

Write the conclusion for each of the following inference procedures:

1. p : the proportion of customers who order dessert at Macaroni Grill

1-PropZInt

$C - Level : 0.90$

$(0.277, 0.337)$

$\hat{p} = 0.307$

$n = 658$

observed value: _____

2. p : the proportion of customers who order dessert at Macaroni Grill

1-PropZTest

$prop > 0.25$

$z = 3.376$

$p = 0.0003$

$\hat{p} = 0.3070$

$n = 658$

observed value: _____

3. p_M : the proportion of customers who order dessert at Macaroni Grill
 p_C : the proportion of customers who order dessert at Carrabba's

2-PropZInt

$C - Level : 0.90$

$(-0.0974, 0.009)$

$\hat{p}_M = 0.3285$

$\hat{p}_C = 0.3728$

$n_M = 624$

$n_C = 338$

observed difference: _____

4. p_M : the proportion of customers who order dessert at Macaroni Grill
 p_C : the proportion of customers who order dessert at Carrabba's

2-PropZTest

$$p_M \neq p_C$$

$$z = -1.3794$$

$$p = 0.1678$$

$$\hat{p}_M = 0.3285$$

$$\hat{p}_C = 0.3728$$

$$\hat{p} = 0.3441$$

$$n_M = 624$$

$$n_C = 338$$

observed difference: _____

Write the conclusion for each of the following inference procedures:

1. p : the proportion of customers who order dessert at Macaroni Grill

1-PropZInt
C-Level: 0.90
(0.277, 0.337)
 $\hat{p} = 0.307$
 $n = 658$

observed value: .307

$$ME = \frac{.06}{2} = \text{span style="border: 1px solid black; padding: 2px;">.03$$

We are 90% confident that the proportion of customers at Macaroni Grill who order dessert is between about 28% and 34%, because 90% of all samples of size 658 will produce a sample proportion within 3% of the true proportion.

2. p : the proportion of customers who order dessert at Macaroni Grill

1-PropZTest
 $prop > 0.25$
 $z = 3.376$
 $p = 0.0003$
 $\hat{p} = 0.3070$
 $n = 658$

observed value: .307

If the proportion of customers who order dessert at Macaroni Grill were 25%, we'd expect to see a sample result at least as extreme as 30.7% in about 3 out of every 10,000 samples by chance. Because this is so unlikely, we conclude that the true proportion of customers who order dessert is more than 25%.

3. p_M : the proportion of customers who order dessert at Macaroni Grill
 p_C : the proportion of customers who order dessert at Carraba's

2-PropZInt
C-Level: 0.90
(-0.0974, 0.009)
 $\hat{p}_M = 0.3285$
 $\hat{p}_C = 0.3728$
 $n_M = 624$
 $n_C = 338$

observed difference: -.0443

$$ME = \text{span style="border: 1px solid black; padding: 2px;">.0532$$

We are 90% confident that the proportion of customers who order dessert at Macaroni Grill is between about 10% less than and 1% more than those at Carraba's, because 90% of all samples of sizes 624 and 338 will produce an observed difference that is within 5.3% of the true difference.

4. p_M : the proportion of customers who order dessert at Macaroni Grill
 p_C : the proportion of customers who order dessert at Carrabba's

2-PropZTest

$$p_M \neq p_C$$

$$z = -1.3794$$

$$p = 0.1678$$

$$\hat{p}_M = 0.3285$$

$$\hat{p}_C = 0.3728$$

$$\hat{p} = 0.3441$$

$$n_M = 624$$

$$n_C = 338$$

observed difference: -.0443

If there were no difference between the proportion of customers who order dessert at Macaroni Grill and Carrabba's, we'd expect to see an observed difference at least as extreme as ours in about 17 out of every 100 samples of these sizes by chance. This is not strong enough evidence to conclude that the proportions are different.