# Statistical Analysis Week 4 Homework

**Houston Restaurant**

Data were collected on the amount spent by 64 customers for lunch at a major Houston restaurant. These data are contained in excel file named Houston (in data folder). Based upon past studies, the population standard deviation is known to be $6.00. (This is population standard deviation known case).

| 1 | 1 point |
|---|---------|

At 95% confidence, what is the margin of error?

| 2 | 2 points |
|---|----------|

What are the confidence interval values at a 95% confidence level.

**Corporate Bonds**

A sample containing years to maturity and yield for 40 corporate bonds is contained in the excel file titled corporate bonds (in the data folder0. (This is a population standard deviation unknown case).

| 3 | 1 point |
|---|---------|

What is the sample mean years to maturity for corporate bonds?

**4**　3 points

What are the confidence interval values at a 99% confidence level.

_____

**5**　4 points

Suppose that 60 percent of 1,000 randomly selected U.S. adults say that they browse a social media site while at work. Based on this please build 99% confindence interval for the proportion of all U.S. adults who would say that they browse social media while at work. Based on this interval, is it reasonable to conclude that more than 50 percent of all U.S. adults would say browse social media while at work?  Please explain your rationale.

## Hypothesis Testing

Please write the null and alternative hypothesis for the following statements. Using the guide from the video for setting up the mathematical conversions of statements discussed in class.

**6** 1 point

The _____ hypothesis is not rejected unless there is sufficient sample evidence to do so.

○ Alternative

○ Null

**7** 1 point

The _____ hypothesis will be accepted only if there is convincing sample evidence that it is true.

○ Alternative

○ Null

**8** 1 point

The null hypothesis is a statement that will be accepted only if there is convincing sample evidence that it is true.

○ True

○ False

**9** 1 point

Based on a random sample of 25 units of product X, the average weight is 102 lbs. and the sample standard deviation is 10 lbs. We would like to decide whether there is enough evidence to establish that the average weight for the population of product X is greater than 100 lbs. Assume the population is normally distributed. One way of expressing the null hypothesis is $H_0$: $\mu = 100$.

○ True

○ False

**10**  1 point

Based on a random sample of 25 units of product X, the average weight is 102 lbs. and the sample standard deviation is 10 lbs. We would like to decide if there is enough evidence to establish that the average weight for the population of product X is greater than 100 lbs. The alternative hypothesis can be written as $H_A: \mu > 100$.
(Assume the population is normally distributed.)

○ True

○ False

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**11**  2 points

Please write the null and alternative hypothesis for the following statement (you can use the insert math equation prompt to make it easier).
An advertiser for a popular weight loss clinic suggests that participants in their new diet program lose on average more than 10 pounds. A competitor wants to determine if these claims are valid.

**12**    2 points

Please write the null and alternative hypothesis for the following statement (you can use the insert math equation butto to make it easier) A research analysts disputes a trade group's prediction that back-to-school spending will average $606.40 per family this year. The researcher believes that average back-to-school spending will significantly differ from this amount.