

SECTION REPORTS

MATH 12 // STATISTICS // SPRING 2019

OVERVIEW

This document contains all of the problems that your group must complete through the duration of this class. Submit these problems in “Section Reports”. The content of each section report is detailed below.

After you hand in a section report, you may move onto the next. In the meantime, I will provide comments on your previous section report. You are then asked to rewrite the section report, addressing my comments. You may then hand in the next draft. This process is repeated until I mark it satisfactory. After all section reports in a chapter are marked satisfactory, you may submit section reports for the next chapter.

Each section report should be professional, neat, clear, and written in complete sentences as if you were writing a lab report. You may handwrite the section reports, but if your writing is not neat, at least ensure that the formatting is clean.

An example section report is posted at

<https://danielmichaelcicala.github.io/teaching/example-section-report.pdf>

Note: Many of the statistics used in this document are fabricated for the purpose of teaching statistical concepts.

CHAPTER 1

Chapter 1, Section 1.

- Define a *population* and a *sample*. What is the difference between the two? Create your own example to illustrate the difference.
- Describe the difference between descriptive statistics and inferential statistics. Invent three examples of a situation in which one would use descriptive statistics and another three in which one would use inferential. Justify each example.
- A (fake) study conducted at Norco Community College determined that student who attended class between 90% and 100% of the time usually received A's in the class. Many students who attended between 75% and 90% of the time received a B in the class. Many students who attended less than 75% of classes failed.
 - (a) What *variables* were considered under this study?
 - (b) What are the *data* in this study?
 - (c) Which kind of statistics was used: descriptive or inferential?
 - (d) What is the *population* under study?
 - (e) Was a *sample* collected? If so, from where?
 - (f) Based on the information given, comment on the relationship between the two variables.

Chapter 1, Section 2.

- What is the difference between a *quantitative* variable and *qualitative* variable? Create three examples of each type and justify why your example is correct.
- What is the difference between *discrete* variables and *continuous* variables? Create three examples of each type and justify why your example is correct.
- Imagine you are at the doctors and the nurse is taking your weight. As you step onto the scale, you notice that it only gives weights in hundredths of a pound. For example, the scale will round a weight of 155.246 up to 155.25 and a weight of 123.423 down to 123.42. Is weight a discrete variable? Justify your answer.
- All measuring devices necessarily round. Otherwise, they'd have to display infinitely many decimal places, which is absurd. Can we ever actually determine a piece of continuous data exactly? What is the *boundary* of a number? If I had a thermometer round temperatures to one decimal point, what is the boundary of 34.3°C? If I had a watch that measured seconds, but not fractions of a second, what is the boundary of 45 seconds?
- There are four levels of measurement described in this section. What are they called? Which level would letter grades given in a class fall under? IQ? Weight? Model of car? Describe what is meant by a *true zero*.

Chapter 1, Section 3.

- Define six sampling methods. Create a situation in which each method would be used. Give a negative aspect for each method and describe why it is negative.
- What is a *sampling error*? Can we always determine a sampling error exactly? Why or why not? Give an example of when we can determine a sampling error exactly.
- Define the population considered in the following situations
 - (a) Monmouth University reported that 57% of people with a college degree are homeowners.
 - (b) CNN found that 85% of federal inmates are serving less than 10 years
 - (c) Eating eggs in the morning may contribute to higher cholesterol
 - (d) Indoor cats live, on average, three years longer than outdoor cats.
- Identify the sampling method used
 - (a) The Dean of RCC wants feedback from faculty. So the Dean randomly selects 30 teachers to interview.
 - (b) Between 12:30pm and 12:45pm, every cashier at Target asks their customers whether they live in Riverside County.
 - (c) Every 100th Hersey Kiss made at the factory is weighed to ensure accuracy of the machine.
 - (d) To ensure student satisfaction, the principal at a local high school surveys ten freshmen, ten sophomores, 15 juniors, and 15 seniors about their experience.

CHAPTER 2

Chapter 2, Section 1.

- Write down each name in your group, first and last. Place all of the letters used in your names (count repetitions) into a categorical frequency distribution.
- Choose any sports team. Look up the roster and record the number of every player. Make two grouped frequency distributions for these numbers. One with class width of 5 and another with class width of 10.
- What is the point of class boundaries? How are they different from class limits?
- Look up the average high temperature (in Fahrenheit) of each capital city in North and South America in January of any year. Place the temperatures into a cumulative frequency distribution. Choose your own class width, and describe why you choose that for the class width. Are there any outliers? If yes, justify why you think it's an outlier. If not, say why not.
- List five reasons for constructing frequency distributions