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Statistics Package Exercise: Tallying Data and Creating Pie Charts

Learning Objective: Summarize and describe the distribution of a categorical variable in context.

The same survey that asked 1,200 U.S. college students about their body perception also asked the following question:

"With whom do you find it easiest to make friends?" (opposite sex, same sex or no difference).

In this activity we will use the collected data to:

- learn how to tally our data into a table of counts and percents.
- learn how to produce a pie chart.

- R StatCrunch TI Calculator Minitab Excel

R Instructions
To open R with the dataset preloaded, right-click here and choose "Save Target As" to download the file to your computer. Then find the downloaded file and double-click it to open it in R.

The data have been loaded into the data frame 'friends'. Enter the command

```
friends
```

to see the data.

You can scroll up and down to see how 1,200 men and women answered the question: "With whom do you find it easiest to make friends?"

Notice that the column title in the data frame

```
friends
```

is

```
Friends
```

. The column title

```
Friends
```

is the variable name, while the data frame name is

```
friends
```

. The subtle difference is the capital F in the column title. R is sensitive to capitalization so R identifies

```
friends
```

and

```
Friends
```

as two different things. To extract a specific variable from a data frame there are many methods, the simplest method is to use the $ to identify the desired variable (column title) within the data frame, or

```
friends$Friends
```

.

Obviously the raw data is not very useful so we will summarize it using a table. To get a summary table of the data, copy and paste the next commands into R (and press <Enter> if necessary to execute the command):

```
t = table(friends$Friends);t
```

```
t = table(Friends$Friends);t
```

Note: Using R-When you assign a value to a variable, R will not display the value unless you ask for the display by executing the variable name as a command in the console.

The same method is used below when the summary table for

```
Friends
```

is converted to percentages and assigned to the variable percent. Executing the variable name to see its contents may seem like an unnecessary extra step, but the convention allows you to assign a large amount of data to a variable and not fill your screen with the result (which could be millions of numbers) unless you really want to see it.

To see the proportion of the total in each category, copy and paste the command:

```
prop = prop.table(t);prop
```

To see the percentage of the total in each category, copy and paste the command:

```
percent=prop.table(t)*100;percent
```

Finally, copy and paste the next command to create a pie chart of your data:

```
pie(t)
```

The following alternate version of the pie chart command will produce a chart with more informative labels. First we will modify our **percent** table so that each value is rounded to one decimal place.

```
pf = round(percent,1);pf
```

Next we will create a label that will include the category name and the percent as the labels for each section of the pie chart. R defaults to alphabetical order for tables and graphic creation so if you create your own labels list the names accordingly.

```
lbl = paste(c("No difference","Opposite sex","Same
sex"),pf,"%",sep=" ");lbl
```

Finally, create the pie chart with the new label added

```
pie(t,label=lbl)
```

Comment

Note that the pie chart visually provides all the information that is in the table.

Learn By Doing (1/1 point)

Describe the distribution of the variable "friends" in context:

Your Answer:

Around half thought there was no difference; same sex yielded the least.

Our Answer:

The students are NOT divided equally among the three categories. About 50% of the students find it as easy to make friends with the opposite sex as with the same sex. Among the remaining 50% of the students, the majority (36.2%) find it easier to make friends with people of the opposite sex, and the remainder (13.7%) find it easier to make friends with people of their own sex.

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