

Analysis_ramping

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

```
here()
```

```
## [1] "C:/Users/Jonas G/Documents/7.semester"
```

```
data <- read.table(here('data', 'Ramp_9days.csv'), header = TRUE, sep = ";", dec = ",")
head(data)
```

```
##      i..ID Code Ctxmax Growth_temperature
## 1  FG13-1     1  40.82              13
## 2  FG13-2     2  40.29              13
## 3  FG20-1     3  40.03              20
## 4  FG20-15    4  39.45              20
## 5  FG13-3     5  41.03              13
## 6  FG13-4     6  39.61              13
```

```
data <- data[complete.cases(data),]
```

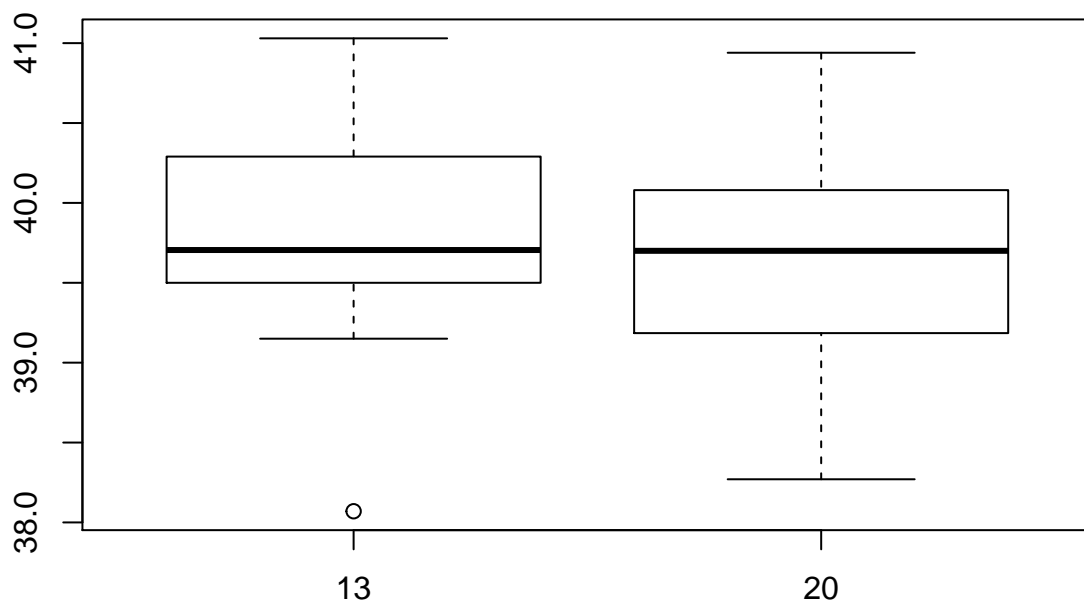
here() should show that your position is in the folder 7.semester else either download 7.semester from github again or create a .Rproj file in the folder on your computer One fly died from water entering the tube and is marked NA so it is removed. Or make a new .Rproj file in the folder 7.semester. There is a problem with the numbers of the so we change that with col.names()

```
colnames(data)<-c('ID', "Code", "Ctxmax", "Temp")
head(data)
```

```
##      ID Code Ctxmax Temp
## 1  FG13-1     1  40.82   13
## 2  FG13-2     2  40.29   13
## 3  FG20-1     3  40.03   20
## 4  FG20-15    4  39.45   20
## 5  FG13-3     5  41.03   13
## 6  FG13-4     6  39.61   13
```

We then compare the two acclimation temperatures first with a boxplot

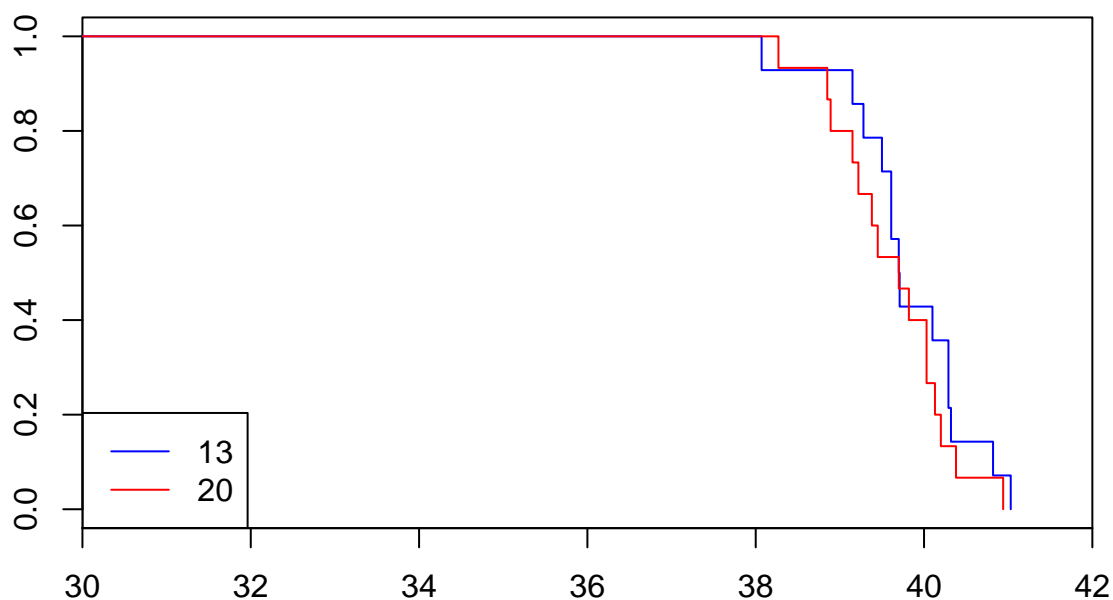
```
boxplot(data$Ctxmax ~ data$Temp)
```



