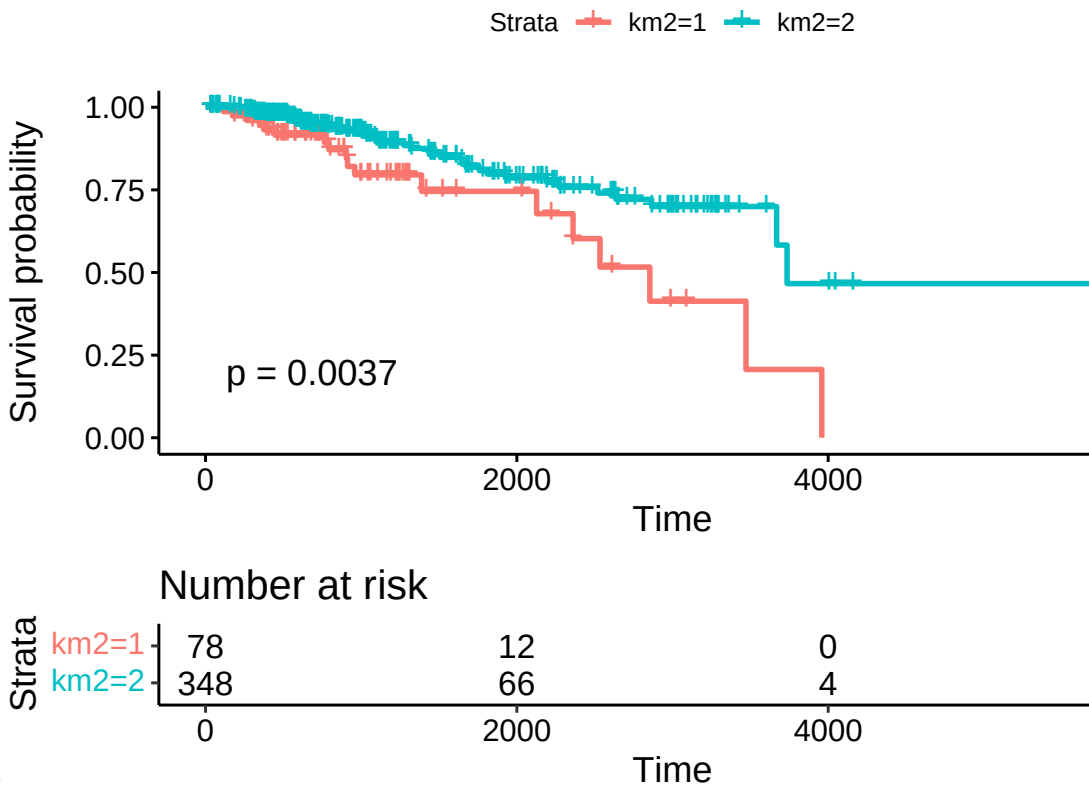
cp decomposition Breast 73 train rank9

VIVI TANG

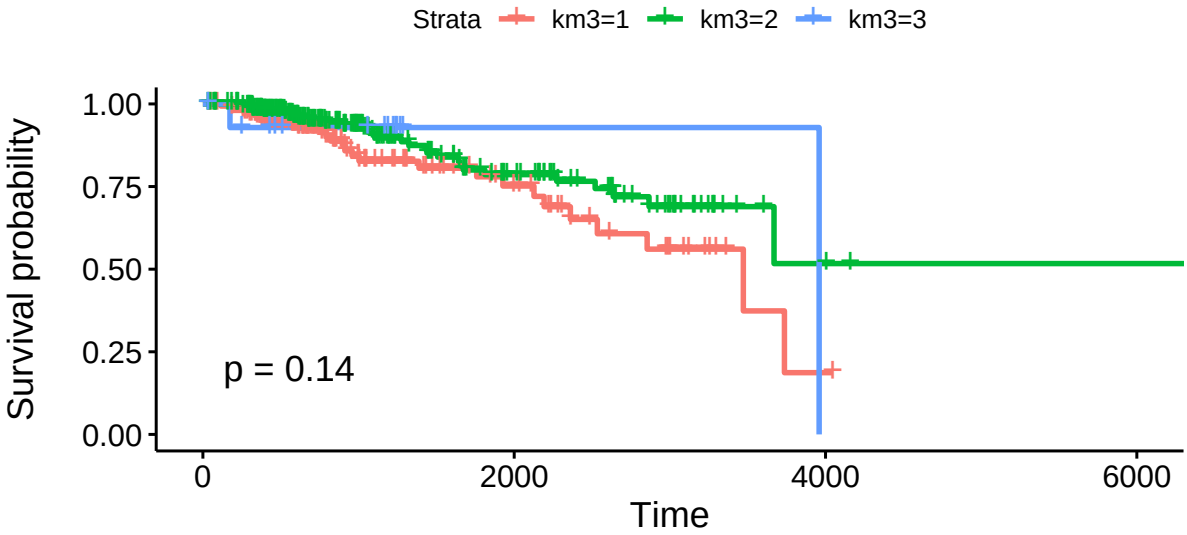
17/11/2021

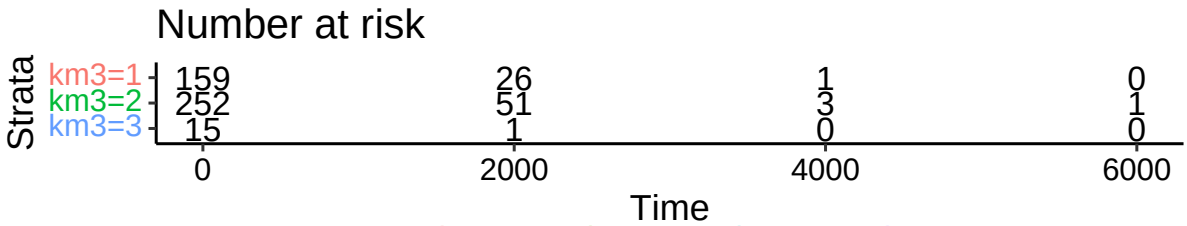
1. Kmeans

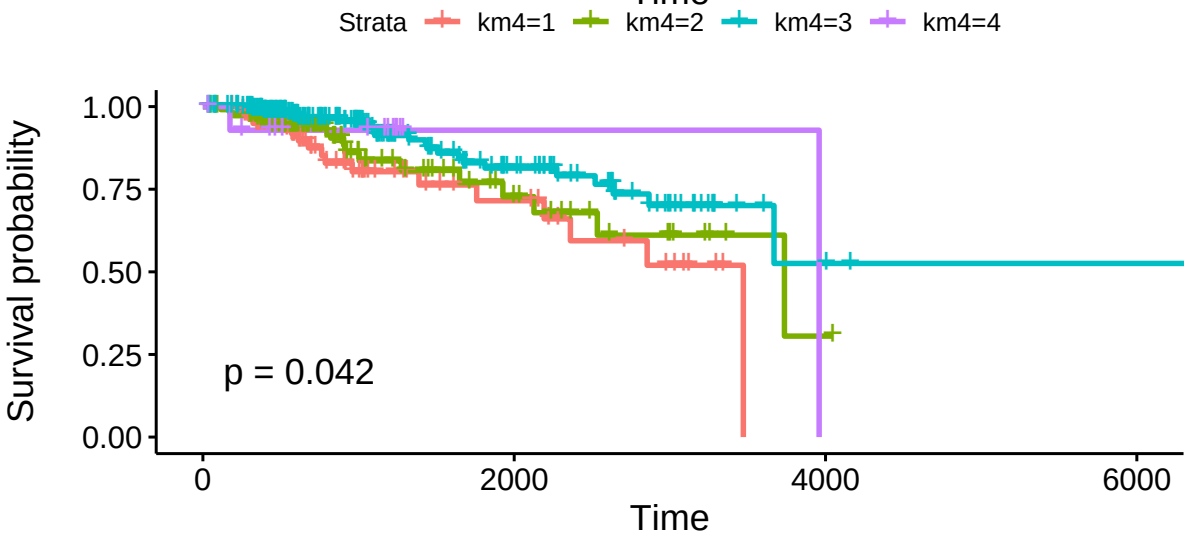
```
## Warning: package 'lattice' was built under R version 3.6.2

## Warning: package 'survival' was built under R version 3.6.2

## Warning: package 'survminer' was built under R version 3.6.2

## Warning: package 'ggplot2' was built under R version 3.6.2

## Warning: package 'ggpubr' was built under R version 3.6.2
```

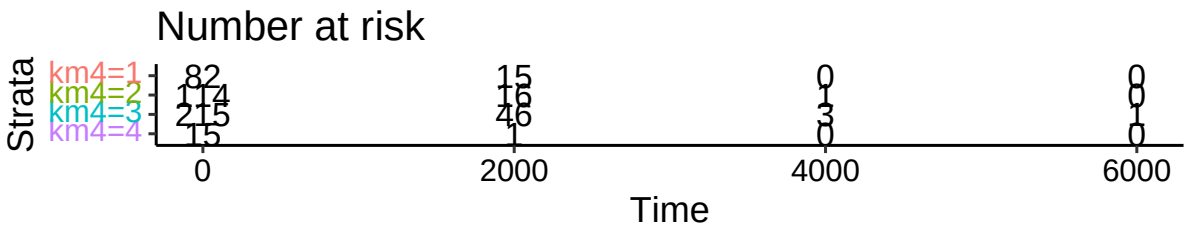


3. Fit the results of Kmeans



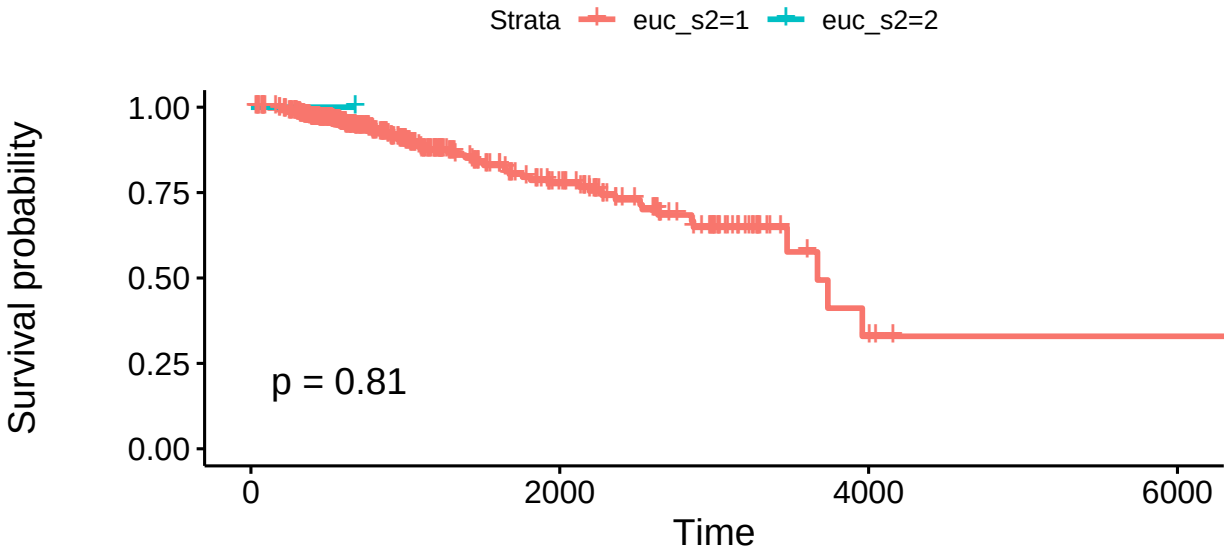


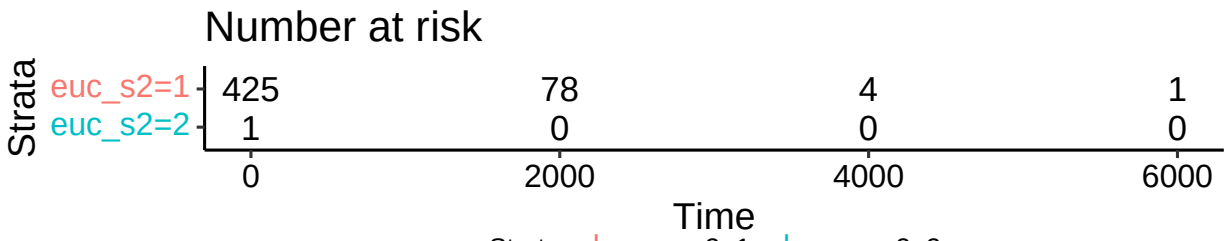


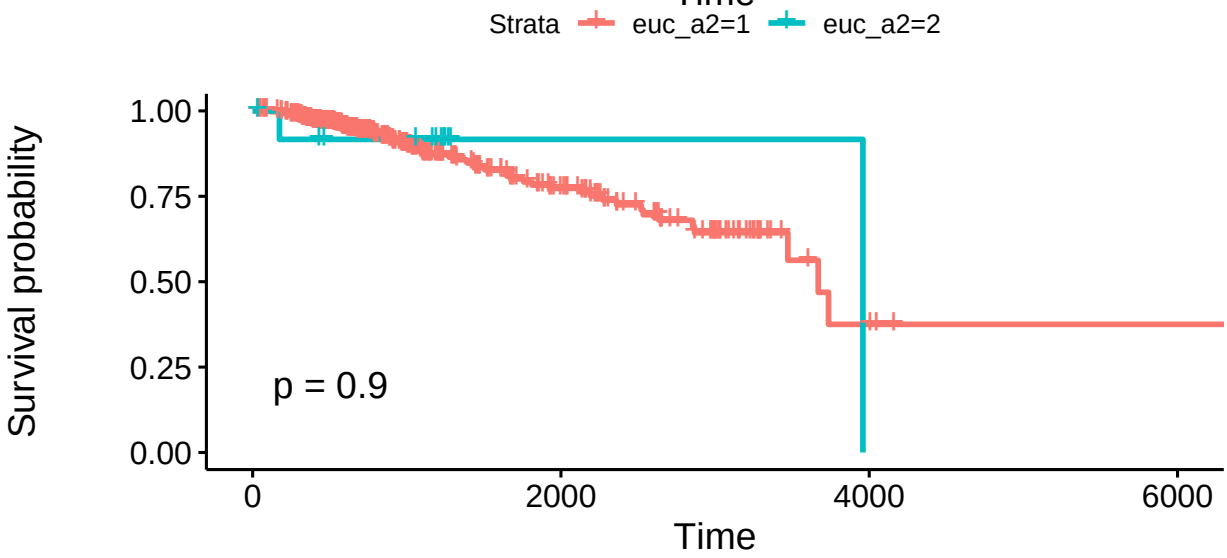


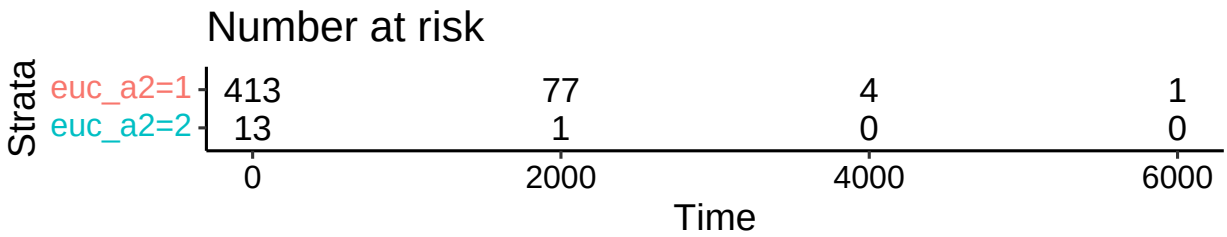
4. Hierarchical Clustering

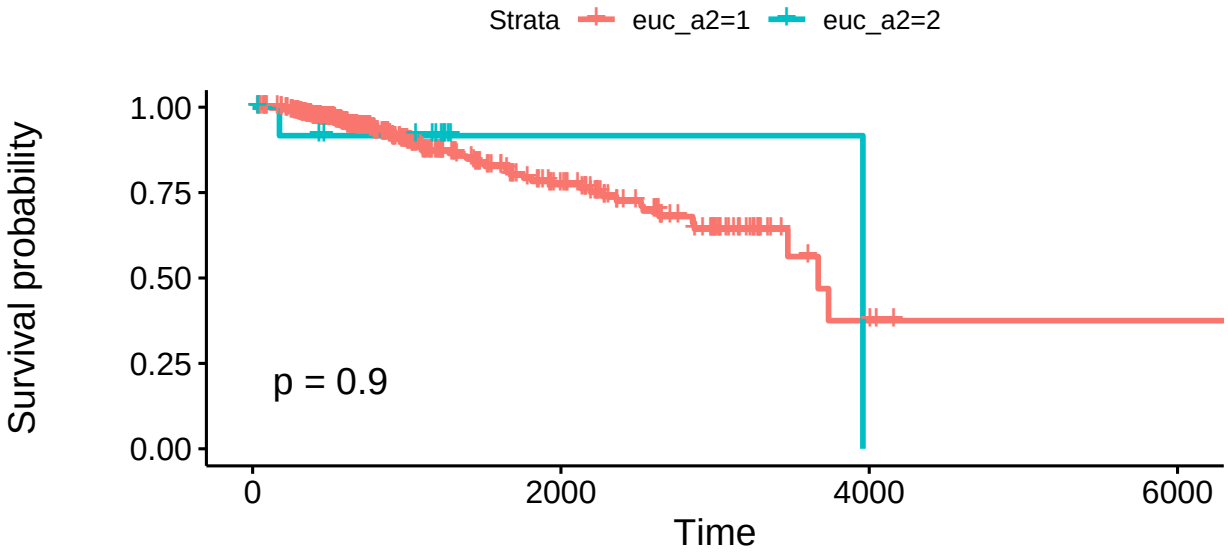
```
## Warning: package 'proxy' was built under R version 3.6.2
```

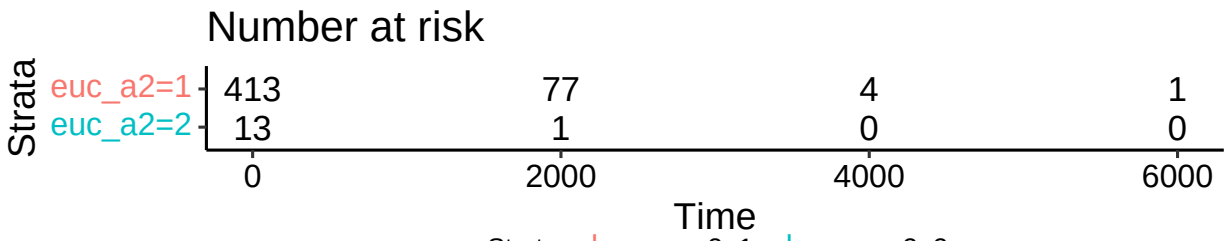

Strata
euc_s2=1
euc_s2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.81
0
2000
4000
6000
Time

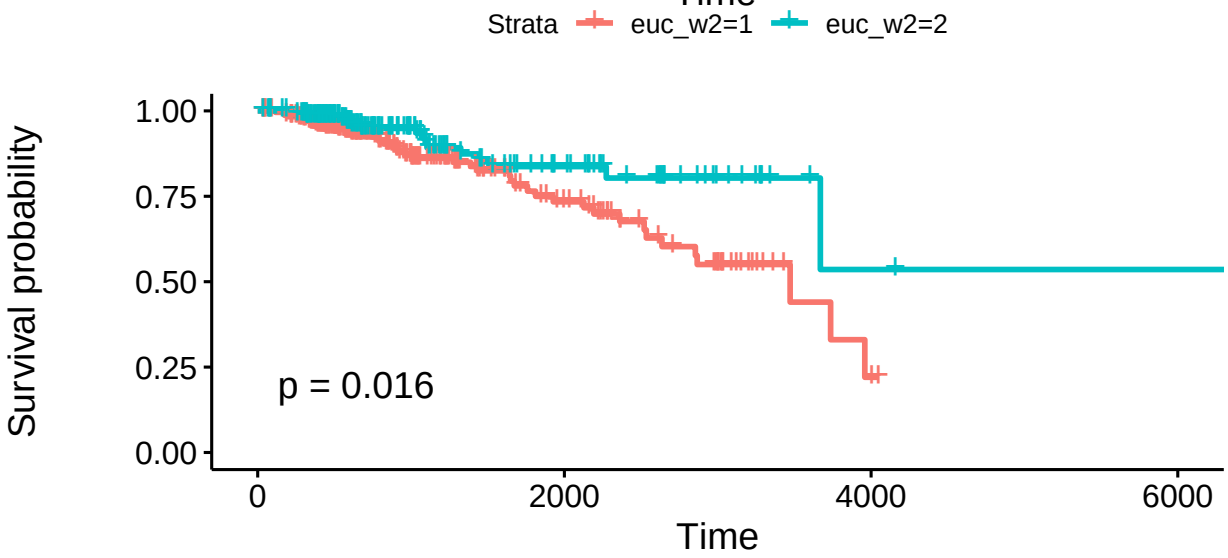

Number at risk
Strata
euc_s2=1
euc_s2=2
425
78
4
1
1
0
0
0
0
2000
4000
6000
Time

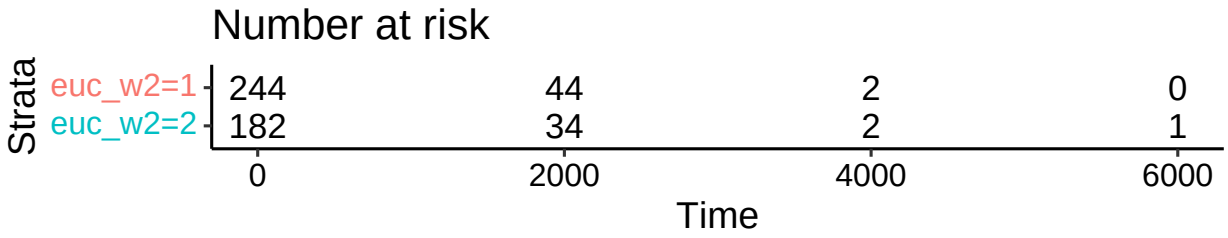

Strata
euc_a2=1
euc_a2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.9
0
2000
4000
6000
Time

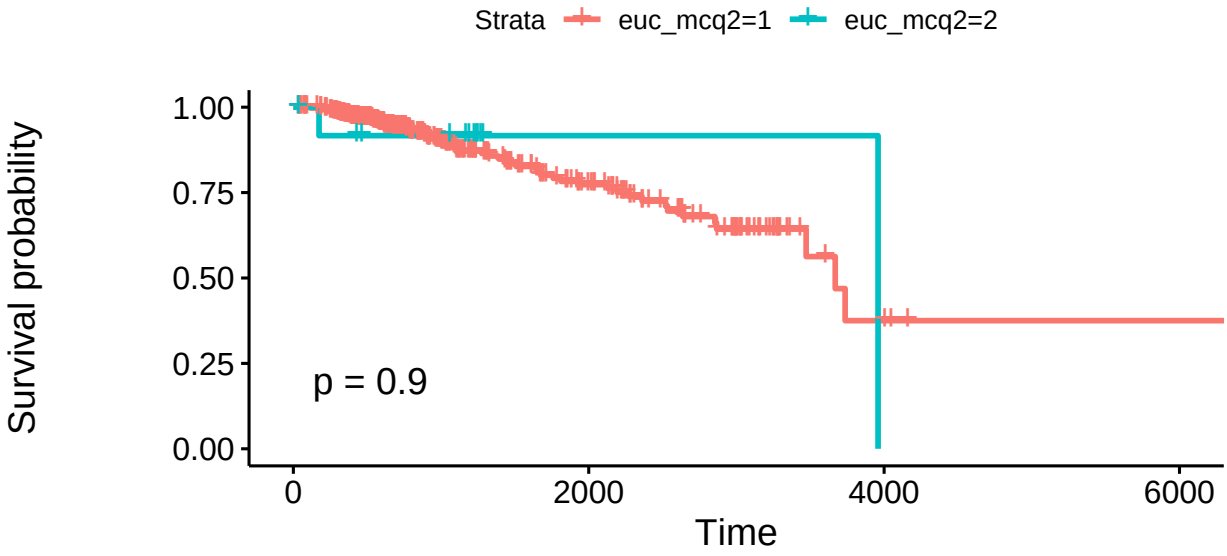

Number at risk
Strata
euc_a2=1
euc_a2=2
413
77
4
1
13
1
0
0
0
2000
4000
6000
Time

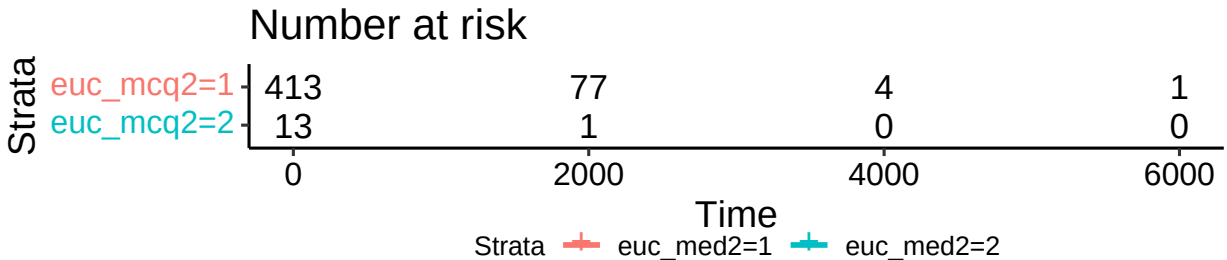

Strata
euc_a2=1
euc_a2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.9
0
2000
4000
6000
Time

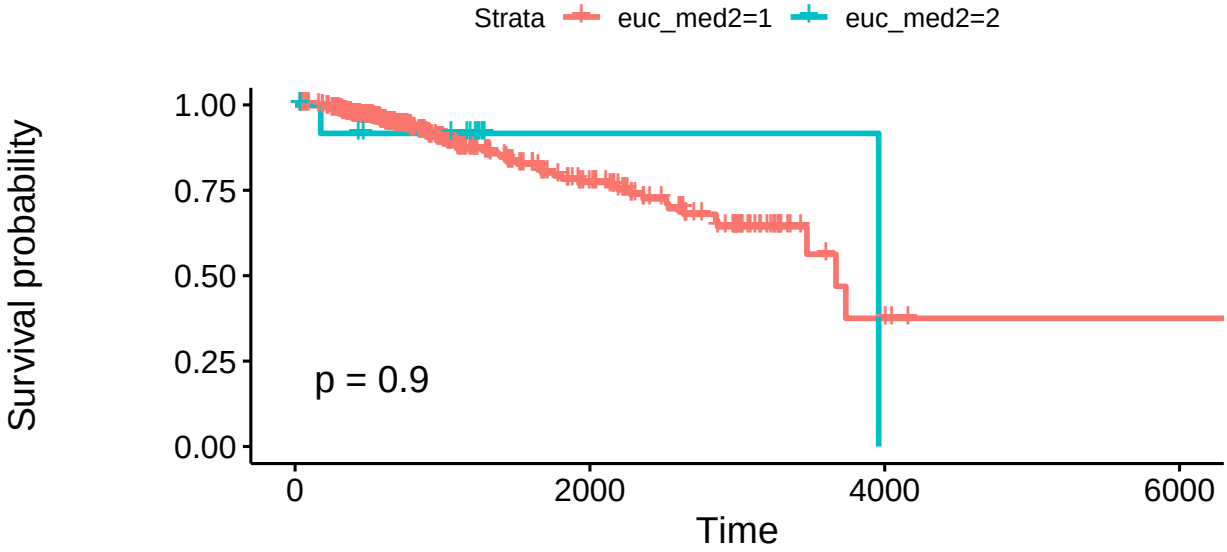

Number at risk
Strata
euc_a2=1
euc_a2=2
413
77
4
1
13
1
0
0
0
2000
4000
6000
Time

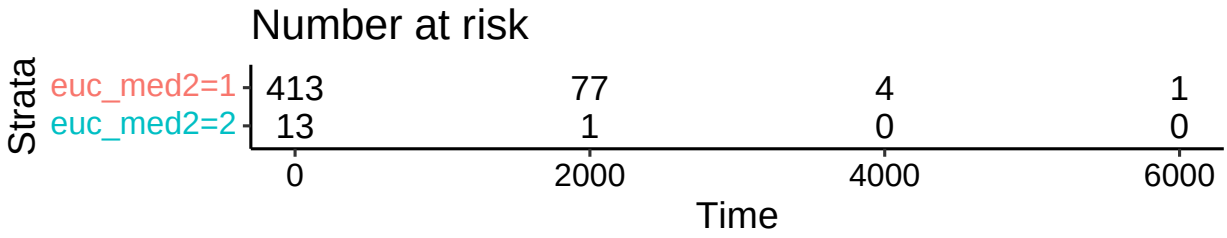

Strata
euc_w2=1
euc_w2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.016
0
2000
4000
6000
Time

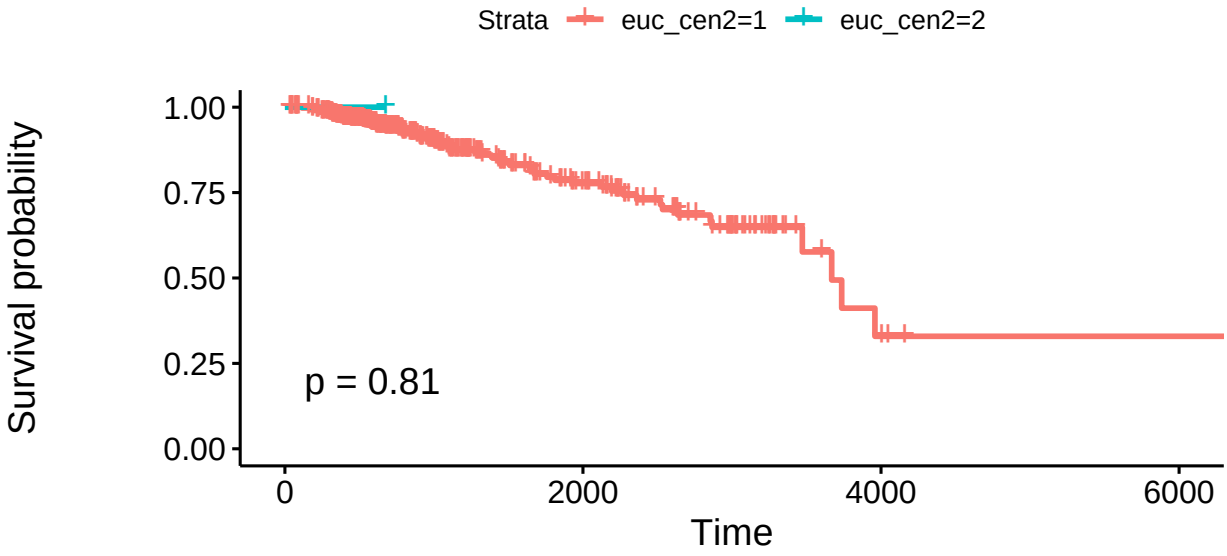

Number at risk
Strata
euc_w2=1
euc_w2=2
244
44
2
0
182
34
2
1
0
2000
4000
6000
Time

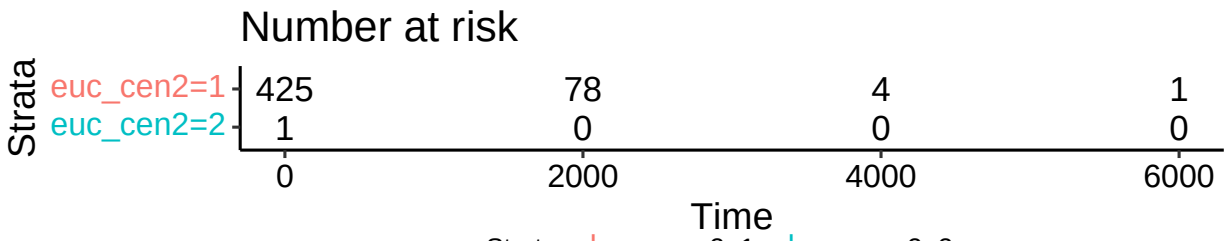

Strata
euc_mcq2=1
euc_mcq2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.9
0
2000
4000
6000
Time

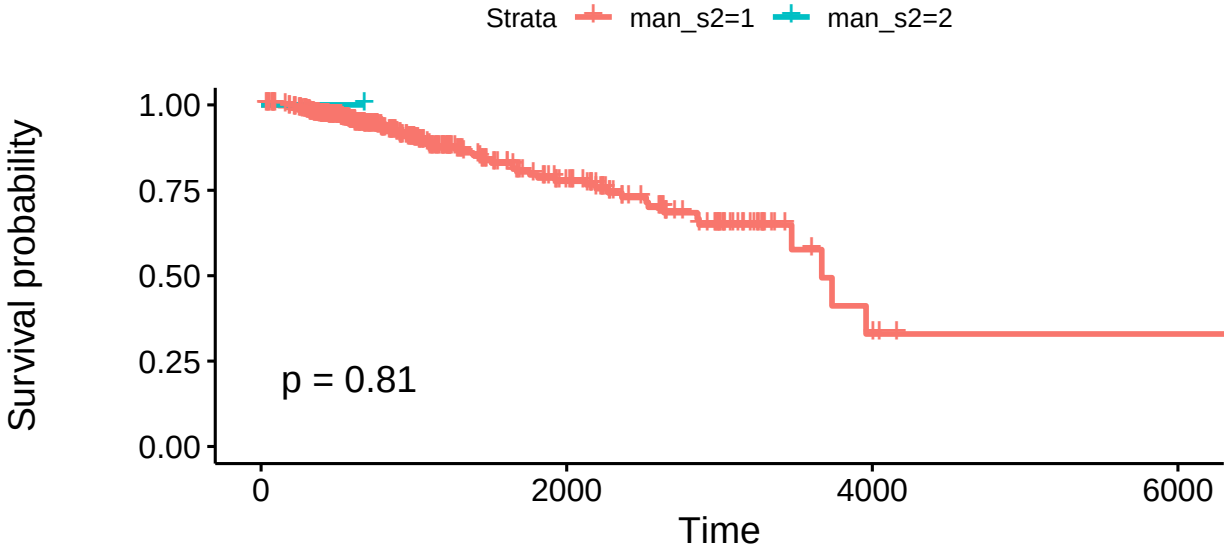

Number at risk
Strata
euc_mcq2=1
euc_mcq2=2
413
77
4
1
13
1
0
0
0
2000
4000
6000
Time

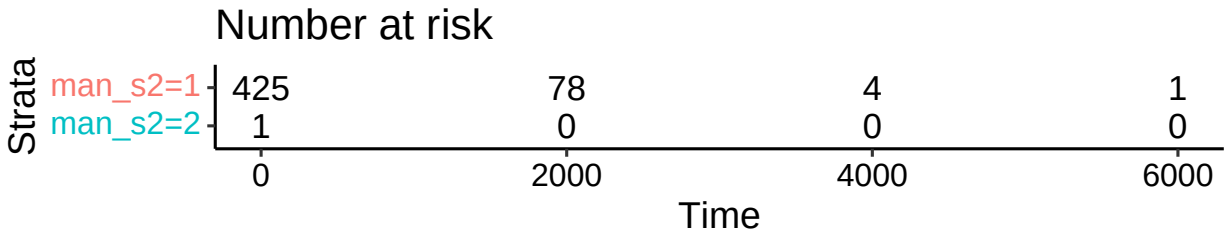

Strata
euc_med2=1
euc_med2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.9
0
2000
4000
6000
Time

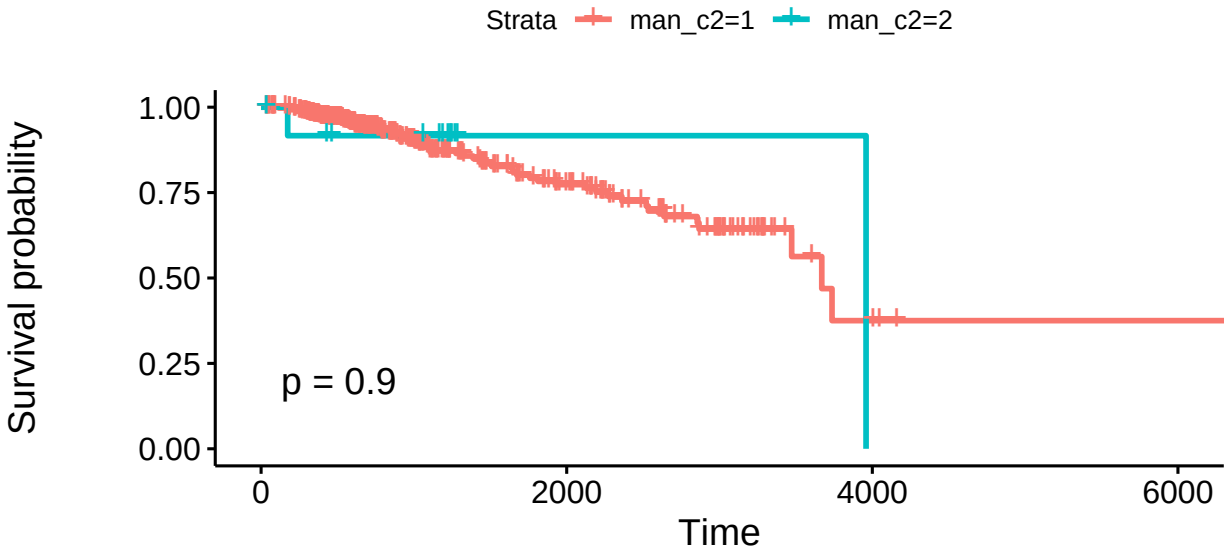

Number at risk
Strata
euc_med2=1
euc_med2=2
413
77
4
1
13
1
0
0
0
2000
4000
6000
Time

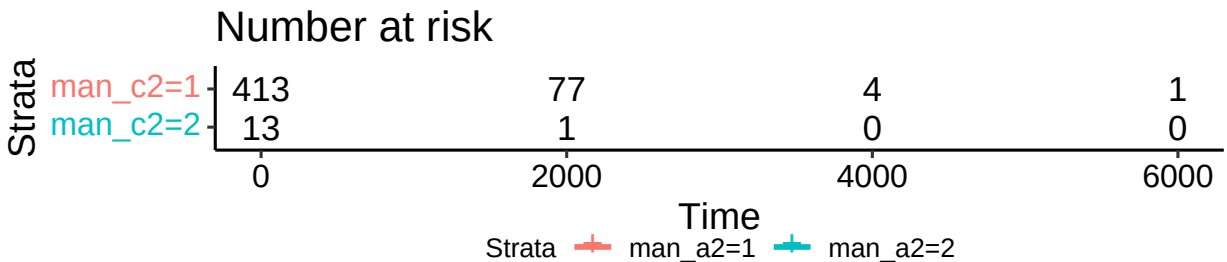

Strata
euc_cen2=1
euc_cen2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.81
0
2000
4000
6000
Time

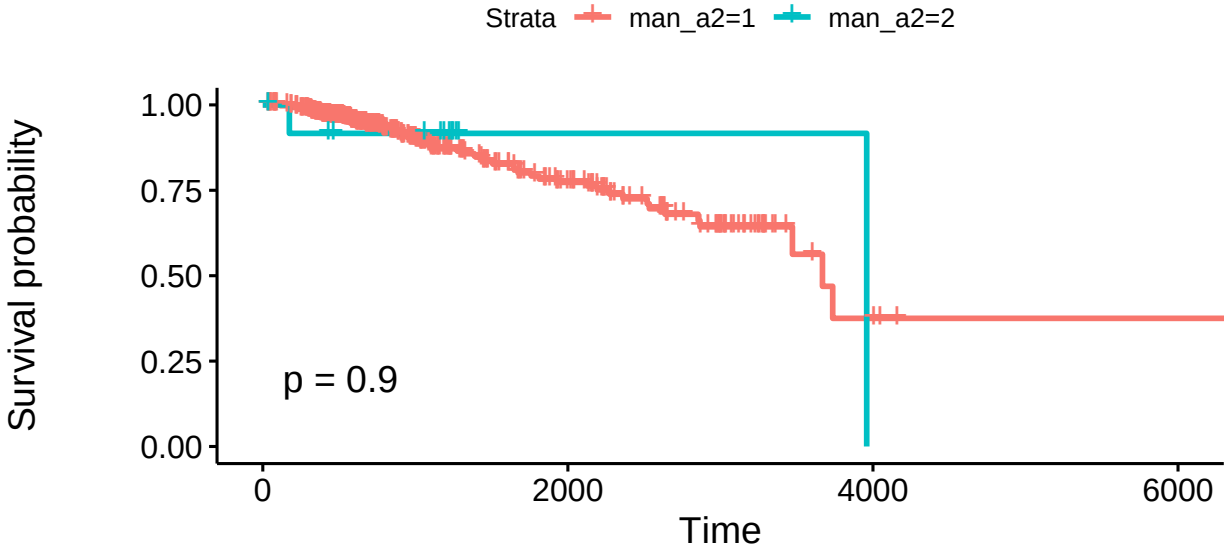

Number at risk
Strata
euc_cen2=1
euc_cen2=2
425
78
4
1
1
0
0
0
0
2000
4000
6000
Time

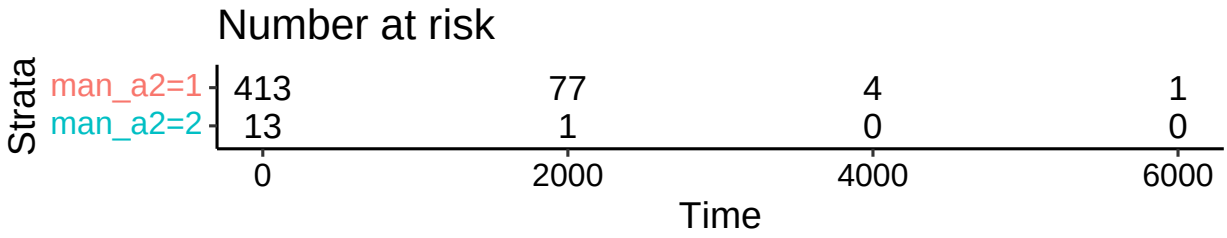

Strata
man_s2=1
man_s2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.81
0
2000
4000
6000
Time

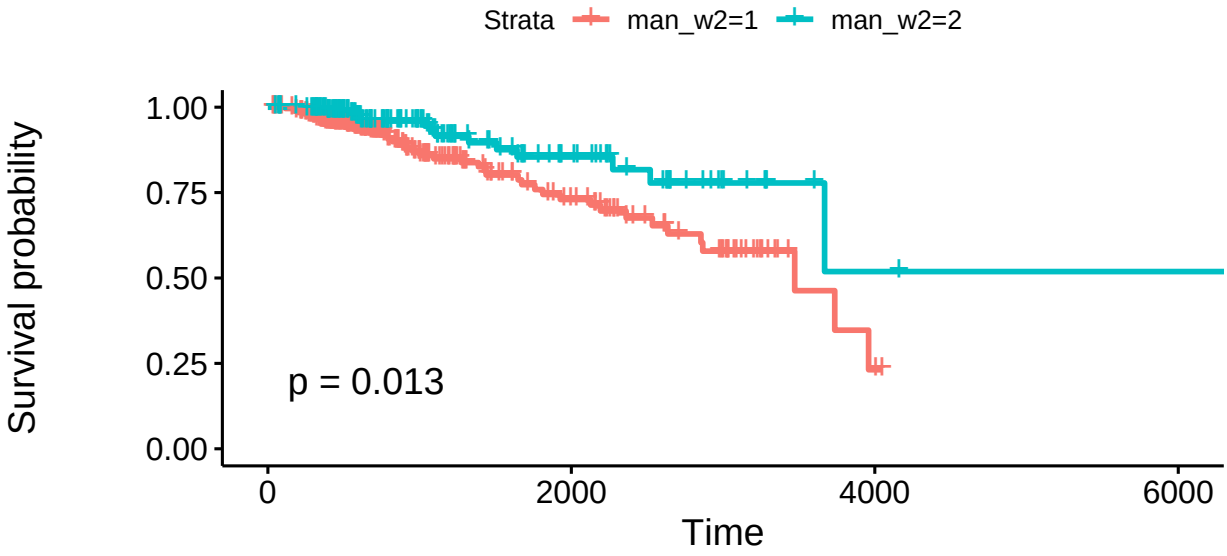

Number at risk
Strata
man_s2=1
man_s2=2
425
78
4
1
1
0
0
0
0
2000
4000
6000
Time

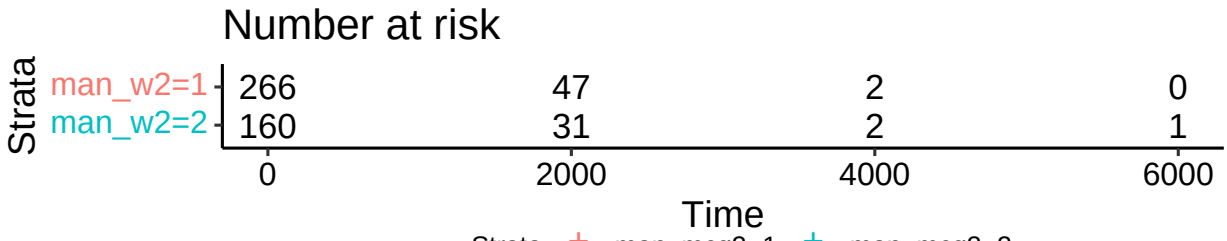

Strata
man_c2=1
man_c2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.9
0
2000
4000
6000
Time

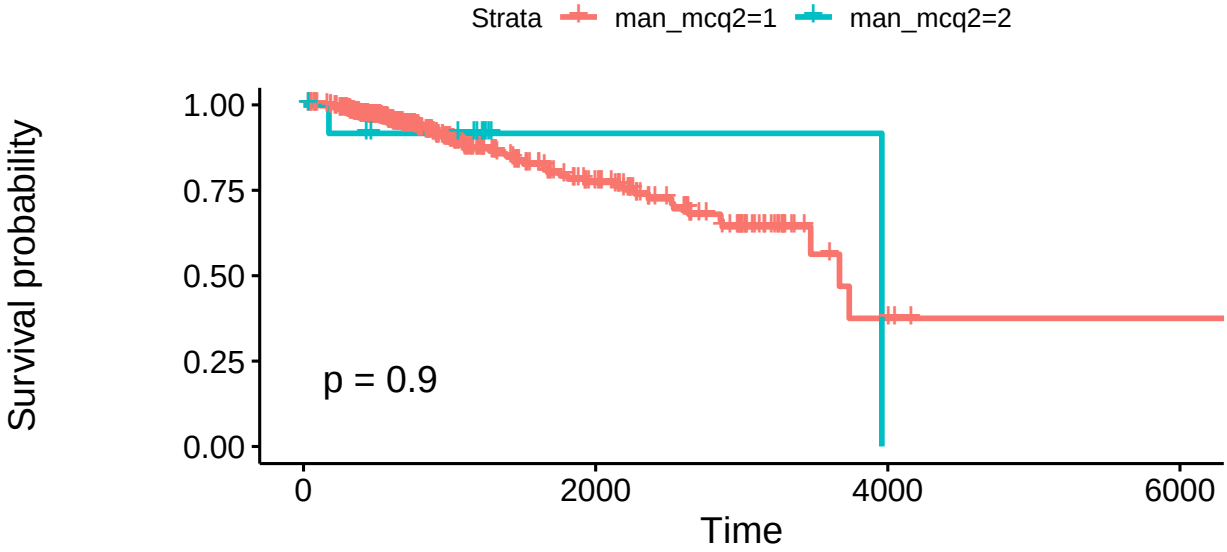

Number at risk
Strata
man_c2=1
man_c2=2
413
77
4
1
13
1
0
0
0
2000
4000
6000
Time

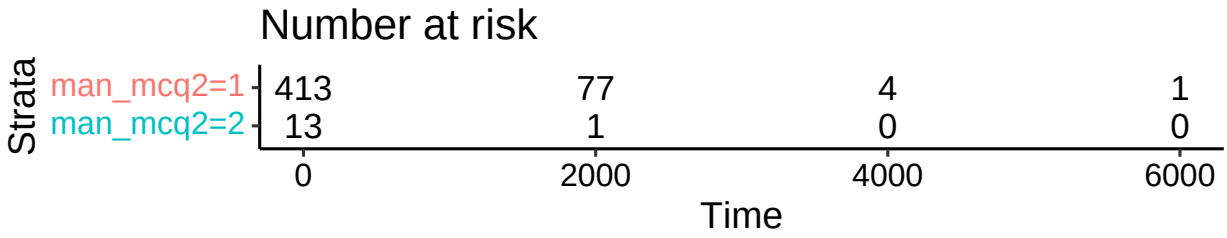

Strata
man_a2=1
man_a2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.9
0
2000
4000
6000
Time

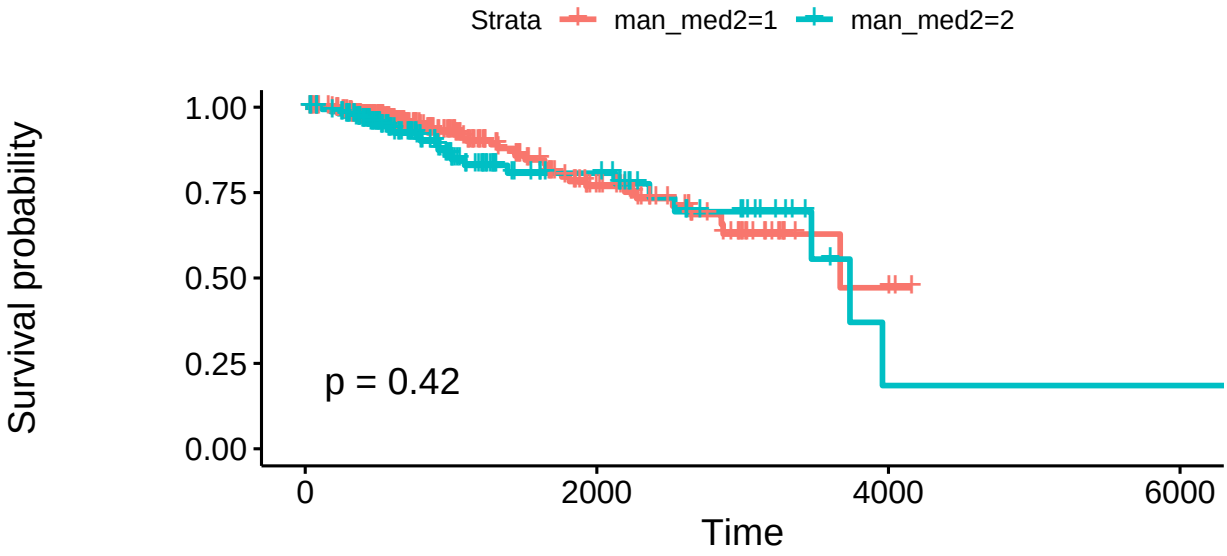

Number at risk
Strata
man_a2=1
man_a2=2
413
77
4
1
13
1
0
0
0
2000
4000
6000
Time

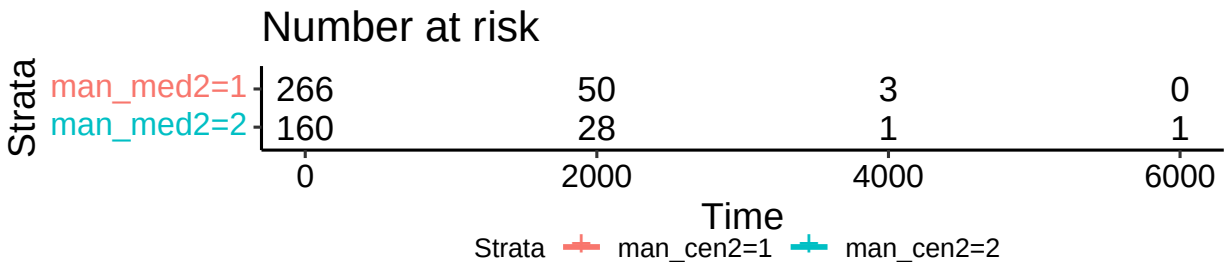

Strata
man_w2=1
man_w2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.013
0
2000
4000
6000
Time

