Lab assessment 5

MAT5007

Applied Statistical Methods

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Question 1

The following data come from a hypothetical survey of 920 people (Men, Women) that ask for their preference of one of the three ice cream flavors (Chocolate, Vanilla, Strawberry). Is there any association between gender and preference for ice cream flavor?

Gender\flavor	Chocolate	Vanilla	Strawberry
Men	100	120	60
Women	350	320	150

R-Script

```r
#Moeenul Islam
"Question 1"

data = matrix(c(100, 120, 60, 350, 320, 150), ncol=3, nrow=2,byrow=T)
data

chisq.test(data)

```

Console

```
> #Moeenul Islam
> "Question 1"
[1] "Question 1"
>
> data = matrix(c(100, 120, 60, 350, 320, 150), ncol=3, nrow=2,byrow=T)
> data
     [,1] [,2] [,3]
[1,]  100  120   60
[2,]  350  320  150
>
> chisq.test(data)

        Pearson's Chi-squared test

data:  data
X-squared = 4.3195, df = 2, p-value = 0.1154

> "H0: Gender and preference for the ice cream flavour are independent"
[1] "H0: Gender and preference for the ice cream flavour are independent"
> "Accept H0"
[1] "Accept H0"
```

Question 2

An outbreak of salmonella-related illness was attributed to ice produced at a certain factory. Scientists measured the level of Salmonella in 9 randomly sampled batches Ice cream. The levels (in MPN/g) were:

0.593	0.142	0.329	0.691	0.231	0.793	0.519	0.392	0.418

Is there any difference in the mean level pf Salmonella in ice cream whose population mean is 0.3 MPN/g?

R-Script

```
10 #Moeenul Islam
11 "Question 2"
12 x = c(0.593, 0.142, 0.329, 0.691, 0.231, 0.793, 0.519, 0.392, 0.418)
13 t.test(x, mu=0.3)
```

Console

```
> #Moeenul Islam
> "Question 2"
[1] "Question 2"
> x = c(0.593, 0.142, 0.329, 0.691, 0.231, 0.793, 0.519, 0.392, 0.418)
> t.test(x, mu=0.3)

        One Sample t-test

data:  x
t = 2.2051, df = 8, p-value = 0.05853
alternative hypothesis: true mean is not equal to 0.3
95 percent confidence interval:
 0.2928381 0.6200508
sample estimates:
mean of x
0.4564444

> "H0: mu=0.3"
[1] "H0: mu=0.3"
> "Accept H0"
[1] "Accept H0"
```