Stat 104: Quantitative Methods for Economics
Homework 8: Due Sunday, November 5

Homework policy: <u>This homework is due by 5:00PM (EST)</u> <u>on the due date.</u> Homework is to be handed in via the course website in pdf format. You do not need to type the homework; there are many ways (scanner in the library or phone apps) to convert written homework into a pdf file. Ask the teaching staff if you need assistance.

Late homework will not be accepted. You are encouraged to discuss homework problems with other students (and with the instructor and TFs, of course), but you must write your final answer in your own words. Solutions prepared "in committee" or by copying someone else's paper are not acceptable.

- Please submit your homework in pdf format; this can be done in Word, or OpenOffice or via cellphone apps that will scan and turn into pdf.
- Please make your homework solutions legible by **bolding** or using circles to identify your solution.
- Since we are not printing out anything, use lots of s p a c e for your solutions, and put each answer on a different page <u>if</u> it makes the solution easier to read.
- Please make sure your submitted solutions are in numerical order [problem 1, problem 2 and so on].
- Please keep your computer output to a minimum and focus on the required answer. The easiest way to put your computer output into your homework is to cut and paste it into a Word file and use the font "courier new".
- Please keep in mind the course rules on Academic Honesty and Collaboration

1) Suppose we have captured, weighed, and released 25 sea otter pups in Monterey Bay. For this sample, the mean weight is 750 g and the sample standard deviation (s) is 100 g. Test the hypothesis that the mean weight for all sea otter pups in Monterey Bay is 800g, for setting $\alpha = 0.05$ (and using a two-tailed test).

2) Toastmasters International cites a report by Gallop Poll that 40% of Americans fear public speaking. A student believes that less than 40% of students at her school fear public speaking. She randomly surveys 361 schoolmates and finds that 135 report they fear public speaking. Conduct a hypothesis test to determine if the percent at her school is less than 40%.

3) The owner of a downtown parking lot suspects that the person she hired to run the lot is stealing some money. The receipts as provided by the employee indicate that the average number of cars parked in the lot is 125 per day and that, on average, each car is parked for 3.5 hours. In order to determine whether the employee is stealing, the owner watches the lot for five days. On those days the number of parked cars is 120, 130, 124, 127 and 128. For the 629 cars that the owner observed during the five days, the mean and standard deviation of the time spent on the lot were 3.6 and 0.4 hours, respectively. Can the owner conclude at the 5% level of significance that the employee is stealing? (Hint: Since there are two ways to steal, two tests should be performed).

4) Seven percent of mutual fund investors rate corporate stocks "very safe," 58% rate them "somewhat safe," 24% rate them "not very safe," 4% rate them "not at all safe," and 7% are "not sure." A BusinessWeek/Harris poll asked 529 mutual fund investors how they would rate corporate bonds on safety. The responses are as follows.

Safety Rating	Frequency
Very safe	48
Somewhat safe	323
Not very safe	79
Not at all safe	16
Not sure	63
Total	529

Do mutual fund investors' attitudes toward corporate bonds differ from their attitudes toward corporate stocks? Answer this question using the chi-square goodness of fit test.

5) The Wall Street Journal Subscriber Study showed data on the employment status of subscribers. Sample results corresponding to subscribers of the eastern and western editions are shown here.

	Region	
Employment Status	**Eastern Edition**	**Western Edition**
Full-time	1105	574
Part-time	31	15
Self-employed/consultant	229	186
Not employed	485	344

Using the Chi-Square test for association in R, test the hypothesis that employment status is independent of the region. What is your conclusion?