

COMM 215: Business Statistics –
Solutions to Practice Problems 2: **Corrections F2011**

Sampling Distribution

2. $P\left[\frac{(20-22)}{0.778} \leq z \leq \frac{(23-22)}{0.778}\right] = P[-2.57 \leq z \leq 1.29] = 0.8964 \leftarrow = (0.4015 + 0.4949)$

Estimation and Hypothesis Testing

2.

c. since the population standard deviation is not known, t-statistic should be used. The answer then is (108.57, 111.43)

6.

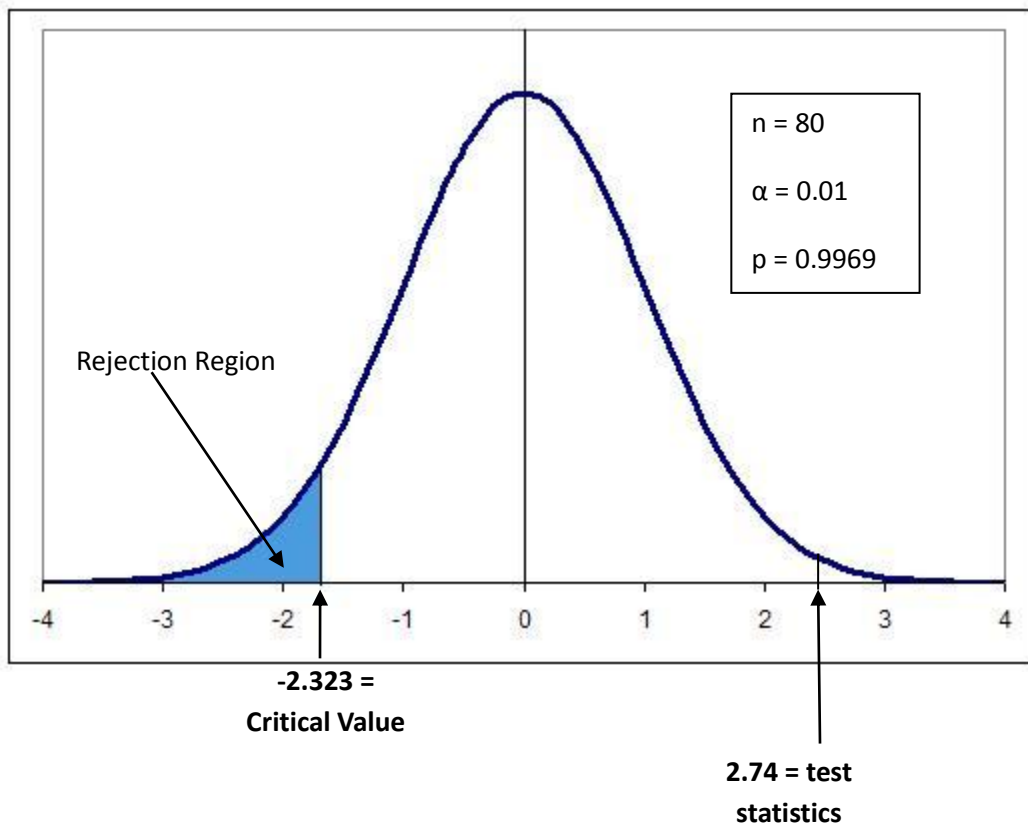
a. $H_0: \mu \leq 5$

7.

$H_0: p \geq 0.04$

$H_a: p < 0.04$

since $2.74 > -2.3$, DO NOT reject H_0



9. $n = 25$, but since σ is known, use the Z-stat

10. there are 2 acceptable solutions

$$n = \frac{(2.580)^2(0.5 * 0.5)}{(0.02)^2} = 4160.25 \rightarrow \mathbf{4161}$$

or

$$n = \frac{(2.575)^2(0.5 * 0.5)}{(0.02)^2} = 4144.14 \rightarrow \mathbf{4145}$$

11.

b.

$$0.07 \pm 1.96 \sqrt{\frac{(0.07)(0.93)}{100}} \rightarrow 0.07 \pm \mathbf{0.0482} \rightarrow (0.0218, 0.1182) \rightarrow 95\% \text{ confidence}$$

12.

b. $H_0: \mu \leq 25$

13.

a) since the population standard deviation is not known, t-statistic should be used. The answer is then (227.43, 248.23)

15. Since the p^* values are not given, we make a conservative estimate and let $p^* = .5$

18.

b. The sample size should be increased to 152.47 → **153**
an increase of 144 ← (153 - 9)

19.

a. $H_0: \mu \geq 2.8$ and since population standard deviation is unknown, t-statistic is used

Chi-Square tests

#8part a

number of years of experience	found JOB	no job	total count
0	20	32	52
1	8	8	16
>1	10	2	12
total count	38	42	80

Simple Linear Regression

1.

d. $\hat{y} = \mathbf{1.423537} + 0.530585(5) = 4.076462$

3.

b. if $P/2 = 0.0005 \rightarrow t = 4.587$
if $P/2 = 0.0010 \rightarrow t = 4.144$
 $0.0010 < p < 0.0020$

Multiple Regression

1.

b. Alternative solution

$$SSE = SST - SSR = 4166 - 939 = 3227$$

$$\left. \begin{array}{l} n = 40 \\ p = 3 \end{array} \right\} n - (p + 1) = 36$$

$$\alpha = 0.05$$

$$F = \frac{(SST - SSE)/p}{SSE/[n - (p + 1)]} = \frac{MSR}{MSE} \rightarrow F = \frac{(4166 - 3227)/3}{3227/[40 - (3 + 1)]} = \frac{313}{89.64} = 3.49$$