Survival

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code for fitting Kaplan-Meier and log-rank test and for displaying survival curves for each type of media

```
data <- read.table(here('data','Worm_9days.csv'), header = TRUE, sep = ";", dec = ",")
head(data)
```

```
##   ï..Time Status Group Replicate
## 1       7      1  FG13         1
## 2       7      1  FG13         1
## 3       7      1  OP50         1
## 4       7      1  OP50         1
## 5       9      1  FG13         1
## 6       7      0  FG13         1
```

here() should show that your position is in the folder 7.semester else select the active project to be 7.semester in the upper right corner.

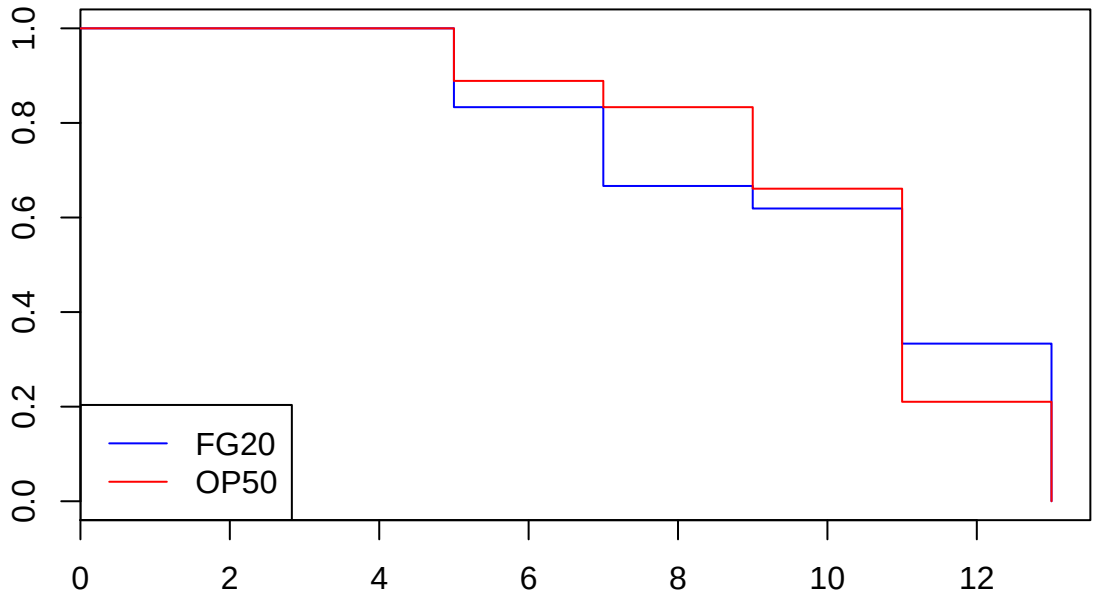
Or make a new .Rproj file in the folder 7.semester. There is a problem with the numbers of the worms so we change that with col.names()

```
colnames(data)<-c("Time","status","media",'Replicate')
head(data)
```

```
##   Time status media Replicate
## 1    7      1  FG13         1
## 2    7      1  FG13         1
## 3    7      1  OP50         1
## 4    7      1  OP50         1
## 5    9      1  FG13         1
## 6    7      0  FG13         1
```

Then we create a survival object with the survival package and make a kaplan-meier curve

```
data$Survobj <- with(data,Surv(data$Time, event = data$status))
km <- survfit(Survobj ~ media, data = data,conf.type = "log-log")
plot(km, col = c("blue","red") )
legend("bottomleft",legend = c("FG20","OP50" ), col = c("blue","red"), lwd=1)
```



Now we test for difference between the curves with both log-rank and gehan-wilcoxon

```
survdiff(Survobj ~media, data = data, rho = 0)
```