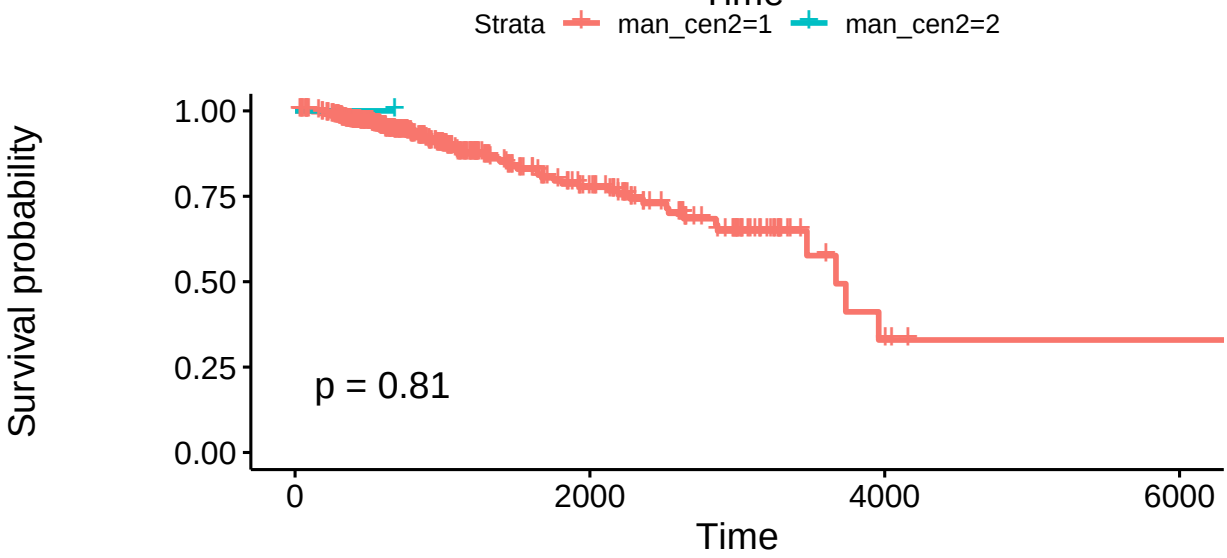

Number at risk
Strata
man_w2=1
man_w2=2
266
47
2
0
160
31
2
1
0
2000
4000
6000
Time

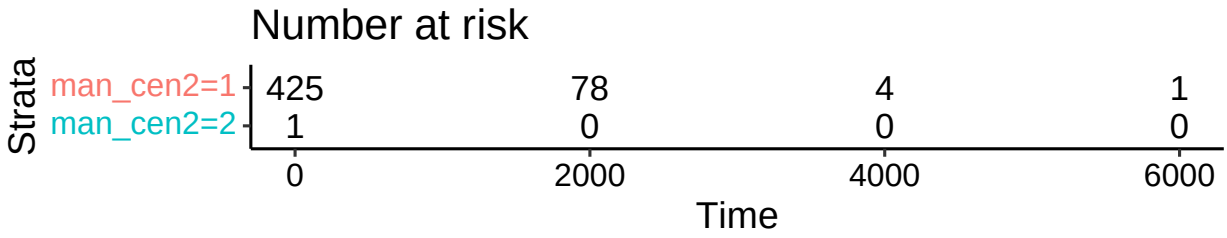

Strata
man_mcq2=1
man_mcq2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.9
0
2000
4000
6000
Time

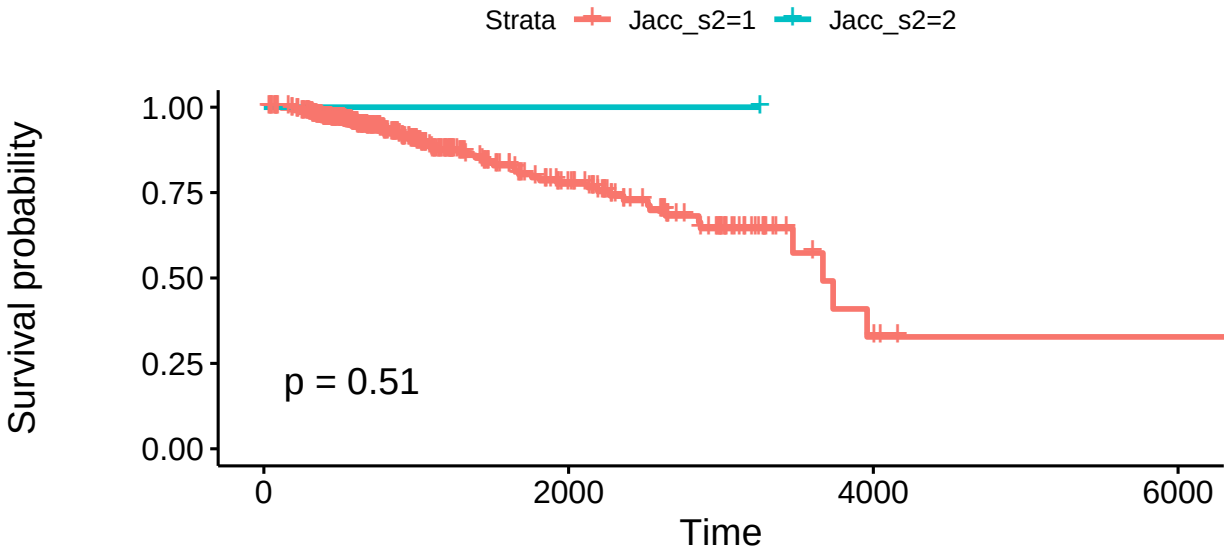

Number at risk
Strata
man_mcq2=1
man_mcq2=2
413
77
4
1
13
1
0
0
0
2000
4000
6000
Time

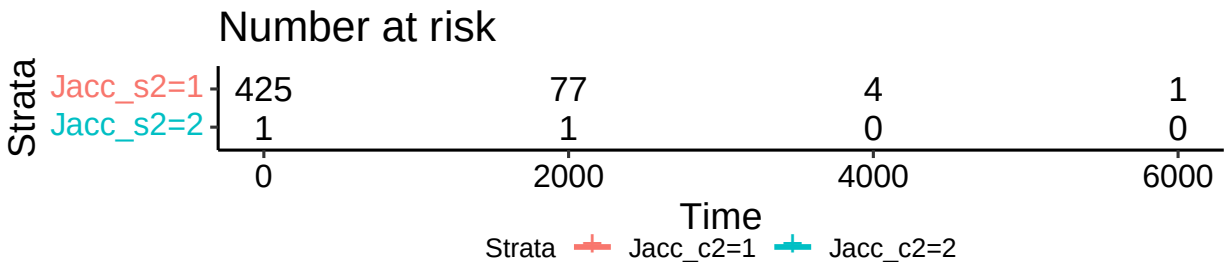

Strata
man_med2=1
man_med2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.42
0
2000
4000
6000
Time

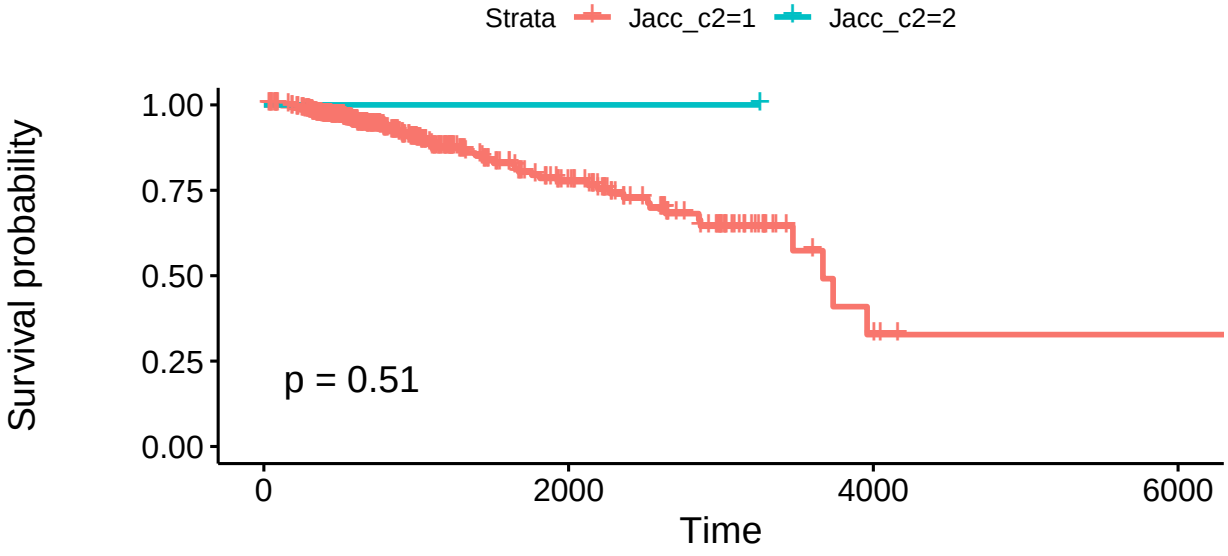

Number at risk
Strata
man_med2=1
man_med2=2
266
50
3
0
160
28
1
1
0
2000
4000
6000
Time

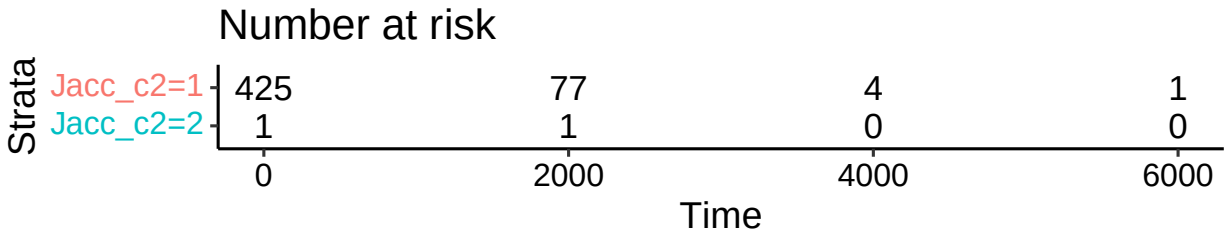

Strata
man_cen2=1
man_cen2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.81
0
2000
4000
6000
Time

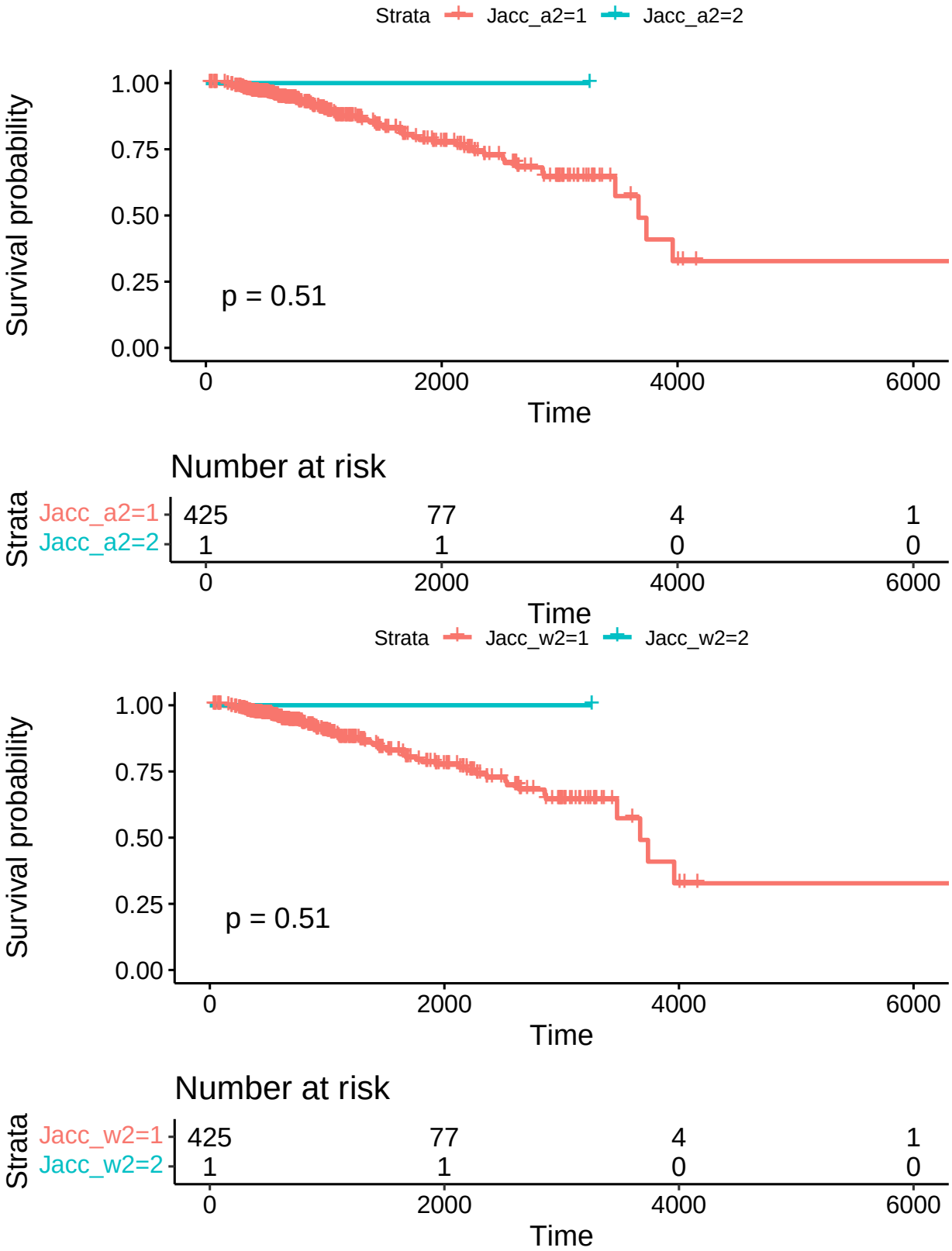

Number at risk
Strata
man_cen2=1
man_cen2=2
425
78
4
1
1
0
0
0
0
2000
4000
6000
Time

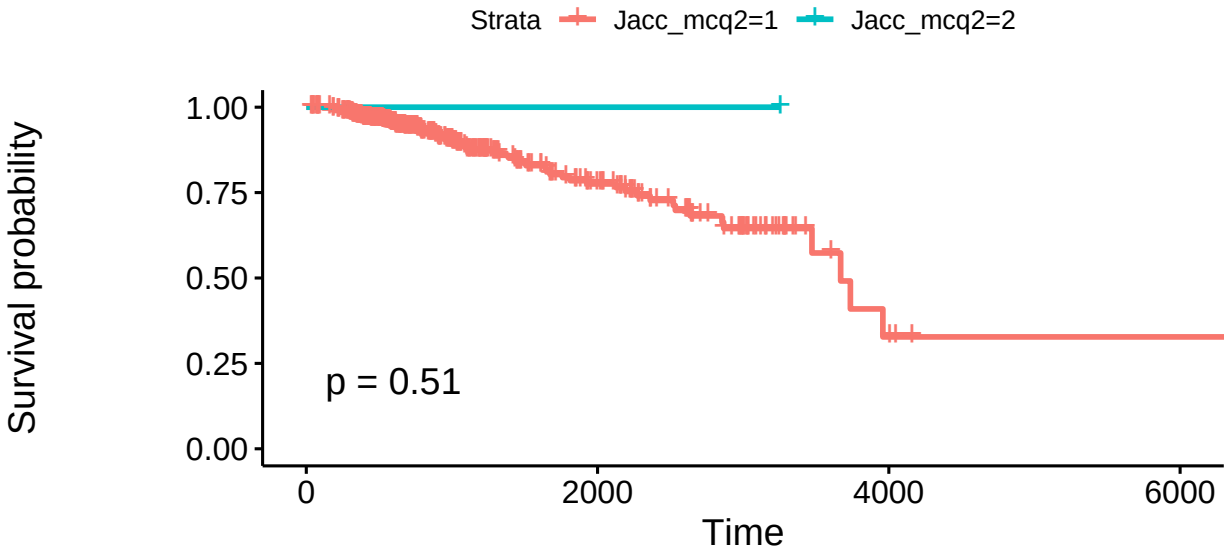

Strata
Jacc_s2=1
Jacc_s2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.51
0
2000
4000
6000
Time

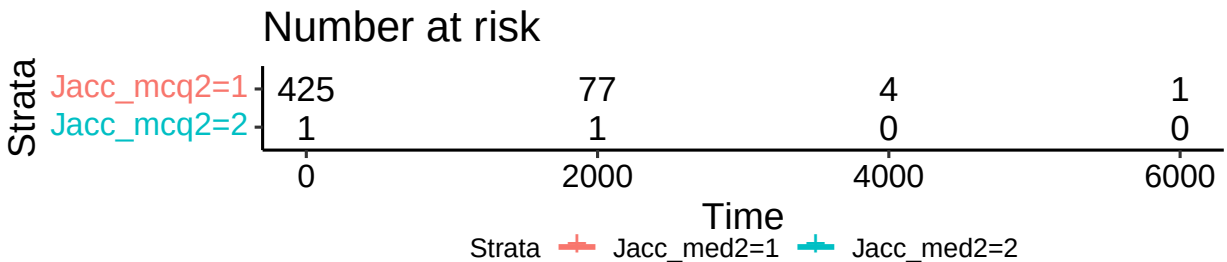

Number at risk
Strata
Jacc_s2=1
Jacc_s2=2
425
77
4
1
1
1
0
0
0
2000
4000
6000
Time

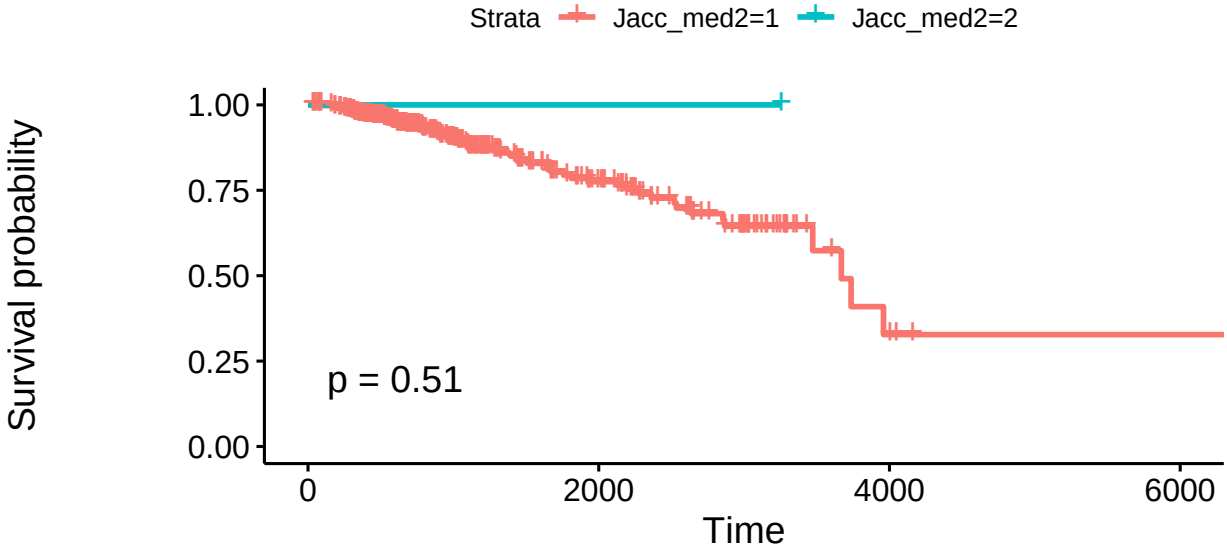

Strata
Jacc_c2=1
Jacc_c2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.51
0
2000
4000
6000
Time

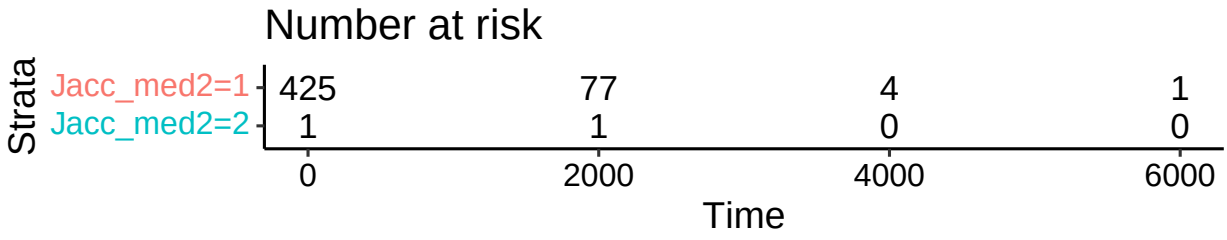

Number at risk
Strata
Jacc_c2=1
Jacc_c2=2
425
77
4
1
1
1
0
0
0
2000
4000
6000
Time

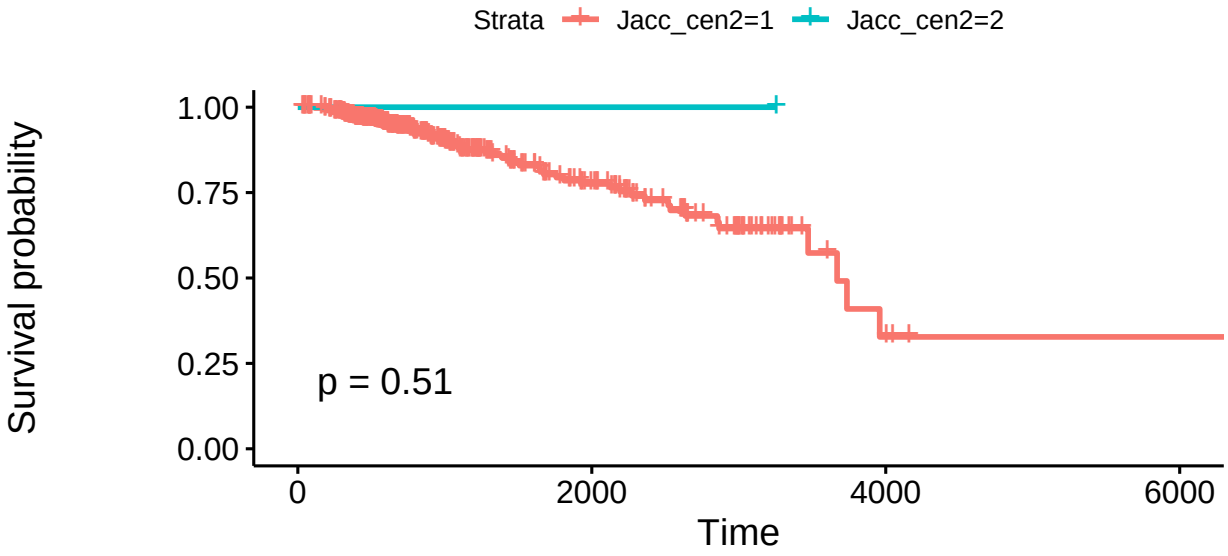

Strata
Jacc_a2=1
Jacc_a2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.51
0
2000
4000
6000
Time
Number at risk
Strata
Jacc_a2=1
Jacc_a2=2
425
77
4
1
1
1
0
0
0
2000
4000
6000
Time
Strata
Jacc_w2=1
Jacc_w2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.51
0
2000
4000
6000
Time
Number at risk
Strata
Jacc_w2=1
Jacc_w2=2
425
77
4
1
1
1
0
0
0
2000
4000
6000
Time

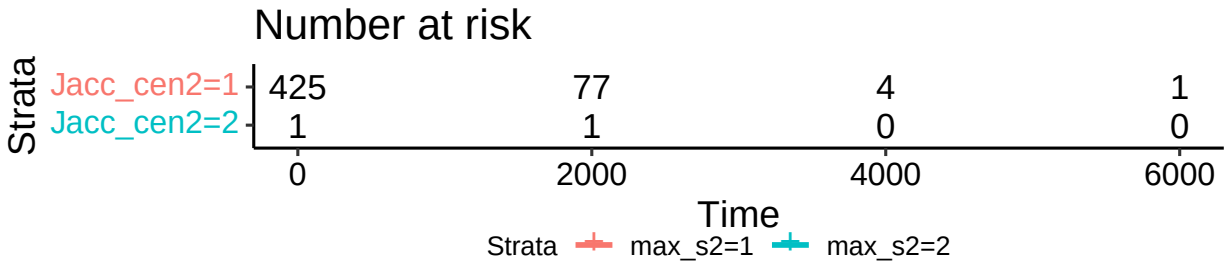

Strata
Jacc_mcq2=1
Jacc_mcq2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.51
0
2000
4000
6000
Time

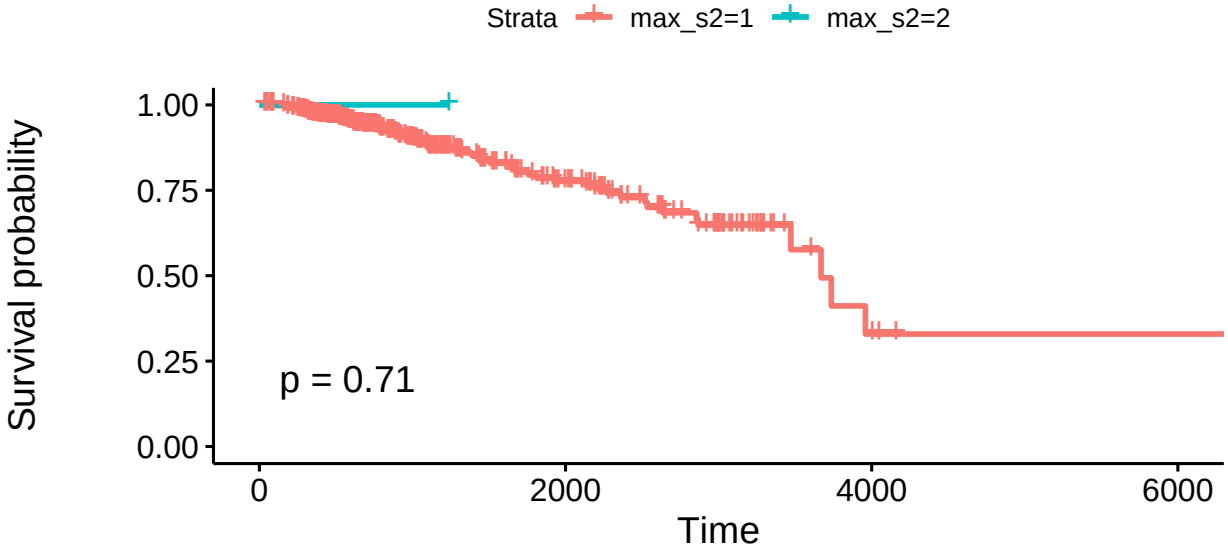

Number at risk
Strata
Jacc_mcq2=1
Jacc_mcq2=2
425
77
4
1
1
1
0
0
0
2000
4000
6000
Time

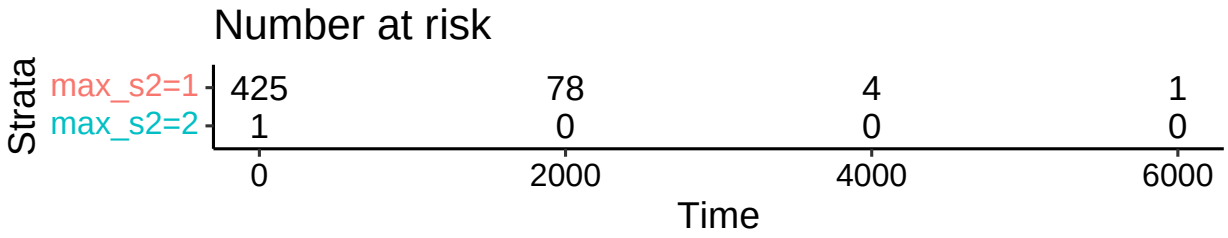

Strata
Jacc_med2=1
Jacc_med2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.51
0
2000
4000
6000
Time

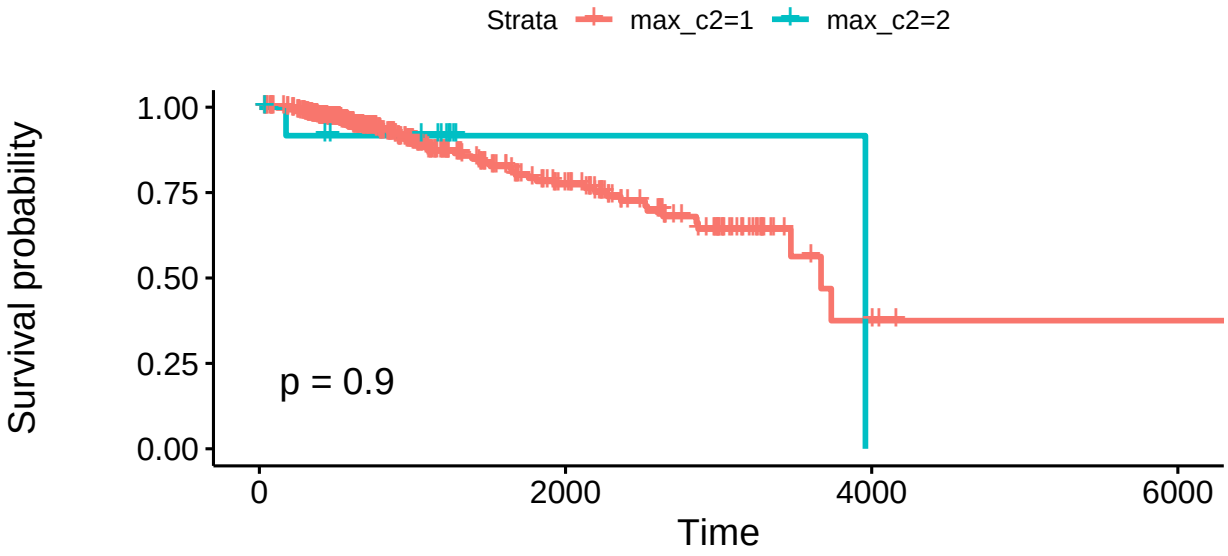

Number at risk
Strata
Jacc_med2=1
Jacc_med2=2
425
77
4
1
1
1
0
0
0
2000
4000
6000
Time

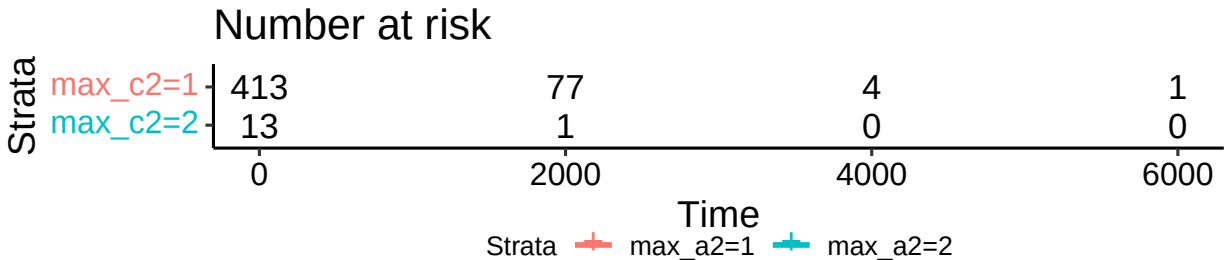

Strata
Jacc_cen2=1
Jacc_cen2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.51
0
2000
4000
6000
Time

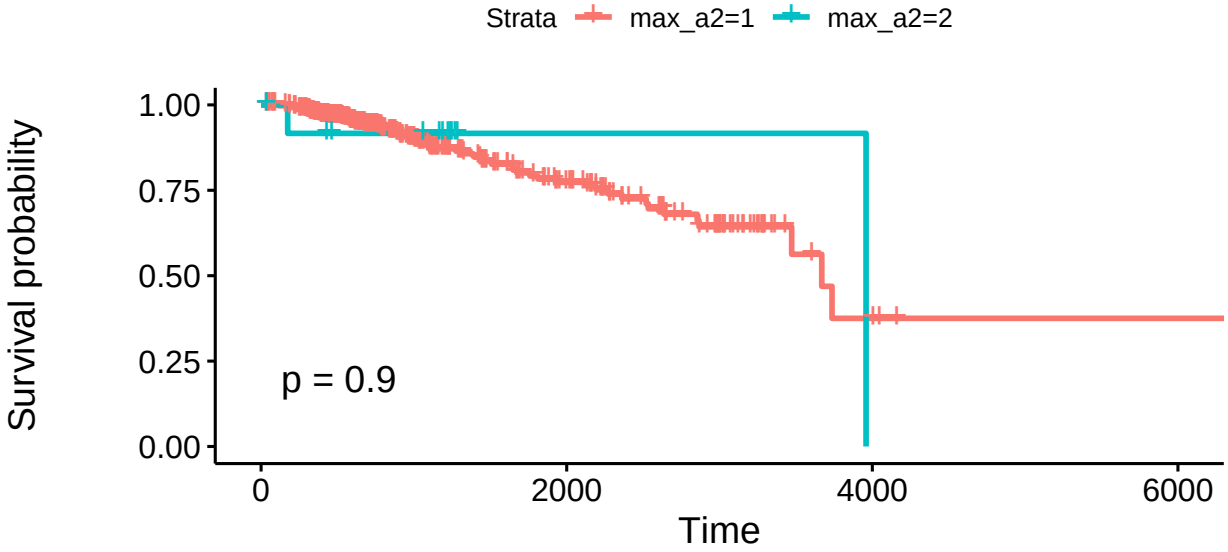

Number at risk
Strata
Jacc_cen2=1
Jacc_cen2=2
425
77
4
1
1
1
0
0
0
2000
4000
6000
Time

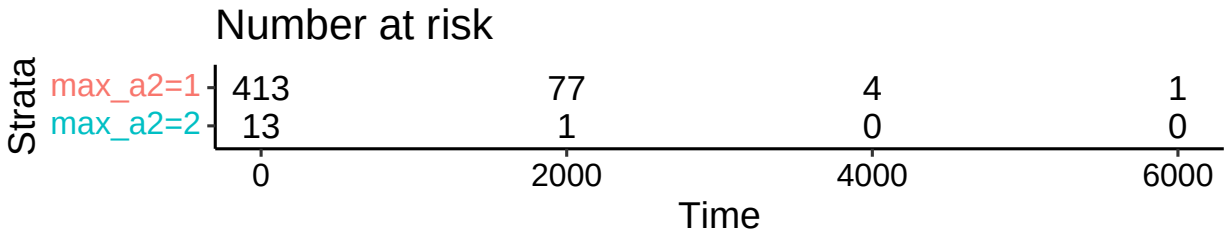

Strata
max_s2=1
max_s2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.71
0
2000
4000
6000
Time

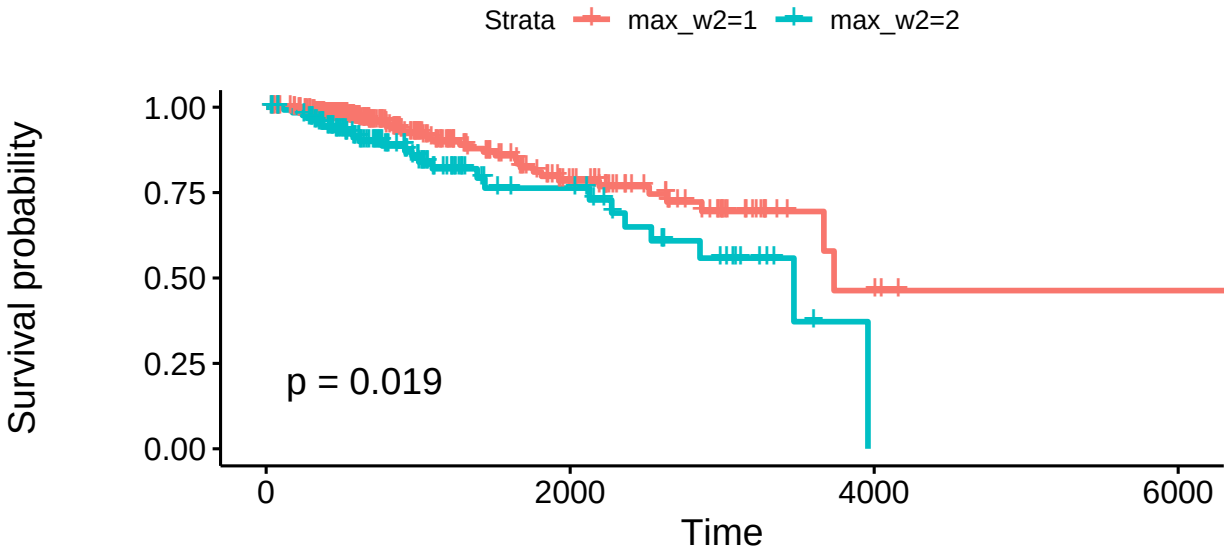

Number at risk
Strata
max_s2=1
max_s2=2
425
78
4
1
1
0
0
0
0
2000
4000
6000
Time

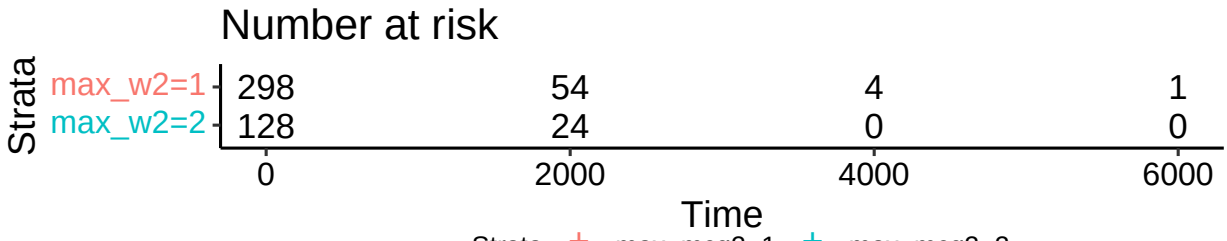

Strata
max_c2=1
max_c2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.9
0
2000
4000
6000
Time

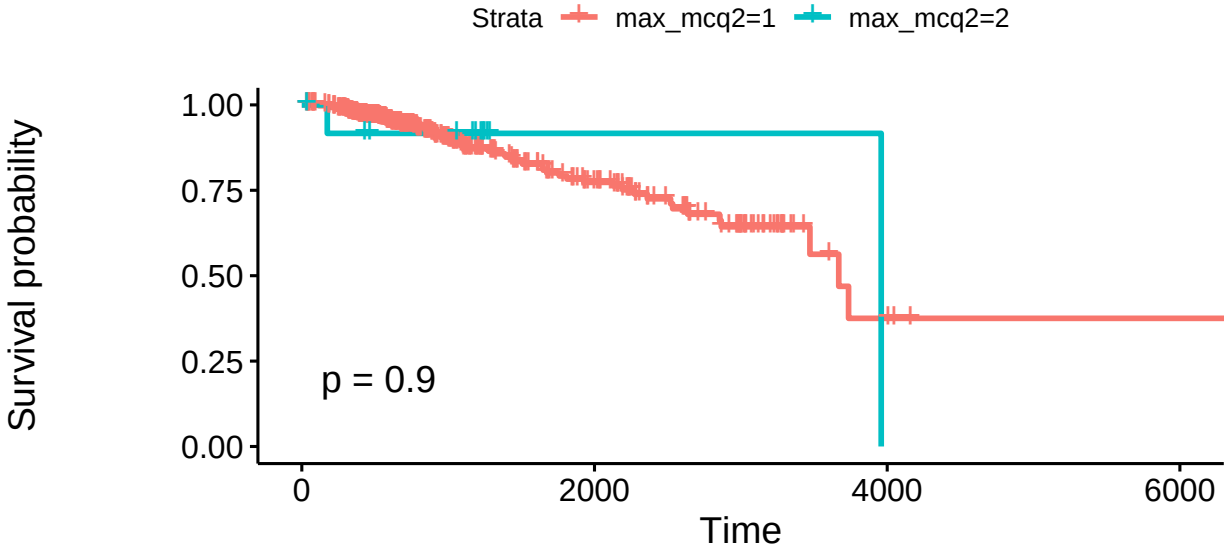

Number at risk
Strata
max_c2=1
max_c2=2
413
77
4
1
13
1
0
0
0
2000
4000
6000
Time

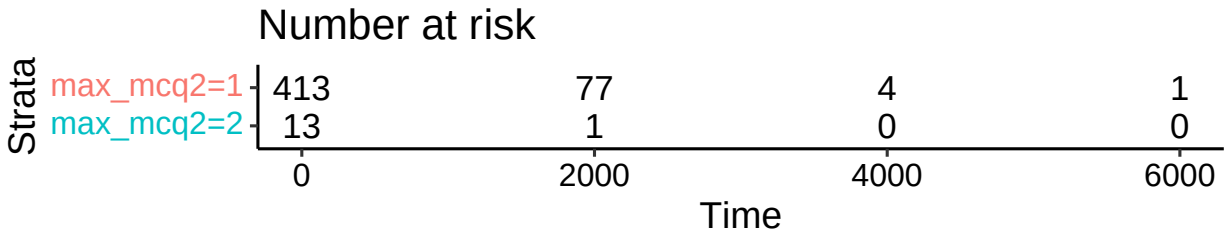

Strata
max_a2=1
max_a2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.9
0
2000
4000
6000
Time

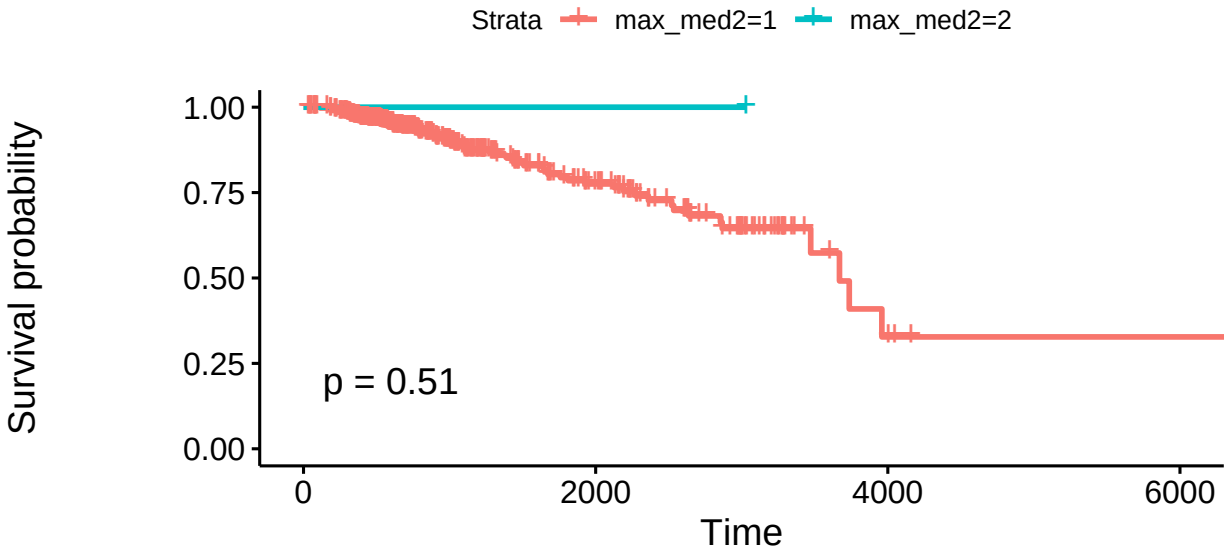

Number at risk
Strata
max_a2=1
max_a2=2
413
77
4
1
13
1
0
0
0
2000
4000
6000
Time

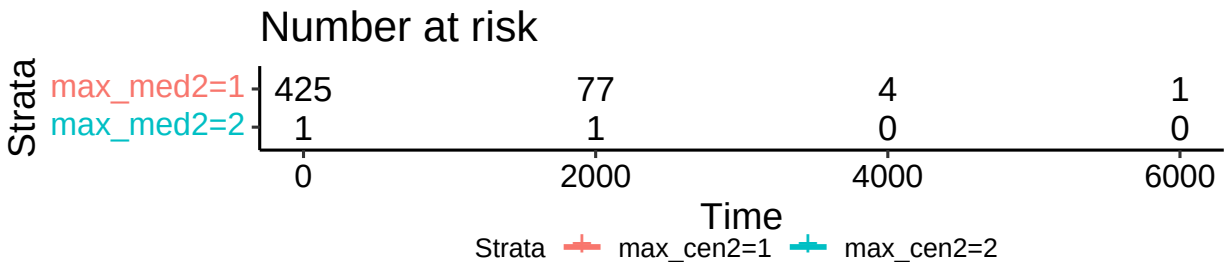

Strata
max_w2=1
max_w2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.019
0
2000
4000
6000
Time

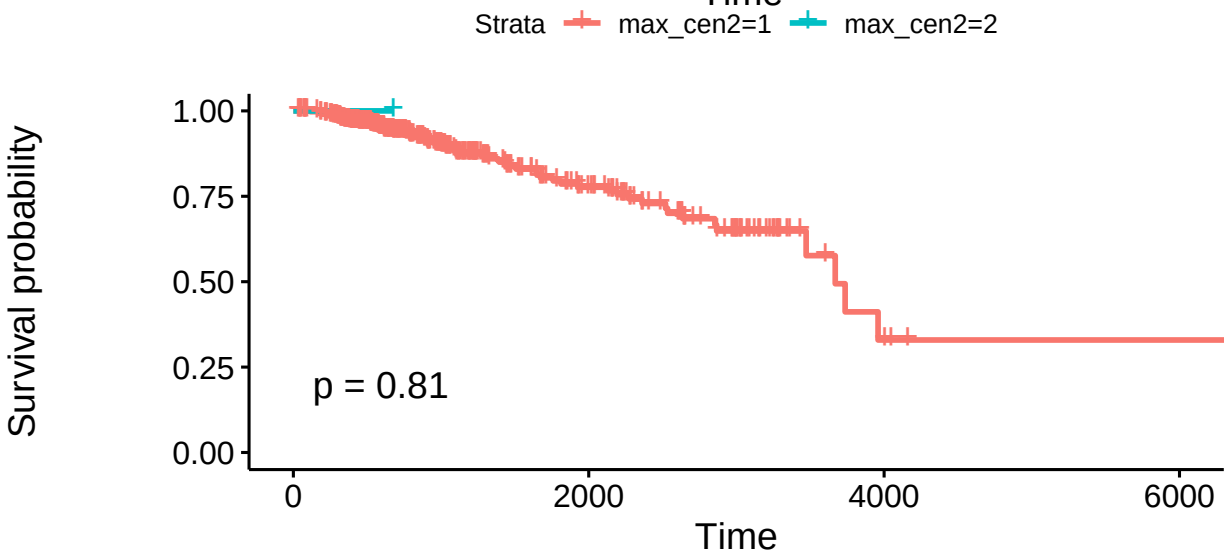

Number at risk
Strata
max_w2=1
max_w2=2
298
54
4
1
128
24
0
0
0
2000
4000
6000
Time

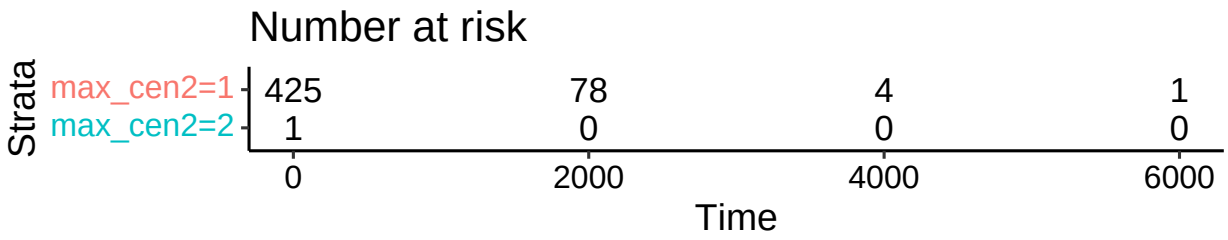

Strata
max_mcq2=1
max_mcq2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.9
0
2000
4000
6000
Time

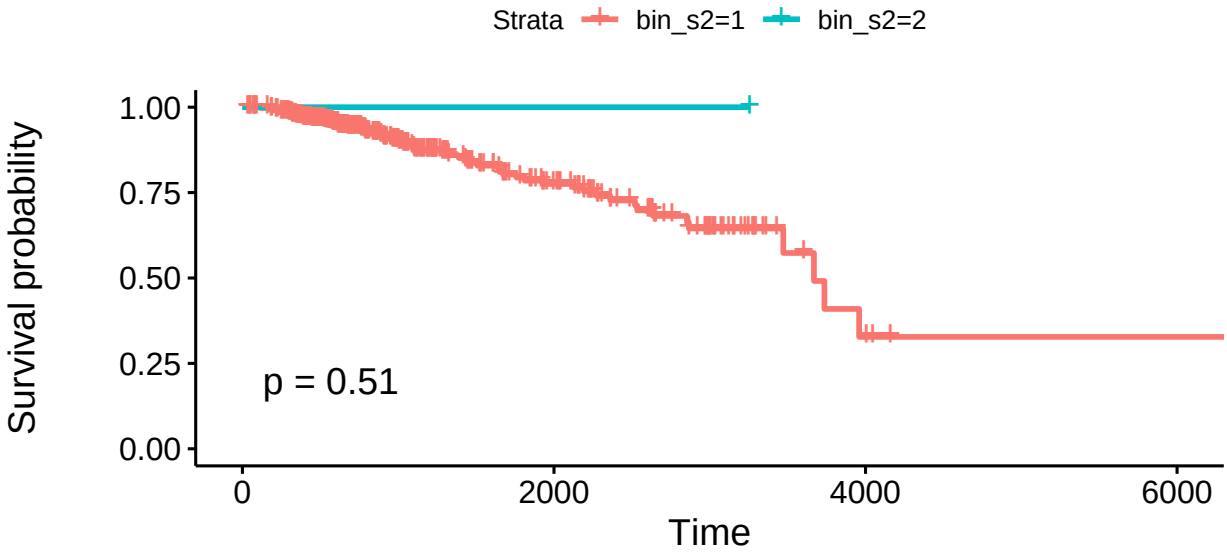

Number at risk
Strata
max_mcq2=1
max_mcq2=2
413
77
4
1
13
1
0
0
0
2000
4000
6000
Time

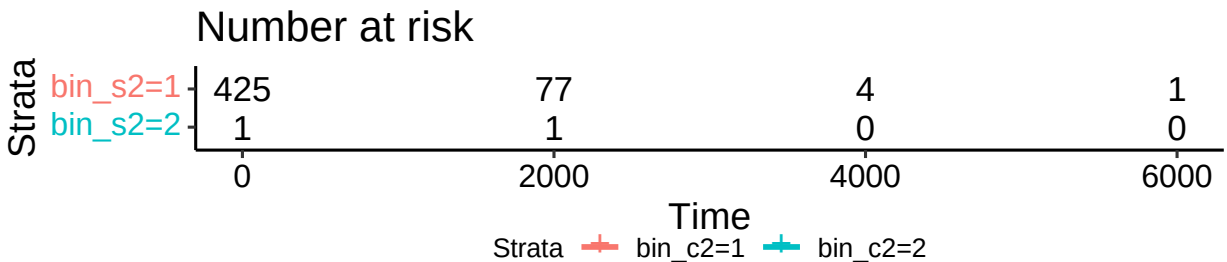

Strata
max_med2=1
max_med2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.51
0
2000
4000
6000
Time

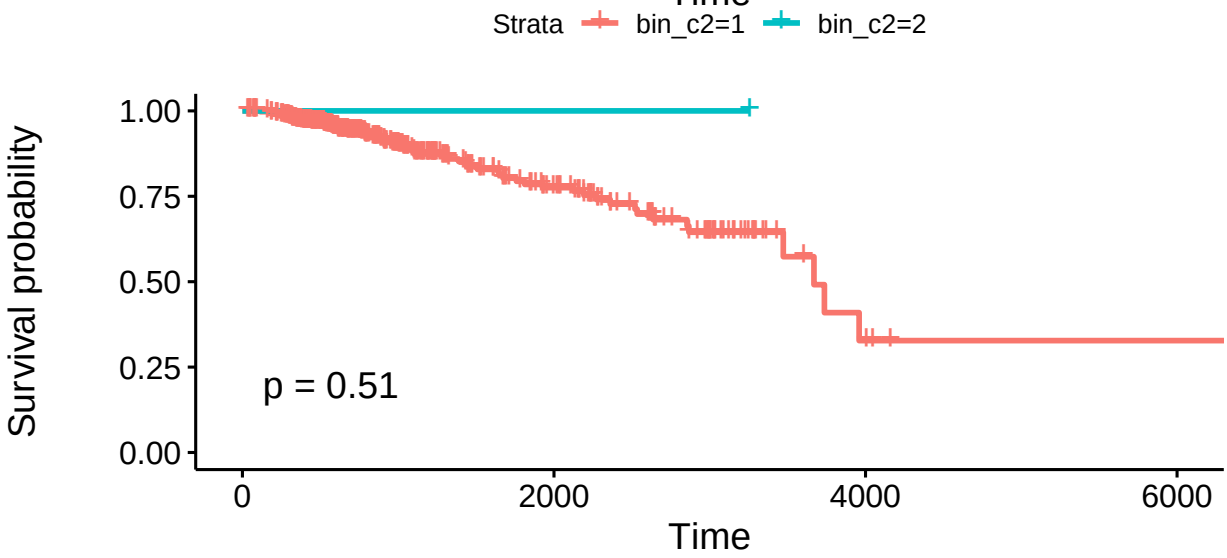

Number at risk
Strata
max_med2=1
max_med2=2
425
77
4
1
1
1
0
0
0
2000
4000
6000
Time

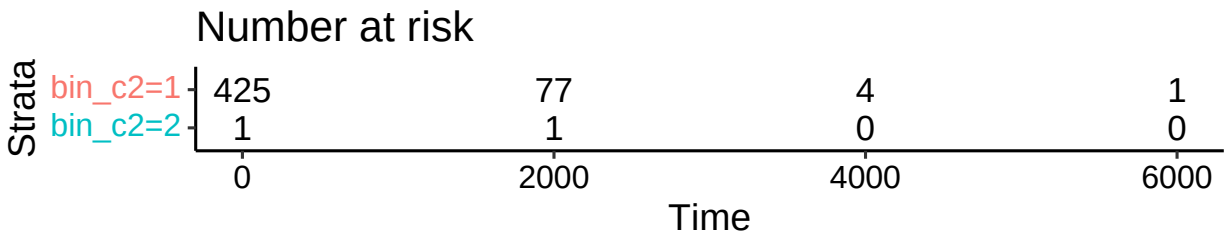

Strata
max_cen2=1
max_cen2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.81
0
2000
4000
6000
Time