This shows basically no difference between the groups. We try to see what is happening with a survival curve

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

```
data$status <- rep(1,29)
data$Survobj <- with(data, Surv(data$Ctmax, event = data$status))
km <- survfit(Survobj ~ Temp, data = data, conf.type = "log-log")
plot(km, col = c("blue", "red"), xlim = c(30, 42) )
legend("bottomleft", legend = c("13", "20" ), col = c("blue", "red"), lwd=1)
```



Which also don't show any meaningful difference between the groups Now we test for difference between the curves with both log-rank and gehan-wilcoxon

```
survdif(Survobj ~Temp, data = data, rho = 0)
```

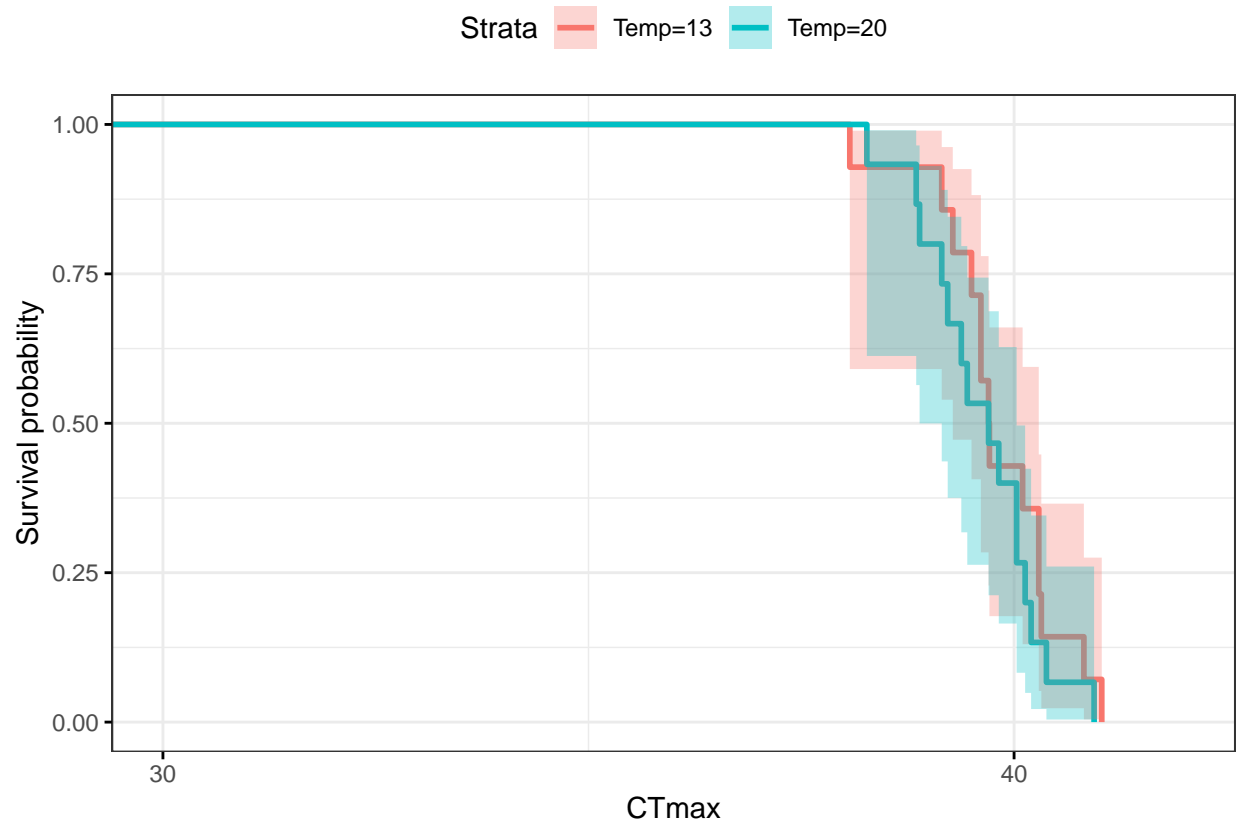
```
## Call:
## survdif(formula = Survobj ~ Temp, data = data, rho = 0)
##
##           N Observed Expected (O-E)^2/E (O-E)^2/V
## Temp=13 14         14    16.2     0.308     0.756
## Temp=20 15         15    12.8     0.392     0.756
##
##  Chisq= 0.8  on 1 degrees of freedom, p= 0.4
```

```
survdif(Survobj ~Temp, data = data, rho = 1)
```

```
## Call:
## survdif(formula = Survobj ~ Temp, data = data, rho = 1)
##
##           N Observed Expected (O-E)^2/E (O-E)^2/V
## Temp=13 14         6.69     8.00     0.215     0.681
## Temp=20 15         8.48     7.17     0.239     0.681
##
##  Chisq= 0.7  on 1 degrees of freedom, p= 0.4
```

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(),
           xlim = c(30,42), xlab = "CTmax")
```



Whic very clearly shows that the problem is that the two lines are far to close together.