

Activity 6-1

Show all your work

Name: _____
Number: _____
Signature: _____
Score: ____/10

State all Excel functions used.

Problem 1: For each of the following situations, state whether the parameter of interest is a mean (μ) or a proportion (p).

- A poll shows that 73% of Canadians worry a lot about federal spending and the budget deficit during the pandemic.
- A survey reports that Global TV news has shown a 21% increase in revenue within a two-year period while newspaper revenues decreased by 55% during the same time period.
- In a CapU survey, 100 students are asked what percentage of their total weekly spending is on beverages.
- In a survey conducted in Metrotown, smart phone users are asked whether or not they use a web-based taxi service.
- In a survey conducted in Metrotown, smart phone users are asked how many times they used a web-based taxi service over the last year.

p, μ, μ, p, μ .

Score: /5

Problem 2: A poll conducted in 2013 found that 52% of American adult Twitter users get at least some news on Twitter. The standard error for this estimate was 2.4%, and a normal distribution may be used to model the sample proportion. Construct a 99% confidence interval for the fraction of American adult Twitter users who get some news on Twitter, and interpret the confidence interval in context.

$z^* = \text{NORM.S.INV}(0.995) \approx 2.575829303$, using standard error of 2.4%, we get that the lower limit of the CI is $52\% - 2.575829303 \times 2.4\% \approx 45.818\%$ while the upper limit of the CI is $52\% + 2.575829303 \times 2.4\% \approx 58.182\%$.

We are 99% confident that the proportion of American adult Twitter users getting at least some news on Twitter is between 45.8% and 58.2%.

Score: /3

Problem 3: Write the null and alternative hypotheses in words and using symbols for the following situation.

Since 2008, chain restaurants in California have been required to display calorie counts of each menu item. Prior to menus displaying calorie counts, the average calorie intake of diners at a restaurant was 1100 calories. After calorie counts started to be displayed on menus, a nutritionist collected data on the number of calories consumed at this restaurant from a random sample of diners. Do these data provide convincing evidence of a difference in the average calorie intake of diners at this restaurant?

Let the population average intake of calories in chain restaurants in California be μ calories. Let H_0 denote the null hypothesis. Let H_1 or H_A denote the alternative hypothesis. $H_0 : \mu = 1100$ calories, and $H_1 : \mu \neq 1100$ calories.

Score: /2

/10
