**Chapter 5.1**

* **Observational Study vs. Experiment:**
* **Population:**
* **Sample:**
* **Census:**
* **Sampling:**
* The **design** of a sample refers to the \_\_\_\_\_\_\_ used to choose the \_\_\_\_\_\_ from the \_\_\_\_\_\_\_\_\_.
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can produce misleading conclusions!

**Examples of Poor Sampling Designs:**

1. **Voluntary Response Sample:**
   1. Ex:
2. **Convenience Sampling:**
   1. Ex:

When we use poor sampling methods, they often result in **bias**. A sampling method is **biased** when \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* We can avoid bias by choosing a sample by \_\_\_\_\_\_\_\_\_.

**Good Sampling Designs:**

A \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ is a sample chosen by chance. These include:

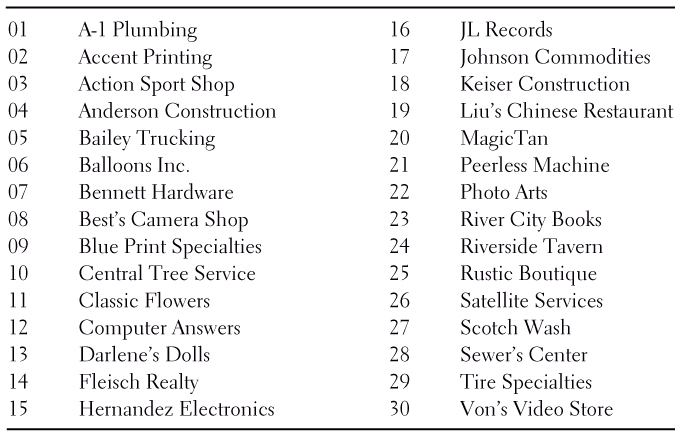
1. **Simple Random Sample ( ):**
   1. Ex:
   2. Using a table of Random Digits to choose a random sample:
      1. (1)

(2)

(3)

(4)

* + 1. Joan’s small accounting firm serves 30 business clients. Joan wants to interview a sample of 5 clients in detail to find ways to improve client satisfaction.
    2. Label
       - Be certain that all labels have the \_\_\_\_\_\_ number of \_\_\_\_\_!!!
       - Use the \_\_\_\_\_\_\_\_ possible labels!



* + 1. Stopping Rule:
    2. Table:

69051 64817 87174 09517 84534 06489 87201 97245

* + 1. ID Sample:

(2) **Systematic Random Sampling:**

Ex:

(3) **Stratified Random Sampling:**

Ex:

(4) **Cluster Sampling:**

Ex:

(5) **Multistage Sampling:**

Ex:

**Cautions about Sample Surveys (More sources of bias)**

* Undercoverage
* Nonresponse
* Response Bias
* \*These problems may or may not cause bias.\*
  + Bias will result if the people left out are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Sampling Error/Sampling Variability (it is not the same thing as bias!)

* **Sampling Error and Sampling Variability**
  + **Sampling Variability** is a statistical reality. If we selected 50 samples from a population, each one would be somewhat different!
  + **Sampling error:** Occurs because the sample rarely reflects the population perfectly.
    - Can’t be avoided…we just have to account for it in our calculations (example: margin of error).