**OBJECTIVES: CHAPTER 9, *Samples (*Pages 232 – 256)**

* Understand the importance of a representative sample.
* Know the basic concepts and terminology of sampling.
* Realize that it is the size of the sample not its fraction of the larger population that determines the accuracy of the inferred statistics about the population.
* Understand the power of randomness when choosing a sample.
* Define SRS, simple random sampling.
* Be able to identify various sampling techniques: SRS, stratified samples, cluster samples, systematic samples, and multistage samples.
* Avoid sampling bias that can invalidate any conclusions that we may draw about the original population.
* Avoid nonresponse bias and response bias.
* Avoid poor sampling methods: voluntary response, convenience sampling, and nonrepresentative sampling frames that result in undercoverage.
* Look for biases in any survey others have done to determine the validity of their conclusions.
* Report on our sampling methods so that others can evaluate our conclusions and give us feedback.
* **Vocabulary:** population, sample, sample survey, bias, randomization, sample size, census, population parameter, statistic (sample statistic), representative sample, SRS (simple random sample), sampling frame, sampling variability, stratified random sample, cluster sample, multistage sample, systematic sample, pilot, voluntary response bias, convenience sample, undercoverage, nonresponse bias, and response bias.
* **Symbols:** mean (statistic), mean (parameter), standard deviation (statistic), standard deviation (parameter), proportion (statistic), proportion (parameter).

**MONDAY, 1.27.25**

**Discuss Chapter 9: Vocabulary and Concepts.**

**Chapter 9 Test.** You may refer to your notes when you take this test.

**Turn in these previously assigned problems before you leave class:** #25 - 33 and 39 on pages 253 – 255.

**Class Work/Homework:** Read and take notes on pages 257 – 263 from Chapter 10: *Observational Studies and Experiments*.

**WEDNESDAY, 1.29.25**

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| **Chapter 10:** Observational Studies and Experiments |

**OBJECTIVES:**

* Know the differences between an observational study, a sample survey, and an experiment. (These methods collect data in different ways and lead us to different conclusions.)
* Know that only well-designed experiments can let us reach cause-and-effect conclusions.
* Manipulate levels of treatment in an experiment to see if a factor that is being investigated produces differences in our response variable.
* Know and apply the principles of experimental design: control, randomize, and replicate.
* Establish the value of having a control group and of using blinding and placebo controls.
* Recognize the problems posed by the confounding variables in experiments and the lurking variables in obsevational studies.
* Design an observational study.
* Design an experiment.

**Vocabulary*:*** *observational studies, retrospective study, prospective study, experiment, random assignment, response variable, subjects or participants, experimental units, levels, treatment, control, randomize, replicate, The 3 Principles of Experimental Design*

**Class Work:**

* Define the words in the vocabulary list above.
* Write your own examples of the following: retrospective study, prospective study, and experiment.

**Homework**: #6 – 8 on page 280.

**FRIDAY, 1.31.25 B-DAY, NO CLASS**