

Supplementary File 1 Comparison of matched pairs after PSM.

Variables	Total (n = 346)	Negative balance (n = 173)	Positive balance (n = 173)	p
Gender, n (%)				0.745
Female	153 (44.2)	75 (43.4)	78 (45.1)	
Male	193 (55.8)	98 (56.6)	95 (54.9)	
Age, n (%)				0.59
< 60	181 (52.3)	88 (50.9)	93 (53.8)	
≥ 60	165 (47.7)	85 (49.1)	80 (46.2)	
Race, n (%)				0.72
White	202 (58.4)	104 (60.1)	98 (56.6)	
Black	35 (10.1)	18 (10.4)	17 (9.8)	
Others	109 (31.5)	51 (29.5)	58 (33.5)	
HR, Mean ± SD	96.4 ± 21.1	95.9 ± 21.7	97.0 ± 20.5	0.638
SBP, Mean ± SD	126.1 ± 26.1	127.5 ± 27.3	124.8 ± 24.9	0.341
DBP, Mean ± SD	70.1 ± 17.7	69.9 ± 17.6	70.3 ± 17.8	0.83
MAP, Mean ± SD	84.0 ± 19.0	84.1 ± 19.3	83.9 ± 18.7	0.918
RR, Mean ± SD	21.2 ± 6.3	21.3 ± 6.4	21.0 ± 6.2	0.665
Temperature, Mean ± SD	36.9 ± 0.9	37.0 ± 0.8	36.9 ± 0.9	0.149

SpO ₂ , Mean ± SD	96.0 ± 4.5	96.0 ± 4.8	96.1 ± 4.1	0.838
CHF, n (%)				0.814
No	244 (70.5)	123 (71.1)	121 (69.9)	
Yes	102 (29.5)	50 (28.9)	52 (30.1)	
COPD, n (%)				0.278
No	251 (72.5)	121 (69.9)	130 (75.1)	
Yes	95 (27.5)	52 (30.1)	43 (24.9)	
Diabetes, n (%)				0.906
No	243 (70.2)	122 (70.5)	121 (69.9)	
Yes	103 (29.8)	51 (29.5)	52 (30.1)	
Renal disease, n (%)				0.406
No	282 (81.5)	144 (83.2)	138 (79.8)	
Yes	64 (18.5)	29 (16.8)	35 (20.2)	
Cancer, n (%)				0.47
No	312 (90.2)	154 (89)	158 (91.3)	
Yes	34 (9.8)	19 (11)	15 (8.7)	
Liver disease, n (%)				0.873
No	301 (87.0)	151 (87.3)	150 (86.7)	
Yes	45 (13.0)	22 (12.7)	23 (13.3)	
Sepsis, n (%)				0.245
No	77 (22.3)	34 (19.7)	43 (24.9)	
Yes	269 (77.7)	139 (80.3)	130 (75.1)	

