Khoảng tin cậy

Bài 1:

> library(BSDA)

Loading required package: lattice

Attaching package: ‘BSDA’

The following object is masked from ‘package:datasets’:

Orange

> tsum.test(mean.x=780, s.x=40, n.x=3, alternative="t",conf.level = 0.96)

One-sample t-Test

data: Summarized x

t = 33.775, df = 2, p-value = 0.0008755

alternative hypothesis: true mean is not equal to 0

96 percent confidence interval:

668.0233 891.9767

sample estimates:

mean of x

780

Khoảng tin cậy 96% (668.0233 891.9767

)

Bài 2:

> library(BSDA)

Loading required package: lattice

Attaching package: ‘BSDA’

The following object is masked from ‘package:datasets’:

Orange

tsum.test(mean.x=174.5,s.x=6.9, n.x=50, alt="t",conf.level = 0.98)

One-sample t-Test

data: Summarized x

t = 178.83, df = 49, p-value < 2.2e-16

alternative hypothesis: true mean is not equal to 0

98 percent confidence interval:

172.1533 176.8467

sample estimates:

mean of x

174.5

Vậy khoảng tin cậy 98% cho chiều cao tổng thể của sinh viên toàn trường là: (172.1533; 176.8467)

Bài 3:

> library(BSDA)

Loading required package: lattice

Attaching package: ‘BSDA’

The following object is masked from ‘package:datasets’:

Orange

> x=c(1.01, 0.97, 1.03, 1.04, 0.99, 0.98, 0.99, 1.01 , 1.03)

> t.test(x, mu=9, alternative="t",conf.level = 0.99)

One Sample t-test

data: x

t = -976.86, df = 8, p-value < 2.2e-16

alternative hypothesis: true mean is not equal to 9

99 percent confidence interval:

0.9780956 1.0330155

sample estimates:

mean of x

1.005556

Vậy khoảng tin cậy 99%:(0.9780956 1.0330155

)

Bài 4:

> tsum.test(mean.x=48.5, s.x=1.5, n.x=12, mu=0, alternative="t",conf.level = 0.9)

One-sample t-Test

data: Summarized x

t = 112.01, df = 11, p-value < 2.2e-16

alternative hypothesis: true mean is not equal to 0

90 percent confidence interval:

47.72236 49.27764

sample estimates:

mean of x

48.5

Vậy khoảng tin cậy 90%:(47.72236 49.27764)

Bài 5

> prop.test(114, 200, alternative = "t",conf.level = 0.96, correct = F)

1-sample proportions test without continuity correction

data: 114 out of 200, null probability 0.5

X-squared = 3.92, df = 1, p-value = 0.04771

alternative hypothesis: true p is not equal to 0.5

96 percent confidence interval:

0.4973900 0.6397185

sample estimates:

p

0.57

KL: 96 percent confidence interval:

0.4973900 0.6397185

Khoảng tin cậy 96%

Bai 6:

> prop.test(228, 1000, alternative = "t",conf.level = 0.99, correct = F)

1-sample proportions test without continuity correction

data: 228 out of 1000, null probability 0.5

X-squared = 295.94, df = 1, p-value < 2.2e-16

alternative hypothesis: true p is not equal to 0.5

99 percent confidence interval:

0.1956847 0.2639009

sample estimates:

p

0.228

KL: 99 percent confidence interval:

0.1956847 0.2639009

Khoảng tin cậy 99%

Bai 7:

> prop.test(1600-1600\*2/3, 1600, p = 0.95, alternative ="t", conf.level = 0.95, correct =FALSE)

1-sample proportions test without continuity correction

data: 1600 - 1600 \* 2/3 out of 1600, null probability 0.95

X-squared = 12809, df = 1, p-value < 2.2e-16

alternative hypothesis: true p is not equal to 0.95

95 percent confidence interval:

0.3106584 0.3568067

sample estimates:

p

0.3333333

Kl: 95 percent confidence interval:

0.3106584 0.3568067

Khoảng tin cậy 95%

**Bài toán về kiểm định giả thiết**

Bài 1:

N=100 x=71,8 S=8,9 a=0,05 μ0 =70

H0 : μ = 70

H1 : μ ≠ 70

tsum.test(mean.x=70, s.x=8.9, n.x=100, mu=71.8, alternative="t",conf.level = 0.05)

One-sample t-Test

data: Summarized x

t = -2.0225, df = 99, p-value = 0.04582

alternative hypothesis: true mean is not equal to 71.8

5 percent confidence interval:

69.94405 70.05595

sample estimates:

mean of x

70

Bác bỏ H0 vì p-value = 0.04582 < a=0,05

Bài 2:

N=30 x=778. S=40 a=0,04. μ0 =800

> tsum.test(mean.x=778, s.x=40, n.x=30, mu=800, alternative="t",conf.level = 0.04)

