

#### Práctica 4

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```
1)
a)
> datos = c(20.8, 20.6, 21.0, 20.9, 19.9, 20.2, 19.8, 19.6, 20.9, 21.1, 20.4, 20.6, 19.7, 19.6, 20.3,
20.7)

> n = 16

> alfa = 0.02

> desv = 0.45

> (cuantil = qnorm(1-alfa/2))

[1] 2.326348

>( media = mean(datos))

[1] 20.38125
>( lim_inf = media - cuantil * desv / sqrt(n))

[1] 20.11954

>( lim_sup = media + cuantil * desv / sqrt(n))

[1] 20.64296

-Intervalo: (20.11954, 20.11954)

b)

> t.test(datos, conf.level=0.98)
```

#### One Sample t-test

```
data: datos

t = 155.85, df = 15, p-value < 2.2e-16

alternative hypothesis: true mean is not equal to 0

98 percent confidence interval:

20.04092 20.72158

sample estimates:

mean of x

20.38125

Intervalo: (20.04092, 20.72158)
```

2)

```
> prop.test(25, 40, conf.level = 0.95)
```

1-sample proportions test with continuity correction

```
data: 25 out of 40, null probability 0.5
X-squared = 2.025, df = 1, p-value = 0.1547
alternative hypothesis: true p is not equal to 0.5
95 percent confidence interval:
 0.4580964 0.7682594
sample estimates:
      p
0.625
```

```
Intervalo: (0.4580964, 0.7682594)
```

```
> datos = c(93, 90, 97, 90, 93, 91, 96, 94, 91, 91, 88, 93, 95, 91, 89
, 92, 87, 88, 90, 86)
> t.test(datos, conf.level = 0.99)
```

One Sample t-test

```
data: datos
t = 139.01, df = 19, p-value < 2.2e-16
alternative hypothesis: true mean is not equal to 0
99 percent confidence interval:
 89.37195 93.12805
sample estimates:
mean of x
 91.25
Intervalo: (89.37195, 93.12805)
```

3)

```
> pantano1 = c(10, 10, 12, 13, 9, 8, 12, 12, 10, 14, 8)
> pantano2 = c(11, 8, 9, 7, 10, 8, 8, 10)
> t.test(pantano1, pantano2, var.equal = FALSE, conf.level = 0.9)
```

welch Two Sample t-test

```
data: pantano1 and pantano2
t = 2.4009, df = 16.955, p-value = 0.02811
alternative hypothesis: true difference in means is not equal to 0
90 percent confidence interval:
 0.5099728 3.1945726
sample estimates:
mean of x mean of y
10.72727    8.87500
```

4)

```
> antes = c(217, 252, 229, 200, 209, 213)
> despues = c(209, 241, 230, 208, 206, 211)
> t.test(antes, despues, paired = TRUE, conf.level = 0.96)
```

### Paired t-test

```
data: antes and despues
t = 0.91186, df = 5, p-value = 0.4037
alternative hypothesis: true difference in means is not equal to 0
96 percent confidence interval:
 -5.057393 10.057393
sample estimates:
mean of the differences
      2.5
```

5)

```
> nadultos = 400
> njovenes = 600
> xadultos = 100
> xjovenes = 300
> n = c(nadultos, njovenes)
> x = c(xadultos, xjovenes)
> prop.test(x,n,conf.level=0.99)
```

### 2-sample test for equality of proportions with continuity correction

```
data: x out of n
X-squared = 61.463, df = 1, p-value = 4.512e-15
alternative hypothesis: two.sided
99 percent confidence interval:
 -0.3287296 -0.1712704
sample estimates:
prop 1 prop 2
 0.25   0.50
```

6)

```
> datos = c(93, 90, 97, 90, 93, 91, 96, 94, 91, 91, 88, 93, 95, 91, 89
, 92, 87, 88, 90, 86)
t.test(datos, conf.level = 0.99)
```

### One Sample t-test

```
data: datos
t = 139.01, df = 19, p-value < 2.2e-16
alternative hypothesis: true mean is not equal to 0
99 percent confidence interval:
 89.37195 93.12805
sample estimates:
mean of x
    91.25
Intervalo: (89.37195, 93.12805)
```