

Monday, August 29: Chapter 1 Introduction, 1.1 Analyzing Categorical Data

Read 2-4

What's the difference between categorical and quantitative variables?

Do we ever use numbers to describe the values of a categorical variable?

What is a distribution?

Alternate Example: US Census Data

Here is information about 10 randomly selected US residents from the 2000 census.

State	Number of Family Members	Age	Gender	Marital Status	Total Income	Travel time to work
Kentucky	2	61	Female	Married	21000	20
Florida	6	27	Female	Married	21300	20
Wisconsin	2	27	Male	Married	30000	5
California	4	33	Female	Married	26000	10
Michigan	3	49	Female	Married	15100	25
Virginia	3	26	Female	Married	25000	15
Pennsylvania	4	44	Male	Married	43000	10
Virginia	4	22	Male	Never married/ single	3000	0
California	1	30	Male	Never married/ single	40000	15
New York	4	34	Female	Separated	30000	40

(a) Who are the individuals in this data set?

(b) What variables are measured? Identify each as categorical or quantitative. In what units were the quantitative variables measured?

(c) Describe the individual in the first row.

Read 8-12

What is the difference between a frequency table and a relative frequency table? When is it better to use relative frequency tables?

What is the most important aspect of pie charts and bar graphs? Why do statisticians prefer bar charts?

When is it inappropriate to use a pie chart?

What are some common ways to make a misleading graph?

What is wrong with the following graph?



HW #11: Page 7 (1, 3, 5, 7, 8) Page 22 (11, 17, 18) – due Wed/Thurs

Tuesday, August 30: Chapter 4 Test (including review time)

Wed/Thurs, Aug 31/Sept 1: 1.1 Analyzing Categorical Data

Read 12-19

What is a marginal distribution?

What is a conditional distribution? How do we know which variable to condition on?

What is a segmented bar graph? Why are they good to use?

How do we organize a statistical problem?

What does it mean for two variables to have an association? How can you tell by looking at a graph?

Alternate Example: Super Powers

A sample of 200 children from the United Kingdom ages 9-17 was selected from the CensusAtSchool website. The gender of each student was recorded along with which super power they would most like to have: invisibility, super strength, telepathy (ability to read minds), ability to fly, or ability to freeze time. Based on this data, can we conclude there is an association between gender and super power preference? Give appropriate evidence to support your answer.

	Female	Male	Total
Invisibility	17	13	30
Super Strength	3	17	20
Telepathy	39	5	44
Fly	36	18	54
Freeze Time	20	32	52
Total	115	85	200

Friday, September 2: 1.2 Displaying Quantitative Data with Graphs

Read 27-29

When describing the distribution of a quantitative variable, what characteristics should be addressed?

Alternate Example: Smart Phone Battery Life

Here is the estimated battery life for each of 9 different smart phones (in minutes). Make a dotplot of the data and describe what you see.

Smart Phone	Battery Life (minutes)
Apple iPhone	300
Motorola Droid	385
Palm Pre	300
Blackberry Bold	360
Blackberry Storm	330
Motorola Cliq	360
Samsung Moment	330
Blackberry Tour	300
HTC Droid	460

Read 29-31

Briefly describe/illustrate the following distribution shapes:

Symmetric

Skewed right

Skewed left

Unimodal

Bimodal

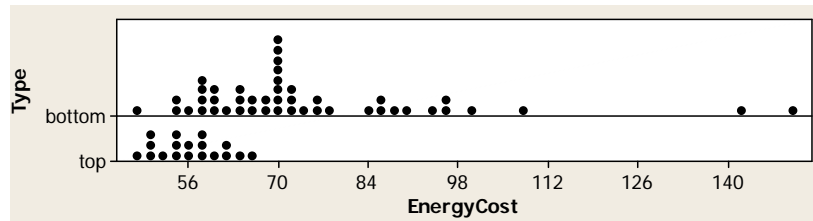
Uniform

Read 31-32

What is the most important thing to remember when you are asked to compare two distributions?

Alternate Example: Energy Cost: Top vs. Bottom Freezers

How do the annual energy costs (in dollars) compare for refrigerators with top freezers and refrigerators with bottom freezers? The data below is from the May 2010 issue of *Consumer Reports*.



HW #13: page 42 (37-43 odd, 44)

Monday, September 5: No School!

Tuesday, September 6: 1.2 Stemplots and Histograms

Read 33-34

What is the most important thing to remember when making a stemplot?

Alternate Example: Which gender is taller, males or females? A sample of 14-year-olds from the United Kingdom was randomly selected using the CensusAtSchool website. Here are the heights of the students (in cm). Make a back-to-back stemplot and compare the distributions.

Male: 154, 157, 187, 163, 167, 159, 169, 162, 176, 177, 151, 175, 174, 165, 165, 183, 180

Female: 160, 169, 152, 167, 164, 163, 160, 163, 169, 157, 158, 153, 161, 165, 165, 159, 168, 153, 166, 158, 158, 166

The following table presents the average points scored per game (PPG) for the 30 NBA teams in the 2009-2010 regular season. Make a dotplot to display the distribution of points per game. Then, use your dotplot to make a histogram of the distribution.

