10. $T = 3 \quad n = 1000$

$H_0 < 3,100 = T = 3$

$H_1 > 3,100 = T \neq 3$

$\cancel{1 - \frac{e^{-T} \times T^{x}}{x!}}$

1 -

11. $\cancel{\Sigma x \quad \Sigma x^2 = 4}$

$\Sigma x = \frac{2,13,200}{12} = 17,766$

$\sigma(x) = 102.900736$

$\Sigma x^2 = 4,243360000$

$E(x) = 17,767$

$\hat{\theta}$ approximate would
measure for estimating be a better

Both of them will be termed consistent if the sample size goes on decreasing still the MSE is small.

① $\theta = E(g(x))$

② $\theta = E\,g(x) - \text{Bias}$

Q) t test

$$\frac{\bar{x} - \mu}{s/\sqrt{n}} \sim t_{n-1}$$

mean $= 0$ variance $= \frac{K}{K-2}$

~~$50 \pm t_{n-1}\, s/\sqrt{n}$~~

~~$50 \pm 2.8221 \times \sqrt{48.667/10}$~~

~~$(50 + 6.223) = 56.223$~~ ~~$(50 - 6.223)$ 43.777~~

~~$43.777 < x < 56.223$~~

~~$50 \pm \sqrt{\ }$~~

$50 \pm 3.250 \times \sqrt{48.667/10}$

50 ± 7.16969

$42.831 < x < 57.169$

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The primary condition to check whether the mean is equal is that the sample should be large enough

It is not possible to identify whether the condition is met or not because the population size is unknown

$$35.05 \pm \overset{t}{\cancel{1.96}}\,2.180 \pm \sqrt{67.875}$$

$$35.05 \pm 17.96$$

~~52.96~~

$$17.09 \leq x \leq 53$$

2. $\cancel{\hat{\theta} = \theta}$

~~If $\hat{\theta} = \theta$~~

If $E(g(x)) = \theta$ then it an ubiased estimator

Bias:

$E(g(x)) - \theta$

mean square error = varience + bias^2

mean square error is used to measure the efficieny of biased estimators than unbiased ones.

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~~$U(0, S)$~~

~~$L = \frac{1}{S^2}$~~

MLE for uniform
$U(0, \theta)$

$L = \frac{1}{\theta^n}$

$\frac{d}{d\theta} \ln L(\theta) = \frac{-n}{\theta}$

~~$= + \frac{n\theta}{\theta^2}$~~

~~6. $H_0 = p = 0.1$~~

$H_1 \quad p > 0.1$

7. Public mean = 30
Private man = 35.05

varience = $\frac{~~1626~~8806 - 8614 - 8100}{8}$
= 64.25

$\frac{~~10669~~ - 11599 - 11056}{8}$
= 67.875

The poi
whether
that the
large e

It is not
the con
because
unkno

35.05

35.0

~~52.9~~
17.0

8. ~~$\hat{\theta} = \theta$~~
~~If $\hat{\theta} = \theta$~~
If $E(g$
estima

Bias =
$E(g($

mean

mean
meas
biase
ones.

$2\bar{x} - s\sqrt{12} = 2a$

$\frac{\cancel{2}\bar{x} - s\sqrt{12}}{\cancel{2}} = a$

$\bar{x} - \frac{s\sqrt{12}}{2} = a$

$\frac{a+b}{2} = \bar{x}$

$\frac{(b-a)^2}{12} = s^2$

$a + b = 2\bar{x}$

$a = 2\bar{x} - b$

$\frac{(b-a)}{\sqrt{12}} = s^2$

$\cancel{b - 2\bar{x} + b =}$

$\cancel{2\bar{x} = s^2}$

$b - a = s\sqrt{12}$

$b = s\sqrt{12} + a$

$a = b - s\sqrt{12}$

$\cancel{a + b = 2\bar{x}}$

$\cancel{a + s\sqrt{12} + a}$

$\cancel{2a + s\sqrt{12} = 2\bar{x}}$

$\cancel{2a = \frac{2\bar{x} - s\sqrt{12}}{2}}$

$a + b = 2x$

$b - s\sqrt{12} + b = 2x$

$2b = 2\bar{x} + s\sqrt{12}$

$b = \frac{2\bar{x} + s\sqrt{12}}{2}$

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$$\frac{(O_i - E_i)^2}{E_i}$$

