Solutions and R Programming Examples: Hypothesis Testing for Proportion(s)

1.Upgrading a New Cellphone

```
prop.test(x =135, n = 500, p = 0.20, correct = FALSE, alternative ="greater")
```

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1-sample proportions test without continuity correction

data: 135 out of 500, null probability 0.2

X-squared = 15.312, df = 1, p-value = 4.556e-05

alternative hypothesis: true p is greater than 0.2

95 percent confidence interval:

0.2386446 1.0000000

sample estimates:

p

0.27

.....

2. 2016 Iris Exit Poll

```
prop.test(x =1205,n =5260, p= 0.25,correct = FALSE, alternative= "two.sided")
```

……

```
          1-sample proportions test without continuity correction

data:  1205 out of 5260, null probability 0.25
X-squared = 12.269, df = 1, p-value = 0.0004606
alternative hypothesis: true p is not equal to 0.25
95 percent confidence interval:
 0.2179307 0.2406396
sample estimates:
        p
0.2290875
```

……

```
prop.test(x =115,n =500, p= 0.25,correct = FALSE, alternative= "two.sided")
```

……

```
      1-sample proportions test without continuity correction

data:  115 out of 500, null probability 0.25
X-squared = 1.0667, df = 1, p-value = 0.3017
alternative hypothesis: true p is not equal to 0.25
95 percent confidence interval:
 0.1952549 0.2688622
sample estimates:
   p
0.23
```

……

3. Checking the Survey Results

```
prop.test(x =28,n =100, p= 0.31,correct = FALSE, alternative= "less")
```

……

```
        1-sample proportions test without continuity correction

data:  28 out of 100, null probability 0.31
X-squared = 0.42076, df = 1, p-value = 0.2583
alternative hypothesis: true p is less than 0.31
95 percent confidence interval:
 0.0000 0.3589
sample estimates:
   p
0.28
```

……

4. Brands more critical for Dads?

```
prop.test(x =c(181,275),n = c(756,809),correct = FALSE, alternative = "less")
```

…….

```
      2-sample test for equality of proportions without continuity correction

data:  c(181, 275) out of c(756, 809)
X-squared = 19.12, df = 1, p-value = 6.138e-06
alternative hypothesis: less
95 percent confidence interval:
 -1.00000000 -0.06306369
sample estimates:
   prop 1    prop 2
0.2394180 0.3399258
```

5. Comparing Marketing Commercials

```
prop.test(x =c(25,20),n =c(100,100),correct = FALSE, alternative = "greater")
```

……

```
     2-sample test for equality of proportions without continuity correction


data:  c(25, 20) out of c(100, 100)
X-squared = 0.71685, df = 1, p-value = 0.1986
alternative hypothesis: greater
95 percent confidence interval:
 -0.04696269  1.00000000
sample estimates:
prop 1 prop 2
  0.25   0.20
```

……

6. Hormone Therapy for Menopause

```
prop.test(x =c(107,88),n =c(8506,8102),correct=FALSE, alternative=
"two.sided")
```

……

```
        2-sample test for equality of proportions without continuity
        correction
data:  c(107, 88) out of c(8506, 8102)
X-squared = 1.0553, df = 1, p-value = 0.3043
alternative hypothesis: two.sided
95 percent confidence interval:
 -0.001553781  0.004989461
sample estimates:
    prop 1     prop 2
0.01257936 0.01086152
```