

March 28, 2011
It is E370 Time!!!

☐ Announcements

- ✓ Your best practice for the lab exam are the activities you have worked on in lab. There is always another case to work on that you didn't do in lab, and the answers are posted for all cases.
- ✓ Manuel Gonzalez has permanently changed his office hours to Thursdays from 9:00 to 11:00 AM.
- ✓ The room for the Wednesday night review session has not yet been finalized.

☐ Some questions to get you thinking:

- ☐ Men seem more reluctant to flee the family nest, with 34% aged between 25 and 29 living with their parents. Suppose 45 randomly selected males aged between 25 and 29 were studied. What is the probability that no less than 20 or no more than 15 of them live with their parents?
- ☐ Family also plays a big role when times are tight as well, the survey suggests, with 63% males in the 25 to 29 year age group saying they would ask relatives or friends if they were in financial trouble. If the survey interviewed 640 males in the same age group, what is the margin of error of a 98% confidence interval for the proportion of males who would rely on someone for help or advice in financial trouble? Write the Excel command as part of the calculation.
- ☐ Fifteen percent of divers or snorkelers are victims of unprovoked shark attacks. Thirty-five diver certification cards are drawn at random. Of thirty-five divers, how many divers would one expect to be shark attack victims?
- ☐ Fifteen percent of divers or snorkelers are victims of unprovoked shark attacks. Thirty-five diver certification cards are drawn at random. What is the likelihood that the sample proportion of divers or snorkelers that was attacked by sharks is 0.2 or more?

- A size of Twix candy bars is advertised as weighing 2.13 ounces. However, the weight of the candy bars is normally distributed with a mean of 2.20 ounces and a standard deviation of 0.4 ounces. What would be the mean weight of 100 Twix candy bars if the Z-score was 1.7?

- What will we do today?
 - ✓ Solve some of the actual questions from our random variable practice sheet.

 - ✓ Calculate a confidence interval for the level of support for a proposal to track space aliens.

 - ✓ Interpret the interval correctly.

 - ✓ Ponder what the interpretation really means.

 - ✓ Use margins of error to estimate minimum sample size.

 - ✓ Consider what we want from a confidence interval.

 - ✓ Look at factors that affect the interval.

