

Interactive Reading Assignment Guide

Section 9.2

Introduction

Screen 1: Degrees of freedom is just another way to say 1 less than the sample size. $df = n-1$

Screen 2: To make a normal probability plot in StatCrunch use Graph > QQ Plot. If the correlation statistic is greater than the critical value we can conclude that the sample comes from a population that is normally distributed. [Section 7.3]

Screen 3: This is a review problem about the sampling distribution of the sample mean. [Section 8.1]

Screen 4: List of Objectives

Objective 1 – Obtain a Point Estimate for the Population Mean (μ)

Screen 1: The sample mean (\bar{x}) is the point estimate for the population mean (μ).

Screen 2: Example 1 shows how to find the point estimate for μ . Be sure to watch the StatCrunch video solution.

Screen 3: This exercise is based on Example 1 on the previous screen. Use StatCrunch.

Objective 2 – State Properties of Student's t-distribution

Screen 1: Skim through this explanation about why we typically do not know the population standard deviation.

Screen 2: Watch the video to learn about the Student t-distribution. The t-distribution is a “family of curves.” That means that there is more than one t-curve, where as there is only one z-curve.

Screen 3: Definition of Student's t-distribution.

Screen 4: This screen summarizes the properties of the t-distribution. Pay attention to how the t-distribution is similar to and differs from the z-distribution.

Screen 5: In this exercise, the smaller sample size has the most area in the tails ... then the larger sample size ... then the z-distribution. **You only get one attempt at this question.**

Objective 3 – Determine t-values

Screen 1: You can breeze through this explanation, as we can use StatCrunch to find t-values.

Screen 2: Example 2 shows how to find t-values. Watch the StatCrunch video to learn how to use StatCrunch to find t-values. (That way you won't need to use the table.)

Screen 3: This exercise is based on Example 2 on the previous screen.

In part d, subtract the level of confidence from 1 and then divide by 2 to find out the area in each tail. Find the t-value for the right tail.

Screen 4: This screen discusses what degrees of freedom to use if your sample size is not on the table. If you are using StatCrunch, you will not need this information.

Objective 4 – Construct and Interpret a Confidence Interval for a Population Mean (μ)

Screen 1: This screen displays the definition and background information of a confidence interval for μ .

Screen 2: This screen describes why it is necessary to check for outliers.

Screen 3: Example 3 shows how to create a confidence interval for μ . Watch the by hand video so you are aware of the details behind the scenes. **BE SURE TO WATCH THE STATCRUNCH VIDEO SOLUTION.**

Screen 4: This screen discusses the difference between a t-value and a z-value.

Screen 5: This exercise is based on Example 3 on Screen 3. Use StatCrunch for part b. For part c, remember that sample size affects the margin of error.

Screen 6: Another confidence interval problem – this one uses “summary” or “grouped data”, not “raw data”.

Screen 7: This activity illustrates the effects finding a confidence interval using a small sample size from a skewed distribution. What you should see: If the population is skewed and you use a small sample size, then the proportion of intervals that capture the true parameter is less than the level of confidence.

Screen 8: This problem is based on the previous activity. Hint: Part b: The proportion will approach 0.95 as n increases. **You only get one attempt at this problem.**

Screen 9: Skip

Objective 5 – Determine the Sample Size Necessary for Estimating a Population Mean within a Given Margin of Error

Screen 1: This screen displays the formula use to calculate the sample size. If you are not going to use StatCrunch, then you will need these formulas.

Screen 2: Example 4 shows how to find the sample size. Watch the StatCrunch video solution!
NOTE: The menus in StatCrunch have changed slightly since the videos were recorded. Menu Selection: Stats > Z-statistics > One sample > Width/Sample size

Screen 3: This exercise is based on Example 4 on the previous screen. Be sure to use StatCrunch.

Screen 4: End of Section