

Name: _____
MAT 222
Spring 2019
Excel Lab 1: Ch.5 & 6

*“When life gives you lemons, steal your
grandma’s jewelry and go clubbin’.”*
– Jean-Ralphio, *Parks and Recreation*

Suppose a group of Facebook™(FB) executives are considering charging a monthly subscription cost to use FB advertisement free. The executives believe that they average FB user will pay \$5.00/month (or more) for an ads-free version of FB. They hire an advertising and marketing company to investigate how much a typical FB user would pay per month for this version of FB. The data the agency collected is found in ‘Facebook Costs’. From previous studies, the agency knows that the standard deviation in price that people will pay per month for ads-free social media websites is \$5.35 (see A6). Based on the data provided by the agency, answer the following questions.

Problem 1: Complete the ‘Yearly Cost (\$)’ column (cells B9–B62). Be sure to provide a print off.

Problem 2: If the advertising and marketing company had asked, “How much would you pay per year for an ads-free version of Facebook™?”, would the participants’ response be the same as you found in Problem 1? Explain.

Problem 3: Complete the following:

Number of People Surveyed: _____

Average Surveyed Monthly Cost: _____

Sample Standard Deviation of Surveyed Monthly Cost: _____

Problem 4: What type of distribution does the average monthly cost the advertising and marketing company found come from? Justify your answer. What is the standard deviation of this distribution? Do you know the mean of this distribution?

Problem 5: Use Excel to calculate a 97% confidence interval for the mean, μ , the average amount that people would be willing to pay for an ad-free version of Facebook™.

Lower Amount: _____

Higher Amount: _____

Problem 6: Give a verbal statement of the answer for the previous problem, including the confidence level. What do you need to be sure your statement is true?

Problem 7: Perform an appropriate hypothesis (using $\alpha = 0.01$) test to determine if Facebook™ ‘should’ implement a monthly ad-free version, given that they want to charge \$5.00/month. Be sure to state the H_0 , H_a , z -statistic, and p -value, and give the conclusion in words.

Problem 8: Suppose the executives wanted to know if the average amount that people would be willing to pay was at ‘the next pay level’ of \$10.00/month for the service. What is the power, using $\alpha = 0.01$ and $H_0 : \mu = 5$, of this test to be able to detect if this is the case? [You do not need to use Excel for this if you so choose.]