Elementary Statistics MATH 108 Spring 2024

Quiz 5

Name: _____

Show your work for each problem; credit will be given for correct answers and showing the correct steps to solving each problem.

Question 1: Gambling is an issue of great concern to those involved in intercollegiate athletics. Because of this, the NCAA surveyed student-athletes concerning their gambling-related behaviors. There were 5594 Division 1 male athletes in the survey. Of these, 3547 reported participation in some gambling behavior. This included playing cards, betting on games of skill, buying lottery tickets, and betting on sports.

Based on this survey, what is the 95% confidence interval for the proportion of Division 1 male athletes in the NCAA participate in gambling behavior? (Keep your answer as a decimal rounded to two decimal places.)

Question 2: Gambling is an issue of great concern to those involved in intercollegiate athletics. Because of this, the NCAA surveyed student-athletes concerning their gambling-related behaviors. There were 5594 Division 1 male athletes in the survey. Of these, 3547 reported participation in some gambling behavior. This included playing cards, betting on games of skill, buying lottery tickets, and betting on sports.

Use this survey to perform a hypothesis test that answers the question: "Is the proportion of Division 1 male athletes who participate in gambling behaviors 50%?"

Report the test-statistic (rounded to two decimal places) and report the p-value (rounded to five decimal places) for your test.

Question 3: Gambling is an issue of great concern to those involved in intercollegiate athletics. Because of this, the NCAA surveyed student-athletes concerning their gambling-related behaviors. There were 3469 Division 1 female athletes in the survey. Of these, 1447 reported participation in some gambling behavior. This included playing cards, betting on games of skill, buying lottery tickets, and betting on sports.

Based on this survey, what is the 95% confidence interval for the proportion of Division 1 female athletes in the NCAA who participate in gambling behavior? (Keep your answer as a decimal rounded to two decimal places.)

Question 4: Gambling is an issue of great concern to those involved in intercollegiate athletics. Because of this, the NCAA surveyed student-athletes concerning their gambling-related behaviors. There were 3469 Division 1 female athletes in the survey. Of these, 1447 reported participation in some gambling behavior. This included playing cards, betting on games of skill, buying lottery tickets, and betting on sports. There were 5594 Division 1 male athletes in the survey. Of these, 3547 reported participation in some gambling behavior. This included playing cards, betting on games of skill, buying lottery tickets, and betting on sports.

Based on this survey, what is the 95% confidence interval for the difference between the proportion of Division 1 female athletes in the NCAA participate in gambling behavior and the proportion of Division 1 male athletes in the NCAA that participate in gambling behavior? (Keep your answer as a decimal rounded to two decimal places.)

Question 5: Gambling is an issue of great concern to those involved in intercollegiate athletics. Because of this, the NCAA surveyed student-athletes concerning their gambling-related behaviors. There were 3469 Division 1 female athletes in the survey. Of these, 1447 reported participation in some gambling behavior. This included playing cards, betting on games of skill, buying lottery tickets, and betting on sports. There were 5594 Division 1 male athletes in the survey. Of these, 3547 reported participation in some gambling behavior. This included playing cards, betting on games of skill, buying lottery tickets, and betting on sports.

Based on this survey, perform a hypothesis test to answer the question: “Is there a difference between the proportion of Division 1 female athletes in the NCAA that participate in gambling behavior and the proportion of Division 1 male athletes in the NCAA that participate in gambling behavior? “

Report the test-statistic (rounded to two decimal places) and report the p-value (rounded to five decimal places) for your test.

Question 6: Nonexercise activity thermogenesis (NEAT) is energy burned by fidgeting, maintenance of posture, spontaneous muscle contraction, and other activities of daily living. In a study of 16 subjects, NEAT was increased by 328 calories per day on average. The standard deviation was 256.

Based on this study, what is the 95% confidence interval for average increase in NEAT? (Keep your answer as a decimal rounded to two decimal places.)

Question 7: The level of various substances in the blood of kidney dialysis patients is of concern because kidney failure and dialysis can lead to nutritional problems. A research paper performed blood tests on several dialysis patients on 6 consecutive clinic visits. One variable measured was the level of phosphate in the blood. Phosphate levels for an individual tend to vary Normally over time. The data on one patient, in milligrams of phosphate per deciliter (mg/dl) or blood, are given below.

5.6, 5.1, 4.6, 4.8, 5.7, 6.4

Based on this study, what is the 90% confidence interval for average phosphate level of this patient? (Keep your answer as a decimal rounded to two decimal places.)

Question 8: Many organizations are doing surveys to determine the satisfaction of their customers. Attitudes towards various aspects of campus life were the subject of one such study conducted at Purdue University. Each item was rated on a 1 to 5 scale, with 5 being the highest rating. The average response of 1406 first-year students to "Feeling welcomed at Purdue" was 3.9 with a standard deviation of 0.98. Assuming that the respondents are a simple random sample, give a 90% confidence interval for the mean of all first-year students. (Keep your answer as a decimal rounded to two decimal places.)

Question 9: E. jugularis is a type of hummingbird that lives in the forest preserves of the Caribbean island of Santa Lucia. The males and females of this species have bills that are shaped somewhat differently. Researchers who study these birds thought that bill shape might be related to the shape of flowers that they visit for food. The researchers observed 49 females and 21 males. Of the females, 20 visited the flowers of H. bihai, while none of the males visited these flowers.

Display the data in a two-way table and perform a Chi-square test.

Provide you test statistic (rounded to one decimal place) and you p-value (rounded to three decimal places).