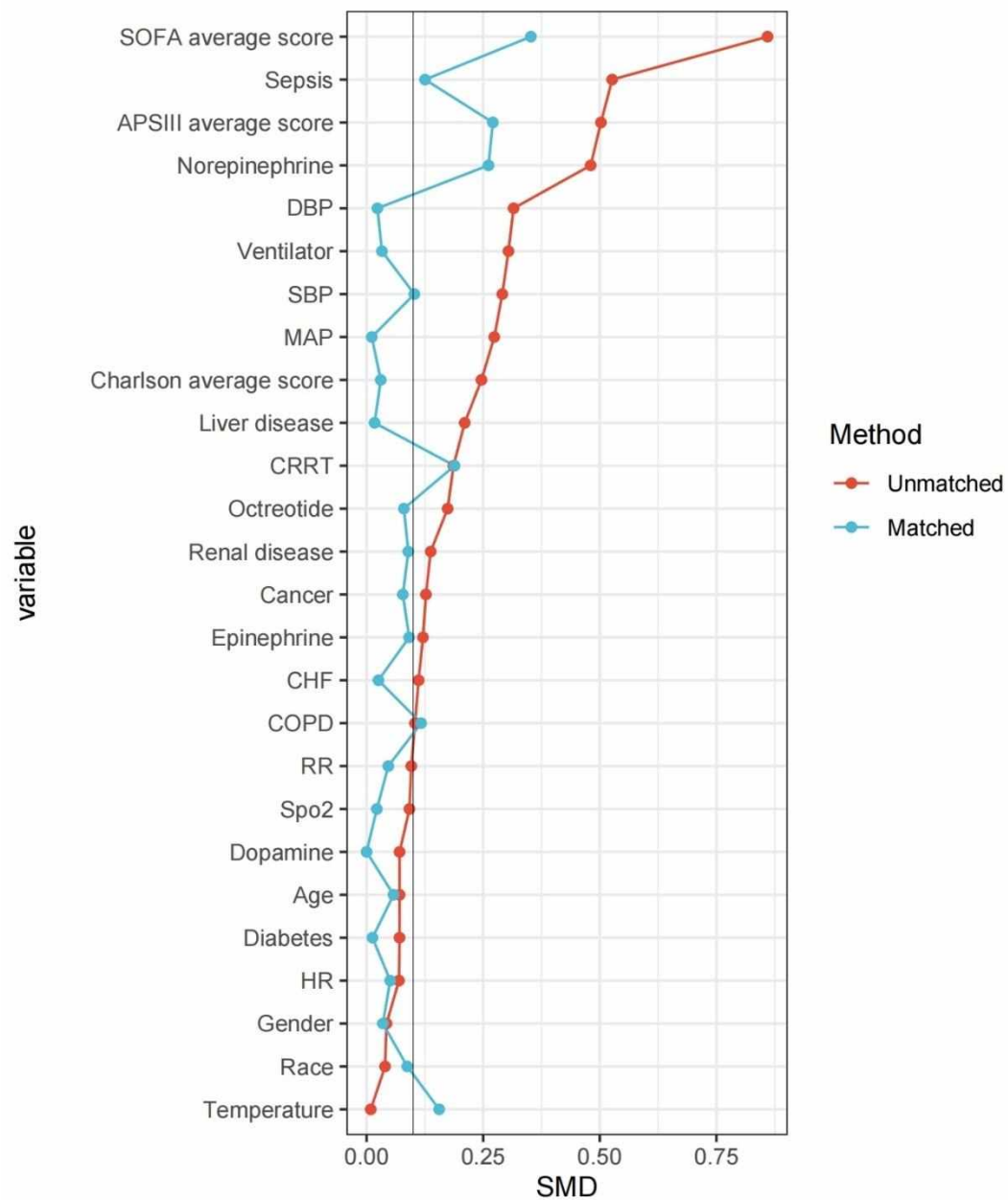
Charlson average score, Median (IQR)	4.0 (2.0, 6.0)	4.0 (2.0, 6.0)	4.0 (2.0, 6.0)	0.83
APSIH average score, Mean $\pm$ SD	55.1 $\pm$ 23.8	51.9 $\pm$ 21.9	58.2 $\pm$ 25.1	0.012
SOFA average score, Median (IQR)	5.9 $\pm$ 3.1	5.4 $\pm$ 2.8	6.5 $\pm$ 3.3	0.001
Epinephrine, n (%)				0.396
No	333 (96.2)	168 (97.1)	165 (95.4)	
Yes	13 (3.8)	5 (2.9)	8 (4.6)	
Dopamine, n (%)				1
No	336 (97.1)	168 (97.1)	168 (97.1)	
Yes	10 (2.9)	5 (2.9)	5 (2.9)	
Norepinephrine, n (%)				0.016
No	206 (59.5)	114 (65.9)	92 (53.2)	
Yes	140 (40.5)	59 (34.1)	81 (46.8)	
Octreotide, n (%)				0.458
No	314 (90.8)	155 (89.6)	159 (91.9)	
Yes	32 (9.2)	18 (10.4)	14 (8.1)	
CRRT, n (%)				0.081
No	317 (91.6)	163 (94.2)	154 (89)	
Yes	29 (8.4)	10 (5.8)	19 (11)	
Ventilator, n (%)				0.76
No	50 (14.5)	24 (13.9)	26 (15)	
Yes	296 (85.5)	149 (86.1)	147 (85)	
90-d mortality, n (%)				0.041

No	290 (83.8)	152 (87.9)	138 (79.8)	
Yes	56 (16.2)	21 (12.1)	35 (20.2)	

Supplementary File 2 Standardized mean differences after propensity score matching.

