Survival lec 5

Mona Maher

September 8, 2019

```
library(survival)
```

```
## Warning: package 'survival' was built under R version 3.5.3
```

```
attach(lung)
View(lung)
library(dplyr)
```

```
## Warning: package 'dplyr' was built under R version 3.5.3
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
time_interval1<-seq(from =0, to = max(lung$time)+30, by =30)
lung3<-cut(lung$time, breaks = time_interval1)

time_interval2<-seq(from =min(lung$time), to = max(lung$time)+30, by =30)

lung4<-mutate(lung, lung3)
View(lung4)
levels(lung4$lung3)<-time_interval2
lung4$lung3<-as.numeric(as.character(lung4$lung3))
obj5<-with(lung4, Surv(lung3, status))
x4<-survfit(obj5~sex, data = lung4)
summary(x4)
```

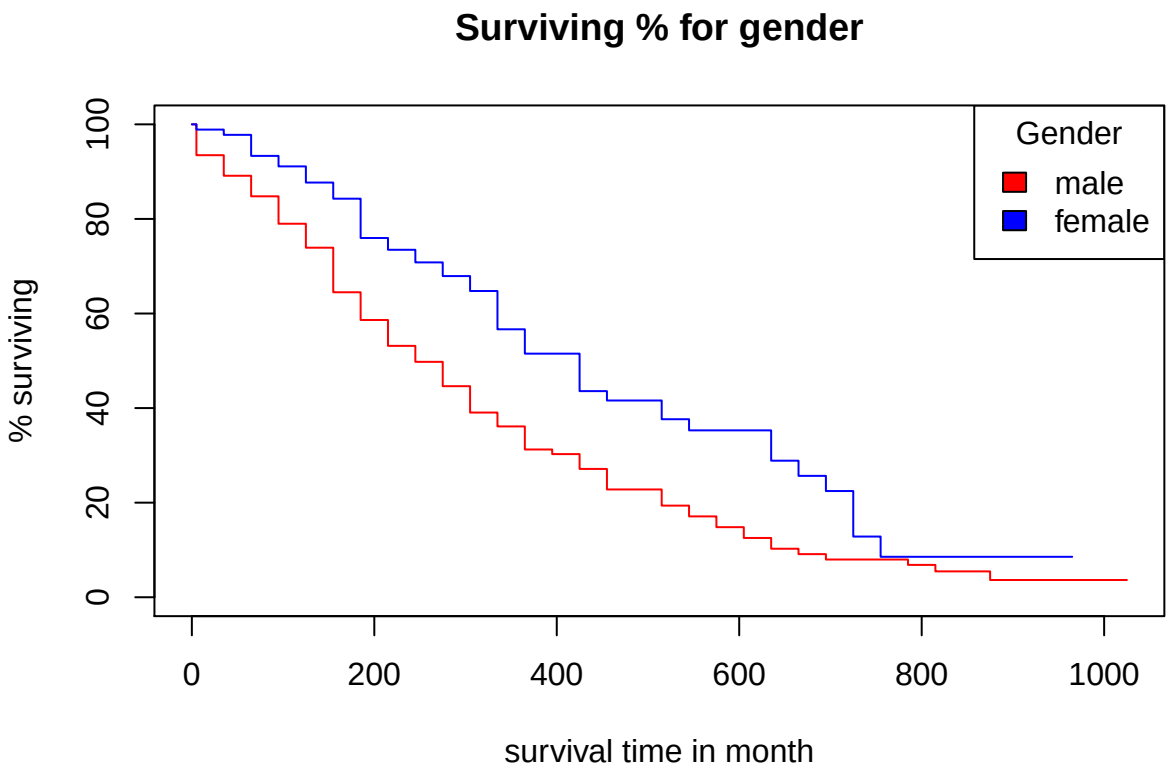
```
## Call: survfit(formula = obj5 ~ sex, data = lung4)
##
##                 sex=1
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     5    138       9   0.9348  0.0210       0.8945        0.977
##    35    129       6   0.8913  0.0265       0.8409        0.945
##    65    123       6   0.8478  0.0306       0.7900        0.910
##    95    117       8   0.7899  0.0347       0.7247        0.861
##   125    109       7   0.7391  0.0374       0.6694        0.816
##   155    102      13   0.6449  0.0407       0.5698        0.730
##   185     88       8   0.5863  0.0420       0.5095        0.675
##   215     75       7   0.5316  0.0429       0.4539        0.623
##   245     63       4   0.4978  0.0433       0.4198        0.590
##   275     58       6   0.4463  0.0436       0.3685        0.541
##   305     48       6   0.3905  0.0437       0.3136        0.486
##   335     40       3   0.3612  0.0436       0.2851        0.458
```

```
##   365     37       5   0.3124  0.0428       0.2388        0.409
##   395     32       1   0.3027  0.0426       0.2297        0.399
##   425     29       3   0.2714  0.0418       0.2006        0.367
##   455     25       4   0.2279  0.0404       0.1611        0.323
##   515     20       3   0.1937  0.0389       0.1308        0.287
##   545     17       2   0.1710  0.0375       0.1112        0.263
##   575     15       2   0.1482  0.0358       0.0923        0.238
##   605     13       2   0.1254  0.0337       0.0740        0.212
##   635     11       2   0.1026  0.0312       0.0565        0.186
##   665      9       1   0.0912  0.0297       0.0481        0.173
##   695      8       1   0.0798  0.0281       0.0400        0.159
##   785      7       1   0.0684  0.0263       0.0322        0.145
##   815      