

Topics 16-18

More Practice

1. Economists often track employment trends by measuring the proportion of people who are “underemployed,” meaning they are either unemployed or would like to work full time but are only working part-time. In the summer of 2013, 17.6% of Americans were “underemployed.” The mayor of Thicksburg wants to show the voters that the situation is not as bad in his town as it is in the rest of the country. His staff takes a simple random sample of 300 Thicksburg residents and finds that 45 of them are underemployed.
 - a) Do the data give convincing evidence that the proportion of underemployed in Thicksburg is lower than elsewhere in the country? Support your answer with a significance test.

b) Interpret the p-value from your test in the context of the problem.

Topics 16-18

More Practice

2. A local newspaper in a large city wants to assess support for the construction of a highway by-pass around the central business district to reduce downtown traffic. They survey a random sample of 1152 city residents and find that 543 of them support the bypass. Construct and interpret a 95% confidence interval to estimate the proportion of residents who support construction of the bypass.

3. For the housing problem, define a Type I and II error and find the probabilities of each and the power if $n = 100$, $\alpha = 0.01$, and 21% of graduate Students actually want housing.

P =the actual proportion of graduate students that want housing.

$$H_o: p = 0.10$$

$$H_a: p > 0.10 \text{ (recommend more housing)}$$

Type I:

Type II: