
How Big Is Your Head?

- (a) With a partner, plan and describe a method to measure the circumference of your heads. Describe your protocol below.
- (b) Using your method, in *centimeters* measure the head circumference of each member of your group. Record your results.
- (c) You will soon combine your data with data from the rest of your classmates. But first, draw a graph of what you EXPECT this distribution to look like in the space below.
- (d) Now, add your measurements to the list for the class on the board in front of the room. Then draw a graph of what the distribution of head circumference looks like for the entire class.
- (e) How does the actual distribution compare with your expected distribution? Any differences?

Next, we use *Fathom* to enter, graph, and analyze the data on head sizes.

1. Open Fathom and drag a new CASE TABLE from the tool shelf.
2. Click on the Column label <new> and type “head1.”
3. Starting in the first empty cell under head1, enter the class’ data.
4. Double click the collection named **Collection 1** and use the resulting dialog box to rename the collection **Head Sizes**. Be sure to click on the text itself.
5. Drag a new GRAPH from the tool shelf.
6. In the case table, grab the attribute name (head1) and drag it to the horizontal axis of the graph and release. Your document window should show a case table and a dotplot.

- (f) **Shape.** What is the approximate shape of the plot? Are there clusters and gaps or unusual data values (i.e., an outlier in the data?) Can you determine why they are unusual?

- (g) **Center and spread:** Choose two numbers that seem reasonable for completing the following sentence. (Note: There is more than one reasonable set of choices.)

The typical head circumference measurement is about _____cm, give or take about _____cm.

- (h) What are some possible reasons for the variability among measurements. Could the variability be reduced? How?
- (i) Now, look at the data for measurements on your Instructor's head circumference. (Your instructor will have entered these data and will display them on the screen so you can see their distribution and compare it to the one you plotted.) How does it compare in shape, center and spread?
- (j) What are the reasons for the variability in these measurements? Are there ways to reduce this variability? How?