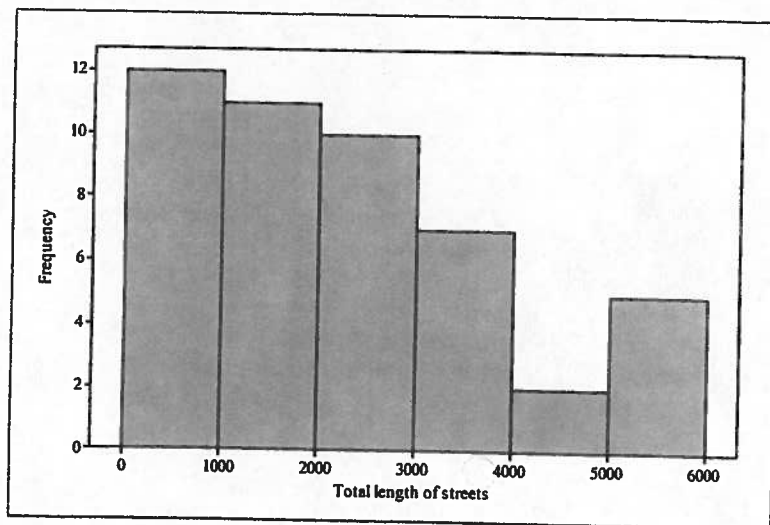


HW #1 - SOLUTIONS

- 25/206 b. A histogram of this data, using classes boundaries of 0, 1000, 2000, ..., 6000 is shown below. The proportion of subdivisions with total length less than 2000 is $(12+11)/47 = .489$, or 48.9%. Between 2000 and 4000, the proportion is $(10+7)/47 = .362$, or 36.2%. The histogram shows the same general shape as depicted by the stem-and-leaf in part (a).



34/34 | a, b

- For urban homes, $\bar{x} = 21.55$ EU/mg; for farm homes, $\bar{x} = 8.56$ EU/mg. The average endotoxin concentration in urban homes is more than double the average endotoxin concentration in farm homes.
- For urban homes, $\tilde{x} = 17.00$ EU/mg; for farm homes, $\tilde{x} = 8.90$ EU/mg. The median endotoxin concentration in urban homes is nearly double the median endotoxin concentration in farm homes. The mean and median endotoxin concentration for urban homes are so different because the few large values, especially the extreme value of 80.0, raise the mean but not the median.

43/45c

$$s^2 = .482$$

$$s = .694$$

18/1 No. Successful by comparison with what? To judge the effect of the new method, it would be better to test it in competition with the old method, using a control group.

18/4 No. (In fact, there were many new recruits to the program at the beginning of the second year, and these people turned out to be in worse shape than those who entered at the beginning of the first year.)

18/5 False. ~~Although~~ ^{Altogether} 1,400 out of 2,000 men are admitted - 45%; while 360 out of 1,100 women are admitted - 33%. This is because the women tend to apply to Department B, which is harder to get into.

18/6 To decide whether 3 out of 24,000 is a lot or a little, you have to compare it to something. For example, the national death rate for persons aged 65 to 74 is about 80 per 100,000 per week (all causes). So 3 out of 24,000 is LOW, NOT HIGH. Suspending the program on the basis of this evidence alone was unwarranted.

21/1. No. There is a comparison missing. It may be that all seeds of coast redwood trees, whether they germinate or not, have a lot of tannic acid.

22/4. It would have been better ~~to~~ not to let the teachers use their judgment. They might be tempted to put the poorer children in the treatment group. (In fact, this seemed to have happened. The children in the treatment group were significantly smaller in physical size than the controls.)

22/5. a) The factors of sex and age affect health, and the groups are studied separately to minimize confounding.

b) This is the wrong conclusion to draw. The study is observational, so it is necessary to think about what is causing what.

* The most likely interpretation is that many ~~students~~ people give up smoking only when their health deteriorates. These former smokers spoil the average of the group.

22/6. This study has no controls, so is inconclusive