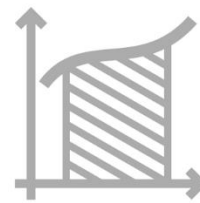


Statistics



$$\{\sqrt{x}\}^2$$



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Hypothesis Testing on Difference Between Proportions

Questions:

- 1) 8% of a random sample of 200 men and 10% of a sample of 180 women are unemployed. Is there a significant difference between the unemployment rates of men and women? Test at a 5% level of significance.
- 2) The proportion of people with driving licenses among the adult population is 60%. 204 of 300 adults from Boston had driving licenses, and 100 of 220 adults from NYC had driving licenses.
 - a. At a 5% level of significance, test the assertion that the proportion of people with driver licenses is greater in Boston than the nation overall.
 - b. At a 1% level of significance, test the assertion that the proportion of people with drivers' licenses in Boston is higher than the proportion in NYC.
- 3) 500 adults were randomly sampled, 200 of whom were men and the rest women. 48% of the men and 58% of the women in the sample were found to have advanced degrees. The purpose of the study is to test whether the proportion of women with advanced degrees is higher than the proportion of men. At a 5% level of significance, what conclusion could you draw?
- 4) In a sample of 100 cows on a farm in Tennessee, it was found that 20 of them carried a certain virus. In a sample of 200 cows on a farm in New Hampshire, it was found that 10 of them carried the virus.
 - a. Construct a test at a 5% level of significance to test the assertion that the virus attacked cows in Tennessee more virulently than in New Hampshire.
 - b. What is the power of the test if the actual proportion of cows carrying the virus in Tennessee is 10% higher than the proportion of cows in New Hampshire carrying the virus?

Answer Key:

- 1) We will not reject H_0 .
- 2) a. We will reject H_0 . b. We will reject H_0 .
- 3) a. 0.014
- 4) a. We will reject H_0 . b. 0.8238