Chapter 4-Measures of Central Tendency

4.1 Mode = 72; Median = 72, Mean = 70.18

4.3 Even without reading the passage, students are still getting about twice as many items correct as they would by chance. This suggests that the test, while testing reading comprehension, is also testing something else. I am not surprised at these results because most students can guess at better than chance levels.

> I think it is worth pointing out that these data suggest that the test measures something other than reading comprehension. Most students just say "they were able to guess intelligently," without realizing that this means that the test is somehow measuring more than just knowledge. This will become more obvious when we talk about correlation in Chapter 9.

4.5 The mean falls above the median.

4.7 Rats running a straight alley maze:
$$\Sigma X = \Sigma n_i X_i = 1 \times 18 + 0 \times 19 + 4 \times 20 + ... = 320;$$

$$\overline{X} = \frac{\Sigma X}{N} = \frac{320}{15} = 21.33$$

Median = 21

4.9 Multiplying by a constant (5):
    Original data   8   3   5   5   6   2   Mean = 4.833, Mode = 5, Median = 5
    Revised data   40 15 25 25 30 10   Mean = 24.17 = 5×4.833, Mode = 25, Median = 25

4.11 Measures of central tendency for ADDSC and GPA:
    ADDSC
        Mode = 50
        Median = 50
        Mean = 4629/88 = 52.6
    GPA
        Mode = 3.00
        Median = 2.635
        Mean = 216.15/88 = 2.46

4.13 The means are very nearly the same for the two conditions.

Stimulus = Mirror

Descriptive Statistics[a]

	N	Minimum	Maximum	Mean	Std. Deviation
RTsec	298	.81	4.44	1.6251	.63030
Valid N (listwise)	298				

a. Stimulus = Mirror

Stimulus = Same

Descriptive Statistics[a]

	N	Minimum	Maximum	Mean	Std. Deviation
RTsec	302	.72	4.42	1.6269	.64518
Valid N (listwise)	302				

a. Stimulus = Same

4.15 The only measure that is acceptable for nominal data is the mode, because the mode is the only one that does not depend on the relationships among the points on the scale.

4.17 Class attendance:
      Regular Attendees   Mean = 276.42; Median = 276
      Poor Attendees   Mean = 248.33; Median = 256
      The two groups were 20 points apart in terms of the medians, and about 25 points apart in terms of means. Clearly, those students who come to class do better.

> You might discuss the fact that since this is not a true experiment (we don't assign subjects to groups at random), we don't know exactly what it means. I would like to think that students did poorly because they didn't hear my brilliant presentations, but it could also be that poorer students in general are less likely to come to class. This is a discussion of confounding, and it is a good example to make the preference for random assignment apparent in a situation with which most students can identify.

4.19 This is an Internet activity in which there is no fixed answer.

4.21 This requires using the results of an internet search.

4.23 Trimmed mean

a)

```
data <- read.table("Fig4-1.dat", header = TRUE)
> attach(data)
> names(data)
[1] "NotRead"
> mean(NotRead)
[1] 46.57143
> mean(NotRead, trim = .1)
[1] 46.66667
```

b)

```
errors <- c(10, 10, 10, 15, 15, 20, 20, 20, 20, 25, 25, 26, 27, 30, 32, 37, 39, 42, 68,
77)
mean(errors)
mean(errors, trim = .1)
hist(errors)

mean = 28.4
trimmed mean = 25.187
```

c) The second distribution is very skewed, as you can see from the histogram.

4.25 The Male Optimists had a mean of 1.016, while the Male Pessimists had a mean of 0.945. This difference is very reliable.