

Consider the dataset `SurveyFall2019.csv` collected from the Getting To Know You Survey (see separate pdf file for description on the dataset) and use the following codes to load the dataset:

```
data <- read.csv("http://users.stat.umn.edu/~parky/SurveyFall2019.csv", header = T)
attach(data)
```

Let's explore some useful R functions.

- a. Use `dim()` to identify the dimension of the dataset. What do the numbers in the output represent?
- b. Use `mean()` to calculate the average `idea.weight` and average `ideal.weight` of students that exercise over 1 hour per day.
- c. Use `length()` to find the number of female students and number of female students that exercise over 1 hour per day.
- d. Obtain the frequency table of the `zzz.week` variable.

For question 1-2, we examine the distribution of the `zzz.week` variable (the number of hours slept per night during the week) for the STAT 3011 students. Use the frequency table to answer the following questions.

1. What is the probability that a randomly chosen STAT 3011 student sleeps less than 6 hours per night during the week?
2. What is the probability that a randomly chosen STAT 3011 student sleeps 8 hours or more per night during the week?
- e. Obtain the cross table for the distributions of the `from.US` and `fav.season` variables using the `table(variable1,variable2)` command. This command allows you to create a table for two variables at the same time. In statistics, we call this a cross-tabulation or two-way table.
- f. Obtain the marginal table for `from.US` and `fav.season` variables.

For question 3-5, we examine the joint distribution of the `from.US` variable (whether the student is from US) and `fav.season` variable (the student's favorite season) for the STAT 3011 students. Use the frequency tables above to answer the following questions.

3. What is the probability that a randomly chosen STAT 3011 student's favorite season is winter?
4. What is the conditional probability that a randomly chosen STAT 3011 student's favorite season is winter, given that he/she is an international student?
5. Based on your answers to question 3 and 4, are the event that a student's favorite season is winter and the event that he/she is an international student independent? Explain.