

For hypothesis test problems, you must provide all four parts of the traditional approach. The test statistic must show the symbolic formula and the formula with relevant values in place.

(8 points : 8 minutes)

1. A group of 257 randomly selected adults began a diet and exercise program with the goal of losing 20 pounds each in 80 days. At the end of the 80 days, only 24% had not lost 20 pounds or more. Use these results to test the program creator's claim that 80% of adults who work the program will lose 20 pounds or more in 80 days. (Use a 4% significance level for this test.) + interpret as \Rightarrow or \Leftarrow

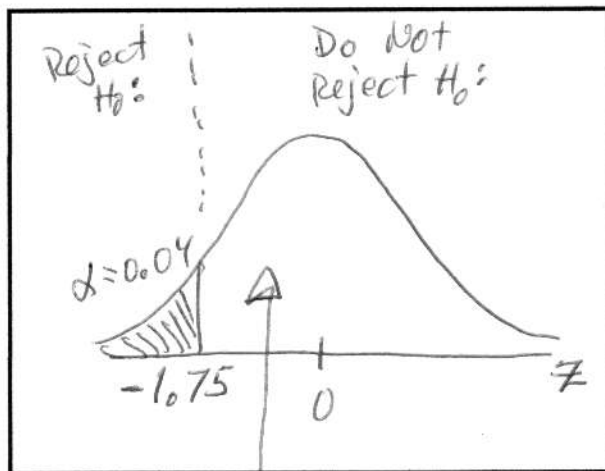
Claim: $p \geq 0.80$ (80%)
 H_0 : $p \geq 0.80$
 H_1 : $p < 0.80$
 $\alpha = 0.04$ in left tail

76% = 0.76 had lost 20 lbs. or more

$\hat{p} = 0.76$ $n = 257$
 $\hat{q} = 0.24$

Test Statistic

$$\frac{\hat{p} - p_0}{\sqrt{\frac{p_0 q_0}{n}}} = \frac{0.76 - 0.80}{\sqrt{\frac{(0.80)(0.20)}{257}}} = \frac{-0.04}{0.02495} = -1.60$$



beca we a testin

Conclusion:
Do not reject H_0

(8 points : 10 minutes)

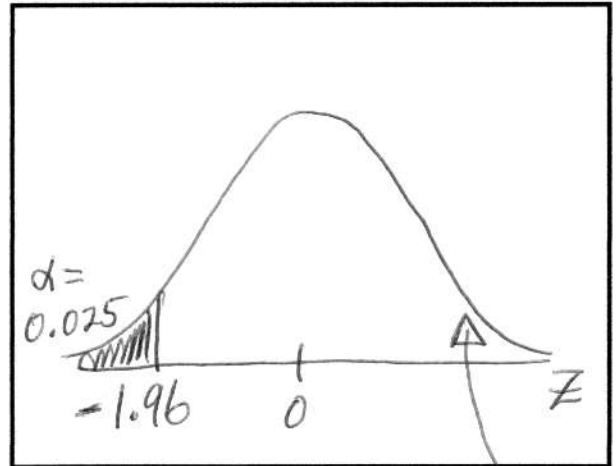
2. Based on "focus group" data (small samples not randomly selected), an advertiser claims that at least 70% of television viewers who see their beer commercials think the brand of beer is good. Test the advertiser's claim using the data from a random sample shown below. (Let $\alpha = 0.025$ for this test.)

Data from Random Sample

	Opinion of Beer	
	Good	Not Good
Saw Beer Ad	228	74
Did not See Ad.	305	199

$n = 302$

Claim: $p \geq 0.70$
 $H_0: p \geq 0.70$
 $H_1: p < 0.70$
 $\alpha = 0.025$
 left tail



\hat{p} = prop. in sample of those who see the ~~ad~~ ad think the beer is good

$$= \frac{228}{302} = 0.755$$

$$\hat{q} = 0.245$$

$$n = 302$$

Test Statistic Z

$$\frac{\hat{p} - p_0}{\sqrt{\frac{p_0 q_0}{n}}} = \frac{0.755 - 0.70}{\sqrt{\frac{(0.70)(0.30)}{302}}} = \frac{0.055}{0.02637}$$

$$= 2.09$$

Conclusion:

Do not reject H_0