Xiaohe Huang

1.

(a)

> x=c(140, 125, 150, 102, 143, 170,120, 94, 53,115)

> t.test(x, alternative="greater", mu=100)

One Sample t-test

data: x

t = 2.0261, df = 9, p-value = 0.0367

alternative hypothesis: true mean is greater than 100

95 percent confidence interval:

102.0193 Inf

sample estimates:

mean of x

121.2

Reject the hypothesis.

(b)

> t.test(x, alternative="greater", mu=100,conf.level = 0.95)

One Sample t-test

data: x

t = 2.0261, df = 9, p-value = 0.0367

alternative hypothesis: true mean is greater than 100

95 percent confidence interval:

102.0193 Inf

sample estimates:

mean of x

121.2

(c)

> t.test(x, alternative="greater", mu=100,conf.level = 0.9)

One Sample t-test

data: x

t = 2.0261, df = 9, p-value = 0.0367

alternative hypothesis: true mean is greater than 100

90 percent confidence interval:

106.7287 Inf

sample estimates:

mean of x

121.2

2．

(a)

> pchisq(600/25,9)

[1] 0.9956987

(b)

> 1-pchisq(12.175\*10/25,9)

[1] 0.8454902

(c)0

3.

> library(UsingR)

Loading required package: MASS

> data(babies)

> t.test(babies$age,babies$dage,alt="less")

Welch Two Sample t-test

data: babies$age and babies$dage

t = -11.0671, df = 2301.524, p-value < 2.2e-16

alternative hypothesis: true difference in means is less than 0

95 percent confidence interval:

-Inf -2.865266

sample estimates:

mean of x mean of y

27.37136 30.73706

Reject the hypothesis. As a result, dads are older.

4.

> Method1=scan()

1: 45.9 47.6 54.9 38.7 35.7 39.2 45.9 43.2 45.4 54.8

11:

Read 10 items

> Method2=scan()

1: 48.2 64.2 56.8 47.2 43.7 45.7 53.0 52.0 45.1 57.5

11:

Read 10 items

Assumptions:

(i) Both samples of interest are normally distributed.

(ii) Both samples have approximately equal(but unknown ) variance

> t.test(Method1,Method,var.equal=TRUE)

Two Sample t-test

data: Method1 and Method

t = -2.1399, df = 18, p-value = 0.04631

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-12.3067979 -0.1132021

sample estimates:

mean of x mean of y

45.13 51.34

Reject the assumption. There is a difference in the means of the measured amounts.

5.

> Team1=scan()

1: 3.0 2.4 1.3 3.1 2.4 2.0 1.1 2.7 3.0 2.2 3.6 1.0 1.4 2.5 1.6

16:

Read 15 items

> Team2=scan()

1: 1.8 1.0 3.5 1.2 3.3 2.6 1.5 2.8 0.4 3.0 2.2 2.7 3.8 2.9 2.1

16:

Read 15 items

> t.test(Team1,Team2,alt="less",var.equal=FALSE)

Welch Two Sample t-test

data: Team1 and Team2

t = -0.3059, df = 26.909, p-value = 0.381

alternative hypothesis: true difference in means is less than 0

95 percent confidence interval:

-Inf 0.4569543

sample estimates:

mean of x mean of y

2.22 2.32

Fail to reject the assumption.

> var.test(Team1,Team2,alt="less")

F test to compare two variances

data: Team1 and Team2

F = 0.6648, num df = 14, denom df = 14, p-value = 0.2273

alternative hypothesis: true ratio of variances is less than 1

95 percent confidence interval:

0.000000 1.651151

sample estimates:

ratio of variances

0.6647879

Fail to reject the assumption.

It is inaccurate to easily say one team is better than the other team.

> t.test(Team1,alt="less",mu=3)

One Sample t-test

data: Team1

t = -3.7753, df = 14, p-value = 0.001024

alternative hypothesis: true mean is less than 3

95 percent confidence interval:

-Inf 2.583896

sample estimates:

mean of x

2.22

> t.test(Team2,alt="less",mu=3)

One Sample t-test

data: Team2

t = -2.6835, df = 14, p-value = 0.008911

alternative hypothesis: true mean is less than 3

95 percent confidence interval:

-Inf 2.766309

sample estimates:

mean of x

2.32

Both teams can complete the mission in less than 3 days.