

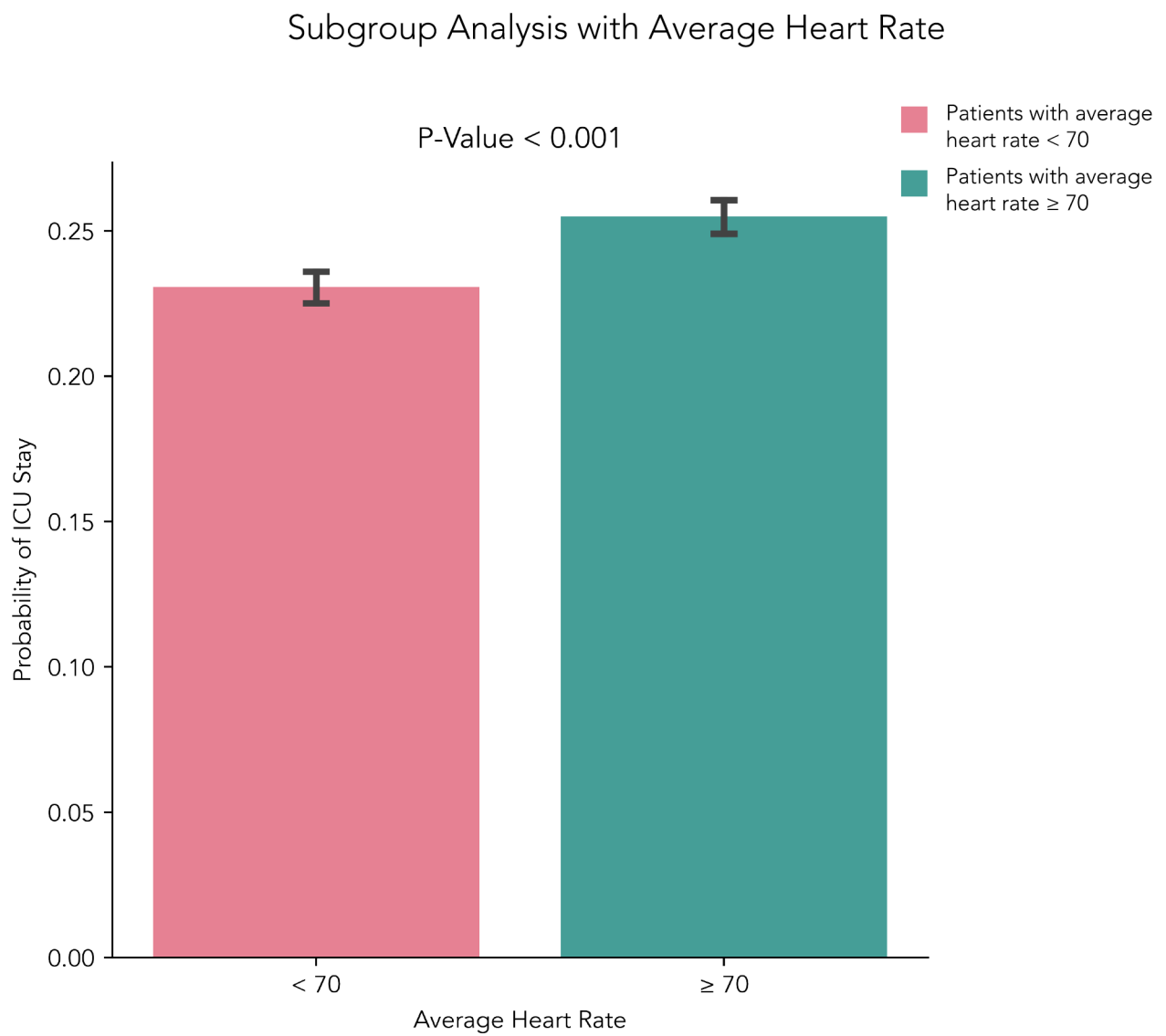


Fig S1. Subgroup analysis with average heart rate. Patients with average heart rate higher than 70 are likely with higher risk of entering ICU after surgery.

