Statistics for Business and Economics
BUAD 202-7,8
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HW4

1. A salesman claims that more than one-fourth of all customers buy his brand vacuum cleaner. If we wanted to test this claim, what would be our null and alternative hypotheses?

2. To test a claim that the mean body temperature of adult humans is NOT 98.6 degrees, a random sample of 106 adults is taken. Based upon this sample, a p value of 0.045 is computed. If a significance level of 0.05 is used, what would be the conclusion about the null hypothesis and what would be the final wording about the claim (i.e. the nontechnical restatement)?

3. A recent sample of 23 student vehicles found that the mean age of the vehicles was 3.5 years with a standard deviation of 1.9 years. If you wanted to use this data to test the claim, at the 0.1 significance level, that the mean age of student vehicles is less than 4 years, what would be your critical value? What would be the decision test in this case? Assume that the ages of student vehicles are normally distributed.

4. In A Sports Illustrated for Kids survey of 603 children, 43% preferred McDonald's for fast food. An advertising executive claims that McDonald's is preferred by half of all children. Test this claim at the 0.05 significance level.

5. What is the p value for your test statistic found in #4?

6. A recent survey of 35 statistics students found that they spent a mean of 6.3 hours studying per week with a standard deviation of 2.1 hours. Use this sample data to test the claim that statistics students spend less than 7 hours studying per week. Use a significance level of 0.01.

7. From midterm 1 we had two versions of the test. For the first version, 37 students took the test; the mean score was 64.4 and the standard deviation was 7.0. For the second version, 38 students took the test; the mean score was 63.9 and the standard deviation was 6.8. We want to test if one format of the exam was harder than the other at a 5% of significance.
(a) What are the populations?
(b) What are the null and alternative hypotheses?
(c) What are the samples?
(d) What is the test statistic?
(e) What is the rejection region?
(f) What is the result of the test?

8. Find a 95% confidence interval for the difference in mean score between the two midterm versions from question #7

9. In the following situations, are the samples matched or independent?
(a) You want to compare the performances of two restaurants. You measure the weekly profits of both restaurants for 10 consecutive weeks

(b) You want to compare expected starting salaries between males and females using the class survey data.
(c) Your company can use one of two possible advertisements. You show one ad to one group of people, and ask them to rate the likelihood of buying your product after seeing the ad. You show the second ad to a second group of people, and ask them the same question.
(d) Your company can use one of two possible advertisements. You show both ads to a group of people, and ask them to rate their opinions of both ads.