

Experimental Study/Design

1. In order to determine if treatment X is successful in treating vertigo, a research study was conducted. From a large population of people who experience vertigo often, at least once per day, 200 participants were selected at random. Half of the participants were randomly assigned to treatment X, while the other half received a placebo, which had no physiological effects. The study showed that participants who received treatment X reported significantly reduced instances of vertigo compared to participants who received the placebo. Based on the design and results of the study, which of the following is an appropriate conclusion?
 - A) Treatment X improves symptoms of vertigo better than all other treatments on the market.
 - B) Treatment X is likely to improve symptoms of vertigo for people who suffer from vertigo often.
 - C) Treatment X will improve the symptoms of vertigo for anyone who takes it.
 - D) Treatment X will substantially decrease the percentage of people who experience vertigo.

2. A polling agency recently surveyed 1,000 adults who were selected at random in San Francisco and asked each of the adults, “Are you satisfied with the parking situation in your city?” Of those surveyed, 61 percent responded that they were satisfied with the parking situation. Based on the results of the survey, which of the following statements must be true?
 - I. Of all adults in the city, 61 percent are satisfied with the parking situation.
 - II. If another 1,000 adults selected at random from the city were surveyed, 61 percent would report that they are satisfied with the parking situation.
 - III. If 1,000 adults selected at random from a different city were surveyed, 61 percent would report that they are satisfied with the parking situation in their city.
 - A) None
 - B) II only
 - C) I and III
 - D) I and II

3. The student body at a tech-magnet high school decided to revolutionize the process to vote for school president. Rather than cast paper ballots, students could vote anonymously on the school's website, or text their vote to a school-owned account. The candidate receiving more than 50% of the student's votes won. Approximately 40% of students voted, and 60% of the votes were cast via text. Candidate A earned 75% of the votes cast using website submission. Based on this information, which of the following is an accurate conclusion?
- A) If all students had voted, Candidate A would have won.
 - B) Students voting by text were likely younger than students voting on the website.
 - C) If all students who voted had voted by website instead of text, Candidate A would have won.
 - D) Students voting on the website were more likely to prefer Candidate A than those who voted by text.
4. A psychology research student was interested in seeing if a relationship existed between the number of tattoos a person has and his or her self-esteem rating. The student handed out a survey to 100 students in a lower-division psychology class. The survey had randomized questions, some of which pertained to her study, while other questions were unrelated. After collecting the survey, the researcher found no significant relationship between the number of tattoos a person has and his or her self-esteem ratings. Based on this information, which of the following is an accurate conclusion?
- A) If the survey had been distributed to students in a lower division art course, it's more likely that a relationship would have existed.
 - B) If the researcher distributed the survey to a larger sample of citizens within the community, she would find that no relationship exists between number of tattoos and self-esteem ratings.
 - C) Distributing the survey to a more randomized sample of students may have produced more accurate results.
 - D) Creating a study with questions only pertaining to the researcher's hypothesis would have produced more accurate results.

5. Ski Patrol at Brundage Mountain have noticed that in heavier snow years, more people ski out-of-bounds and end up calling ski patrol for rescue. In an effort to remediate the problem, the ski patrol installs two new types of signage. On the front side of the mountain, electric signs are installed that melt any snow that may cover them in heavy snowfalls. On the back side of the mountain, two-tiered fencing is installed to hold ropes at a standard height and an elevated height for heavy snowfalls. At the end of the year, patrol notes a 20% decrease in out-of-bounds rescue calls on the front side, and a 32% decrease in out-of-bounds rescue calls on the backside. Based on this information, which of the following is an accurate conclusion?
- A) The two-tier rope system was more effective in reducing the number of out-of-bounds rescue calls than the electric signs.
 - B) If both types of signage were installed next year, there would be a 52% decrease in the number of out-of-bounds rescue calls compared to last year.
 - C) Because the two-tier rope system produces better results than the electric signage, more ski resorts next year will install the two-tier rope system.
 - D) The electric signs on the front side proved ineffective compared to the two-tier rope system.
6. Leslie teaches yoga to senior citizens. Leslie's students range from 60 to 75 years old. At the beginning of the program, Leslie tests the athlete's flexibility and monitors flexibility over the course of the program. At the end of the program, Leslie finds that her yogis have improved their flexibility by an average of 12%. She would like to make a flyer with this statistic for future classes. Which of the following statements is accurate?
- A) "I can help any yogi increase his or her flexibility an average of 12 percent!"
 - B) "Seniors have improved flexibility by 12 percent through my yoga classes!"
 - C) "Any senior can improve flexibility by 12 percent or more through my yoga classes!"
 - D) "On average, my senior yogis have experienced a 12 percent increase in overall flexibility!"