

Assignment

Write

Describe how you determine whether two sample proportions or means are statistically significant.

Remember

The term statistically significant is used to indicate that a result is very unlikely to have occurred by chance. Typically, a result that is more than 2 standard deviations from the mean, or outside a 95% confidence interval, is considered statistically significant.

Practice

- Legislators have been trying to increase public support for the construction of a new bridge in their state's largest city through a broad advertising campaign. Prior to the advertising campaign, 539 out of 1400 people that were polled said they supported the bridge project. Following the advertising campaign, 561 out of 1100 people that were polled said they supported the project.
 - Determine the sample proportion of people who support the new bridge for each poll.
 - Determine whether the results of the 2 polls are statistically significant. Use a 95% confidence interval when making your calculations.
 - Based on your findings, what can you conclude about the impact of the ad campaign?
- A random sample of 150 qualifying speeds is collected from data on stock car races. The mean qualifying speed is 191.8 miles per hour with a standard deviation of 2.1 miles per hour.
 - Determine a range of values for the population mean using a 95% confidence interval.
 - Burn Rubber Tires introduces a new tire they claim is revolutionary. They guarantee these tires will increase the speeds of stock cars. A random sample of 150 qualifying speeds of cars using these new tires is collected. The average qualifying speed of cars with these tires is 192.08 miles per hour. Are the results of the sample using the new tires statistically significant? What can you conclude about the effectiveness of the new tires? Explain your reasoning.
- On average, 48% of all babies born in the United States are girls. In the past year, 473 of the 860 babies born in one particular county were girls. Determine whether the birth rate for girls in this county is statistically significant. Use a 95% confidence interval when making your calculations.

Stretch

- A recent study of the blood pressure of employees in a particular company found the rate of employees who have high blood pressure had a 95% confidence interval of 0.4598 to 0.4816.
 - What was the sample proportion?
 - What was the standard deviation from the sample?
 - If 480 employees in the sample had high blood pressure, how many employees were in the sample?
 - The population proportion of employees in the company with high blood pressure is 0.46. Are the results of the sample of employees statistically significant? Explain your reasoning.

Review

1. A small town of 15,680 adults is thinking of building a community recreation center with a pool. Of the 1200 adults surveyed by the town, 445 said they were in favor of a community recreation center.
 - a. Determine the sample proportion that represents the percent of adults in the town that favor building a community recreation center. Round your answer to the nearest tenth of a percent.
 - b. Determine a 95% confidence interval for the population proportion using the sample proportion. Round your answer to the nearest tenth of a percent.
2. The speed of cars on a stretch of highway is normally distributed. The average speed of a car is 65 miles per hour with a standard deviation of 6 miles per hour.
 - a. What percent of cars are driving less than 70 miles per hour?
 - b. What percent of cars are driving between 57 and 62 miles per hour?
 - c. Determine the speed of a car in the 65th percentile.
3. Write an equation of a sine curve with amplitude 2, period $\frac{\pi}{4}$, phase shift 3, and vertical shift 6.