

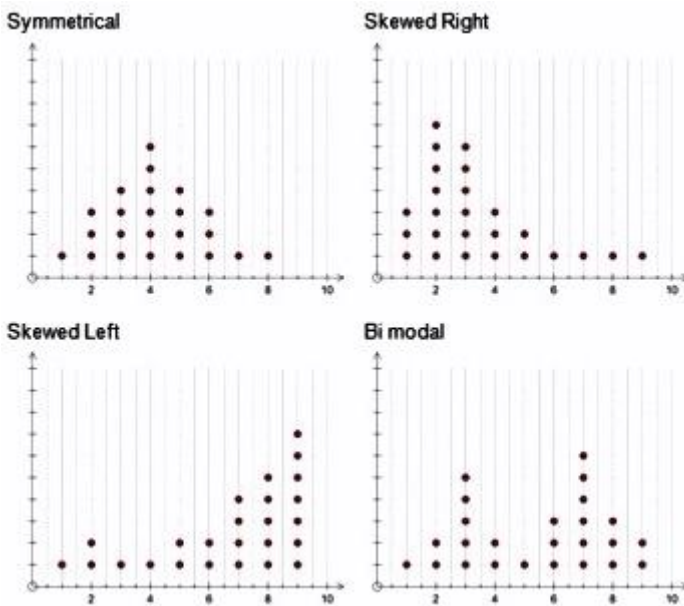
Math 247: Visualizing Data (“See It”) (Section 2.1)
and Summarizing Numerical Distributions (“Summarize It”) (Section 2.2)

Pet Ownership Raw Data: We call data “raw” when it comes directly from our subjects.

Dotplots: A dotplot is a number line where each data value is displayed as a dot.

Example: Make a dotplot of the Pet Data by hand. Then describe the distribution, including shape, center, outliers, and variability/spread (see descriptions below).

Shape of data:

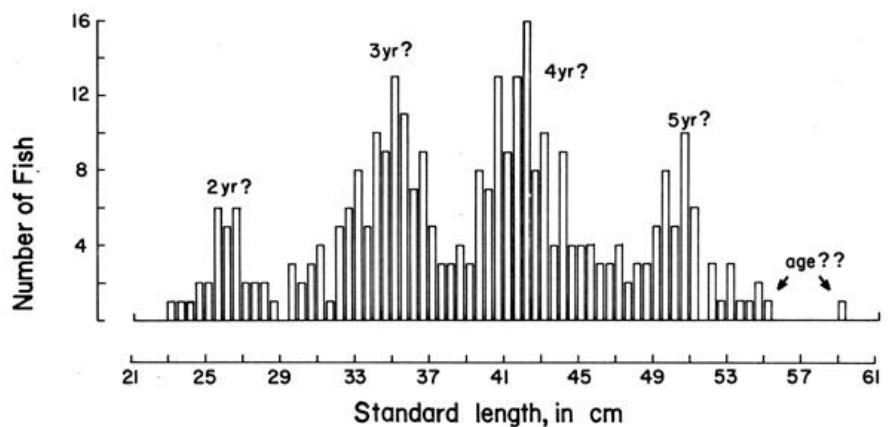


Center of Data: The value that roughly splits the data into two equal halves. (The center can be considered a “Typical Value” if the data is symmetric)

