Midterm Q6

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3/9/2022

```
library(AER)
```

```
## Loading required package: car
```

```
## Loading required package: carData
```

```
## Loading required package: lmtest
```

```
## Loading required package: zoo
```

```
##
## Attaching package: 'zoo'
```

```
## The following objects are masked from 'package:base':
##
##     as.Date, as.Date.numeric
```

```
## Loading required package: sandwich
```

```
## Loading required package: survival
```

```
data("Affairs")
```

6. F-Test of Model Utility Perform the F-Test of the Utility of model g.

a. What are the Null Hypothesis and Alternative Hypothesis?

```
#H0= beta1=0, beta2=0,beta3=0,beta4=0,beta5=0,beta6=0,beta7=0
#H1= Atleast one of beta1, beta2,beta3,beta 4, beta5,beta6,beta7 not equal to 0
```

b. Compute the Analysis of Variance table for this test based on the data?

```
g=lm (affairs~gender+age+yearsmarried+children+education+religiousness+occupation+rating, data = Affairs)
g0 <- lm(affairs~1, Affairs)
(anov <- anova(g0, g))
```

```
## Analysis of Variance Table
##
## Model 1: affairs ~ 1
## Model 2: affairs ~ gender + age + yearsmarried + children + education +
##     religiousness + occupation + rating
##   Res.Df    RSS Df Sum of Sq      F    Pr(>F)
## 1    600 6529.1
## 2    592 5669.0  8    860.13 11.228 7.472e-15 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

c. Using α=0.05. What is the conclusion of the hypotheises test of utility model g?

```
alpha = 0.05
p.value <- 7.472e-15
if(p.value < alpha) "Reject HO" else "Do Not Reject HO"
```

```
## [1] "Reject HO"
```

```
if(p.value < alpha) "Model is useful" else "Model is not useful"
```

```
## [1] "Model is useful"
```