One-sample t-Test

data: Summarized x

t = -3.0125, df = 29, p-value = 0.005331

alternative hypothesis: true mean is not equal to 800

4 percent confidence interval:

777.6306 778.3694

sample estimates:

mean of x

778

H0 : μ = 800

H1 : μ ≠ 800

Kết luận: Do p-value = 0.005< alpha=0.04 nên chấp nhận giả thiết H1

Bài 3:

N=50 x=165,2 S=6,9 a=0,01 μ0 =162,5

H0 : μ = 162,5

H1 : μ ≠ 162,5

> zsum.test(mean.x=165.2,sigma.x=6.9, n.x=50, alt="less", mu=162.5,conf.level = 0.99)

One-sample z-Test

data: Summarized x

z = 2.7669, p-value = 0.9972

alternative hypothesis: true mean is less than 162.5

99 percent confidence interval:

NA 167.4701

sample estimates:

mean of x

165.2

Kết luận: Do p-value = 0.99 > alpha=0.01 nên chấp nhận giả thiết H1

Bài 4:

9,5 10,2 9,7 10,1 10,3 10,1 9,8 9,9 10,4 10,3 9,8 9,4 10,4 10,6 10,8 9,7

> x=c(9.5, 10.2, 9.7, 10.1, 10.3, 10.1, 9.8, 9.9, 10.4, 10.3, 9.8, 9.4, 10.4, 10.6, 10.8, 9.7)

> tsum.test(mean(x), sd(x), n.x=15, mu=10, alternative="t",conf.level = 0.99)

One-sample t-Test

data: Summarized x

t = 0.60801, df = 14, p-value = 0.5529

alternative hypothesis: true mean is not equal to 10

99 percent confidence interval:

9.756498 10.368502

sample estimates:

mean of x

10.0625

Vậy có thể xem thể tích của các hộp đựng loại dầu nhờn nào đó là 10 lít.

Bài 5:

N=20 x=33,1 S=4,3 a=0,05 μ0 =35

H0=35

H1#35

tsum.test(mean.x=33.1, s.x=4.3, n.x=20, mu=35, alternative="t",conf.level = 0.05)

One-sample t-Test

data: Summarized x

t = -1.9761, df = 19, p-value = 0.06285

alternative hypothesis: true mean is not equal to 35

5 percent confidence interval:

33.03891 33.16109

sample estimates:

mean of x

33.1

Kết luận: Do p-value = 0.06> alpha=0.05 nên chấp nhận giả thiết H0

Bài6:

N=200. P=90. P0=0.4. a=0.05

H0 : P=0,4

H1 : P>0,4

> prop.test(90, 200, p = 0.4, alternative = "greater",conf.level = 0.95, correct = F)

1-sample proportions test without continuity correction

data: 90 out of 200, null probability 0.4

X-squared = 2.0833, df = 1, p-value = 0.07446

alternative hypothesis: true p is greater than 0.4

95 percent confidence interval:

0.3931881 1.0000000

sample estimates:

p

0.45

Bác bỏ H1 vì p-value = 0.07446 > 0.05

Bài 7:

N=35. P=18. P0=0.4. a=0.05

H0 : P=0,4

H1 : P>0,4

> prop.test(18, 35, p = 0.4, alternative = "greater",conf.level = 0.95, correct = F)

1-sample proportions test without continuity correction

data: 18 out of 35, null probability 0.4

X-squared = 1.9048, df = 1, p-value = 0.08377

alternative hypothesis: true p is greater than 0.4

95 percent confidence interval:

0.3793762 1.0000000

sample estimates:

p

0.5142857

Chấp nhận H0 vì p-value = 0.08377 > a=0,05

Bài 8:

N=1000. P=136. P0=0.2. a=0.01

H0 : P=0,2

H1 : P>0,2

> prop.test(136, 1000, p = 0.2, alternative = "greater",conf.level = 0.99, correct = F)

1-sample proportions test without continuity correction

data: 136 out of 1000, null probability 0.2

X-squared = 25.6, df = 1, p-value = 1

alternative hypothesis: true p is greater than 0.2

99 percent confidence interval:

0.1127336 1.0000000

sample estimates:

p

0.136

Chấp thuận H0 vì p-value = 1 > a=0.01

Bài 9:

N=90. P=28. P0=0.25. a=0.05

H0 : P=0,25

H1 : P>0,25

> prop.test(28, 90, p = 0.25, alternative = "greater",conf.level = 0.95, correct = F)

1-sample proportions test without continuity correction

data: 28 out of 90, null probability 0.25

X-squared = 1.7926, df = 1, p-value = 0.09031

alternative hypothesis: true p is greater than 0.25

95 percent confidence interval:

0.2373445 1.0000000

sample estimates:

p

0.3111111

Chấp thuận H0 vì p-value = 0.09031 > a=0,05