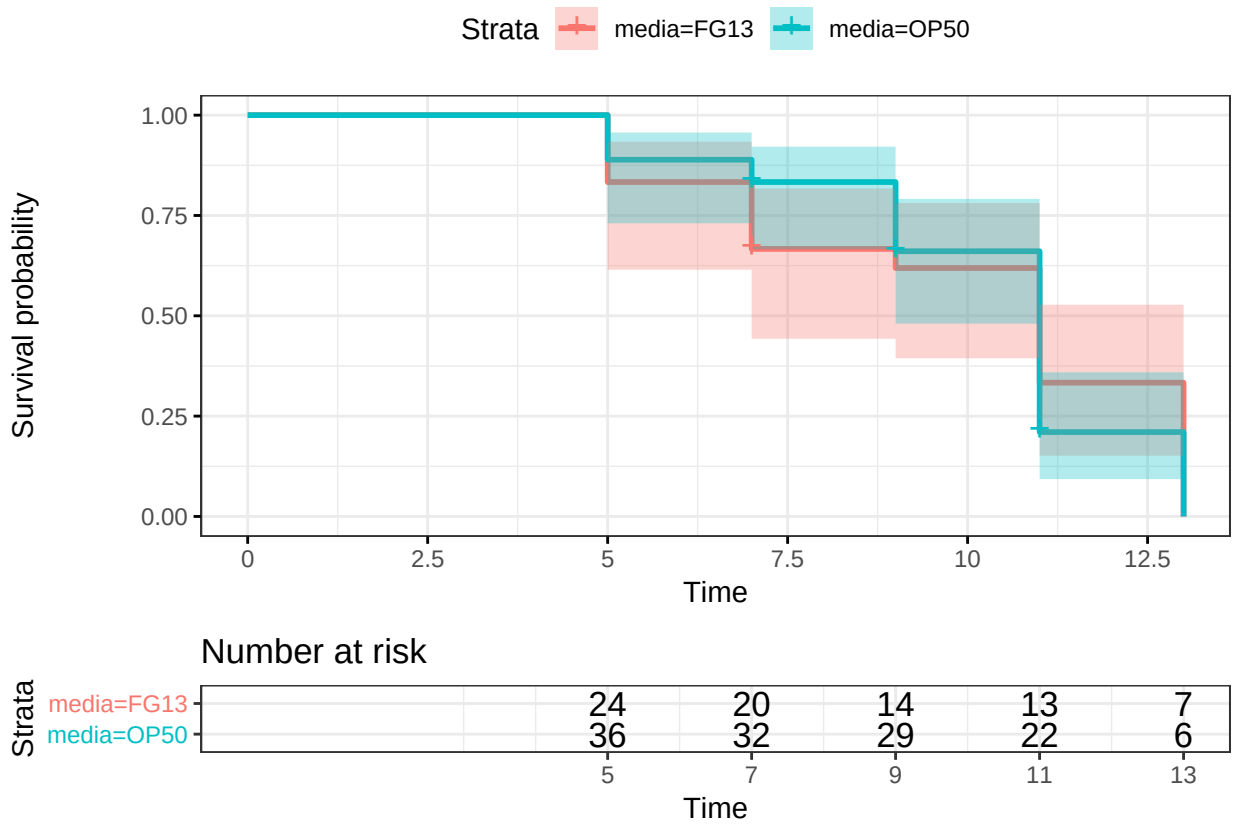
```
## Call:
## survdiff(formula = Survobj ~ media, data = data, rho = 0)
##
##              N Observed Expected (O-E)^2/E (O-E)^2/V
## media=FG13 24       22     22.6    0.0152    0.0546
## media=OP50 36       33     32.4    0.0106    0.0546
##
##  Chisq= 0.1  on 1 degrees of freedom, p= 0.8
```

```
survdiff(Survobj ~media, data = data, rho = 1)
```

```
## Call:
## survdiff(formula = Survobj ~ media, data = data, rho = 1)
##
##              N Observed Expected (O-E)^2/E (O-E)^2/V
## media=FG13 24     13.9     13.8   0.00124   0.00401
## media=OP50 36     21.5     21.6   0.00079   0.00401
##
##  Chisq= 0  on 1 degrees of freedom, p= 0.9
```

Which both don‘t find a significant difference between the groups But we can make a nicer survival curve with a different package survminer and add readable confidence intervals

```
ggsurvplot(km,data = data, conf.int = TRUE, ggtheme = theme_bw(),
           risk.table = 0.25)
```

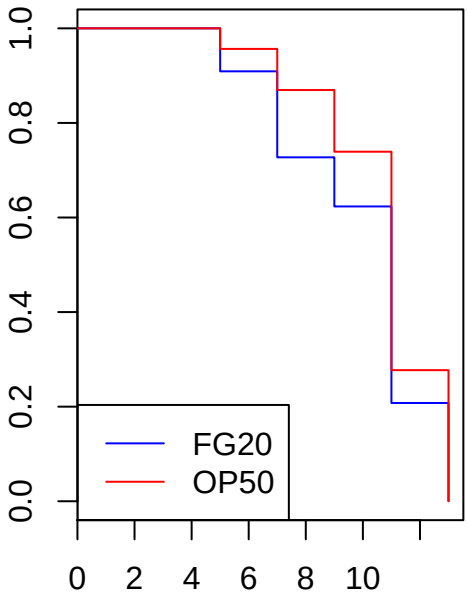


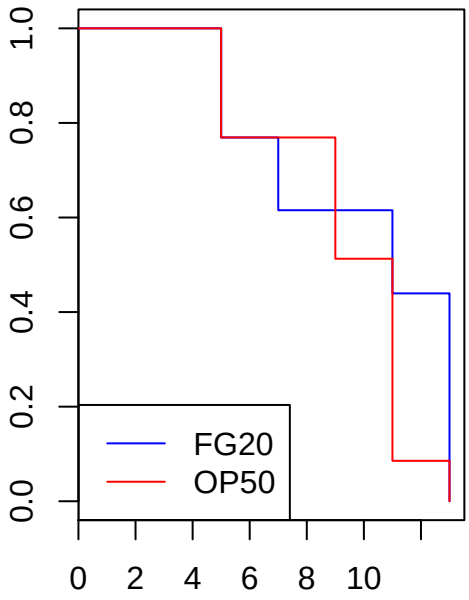
We then try to split up in replicates to see if there are any differences between scorers

```
d1 <- data[data$Replicate == 1,]
d2 <- data[data$Replicate == 2,]
d1$Survobj <- with(d1,Surv(d1$Time, event = d1$status))
d2$Survobj <- with(d2,Surv(d2$Time, event = d2$status))
```

Then we make kaplan-meier curves

```
par(mfrow = c(1,2))
km1 <- survfit(Survobj ~ media, data = d1,conf.type = "log-log")
plot(km1, col = c("blue","red") )
legend("bottomleft",legend = c("FG20","OP50" ), col = c("blue","red"), lwd=1)
km2 <- survfit(Survobj ~ media, data = d2,conf.type = "log-log")
plot(km2, col = c("blue","red") )
legend("bottomleft",legend = c("FG20","OP50" ), col = c("blue","red"), lwd=1)
```


1.0
0.8
0.6
0.4
0.2
0.0
FG20
OP50
0
2
4
6
8
10


1.0
0.8
0.6
0.4
0.2
0.0
FG20
OP50
0
2
4
6
8
10