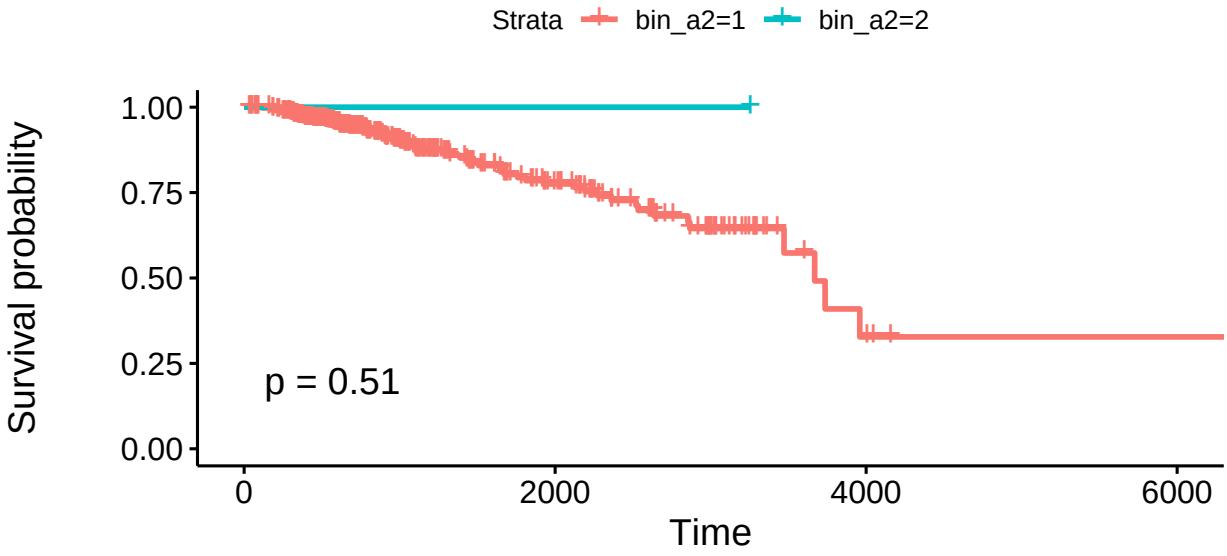

Number at risk
Strata
max_cen2=1
max_cen2=2
425
78
4
1
1
0
0
0
0
2000
4000
6000
Time

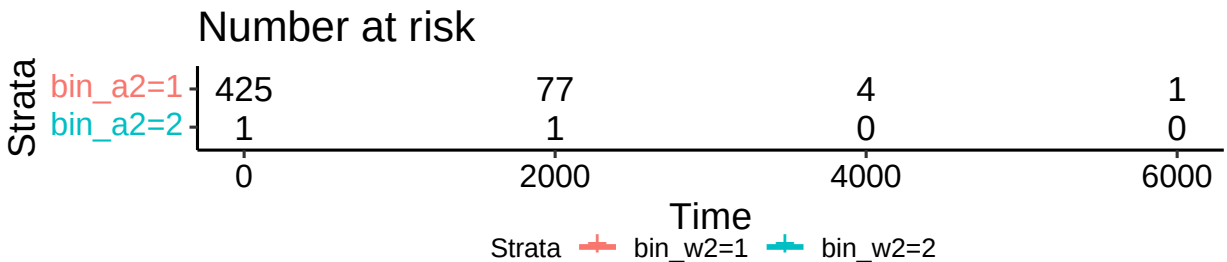

Strata
bin_s2=1
bin_s2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.51
0
2000
4000
6000
Time

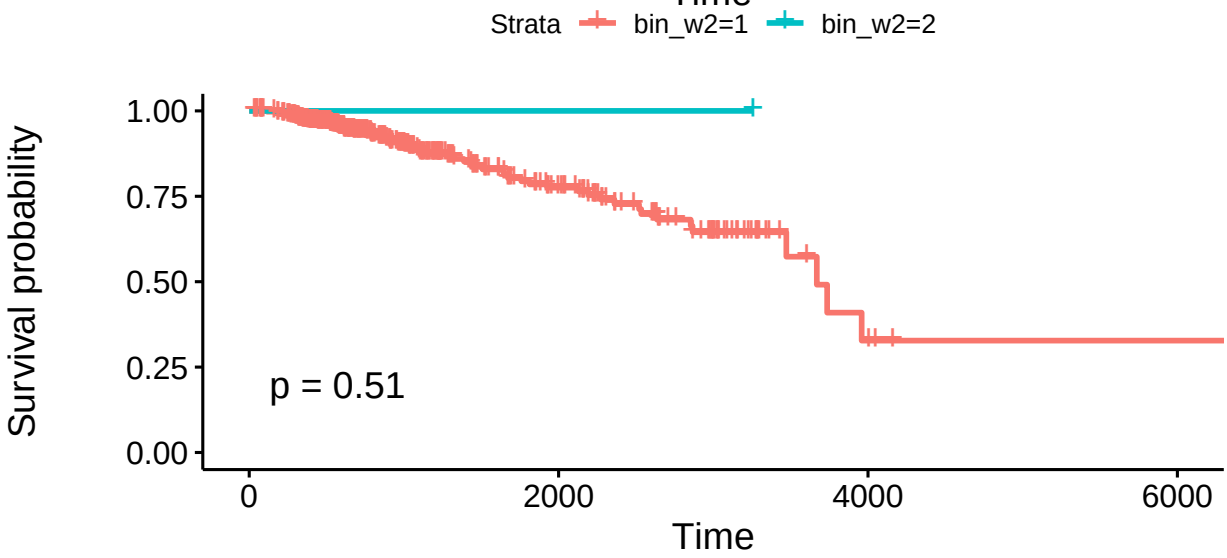

Number at risk
Strata
bin_s2=1
bin_s2=2
425
77
4
1
1
1
0
0
0
2000
4000
6000
Time

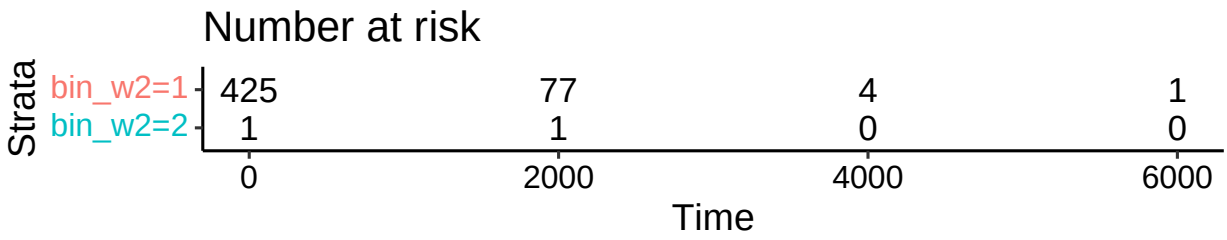

Strata
bin_c2=1
bin_c2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.51
0
2000
4000
6000
Time

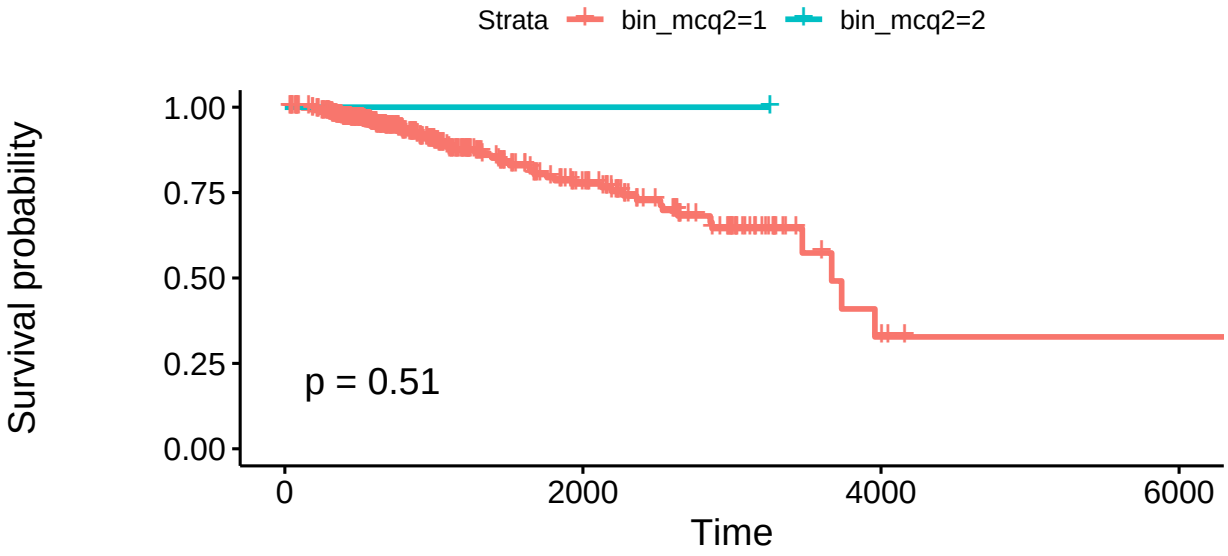

Number at risk
Strata
bin_c2=1
bin_c2=2
425
77
4
1
1
1
0
0
0
2000
4000
6000
Time

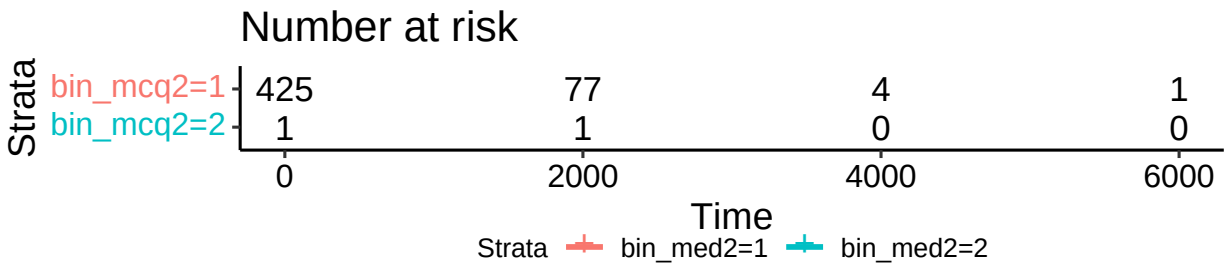

Strata
bin_a2=1
bin_a2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.51
0
2000
4000
6000
Time

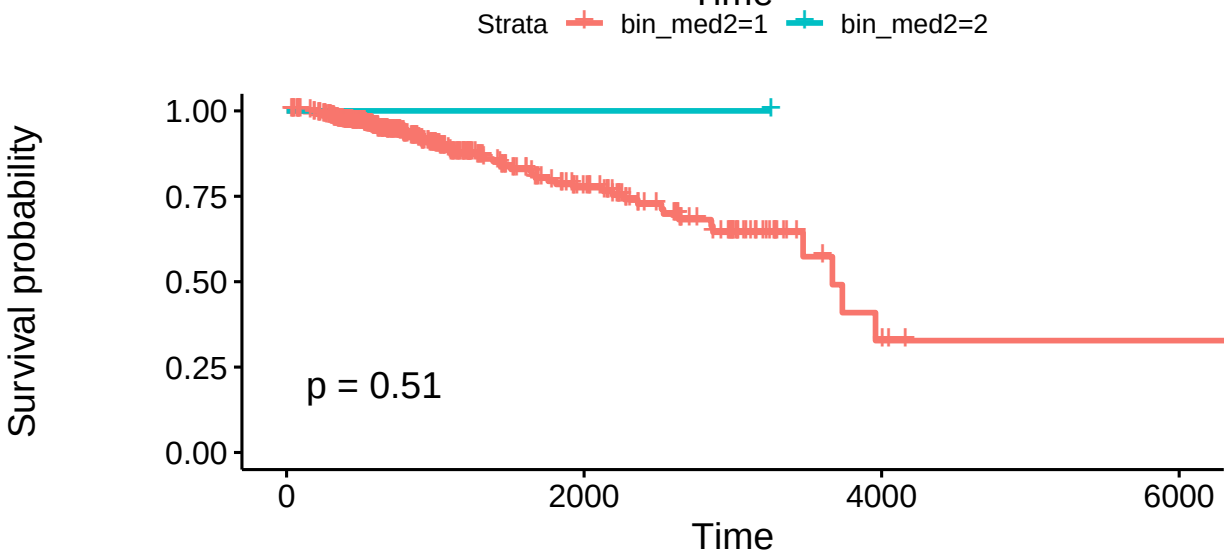

Number at risk
Strata
bin_a2=1
bin_a2=2
425
77
4
1
1
1
0
0
0
2000
4000
6000
Time

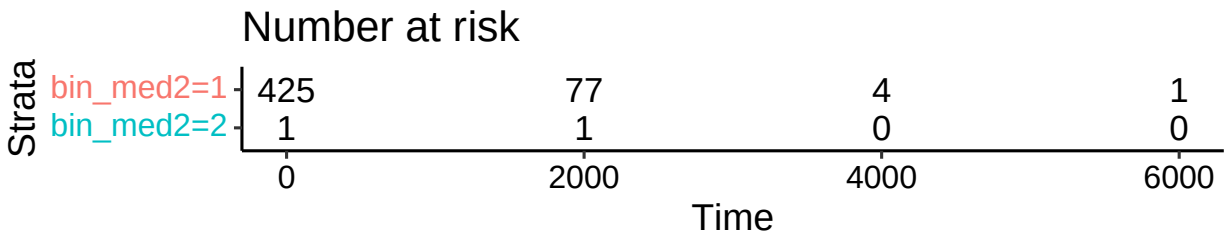

Strata
bin_w2=1
bin_w2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.51
0
2000
4000
6000
Time

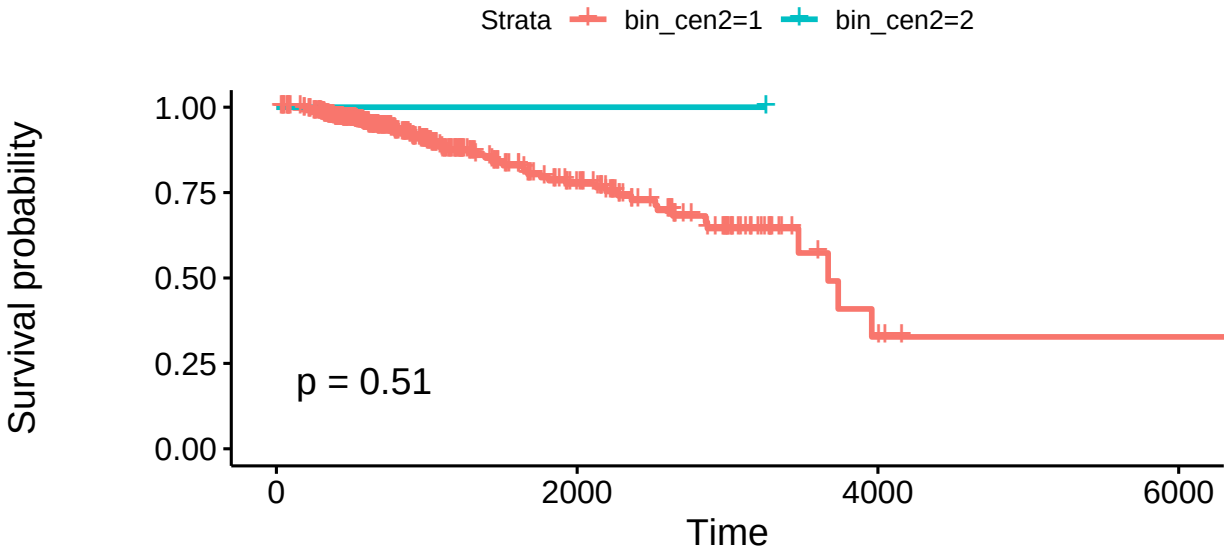

Number at risk
Strata
bin_w2=1
bin_w2=2
425
77
4
1
1
1
0
0
0
2000
4000
6000
Time

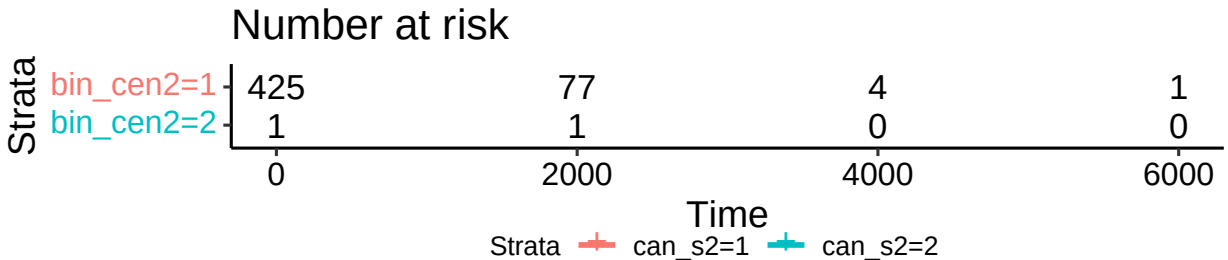

Strata
bin_mcq2=1
bin_mcq2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.51
0
2000
4000
6000
Time

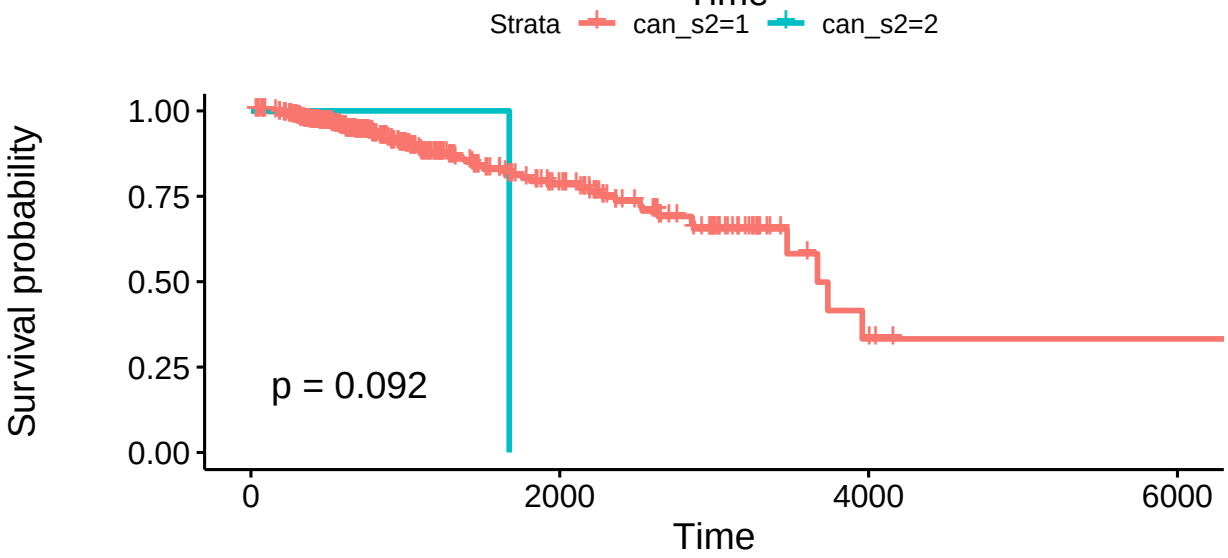

Number at risk
Strata
bin_mcq2=1
bin_mcq2=2
425
77
4
1
1
1
0
0
0
2000
4000
6000
Time

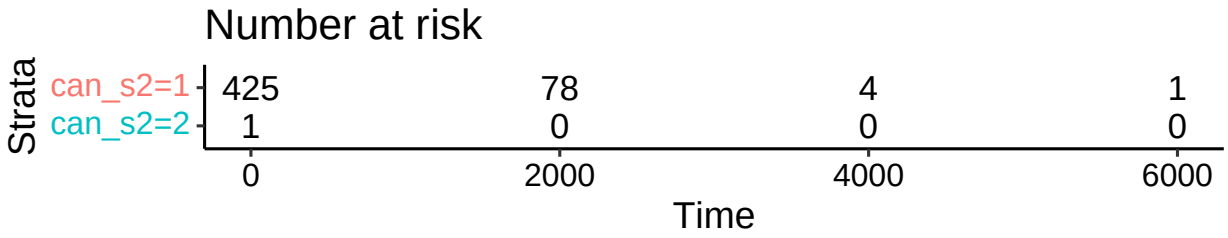

Strata
bin_med2=1
bin_med2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.51
0
2000
4000
6000
Time

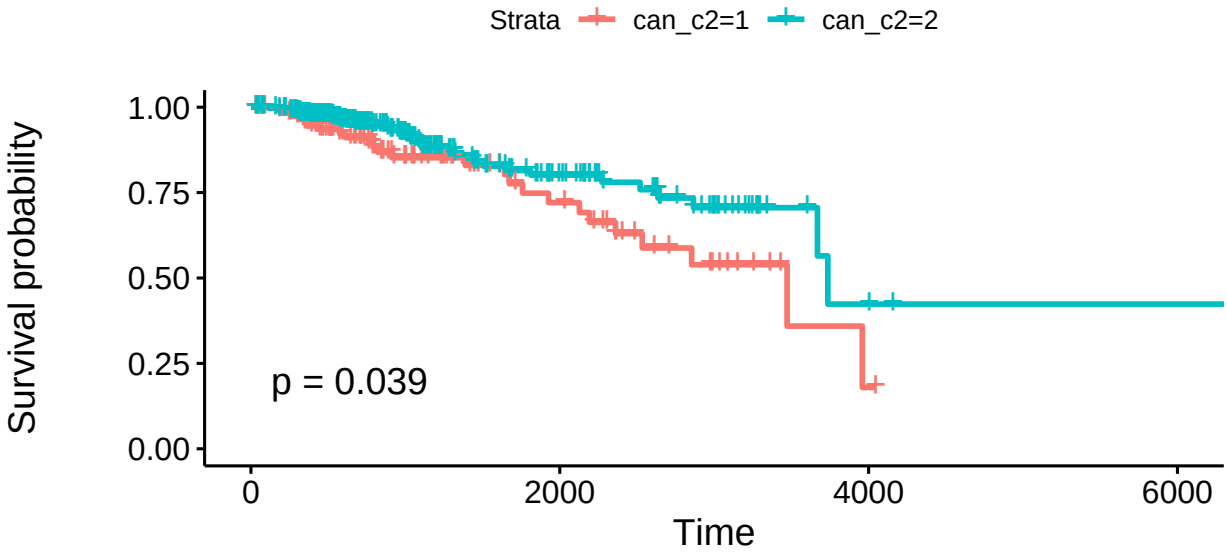

Number at risk
Strata
bin_med2=1
bin_med2=2
425
77
4
1
1
1
0
0
0
2000
4000
6000
Time

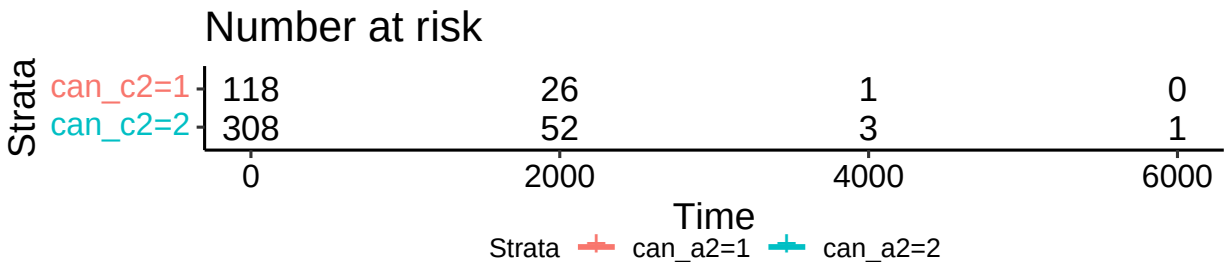

Strata
bin_cen2=1
bin_cen2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.51
0
2000
4000
6000
Time

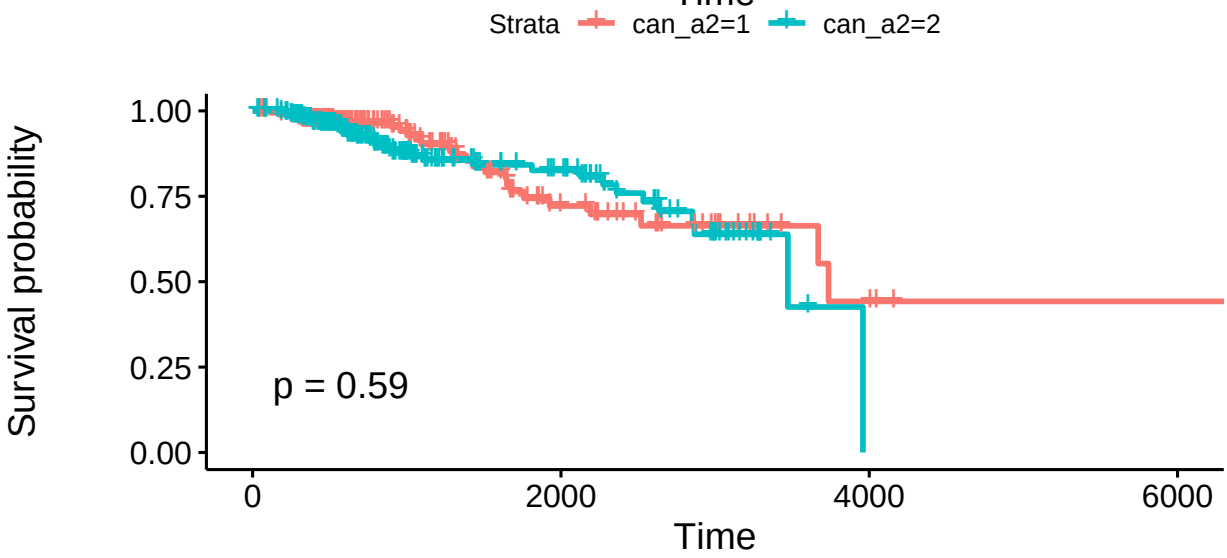

Number at risk
Strata
bin_cen2=1
bin_cen2=2
425
77
4
1
1
1
0
0
0
2000
4000
6000
Time

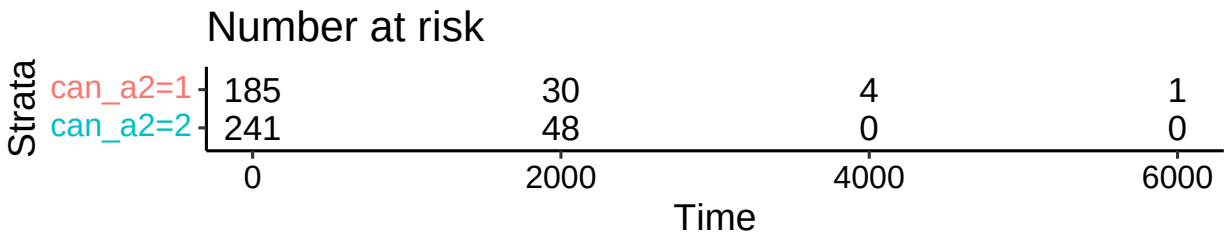

Strata
can_s2=1
can_s2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.092
0
2000
4000
6000
Time

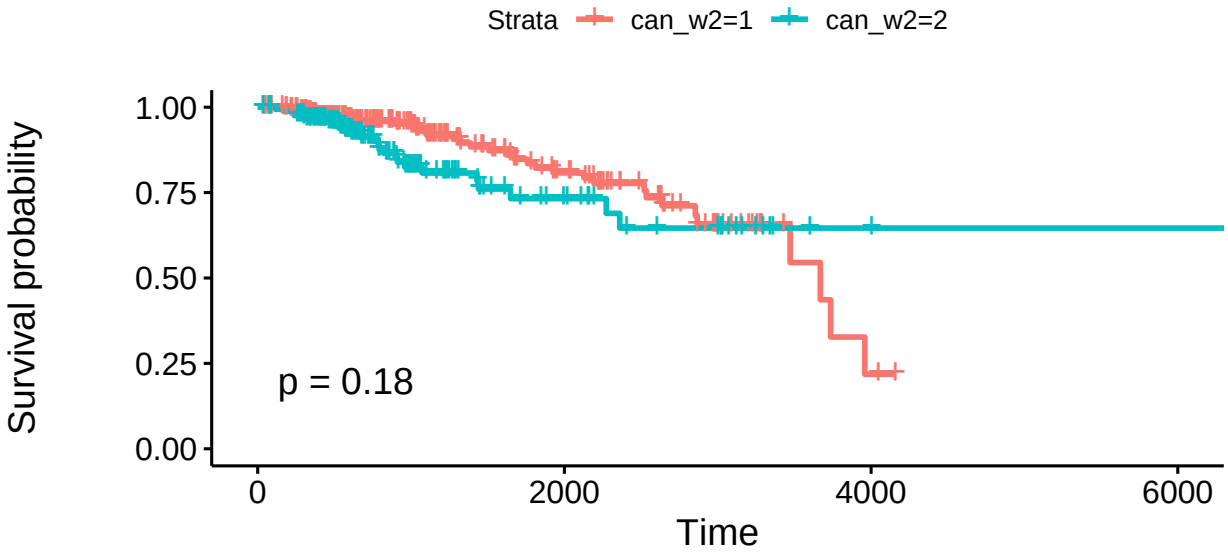

Number at risk
Strata
can_s2=1
can_s2=2
425
78
4
1
1
0
0
0
0
2000
4000
6000
Time

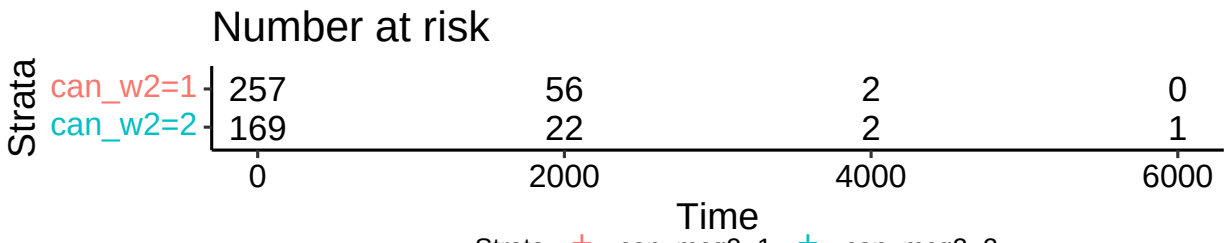

Strata
can_c2=1
can_c2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.039
0
2000
4000
6000
Time

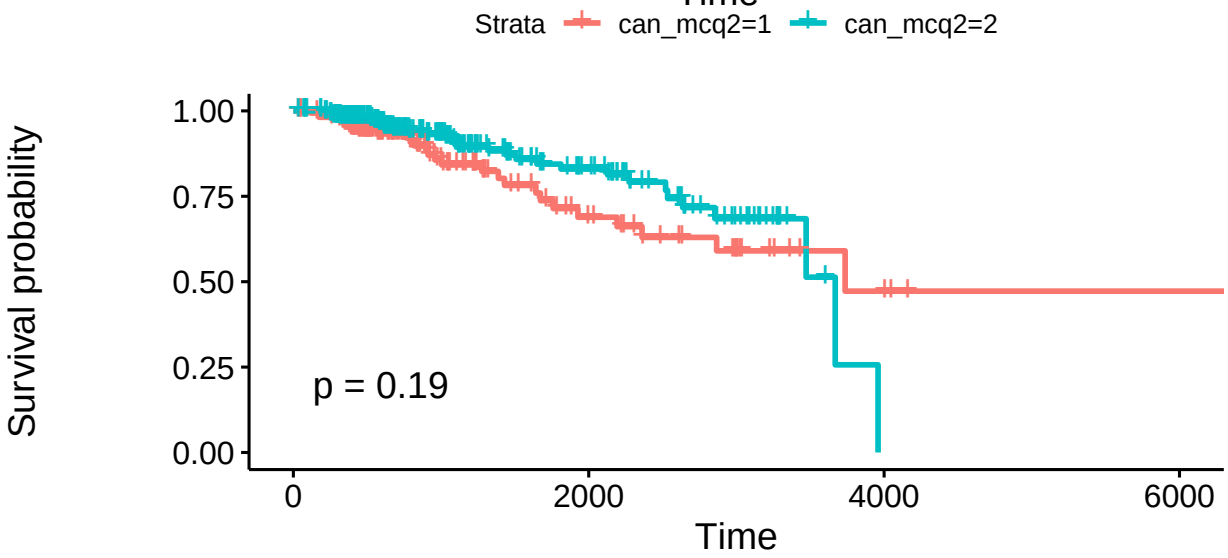

Number at risk
Strata
can_c2=1
can_c2=2
118
26
1
0
308
52
3
1
0
2000
4000
6000
Time

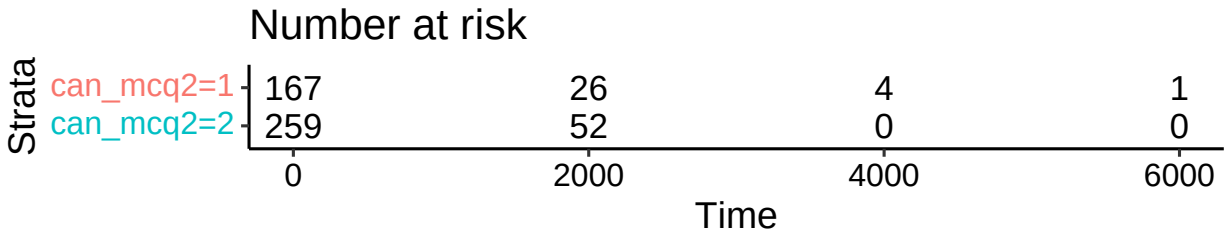

Strata
can_a2=1
can_a2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.59
0
2000
4000
6000
Time

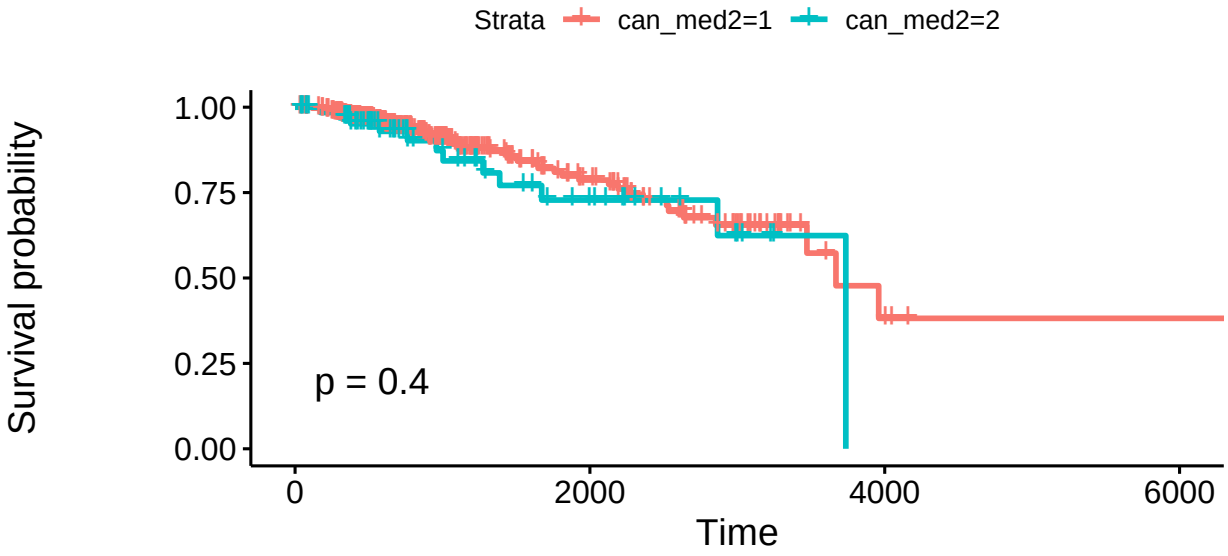

Number at risk
Strata
can_a2=1
can_a2=2
185
30
4
1
241
48
0
0
0
2000
4000
6000
Time

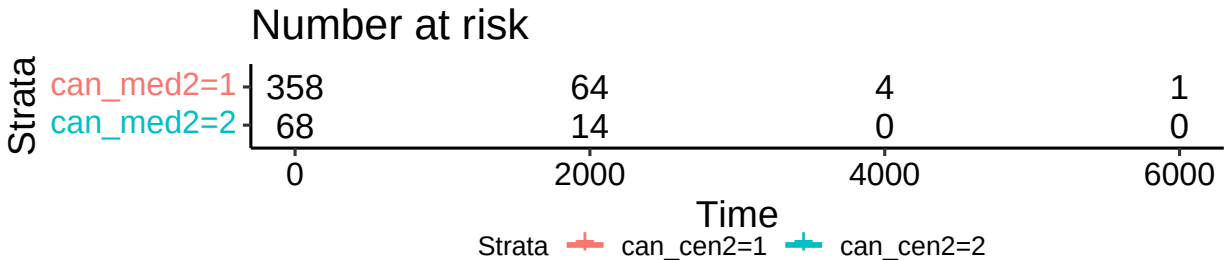

Strata
can_w2=1
can_w2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.18
0
2000
4000
6000
Time

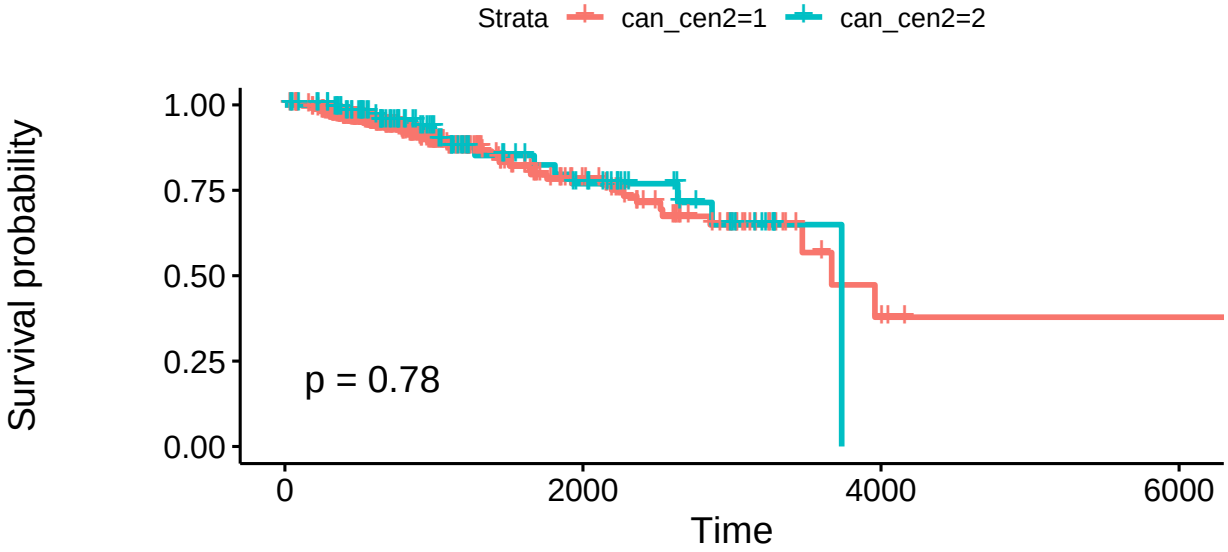

Number at risk
Strata
can_w2=1
can_w2=2
257
56
2
0
169
22
2
1
0
2000
4000
6000
Time

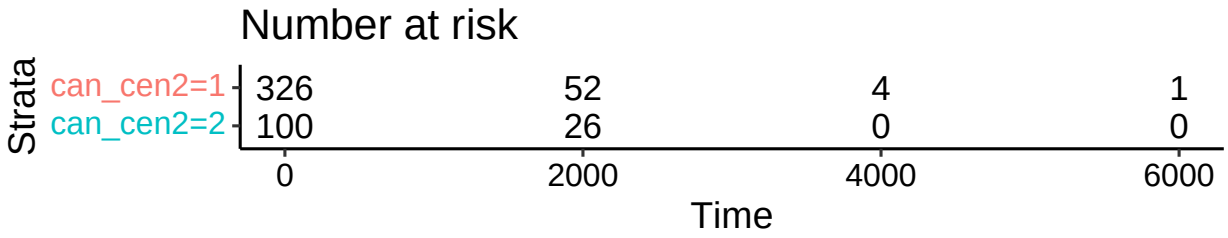

Strata
can_mcq2=1
can_mcq2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.19
0
2000
4000
6000
Time

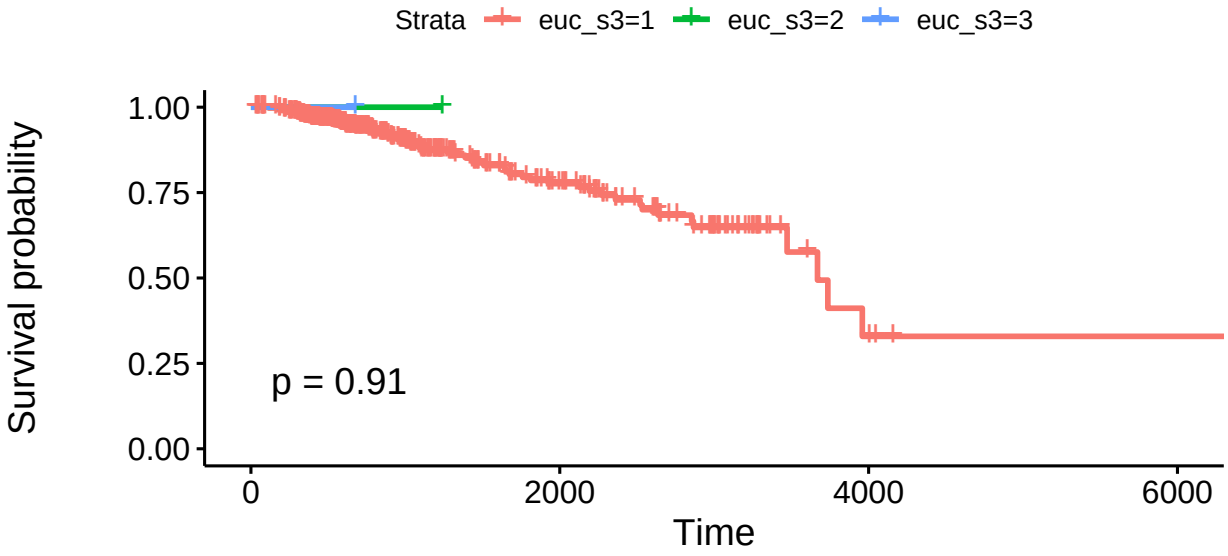

Number at risk
Strata
can_mcq2=1
can_mcq2=2
167
26
4
1
259
52
0
0
0
2000
4000
6000
Time

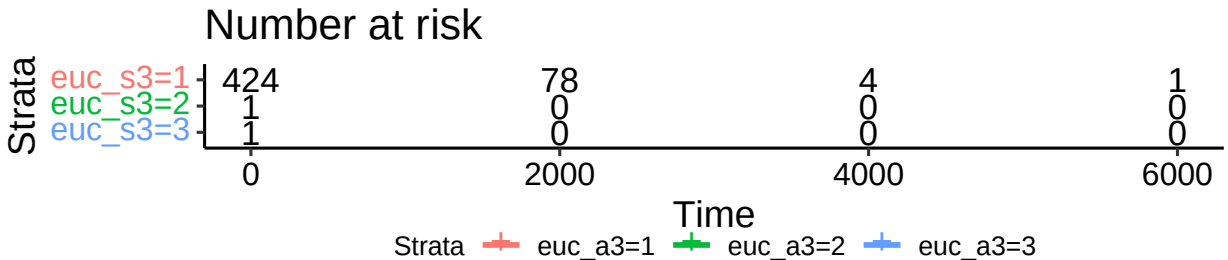

Strata
can_med2=1
can_med2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.4
0
2000
4000
6000
Time

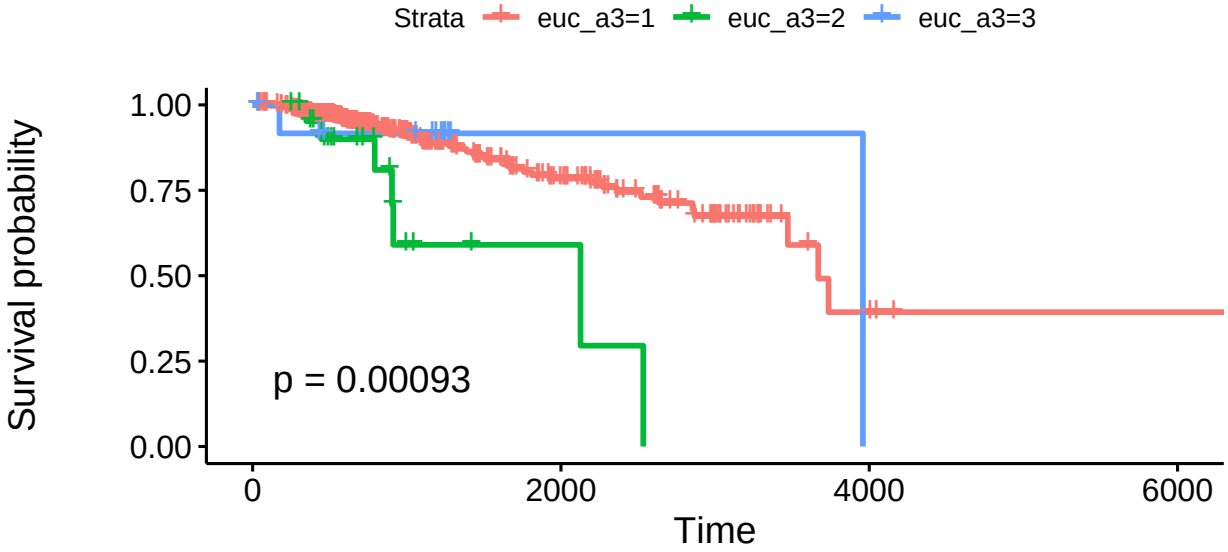

Number at risk
Strata
can_med2=1
can_med2=2
358
64
4
1
68
14
0
0
0
2000
4000
6000
Time

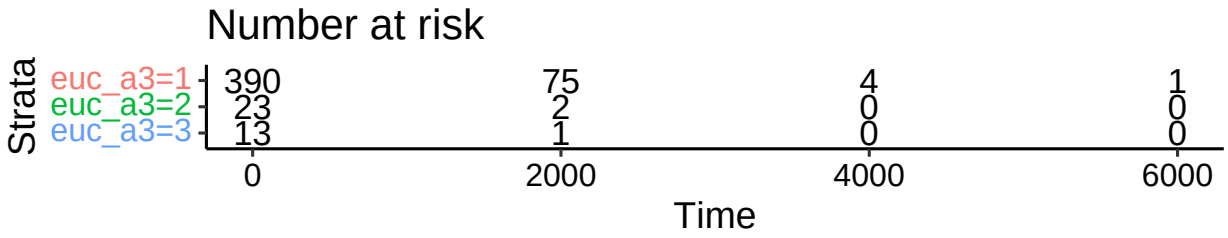

Strata
can_cen2=1
can_cen2=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.78
0
2000
4000
6000
Time

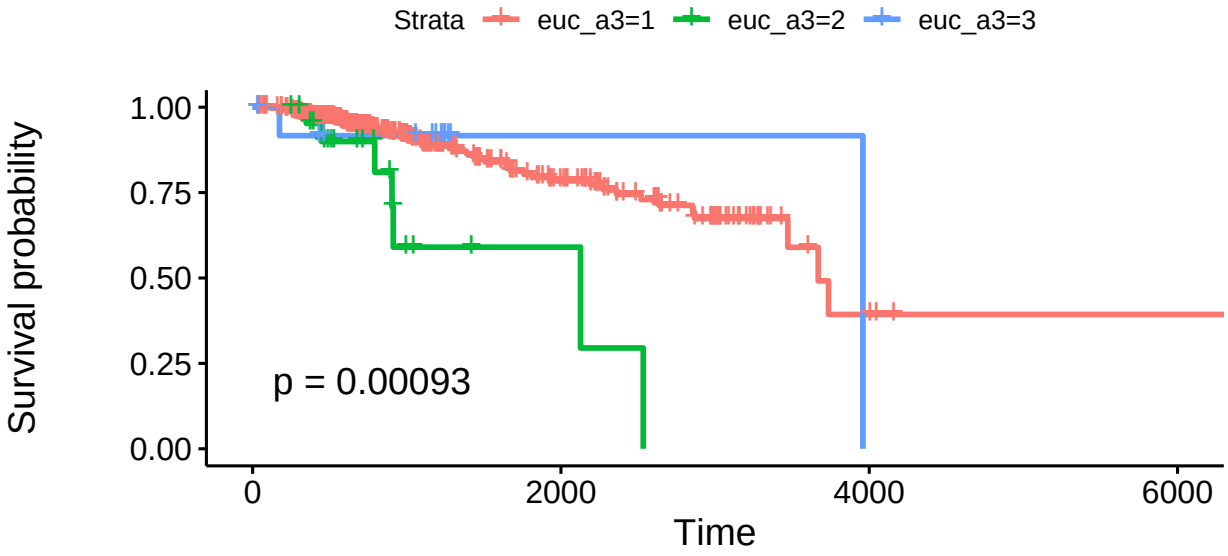

Number at risk
Strata
can_cen2=1
can_cen2=2
326
52
4
1
100
26
0
0
0
2000
4000
6000
Time

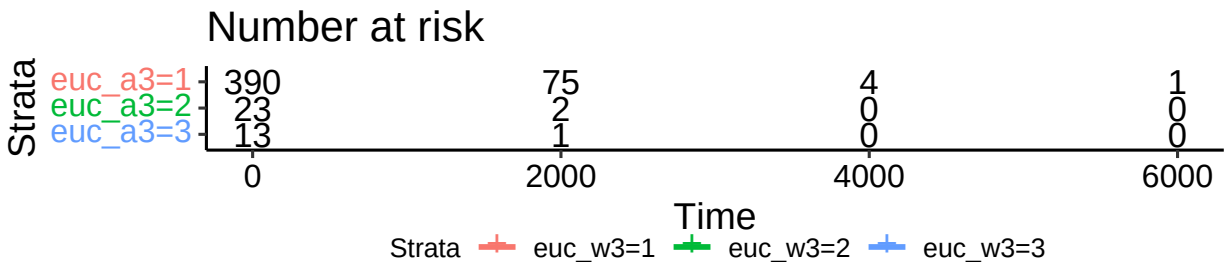

Strata
euc_s3=1
euc_s3=2
euc_s3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.91
0
2000
4000
6000
Time

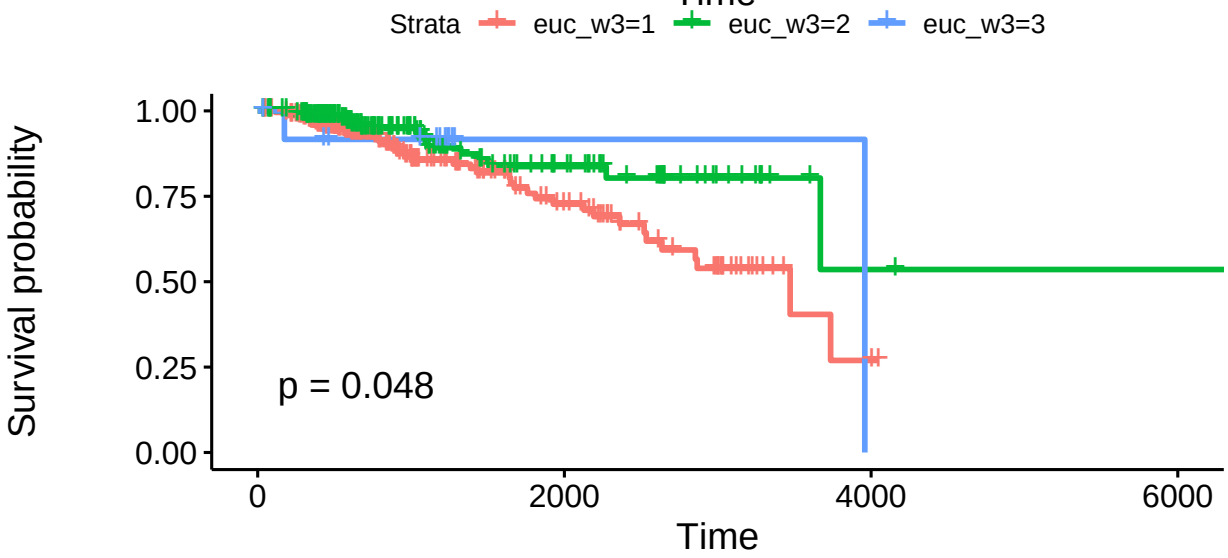

Number at risk
Strata
euc_s3=1
euc_s3=2
euc_s3=3
424
1
1
78
0
0
4
0
0
1
0
0
0
2000
4000
6000
Time

