Homework 2 Instructions

FISH 552 - Kristin Privitera-Johnson

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Part 1 - Programming Assignment

Open a new script in RStudio and create an assignment header using comments.

```
# Name: First Last
# Homework 1
```

Complete the tasks below. Please label each question and task with comments.

```
#==Question 1a ####
# Your R code here

#==Question 1b ####
# Your R code here
```

When your script is complete, save it as `LastName_Homework2.R`, then clear your workspace (Workspace/Clear all) and run through your script again to make sure you don't have any `object not found` errors. Then go to the course website to submit your R script.

Question 1

This question will use the dataset `beaver1`, which is built into R. Run the command `head(beaver1)` to get a sense of what is in the dataset, and go to the help file `?beaver1` to learn more about this data set. Using this dataset:

a) Use one function to compute the mean temperature for inside and outside the retreat.

b) Recreate the following plot. Note the x-axis, and the green points mark activity outside the retreat.

- Plot, labels, and title
- Axis
- Points
- Horizontal lines
- Legend

c) Note that the observation at 22:20 is missing. Create a new data frame that includes an additional observation with a temperature of 37.3 and activity outside the retreat at this time.

d) How much did the mean temperature during periods of activity outside the retreat change? (i.e. compare `beaver1` and your new data frame)

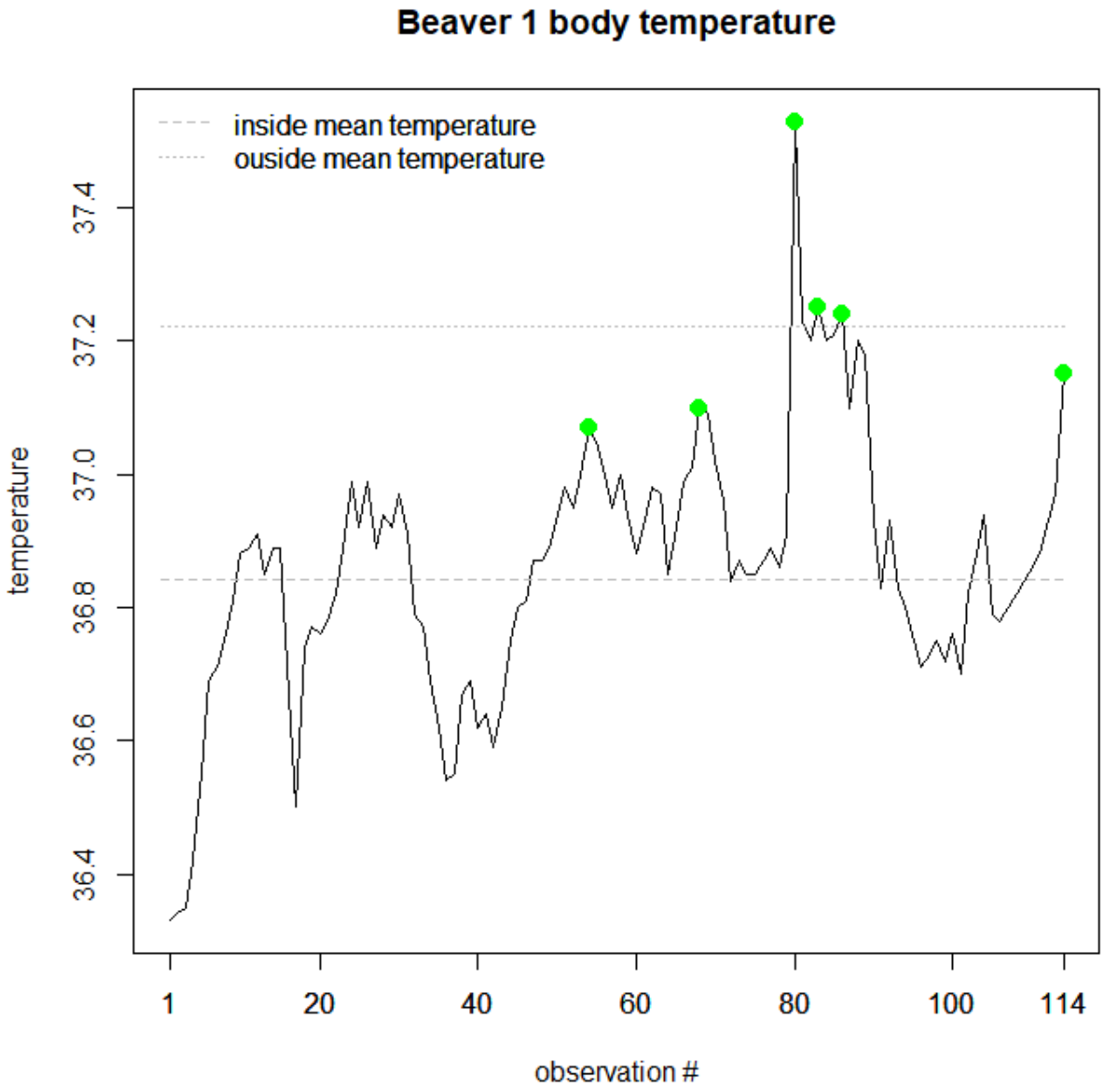

Figure 1: Plot to recreate.

Question 2

This question will use the dataset crabs, which is built into R. Type the following command to get access to the dataset (we'll cover what a library is later):

```
library(MASS)
?crabs
head(crabs)
```

Now use the dataset crabs to complete the following:

a) Use **one function** to compute the mean of frontal lobe size for "blue" and "orange" purple rock crabs. Now compute the standard deviation of frontal lobe size for "blue" and "orange" purple rock crabs.

b) Run this line of code: `crabs$sp:crabs$sex`. Explain what's going on here by adding comments to your code above this line of code. Call this new factor `spsex`.

c) Change the levels of `spsex` so that they are more informative. So B:F might be called "Blue Female" and so on.

d) Use **one function** to compute the mean of frontal lobe size for each sex and color combination of purple rock crab.

e) Use **one function** with the vector `spsex` to compute the total number of each sex and color combination of purple rock crab. Call this vector `crab.counts`. Hint: `?table`.

f) Create an informative plot using the crabs data with appropriate labeling. You may plot part of the data or all of the data, but you are required to create a multipanel plot with at least two dimensions using `layout()` or `par(mfrow)`. Be creative!