Subgroup Analysis with Low-Frequency HRV Power

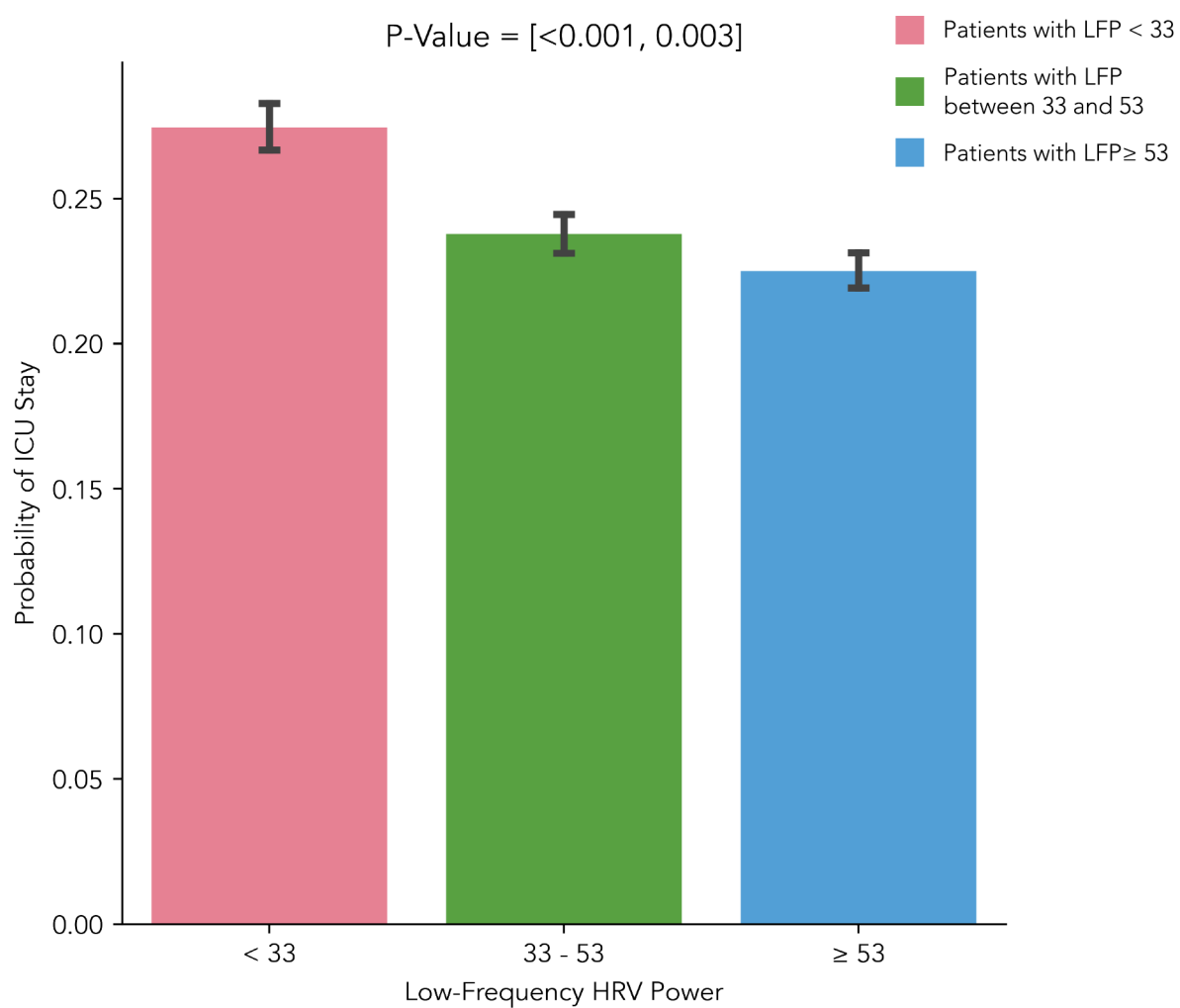


Fig S2. Subgroup analysis with low-frequency HRV power. Patients with low-frequency power (LFP) < 33 are likely with higher risk of entering ICU after surgery.

Subgroup Analysis with Short Term Fluctutaion (DFA α_1)