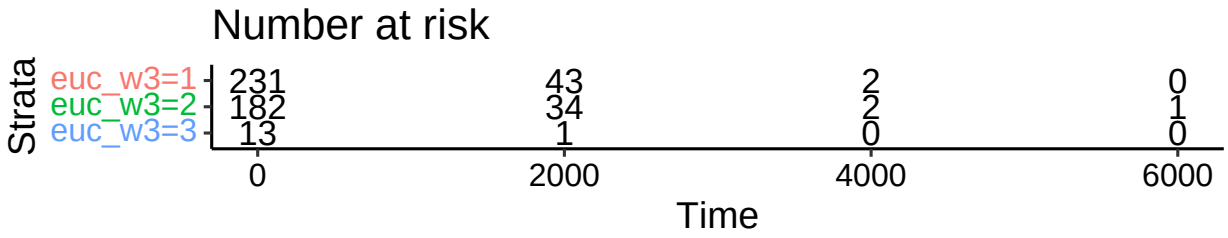

Strata
euc_a3=1
euc_a3=2
euc_a3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.00093
0
2000
4000
6000
Time

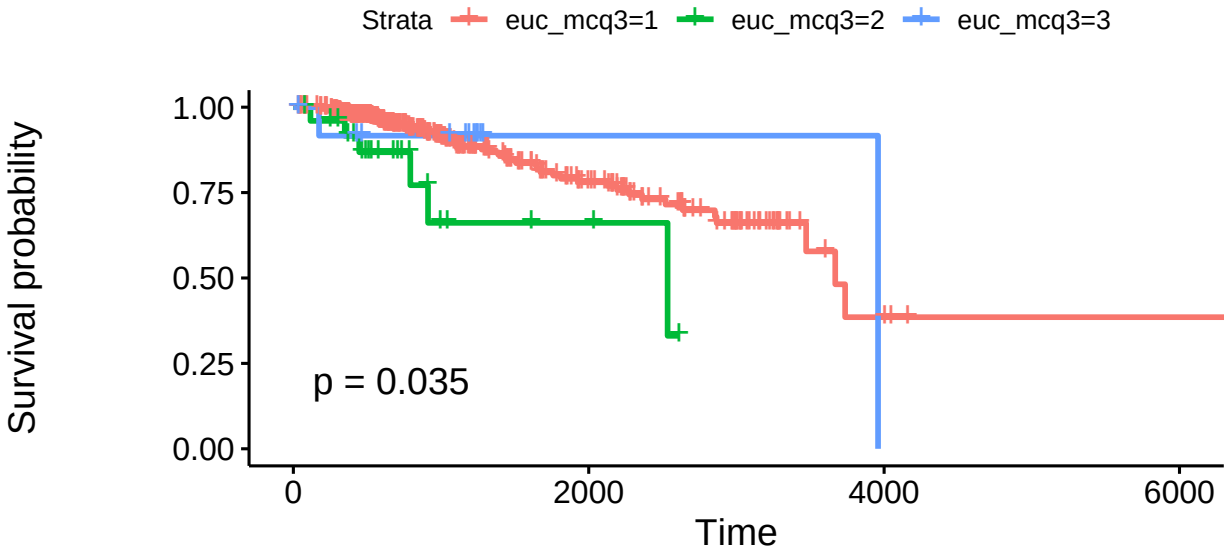

Number at risk
Strata
euc_a3=1
euc_a3=2
euc_a3=3
390
23
13
75
2
1
4
0
0
1
0
0
0
2000
4000
6000
Time

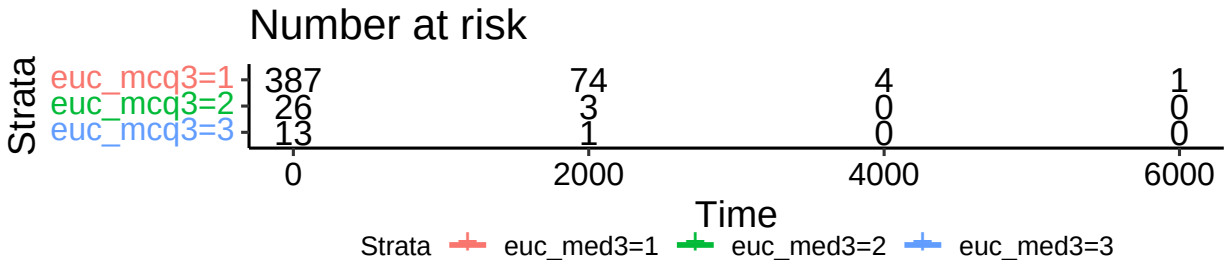

Strata
euc_a3=1
euc_a3=2
euc_a3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.00093
0
2000
4000
6000
Time

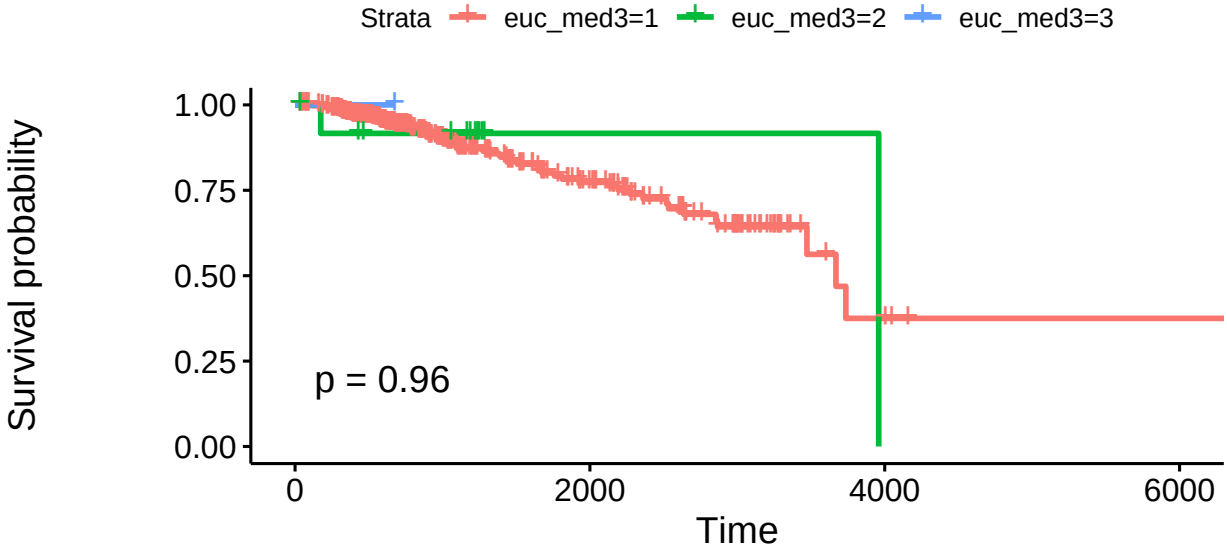

Number at risk
Strata
euc_a3=1
euc_a3=2
euc_a3=3
390
23
13
75
2
1
4
0
0
1
0
0
0
2000
4000
6000
Time

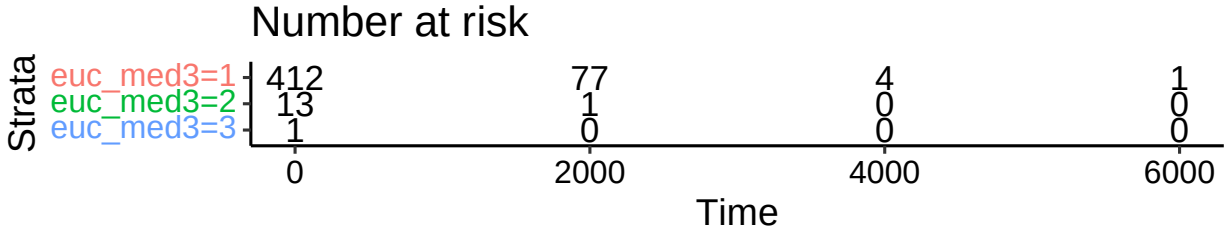

Strata
euc_w3=1
euc_w3=2
euc_w3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.048
0
2000
4000
6000
Time

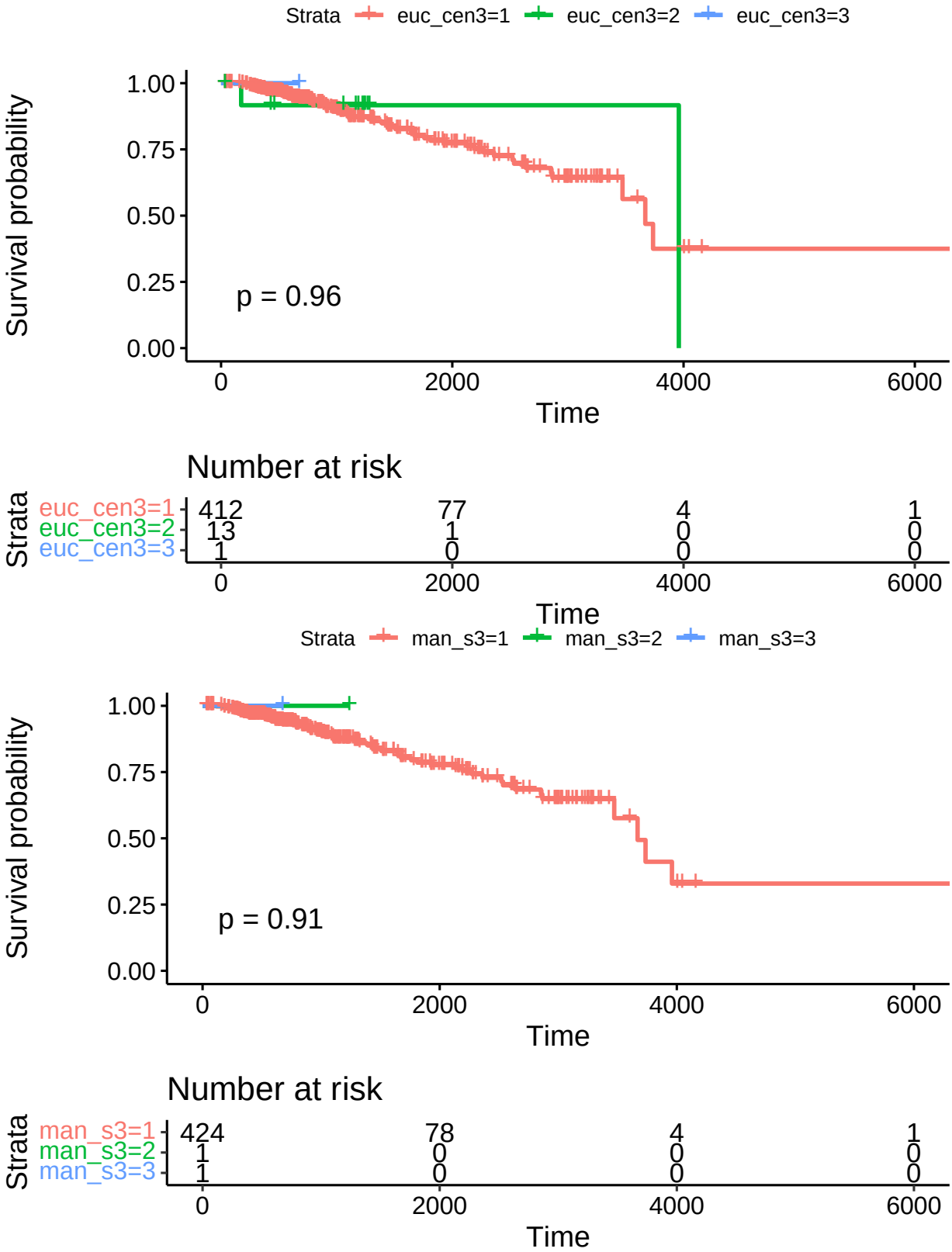

Number at risk
Strata
euc_w3=1
euc_w3=2
euc_w3=3
231
182
13
43
34
1
2
2
0
0
1
0
0
2000
4000
6000
Time

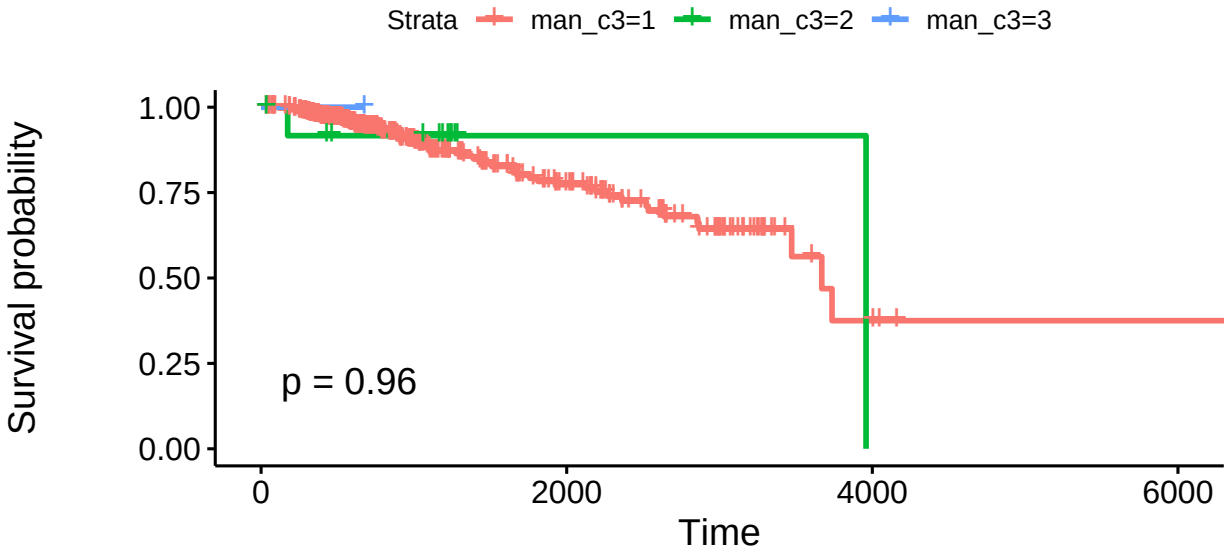

Strata
euc_mcq3=1
euc_mcq3=2
euc_mcq3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.035
0
2000
4000
6000
Time

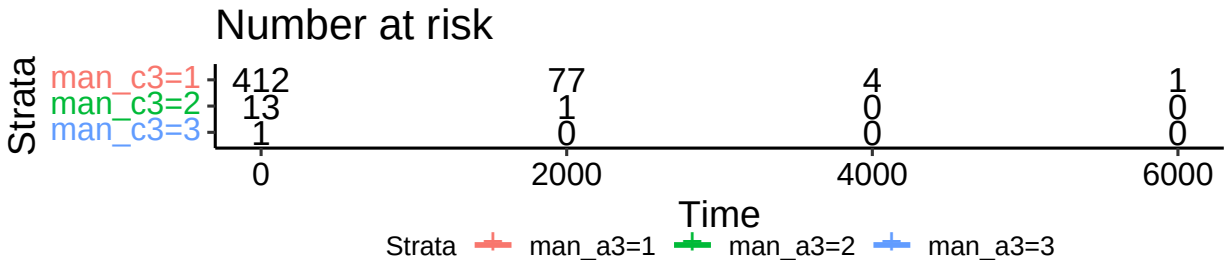

Number at risk
Strata
euc_mcq3=1
euc_mcq3=2
euc_mcq3=3
387
74
4
1
26
3
0
0
13
1
0
0
0
2000
4000
6000
Time

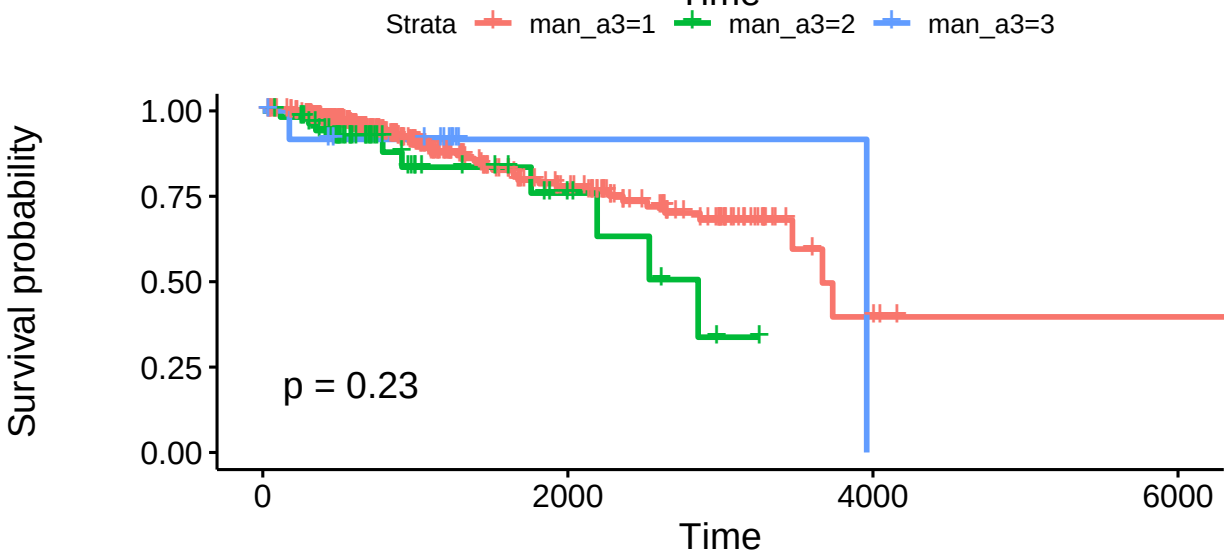

Strata
euc_med3=1
euc_med3=2
euc_med3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.96
0
2000
4000
6000
Time

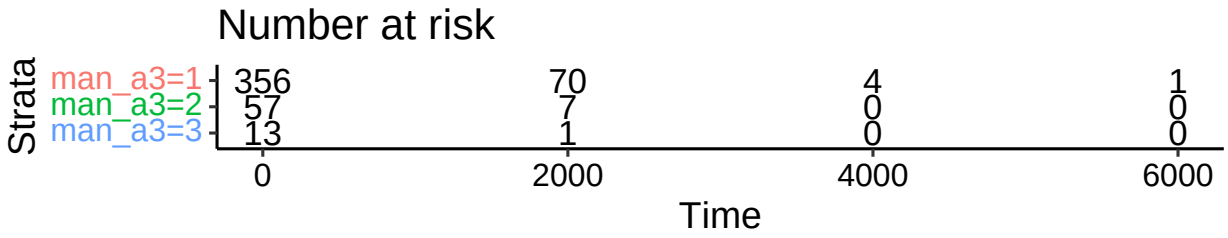

Number at risk
Strata
euc_med3=1
euc_med3=2
euc_med3=3
412
77
4
1
13
1
0
0
1
0
0
0
0
2000
4000
6000
Time

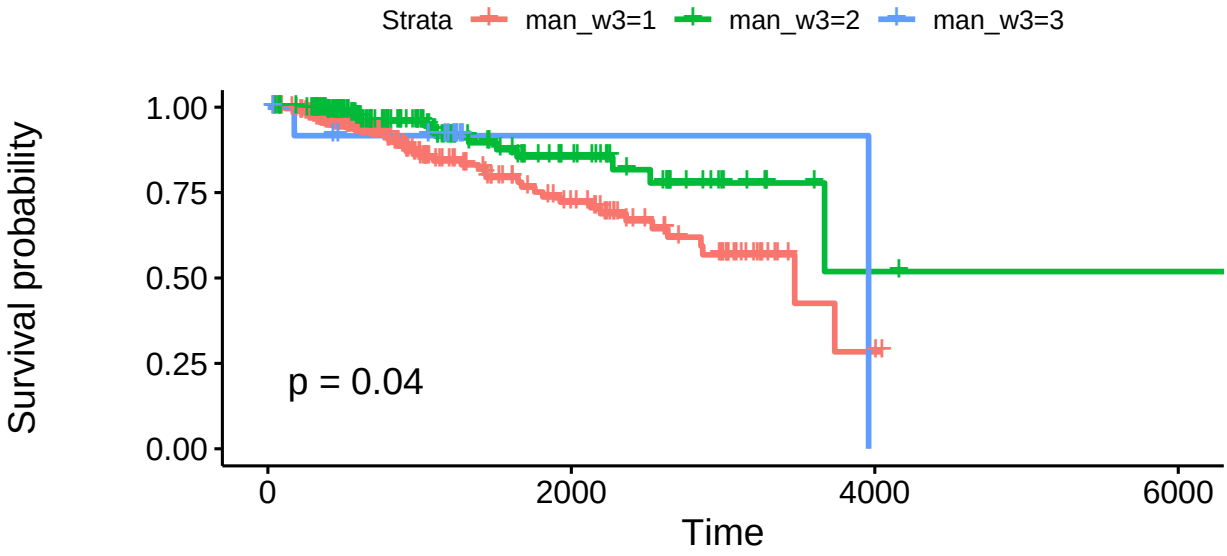

Strata
euc_cen3=1
euc_cen3=2
euc_cen3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.96
0
2000
4000
6000
Time
Number at risk
Strata
euc_cen3=1
euc_cen3=2
euc_cen3=3
412
13
1
77
1
0
4
0
0
1
0
0
0
2000
4000
6000
Time
Strata
man_s3=1
man_s3=2
man_s3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.91
0
2000
4000
6000
Time
Number at risk
Strata
man_s3=1
man_s3=2
man_s3=3
424
1
1
78
0
0
4
0
0
1
0
0
0
2000
4000
6000
Time

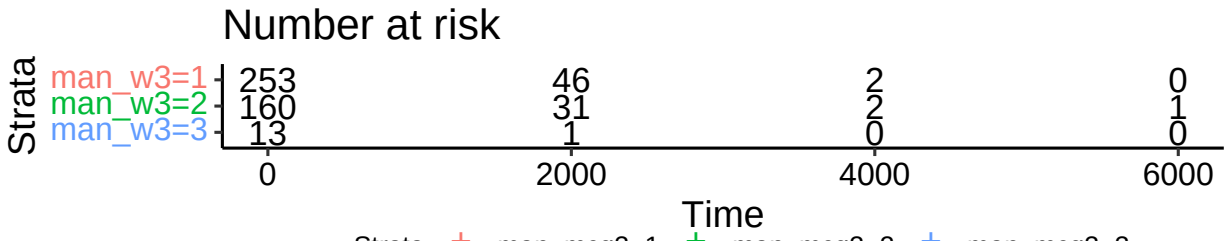

Strata
man_c3=1
man_c3=2
man_c3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.96
0
2000
4000
6000
Time

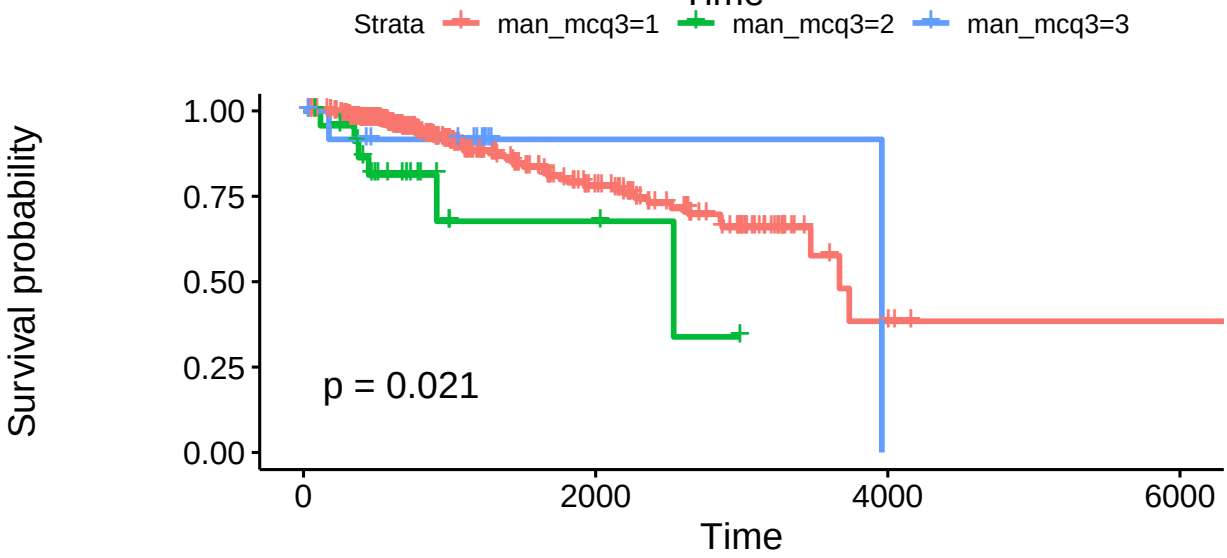

Number at risk
Strata
man_c3=1
man_c3=2
man_c3=3
412
77
4
1
13
1
0
0
1
0
0
0
0
2000
4000
6000
Time

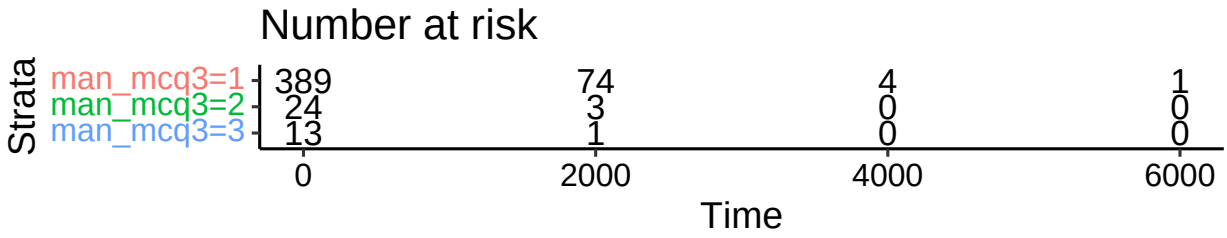

Strata
man_a3=1
man_a3=2
man_a3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.23
0
2000
4000
6000
Time

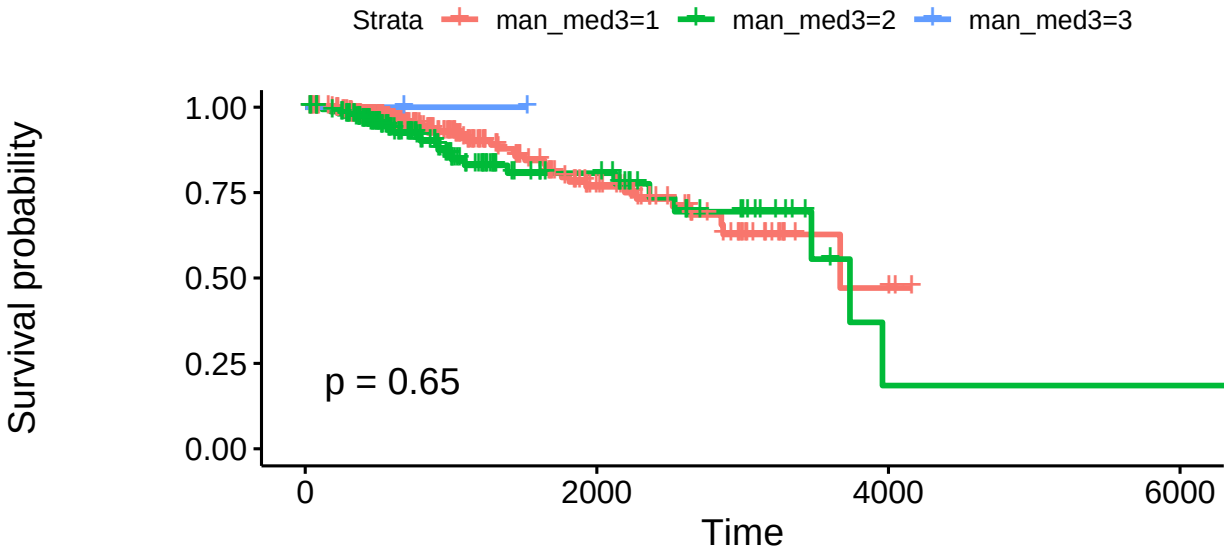

Number at risk
Strata
man_a3=1
man_a3=2
man_a3=3
356
70
4
1
57
7
0
0
13
1
0
0
0
2000
4000
6000
Time

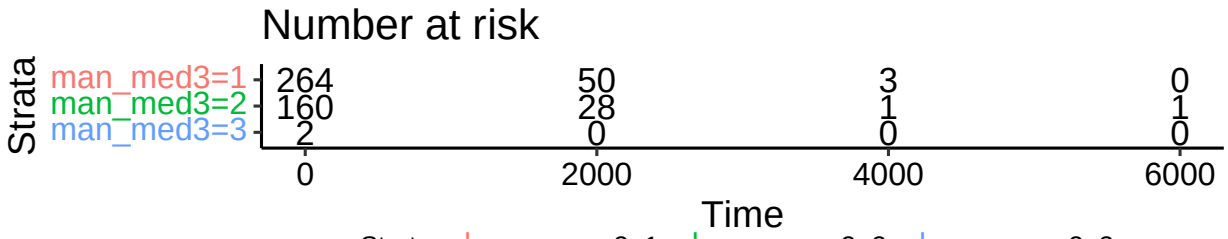

Strata
man_w3=1
man_w3=2
man_w3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.04
0
2000
4000
6000
Time

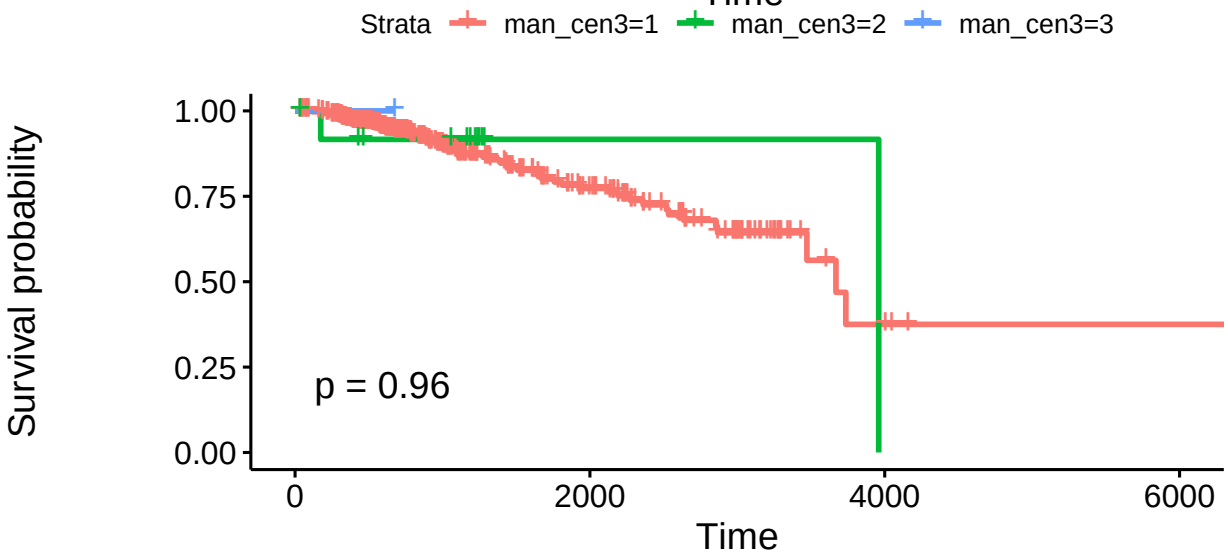

Number at risk
Strata
man_w3=1
man_w3=2
man_w3=3
253
160
13
46
31
1
2
2
0
0
1
0
0
2000
4000
6000
Time

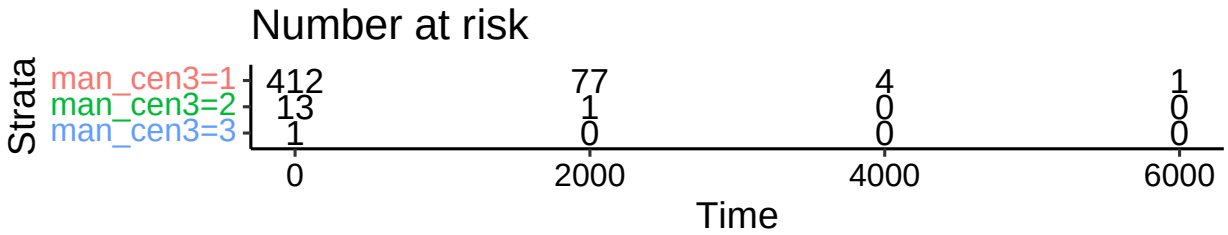

Strata
man_mcq3=1
man_mcq3=2
man_mcq3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.021
0
2000
4000
6000
Time

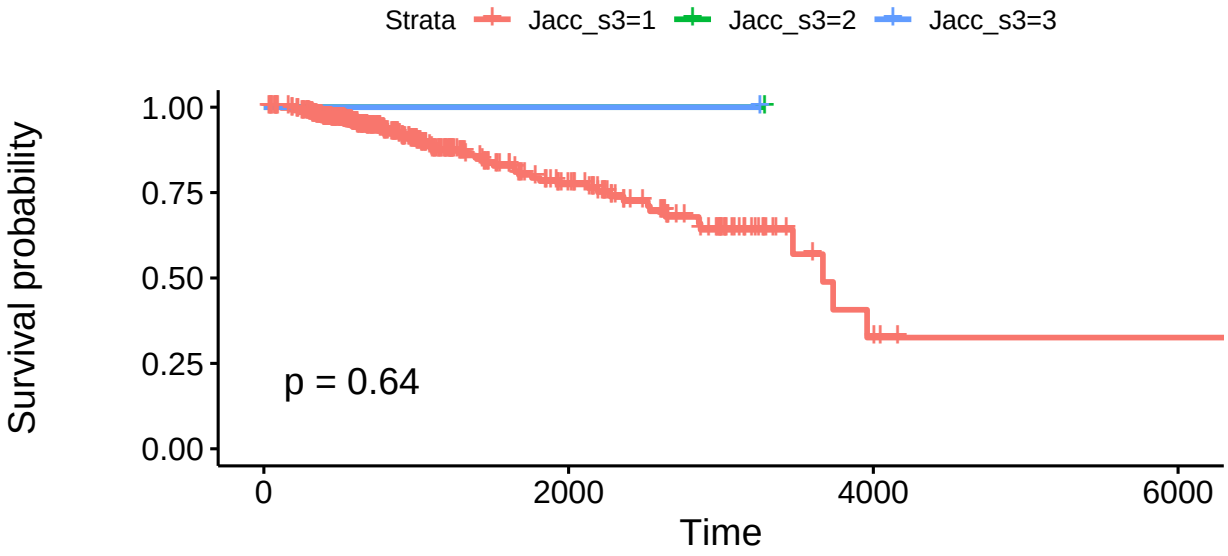

Number at risk
Strata
man_mcq3=1
man_mcq3=2
man_mcq3=3
389
24
13
74
3
1
4
0
0
1
0
0
0
2000
4000
6000
Time

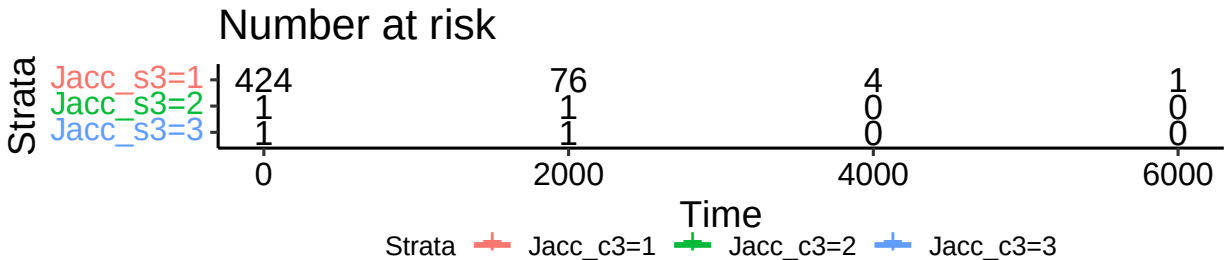

Strata
man_med3=1
man_med3=2
man_med3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.65
0
2000
4000
6000
Time

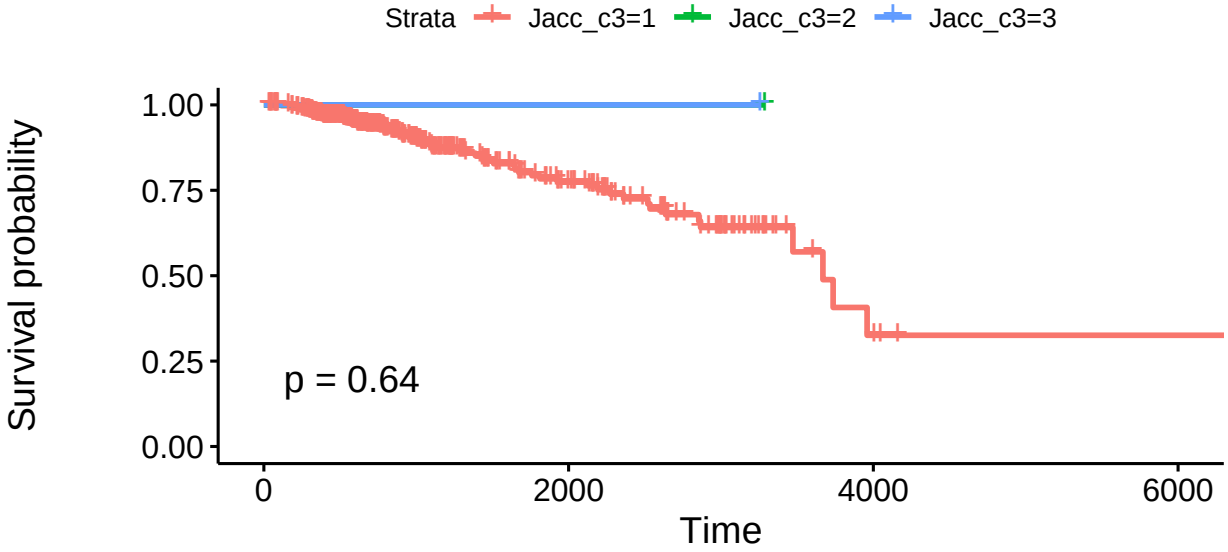

Number at risk
Strata
man_med3=1
man_med3=2
man_med3=3
264
160
2
50
28
0
3
1
0
0
1
0
0
2000
4000
6000
Time

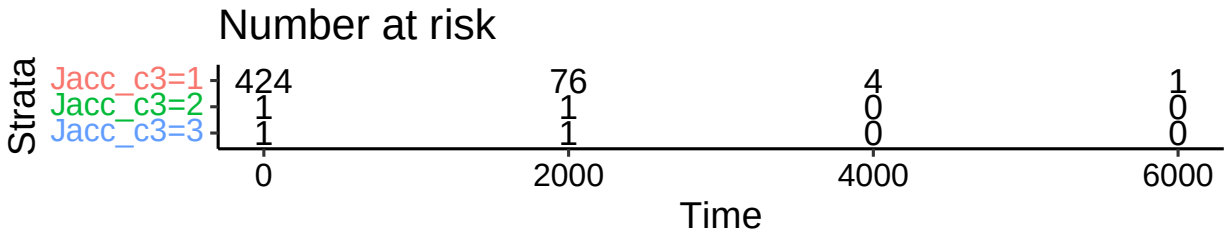

Strata
man_cen3=1
man_cen3=2
man_cen3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.96
0
2000
4000
6000
Time

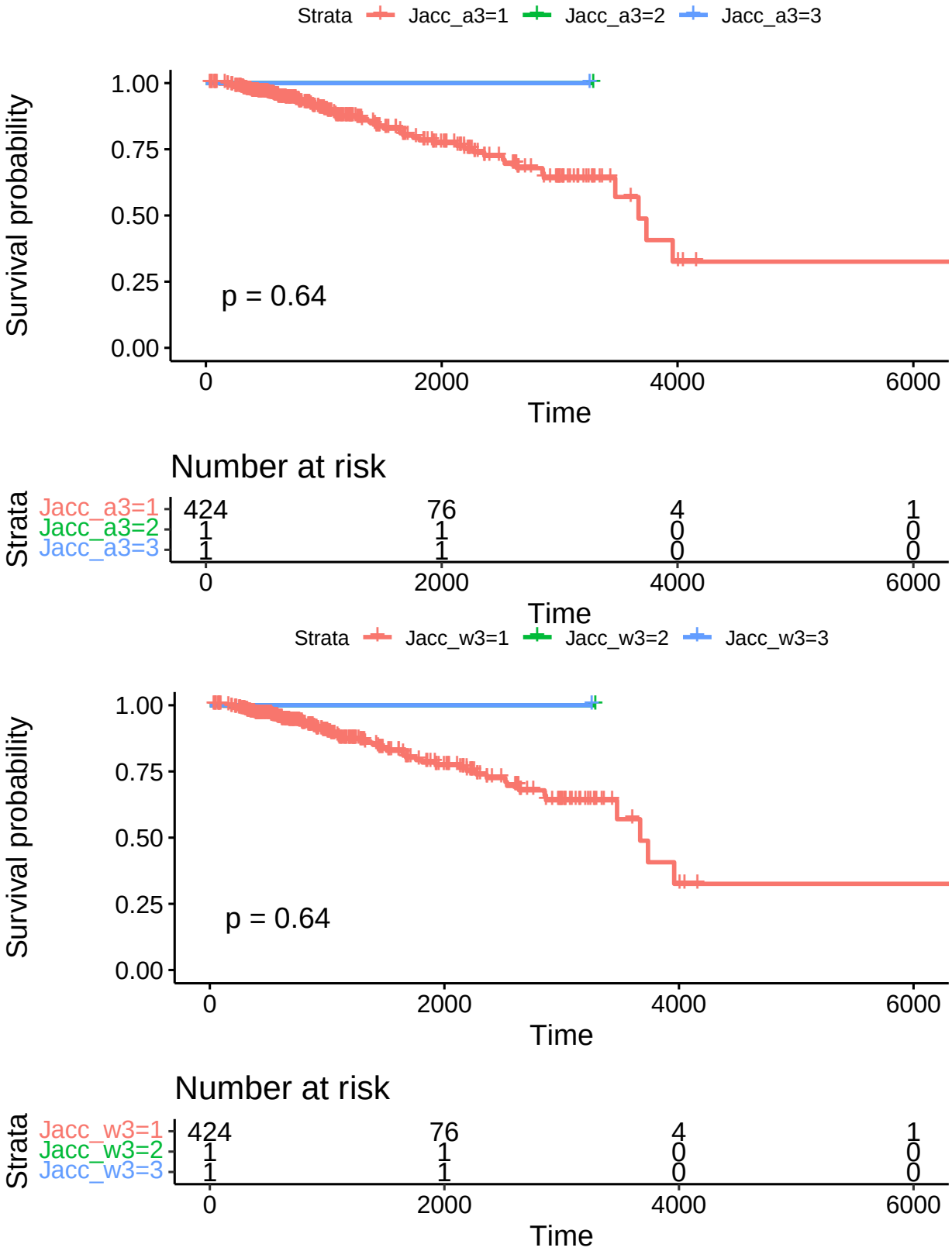

Number at risk
Strata
man_cen3=1
man_cen3=2
man_cen3=3
412
13
1
77
1
0
4
0
0
1
0
0
2000
4000
6000
Time

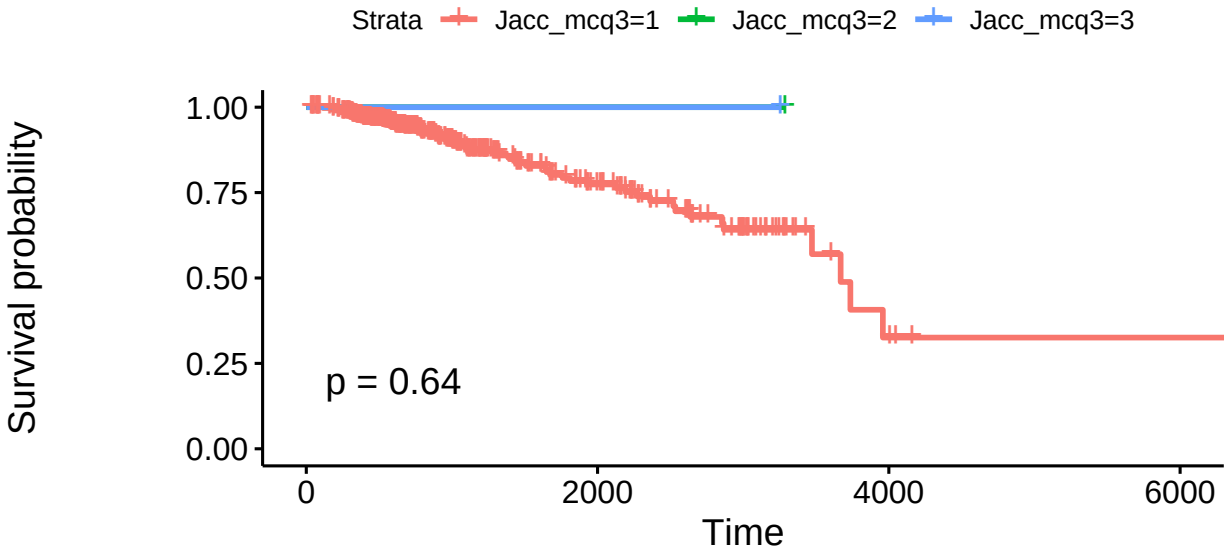

Strata
Jacc_s3=1
Jacc_s3=2
Jacc_s3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.64
0
2000
4000
6000
Time

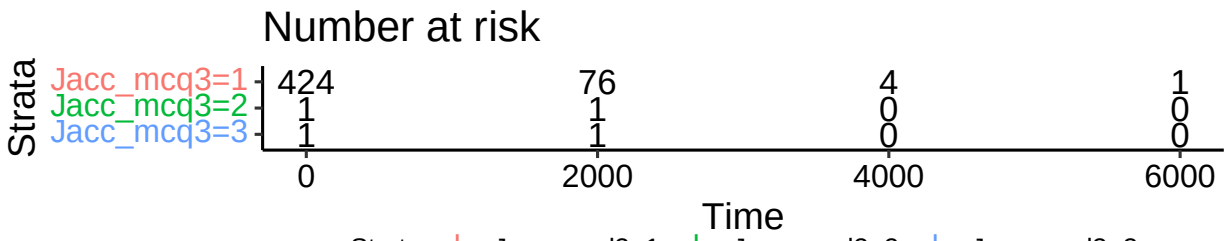

Number at risk
Strata
Jacc_s3=1
Jacc_s3=2
Jacc_s3=3
424
1
1
76
1
1
4
0
0
1
0
0
0
2000
4000
6000
Time

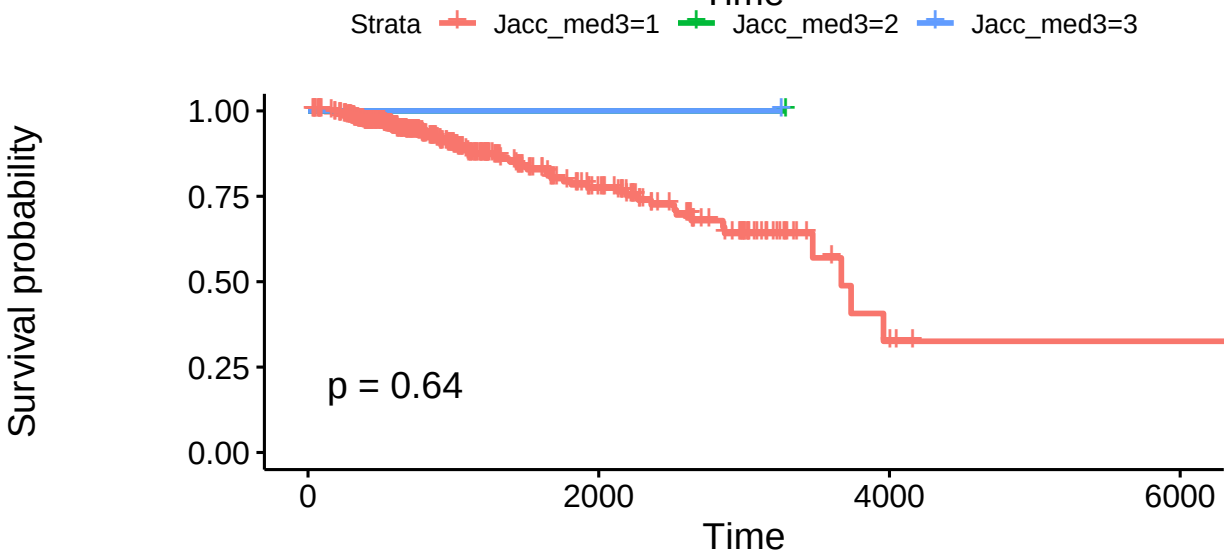

Strata
Jacc_c3=1
Jacc_c3=2
Jacc_c3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.64
0
2000
4000
6000
Time

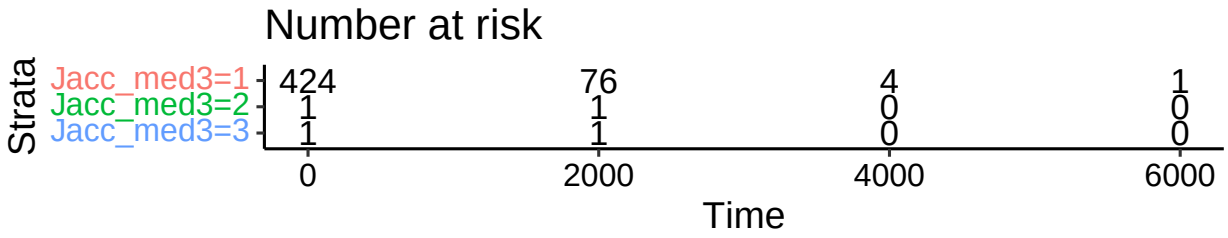

Number at risk
Strata
Jacc_c3=1
Jacc_c3=2
Jacc_c3=3
424
1
1
76
1
1
4
0
0
1
0
0
0
2000
4000
6000
Time

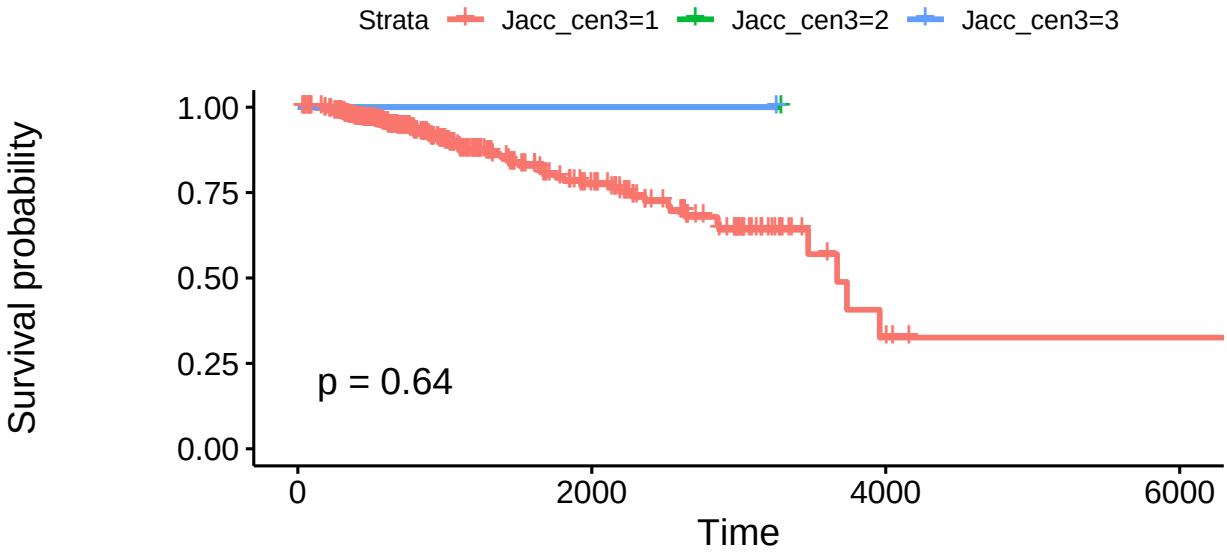

Strata
Jacc_a3=1
Jacc_a3=2
Jacc_a3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.64
0
2000
4000
6000
Time
Number at risk
Strata
Jacc_a3=1
Jacc_a3=2
Jacc_a3=3
424
1
1
76
1
1
4
0
0
1
0
0
0
2000
4000
6000
Time
Strata
Jacc_w3=1
Jacc_w3=2
Jacc_w3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.64
0
2000
4000
6000
Time
Number at risk
Strata
Jacc_w3=1
Jacc_w3=2
Jacc_w3=3
424
1
1
76
1
1
4
0
0
1
0
0
0
2000
4000
6000
Time

