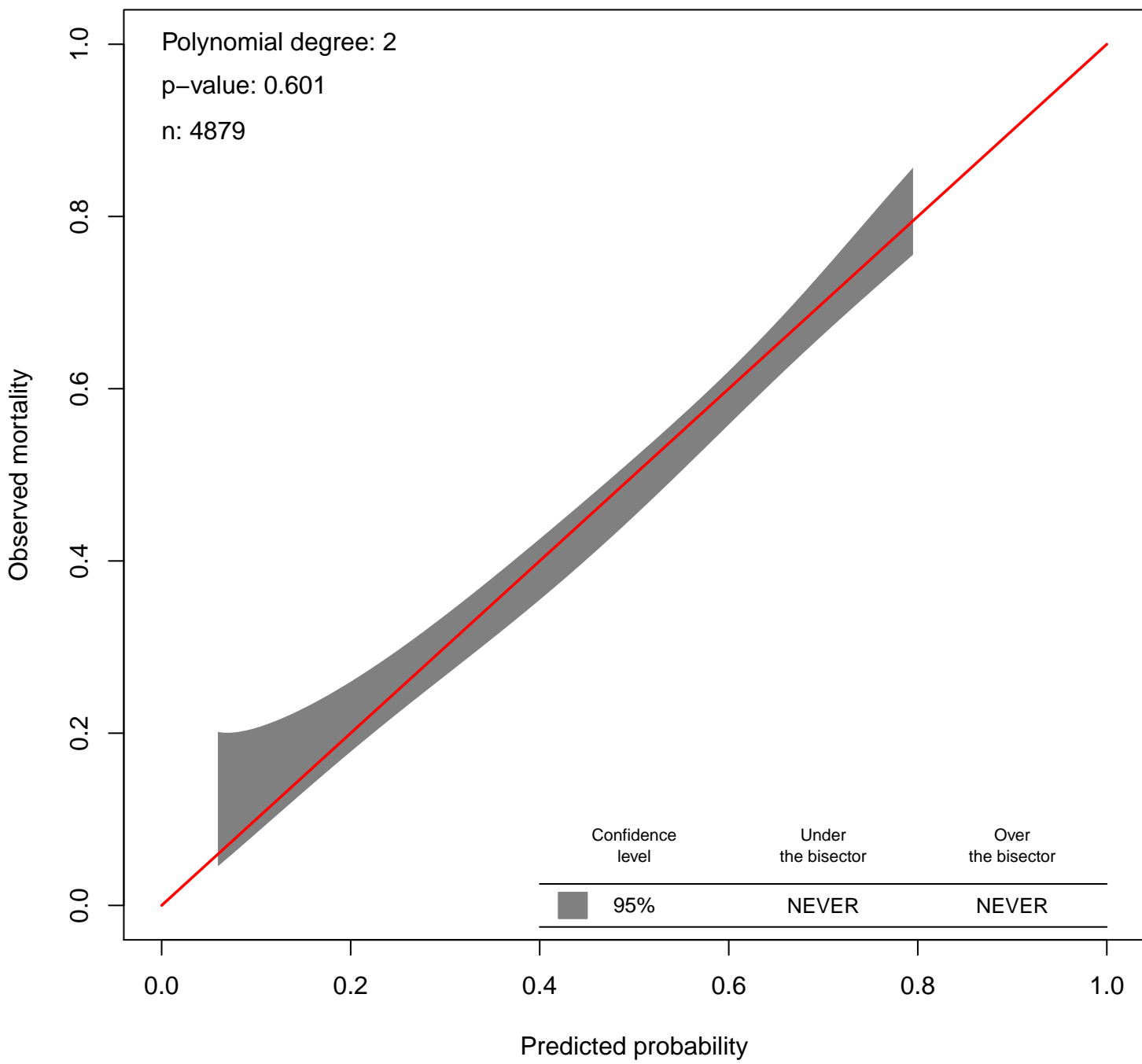




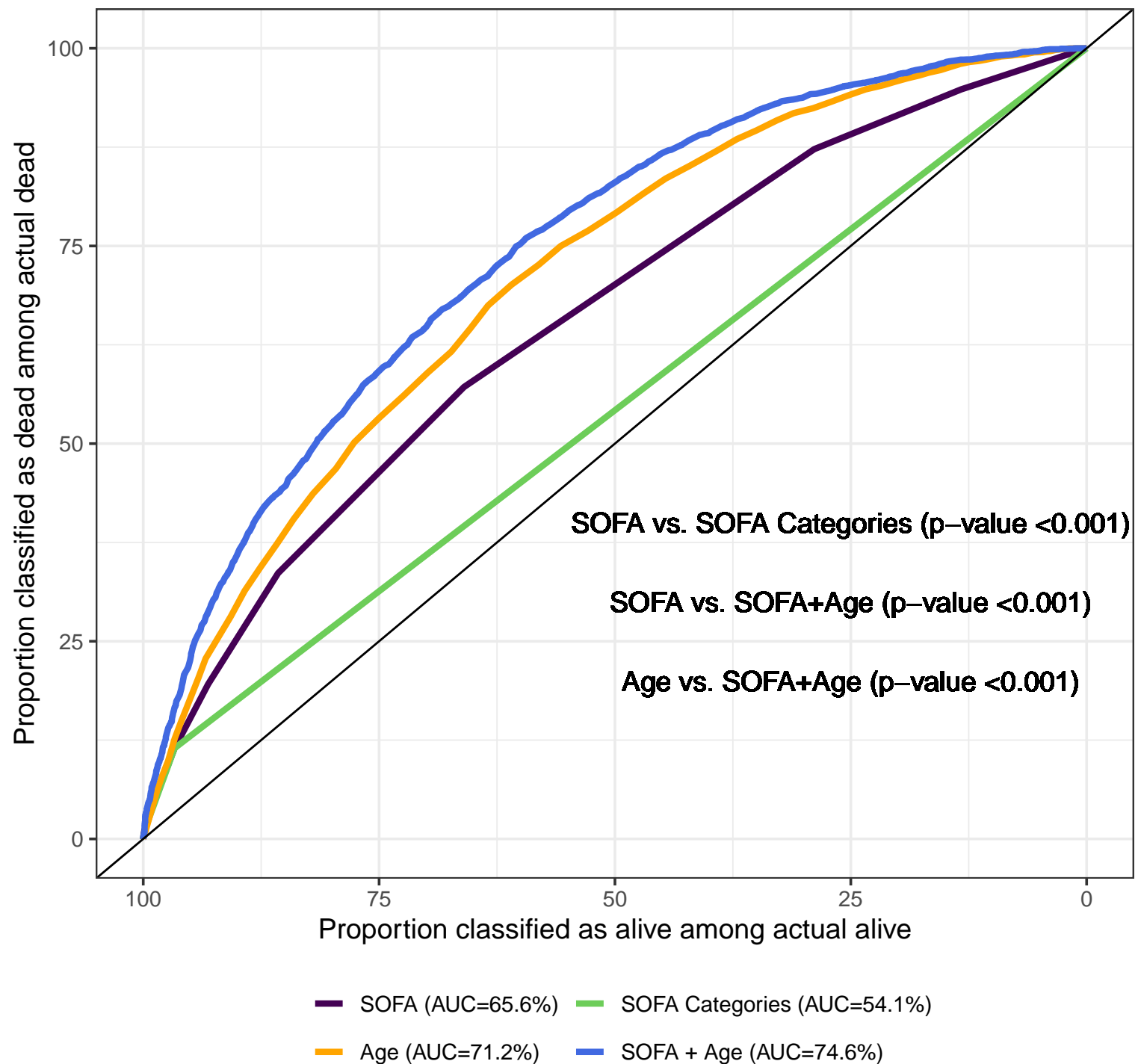
## Age, training set



# Age, validation set



ROC for in-hospital mortality among ventilated — training set



ROC for in-hospital mortality among ventilated — validation set

