Mrs. Daniel- AP Stats
10.1 #2 WS Solutions

Parameter:

p_1 = the true quitting rate for employees like these who get a financial incentive to quit smoking

p_2 = the true quitting rate for employees like these who don't get a financial incentive to quit smoking.

Hypothesis:

H_0 : $p_1 = p_2$

H_a : $p_1 > p_2$

Assess Conditions:

- Random: The treatments were randomly assigned.
- Normal: $n_1\hat{p}_1$ = 66, $n_1(1-\hat{p}_1)$ = 373, $n_2\hat{p}_2$ = 22, $n_2(1-\hat{p}_2)$ = 417 are all at least 10.
- Independent: The random assignment allows us to view these two groups as independent. We must assume that each employee's decision to quit is independent of other employee's decisions.

Name Test: two-sample *z* test for $p_1 - p_2$

Test Statistic: $\hat{p}_C = \frac{66+22}{439+439} = 0.100$, $z = \frac{(0.15-0.05)-0}{\sqrt{\frac{0.1(1-0.1)}{439}+\frac{0.1(1-0.1)}{439}}} = 4.94$,

Obtain *P*-value: p-value ≈ 0

Make a Decision: Since the *P*-value is practically zero, which is less than 0.05, we reject H_0.

State Conclusion in Context: We have convincing evidence that financial incentives help employees like these quit smoking.