IAS Assignment

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```
comm = read.csv("Comm 20k-37.5k.csv")

cont_model_comm = lm(log(comm$CommInsure) ~ factor(comm$Floor)
                     + log(comm$Excess) +log(comm$Content), data = comm)
summary(cont_model_comm)
```

```
##
## Call:
## lm(formula = log(comm$CommInsure) ~ factor(comm$Floor) + log(comm$Excess) +
##     log(comm$Content), data = comm)
##
## Residuals:
##       Min        1Q    Median        3Q       Max
## -0.046484 -0.014901  0.004087  0.018200  0.035472
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)           2.198202   0.096280   22.83   <2e-16 ***
## factor(comm$Floor)1 -0.163845   0.004665  -35.13   <2e-16 ***
## factor(comm$Floor)2 -0.191472   0.004665  -41.05   <2e-16 ***
## log(comm$Excess)    -0.051394   0.001611  -31.90   <2e-16 ***
## log(comm$Content)    0.390900   0.009392   41.62   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.02285 on 139 degrees of freedom
## Multiple R-squared:  0.9714, Adjusted R-squared:  0.9706
## F-statistic:  1180 on 4 and 139 DF,  p-value: < 2.2e-16
```

```
comm$Floor = factor(comm$Floor)
comm$Excess = factor(comm$Excess, levels = c(750, 100, 200, 300, 500, 1000, 2000, 5000))
comm$Content = factor(comm$Content, levels = c(25000, 20000, 22500, 27500, 30000, 37500))
fac_model_comm = lm(log(comm$CommInsure) ~ comm$Floor+comm$Excess+comm$Content, data = comm)
summary(fac_model_comm)
```

```
##
## Call:
## lm(formula = log(comm$CommInsure) ~ comm$Floor + comm$Excess +
##     comm$Content, data = comm)
##
## Residuals:
##        Min         1Q     Median         3Q        Max
## -0.0168278 -0.0044761  0.0004733  0.0039401  0.0307086
```

```
##
## Coefficients:
##                     Estimate Std. Error  t value Pr(>|t|)
## (Intercept)         5.836346   0.002396 2435.725  < 2e-16 ***
## comm$Floor1        -0.163845   0.001515 -108.116  < 2e-16 ***
## comm$Floor2        -0.191472   0.001515 -126.346  < 2e-16 ***
## comm$Excess100      0.046751   0.002475   18.891  < 2e-16 ***
## comm$Excess200      0.040297   0.002475   16.283  < 2e-16 ***
## comm$Excess300      0.034136   0.002475   13.794  < 2e-16 ***
## comm$Excess500      0.021942   0.002475    8.866 5.27e-15 ***
## comm$Excess1000    -0.021877   0.002475   -8.840 6.09e-15 ***
## comm$Excess2000    -0.074858   0.002475  -30.249  < 2e-16 ***
## comm$Excess5000    -0.151502   0.002475  -61.220  < 2e-16 ***
## comm$Content20000 -0.080519   0.002143  -37.570  < 2e-16 ***
## comm$Content22500 -0.039441   0.002143  -18.403  < 2e-16 ***
## comm$Content27500   0.037784   0.002143   17.630  < 2e-16 ***
## comm$Content30000   0.074194   0.002143   34.619  < 2e-16 ***
## comm$Content37500   0.163695   0.002143   76.379  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.007424 on 129 degrees of freedom
## Multiple R-squared:  0.9972, Adjusted R-squared:  0.9969
## F-statistic:  3278 on 14 and 129 DF,  p-value: < 2.2e-16
```

```r
suncp = read.csv("Suncorp 20k-37.5k.csv")

cont_model_suncp = lm(log(suncp$Suncorp) ~ factor(suncp$Floor) + log(suncp$Excess) + log(suncp$Content)
summary(cont_model_suncp)
```

```
##
## Call:
## lm(formula = log(suncp$Suncorp) ~ factor(suncp$Floor) + log(suncp$Excess) +
##     log(suncp$Content), data = suncp)
##
## Residuals:
##       Min        1Q    Median        3Q       Max
## -0.052303 -0.016964  0.001678  0.011239  0.062823
##
## Coefficients:
##                       Estimate Std. Error t value Pr(>|t|)
## (Intercept)          -0.188784   0.100755  -1.874   0.0638 .
## factor(suncp$Floor)1 -0.324488   0.004833 -67.140   <2e-16 ***
## factor(suncp$Floor)2 -0.393410   0.004833 -81.400   <2e-16 ***
## log(suncp$Excess)    -0.088020   0.002745 -32.067   <2e-16 ***
## log(suncp$Content)    0.612627   0.009731  62.955   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.0205 on 103 degrees of freedom
##   (203 observations deleted due to missingness)
## Multiple R-squared:  0.9919, Adjusted R-squared:  0.9915
## F-statistic:  3137 on 4 and 103 DF,  p-value: < 2.2e-16
```

```r
suncp$Floor = factor(suncp$Floor)
suncp$Excess = factor(suncp$Excess, levels = c(750, 200, 400, 600, 1000, 2000))
suncp$Content = factor(suncp$Content, levels = c(25000, 20000, 22500, 27500, 30000, 37500))
model_suncp = lm(log(suncp$Suncorp) ~ suncp$Floor+suncp$Excess+suncp$Content, data = suncp)
summary(model_suncp)
```

```
##
## Call:
## lm(formula = log(suncp$Suncorp) ~ suncp$Floor + suncp$Excess +
##     suncp$Content, data = suncp)
##
## Residuals:
##       Min        1Q    Median        3Q       Max
## -0.041968 -0.012558 -0.000763  0.011031  0.072913
##
## Coefficients:
##                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)          5.438106   0.006990 777.992  < 2e-16 ***
## suncp$Floor1        -0.324488   0.004749 -68.332  < 2e-16 ***
## suncp$Floor2        -0.393410   0.004749 -82.845  < 2e-16 ***
## suncp$Excess200      0.105014   0.006716  15.637  < 2e-16 ***
## suncp$Excess400      0.057685   0.006716   8.590 1.70e-13 ***
## suncp$Excess600      0.016212   0.006716   2.414  0.01770 *
## suncp$Excess1000    -0.021114   0.006716  -3.144  0.00222 **
## suncp$Excess2000    -0.098908   0.006716 -14.728  < 2e-16 ***
## suncp$Content20000 -0.141457   0.006716 -21.064  < 2e-16 ***
## suncp$Content22500 -0.065722   0.006716  -9.786 4.73e-16 ***
## suncp$Content27500  0.056658   0.006716   8.437 3.59e-13 ***
## suncp$Content30000  0.108911   0.006716  16.217  < 2e-16 ***
## suncp$Content37500  0.245138   0.006716  36.502  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.02015 on 95 degrees of freedom
##   (203 observations deleted due to missingness)
## Multiple R-squared:  0.9928, Adjusted R-squared:  0.9918
## F-statistic:  1084 on 12 and 95 DF,  p-value: < 2.2e-16
```