5       1   0.0547  0.0243       0.0229        0.131
##   875      3       1   0.0365  0.0220       0.0112        0.119
##
##                 sex=2
##  time n.risk n.event survival std.err lower 95% CI upper 95% CI
##     5     90       1   0.9889  0.0110       0.9675        1.000
##    35     89       1   0.9778  0.0155       0.9478        1.000
##    65     88       4   0.9333  0.0263       0.8832        0.986
##    95     84       2   0.9111  0.0300       0.8542        0.972
##   125     80       3   0.8769  0.0348       0.8114        0.948
##   155     77       3   0.8428  0.0386       0.7704        0.922
##   185     71       7   0.7597  0.0458       0.6750        0.855
##   215     61       2   0.7348  0.0476       0.6472        0.834
##   245     55       2   0.7081  0.0495       0.6175        0.812
##   275     49       2   0.6792  0.0515       0.5854        0.788
##   305     43       2   0.6476  0.0537       0.5504        0.762
##   335     40       5   0.5666  0.0579       0.4637        0.692
##   365     33       3   0.5151  0.0598       0.4103        0.647
##   425     26       4   0.4359  0.0624       0.3293        0.577
##   455     22       1   0.4161  0.0626       0.3098        0.559
##   515     21       2   0.3764  0.0626       0.2717        0.521
##   545     16       1   0.3529  0.0630       0.2488        0.501
##   635     11       2   0.2887  0.0659       0.1847        0.451
##   665      9       1   0.2567  0.0659       0.1552        0.425
##   695      8       1   0.2246  0.0650       0.1273        0.396
##   725      7       3   0.1283  0.0561       0.0545        0.302
##   755      3       1   0.0856  0.0512       0.0265        0.276
```

```
x4
```

```
## Call: survfit(formula = obj5 ~ sex, data = lung4)
##
##         n events median 0.95LCL 0.95UCL
## sex=1 138    112    245     215     305
## sex=2  90     53    425     335     635
```

```
plot(x4, xlab = "survival time in month", ylab = "% surviving", yscale = 100,col = c("red","blue"), mai
legend("topright", title = "Gender", c("male", "female"), fill = c("red", "blue"))
```




```
survdiff(obj5~sex, data = lung4)
```

```
## Call:
## survdiff(formula = obj5 ~ sex, data = lung4)
##
##         N Observed Expected (O-E)^2/E (O-E)^2/V
## sex=1 138      112     91.5      4.59      11.2
## sex=2  90       53     73.5      5.71      11.2
##
##  Chisq= 11.2  on 1 degrees of freedom, p= 8e-04
```

- p-valueis less than 0.05 so there is a significant difference in survival% between male and female