

Daphnia Lab

Bio 103

R Setup

- Make a new R project. If you are using a computer that does not belong to you make this project on your flash drive.

Enter your data

Your data should look like

It should look like the following.

	Time.min.	Ice	HeartRate.count.10sec.
1	0.5	TRUE	40
2	1.0	TRUE	39
3	1.5	TRUE	35
4	2.0	TRUE	24
5	2.5	TRUE	12
6	3.0	TRUE	3
7	3.5	TRUE	1
8	4.0	TRUE	2
9	4.5	TRUE	3
10	5.0	TRUE	2
11	5.5	FALSE	2
12	6.0	FALSE	4
13	6.5	FALSE	3
14	7.0	FALSE	10
15	7.5	FALSE	12
16	8.0	FALSE	16
17	8.5	FALSE	15
18	9.0	FALSE	26
19	9.5	FALSE	36
20	10.0	FALSE	41

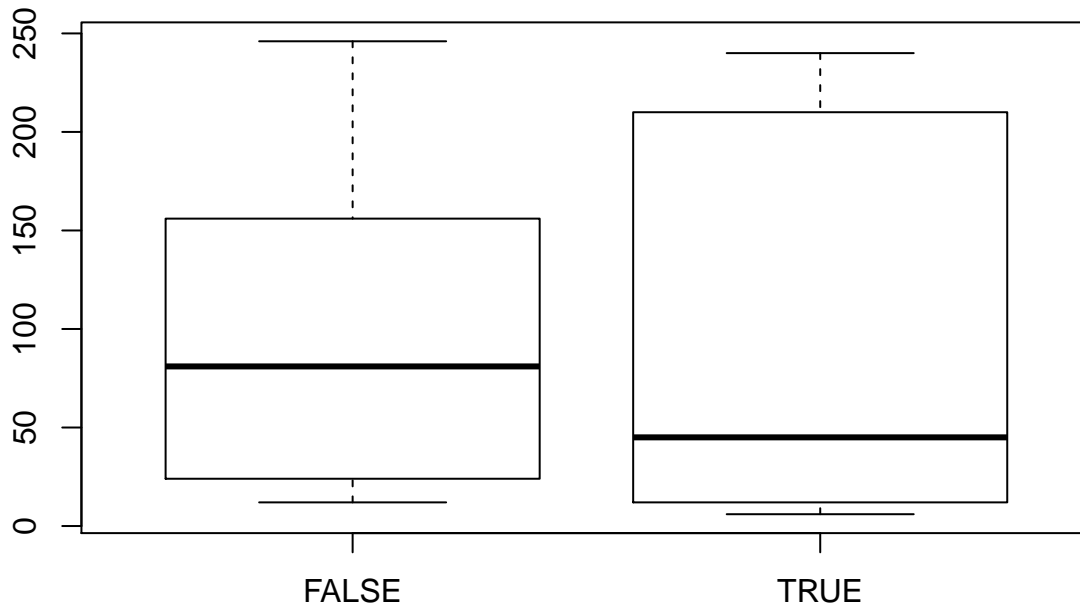
Transform your data

- Calculate heartbeats per minute by multiplying your heart beat counts by 6. Assign this to a new column (column name comes after \$) in your data table.

```
HB_Linda_data$HeartRate_min<-6*HB_Linda_data$HeartRate.count.10sec.
```

Compare Daphnia HR per minute under the experimental condition and the control (ambient) using a boxplot. The boxplot function takes some observation as a function of a treatment, for a given dataset.

