Risk_HW4

```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
setwd('/Volumes/IMP/Term 3/RISK')

customer_info <- read.csv('creditcard.csv', header = TRUE)

#Part - (A)
#### Cleaning the data ###
# 1. remove age < 18
# 2. create log(share) column
# 3. Replace yes with 1 and No with 0 in Card column

customer_info <- customer_info %>% filter(age > 18) %>% mutate(log_share = log(share))
customer_info <- customer_info %>% mutate(card = ifelse(card == "yes", 1, 0))

### Logit & Probit Regressions ###

Logit <- glm (card ~ income + reports + log_share, family = binomial(link = "logit"), data = customer_i

Probit <- glm (card ~ income + reports + log_share, family = binomial(link = "probit"), data = customer
```

```
## Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred
```

```
## Test case with $30,000 income, (1,2) derogatory reports and expenditure 0.001, 0.01 of annual income

###Case 1:
income = 3
report = 1
log_share = log(0.001)
case1 = data.frame(income = income, reports = report, log_share = log_share)
Logit_case1 = predict(Logit,case1, type = "response")
Probit_case1 = predict(Probit,case1, type = "response")
print("Case 1 results")
```

```
## [1] "Case 1 results"
```

```
print(Logit_case1)
```

```
##         1
## 0.2237693
```

```
print(Probit_case1)
```

```
##         1
## 0.2837883
```

```
###Case 2:
report2 = 2
case2 = data.frame(income = income, reports = report2, log_share)
Logit_case2 = predict(Logit,case2, type = "response")
Probit_case2 = predict(Probit,case2, type = "response")
print("Case 2 results")
```

```
## [1] "Case 2 results"
```

```
print(Logit_case2)
```

```
##          1
## 0.04418212
```

```
print(Probit_case2)
```

```
##          1
## 0.07604695
```

```
Effect_logit = Logit_case2 - Logit_case1
Effect_Probit = Probit_case2 - Probit_case1

###Case 3 & 4:
log_share2 = log(0.01)
case3 = data.frame(income = income, reports = report, log_share2)
case4 = data.frame(income = income, reports = report2, log_share2)
Logit_case3 = predict(Logit,case3, type = "response")
Logit_case4 = predict(Logit,case4, type = "response")
Probit_case3 = predict(Probit,case3, type = "response")
Probit_case4 = predict(Probit,case4, type = "response")
print("Case 3 results")
```

```
## [1] "Case 3 results"
```

```
print(Logit_case3)
```

```
##         1
## 0.2237693
```

```
print(Probit_case3)
```

```
##         1
## 0.2837883
```

```
print("Case 4 results")
```

```
## [1] "Case 4 results"
```

```
print(Logit_case4)
```

```
##          1
## 0.04418212
```

```
print(Probit_case4)
```

```
##          1
## 0.07604695
```

```r
Effect_logit_ = Logit_case4 - Logit_case3
Effect_Probit_ = Probit_case4 - Probit_case3


print("Effects of additional report on case 1")
```

```
## [1] "Effects of additional report on case 1"
```

```r
print(Effect_logit)
```

```
##          1
## -0.1795872
```

```r
print(Effect_Probit)
```

```
##          1
## -0.2077413
```

```r
print("Effects of additional report on case 3")
```

```
## [1] "Effects of additional report on case 3"
```

```r
print(Effect_logit_)
```

```
##          1
## -0.1795872
```

```r
print(Effect_Probit_)
```

```
##          1
## -0.2077413
```