"FRAPPY"

Review Section 9.3

The following problem is taken from an actual Advanced Placement Statistics Examination. Your task is to generate a complete, concise statistical response in 15 minutes. You will be graded based on the AP rubric and will earn a score of 0-4. After grading, keep this problem in your binder for your AP Exam preparation.

A bridal gown industry publication claims that nationwide the average amount spent for a wedding gown is $1,012. A local bridal shop in an urban community has noticed their more expensive gowns are not selling well. Instead, the brides seem to be selecting only lower priced gowns or clearance gowns. The shop wonders if the average amount spent for a wedding gown is less than $1,012 for their customers. To investigate, they selected a random sample of 50 wedding gown sales. They found a sample mean of $985 and a standard deviation of $235.

Is there convincing evidence that the average amount spent on a wedding gown at this shop is less than the national figure? Test the relevant hypotheses using a 0.05 significance level. $\alpha = .05$

Scoring:

(a) E P I

(b) E P I

(c) E P I

(d) E P I

A μ = the true mean cost nationwide of a wedding dress

$H_0: \mu = \$1012$

$H_A: \mu < \$1012$

B 1 sample t test for means

CONDITIONS

Random: SRS $n = 50$ wedding gowns at this shop

Independent: It is reasonable this shop has more than (10×50) 500 wedding dresses to sell

Normal: Since the sample is large $50 > 30$, CLT says the normal condition is met

C

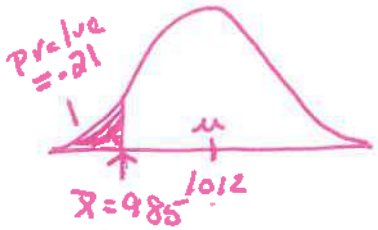
Sample

$n = 50 \quad \bar{x} = 985 \quad s_x = 235$

$$t = \frac{985 - 1,012}{235/\sqrt{50}} \qquad df = 49$$

$t = -.81$

$pvalue = P(t < -.81) = .2109$



D Since the pvalue (.2109) is greater than $\alpha = .05$, we fail to reject the null hypothesis. THERE IS NOT CONVINCING evidence that the average amount of a wedding gown at this shop is less than the national average of $1,012.

Total: __/4

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