

Unit 5 In-Class review:

- (1) Suppose that 84% of a sample of 125 nurses working 7 AM to 3 PM shifts in city hospitals express positive job satisfaction, while only 72% of a sample of 150 nurses on 11 PM to 7 AM shifts express similar fulfillment. Establish a 90% confidence interval estimate for the difference and interpret.
- (2) A doctor thinks that less than 30 percent of all persons exposed to a certain amount of radiation will feel any ill effects. Only 9 of the 57 people exposed to such radiation felt any ill effects. Test the claim at the 0.05 level of significance.
- (3) Suppose in an election campaign a telephone poll of 800 registered voters under age 30 shows 460 in favor of the Republican candidate. However a second poll shows only 520 of 1000 registered voters over age 30 favored the Republican candidate. At the 1% significance level, is there sufficient evidence that the candidate's popularity is different between the two age groups?
- (4) In a random sample of machine parts, 18 out of 225 were found to have been damaged in shipment. Establish a 95% confidence interval estimate for the proportion of machine parts that are damaged in shipment.
- (5) Go back to Problem #2 and answer the following questions:
  - (a) Interpret your p-value in context of the problem
  - (b) What would a Type I error be in context?
  - (c) What would a Type II error be in context?
  - (d) What would Power be in context?
- (6) Go back to Problem #1. Using your interval, does there appear to be a difference between the % of nurses expressing positive job satisfaction during each shift?
- (7) Going back to problem #4: We want to estimate the true percent of defective machine parts with a 3% margin of error and 92% confidence. How many machine parts would we have to sample? Use the value sample proportion given in Problem #4 as a good estimate for the true proportion.
- (8) I want to estimate the number of people who will respond "YES" to my survey question. I want a margin of error of 6% with 99% confidence. How many people do I need to sample?
- (9) I have a confidence interval that is (0.42, 0.57).
  - (a) What is my sample proportion?
  - (b) What is my margin of error?
  - (c) If my sample size was 60, what is my level of confidence?
- (10) Going back to Problem #4, explain what 95% confidence means in context.

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