

WINTER SEMESTER 2021-2022

Activity Sheet -8 - LARGE SAMPLE TEST

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1)AIM: To find whether the given claim is tenable

SYNTAX:

$z_c = (p - P) / (\sqrt{(P * Q) / N})$

$z_t = qnorm(1 - \alpha)$

$abs(z_c) < abs(z_t)$

CODE:

```
1  N=400
2  p=30/400
3  P=0.05
4  Q=1-P
5  zc=(p-P)/(sqrt((P*Q)/N))
6  alpha=0.05
7  zt=qnorm(1-alpha)
8  if(abs(zc)<abs(zt))
9  {
10   print("Hypothesis is accepted")
11 }else{
12   print("Hypothesis is rejected")
13 }
```

OUTPUT:

```
> N=400
> p=30/400
> P=0.05
> Q=1-P
> zc=(p-P)/(sqrt((P*Q)/N))
> alpha=0.05
> zt=qnorm(1-alpha)
```

```

> if(abs(zc)<abs(zt))
+ {
+   print("Hypothesis is accepted")
+ }else{
+   print("Hypothesis is rejected")
+ }
[1] "Hypothesis is rejected"

```

INFERENCE : The given claim is not tenable

2) AIM: To test whether the hypothesis of the proportions of men and women are in favor of the proposal are same, at 5% level.

SYNTAX:

$$z_c = (p_1 - p_2) / (\sqrt{(p_1 * q) * ((1/n_1) + (1/n_2))})$$

$$z_t = qnorm(1 - (\alpha/2))$$

$$abs(z_c) < abs(z_t)$$

CODE:

```

1  h1=400
2  n2=600
3  x1=200
4  x2=325
5  p1=x1/n1
6  p2=x2/n2
7  p=(x1+x2)/(n1+n2)
8  q=1-p
9  zc=(p1-p2)/(sqrt((p1*q)*((1/n1)+(1/n2))))
10 alpha=0.05
11 zt=qnorm(1-(alpha/2))
12 if(abs(zc)<abs(zt))
13 {print("Hypothesis is accepted")
14 }else{
15   print("Hypothesis is rejected")
16 }

```

OUTPUT:

```
> n1=400
> n2=600
> x1=200
> x2=325
> p1=x1/n1
> p2=x2/n2
> p=(x1+x2)/(n1+n2)
> q=1-p
> zc=(p1-p2)/(sqrt((p1*q)*((1/n1)+(1/n2))))
> alpha=0.05
> zt=qnorm(1-(alpha/2))
> if(abs(zc)<abs(zt))
+ {print("Hypothesis is accepted")}
+ }else{
+   print("Hypothesis is rejected")}
+ }
[1] "Hypothesis is accepted"
```

INFERENCE : At 5% level, the hypothesis of the proportions of men and women are in favor of the proposal are same.

3)AIM: To find the 95% fiducial limits of true mean

SYNTAX:

$zc = (s_x - p_x) / ((s_{sd}) / (\sqrt{n}))$

$zt = qnorm(1 - (\alpha/2))$

$abs(zc) < abs(zt)$

CODE:

```
1  n=900
2  s_x=3.4
3  s_sd=2.61
4  p_x=3.25
5  p_sd=2.61
6  alpha=0.05
7  zc=(s_x-p_x)/((s_sd)/(sqrt(n)))
8  zt=qnorm(1-(alpha/2))
9  if(abs(zc)<abs(zt))
10 {print("Hypothesis is accepted")}
11 }else{
12   print("Hypothesis is rejected")}
13 }
```

OUTPUT:

```
> n=900
> s_x=3.4
> s_sd=2.61
> p_x=3.25
> p_sd=2.61
> alpha=0.05
> zc=(s_x-p_x)/((s_sd)/(sqrt(n)))
> zt=qnorm(1-(alpha/2))
> if(abs(zc)<abs(zt))
+ {print("Hypothesis is accepted")}
+ }else{
+   print("Hypothesis is rejected")
+ }
[1] "Hypothesis is accepted"
> |
```

INFERENCE : Hypothesis is accepted

4)

AIM: To test whether the samples can be regarded as drawn from the same population of S.D 2.5 inches.

SYNTAX:

$zc = (x1 - x2) / (sd * (\sqrt{(1/n1) + (1/n2)}))$

$zt = qnorm(1 - (\alpha/2))$

$abs(zc) < abs(zt)$

CODE:

```
1  n1=1000
2  n2=2000
3  x1=67.5
4  x2=68.0
5  sd=2.5
6  alpha=0.05
7  zc=(x1-x2)/(sd*(sqrt((1/n1)+(1/n2))))
8  zt=qnorm(1-(alpha/2))
```

```

9  if(abs(zc)<abs(zt))
10 {print("Hypothesis is accepted")
11 }else{
12   print("Hypothesis is rejected")
13 }

```

OUTPUT:

```

> n1=1000
> n2=2000
> x1=67.5
> x2=68.0
> sd=2.5
> alpha=0.05
> zc=(x1-x2)/(sd*(sqrt((1/n1)+(1/n2))))
> zt=qnorm(1-(alpha/2))
> if(abs(zc)<abs(zt))
+ {print("Hypothesis is accepted")
+ }else{
+   print("Hypothesis is rejected")
+ }
[1] "Hypothesis is rejected"
> |

```

INFERENCE : The given samples can be regarded as drawn from the same population of S.D 2.5 inches.