

STATISTICS 402 - Assignment 3

Solution

Chapter 4

Exercise Set A, pg 109, # 1, 2 and 7

- #1 Response: Number of plants
Conditions: Two species of primrose
Material: 12 habitats
- #2 Response: Percentage of eggs that hatch
Conditions: Water temperature
Material: Batches of fish eggs
- #7 Response: Number of correctly remembered words
Conditions: Verbal/Visual information
Long term/Short term
Material: Human subjects

Exercise Set B, pg 117, # 8 and 10

- #8 In order to judge the value of dairy cows the average milk yield, in pounds per week would be more valid than the weight of the cow.
- #10 In order to compare the reproductive fitness of columbine plants the number of seeds produced would be more valid than the dry weight of the plant.

Exercise Set C, pgs 124 – 125, # 2 and 3

- #2 Mothers in the first group (two children) tend to be **younger** than mothers in the second group, and as you get **older** your blood pressure tends to go up. So for this data set, number of children is confounded with **age**.
- #3 a) If you looked at total number of deaths, the effect of climate would be confounded with **population**. States that were more **populous** would tend to have higher values.

b) Even death rate is not a good choice for a response, mainly because the effect of climate would still be confounded with **the age and health of the people in the state**. **Older people many with health issues, retire to Florida**.

Exercise Set D, pgs 127 – 128, # 1, 2 and 10

- #1
- a) A group of your friends would tend to be more uniform because you tend to choose friends based on common likes and dislikes.
 - b) A random sample should be more representative because you are not purposefully excluding or including any set of individuals.
 - c) A representative sample would be better so that the full range of student attitudes will be expressed by individuals chosen for the study.
- #2
- a) Chance errors are likely to be smaller with the first set of more uniform subjects.
 - b) Bias is likely to be smaller with the second set of less uniform subjects. More diversity would tend to avoid biasing one group relative to another.
- #3
- a) Chance errors are likely to be smaller with the second set of less representative subjects. Greater representation usually implies a broader range and thus larger differences in subjects. Less representation usually implies more consistent subjects.
 - b) Bias is likely to be smaller with the first set of more representative subjects. More diversity would tend to avoid biasing one group relative to another.