STATISTICS FALL 2005

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ASSIGNMENTS, PART 6.

Ex 6.1 On the webpage you find the data for the Cherokee voice onset times. Perform the analysis as shown in the book. Test whether the VOTs have changed. Create a boxplot. *Warning.* The data is different from that of the book, both in layout and in numbers, so do not assume you get the same result.

Ex 6.2 Suppose we have normal distribution with parameters μ and σ. Then the probability of error greater or equal to δ, the signifance level, and the power determine the number of observations needed. Thus we find a connection between 5 numbers. R provides a function `power.t.test` to compute one from the other four. Determine, for example, the number of experiments needed for $\sigma = 0.5$ so that the error is < 0.1, with type I error probability 0.01 and type II error probability 0.9. Give examples that show to compute each of the five numbers from the others. (I have given you one, you will have to supply the other four. Please make them different.) Why is μ irrelevant? *Warning.* Look carefully at the default values to avoid problems!

Ex 6.3 Here is a vector of numbers:

$$4, 5, 10, 15, 5, 31, 31, 10, 17, 39, 16, 13, 15, 45, 1, 41, 25, 29, 15, 11$$

Make a Q-Q-plot of this data. Does it look normally distributed? Assuming that it is, what are the mean and variance? (Give confidence intervals etc with your answer.)