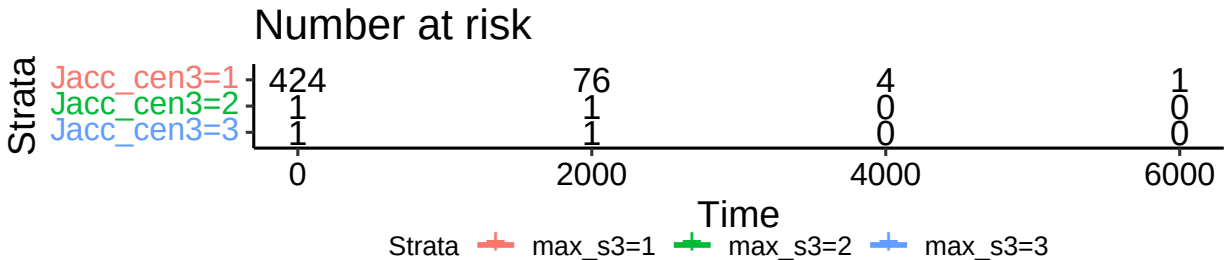

Strata
Jacc_mcq3=1
Jacc_mcq3=2
Jacc_mcq3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.64
0
2000
4000
6000
Time

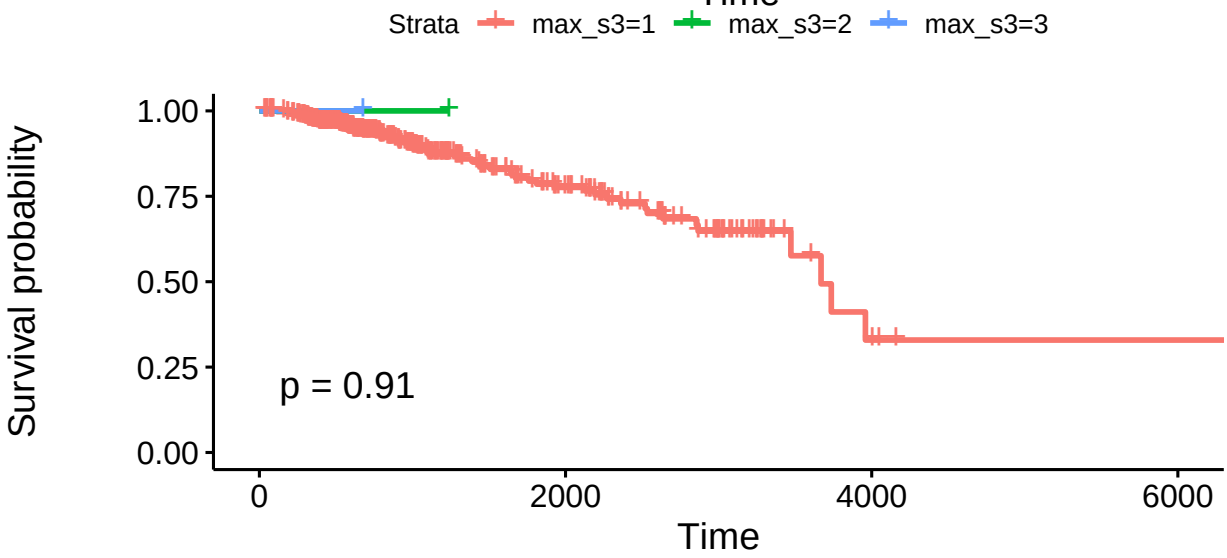

Number at risk
Strata
Jacc_mcq3=1
Jacc_mcq3=2
Jacc_mcq3=3
424
1
1
76
1
1
4
0
0
1
0
0
0
2000
4000
6000
Time

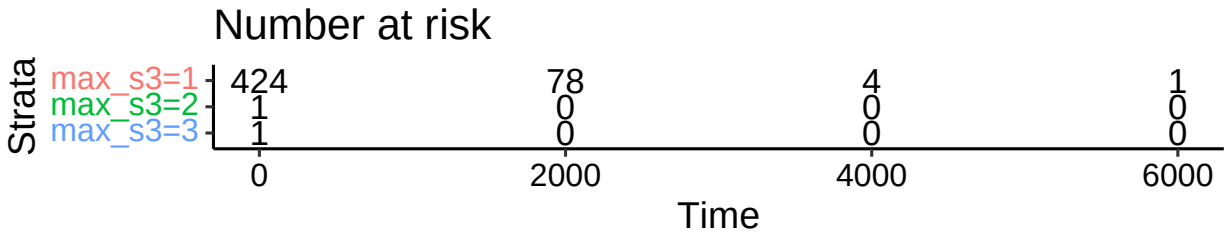

Strata
Jacc_med3=1
Jacc_med3=2
Jacc_med3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.64
0
2000
4000
6000
Time

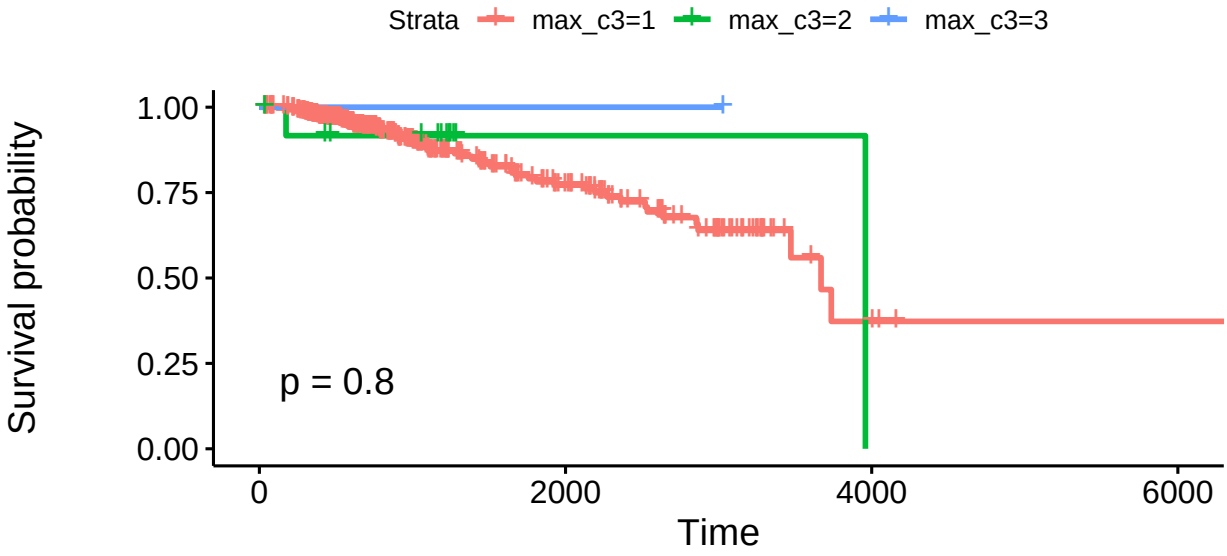

Number at risk
Strata
Jacc_med3=1
Jacc_med3=2
Jacc_med3=3
424
1
1
76
1
1
4
0
0
1
0
0
0
2000
4000
6000
Time

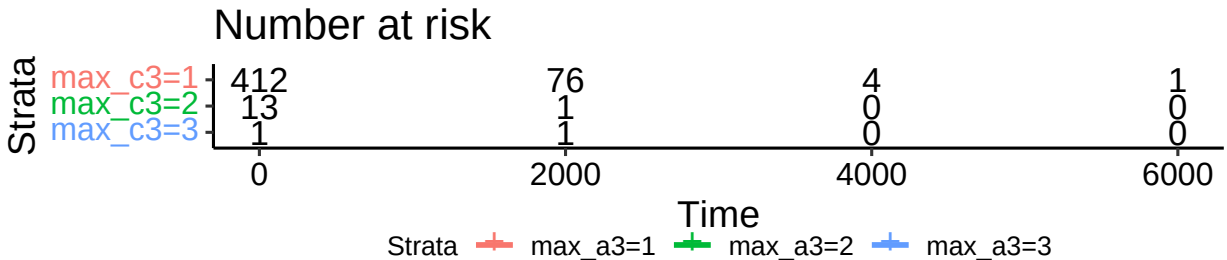

Strata
Jacc_cen3=1
Jacc_cen3=2
Jacc_cen3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.64
0
2000
4000
6000
Time

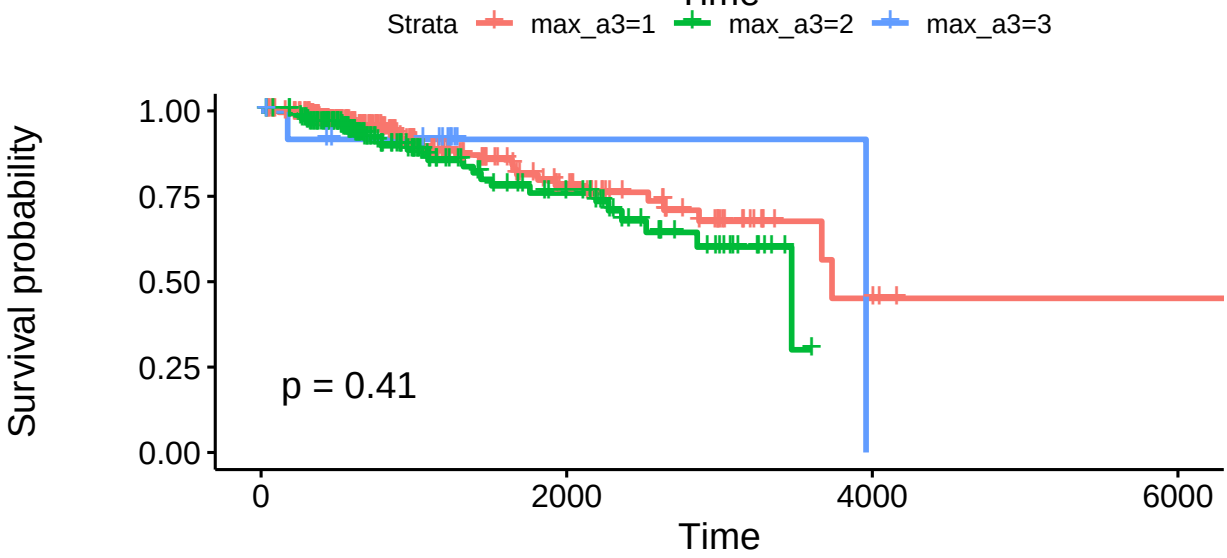

Number at risk
Strata
Jacc_cen3=1
Jacc_cen3=2
Jacc_cen3=3
424
1
1
76
1
1
4
0
0
1
0
0
0
2000
4000
6000
Time

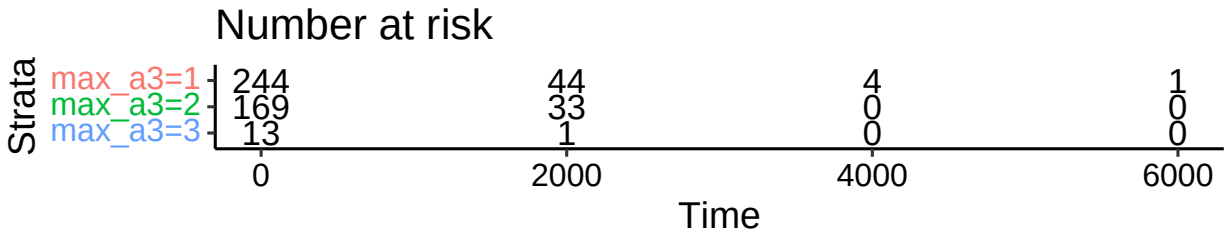

Strata
max_s3=1
max_s3=2
max_s3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.91
0
2000
4000
6000
Time

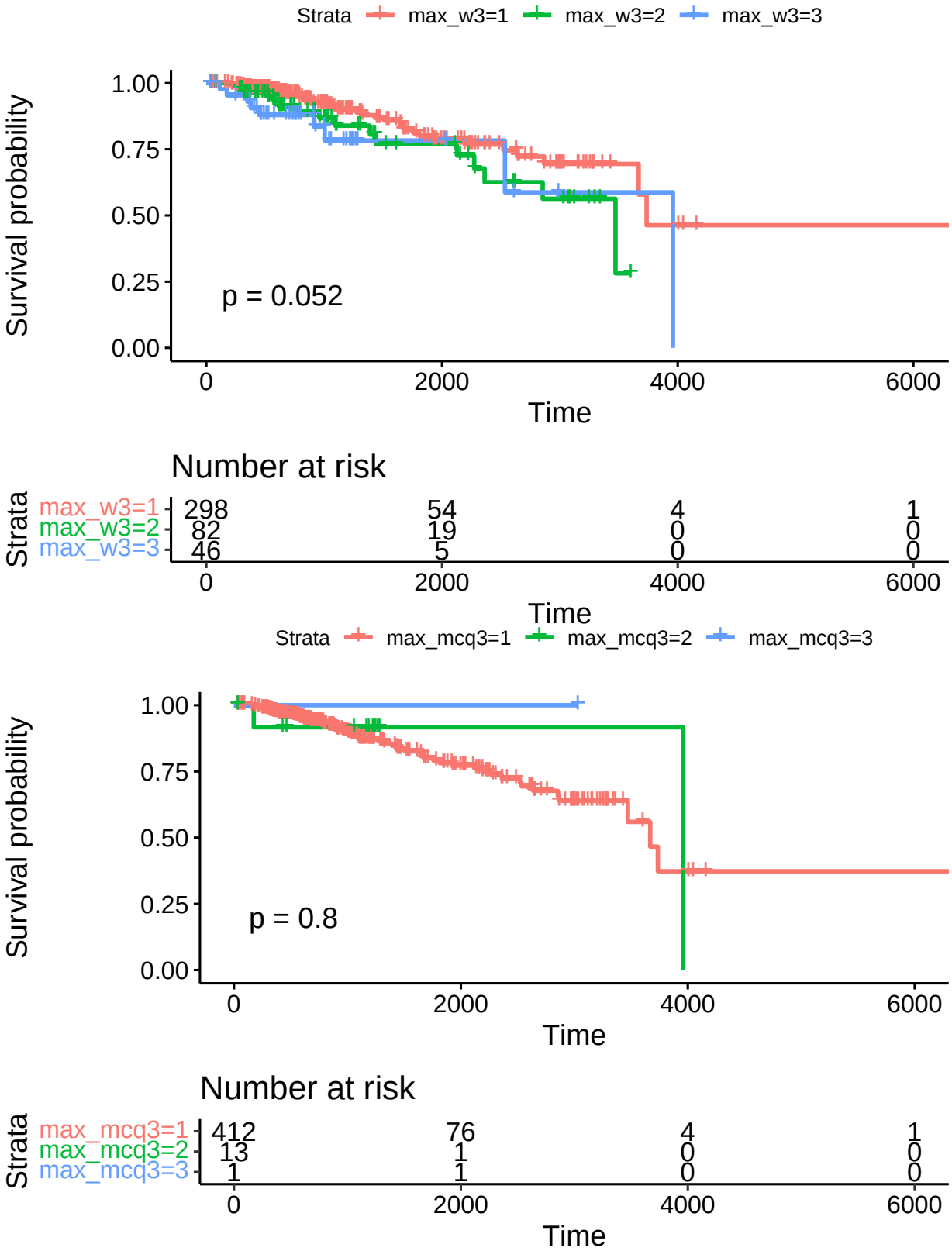

Number at risk
Strata
max_s3=1
max_s3=2
max_s3=3
424
1
1
78
0
0
4
0
0
1
0
0
0
2000
4000
6000
Time

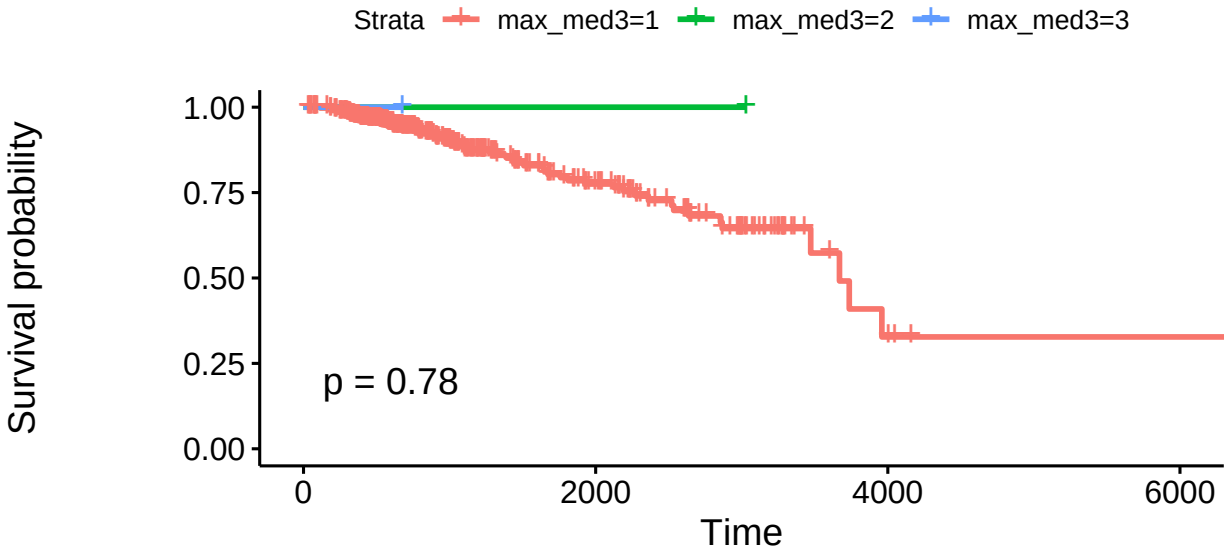

Strata
max_c3=1
max_c3=2
max_c3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.8
0
2000
4000
6000
Time

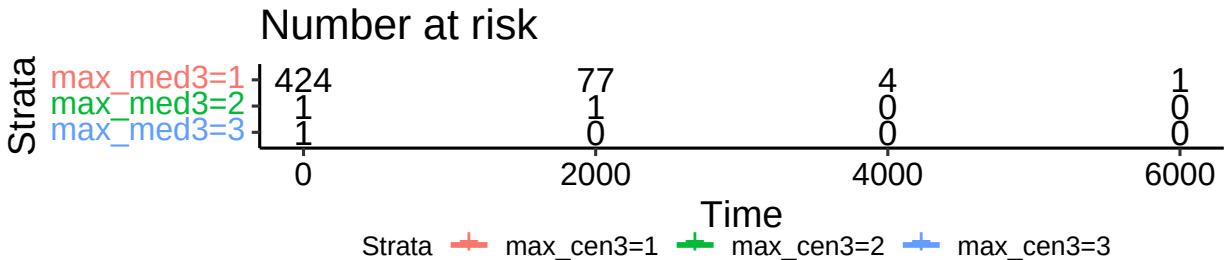

Number at risk
Strata
max_c3=1
max_c3=2
max_c3=3
412
76
4
1
13
1
0
0
1
1
0
0
0
2000
4000
6000
Time

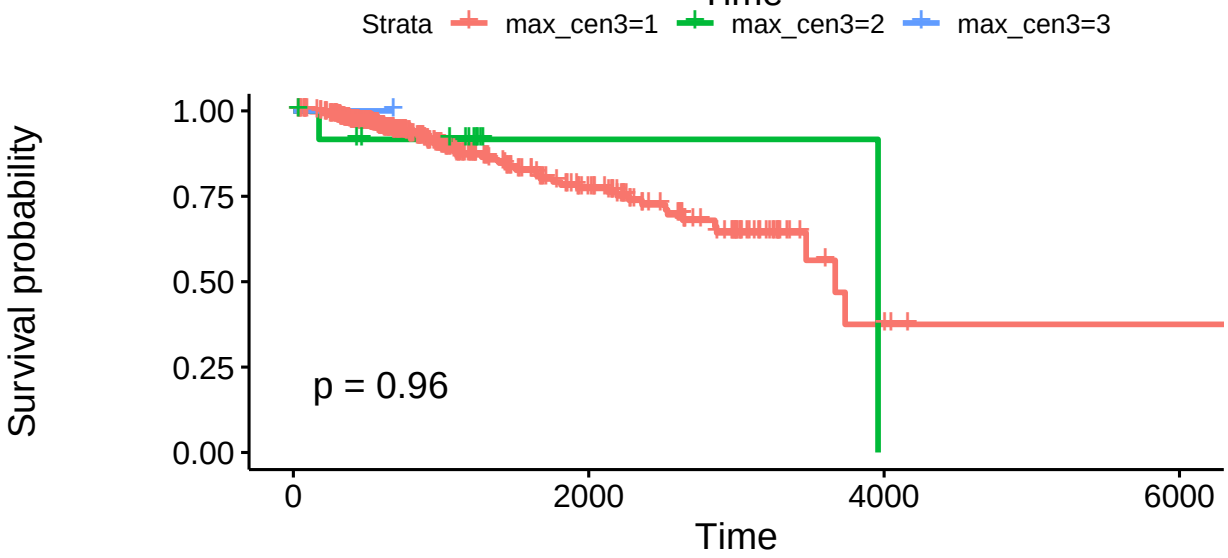

Strata
max_a3=1
max_a3=2
max_a3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.41
0
2000
4000
6000
Time

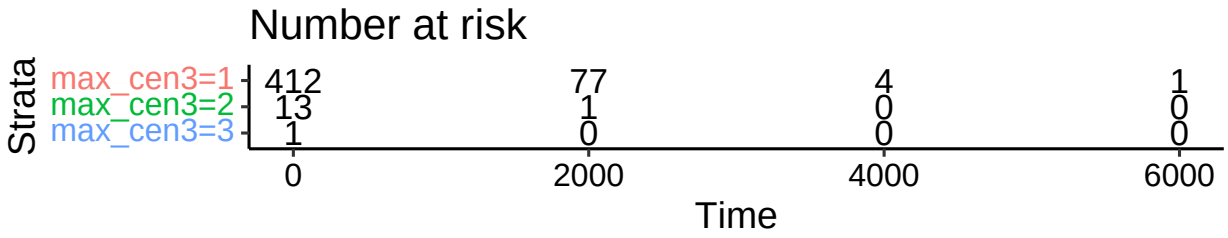

Number at risk
Strata
max_a3=1
max_a3=2
max_a3=3
244
44
4
1
169
33
0
0
13
1
0
0
0
2000
4000
6000
Time

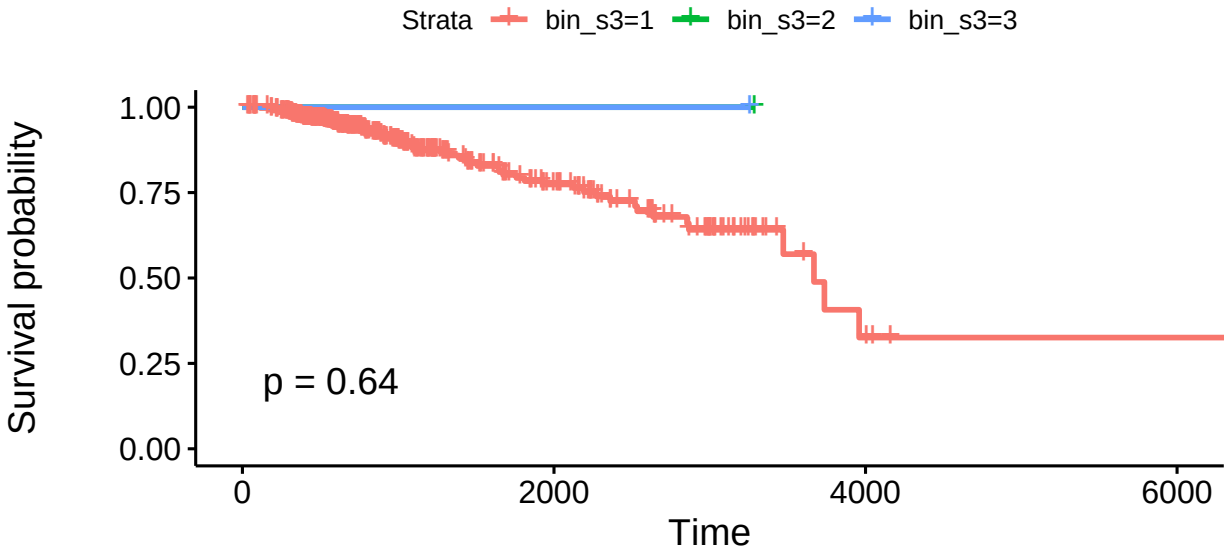

Strata
max_w3=1
max_w3=2
max_w3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.052
0
2000
4000
6000
Time
Number at risk
Strata
max_w3=1
max_w3=2
max_w3=3
298
82
46
54
19
5
4
0
0
1
0
0
0
2000
4000
6000
Time
Strata
max_mcq3=1
max_mcq3=2
max_mcq3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.8
0
2000
4000
6000
Time
Number at risk
Strata
max_mcq3=1
max_mcq3=2
max_mcq3=3
412
13
1
76
1
1
4
0
0
1
0
0
0
2000
4000
6000
Time

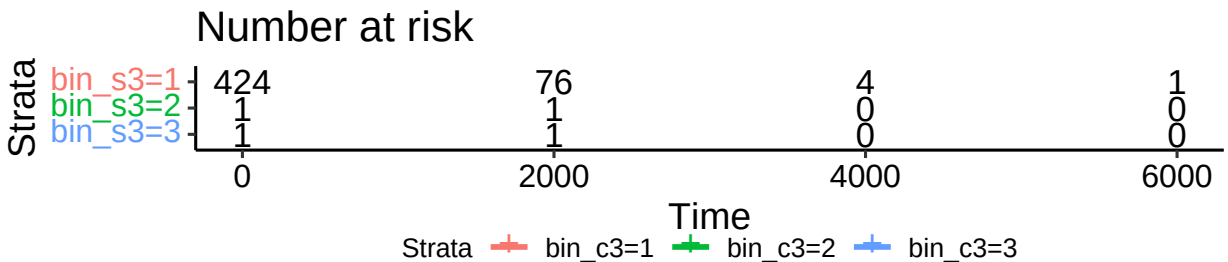

Strata
max_med3=1
max_med3=2
max_med3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.78
0
2000
4000
6000
Time

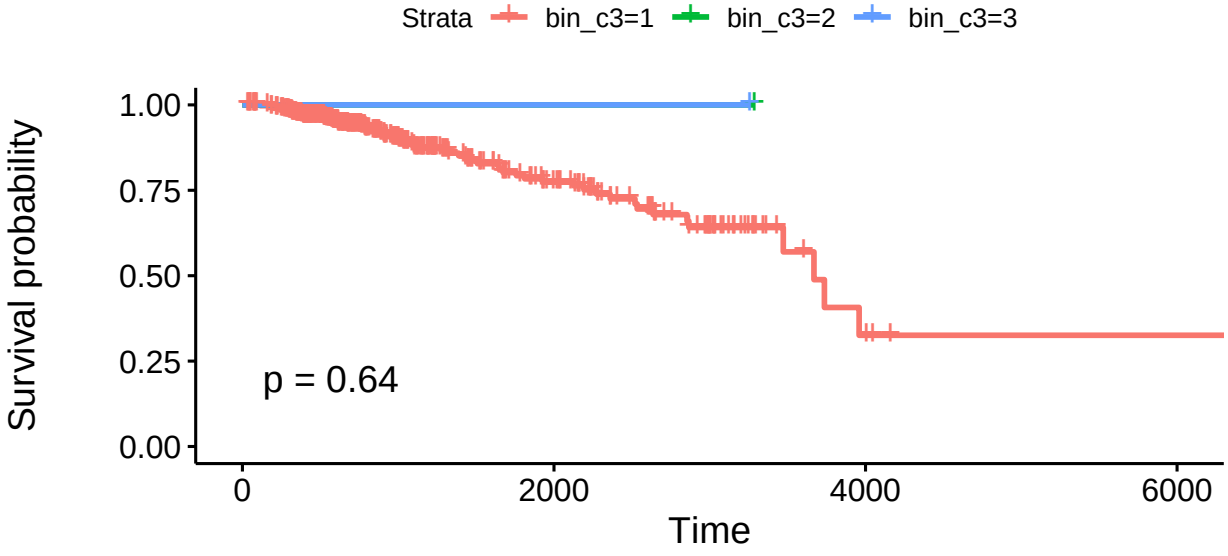

Number at risk
Strata
max_med3=1
max_med3=2
max_med3=3
424
1
1
77
1
0
4
0
0
1
0
0
0
2000
4000
6000
Time

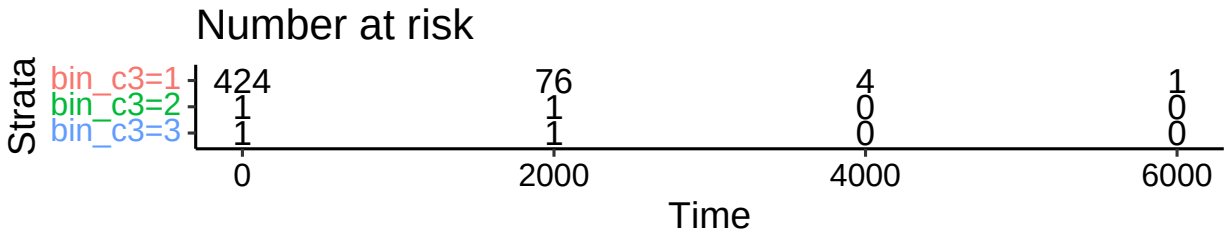

Strata
max_cen3=1
max_cen3=2
max_cen3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.96
0
2000
4000
6000
Time

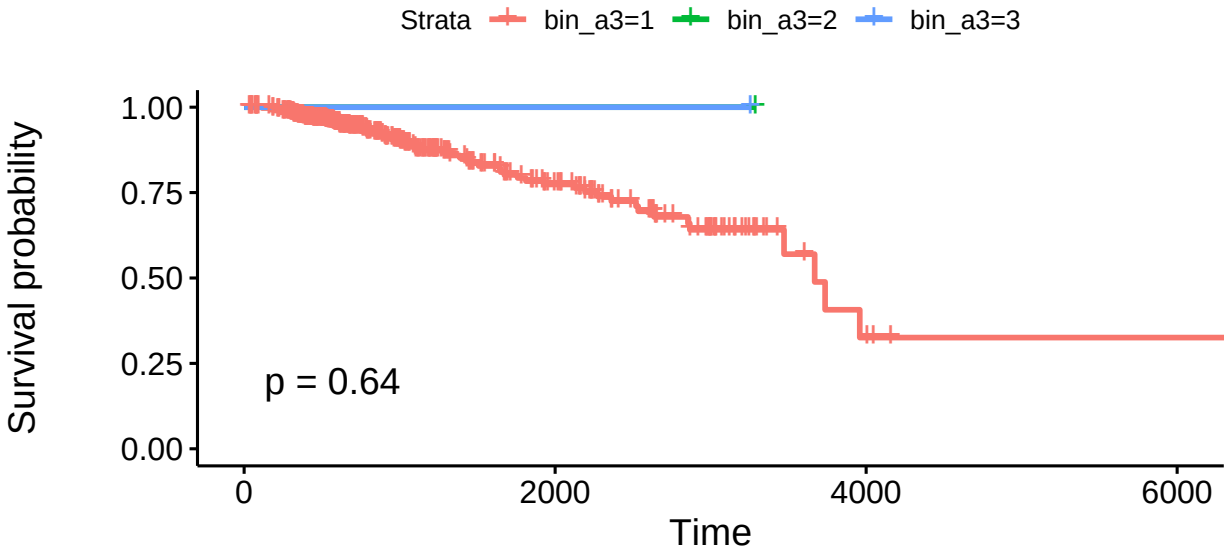

Number at risk
Strata
max_cen3=1
max_cen3=2
max_cen3=3
412
13
1
77
1
0
4
0
0
1
0
0
0
2000
4000
6000
Time

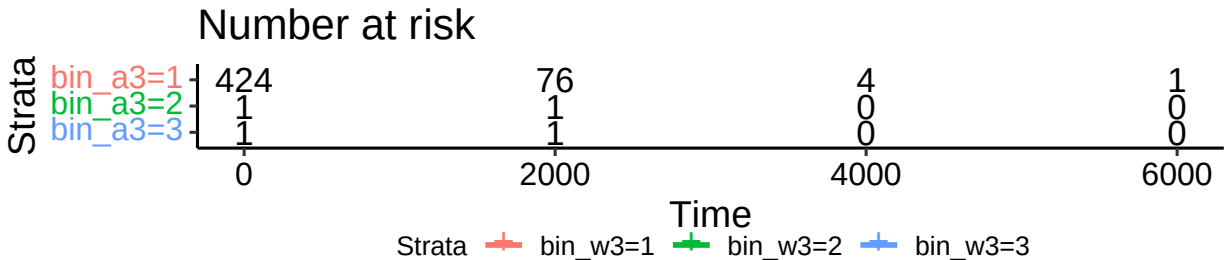

Strata
bin_s3=1
bin_s3=2
bin_s3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.64
0
2000
4000
6000
Time

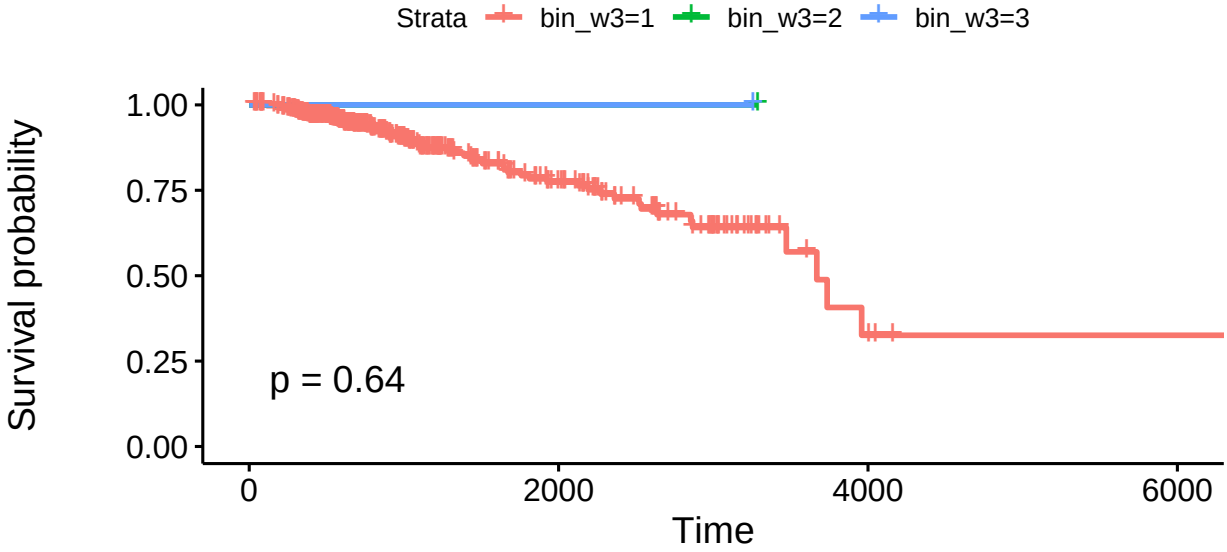

Number at risk
Strata
bin_s3=1
bin_s3=2
bin_s3=3
424
1
1
76
1
1
4
0
0
1
0
0
0
2000
4000
6000
Time

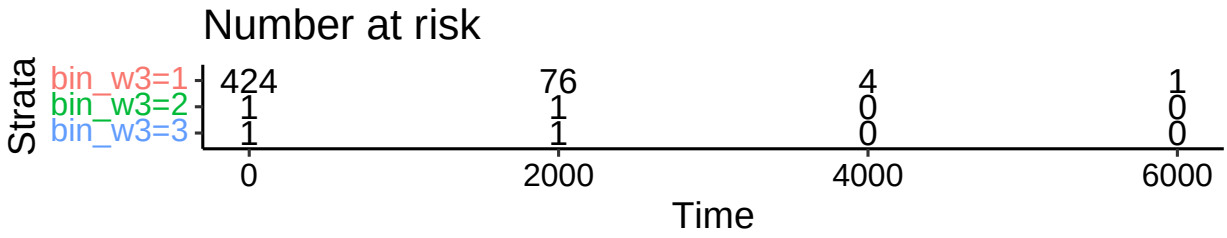

Strata
bin_c3=1
bin_c3=2
bin_c3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.64
0
2000
4000
6000
Time

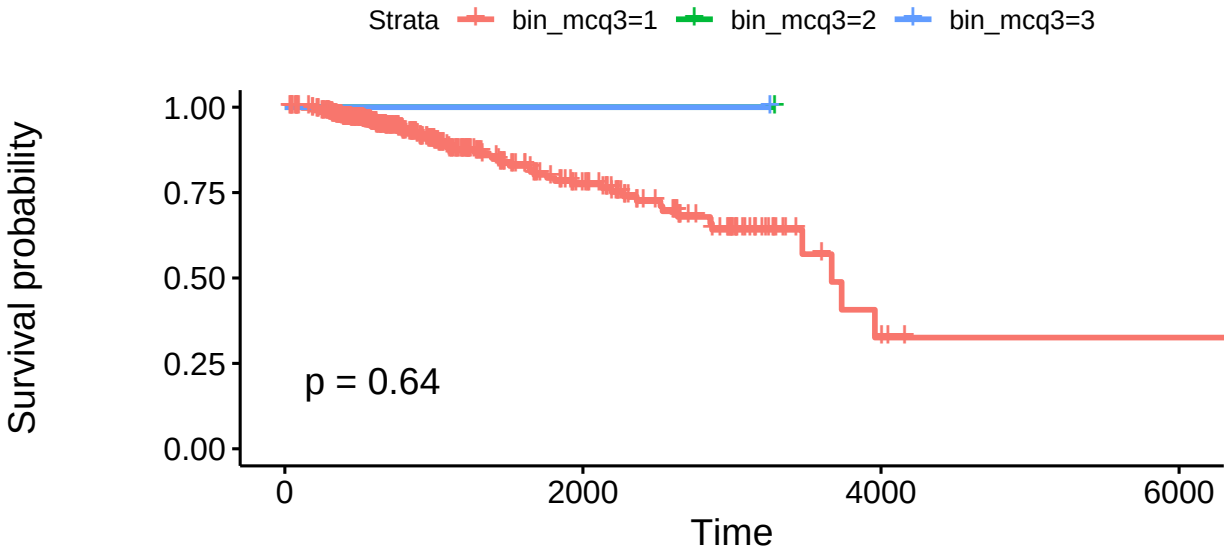

Number at risk
Strata
bin_c3=1
bin_c3=2
bin_c3=3
424
1
1
76
1
1
4
0
0
1
0
0
0
2000
4000
6000
Time

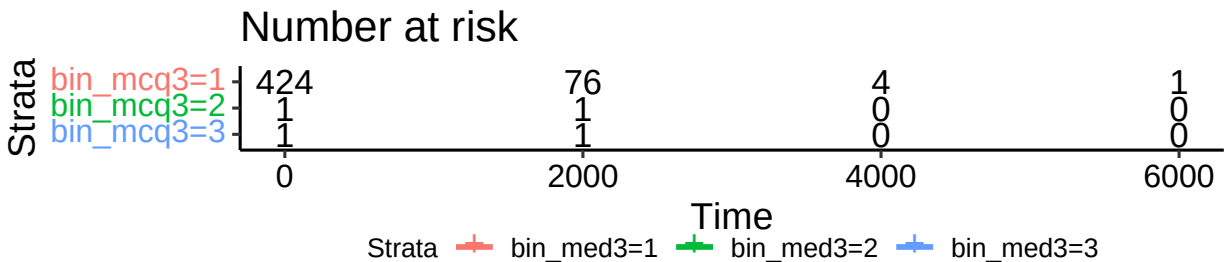

Strata
bin_a3=1
bin_a3=2
bin_a3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.64
0
2000
4000
6000
Time

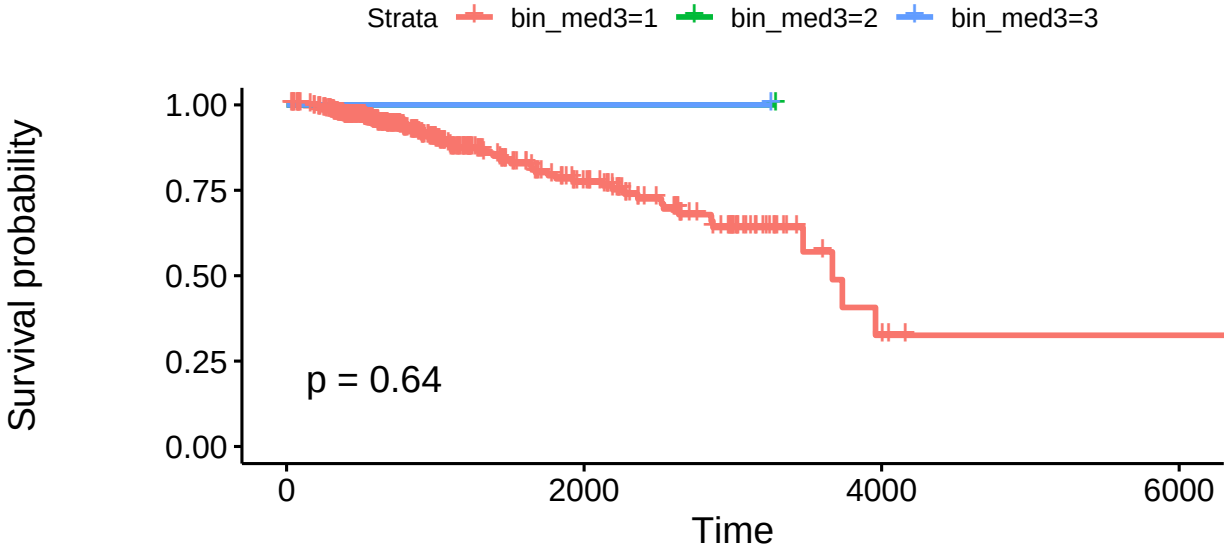

Number at risk
Strata
bin_a3=1
bin_a3=2
bin_a3=3
424
1
1
76
1
1
4
0
0
1
0
0
0
2000
4000
6000
Time

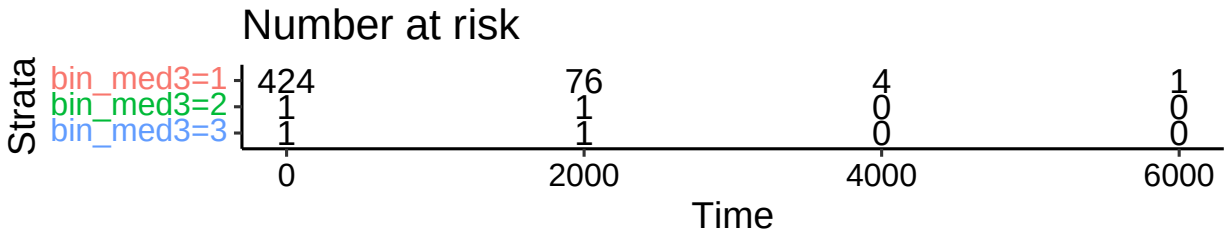

Strata
bin_w3=1
bin_w3=2
bin_w3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.64
0
2000
4000
6000
Time

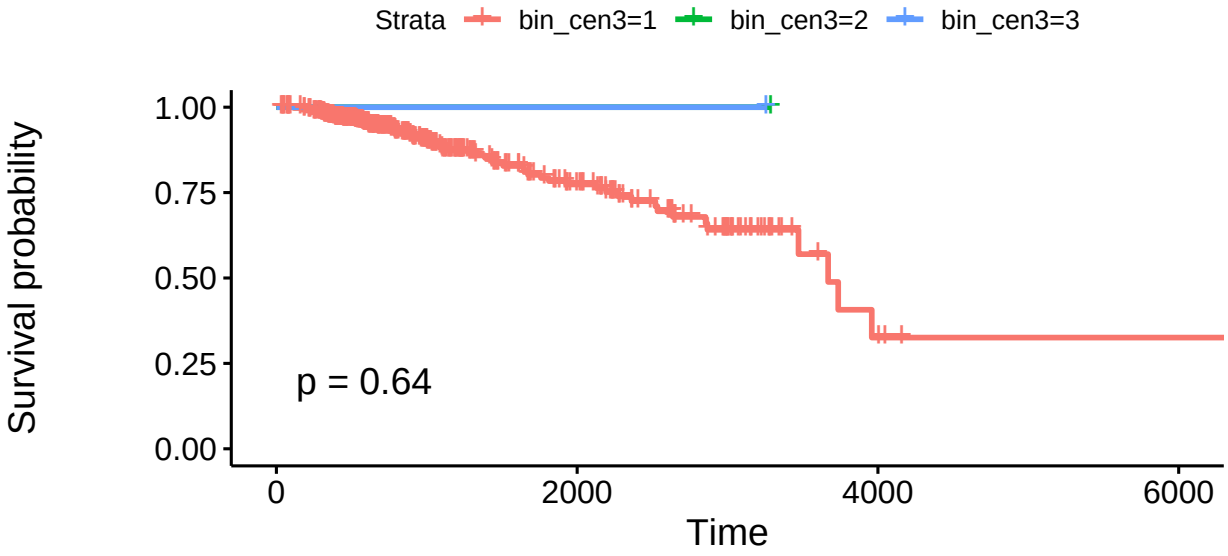

Number at risk
Strata
bin_w3=1
bin_w3=2
bin_w3=3
424
1
1
76
1
1
4
0
0
1
0
0
0
2000
4000
6000
Time

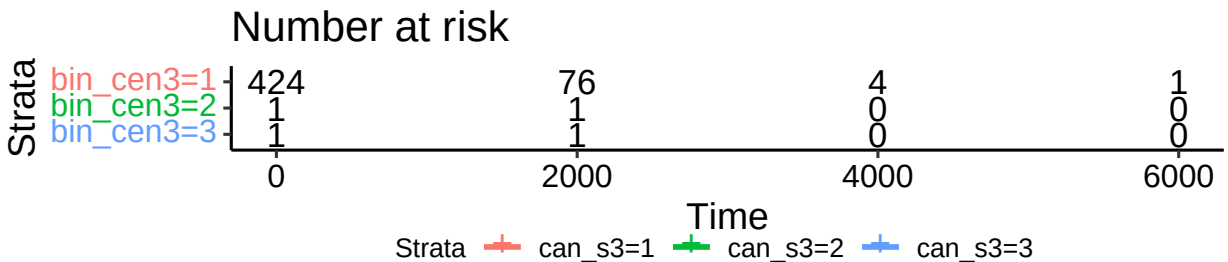

Strata
bin_mcq3=1
bin_mcq3=2
bin_mcq3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.64
0
2000
4000
6000
Time

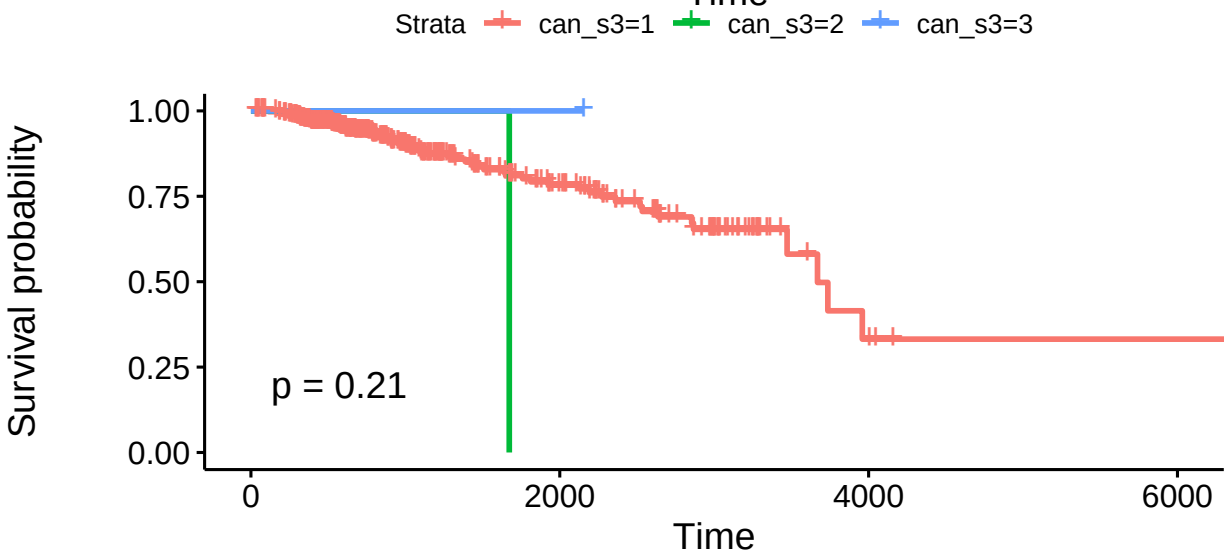

Number at risk
Strata
bin_mcq3=1
bin_mcq3=2
bin_mcq3=3
424
1
1
76
1
1
4
0
0
1
0
0
0
2000
4000
6000
Time

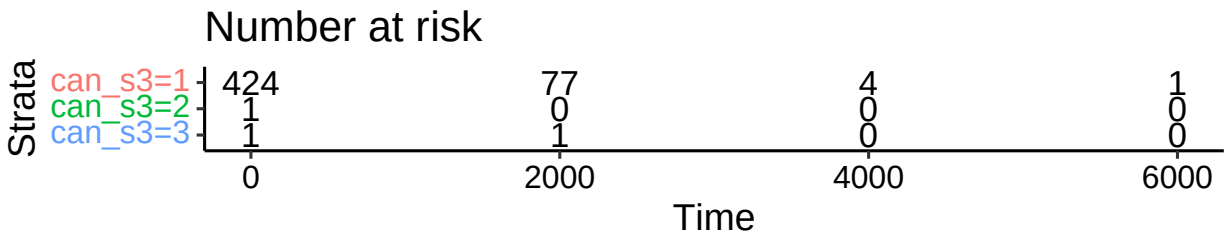

Strata
bin_med3=1
bin_med3=2
bin_med3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.64
0
2000
4000
6000
Time

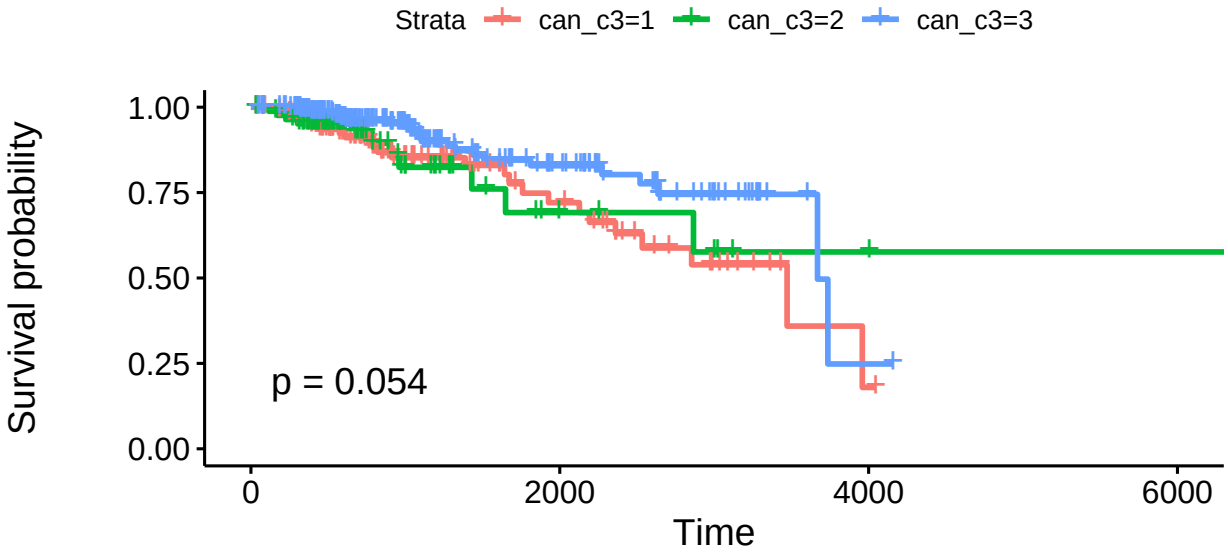

Number at risk
Strata
bin_med3=1
bin_med3=2
bin_med3=3
424
1
1
76
1
1
4
0
0
1
0
0
0
2000
4000
6000
Time

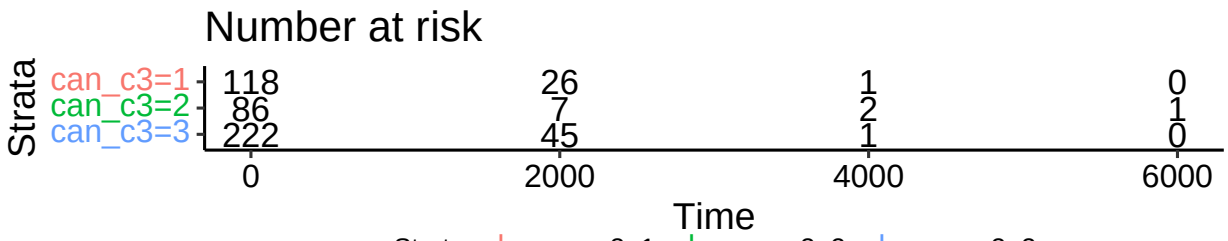

Strata
bin_cen3=1
bin_cen3=2
bin_cen3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.64
0
2000
4000
6000
Time

