

Stat303: Statistical Methods

Homework 06 (07/23/2009)

Instructor: Jin, Ick Hoon

Hint for Homework 06

The number used in this hint can be changed by your homework set.

4. Confidence Interval for a Population Mean, Sample Size

(a) Confidence Interval

$$\bar{x} \pm Z_{\alpha/2} \frac{s}{\sqrt{n}} = 10.0038 \pm Z_{\alpha/2} \frac{.0004}{\sqrt{5}}$$

(b) Sample Size

$$Z_{\alpha/2} \frac{s}{\sqrt{n}} = 0.0001 \Rightarrow n = \left(\frac{Z_{\alpha/2} \cdot s}{0.0001} \right)^2 \Rightarrow n = \left(\frac{Z_{\alpha/2} \cdot 0.0004}{0.0001} \right)^2$$

6. Statistical Significance and Tests for a Population Mean

p-Value $< \alpha \Rightarrow$ Reject H_0 , p-Value $> \alpha \Rightarrow$ Fail to reject H_0 .

The P-Value

If $H_A : \mu \neq \mu_0$, then $p - Value = 2 \cdot 0.035 > 0.05$

If $H_A : \mu > \mu_0$, then $p - Value = 0.035 < 0.05$

7. Statistical Significance and Tests for a Population Mean

For $H_A : \mu > \mu_0$, p-Value = $P(Z > -2.62)$

For $H_A : \mu < \mu_0$, p-Value = $P(Z < -2.62)$

For $H_A : \mu \neq \mu_0$, p-Value = $P(Z > |2.62|)$

13. Statistical Significance and Tests for a Population Mean

Test Statistic:

$$Z = \frac{\bar{X} - \mu_0}{\sigma/\sqrt{n}} = \frac{11.07 - 8.79}{2.6/\sqrt{5}}$$

p-Value:

$$p - Value = P(Z > z)$$

16. Statistical Significance and Tests for a Population Mean

Test Statistic:

$$Z = \frac{\bar{X} - \mu_0}{\sigma/\sqrt{n}} = \frac{0.419 - 0.5}{0.2887/\sqrt{100}}$$

p-Value:

$$p - Value = 2P(Z > |z|)$$

17. Confidence Interval:

$$\bar{X} \pm Z_{.05/2} \frac{s}{\sqrt{n}}$$