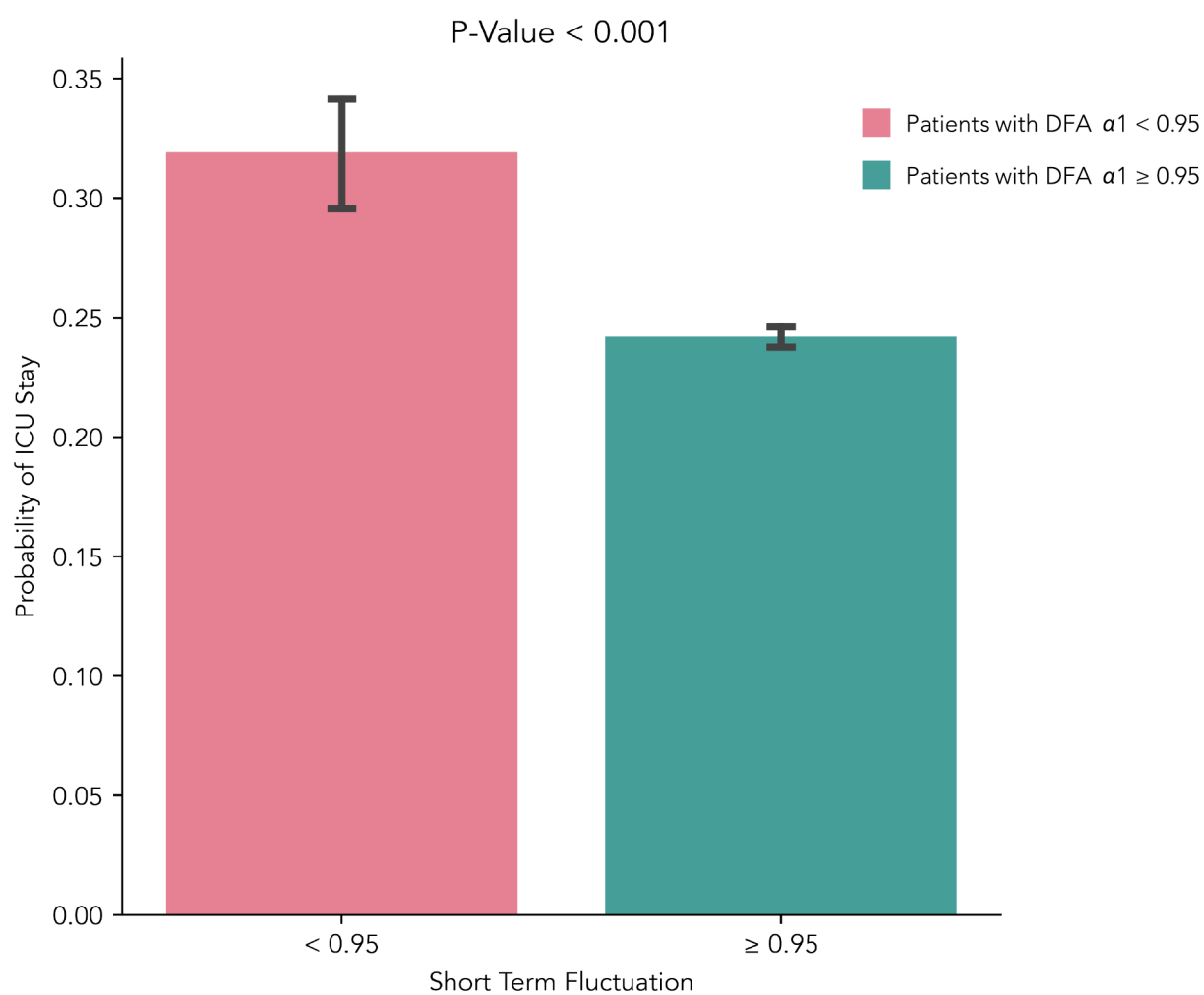


Fig S3. Subgroup analysis with short term fluctuation. Patients with short-term fluctuation DFA $\alpha_1 < 0.95$ are likely with higher risk of entering ICU after surgery.

Table S1. Extracted features in each case

No	Feature abbreviation	Brief explanation
HRV features		
1	nni_counter	related to NN intervals
2	nni_mean	
3	nni_min	
4	nni_max	
5	hr_mean	related to heart rate features
6	hr_min	
7	hr_max	
8	hr_std	
9	nni_diff_mean	related to NN interval differences
10	nni_diff_min	
11	nni_diff_max	
12	sdnn	related to standard deviation of a NN interval series
13	sdnn_index	
14	sdann	
15	rmssd	root mean of squared NNI differences
16	sdsd	standard deviation of NNI differences
17	pnn50	related to the ratio of NN more than 50/20ms
18	pnn20	
20 - 22	fft_peak_0 - 2	related to FFT power spectral density
23 - 25	fft_abs_0 - 2	
26 - 29	fft_rel_0 - 2	
29 - 31	fft_log_0 - 2	
32 - 33	fft_norm_0 - 1	
34	fft_ratio	
35	fft_total	
36	fft_nfft	
37 - 39	lomb_peak_0 - 2	related to Lomb-Scargle power spectral density
40 - 42	lomb_abs_0 - 2	
43 - 45	lomb_rel_0 - 2	
46 - 48	lomb_log_0 - 2	
49 - 50	lomb_norm_0 - 1	
51	lomb_ratio	
52	lomb_total	
53	lomb_fft	
54 - 56	ar_peak_0 - 2	related to autoregressive power spectral density
57 - 59	ar_abs_0 - 2	
60 - 62	ar_rel_0 - 2	
63 - 65	ar_log_0 - 2	

No	Feature abbreviation	Brief explanation
66	ar_norm_0 - 1	
67	ar_ratio	
68	ar_total	
69	ar_fft	
70	sd1	related to Poincare
71	sd2	
72	sd_ratio	
73	ellipse_area	
74	sampen	sample entropy
75	dfa_alpha1	related to detrended fluctuation analysis (DFA)
76	dfa_alpha2	
Clinical features		
77	ane_time	related to basic patient information
78	op_time	
79	age	
80	sex	
81	height	
82	weight	
83	bmi	
84	emop	
85	ane_type	