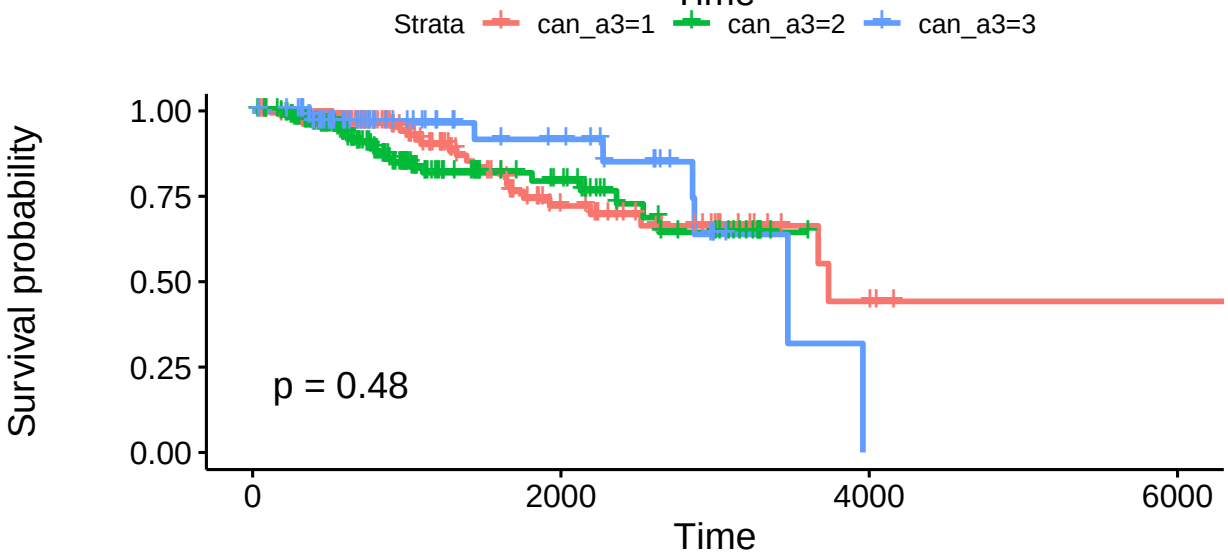

Number at risk
Strata
bin_cen3=1
bin_cen3=2
bin_cen3=3
424
1
1
76
1
1
4
0
0
1
0
0
0
2000
4000
6000
Time

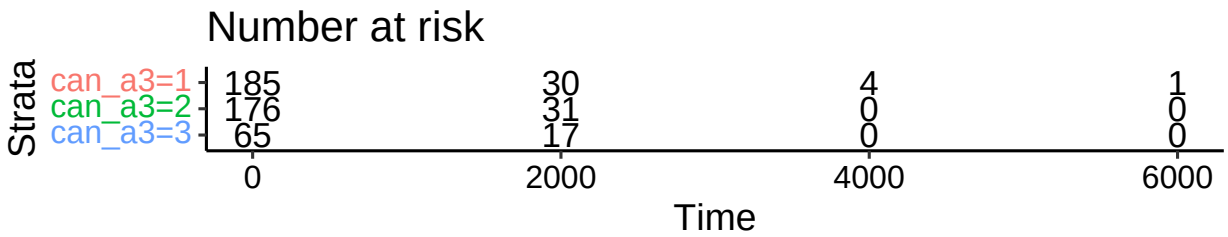

Strata
can_s3=1
can_s3=2
can_s3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.21
0
2000
4000
6000
Time

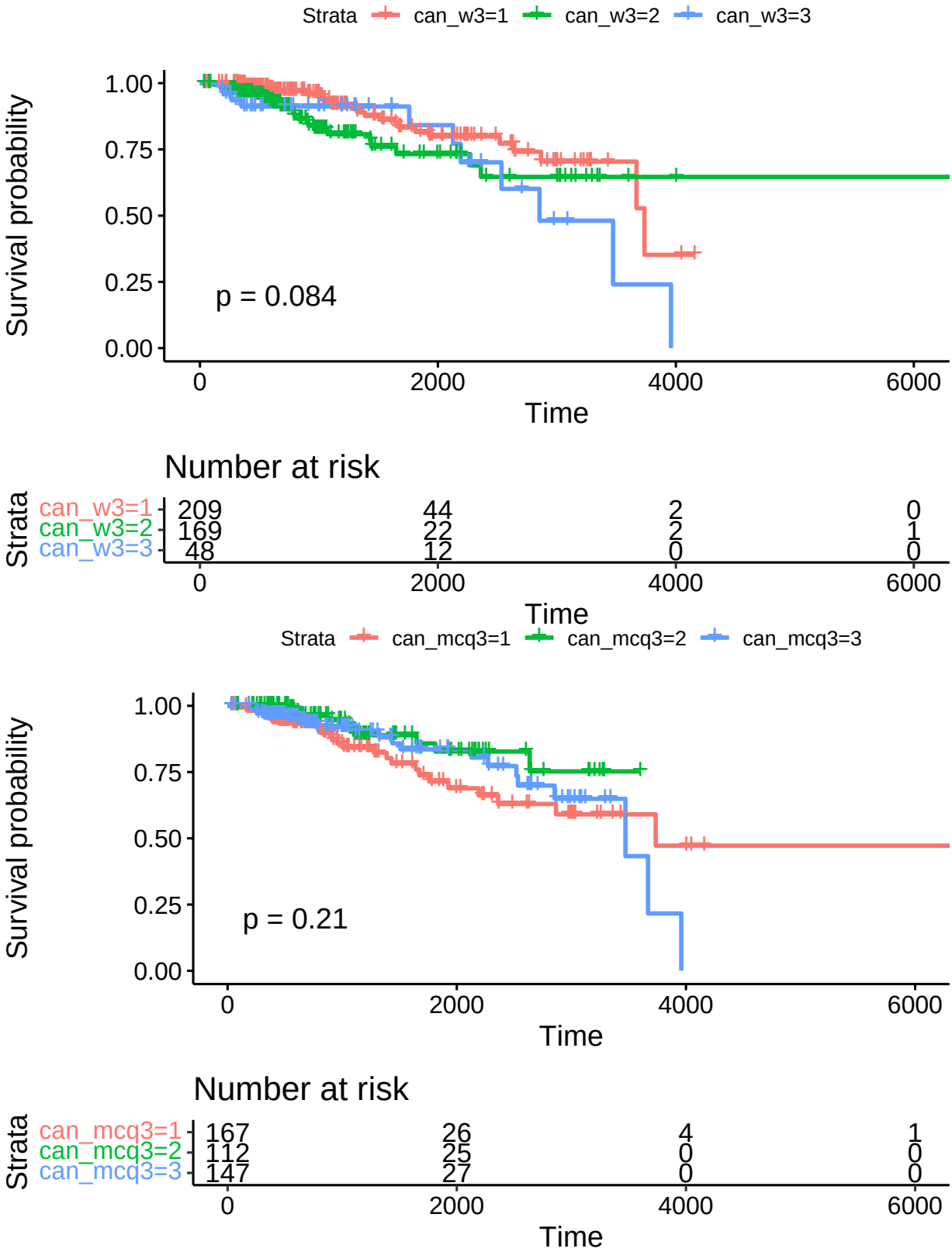

Number at risk
Strata
can_s3=1
can_s3=2
can_s3=3
424
1
1
77
0
1
4
0
0
1
0
0
0
2000
4000
6000
Time

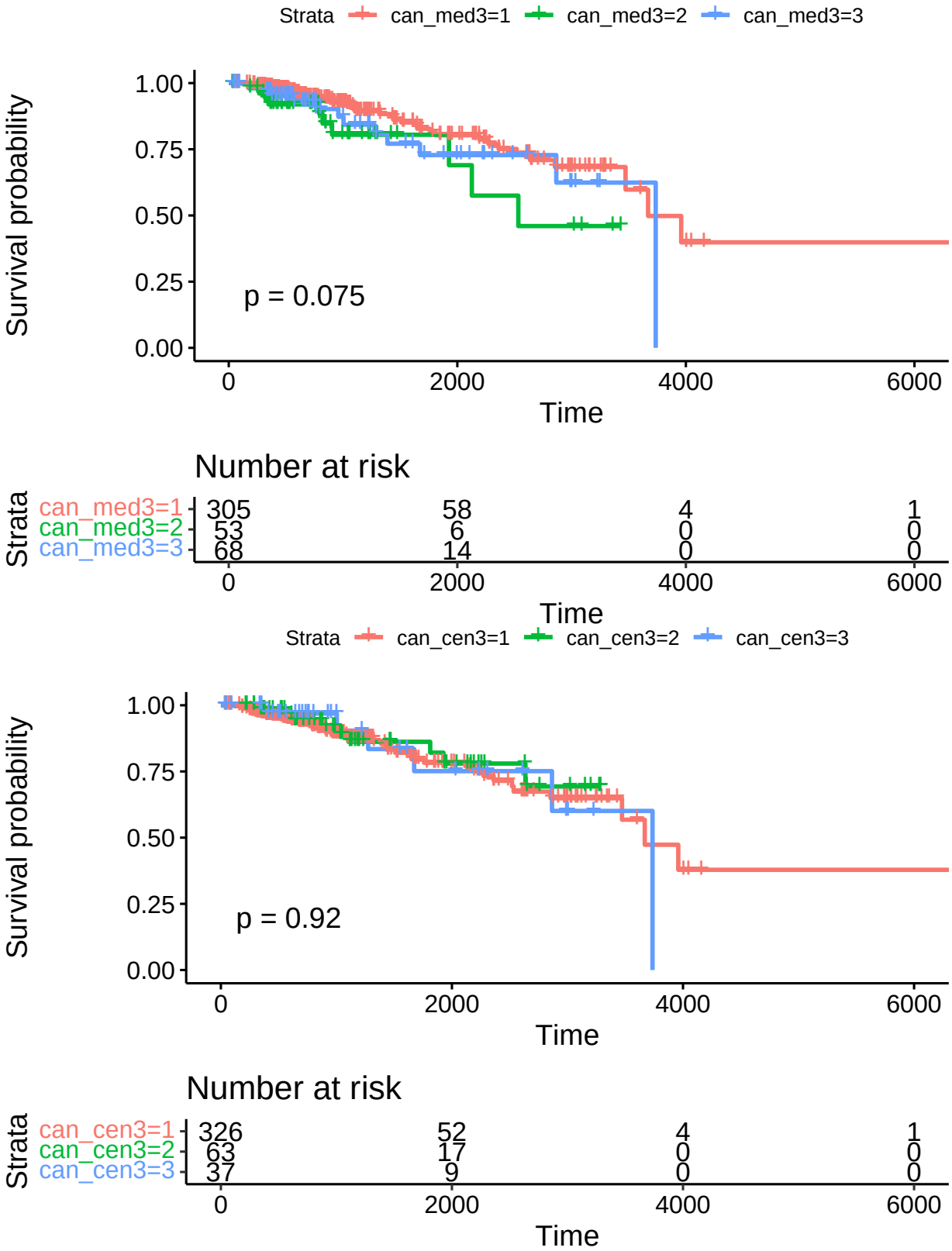

Strata
can_c3=1
can_c3=2
can_c3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.054
0
2000
4000
6000
Time

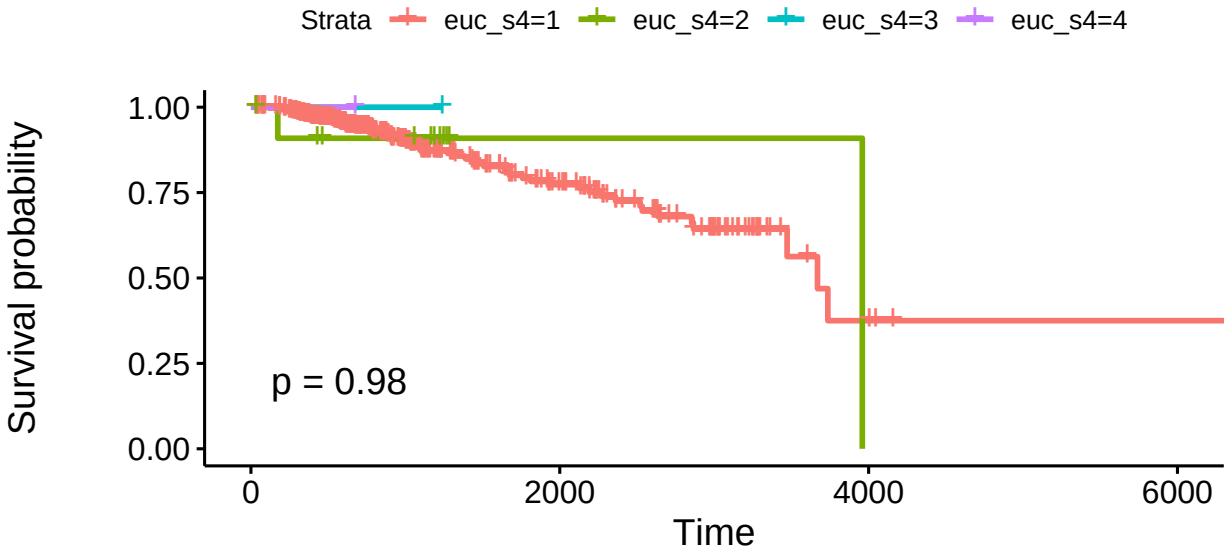

Number at risk
Strata
can_c3=1
can_c3=2
can_c3=3
118
86
222
26
7
45
1
2
1
0
1
0
0
2000
4000
6000
Time

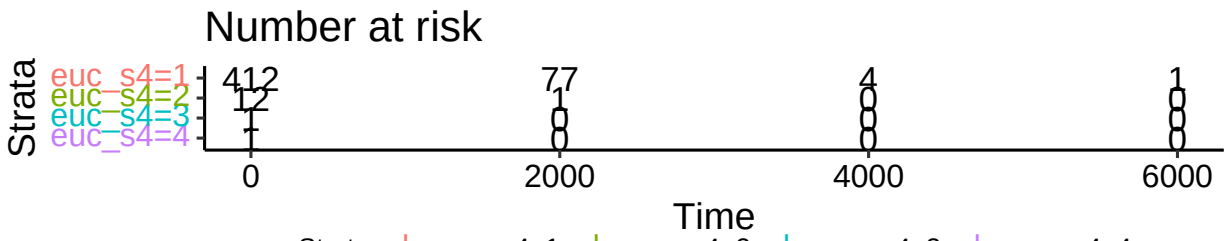

Strata
can_a3=1
can_a3=2
can_a3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.48
0
2000
4000
6000
Time

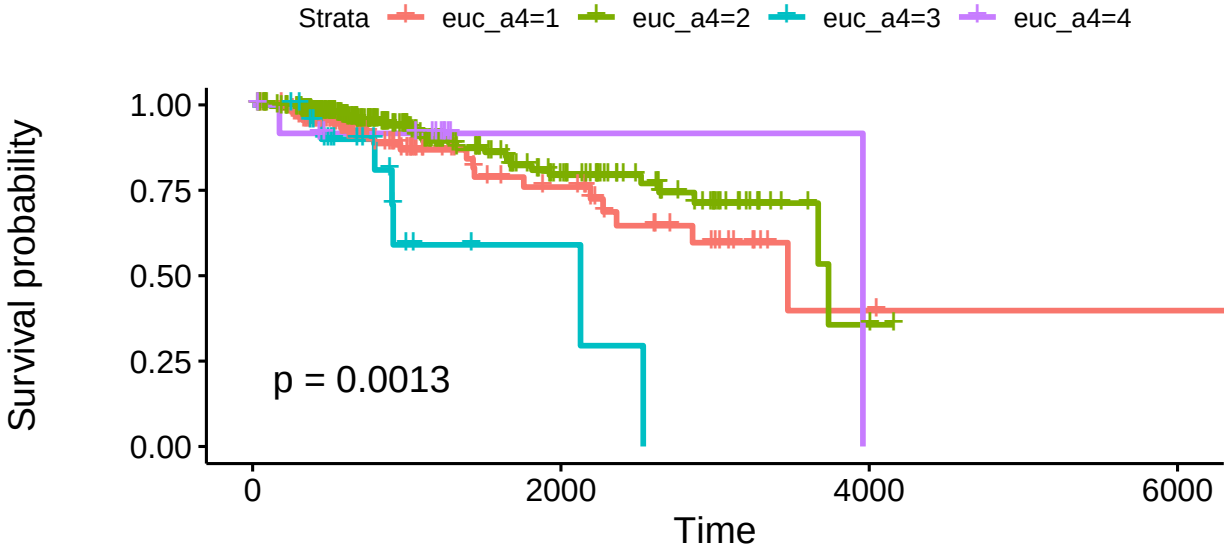

Number at risk
Strata
can_a3=1
can_a3=2
can_a3=3
185
176
65
30
31
17
4
0
0
1
0
0
0
2000
4000
6000
Time

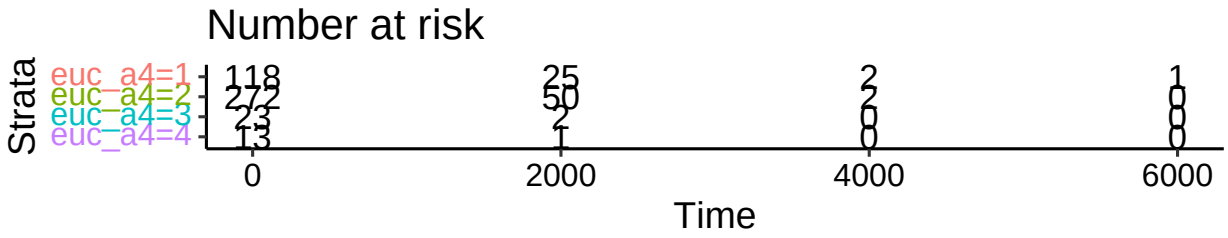

Strata
can_w3=1
can_w3=2
can_w3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.084
0
2000
4000
6000
Time
Number at risk
Strata
can_w3=1
can_w3=2
can_w3=3
209
169
48
44
22
12
2
2
0
0
1
0
0
2000
4000
6000
Time
Strata
can_mcq3=1
can_mcq3=2
can_mcq3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.21
0
2000
4000
6000
Time
Number at risk
Strata
can_mcq3=1
can_mcq3=2
can_mcq3=3
167
112
147
26
25
27
4
0
0
1
0
0
0
2000
4000
6000
Time

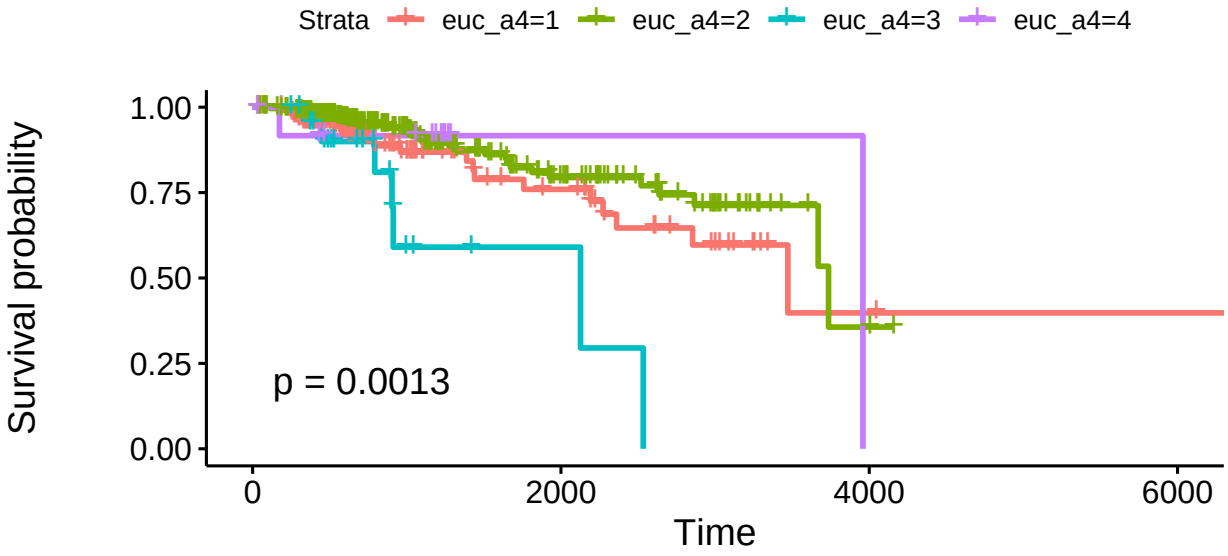

Strata
can_med3=1
can_med3=2
can_med3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.075
0
2000
4000
6000
Time
Number at risk
Strata
can_med3=1
can_med3=2
can_med3=3
305
58
4
1
53
6
0
0
68
14
0
0
0
2000
4000
6000
Time
Strata
can_cen3=1
can_cen3=2
can_cen3=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.92
0
2000
4000
6000
Time
Number at risk
Strata
can_cen3=1
can_cen3=2
can_cen3=3
326
52
4
1
63
17
0
0
37
9
0
0
0
2000
4000
6000
Time

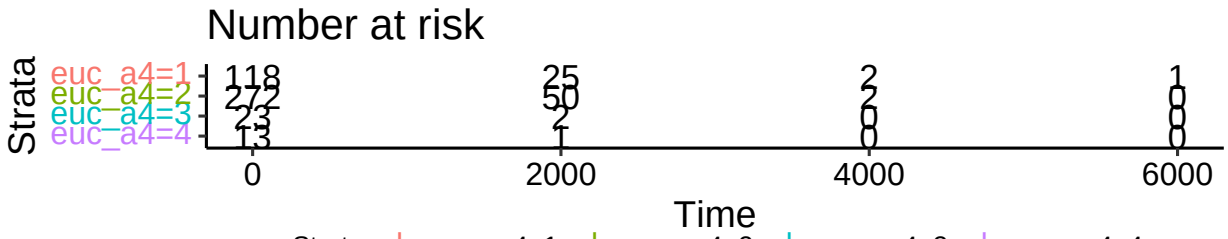

Strata
euc_s4=1
euc_s4=2
euc_s4=3
euc_s4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.98
0
2000
4000
6000
Time

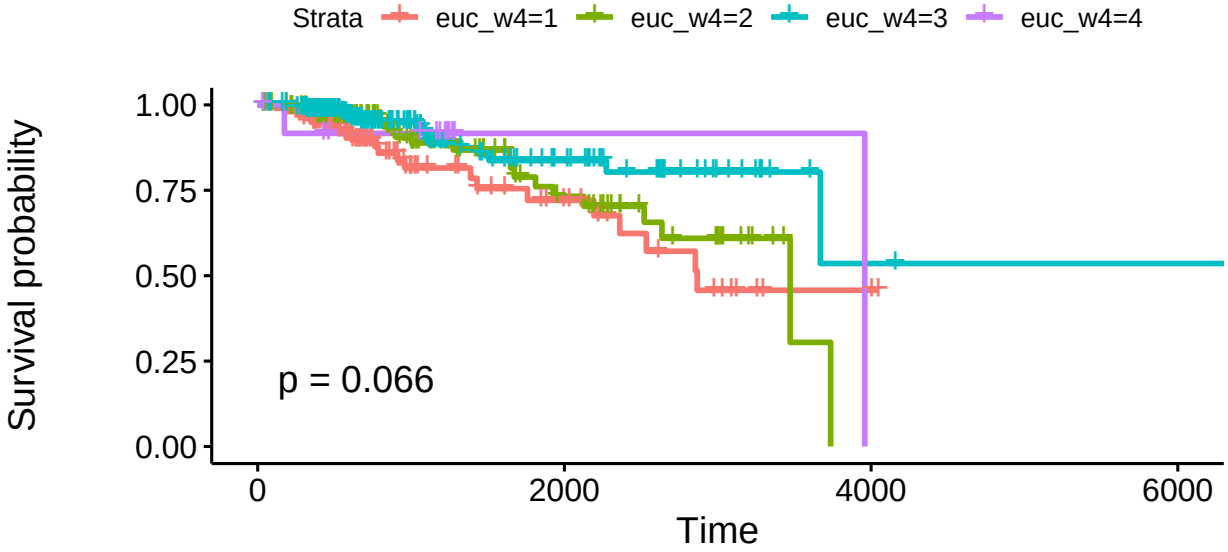

Number at risk
Strata
euc_s4=1
euc_s4=2
euc_s4=3
euc_s4=4
412
77
4
1
12
1
0
0
1
0
0
0
0
2000
4000
6000
Time

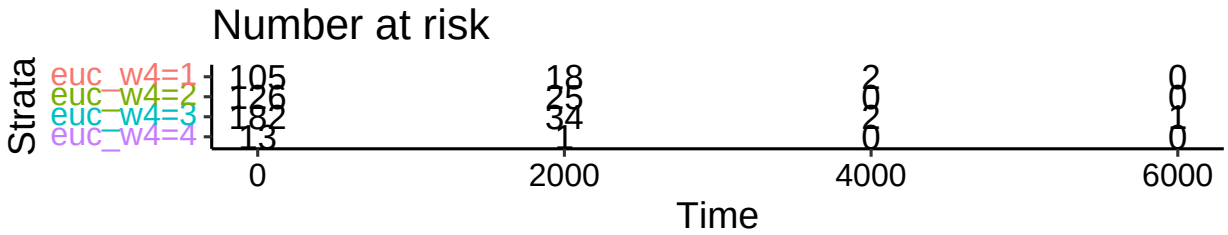

Strata
euc_a4=1
euc_a4=2
euc_a4=3
euc_a4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.0013
0
2000
4000
6000
Time

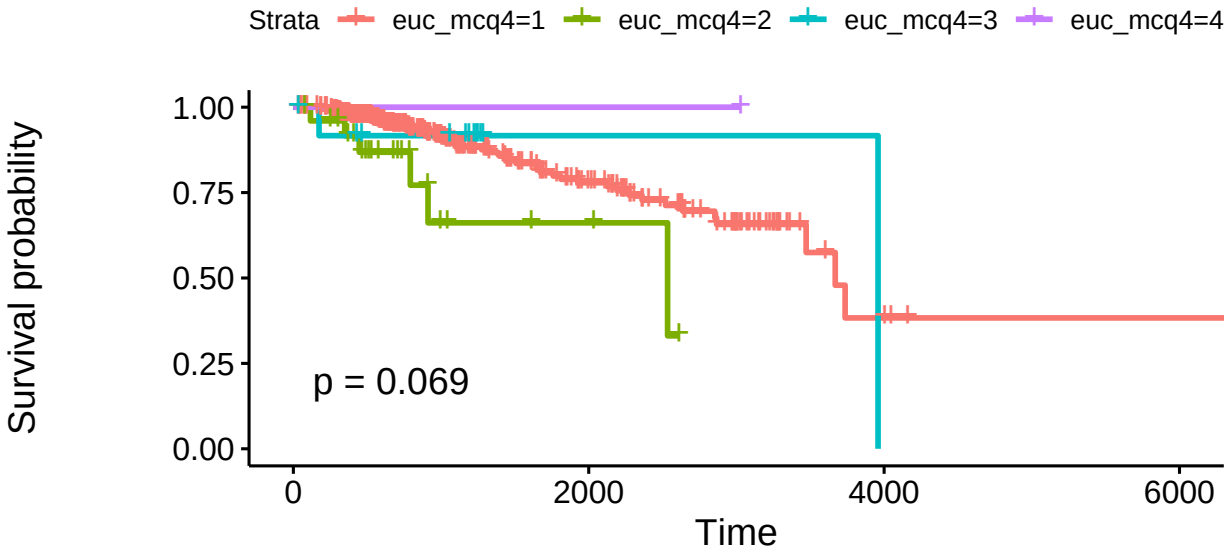

Number at risk
Strata
euc_a4=1
euc_a4=2
euc_a4=3
euc_a4=4
118
25
2
1
27
2
0
0
2
0
0
0
1
0
0
0
2000
4000
6000
Time

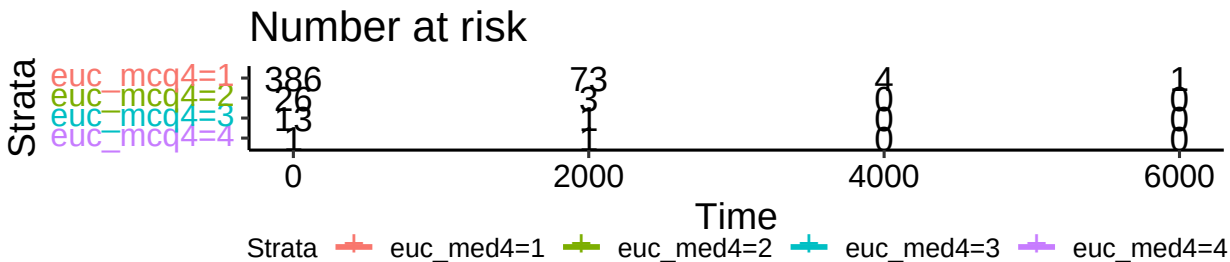

Strata
euc_a4=1
euc_a4=2
euc_a4=3
euc_a4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.0013
0
2000
4000
6000
Time

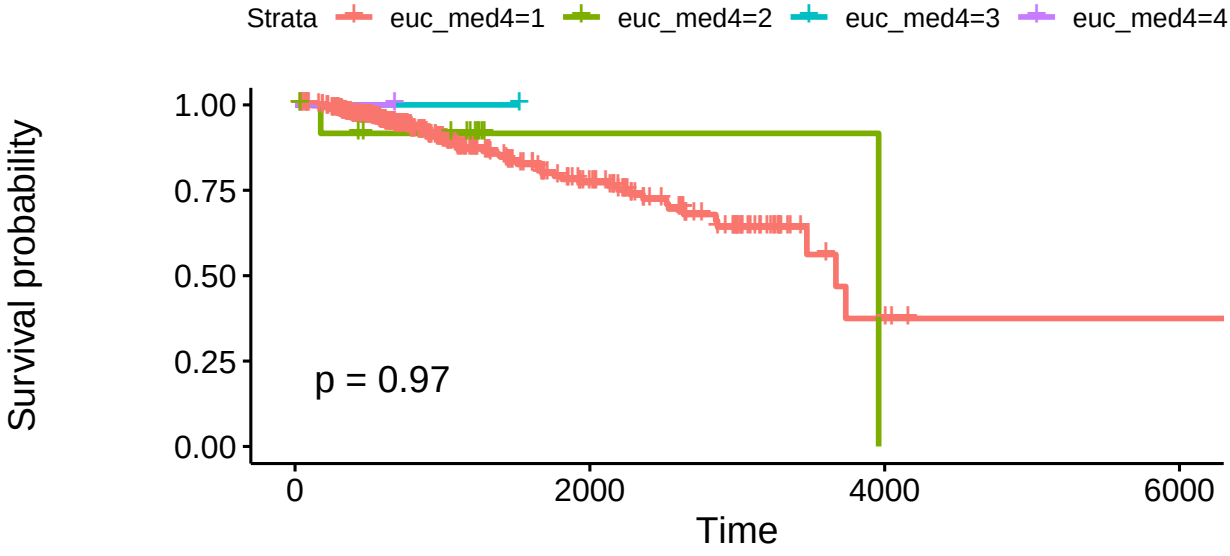

Number at risk
Strata
euc_a4=1
euc_a4=2
euc_a4=3
euc_a4=4
118
272
23
13
25
50
2
1
2
0
0
0
1
0
0
0
0
2000
4000
6000
Time

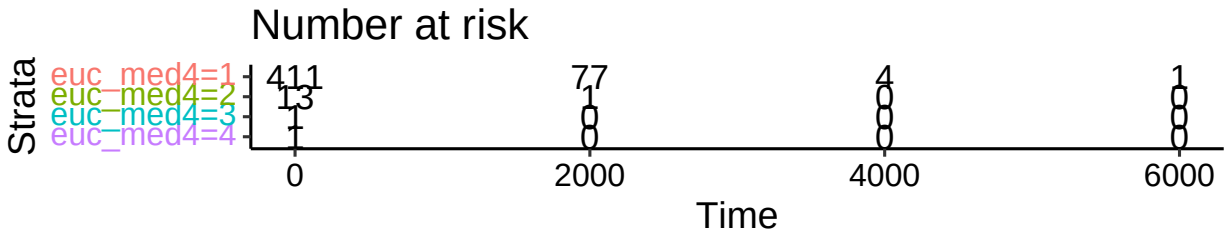

Strata
euc_w4=1
euc_w4=2
euc_w4=3
euc_w4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.066
0
2000
4000
6000
Time

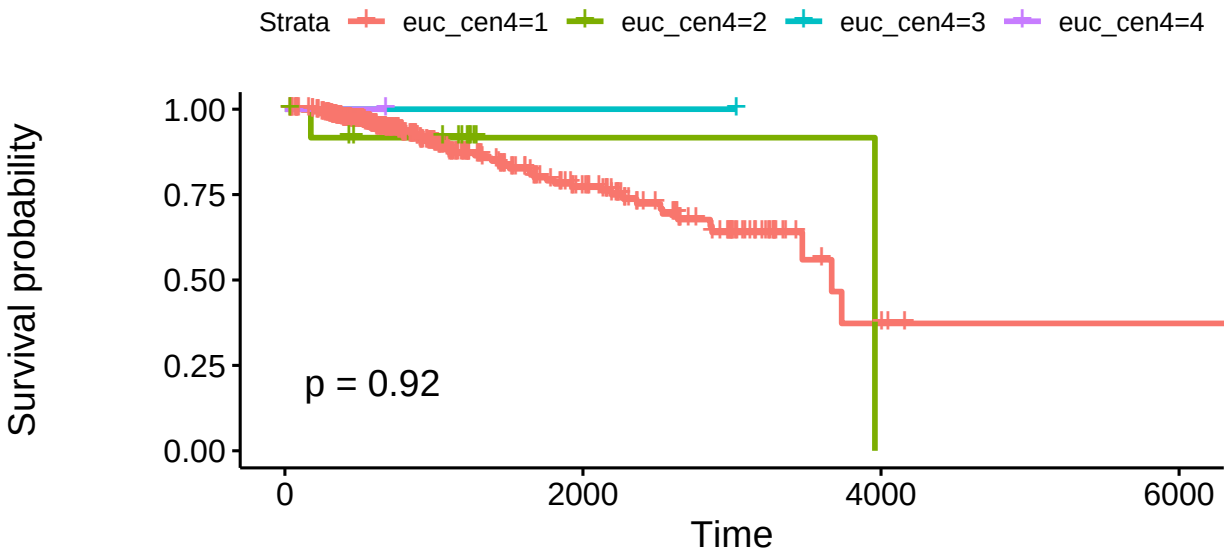

Number at risk
Strata
euc_w4=1
euc_w4=2
euc_w4=3
euc_w4=4
105
126
182
13
18
25
34
1
2
0
2
0
0
0
1
0
0
2000
4000
6000
Time

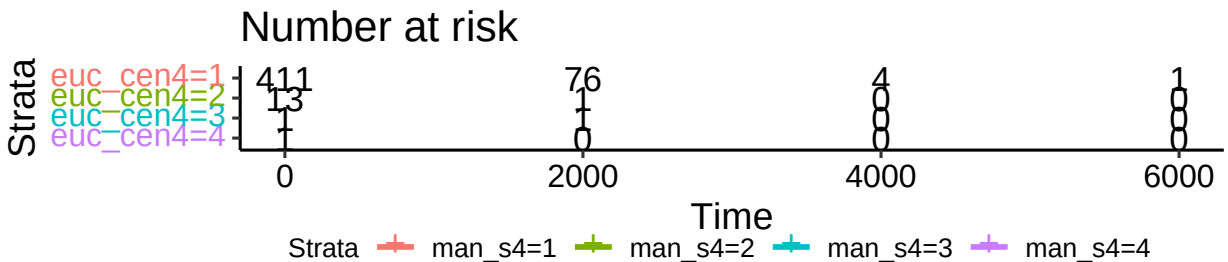

Strata
euc_mcq4=1
euc_mcq4=2
euc_mcq4=3
euc_mcq4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.069
0
2000
4000
6000
Time

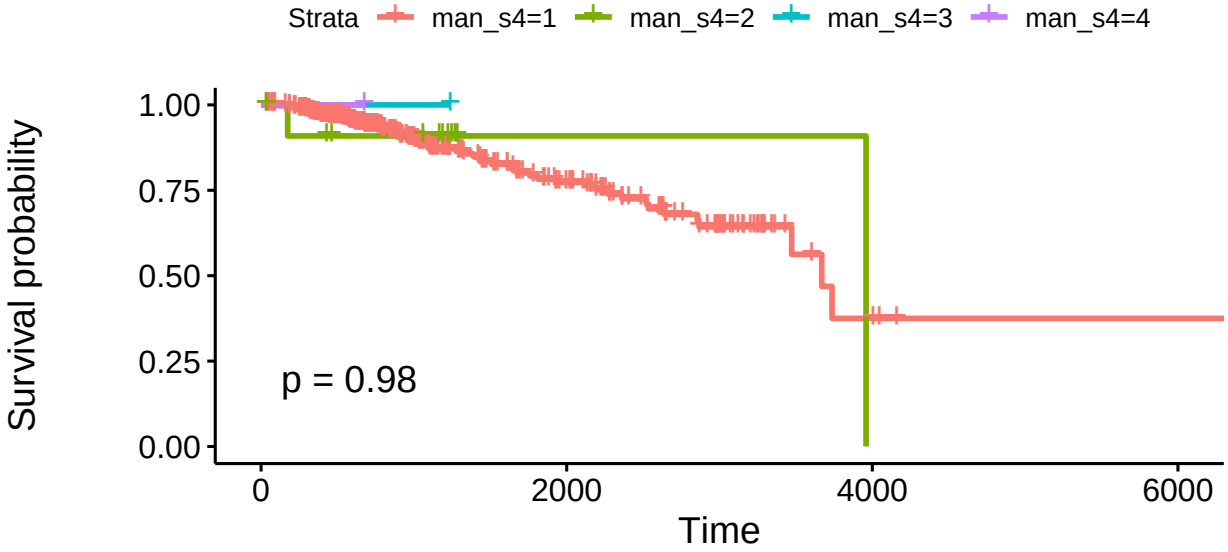

Number at risk
Strata
euc_mcq4=1
euc_mcq4=2
euc_mcq4=3
euc_mcq4=4
386
26
13
1
73
3
1
0
4
0
0
0
1
0
0
0
0
2000
4000
6000
Time

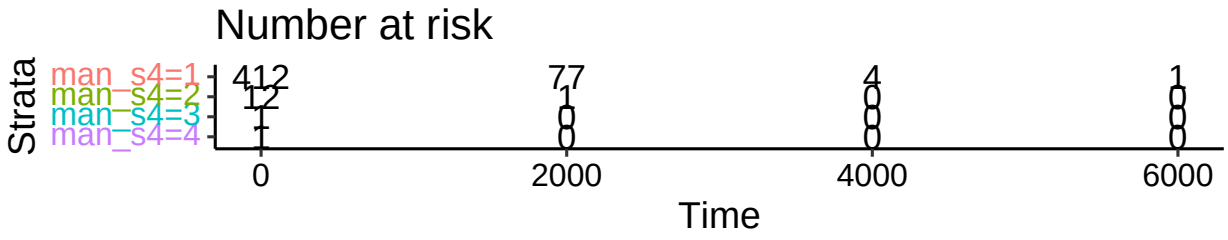

Strata
euc_med4=1
euc_med4=2
euc_med4=3
euc_med4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.97
0
2000
4000
6000
Time

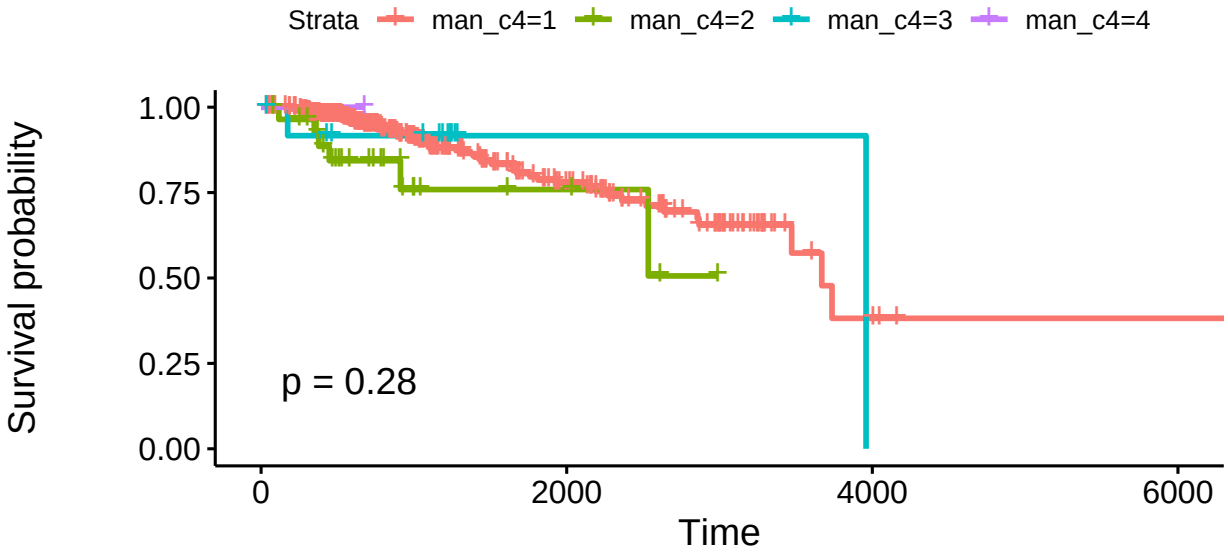

Number at risk
Strata
euc_med4=1
euc_med4=2
euc_med4=3
euc_med4=4
411
13
1
0
77
1
0
0
4
0
0
0
1
0
0
0
0
2000
4000
6000
Time

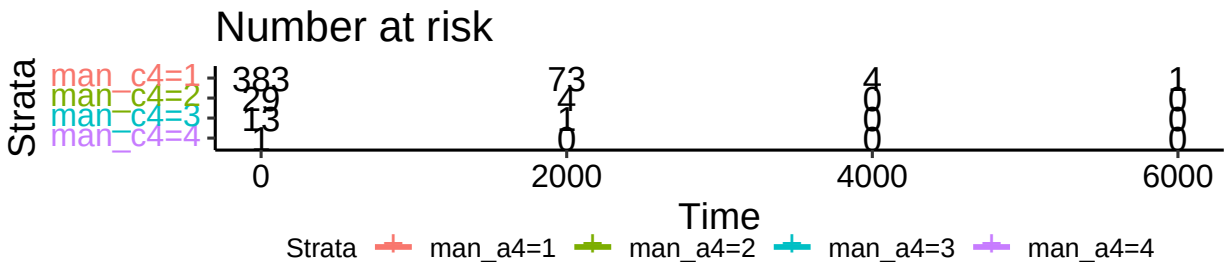

Strata
euc_cen4=1
euc_cen4=2
euc_cen4=3
euc_cen4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.92
0
2000
4000
6000
Time

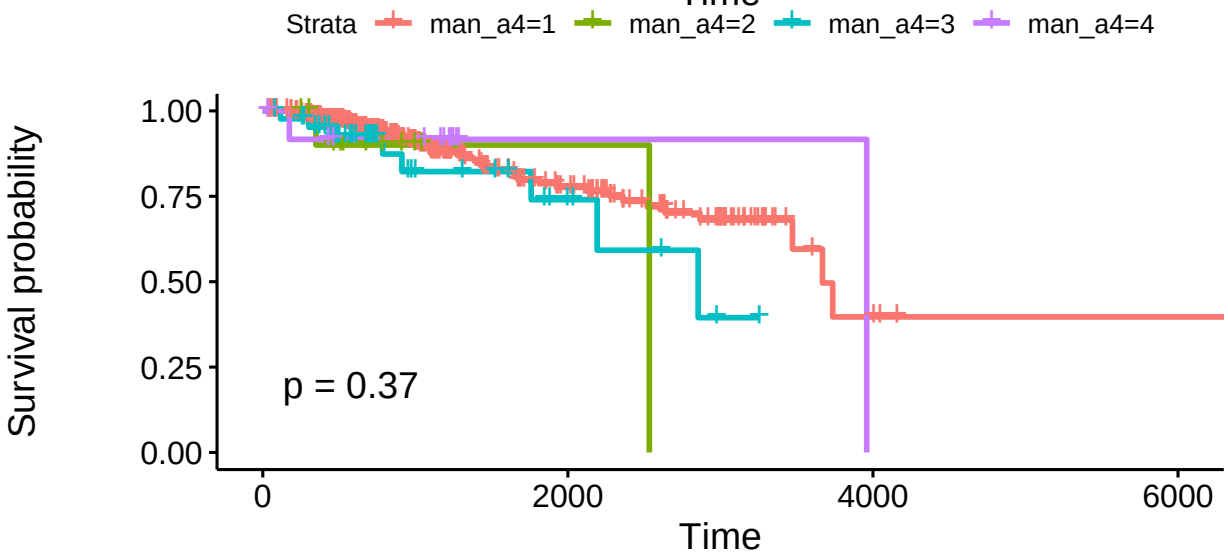

Number at risk
Strata
euc_cen4=1
euc_cen4=2
euc_cen4=3
euc_cen4=4
411
76
4
1
13
1
0
0
1
0
0
0
0
2000
4000
6000
Time

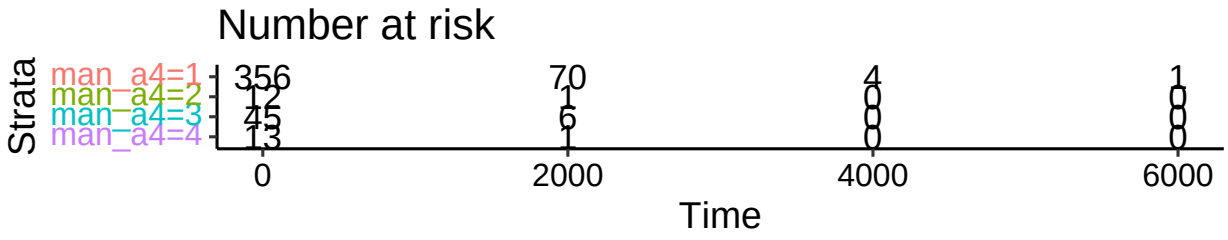

Strata
man_s4=1
man_s4=2
man_s4=3
man_s4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.98
0
2000
4000
6000
Time

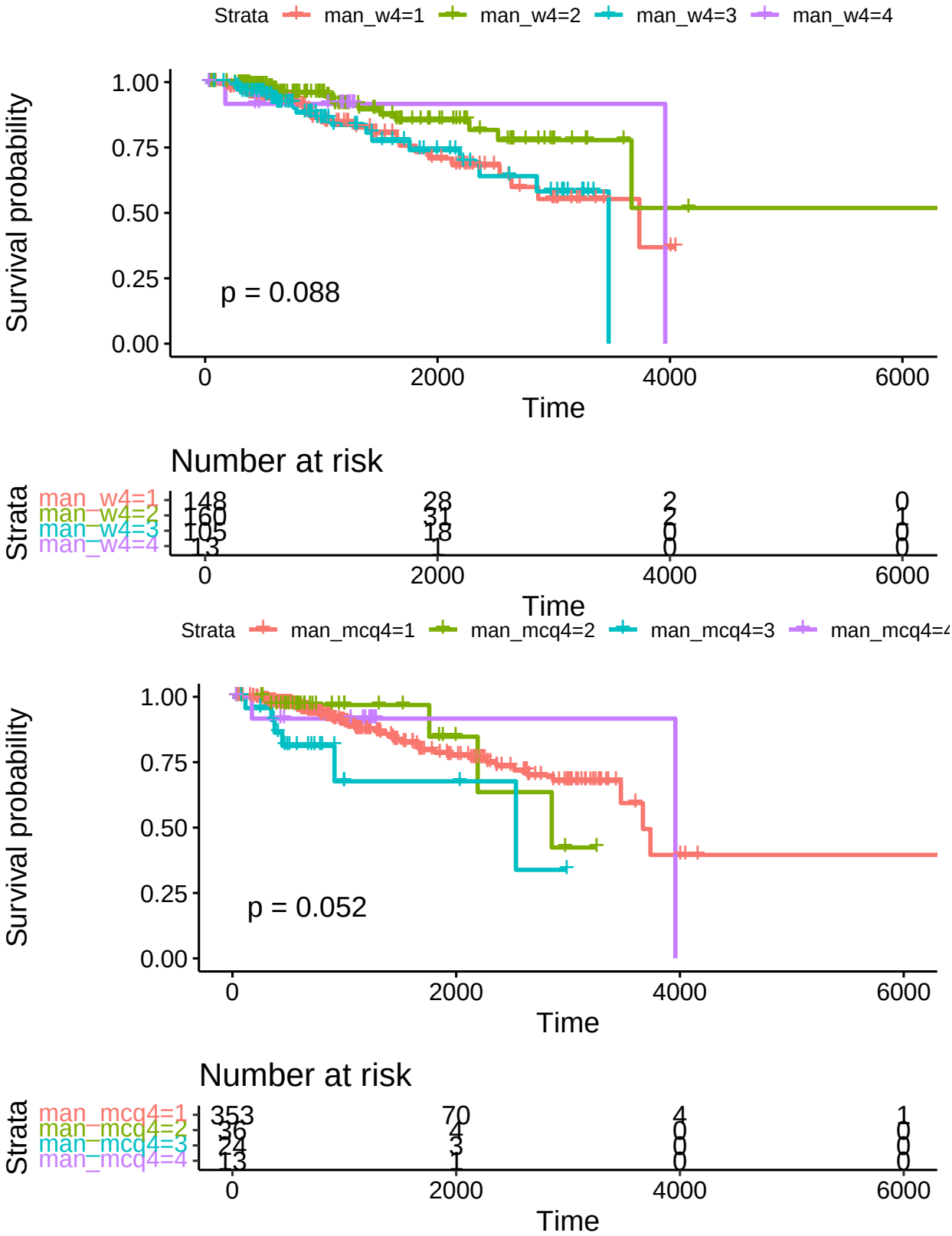

Number at risk
Strata
man_s4=1
man_s4=2
man_s4=3
man_s4=4
412
77
4
1
12
1
0
0
1
0
0
0
0
2000
4000
6000
Time

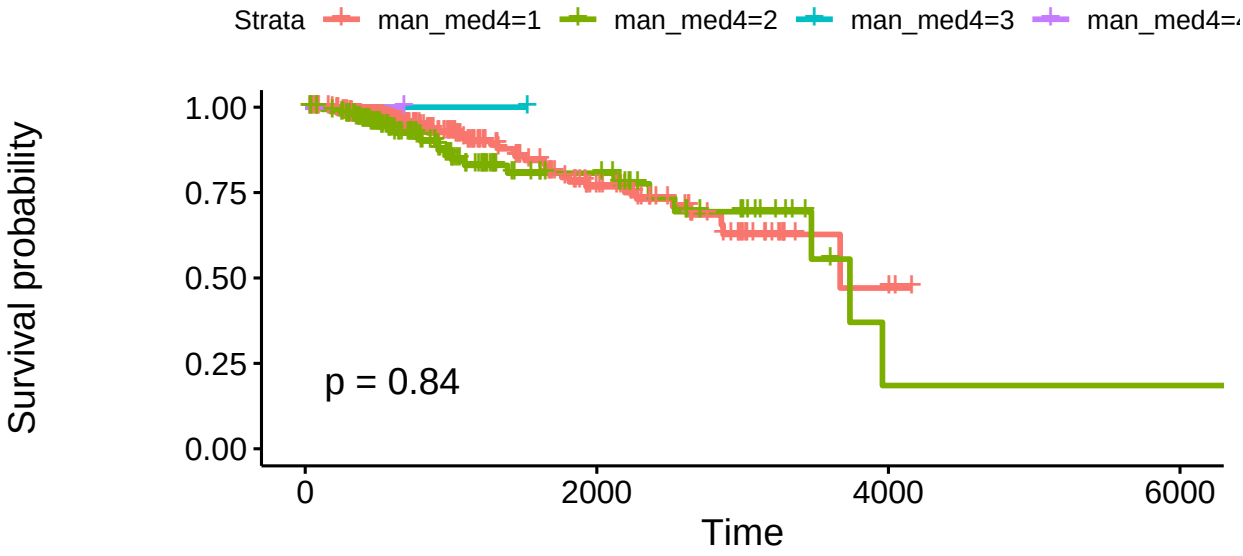

Strata
man_c4=1
man_c4=2
man_c4=3
man_c4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.28
0
2000
4000
6000
Time