69.44, 42.25, 11.11, 32.11.1, 34.07

4. $f(x) = \frac{c\beta}{(x+\beta)^4}$

$$\int x \cdot \frac{c\beta}{(x+\beta)^4}$$

$$\int \frac{xc\beta}{(x+\beta)^4}$$

5. $\frac{a+b}{2} = \bar{x}$ $\qquad \frac{(b-a)^2}{12} = s^2$

$2\bar{x} - a = b$

$(b^2 - 2ab + a^2$

$$\cancel{\frac{(2\bar{x}-a)^2 - 2a(2\bar{x}-a) + a^2}{12}}$$

$\cancel{4\bar{x}^2 -}$

$$\frac{(b-a)}{\sqrt{12}} = s^2$$

$$\frac{2\bar{x} - a - a}{\sqrt{12}} = s$$

$2\bar{x} - 2a = s\sqrt{12}$

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3. $^nC_x \cdot p^x \cdot q^{n-x}$

$L = \prod$

$^4C_0 p^0 \cdot q^{4-0} \cdot {^4C_1} p^1 \cdot q^3 \cdot$
$^4C_2 \; p^2 q^2 \cdot {^4C_3} p^3 q^1 \cdot$
$^4C_4 \; p^4 q^0$

$q^4 \cdot 4pq^3 \cdot 6p^2q^2 \cdot 4p^3q \cdot$
p^4q^0

$= (1-p)^4 \cdot 4p(1-p)^3 \cdot 6p^2(1-p)^2 \cdot$
$4p^3(1-p) \cdot p^4q^0$

$96 \cdot p^{10}(1-p)^{10}$

Taking
$\log L = 10\log p + 10\log(1-p)$
Taking

$= \frac{10}{p} + \frac{10}{(1-p)} + C$

$\frac{10(1-p) + 10p}{p(1-p)}$

0	1	2	3	4
86	75	16	2	1

x	O_i	E_i
0	86	36
1	75	36
2	16	36
3	2	36
4	1	36

②

$$\frac{1}{n-1}\left(\Sigma\,\sigma^2+u^2\right) n\left(\frac{\sigma^2}{n}+u^2\right)$$

$$\frac{1}{n-1}\left(n\sigma^2+nu^2 + -\sigma^2 - nu^2\right.$$

$$\frac{1}{n-1}(n-1)(\sigma^2$$

$$E(s^2) = \sigma^2$$

$$var\left(\frac{(n-1)s^2}{\sigma^2}\right) = n-1$$

$$= \left(2n-1\right)$$

$$s^2 = \frac{\sigma^2}{n-1}(n-1) = \sigma^2$$

$$var\left(\frac{n-1}{\sigma^2}\right) = 2n-1$$

$$\Rightarrow var(s^2) = \frac{\sigma^4}{n-1^2} \times 2n-1$$

$$= \frac{2\sigma^4}{n-1}$$

$\bar{z} \pm$

④ Probability is 0.000 according to formulae table

250) 250

q is 0.140 , 0.220

aqs assignment 1

(1) $\bar{x} \pm z_{\alpha/2} \cdot \sigma/\sqrt{n}$

$\bar{x} \pm 1.96 \times \cancel{200}\sqrt{\theta}/200$

2. $\sum x_i = n4$ $\qquad \sum \sigma^2 = n^2\sigma^2$

$\bar{x} = \frac{n4}{n}$ $\qquad \sigma^2 = \frac{n^2\sigma^2}{n^2}$

$\bar{x} = 4$ $\qquad \sigma^2 = \frac{\sigma^2}{n}$

$E(s^2) = \sigma^2$

using method of moments

$E(s^2) = \frac{1}{n-1}(x_1 - \bar{x})^2$

$\frac{1}{n-1}(n\sigma^2 - 4^2)$