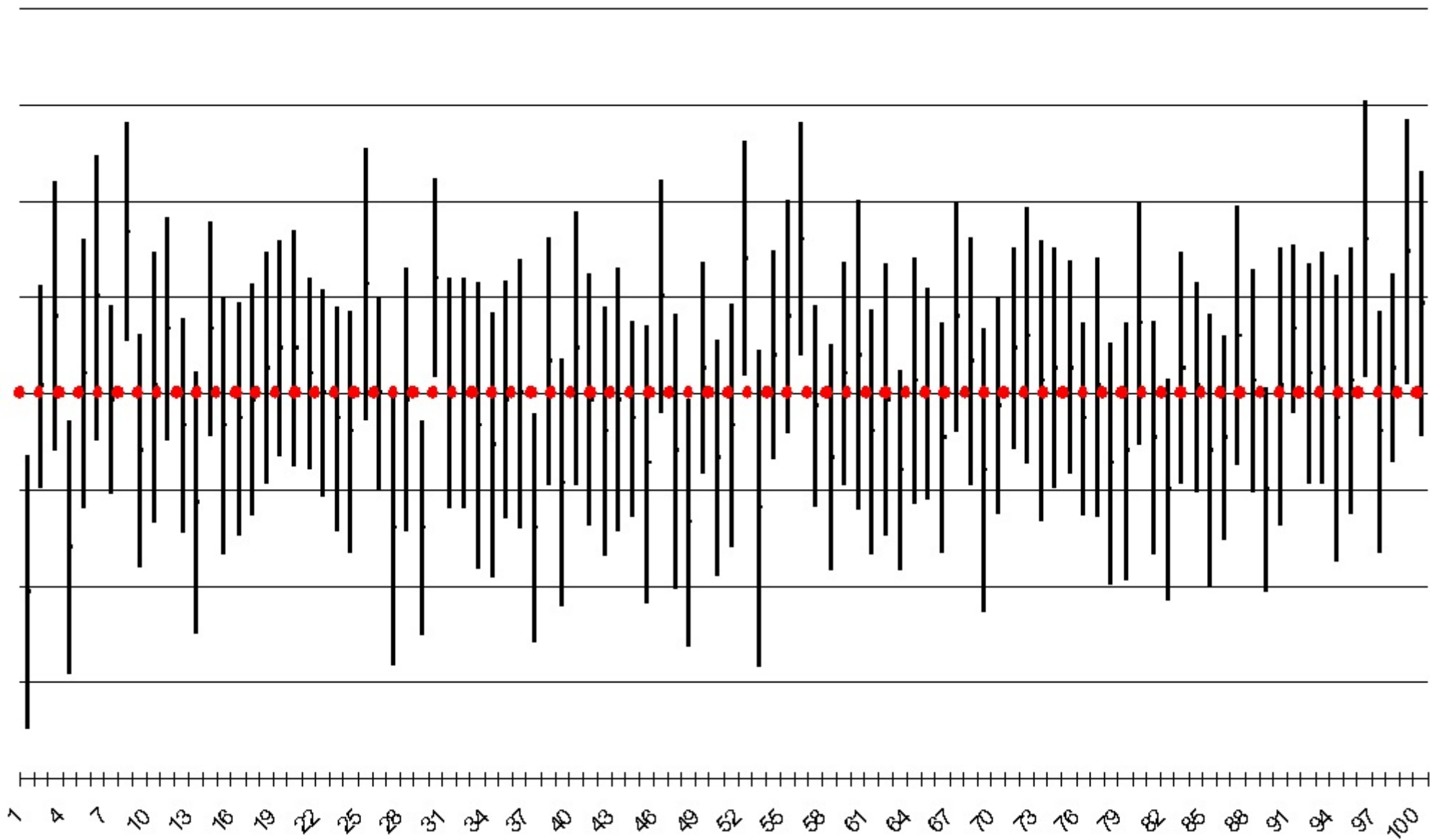
- In Denver, Colorado, there was a proposal to establish an Extraterrestrial Affairs Commission to track space aliens. "We hope to get the message out that technology from extraterrestrial origins has been withheld, and that it can cure cancer," says Jeff Peckman, the director of the ballot initiative. The Rocky Mountain Paranormal Research Society has called the ballot question an embarrassment.

- Mr. Peckman paid for his own polling. He questioned a random sample of 199 of the 3974 signatures he obtained to get the initiative on the ballot. Of those questioned, 102 were in favor of the initiative. Calculate a 90% confidence interval for the proportion of Denver residents in favor of this proposal.

- Interpret this interval.
 - ✓ Mr. Peckman is 90% confident that the proportion of all Denver residents in favor of the establishment of an Extraterrestrial Affairs Commission is 51% plus or minus 6%.

OR

- ✓ Mr. Peckman is 90% confident that the proportion of all Denver residents in favor of the establishment of an Extraterrestrial Affairs Commission is between 45% and 57%.
- Does it mean. . .
 - ✓ . . .that he is 90% sure a randomly selected adult Denver resident will be in favor of the initiative between 45 and 57% of the time?
 - ✓ . . .that he is 90% sure that the sample proportion of Denver residents in favor of the initiative is between 45 and 57%?
 - ✓ . . .that 90% of all samples of 199 Denver residents will have a proportion in favor of the initiative between 45 and 57%?
 - ✓ . . .that, on average, 90 times out of 100 a confidence interval calculated from different samples of the same size will be between 45 and 57%?
 - Take a look at this set of 100 90% confidence intervals calculated assuming that the true proportion of support is 51%.
 - What do you think it means to be 90% confident?
 - Talk it over with your team!



- ❑ Unfortunately, Mr. Peckman's prognostication was unsound. The actual proportion of Denver residents in favor of his initiative was 15%.
- ❑ Calculate a 90% confidence interval using the actual percentage.
- ❑ Compare the two intervals.
- ❑ What does this make you think about Mr. Peckman's sampling techniques?