Section 8.3

Use the traditional method of hypothesis testing to test the given claim.

1. In a recent poll of 750 randomly selected adults, 588 said that it is morally wrong to not report all income on tax returns. Use a 0.05 significance level to test the claim that 75% of adults say that it is morally wrong to not report all income on tax returns.

2. In one study of smokers who tried to quit smoking with nicotine patch therapy, 44 were smoking one year after the treatment and 39 were not smoking one year after the treatment. Use a 0.10 significance level to test the claim that among smokers who try to quit with nicotine patch therapy, the majority are smoking a year after the treatment.

Follow-up question: Do the results of the hypothesis test suggest that the nicotine patch therapy is ineffective? Explain.

Use the P-Value method of hypothesis testing to test the given claim.

3. In a study of 420,002 cell phone users, 156 subjects developed brain cancer. Test the claim that cell phone users develop brain cancer at a rate that is different from the rate of 0.0340% for people who do not use cell phones. Use a 0.005 significance level.

FOLLOW UP QUESTION: Should cell phone users be worried that their phones are increasing their risk of developing brain cancer? Explain.

4. When 109,857 arrests for federal offenses were randomly selected, it was found that 32,447 of them were drug offenses. Test the claim that at least 29% of federal crimes are for drug offenses. Use a 0.05 significance level.
Section 8.4

Use the traditional method of hypothesis testing to test the given claim.

1. A simple random sample of 50 adults is obtained, and each person’s red blood cell count (in cells per microliter) is measured. The sample mean is 5.23. The population standard deviation for red blood cell counts is 0.54. Use a 0.01 significance level to test the claim that the sample is from a population with a mean less than 5.4, which is a value often used for the upper limit of the range of normal values. What do the results suggest about the sample group?

2. Data Set 2 in Appendix B includes a sample of 106 body temperatures with a mean of 98.20°F. Assume that σ is known to be 0.62°F. Use a 0.05 significance level to test the claim that the mean body temperature of the population is equal to 98.6°F, as is commonly believed. Is there sufficient evidence to conclude that the common belief is wrong?

Use the P-Value method of hypothesis testing to test the given claim.

3. The health of the bear population in Yellowstone National Park is monitored by periodic measurements taken from anesthetized bears. A sample of 54 bears has a mean weight of 182.9 lb. Assuming that σ is known to be 121.8 lb, use a 0.10 significance level to test the claim that the population mean of all such bear weights is greater than 150 lb.

4. A simple random sample of 36 cans of regular Coke has a mean volume of 12.19 oz. Assume that the standard deviation of all cans of regular Coke is 0.11 oz. Use a 0.01 significance level to test the claim that cans of regular Coke have volumes with a mean of 12oz, as stated on the label. If there is a difference, is it substantial?
Section 8.5

Use the traditional method of hypothesis testing to test the given claim.

1. When 40 people use the Weight Watchers diet for one year, their mean weight loss was 3.0 lb and the standard deviation was 4.9 lb. Use a 0.01 significance level to test the claim that the mean weight loss is greater than 0 lb. Based on these results, does the diet appear to be effective? Does the diet appear to have practical significance?

2. In an analysis investigating the usefulness of pennies, the cents portions of 100 randomly selected credit card charges are recorded. The sample has a mean of 47.6 cents and a standard deviation of 33.5 cents. If the amounts from 0 cents to 99 cents are all equally likely, the mean is expected to be 49.5 cents. Use a 0.05 significance level to test the claim that the sample is from a population with a mean equal to 49.5 cents.

Use the P-Value method of hypothesis testing to test the given claim.

3. According to the manufacturer, the normal output voltage is 120 volts for a certain UPS. The 40 measured voltage amounts have a mean of 123.59 volts and a standard deviation of 0.31 volts. Use a 0.05 significance level to test the claim that the sample is from a population with a mean equal to 120 volts.

4. A simple random sample of 40 recorded speeds (in mph) is obtained from cars traveling on a section of Highway 405 in Los Angeles. The sample has a mean of 68.4 mph and a standard deviation of 5.7 mph. Use a 0.01 significance level to test the claim that the mean speed of all cars is greater than the posted speed limit of 65 mph.