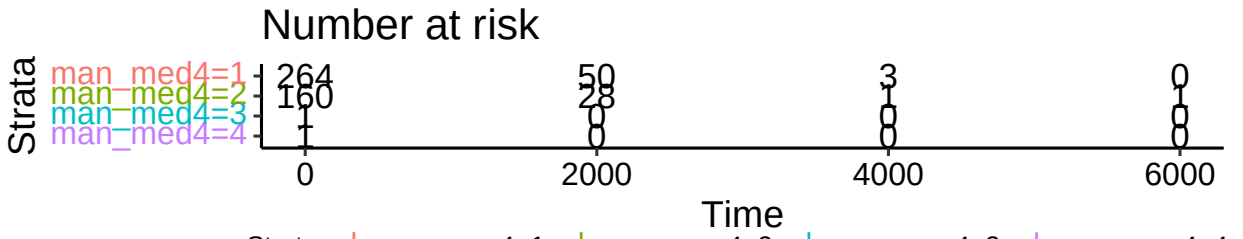

Number at risk
Strata
man_c4=1
man_c4=2
man_c4=3
man_c4=4
383
73
4
1
29
4
0
0
13
1
0
0
1
0
0
0
0
2000
4000
6000
Time

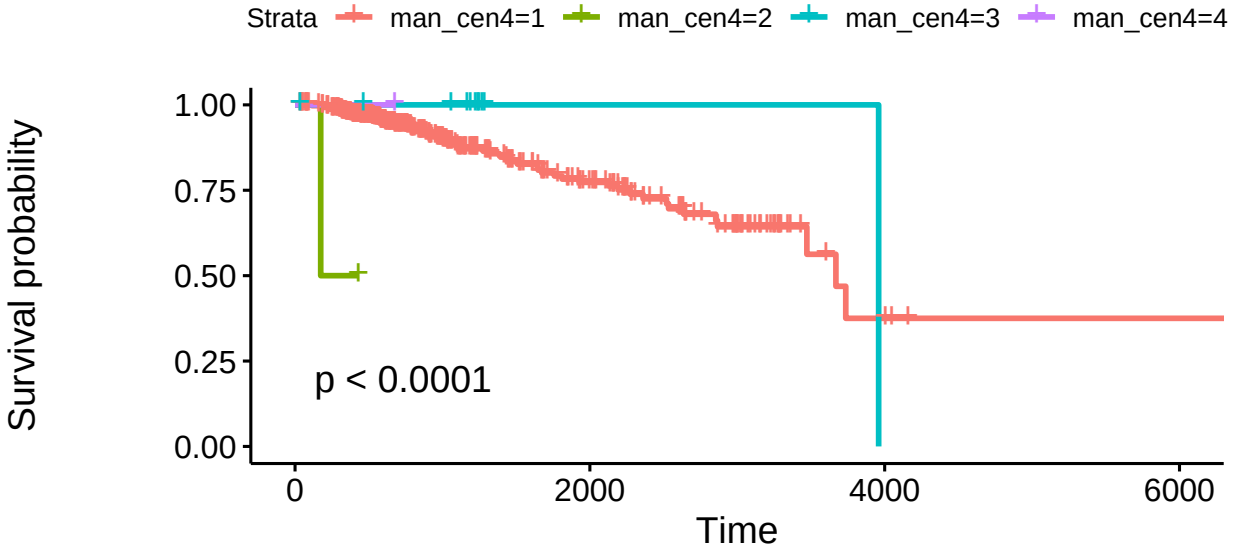

Strata
man_a4=1
man_a4=2
man_a4=3
man_a4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.37
0
2000
4000
6000
Time

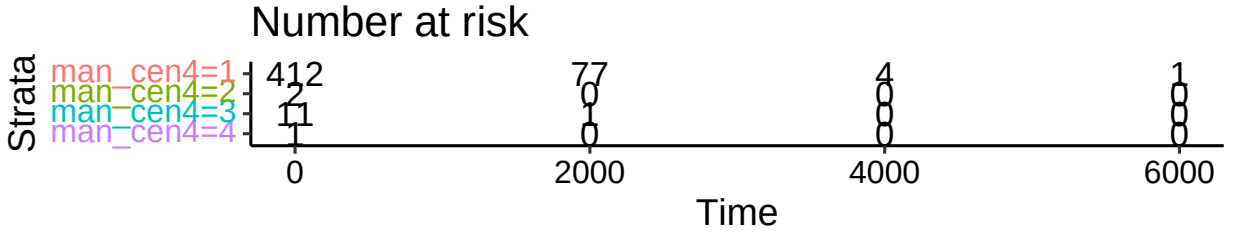

Number at risk
Strata
man_a4=1
man_a4=2
man_a4=3
man_a4=4
356
70
4
1
12
1
0
0
45
6
0
0
13
1
0
0
0
2000
4000
6000
Time

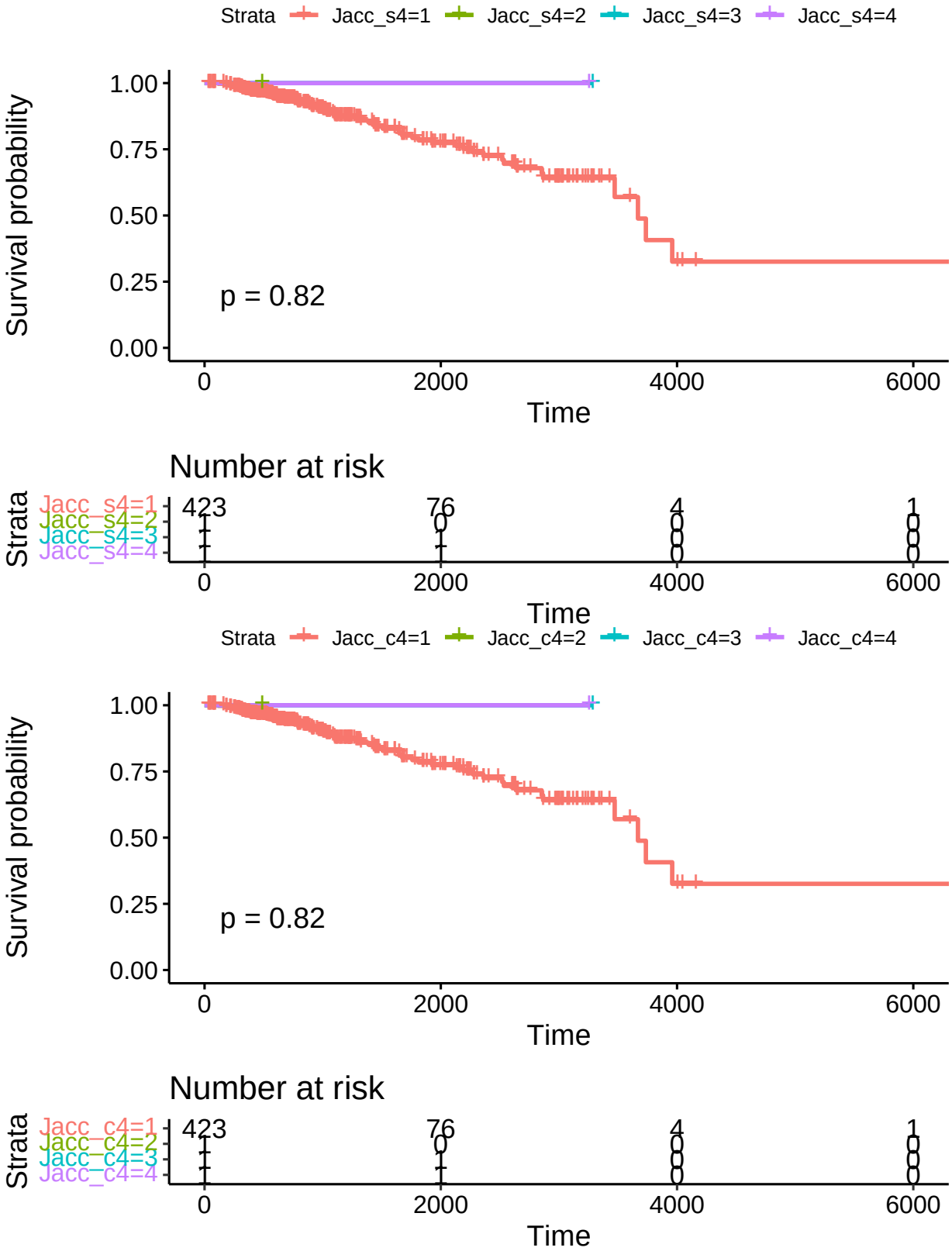

Strata
man_w4=1
man_w4=2
man_w4=3
man_w4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.088
0
2000
4000
6000
Time
Number at risk
Strata
man_w4=1
man_w4=2
man_w4=3
man_w4=4
148
28
2
0
160
31
2
1
105
18
0
0
13
1
0
0
0
2000
4000
6000
Time
Strata
man_mcq4=1
man_mcq4=2
man_mcq4=3
man_mcq4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.052
0
2000
4000
6000
Time
Number at risk
Strata
man_mcq4=1
man_mcq4=2
man_mcq4=3
man_mcq4=4
353
70
4
1
36
4
0
0
24
3
0
0
13
1
0
0
0
2000
4000
6000
Time

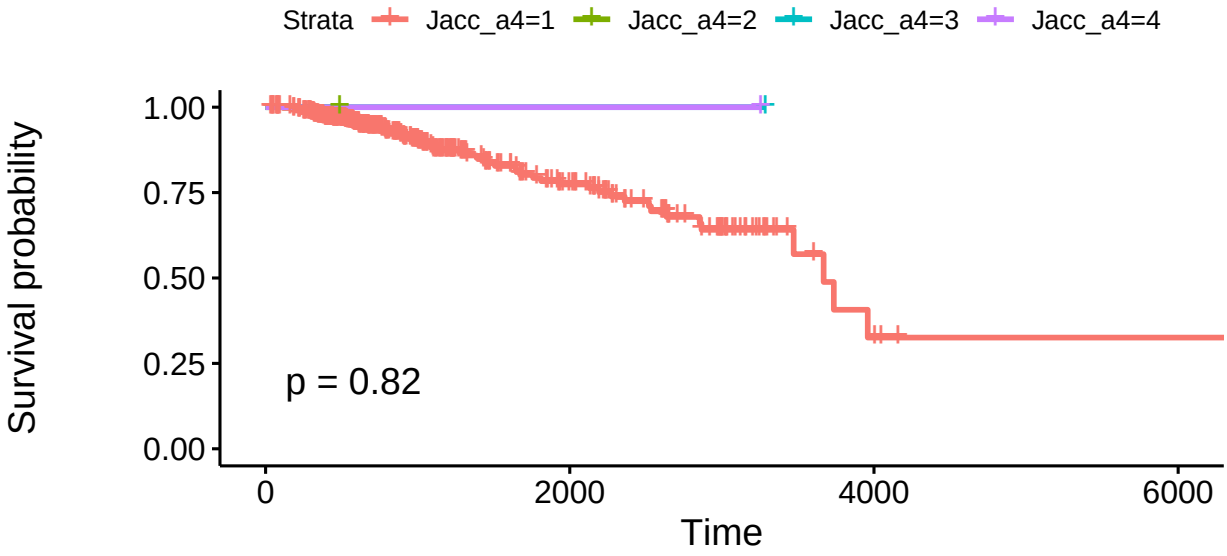

Strata
man_med4=1
man_med4=2
man_med4=3
man_med4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.84
0
2000
4000
6000
Time

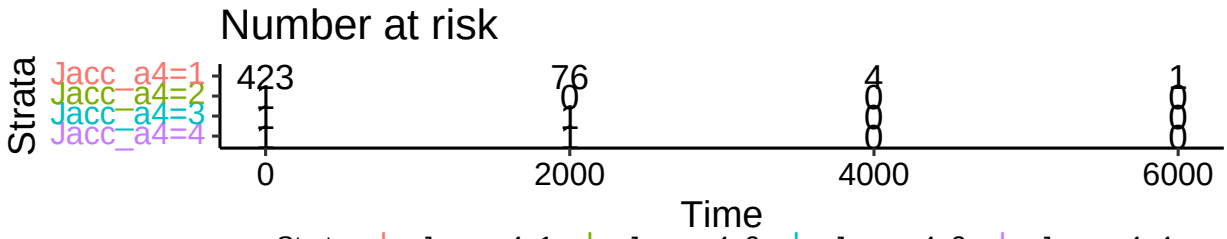

Number at risk
Strata
man_med4=1
man_med4=2
man_med4=3
man_med4=4
264
160
50
28
3
1
0
1
0
0
0
0
0
2000
4000
6000
Time

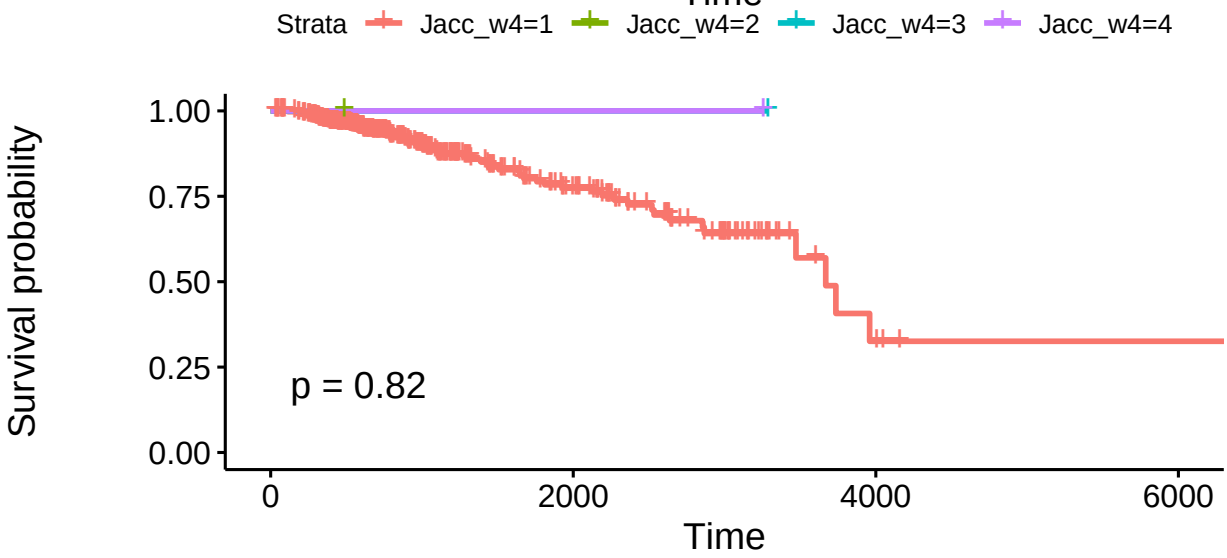

Strata
man_cen4=1
man_cen4=2
man_cen4=3
man_cen4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p < 0.0001
0
2000
4000
6000
Time

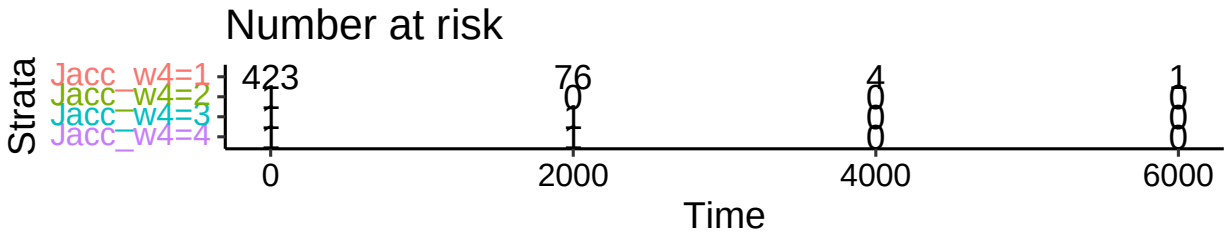

Number at risk
Strata
man_cen4=1
man_cen4=2
man_cen4=3
man_cen4=4
412
2
11
1
77
0
1
0
4
0
0
0
1
0
0
0
2000
4000
6000
Time

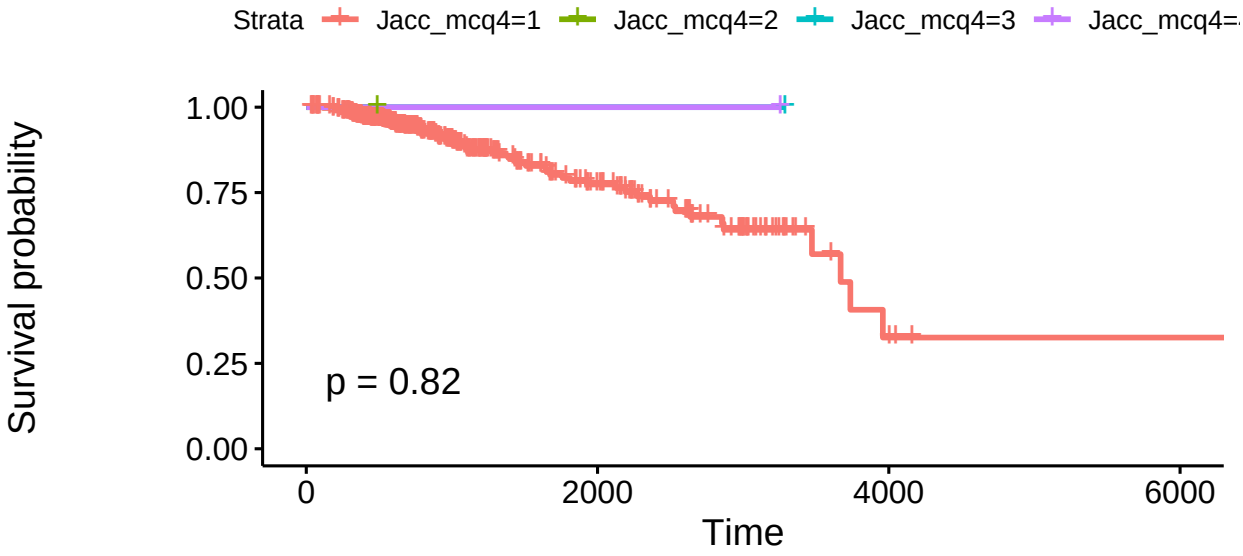

Strata
Jacc_s4=1
Jacc_s4=2
Jacc_s4=3
Jacc_s4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.82
0
2000
4000
6000
Time
Number at risk
Strata
Jacc_s4=1
Jacc_s4=2
Jacc_s4=3
Jacc_s4=4
423
76
4
1
0
0
0
0
0
2000
4000
6000
Time
Strata
Jacc_c4=1
Jacc_c4=2
Jacc_c4=3
Jacc_c4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.82
0
2000
4000
6000
Time
Number at risk
Strata
Jacc_c4=1
Jacc_c4=2
Jacc_c4=3
Jacc_c4=4
423
76
4
1
0
0
0
0
0
2000
4000
6000
Time

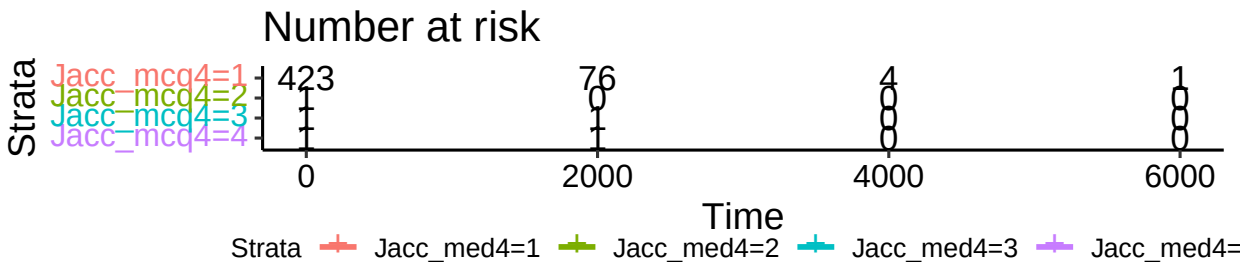

Strata
Jacc_a4=1
Jacc_a4=2
Jacc_a4=3
Jacc_a4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.82
0
2000
4000
6000
Time

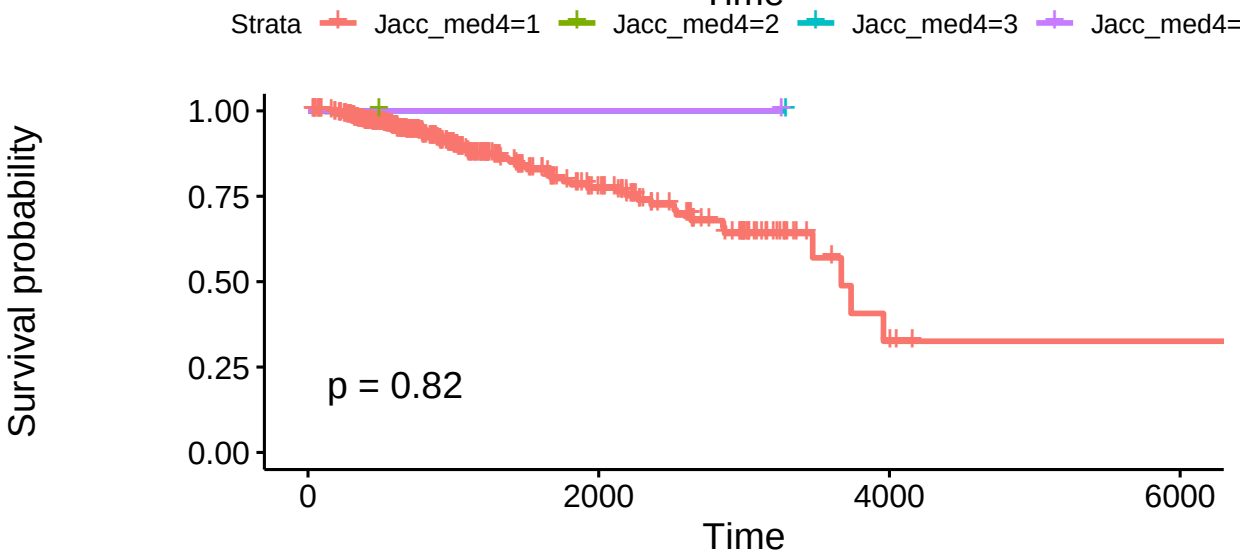

Number at risk
Strata
Jacc_a4=1
Jacc_a4=2
Jacc_a4=3
Jacc_a4=4
423
76
4
1
0
0
0
0
0
2000
4000
6000
Time

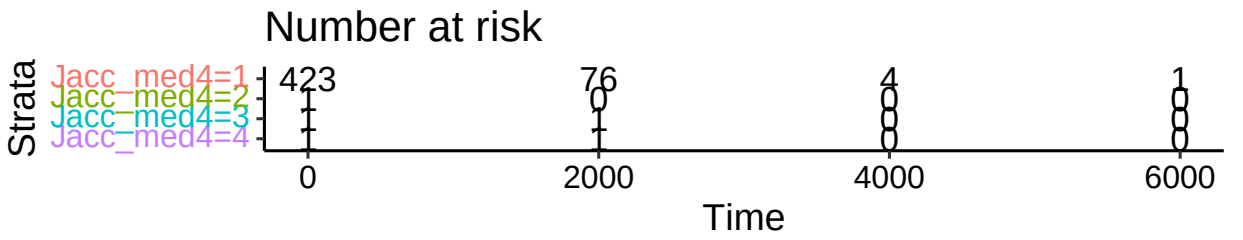

Strata
Jacc_w4=1
Jacc_w4=2
Jacc_w4=3
Jacc_w4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.82
0
2000
4000
6000
Time

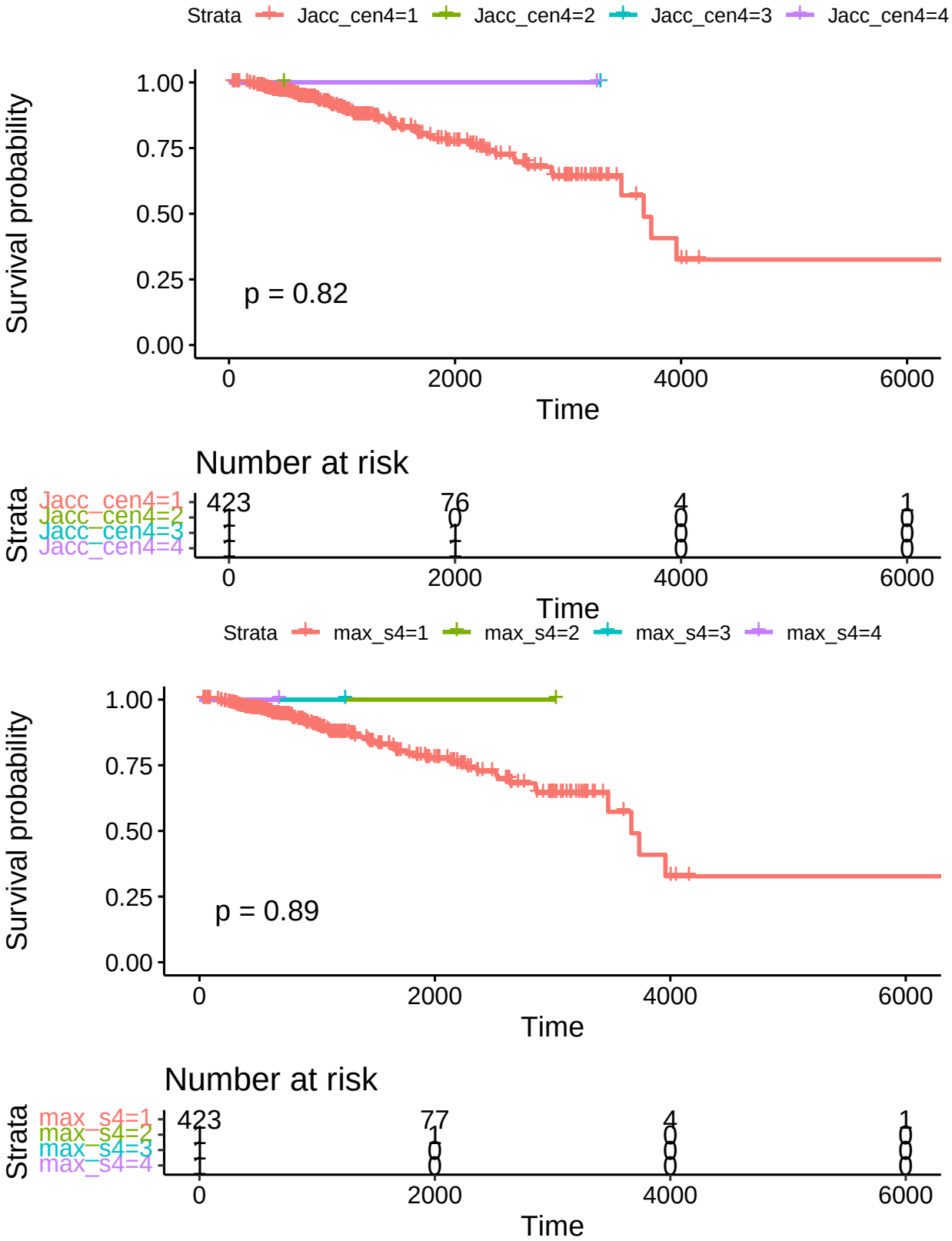

Number at risk
Strata
Jacc_w4=1
Jacc_w4=2
Jacc_w4=3
Jacc_w4=4
423
76
4
1
0
0
0
0
0
2000
4000
6000
Time

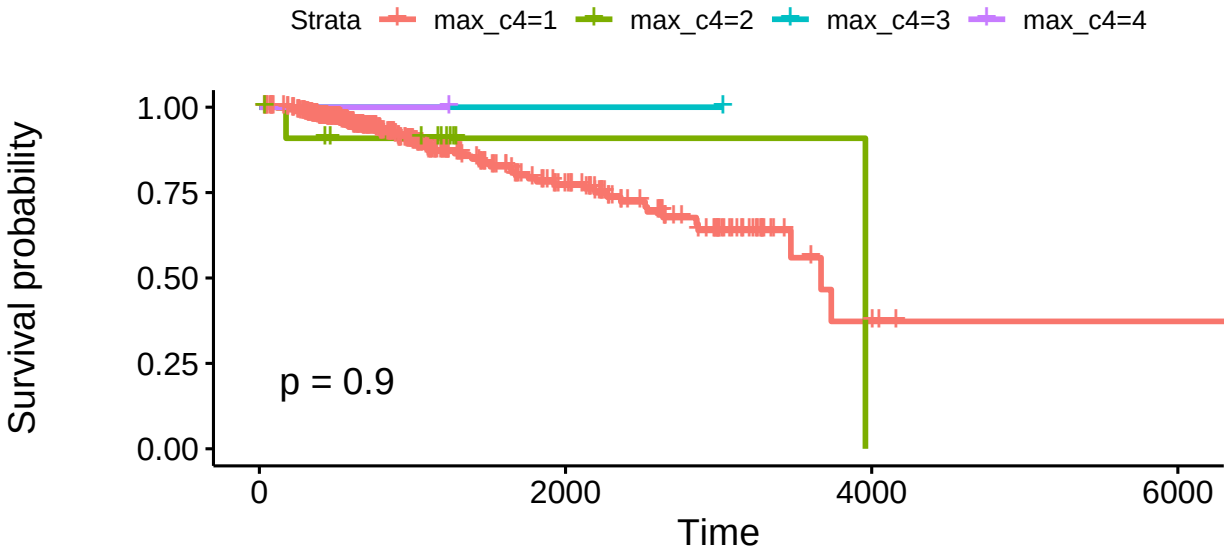

Strata
Jacc_mcq4=1
Jacc_mcq4=2
Jacc_mcq4=3
Jacc_mcq4=
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.82
0
2000
4000
6000
Time

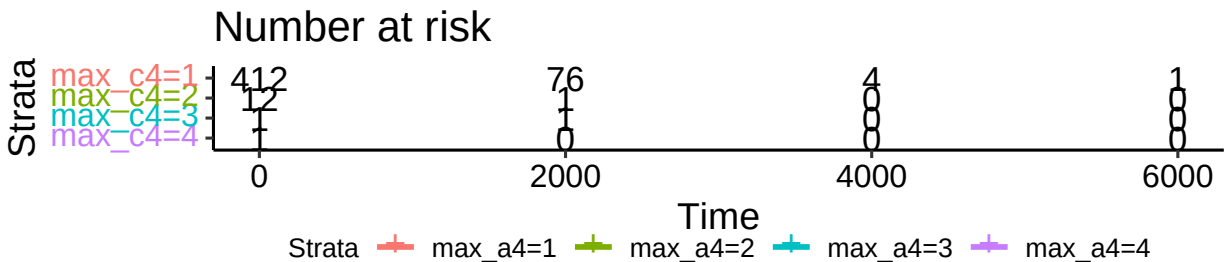

Number at risk
Strata
Jacc_mcq4=1
Jacc_mcq4=2
Jacc_mcq4=3
Jacc_mcq4=4
423
76
4
1
0
0
0
0
0
2000
4000
6000
Time

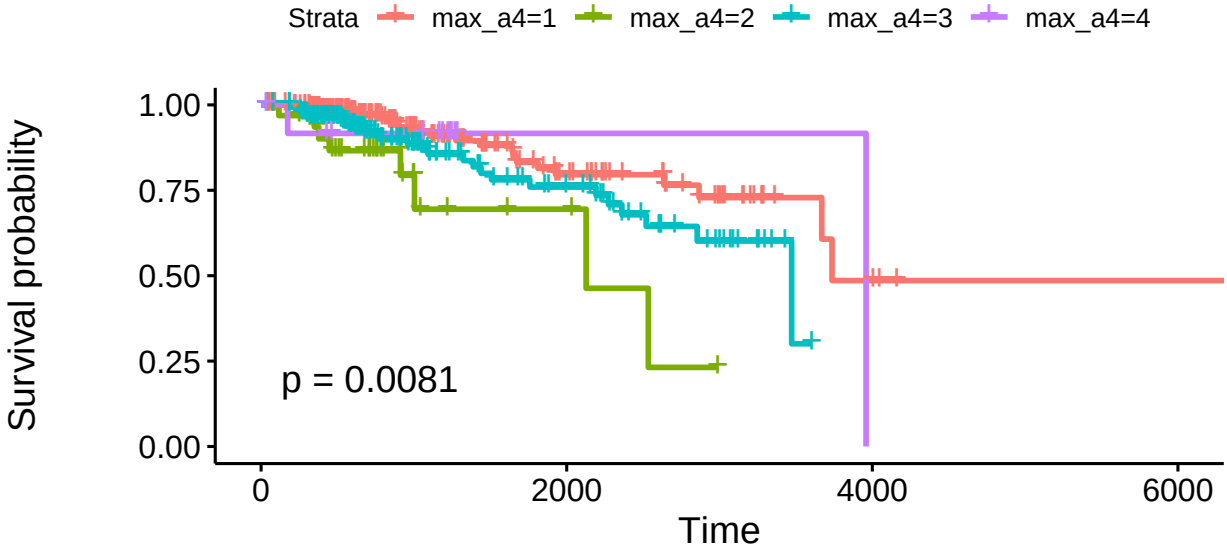

Strata
Jacc_med4=1
Jacc_med4=2
Jacc_med4=3
Jacc_med4=
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.82
0
2000
4000
6000
Time

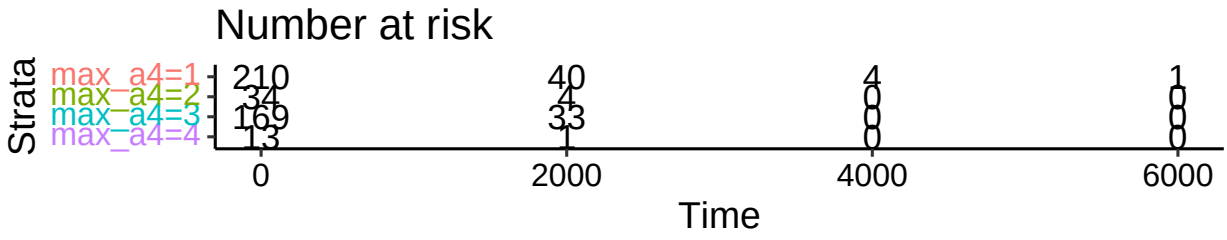

Number at risk
Strata
Jacc_med4=1
Jacc_med4=2
Jacc_med4=3
Jacc_med4=4
423
76
4
1
0
0
0
0
0
2000
4000
6000
Time

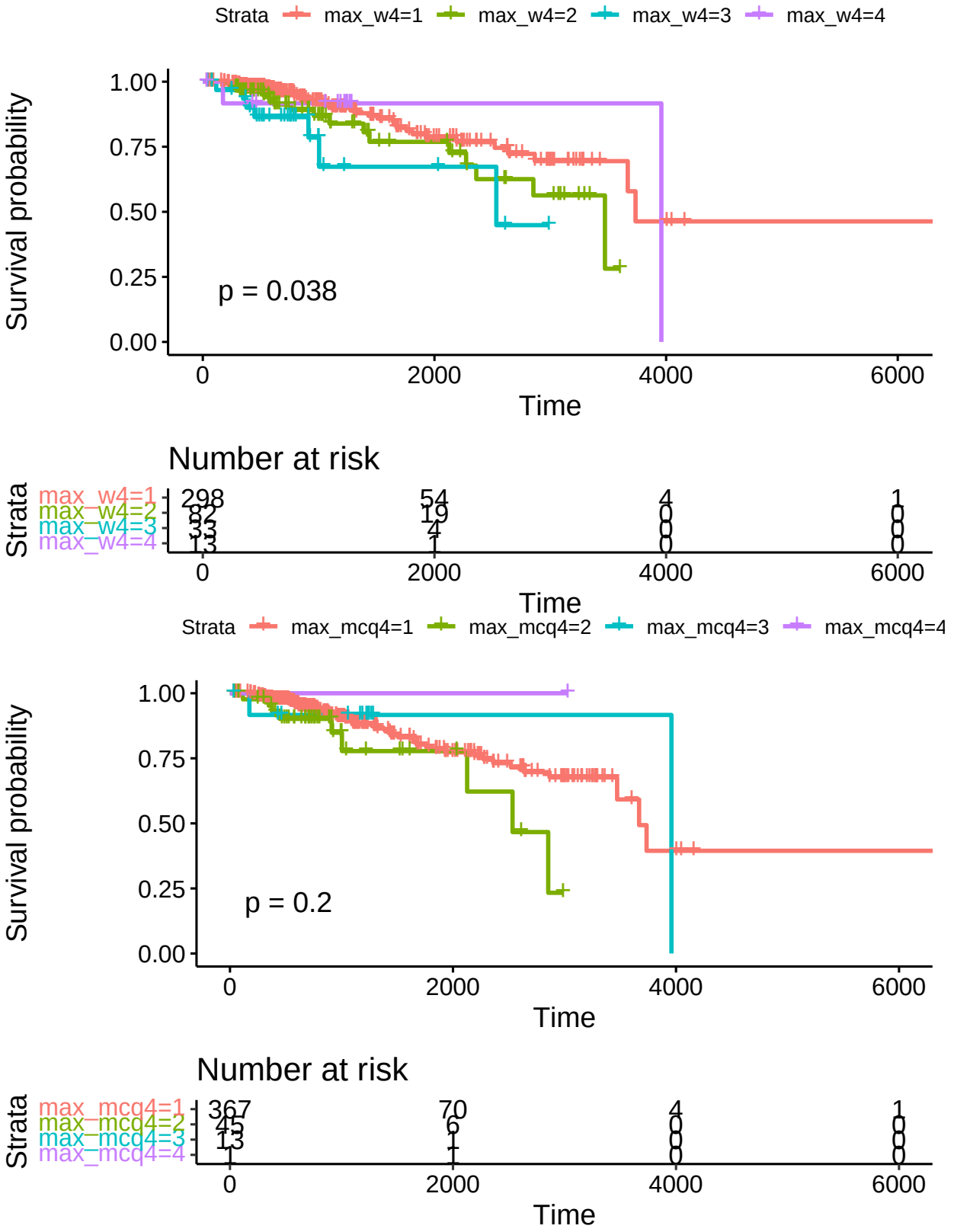

Strata
Jacc_cen4=1
Jacc_cen4=2
Jacc_cen4=3
Jacc_cen4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.82
0
2000
4000
6000
Time
Number at risk
Strata
Jacc_cen4=1
Jacc_cen4=2
Jacc_cen4=3
Jacc_cen4=4
423
76
4
1
0
0
0
0
0
2000
4000
6000
Time
Strata
max_s4=1
max_s4=2
max_s4=3
max_s4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.89
0
2000
4000
6000
Time
Number at risk
Strata
max_s4=1
max_s4=2
max_s4=3
max_s4=4
423
77
4
1
0
0
0
0
0
2000
4000
6000
Time

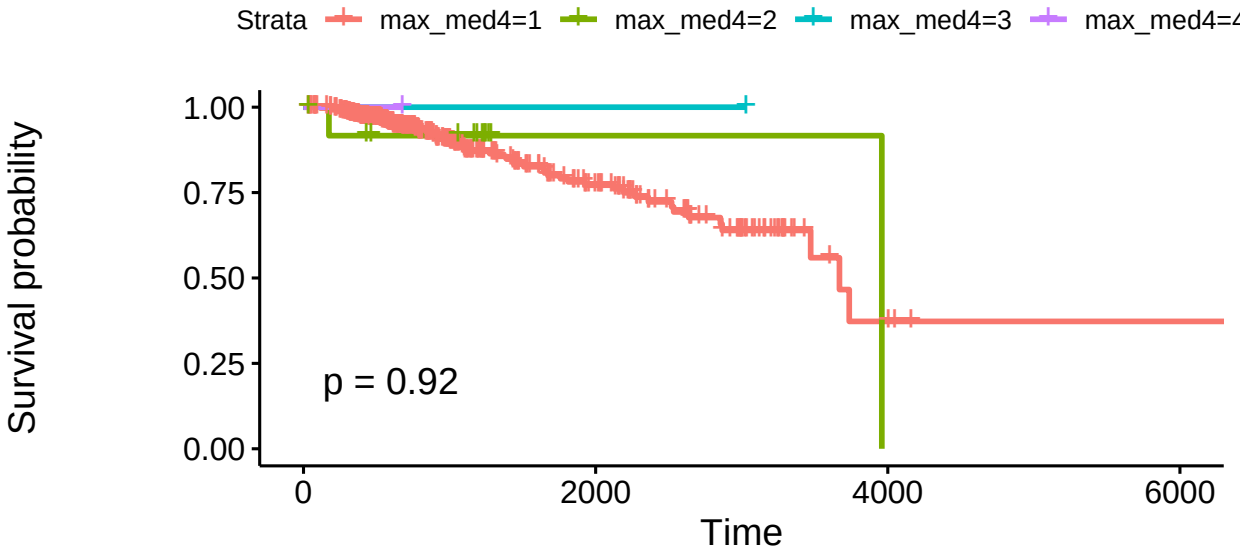

Strata
max_c4=1
max_c4=2
max_c4=3
max_c4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.9
0
2000
4000
6000
Time

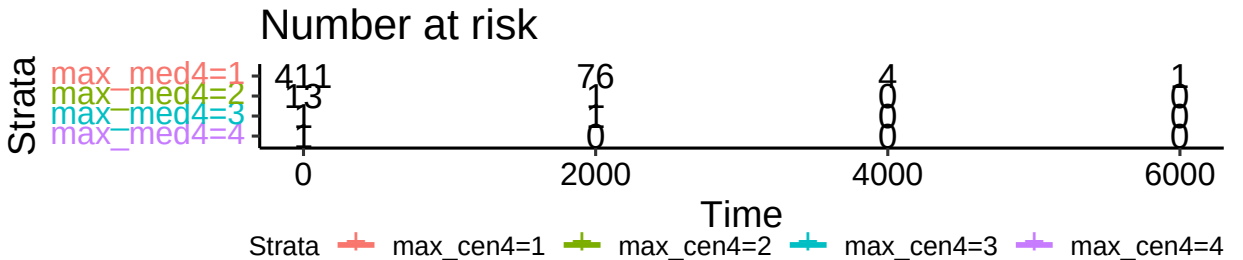

Number at risk
Strata
max_c4=1
max_c4=2
max_c4=3
max_c4=4
412
12
1
1
76
1
1
0
4
0
0
0
1
0
0
0
0
2000
4000
6000
Time

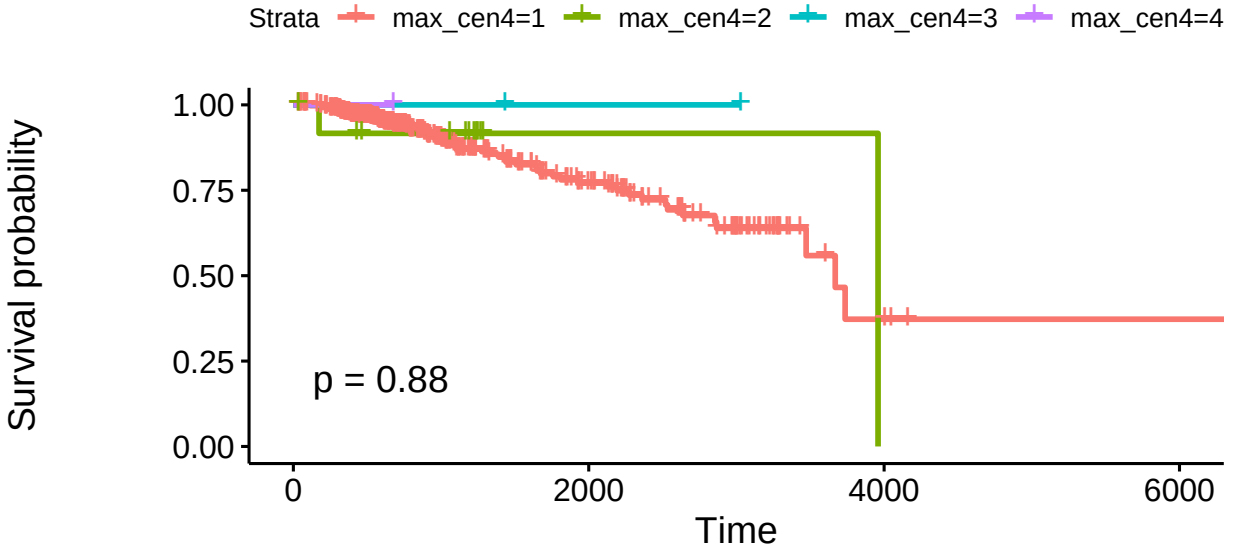

Strata
max_a4=1
max_a4=2
max_a4=3
max_a4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.0081
0
2000
4000
6000
Time

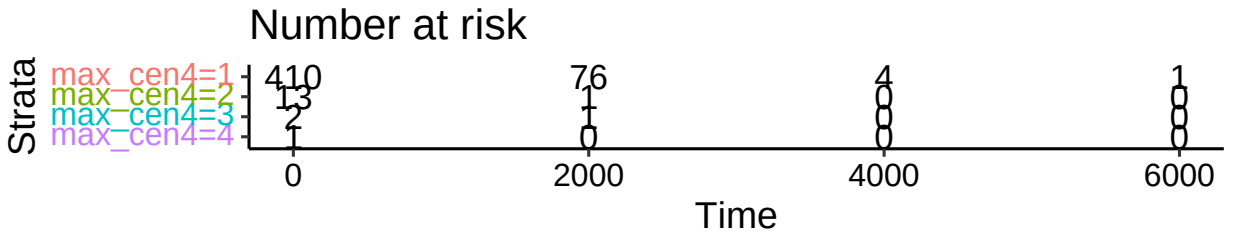

Number at risk
Strata
max_a4=1
max_a4=2
max_a4=3
max_a4=4
210
34
169
13
40
4
33
1
4
0
0
0
1
0
0
0
0
2000
4000
6000
Time

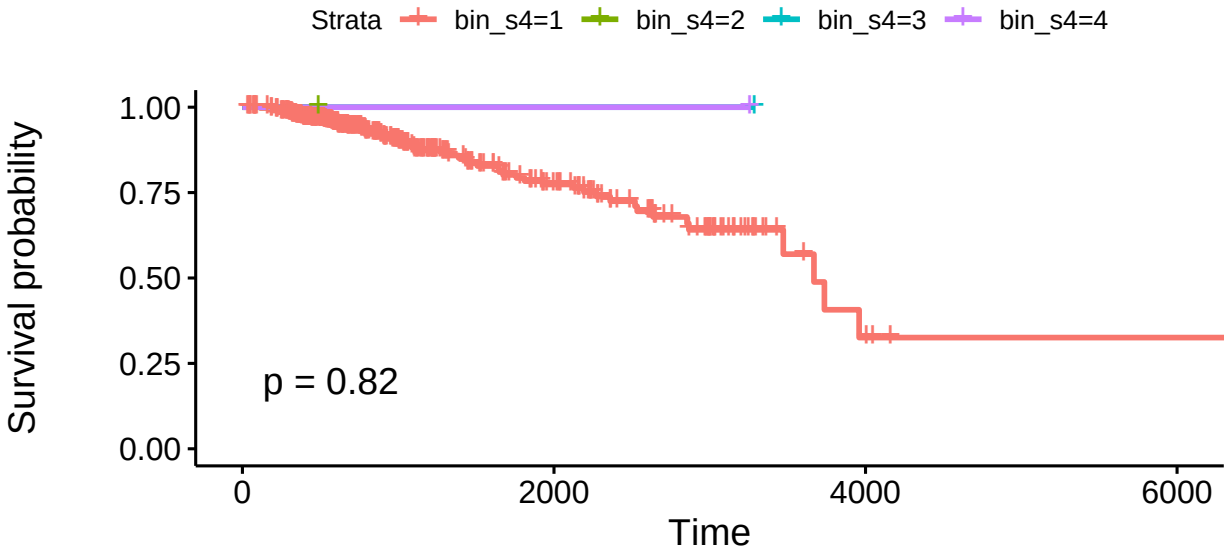

Strata
max_w4=1
max_w4=2
max_w4=3
max_w4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.038
0
2000
4000
6000
Time
Number at risk
Strata
max_w4=1
max_w4=2
max_w4=3
max_w4=4
298
54
4
1
92
19
0
0
33
4
0
0
13
1
0
0
0
2000
4000
6000
Time
Strata
max_mcq4=1
max_mcq4=2
max_mcq4=3
max_mcq4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.2
0
2000
4000
6000
Time
Number at risk
Strata
max_mcq4=1
max_mcq4=2
max_mcq4=3
max_mcq4=4
367
70
4
1
45
6
0
0
13
1
0
0
1
0
0
0
0
2000
4000
6000
Time

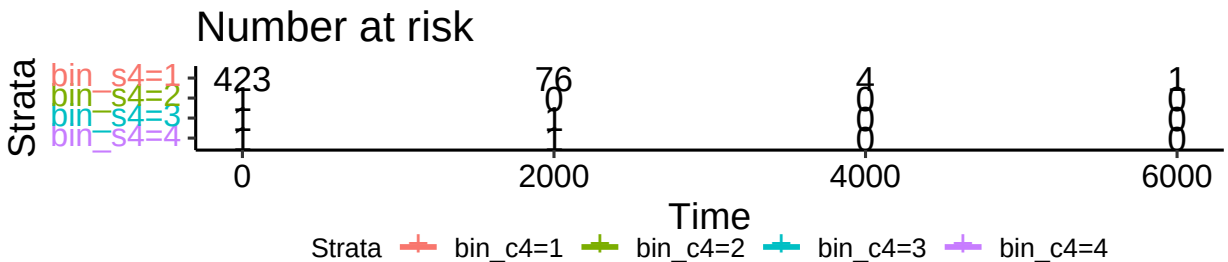

Strata
max_med4=1
max_med4=2
max_med4=3
max_med4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.92
0
2000
4000
6000
Time

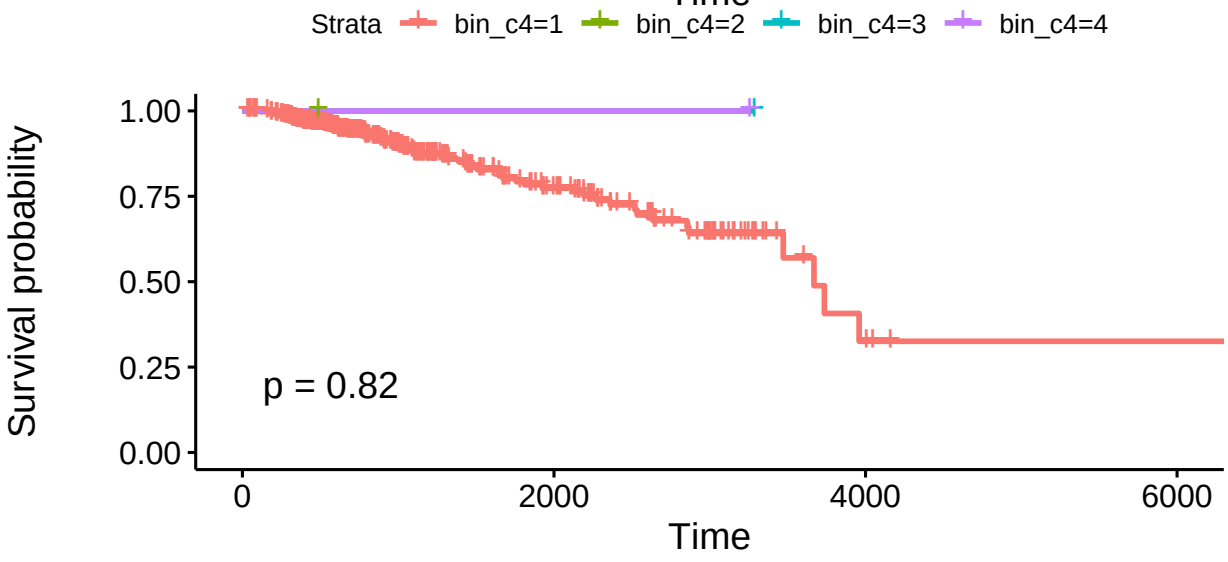

Number at risk
Strata
max_med4=1
max_med4=2
max_med4=3
max_med4=4
411
76
4
1
13
1
0
0
1
0
0
0
0
2000
4000
6000
Time

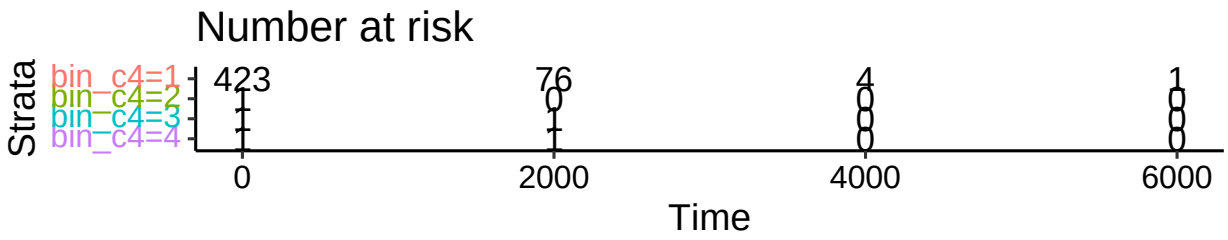

Strata
max_cen4=1
max_cen4=2
max_cen4=3
max_cen4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.88
0
2000
4000
6000
Time

