

# Chapter 1: Exploring Data

## Key Vocabulary:

individuals variable categorical variable quantitative variable two way table marginal distributions conditional distribution association distribution range spread frequency outlier center	shape skewed left skewed right symmetric dot plot histogram stemplot split stems back-to-back stemplot time plot mean nonresistant $\Sigma$	median resistant quartiles $Q_1, Q_3$ IQR five-number summary minimum maximum boxplot modified boxplot standard deviation variance
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### 1.1 Displaying Distributions with Graphs (pp.2-21)

1. What is the difference between categorical and quantitative variables?

2. Check Your Understanding pg 5

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3. What is the difference between a frequency table and a relative frequency table?

4. What type of data are *pie charts* and *bar graphs* used for?

5. Pie Charts can only be used when?

6. How is a two-way table setup?

Which is more informative when comparing groups counts or percents? Why?

7. Check Your Understanding pg 14

1.

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8. Explain the four step process to organizing a statistical problem.

9. What do you need to be cautious of when variables seem to have a strong association?

**1.2 Describing Distributions with Numbers (pp.27-42)**

10. How do you make a dot plot?

11. When examining a distribution, you can describe the overall pattern by its

**S**\_\_\_\_\_      **O**\_\_\_\_\_      **C**\_\_\_\_\_      **S**\_\_\_\_\_

*(Mrs. Anderson prefers the mnemonic CSSCO ... can you figure out what those letters stand for? Extra credit on this reading guide if you write the answer in here!)*

12. If a distribution is *symmetric*, what does its dot plot look like? (draw one!)

13. If a distribution is *skewed right*, what does its dot plot look like?

14. If a distribution is *skewed left*, what does its dot plot look like?

15. What is the difference between unimodal, bimodal, and multimodal data? (draw a dotplot for each)

16. How do you make a *stemplot*?

17. Check Your Understanding pg 31

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18. When is it advantageous to split stems on a stemplot?

19. When is a *back to back stemplot* useful?

20. How is the *stemplot* of a distribution related to its histogram?

21. Check Your Understanding pg 34

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22. What is a *histogram*?

23. When is it better to use a *histogram* rather than a *stemplot* or *dotplot*?

24. What is meant by *frequency* in a histogram?

25. What is the difference between a *bar-graph* and a *histogram*?

26. Define *outlier*.

27. Check Your Understanding pg 39

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28. Check Your Understanding pg 41

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**1.3 Describing Quantitative Data with Numbers (pp.50-69)**

1. In statistics, what are the most common measures of center?

2. Explain how to calculate the *mean*,  $\bar{x}$ .

3. Explain how to calculate the *median*,  $M$ .

4. Explain why the median is *resistant* to extreme observations, but the mean is *nonresistant*.

5. In a symmetric distribution where are the mean and median in relation to each other?

What about in a distribution that is skewed?

6. What is the difference between “*average*” value and “*typical*” value?

7. Check Your Understanding pg 55

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8. Explain how to calculate  $Q_1$  and  $Q_3$  and  $IQR$ .

9. When does an observation become an *outlier*?

10. What is the *five-number summary*?
11. How much of the data falls between each quartile?
12. How much of the data falls between Q1 and Q3?
13. Check Your Understanding pg 61
  - 1.
  - 2.
  - 3.
  - 4.
14. What does *standard deviation* measure?
15. What is the relationship between *variance* and *standard deviation*?
16. When does *standard deviation* equal zero?
17. What are the units for the standard deviation of a distribution?
18. Is *standard deviation* resistant or nonresistant to extreme observations? Explain.
19. Use a five number summary when...                      Use  $\bar{x}$  and  $s$  when...

20. Check Your Understanding pg 64

1.

2.

3.

4.