

# STAT 3400 - Homework #8

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Due March 23, 2023

## Problem 14.6.2

- a. Larger under scenario i
- b. Larger under scenario i
- c. Same under both scenarios
- d. Larger under scenario i

## Problem 14.6.3

- a.  $H_0$ : There isn't enough evidence to suggest that regulations aren't being met.  $H_A$ : There is enough evidence to suggest that regulations aren't being met.
- b. A type one error occurs if the inspector says that regulations aren't being met when they are.
- c. A type two error occurs if the inspector says that regulations are being met when they aren't.
- d. Type one error is more problematic for the restaurant owner because his license to sell food will be revoked incorrectly in that case.
- e. Type two error is more problematic for the diners because they would have to eat food prepared in unsanitary conditions in that case.
- f. I would prefer that the food inspector doesn't require very strong evidence of conditions not being met because then I wouldn't eat food prepared in unsanitary conditions.

## Problem 14.6.4

- a. True
- b. False. Increasing the significance level will increase the probability of making a Type 1 Error.
- c. False. If the null hypothesis is  $p=0.5$  and we fail to reject  $H_0$ . Under this scenario, we don't have evidence to say the true population proportion isn't 0.5.
- d. True

## Problem 14.6.6

Increasing the sample size will decrease the standard error which will decrease the p value.