

Homework exercise essay sample



**ASSIGN
BUSTER**

According to Cozby (2009) inferential statistics are used to determine whether we can in fact make statements that the results reflect what would happen if we were to conduct the experiment again and again with multiple samples. Define probability and discuss how it relates to the concept of statistical significance. Probability is the possibility that an outcome of an experience or an event will occur (Cozby 2009). Statistical significance and probability are one in the same. A researcher is studying the effects of yoga on depression. Participants are randomly assigned to one of two groups: yoga and medication (experimental group) or support group and medication (control group). What is the null hypothesis? What is the research hypothesis? Since the experimental group differs from the control group, this would be the research hypothesis, and if there is no difference in the mean, this would be the null hypothesis. In the scenario described in the previous question, the researcher implements two programs simultaneously: a 6-week yoga program coupled with medication management and a 6-week support group program coupled with medication management. At the end of the 6 weeks, participants complete a questionnaire measuring depression.

The researcher compares the mean score of the experimental group with the mean score of the control group. What statistical test would be most appropriate for this purpose and why? What is the role of probability in this statistical test? Bivariate Research because in this case the researcher is studying whether two variables are related. The role of probability in this statistical test is to determine what outcome is likely to occur. In the scenario described in the previous questions, the researcher predicted that participants in the experimental group (yoga plus medication) would score

significantly lower on measures of depression than would participants in the control group support group plus medication. True or false A two-tailed test of significance is most appropriate in this case. Explain your response. False.

Because the researcher predicted that participants in the experimental group yoga and meditation would score considerably LOWER on measures of depression. Which means that when the researcher says LOWER it implies a one-tailed test Now on the other hand if the researchers had said they would have scored significantly DIFFERENT, then yes, this would be considered a two-tailed test.

Explain the relationship between the alpha level (or significance level) and Type I error. What is a Type II error How are Type I and Type II errors different According to Cozby (2009) A Type I error is made when we reject the null hypothesis but the null hypothesis is actually true. Our decision is that the population means are not equal when they actually are equal. Type I errors occur when, simply by chance, we obtain a large value of t or F . A Type II error occurs when the null hypothesis is accepted although in the population the research hypothesis is true. The population means are not equal, but the results of the experiment do not lead to a decision to reject the null hypothesis. A researcher is studying the effects of sex male and female and dietary sugar on energy level. Male and female participants agree to follow either a high sugar or low sugar diet for eight weeks. The researcher asks the participants to complete a number of questionnaires, including one assessing energy level, before and after the program.

The researcher is interested in determining whether a high or low sugar diet affects reported energy levels differently for men and women. At the end of

the program, the researcher examines scores on the energy level scale for the following groups Men low sugar diet Men high sugar diet Women low sugar diet Women high sugar diet. What statistic could the researcher use to assess the data What criteria did you use to determine the appropriate statistical test Perform a chi-square test or Fishers exact test because a Chi-square test is a common test for nominal (categorical) data. One application of a Chi-square test is a test for independence. In this case, the null hypothesis is that the occurrence of the outcomes for the two groups is equal.