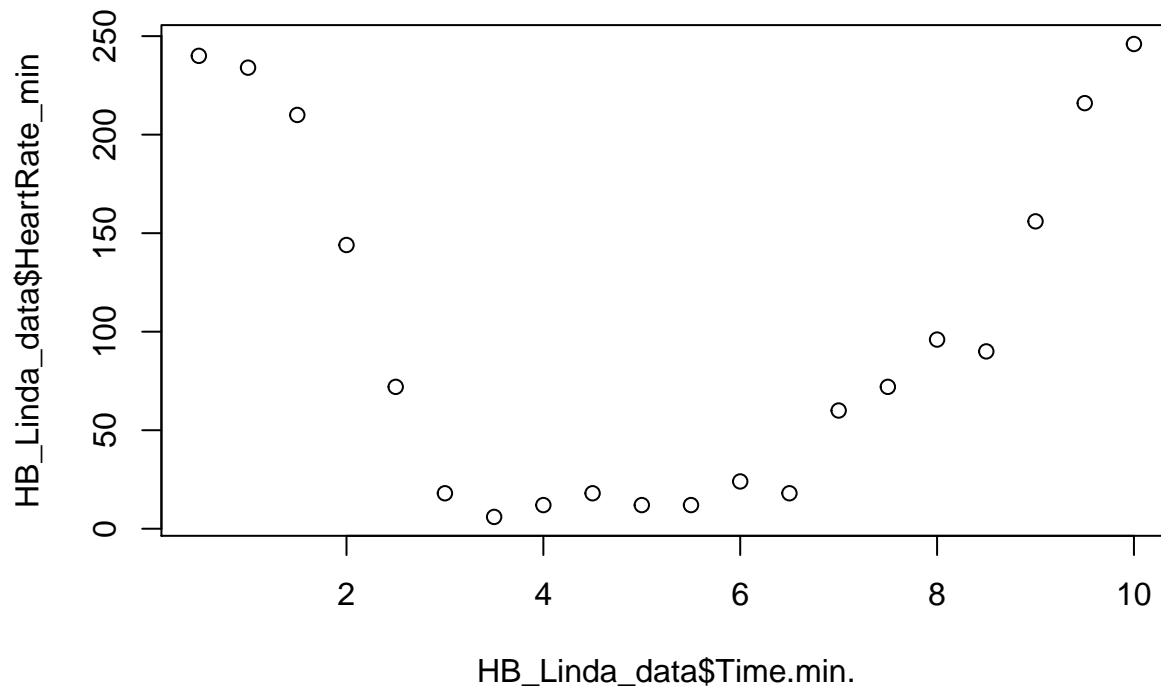
```
boxplot(HeartRate_min ~ Ice, data = HB_Linda_data)
```



- What does this tell you about the effect of the treatment on heart rate?
- Is there a difference between treatment and not?
- What could be obscuring a treatment effect?

You might have noticed it took some time for your Daphnia's heartrate to stabilize under the treatment condition (or when you removed the treatment). * Graph the change in heartrate over time to determine the "real" heartrate given the treatment.

```
plot(HB_Linda_data$Time.min.,HB_Linda_data$HeartRate_min)
```



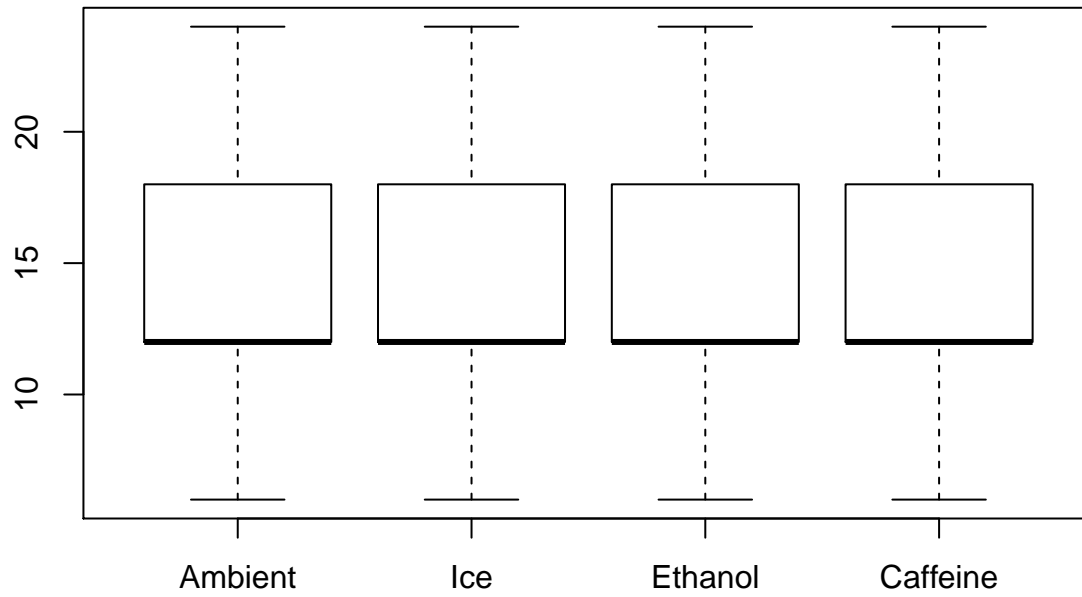
- Based on this plot decide at which times the heartrate is fully affected by the treatment. Calculate the mean heartrate for this subset of the data (note the row numbers for these times). You will be able to extract the subset of the data (for example rows 6-12 (i.e. 3 - 6 minutes) using the following:

```
my_data_frame[6:12]
```

- Repeat for all treatments
- Include axis labels with units. Be sure your units are correct; present your data in a standardized format using beats per minute (BPM).
- Put the data from all the treatments into a new data frame so you can plot it.

```
sub_results <- data.frame(HB_Linda_data$HeartRate_min[6:12], HB_Linda_data$HeartRate_min[6:12],
  colnames(sub_results) <- c('Ambient', 'Ice', 'Ethanol', 'Caffeine')

boxplot(sub_results)
```



- Include axis labels with units. Be sure your units are correct; present your data in a standardized format using beats per minute (BPM).