Team	PPG	Team	PPG	Team	PPG
Atlanta Hawks	101.7	Indiana Pacers	100.8	Oklahoma City Thunder	101.5
Boston Celtics	99.2	Los Angeles Clippers	95.7	Orlando Magic	102.8
Charlotte Bobcats	95.3	Los Angeles Lakers	101.7	Philadelphia 76ers	97.7
Chicago Bulls	97.5	Memphis Grizzlies	102.5	Phoenix Suns	110.2
Cleveland Cavaliers	102.1	Miami Heat	96.5	Portland Trail Blazers	98.1
Dallas Mavericks	102	Milwaukee Bucks	97.7	Sacramento Kings	100
Denver Nuggets	106.5	Minnesota Timberwolves	98.2	San Antonio Spurs	101.4
Detroit Pistons	94	New Jersey Nets	92.4	Toronto Raptors	104.1
Golden State Warriors	108.8	New Orleans Hornets	100.2	Utah Jazz	104.2
Houston Rockets	102.4	New York Knicks	102.1	Washington Wizards	96.2

Read 35-39

How do you make a histogram?

Why would we prefer a *relative* frequency histogram to a frequency histogram?

Read 39-41

What will cause you to lose points on tests and projects (and cause Mr. Tabor to lose his hair)?

Wed/Thurs, September 7/8: 1.3 Describing Quantitative Data with Numbers

Read 50-52

What is the difference between \bar{x} and μ ?

What is a resistant measure? Is the mean a resistant measure of center?

How can you estimate the mean of a histogram or dotplot?

Read 53-55

Is the median a resistant measure of center? Explain.

How does the shape of a distribution affect the relationship between the mean and the median?

Read 55-57

What is the range? Is it a resistant measure of spread? Explain.

What are quartiles? How do you find them?

What is the interquartile range (*IQR*)? Is the *IQR* a resistant measure of spread?

Alternate Example: McDonald's Beef Sandwiches
 Here is data for the amount of fat (in grams) for McDonald's beef sandwiches. Calculate and interpret the median and the *IQR*.

Sandwich	Fat (g)
Hamburger	9 g
Cheeseburger	12 g
Double Cheeseburger	23 g
McDouble	19 g
Quarter Pounder®	19 g
Quarter Pounder® with Cheese	26 g
Double Quarter Pounder® with Cheese	42 g
Big Mac®	29 g
Big N' Tasty®	24 g
Big N' Tasty® with Cheese	28 g
Angus Bacon & Cheese	39 g
Angus Deluxe	39 g
Angus Mushroom & Swiss	40 g
McRib ®	26 g
Mac Snack Wrap	19 g

Read 57-58

What is an outlier? How can you identify outliers? Are there outliers in the beef sandwich distribution?

Here is data for the amount of fat (in grams) for McDonald's chicken sandwiches. Are there any outliers in this distribution?

Sandwich	Fat
McChicken ®	16 g
Premium Grilled Chicken Classic Sandwich	10 g
Premium Crispy Chicken Classic Sandwich	20 g
Premium Grilled Chicken Club Sandwich	17 g
Premium Crispy Chicken Club Sandwich	28 g
Premium Grilled Chicken Ranch BLT Sandwich	12 g
Premium Crispy Chicken Ranch BLT Sandwich	23 g
Southern Style Crispy Chicken Sandwich	17 g
Ranch Snack Wrap® (Crispy)	17 g
Ranch Snack Wrap® (Grilled)	10 g
Honey Mustard Snack Wrap® (Crispy)	16 g
Honey Mustard Snack Wrap® (Grilled)	9 g
Chipotle BBQ Snack Wrap® (Crispy)	15 g
Chipotle BBQ Snack Wrap® (Grilled)	9 g

Friday, September 9: 1.3 Boxplots and Comparing Distributions

Read 58-60

What is the five-number summary?

Draw parallel boxplots for the beef and chicken sandwich data from the previous lesson. Compare these distributions.

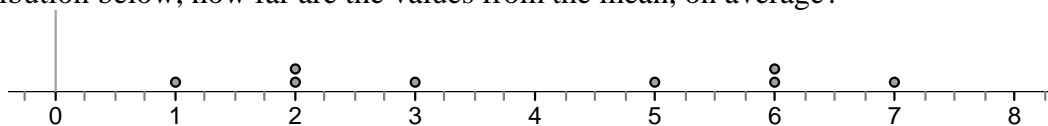
Alternate Example: Here are the number of home runs that Hank Aaron hit in each of his 23 seasons. Calculate the five-number summary for this data, check for outliers, make a boxplot, and compare Aaron's distribution with Bonds' distribution. Based only on the boxplots, who hit a higher number of HR, on average? Explain.

13 27 26 44 30 39 40 34 45 44 24 32 44 39 29 44 38 47 34 40 20 12 10

HW #16: page 71 (91, 93, 94a, 95)

Monday, September 12: 1.3 Describing Quantitative Data with Numbers

In the distribution below, how far are the values from the mean, on average?



What does the standard deviation measure?

What are some similarities and differences between the range, *IQR*, and standard deviation?

Read 62-64

How is the standard deviation calculated?

What are some properties of the standard deviation?

Alternate Example: A random sample of 5 students was asked how many minutes they spent doing HW the previous night. Here are their responses (in minutes): 0, 25, 30, 60, 90. Calculate and interpret the standard deviation.

Read 66-67

What factors should you consider when choosing which summary statistics to use?

HW #17: page 72 (99, 102- 105, 107-111)

Tuesday, September 13: Chapter 1 Review

FRAPPY

HW #18: Page 75: Chapter Review Exercises (optional: page 78: AP Practice Test)

Wed/Thurs, September 14/15: Review Chapter 1

Friday, September 16: Chapter 1 Test