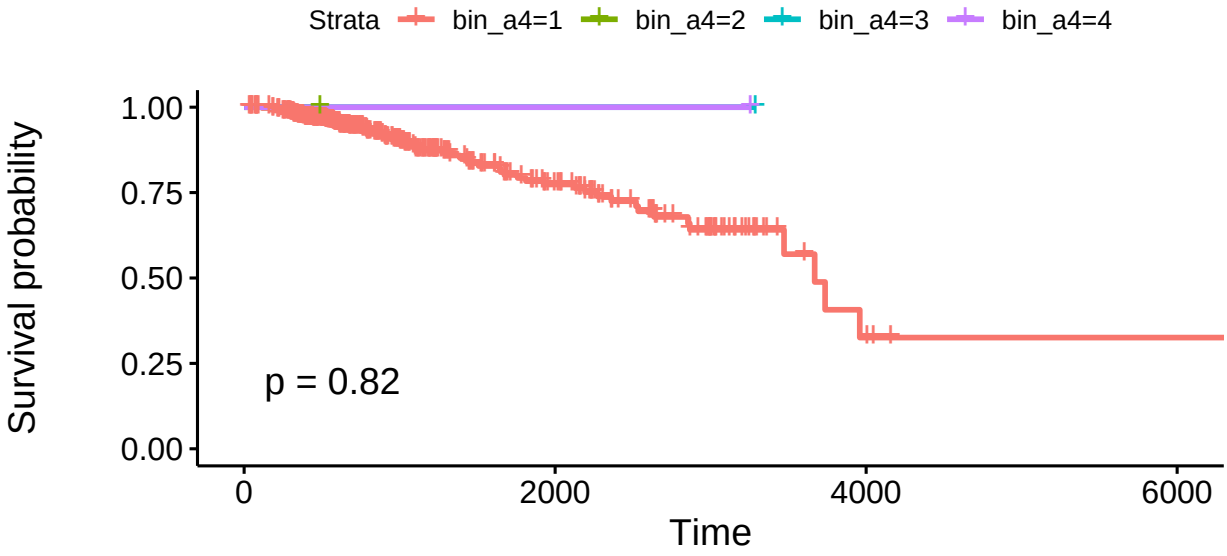

Number at risk
Strata
max_cen4=1
max_cen4=2
max_cen4=3
max_cen4=4
410
76
4
1
13
1
0
0
2
1
0
0
0
2000
4000
6000
Time

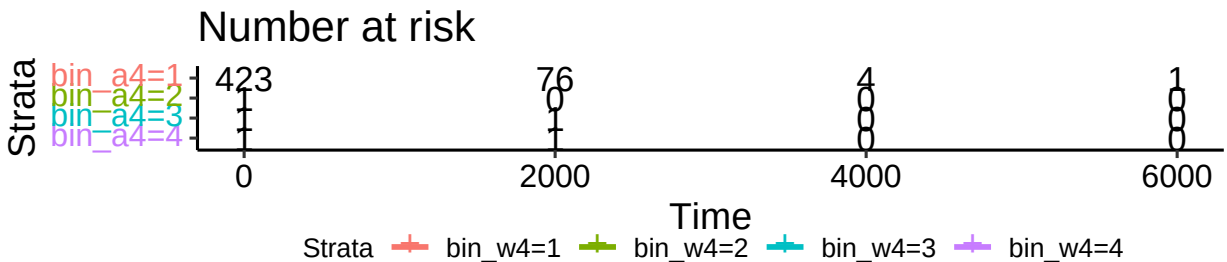

Strata
bin_s4=1
bin_s4=2
bin_s4=3
bin_s4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.82
0
2000
4000
6000
Time

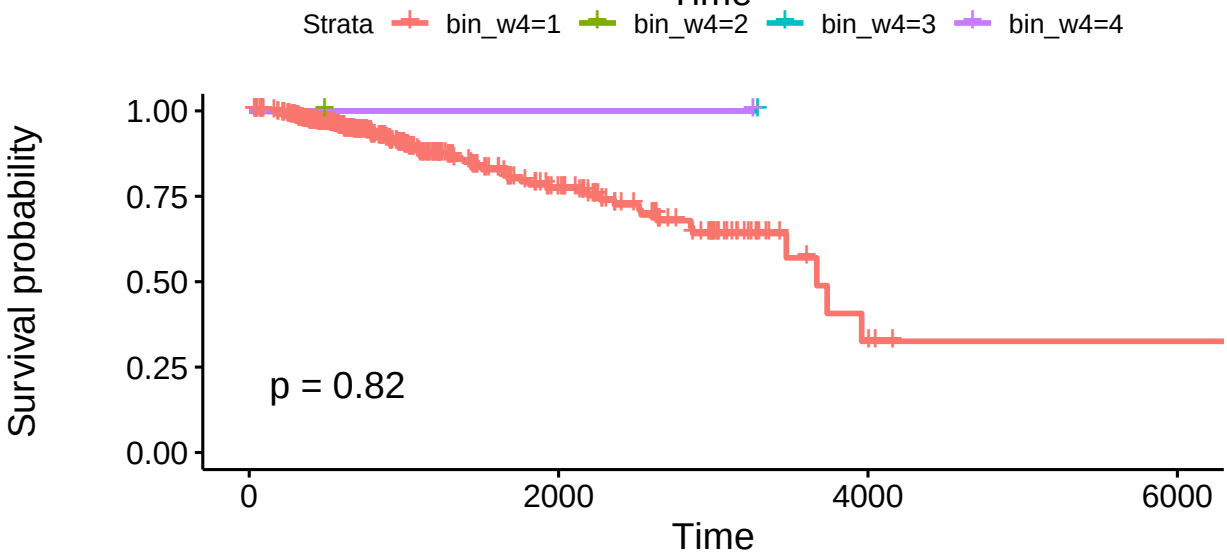

Number at risk
Strata
bin_s4=1
bin_s4=2
bin_s4=3
bin_s4=4
423
76
4
1
0
0
0
0
0
2000
4000
6000
Time

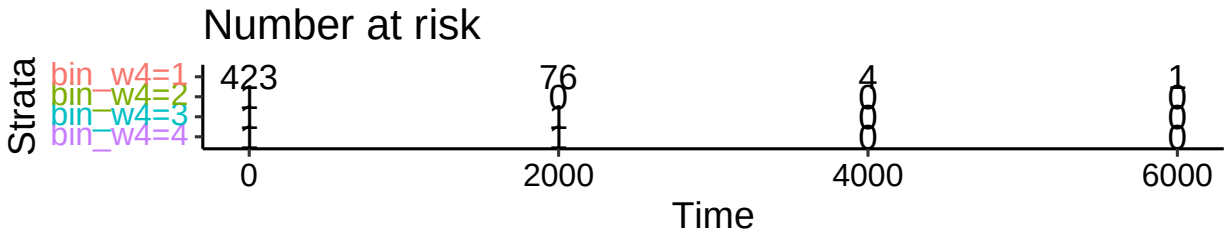

Strata
bin_c4=1
bin_c4=2
bin_c4=3
bin_c4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.82
0
2000
4000
6000
Time

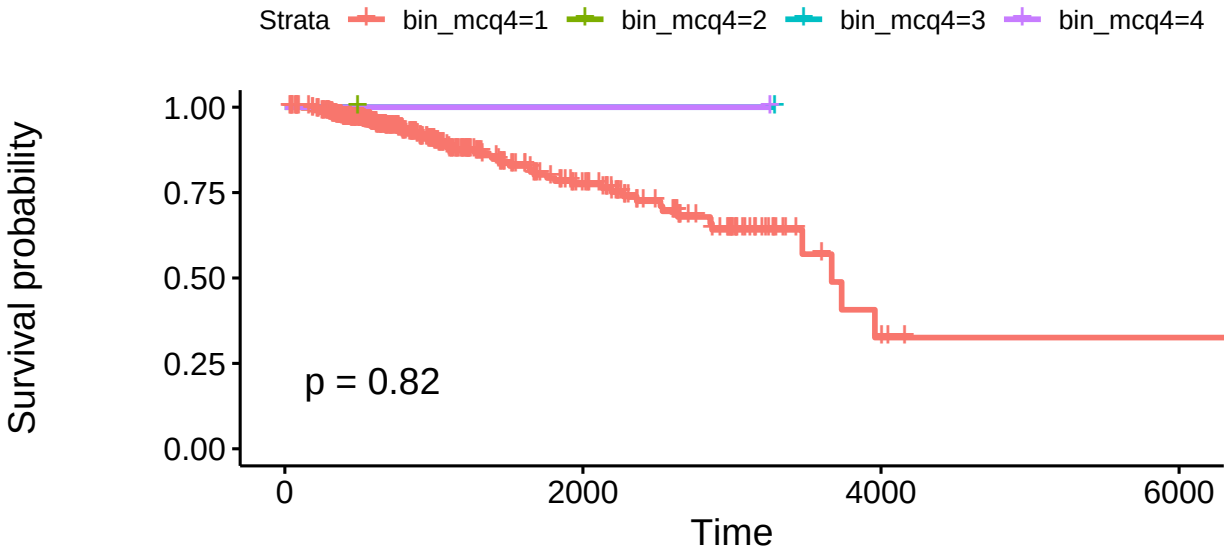

Number at risk
Strata
bin_c4=1
bin_c4=2
bin_c4=3
bin_c4=4
423
76
4
1
0
0
0
0
0
2000
4000
6000
Time

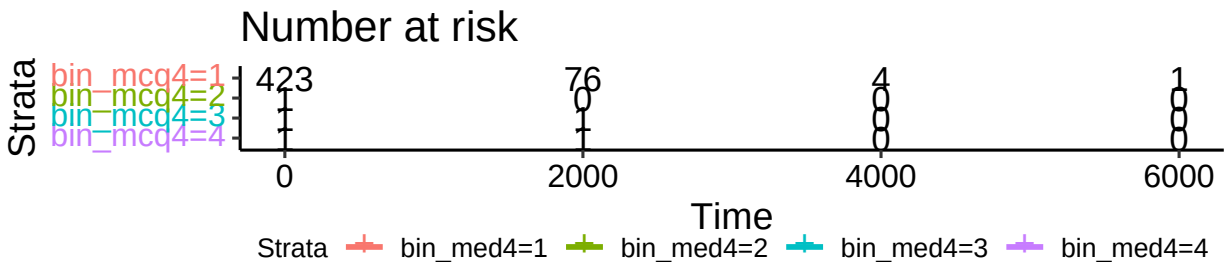

Strata
bin_a4=1
bin_a4=2
bin_a4=3
bin_a4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.82
0
2000
4000
6000
Time

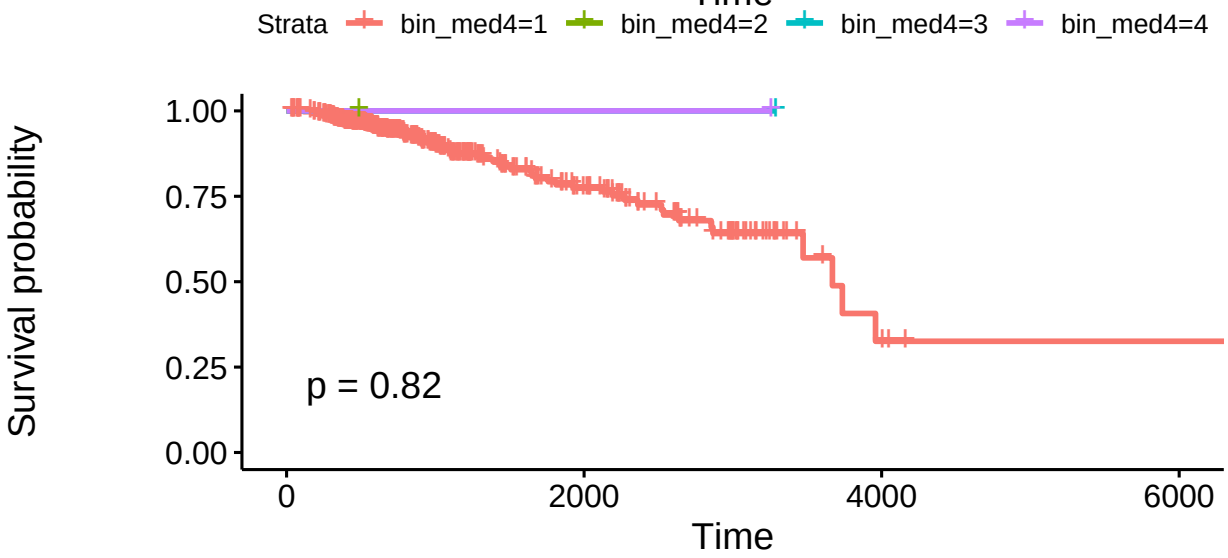

Number at risk
Strata
bin_a4=1
bin_a4=2
bin_a4=3
bin_a4=4
423
76
4
1
0
0
0
0
0
2000
4000
6000
Time

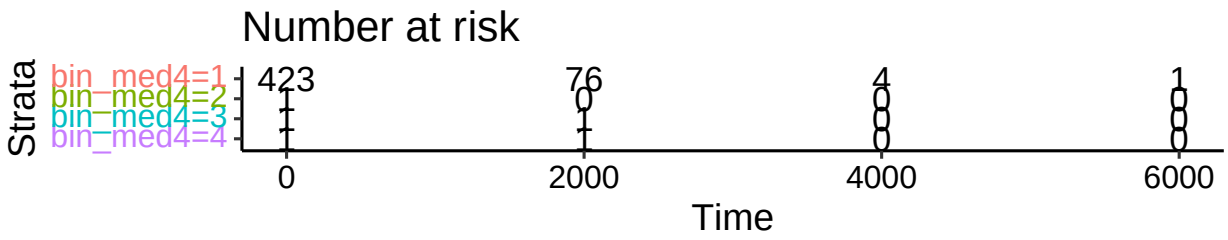

Strata
bin_w4=1
bin_w4=2
bin_w4=3
bin_w4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.82
0
2000
4000
6000
Time

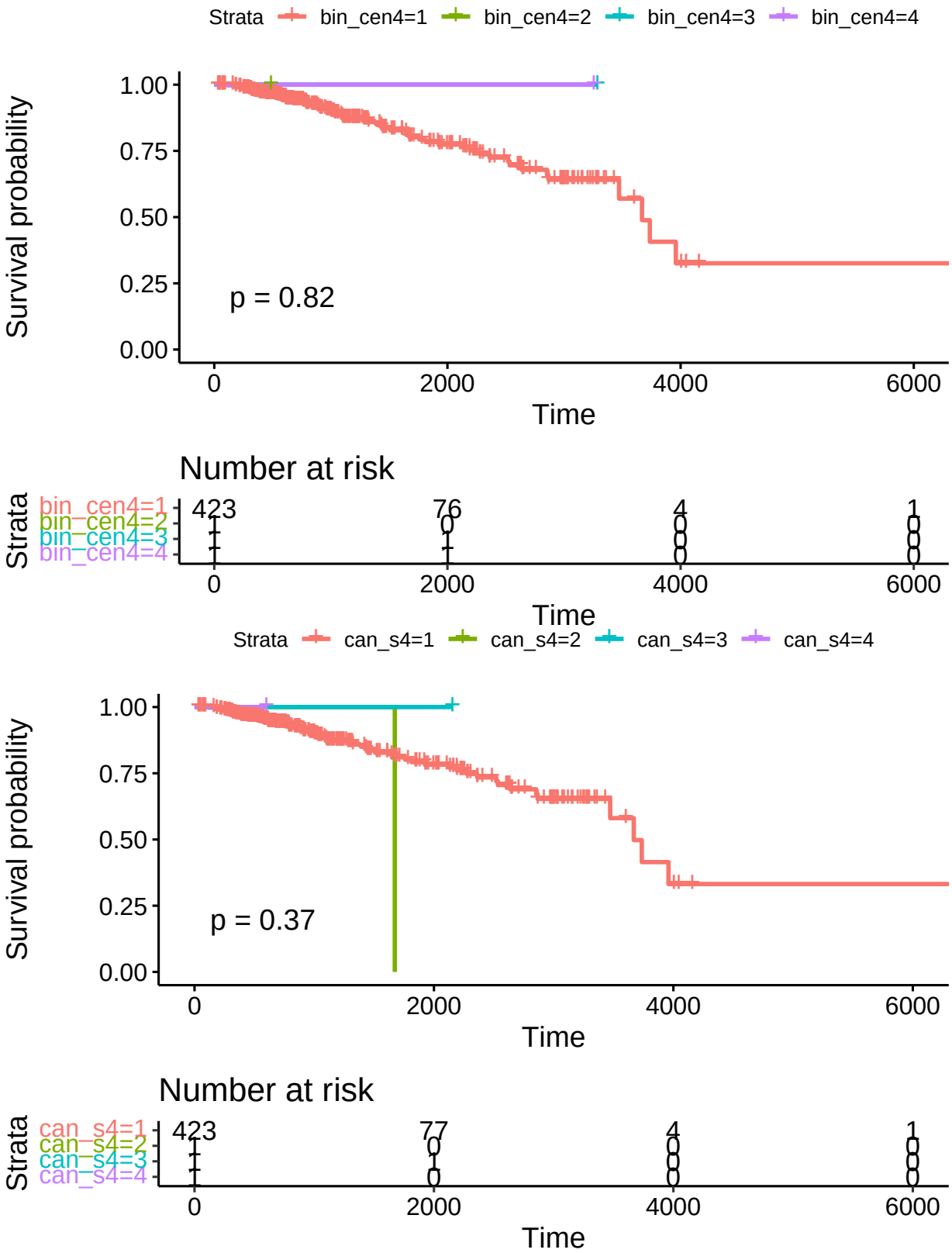

Number at risk
Strata
bin_w4=1
bin_w4=2
bin_w4=3
bin_w4=4
423
76
4
1
0
0
0
0
0
2000
4000
6000
Time

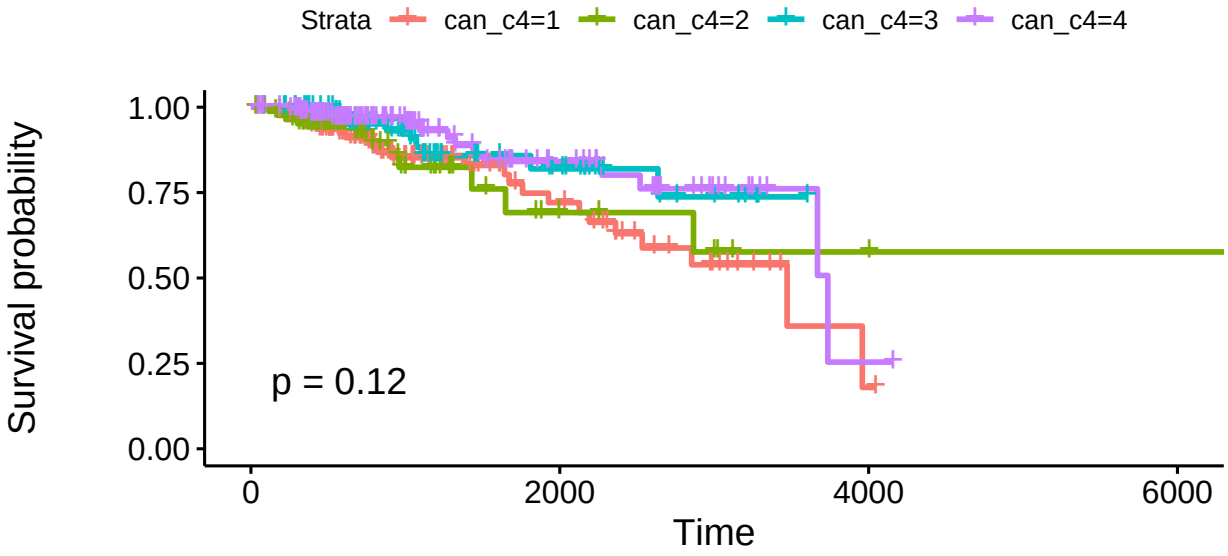

Strata
bin_mcq4=1
bin_mcq4=2
bin_mcq4=3
bin_mcq4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.82
0
2000
4000
6000
Time

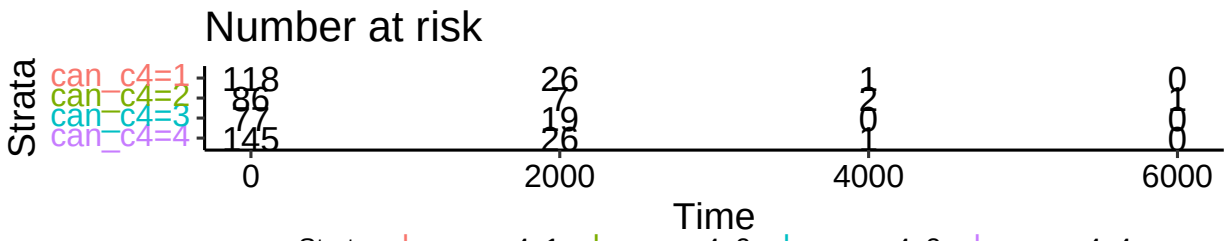

Number at risk
Strata
bin_mcq4=1
bin_mcq4=2
bin_mcq4=3
bin_mcq4=4
423
76
4
1
0
0
0
0
0
2000
4000
6000
Time

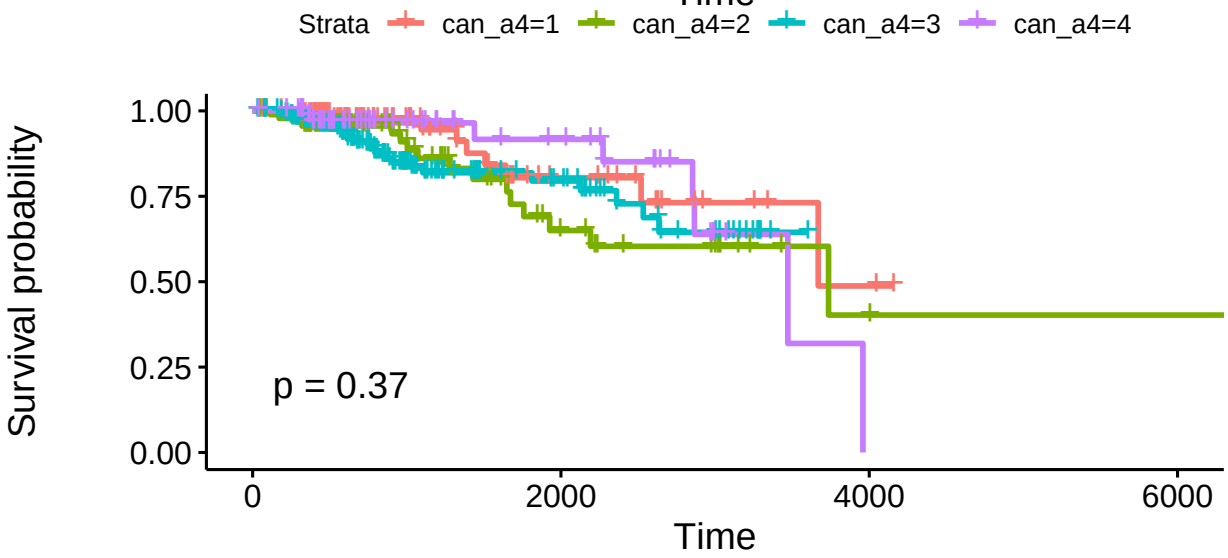

Strata
bin_med4=1
bin_med4=2
bin_med4=3
bin_med4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.82
0
2000
4000
6000
Time

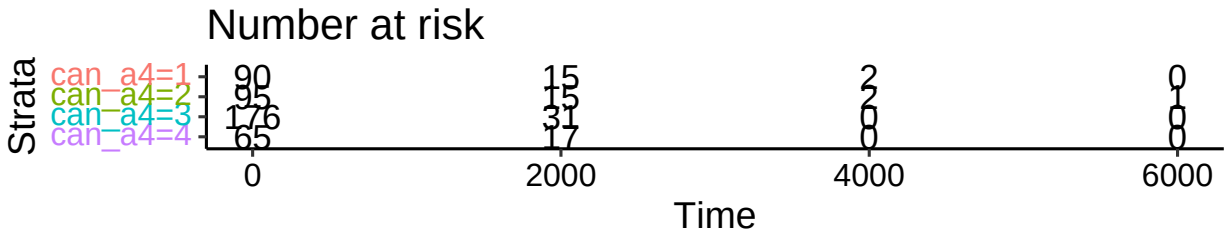

Number at risk
Strata
bin_med4=1
bin_med4=2
bin_med4=3
bin_med4=4
423
76
4
1
0
0
0
0
0
2000
4000
6000
Time

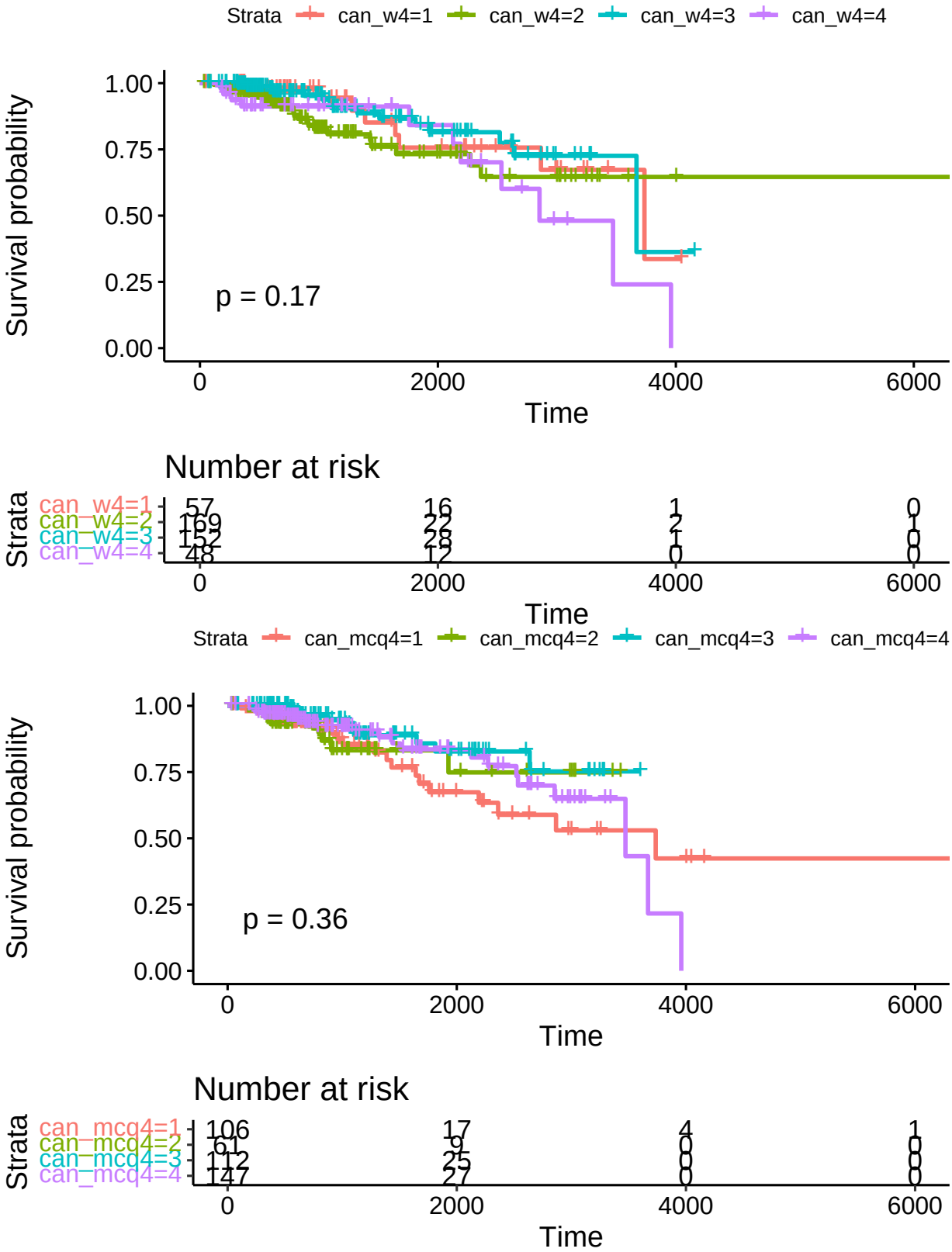

Strata
bin_cen4=1
bin_cen4=2
bin_cen4=3
bin_cen4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.82
0
2000
4000
6000
Time
Number at risk
bin_cen4=1
bin_cen4=2
bin_cen4=3
bin_cen4=4
423
76
4
1
0
2000
4000
6000
Time
Strata
can_s4=1
can_s4=2
can_s4=3
can_s4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.37
0
2000
4000
6000
Time
Number at risk
can_s4=1
can_s4=2
can_s4=3
can_s4=4
423
77
4
1
0
2000
4000
6000
Time

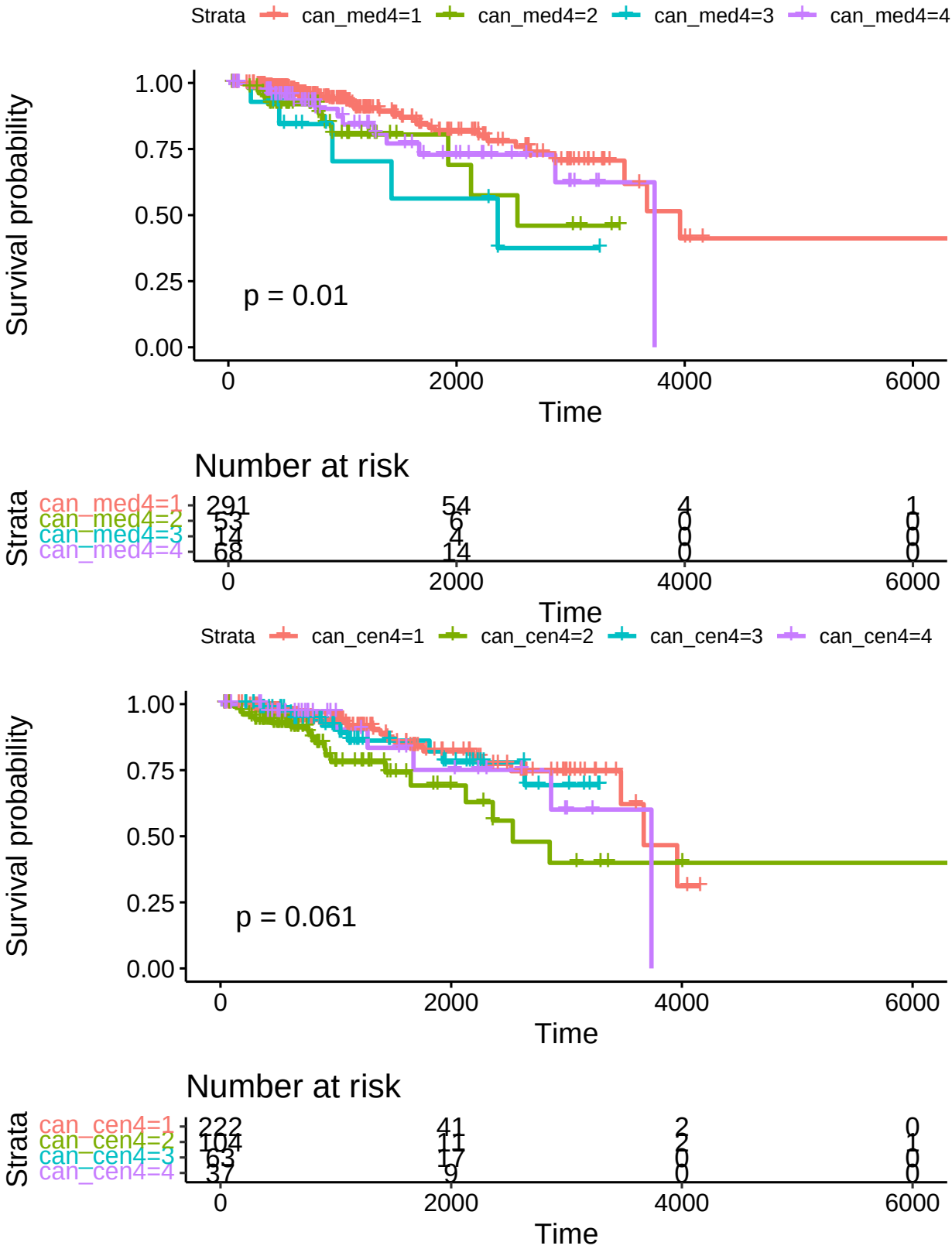

Strata
can_c4=1
can_c4=2
can_c4=3
can_c4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.12
0
2000
4000
6000
Time


Number at risk
Strata
can_c4=1
can_c4=2
can_c4=3
can_c4=4
118
86
77
145
26
7
19
26
1
2
0
1
0
1
0
0
0
2000
4000
6000
Time


Strata
can_a4=1
can_a4=2
can_a4=3
can_a4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.37
0
2000
4000
6000
Time

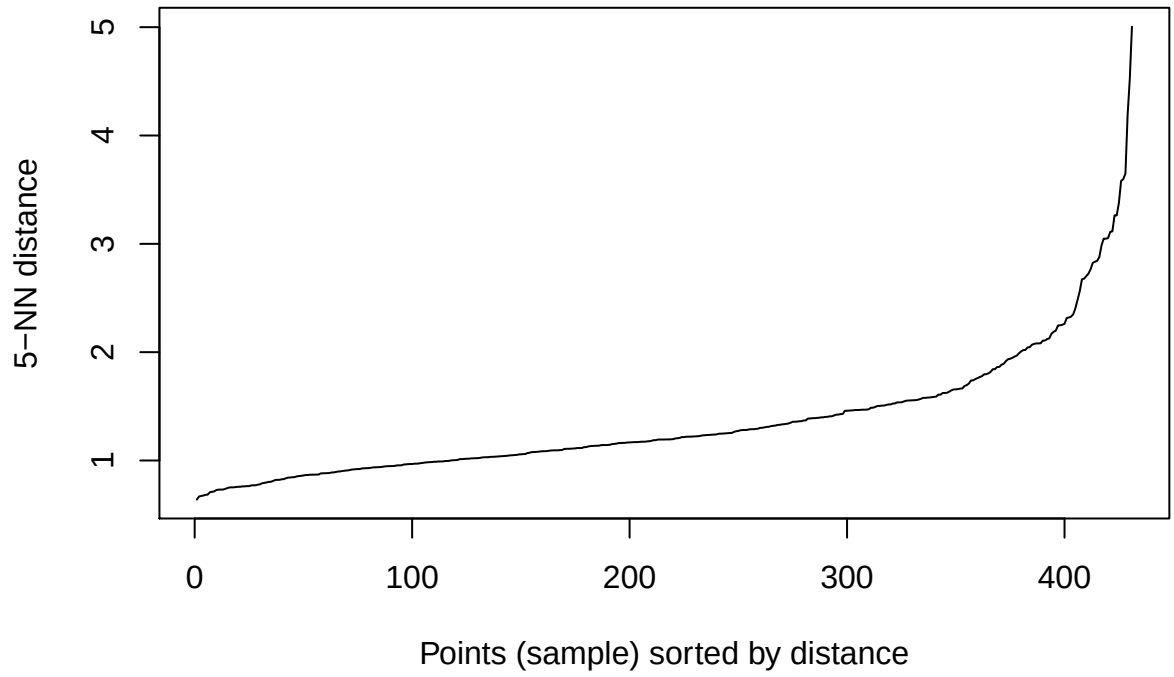

Number at risk
Strata
can_a4=1
can_a4=2
can_a4=3
can_a4=4
90
95
176
65
15
15
31
17
2
2
0
0
0
1
0
0
0
2000
4000
6000
Time


Strata
can_w4=1
can_w4=2
can_w4=3
can_w4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.17
0
2000
4000
6000
Time
Number at risk
Strata
can_w4=1
can_w4=2
can_w4=3
can_w4=4
57
169
152
48
16
22
28
12
1
2
1
0
0
1
0
0
0
2000
4000
6000
Time
Strata
can_mcq4=1
can_mcq4=2
can_mcq4=3
can_mcq4=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.36
0
2000
4000
6000
Time
Number at risk
Strata
can_mcq4=1
can_mcq4=2
can_mcq4=3
can_mcq4=4
106
61
112
147
17
9
25
27
4
0
0
0
1
0
0
0
0
2000
4000
6000
Time



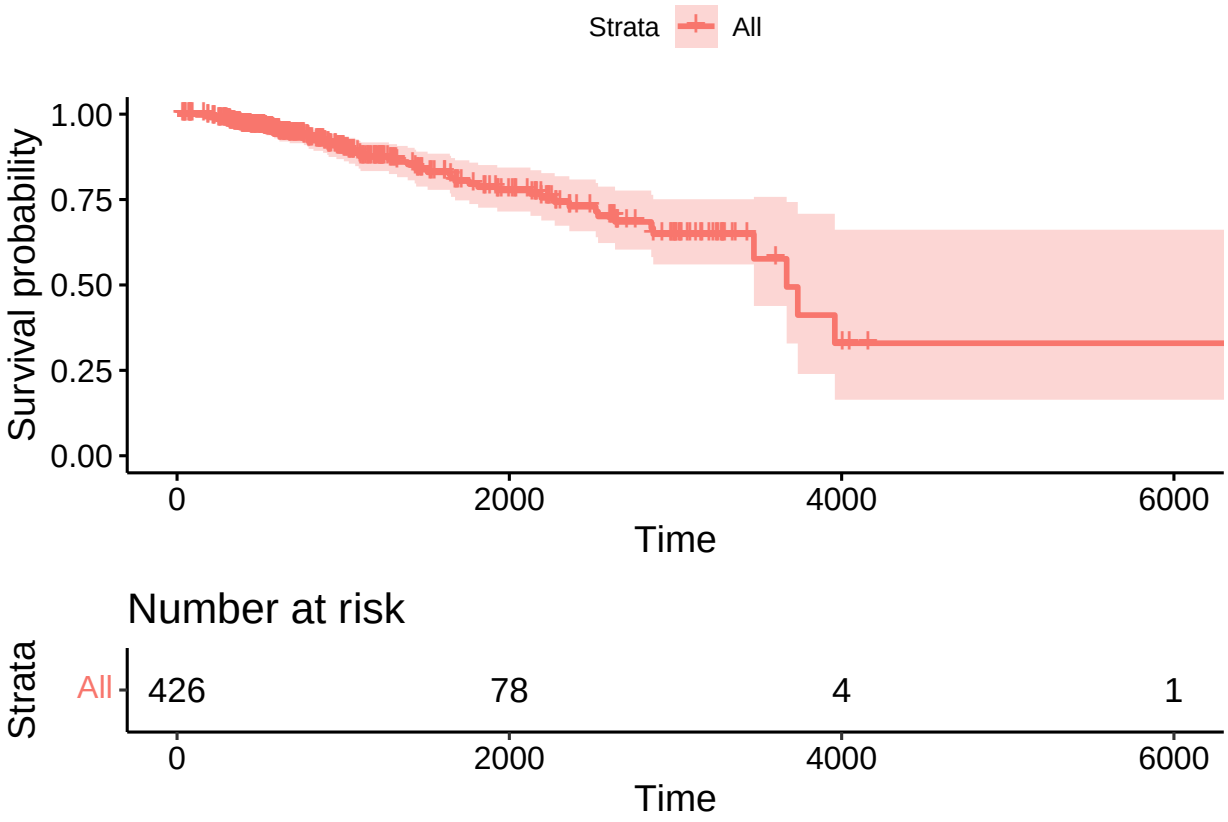
3. DBSCAN

```
## Warning: package 'dbscan' was built under R version 3.6.2
```

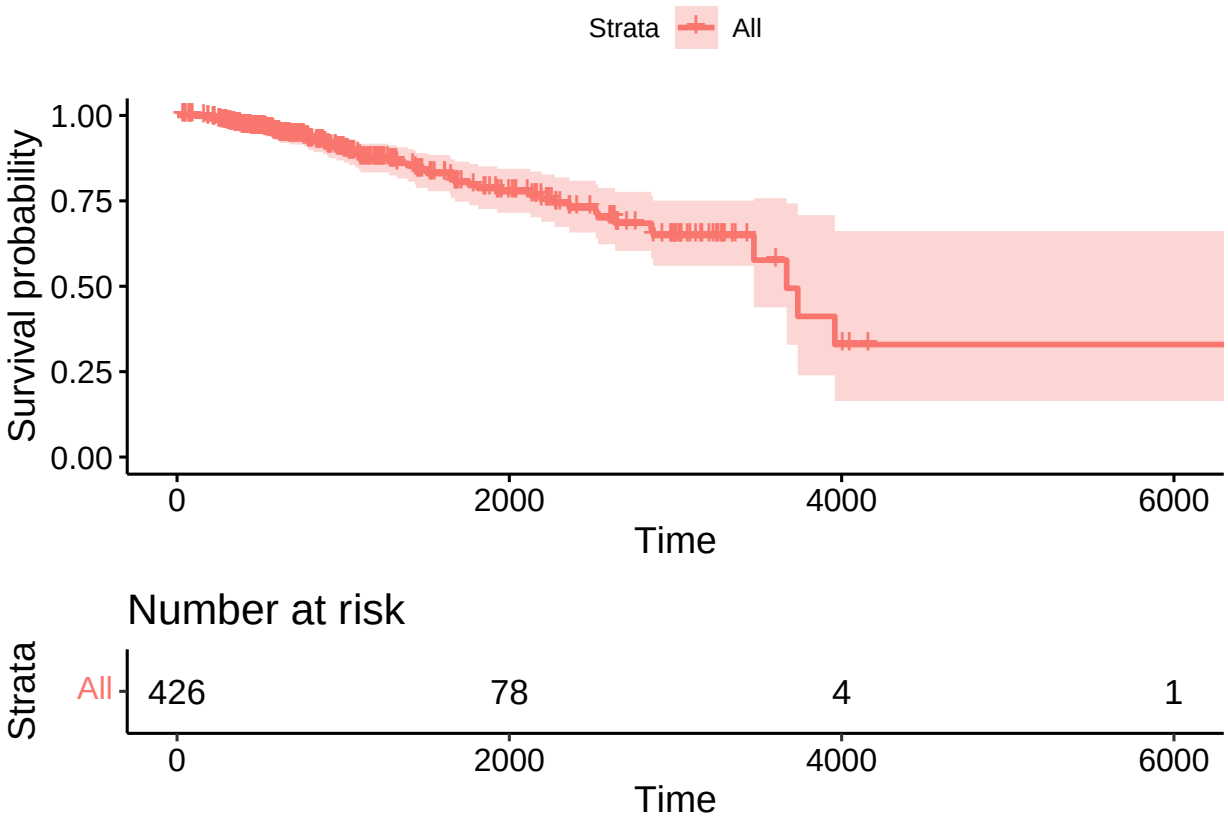



```
## Warning in dbscan(tucker1, eps = 16, MinPts = 20): converting argument MinPts
## (fpc) to minPts (dbscan)!
```

```
## Warning in .pvalue(fit, data = data, method = method, pval = pval, pval.coord = pval.coord, : There a
##  This is a null model.
```

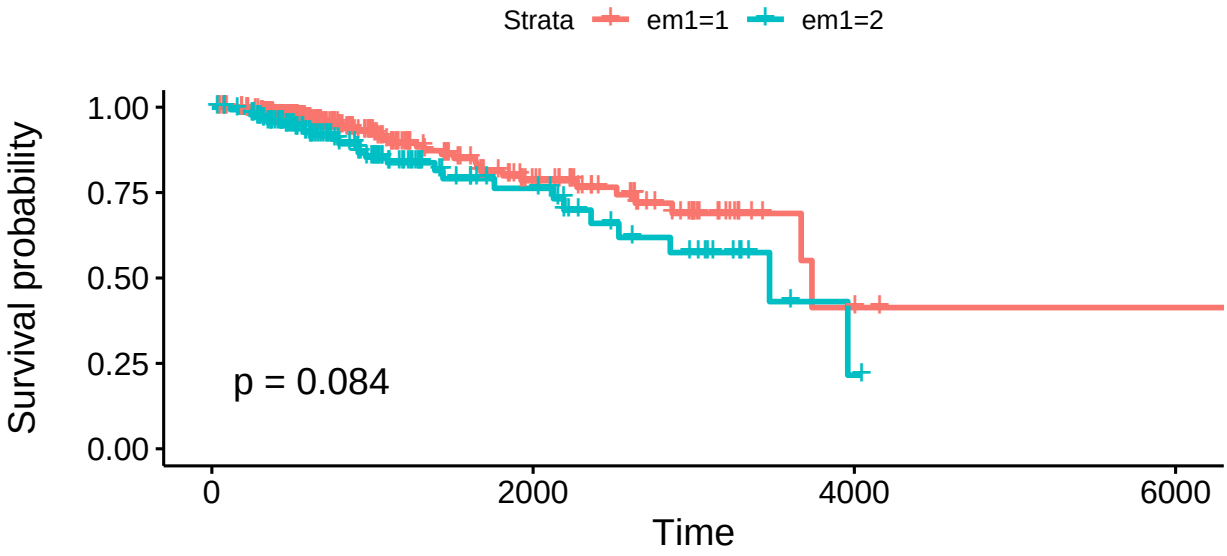


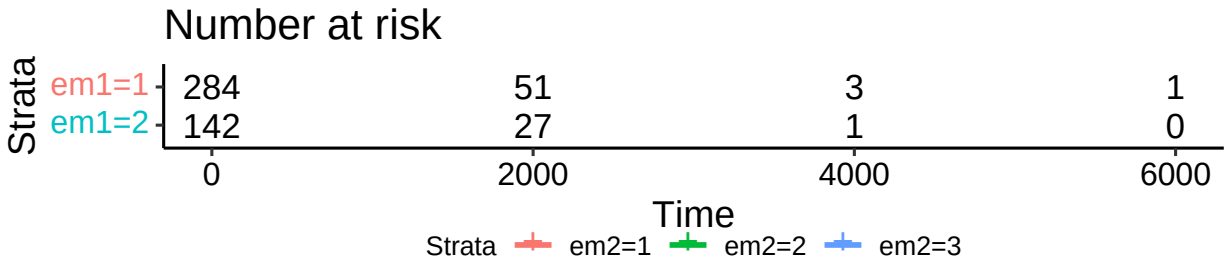
```
## Warning in .pvalue(fit, data = data, method = method, pval = pval, pval.coord = pval.coord, : There a
##  This is a null model.
```

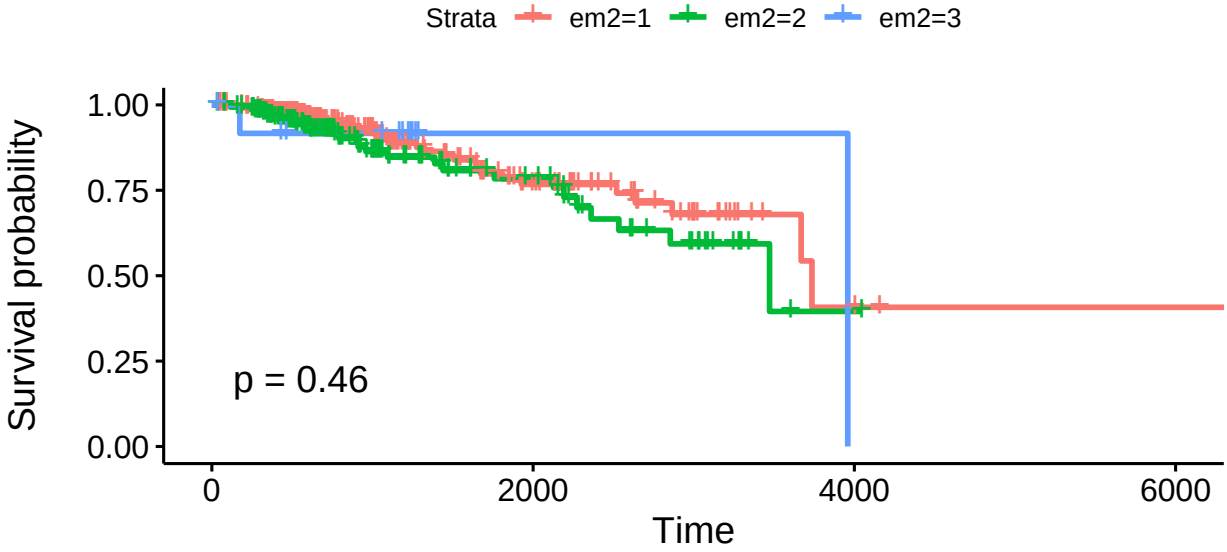


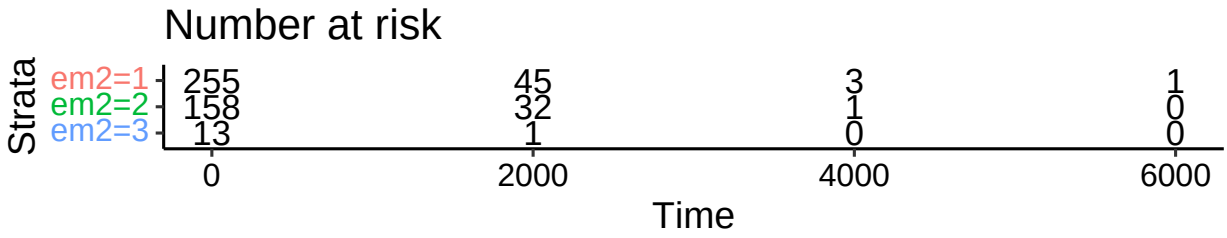
4. EM algorithm based on GMM

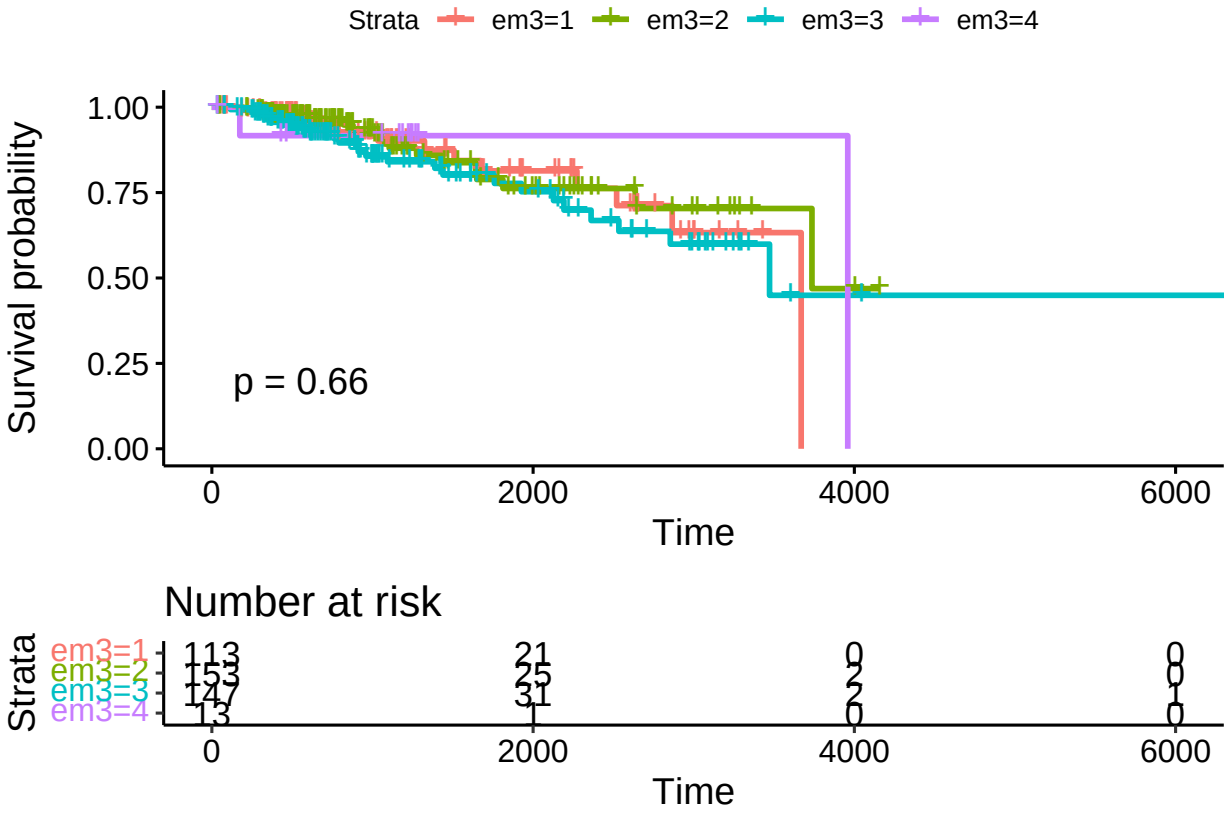
```
## Warning: package 'mclust' was built under R version 3.6.2
```


Strata
em1=1
em1=2
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.084
0
2000
4000
6000
Time


Number at risk
Strata
em1=1
em1=2
284
51
3
1
142
27
1
0
0
2000
4000
6000
Time


Strata
em2=1
em2=2
em2=3
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.46
0
2000
4000
6000
Time


Number at risk
Strata
em2=1
em2=2
em2=3
255
45
3
1
158
32
1
0
13
1
0
0
0
2000
4000
6000
Time


Strata
em3=1
em3=2
em3=3
em3=4
Survival probability
1.00
0.75
0.50
0.25
0.00
p = 0.66
0
2000
4000
6000
Time

Number at risk
Strata
em3=1
em3=2
em3=3
em3=4
113
153
147
13
21
25
31
1
0
2
2
0
0
0
1
0
0
2000
4000
6000
Time