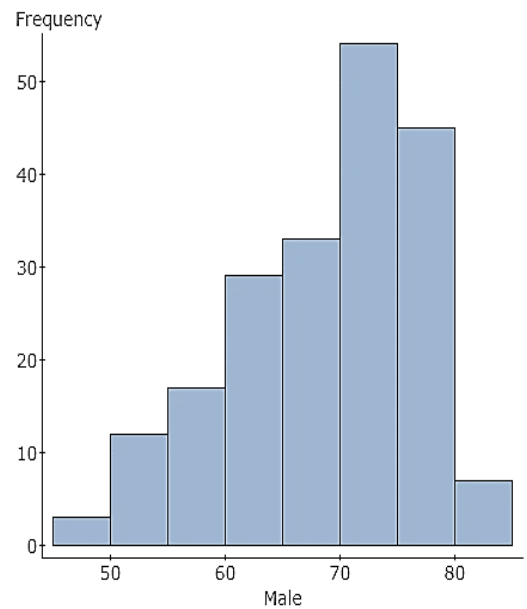
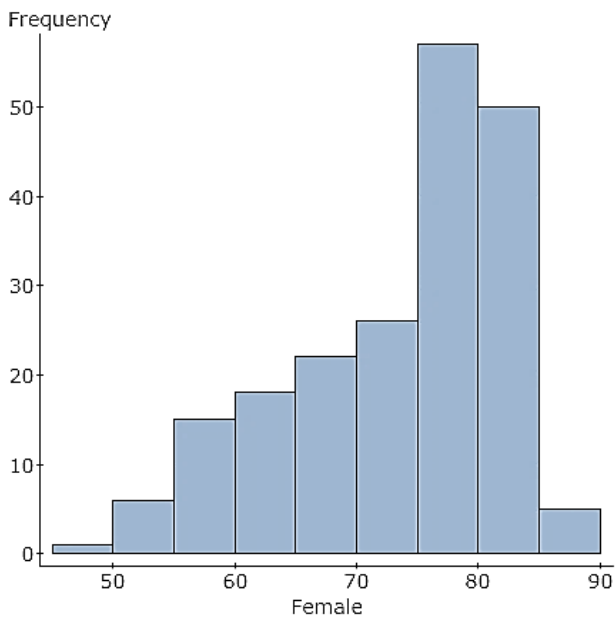
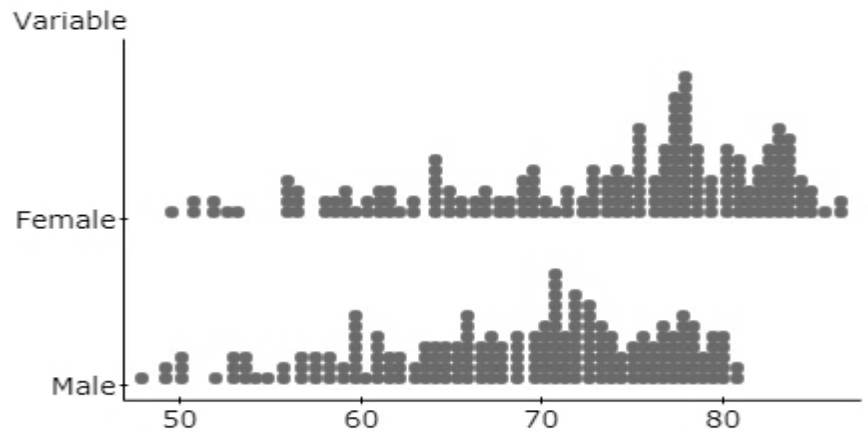
Spread of Data (“Variability”): The spread or variability of the data is a measure of how tightly clustered the data is around the center.

Outliers: Data values that fall well beyond where the majority of the data is clustered.

A note on bi-modal or multimodal distributions: Data that has several clumps and peaks suggests the data may contain more than one population! Consider the fish length data shown all from the same species of fish. What were the different “populations” within the data?



Example: Consider the Worldwide Average Lifespan by Nation (for 200 nations) that is graphed below. Compare the shape, center, and spread of the graphs.



Histograms: A histogram is a graph that groups data values into “classes” or “bins”. The classes are shown on the x-axis and the count or “frequency” is shown on the y-axis. Sometimes we want to look at **percentages (relative frequencies)**. Relabel each y-axis with Relative Frequency.

Example:

Look at the Histogram of the Male Lifespans. What is the Class Width?
 What are the classes (bins) in this histogram? What is the frequency for each class?

How many countries have a male life span of less than 50 years? Of 75 or more years?

Example: Homework problem #2.29, page 68. Use the data for animal longevity to do problem #29. Store the graphs and your responses to the questions in GoogleDocs.

Note that the question has many parts, so type each of these questions separately to make sure you answer each one!

- Graph the average lifespans of animals as given in the data. (Make a dotplot and a histogram)
- Describe the distribution.
- What is a typical lifespan (center value)?
- Identify the three outliers and report their lifespans.
- If you were to include humans in this graph, where would the data point be (assume humans live 75 years, on average).

StatCrunch Instructions: The book contains StatCrunch instructions at the end of each chapter. The instructions are summarized here for convenience.

Entering Data:

Go to www.statcrunch.com and log in. Click

> Open StatCrunch

- If you have your own raw data, type the name of each variable at the top of each column and type in the data.

Select data source

Paste into form

Copy and paste your data into the input box below.

```
Sheep 154 12
Squirrel, gray 44 10
Tiger 105 16
Wolf, maned 63 5
Zebra, Grant's 365 15
```

- If you're using data for a homework problem with a data file, do the following:

1. Go to the www.wrightmath.info website, click Math 247, then select the StatCrunch page.
2. Download the data set by clicking the link to the data set you want.
3. Open the file in Excel, then copy the contents.
4. Go back to the StatCrunch page and click "From paste"
5. Paste in the data.
6. IMPORTANT! Name the Data Set AND choose "tab" for the Delimiter.
7. Click "

Data set name

Homework 2.29

Data set description

Select the "Data" menu then "Load" then "From Paste" then scroll down and click "Upload"

Columns **i**

First line as column name

Delimiters **i**

tab

Making a Graph:

- Choose "Graph" from the menu bar.
- Select the type of graph you want.
- Select which data set you want to graph.
- Click compute.

For the homework, you'll need a **printout of the graph** and the **answers to the questions about the graph**.

- Open a new Google Doc
- Type in the homework problem number.
- Copy and paste the graph into the document.
- Type the answers to the homework question pertaining to the graph
- **Print the document and include it in your homework packet.**

