

The material on Maximum Likelihood Estimation **is covered** on Exam 2. Because the HW on MLE is due immediately before the Exam, no additional review material is given.

The material on Exponential Families **is not covered** on Exam 2.

Applied Statistics Practice

The statistics questions on the exam will not be from the datasets in the drop-down menus in StatKey. However, I think you have had plenty of practice downloading datasets. So to make it quicker for you to practice all of this, I'm only asking questions about the data you can find in the drop-down menus.

This set of problems does not represent every type we covered that might be on the exam. We expect that you will have learned about the similarities and differences of the various types that your knowledge "carries over" from one type to another.

About the confidence intervals asked for below:

On the exam, you'll be asked for the length of the interval, but I don't think that's a good way for you to communicate about the intervals. So, when you discuss these problems, tell each other the actual intervals you found.

1. Find a 90% confidence interval for the population standard deviation of **the Atlanta commute times**.
2. For the **CellPhone Types** dataset, what proportion of the phones are Blackberry? (This question is a clue about where to find the data.)
3. How strong is the evidence that the population proportion of Blackberry users (see previous question) is greater than 5%? Give the p-value.
4. For the **BodyTemp50** dataset, find a 95% confidence interval for the population median.
5. Find a 90% confidence interval for the population mean for the population from which the **Manhattan apartment rents** data was drawn.
6. How strong is the evidence that the population means differ **Finger Taps on Caffeine** dataset? Give the p-value.
7. Consider the data needed to form a confidence interval for the population proportion of voters who support the ballot initiative in the **Voter Sentiment Data**.
 - a. How large is the margin of error for a 95% confidence interval from that dataset?
 - b. How large a sample would they need to get a margin of error of 0.04?
 - c. Did you have to make any choices to find that sample size? If so, what choice did you make and why?
8. How much does the pH of lake water affect the average amount of mercury in the water? Use the **Florida Lakes** dataset (which includes these variables) to find a 90% confidence interval for the slope coefficient for this relationship in the population represented by this data.
9. Is there an association between Gender of a person and their opinion on the statement "There is only one true love for each person" in the population represented by the **OneTrueLove** dataset? Give a p-value.
10. How strong is the evidence that there is a difference in the how many ants are attracted to the different types of sandwiches in the population represented by the **Sandwich Ants** dataset. Give a p-value.