

Exam 3/Chapter 7

The data for this exam can be found in the file *exam3data.xls*

1) Answer true or false to each of the following

- (a) ___ If $0.236 < p < 0.351$ is a 95% confidence interval for p then we can be 95% sure that $p < 0.23$.
- (b) ___ If $0.236 < p < 0.351$ is a 95% confidence interval for p then we can be 95% sure that $p < 0.25$.
- (c) ___ As the sample size goes up, the margin of error goes down.
- (d) ___ As the confidence level goes up, the margin of error goes down.
- (e) ___ Statistics has many, many, many real life applications.

2) At Community Hospital, the burn center is experimenting with a new plasma compress treatment. A random sample of $n = 316$ patients with minor burns received the plasma compress treatment. Of these patients it was found that 259 had no visible scars after treatment. (15 Pts)

- (a) Construct a 90% confidence interval for the population proportion of patients with minor burns who had no visible scars after the plasma compress treatment.

Another random sample of $n = 419$ patients with minor burns received no plasma treatment. For this group, it was found that 94 had no visible scars after treatment.

- (b) Construct a 90% confidence interval for the population proportion of patients with minor burns who had no visible scars after not receiving the plasma compress treatment.

- (c) Based on your answers to (a) and (b), does there appear to be a difference between getting the plasma treatment and not getting the plasma treatment?

3) In the file *exam3data.xls* on sheet *number 3* you will find the grades of 20 randomly selected students in Math 159-05 and 20 students in Math 159-06.

- (a) Find the sample mean and sample standard deviation for the grades from Math 159-05 and the sample mean and sample standard deviation for the grades from Math 159-06.

- (b) Construct a 95% confidence interval for the population mean of the grades in Math 159-05.

- (c) Construct a 95% confidence interval for the population mean of the grades in Math 159-06.

- (d) Can we conclude at the 95% level of confidence that there is a difference in the grades between the two sections?

4) According to the ABC/Washington Post Poll released October 7, 2007, Fred Thompson is receiving 17% of support from Republicans. The poll had 398 Republicans responding.

- (a) Find a 90% confidence interval for the population proportion of Republicans that support Fred Thompson.

- (b) Can we conclude with 90% confidence that Fred Thompson is receiving at least 13% support from Democrats? Why or why not?

- (c) Find a 95% confidence interval for the population proportion of Republicans that support Fred Thompson.

- (d) Can we conclude with 95% confidence that Fred Thompson is receiving at least 13% support from Democrats? Why or why not?

- (e) If we wanted to conduct another poll that is to have a margin of error of 1% with a 90% confidence level, how many Republicans would need to be polled?

5) The body mass index (BMI) was recorded for 40 randomly selected men were recorded and the results are stored in the file *exam3data.xls* on sheet *number 5*. Find a 99% confidence interval for the population standard deviation of the BMI measurements.

6) An organization wishes to investigate the average age of cars in use. If they want a margin of error of 1.5 years with a 95% confidence level, how many cars need to be selected for the survey? You may assume the standard deviation of cars in use is $\sigma = 6.4$ years.