

Review for the Final Exam (Open format page)

I. A 90% CI for the true percentage of students getting their PhDs is (1.0%, 5.0%). Interpret this CI in context of the problem.

**We are 90% confident that the true percentage of students getting their PhDs is within (1%, 5%).**

II. A 95 % confidence interval for the mean amount of coffee dispensed by vending machine is: (7.2, 7.6) oz. Interpret this CI in context of the problem.

**We are 95% confident that the mean amount of coffee dispensed by vending machine is within (7.2, 7.6) oz.**

III. The government mint claims that less than 77% of the public is against changing dollar coins for dollar bills. In a survey of 800 people, 600 said they were opposed to the change. At the 5% level of significance, test the mint's claim.

a) State the null and alternate hypotheses.  $H_0 : P = .77$   $H_a : P < .77$

b) What is the point estimator value of true proportion of people against changing dollar coins?

$$\hat{P} = x/n = 600/800 = .75$$

d). The Test Statistic for this test was reported as  $Z = -1.34$ , calculate the P – value, make a decision, give a conclusion and explain it in simple non-technical terms in context of the problem.

$$P\text{-value} = 0.0901$$

**Decision: Fail to Reject  $H_0$**

**At the 5% level of significance we have insufficient evidence to support the government mint claim that less than 77% of the public is against changing dollar coins for dollar bills.**

IV. A sample of 121 calls to the 900 number you operate has a mean duration of 16.6 minutes and a standard deviation of 3.63 minutes. You offer a discount, which will be discontinued if the mean call duration is less than 17 minutes. At 3% level of significance, what is your decision? Based on this study, do you think the service discount should be discontinued?

1. State the null and alternate hypotheses.  $H_0 : \mu = 17$   $H_a : \mu < 17$

2. The P-value for this test was reported as  $p = 0.114$ , give a conclusion and explain it in simple non-technical terms in context of the problem

**Conclusion: At 3% level of significance we have insufficient evidence that mean call duration is less than 17 minutes, therefore, the service discount should not be discontinued.**

