

Practical 4: Solutions in STATA

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Data preparation

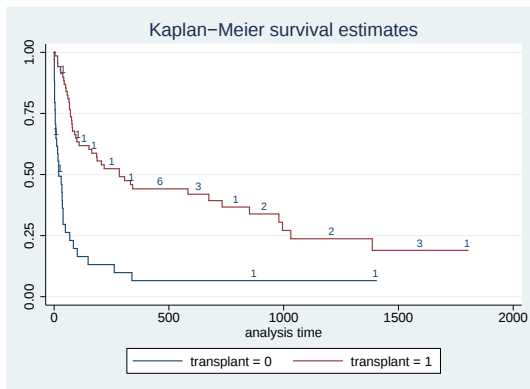
```
. stset followup,failure(event)

      failure event:  event != 0 & event < .
obs. time interval:  (0, followup]
exit on or before:  failure
```

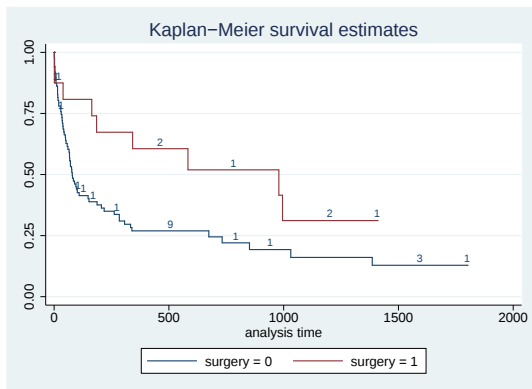
```
      103  total obs.
       0  exclusions
```

```
      103  obs. remaining, representing
       75  failures in single record/single failure data
31851.5  total analysis time at risk, at risk from t =           0
               earliest observed entry t =           0
               last observed exit t =          1799
```

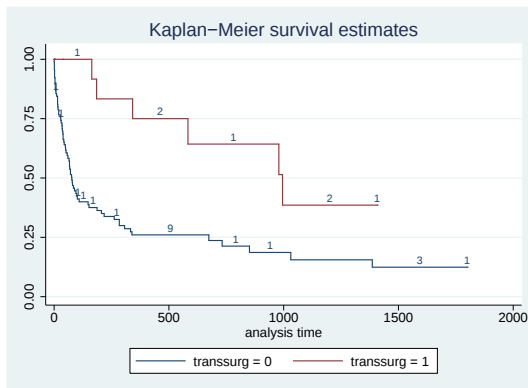
Question 1



Question 1



Question 1



Question 2

```
. sts test transplant
      failure _d: event
      analysis time _t: followup

Log-rank test for equality of survivor functions
```

transplant	Events observed	Events expected
0	30	12.09
1	45	62.91
Total	75	75.00

```

      chi2(1) =    33.24
      Pr>chi2 =    0.0000

```

```
. sts test surgery
      failure _d: event
      analysis time _t: followup

Log-rank test for equality of survivor functions
```

surgery	Events observed	Events expected
0	66	58.59
1	9	16.41
Total	75	75.00

```

      chi2(1) =     4.44
      Pr>chi2 =    0.0350

```

```
. sts test transsurg
      failure _d: event
      analysis time _t: followup

Log-rank test for equality of survivor functions
```

transsurg	Events observed	Events expected
0	69	58.98
1	6	16.02
Total	75	75.00

```

      chi2(1) =     8.30
      Pr>chi2 =    0.0040

```

Question 3

```
. stcox transplant age surgery,nohr
      failure _d:  event
      analysis time _t:  followup

Iteration 0:   log likelihood = -298.32561
Iteration 1:   log likelihood = -278.02191
Iteration 2:   log likelihood = -275.59746
Iteration 3:   log likelihood = -275.59417
Iteration 4:   log likelihood = -275.59417
Refining estimates:
Iteration 0:   log likelihood = -275.59417

Cox regression -- Breslow method for ties

No. of subjects =           103             Number of obs   =           103
No. of failures =             75             LR chi2(3)      =           45.46
Time at risk   =       31851.5             Prob > chi2       =           0.0000
Log likelihood =   -275.59417
```

_t	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
transplant	-1.70814	.2786022	-6.13	0.000	-2.254191 -1.16209
age	.0586086	.0150511	3.89	0.000	.0291091 .0881082
surgery	-.4214024	.3709975	-1.14	0.256	-1.148544 .3057394

Question 3

```

stcox transplant age surgery transsurg, nohr sca(sca*) sch(scho*)
      failure _d: event
      analysis time _t: followup

Iteration 0:   log likelihood = -298.32561
Iteration 1:   log likelihood = -279.67864
Iteration 2:   log likelihood = -272.71071
Iteration 3:   log likelihood = -272.5786
Iteration 4:   log likelihood = -272.57828
Refining estimates:
Iteration 0:   log likelihood = -272.57828

Cox regression -- Breslow method for ties

No. of subjects =          103           Number of obs   =          103
No. of failures =           75
Time at risk   =       31851.5
Log likelihood =   -272.57828           LR chi2(4)       =       51.49
                                           Prob > chi2      =       0.0000

```

_t	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
transplant	-1.582399	.2847714	-5.56	0.000	-2.14054	-1.024257
age	.0589461	.0152519	3.86	0.000	.0290529	.0888393
surgery	1.304038	.6237609	2.09	0.037	.0814887	2.526587
transsurg	-2.13799	.7678451	-2.78	0.005	-3.642939	-.6330415

Question 4

```
estat phtest,detail
```

Test of proportional-hazards assumption

Time: Time

	rho	chi2	df	Prob>chi2
transplant	0.06963	0.34	1	0.5571
age	0.11959	1.60	1	0.2057
surgery	0.03852	0.10	1	0.7463
transsurg	0.10749	0.80	1	0.3711
global test		7.91	4	0.0948