

Midterm 1 Study Guide

Stat 1040-601

Ch 1 - 5

Chapter 1

1. List possible confounding variables in an experiment. Explain what a confounding variable is.
2. Define double blind experiment.
3. Define placebo.
4. What is a control group? Why is it important?
5. Give an example of an instance in which there is a correlation between two variables. Does that prove causation?
6. Give an example of two variables which correlate but neither causes the other. What is the confounding variable in this case?
7. Why is randomness important? Can you think of situations in which you control for a confounding variable using randomness?

Chapter 2

1. What is the difference between an experiment and an observational study?
2. Given some data, can you draw a histogram?
3. Identify variables as being either discrete or continuous.
4. Identify skew of different distributions.
5. Given some data, calculate the mean and median.
6. Given some data, calculate the Standard Deviation (SD), also written as σ .
7. Use the Empirical Rule (and remember its name!).

Problem 9. I have an uncle that grows corn on his property. He is interested in growing corn as tall as possible, and would like to try some new fertilizers. Before making any plans for an experiment, he first took a random sample of corn stalks on his property and measured their respective heights. The data he collected is given in the following table:

Range in plant size	Number of plants with height in this range
1-2 ft	40
2-3 ft	132
3-4 ft	351
4-5 ft	338
4-6 ft	145
6-7 ft	10

(a) Draw a histogram of the data.

(b) Calculate, **showing your work**, the mean height of the sample.

(c) Calculate, **showing your work**, the standard deviation height of the sample.

Problem 11. The following is an excerpt from the z -score table found in the back of your book.

z	Height	Area
0.95	25.41	65.79
1.55	12.00	87.89
1.80	7.90	92.81

Using the table, and **showing your work**, calculate:

(a) The percent of data which has z -score between -0.95 and 0.95 .

(b) The percent of data which has z -score between -1.55 and 1.80 .

(c) The percent of data which has z -score between -1.80 and 0.95 .