Population Mean (Unknown Variance)

1. Use the following sample means and sample standard deviations from the class survey to form 95% confidence intervals the population mean for each variable.

   (a) SAT score: $\bar{x} = 2160$, $s = 140$, $n = 57$.

   (b) Hours spent studying each week: $\bar{x} = 16.6$, $s = 10.1$, $n = 60$.

   (c) Hours spent working each week (if employed): $\bar{x} = 10.3$, $s = 3.6$, $n = 13$

2. In problem 1, what are the relevant populations?

3. In problem 1, what assumptions do we need for the confidence intervals to be valid? How could we check these assumptions?

Population Proportion

4. Use the following data from the class survey to estimate the relevant population proportions. Give 95% confidence intervals for these proportions.

   (a) Gender: 26 Female, 38 Male.

   (b) Employed: 51 No, 13 Yes.

   (c) Finance Major: 32 Yes, 31 No.

5. In problem 4, what are the relevant populations?

6. In problem 4, what assumptions do we need for the confidence intervals to be valid? How could we check these assumptions?

Additional Confidence Interval Problems

7. The *Minneapolis Star Tribune* (August 12, 2008) reported that 73% of Americans say that Starbucks coffee is overpriced. The source of this information was a national telephone survey of 1,000 American adults conducted by Rasmussen Reports. Find and interpret a 95% confidence interval for the population proportion.

8. Researchers recorded expenses per full-time equivalent employee for each in a sample of 1,751 army hospitals. The sample yielded the following summary statistics: $\bar{x} = \$6,563$ and $s = \$2,484$. Estimate the mean expenses per full-time equivalent employee of all U.S. army hospitals using a 90% confidence interval.

9. Each year, construction contractors and equipment distributors from across the United States participate in a survey called the CIT Construction Industry Forecast. Recently, 900 contractors were interviewed for the survey. Of these, 414 indicated that they either already have a company website or plan to have a company website by the end of the year.

   (a) Estimate the proportion of contractors in the United States who have a company website or who will have one by the end of the year.

   (b) Find an interval estimate for the proportion, using a 95% confidence interval.

Standard Errors

10. For each of the problems on this handout, compute the Standard Error of the estimate of the population parameter.