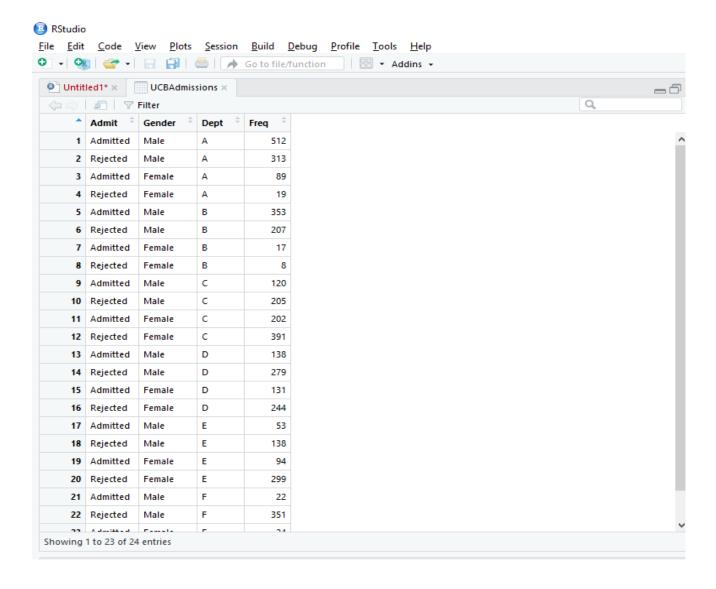
1. Problem Statement

2. Suppose p = the proportion of students who are admitted to the graduate school of the University of California at Berkeley, and suppose that a public relation officer boasts that UCB has historically had a 40% acceptance rate for its graduate school. Consider the data stored in the table UCBAdmissions from 1973. Assuming these observations constituted a simple random sample, are they consistent with the officerâ..s claim, or do they provide evidence that the acceptance rate was significantly less than 40%? Use an $\hat{1}\pm 0.01$ significance level.

Answer :

> View(UCBAdmissions)



```
> class(UCBAdmissions)
[1] "table"
> -qnorm(0.99)
[1] -2.326348
> A <- as.data.frame(UCBAdmissions)</pre>
> head(A)
     Admit Gender Dept Freq
1 Admitted
             Male
                         512
                     Α
2 Rejected
             Male
                      Α
                         313
                          89
3 Admitted Female
                      Α
                          19
4 Rejected Female
                      Α
5 Admitted
                         353
             Male
                      В
6 Rejected
             Male
                      в 207
> xtabs(Freq ~ Admit, data = A)
Admit
Admitted Rejected
    1755
             2771
> phat <- 1755/(1755 + 2771)
> (phat - 0.4)/sqrt(0.4 * 0.6/(1755 + 2771))
[1] -1.680919
> prop.test(1755, 1755 + 2771, p = 0.4, alternative = "less",
            + conf.level = 0.99, correct = FALSE)
```

```
Error: unexpected '=' in:
"prop.test(1755, 1755 + 2771, p = 0.4, alternative = "less",
            + conf.level ='
> prop.test(1755, 1755 + 2771, p = 0.4, alternative = "less",conf.level =
0.99, correct = FALSE)
         1-sample proportions test without continuity correction
data: 1755 out of 1755 + 2771, null probability 0.4 X-squared = 2.8255, df = 1, p-value = 0.04639
alternative hypothesis: true p is less than 0.4
99 percent confidence interval:
 0.0000000 0.4047326
sample estimates:
0.3877596
> library(IPSUR)
Warning message:
package 'IPSUR' was built under R version 3.5.2
> library(HH)
Loading required package: lattice
Loading required package: grid
Loading required package: latticeExtra
Loading required package: RColorBrewer
Loading required package: multcomp
Loading required package: mvtnorm
Loading required package: survival
Loading required package: TH.data
Loading required package: MASS
Attaching package: 'TH.data'
The following object is masked from 'package:MASS':
     geyser
Loading required package: gridExtra
Warning messages:
1: package 'HH' was built under R version 3.5.2
2: package 'latticeExtra' was built under R version 3.5.2
3: package 'RColorBrewer' was built under R version 3.5.2
4: package 'multcomp' was built under R version 3.5.2
5: package 'mvtnorm' was built under R version 3.5.2
6: package 'TH.data' was built under R version 3.5.2
7: package 'gridExtra' was built under R version 3.5.2
> library(ggplot2)
Attaching package: 'ggplot2'
The following object is masked from 'package:latticeExtra':
     layer
Warning message:
package 'ggplot2' was built under R version 3.5.2
> par(mfrow = c(1,1))
> plot(temp, "Hypoth")
```

