

08/07/2019

Reject $H_0 \Rightarrow$ test is significant

fail to reject $H_0 \Rightarrow$ the test is not significant.

P-value: $p\text{-value} \leq \alpha \Rightarrow$ reject H_0

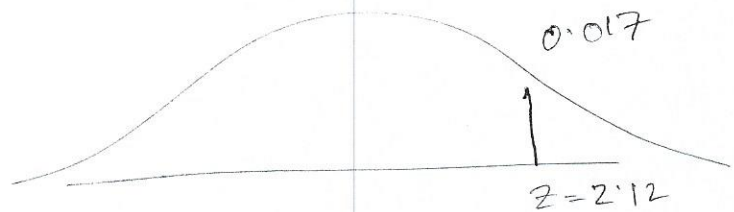
$p\text{-value} > \alpha \Rightarrow$ fail to reject H_0 .

b) $H_0: p = 0.65$

$H_a: p > 0.65$

$\alpha: 0.01$

$z = 2.12$



$p\text{-value} = 0.017$

$0.017 > 0.01$

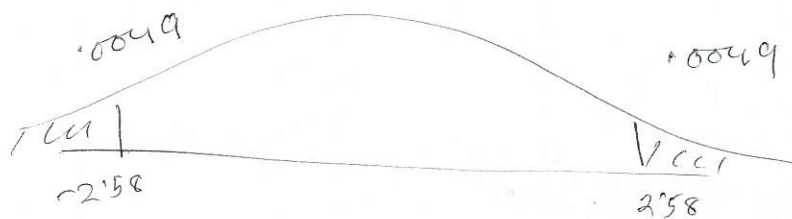
H_0 , fail to reject H_0 .

c) $H_0: p = 0.8$

$H_a: p \neq 0.8$

$\alpha: 0.05$

$z = 2.58$



$$p\text{-value} = 0.0098 < 0.05$$

Reject H_0 .

Example

① $H_0: p = 0.75$

$H_1: p > 0.75$

$\alpha = 0.01$

$p = 0.75$

$a = 0.25$

$n = 1007$

$\bar{x} = 856$

$\hat{p} = \frac{856}{1007} = 0.85$

② binomial distribution ✓

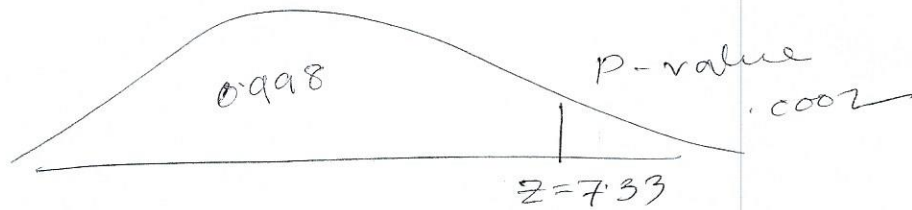
$np \geq 5 \quad 756.25$

$na \geq 5 \quad 251.75$

normality applies

③ Find z-score

$$z = \frac{(0.85 - 0.75)}{\sqrt{\frac{0.75 \times 0.25}{1007}}} \approx 7.33$$



$$0.01 > 0.0002$$

reject H_0 .

Since p-value is less than 0.01, we reject H_0 . There is enough evidence to support the claim that more than 75% of adults know what Twitter is. The test is significant.

② $H_0: p = 0.5$

$H_1: p > 0.5$

$\alpha = 0.05$

$p = 0.5$

$n = 0.5$

$n = 703$

$\hat{p} = 0.61$

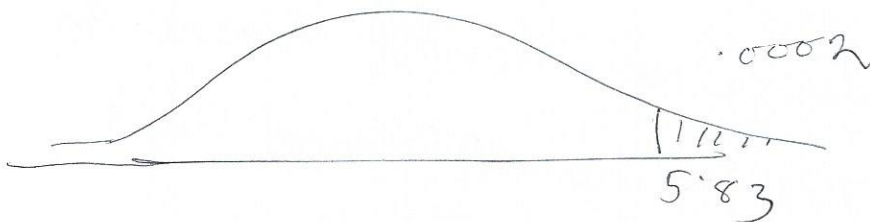
binomial distⁿ.

$$np > 5$$

$$nq > 5$$

Normality applies

$$3. \quad Z = \frac{(0.61 - 0.5)}{\sqrt{\left(\frac{0.5 \times 0.5}{703}\right)}} = 5.83$$



$$0.0002 < 0.05$$

Reject H_0 .

Since p-value is less than 5%, we reject H_0 .

There is enough evidence to support the claim that more than 50% of workers set their jobs through networking.

The test is significant.

Ex: 3

$$H_0: p = 0.61$$

$$H_1: p \neq 0.61$$

$$p = 0.61$$

$$q = 1 - 0.61 = 0.39$$

$$\alpha = 0.05$$

$$n = 1002$$

$$\hat{p} = 0.7$$

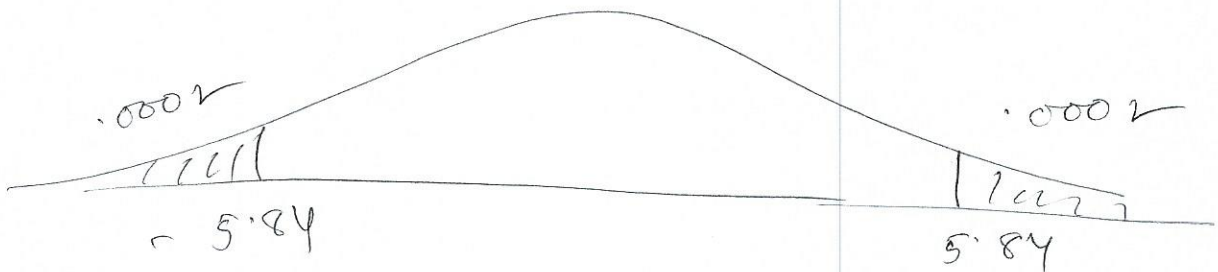
binomial distⁿ since

$$np \geq 5$$

$$nq \geq 5$$

normality applies.

$$Z = \frac{0.7 - 0.61}{\sqrt{\frac{0.61 * 0.39}{1002}}} \approx 5.84$$



$$p\text{-value} : .0002 + .0002 = .0004$$

$$.0004 < 0.05$$

Reject H_0 .

Since p-value is less than 0.05, we reject H_0 .

The claim that exactly 61% of voters voted at ~~the~~ the recent jones election was false. The test is significant.

$$H_0: p = 0.5$$

$$H_1: p > 0.5$$

$$\alpha = 0.01$$

$$p = 0.5$$

$$q = 1 - 0.5 = 0.5$$

$$\hat{p} = \frac{239}{291} = 0.82$$

$$x = 239$$

$$n = 291$$

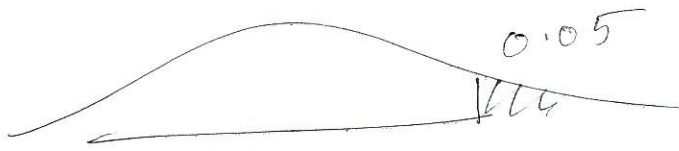
Ex 1

$$H_0: \mu = 1.8$$

$$H_1: \mu > 1.8$$

$$t_s = \frac{\bar{x} - \mu}{s/\sqrt{n}}$$

$$t_s = \frac{1.911 - 1.8}{\frac{1.065}{\sqrt{62}}} = 0.8207$$



$$t_2 = 1.671 > .8207$$

reject H_0 .

