Week 4 Estimation

`temphr`

The results of a study of body temperature and heart rate.

1. Find the sample mean $\bar{x}$ and the sample standard deviation s of the temperature variables.
2. Examine a histogram of scores on one of the temperature variables. Is the shape of the distribution reasonably close to normal?
3. Construct a 95% confidence interval for the true mean temperature.
4. The 'average' body temperature is popularly believed to be $37°C$. Does the 95% confidence interval based on this sample include this value? What conclusion do you draw from this?
5. Construct a 80% confidence interval for the true variance of the temperature.

`leadcopp`

A water company periodically tests its supply of drinking water for contaminants such as lead and copper. The file contains lead and copper levels in water specimens collected from a sample of 10 households.

1. Construct a 99% confidence interval for the mean lead level in the water supply, and likewise for the mean copper level in the water supply, and discuss your results.
2. Construct a 90% confidence interval for the variance of lead level in the water supply, and for variance of the copper level.

`bulimia`

Two samples of students participated in a psychology experiment. One sample consisted of 11 students known to suffer from the eating disorder bulimia, while the other sample consisted of 14 students with normal eating habits. Each student completed a questionnaire from which a *fear of negative evaluation* (FNE) score was produced (the higher the score, the greater the fear of negative evaluation).

1. Construct a 95% confidence interval for the mean FNE score of the population of bulimic students, and likewise for the population of healthy students.
2. Discuss your results.

`ammonia`

In 2001, the journal *Environmental Science and Technology* published a study on ammonia levels near the exit of a San Fransisco road tunnel. The file contains the daily ammonia concentrations (ppm) recorded on eight randomly selected days during the evening rush-hour in the summer of 1999.

Construct a 99% confidence interval for the true mean daily ammonia level nears the tunnel.