Variable	SMD	
	Before matching	After matching
Male, n (%)	0.043	0.035
Age $\geq$ 60, n (%)	0.071	0.058
Race, n (%)	0.04	0.087
White		
Black		
Others		
HR, Mean $\pm$ SD	0.069	0.051
SBP, Mean $\pm$ SD	0.291	0.102
DBP, Mean $\pm$ SD	0.315	0.023
MAP, Mean $\pm$ SD	0.274	0.011
RR, Mean $\pm$ SD	0.096	0.047
Temperature, Mean $\pm$ SD	0.009	0.156
SpO ₂ , Mean $\pm$ SD	0.092	0.022
CHF, n (%)	0.112	0.025
COPD, n (%)	0.104	0.117
Diabetes, n (%)	0.071	0.013
Renal disease, n (%)	0.137	0.089
Cancer, n (%)	0.127	0.078
Liver disease, n (%)	0.21	0.017
Sepsis, n (%)	0.527	0.125
Charlson average score, Median (IQR)	0.246	0.03
APSIH average score, Mean $\pm$ SD	0.502	0.271
SOFA average score, Median (IQR)	0.86	0.352
Epinephrine, n (%)	0.121	0.091
Dopamine, n (%)	0.071	<0.001
Norepinephrine, n (%)	0.48	0.261
Octreotide, n (%)	0.174	0.08
CRRT, n (%)	0.186	0.189
Ventilator, n (%)	0.304	0.033

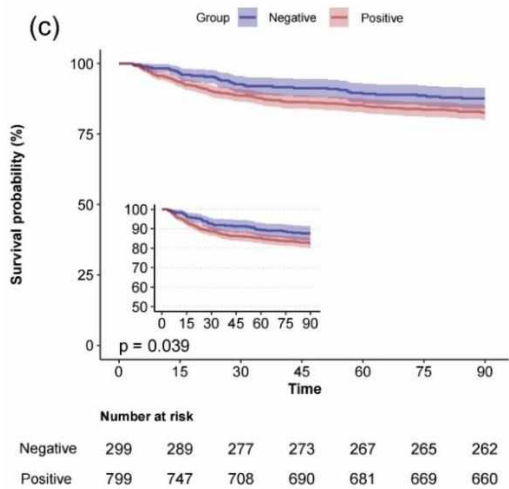
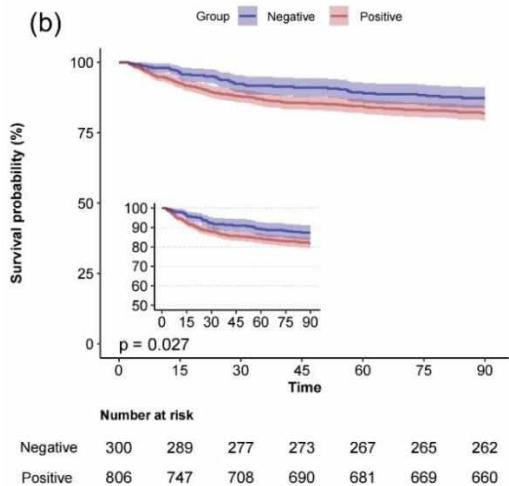
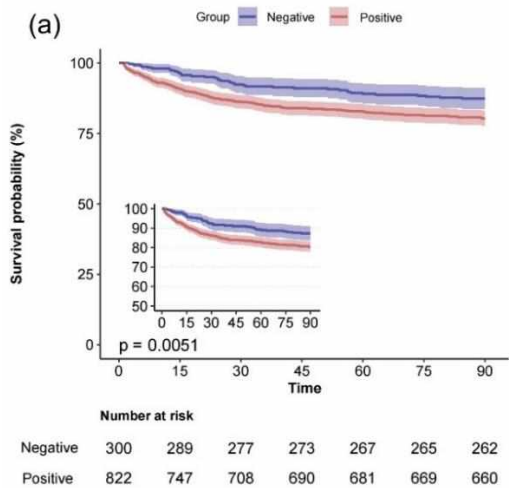
Supplementary File 3 Changes in standardized mean differences of covariates before and after PSM.



Supplementary File 4 Landmark analysis of the association between positive fluid balance and 90-Day mortality, excluding patients who died within 24h, 48h, and 72h.

Item	Group	Number of patients	HR (95% CI)	p-value
at 24h	Negative balance	300	1(Ref)	
	Positive balance	822	1.62 (1.13~2.32)	0.009
at 48h	Negative balance	300	1(Ref)	
	Positive balance	806	1.51 (1.05~2.17)	0.026
at 72h	Negative balance	299	1(Ref)	
	Positive balance	799	1.48 (1.03~2.15)	0.036

Supplementary File 5 Landmark analysis of K-M survival curves: (a) Excluding patients who died within 24h, (b) Excluding patients who died within 48h, and (c) Excluding patients who died within 72h.



Supplementary File 6 Restricted cubic spline analysis of the nonlinear association between cumulative fluid balance and 90-day mortality risk.

