NEW PRICING

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This project investigates the influence of the decoy effect on consumer decision-making within the context of gym membership selections. Utilizing a quantitative research design, this project focused the main objective: to analyze the financial impact of decoy pricing strategies on revenue generation.

Data were collected from 107 people through surveying (scenarios featuring three gym membership options).

Revenue comparison across scenarios with and without the decoy demonstrated that the presence of a decoy option notably boosts total revenue, confirming its strategic importance in pricing.

Loading the needed packages and libraries:

```
options(repos = c(CRAN = "https://cloud.r-project.org"))
install.packages("corrplot")

## Installing package into 'C:/Users/HP/AppData/Local/R/win-library/4.3'
## (as 'lib' is unspecified)

## package 'corrplot' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##    C:\Users\HP\AppData\Local\Temp\RtmpQJysZ3\downloaded_packages

library(corrplot)

## Warning: package 'corrplot' was built under R version 4.3.3

## corrplot 0.95 loaded

library(dplyr)

## Warning: package 'dplyr' was built under R version 4.3.3

##
## 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
```

```
library(tidyverse)

## Warning: package 'tidyverse' was built under R version 4.3.3

## Warning: package 'ggplot2' was built under R version 4.3.3

## Warning: package 'tibble' was built under R version 4.3.2

## Warning: package 'tidyr' was built under R version 4.3.2

## Warning: package 'readr' was built under R version 4.3.3

## Warning: package 'purrr' was built under R version 4.3.2

## Warning: package 'stringr' was built under R version 4.3.2

## Warning: package 'forcats' was built under R version 4.3.3

## Warning: package 'lubridate' was built under R version 4.3.3

## ── Attaching core tidyverse packages ──────────────────────── tidyverse
2.0.0 ──
## ✓ forcats   1.0.0      ✓ readr     2.1.5
## ✓ ggplot2   3.5.1      ✓ stringr   1.5.1
## ✓ lubridate 1.9.4      ✓ tibble    3.2.1
## ✓ purrr     1.0.2      ✓ tidyr     1.3.1

## ── Conflicts ──────────────────────────────────────
tidyverse_conflicts() ──
## ✗ dplyr::filter() masks stats::filter()
## ✗ dplyr::lag()    masks stats::lag()
## ℹ Use the conflicted package (<http://conflicted.r-lib.org/>) to force all
conflicts to become errors
```

Importing the data and obtaining basic summaries:

```
data = read.csv("C:/Users/HP/Downloads/Decoy.csv")
head(data)

##    Age GenderMale Working GymImportance MonthlyBudget FitnessNeeds
SavingsGoal
## 1  22          1       3             3          20.0            3
2
## 2  22          1       4             4          17.5            5
2
## 3  23          1       5             5           0.0            2
1
## 4  23          1       3             5          22.5            5
3
## 5  18          0       0             4          62.5            4
5
## 6  21          0       0             3          32.5            4
```

2

```
##   PriceFairness FinancialCommitment Decoy Option NDOption In X2IO Dc X2DO
## 1             1                   1     0      1        1  0    1  1    3
## 2             3                   3     0      1        1  0    1  0    0
## 3             4                   1     0      1        1  0    1  0    0
## 4             3                   3     0      1        1  0    1  1    3
## 5             4                   4     1      3        3  1    3  1    3
## 6             5                   4     1      3        3  0    2  1    3
##   Collective Score Binary                                    X X.1 X.2
X.3
## 1          1     4      0
## 2          1     8      0 Collective and decoy should be identical
## 3          1     6      0                  Withing group comparisons
## 4          1     9      1                          Group comparisons
## 5          3    13      1
## 6          3    11      1                          Literature review
##   X.4 X.5
## 1
## 2
## 3
## 4
## 5
## 6
```

```
summary(data)
```

```
##       Age          GenderMale        Working       GymImportance
##  Min.   :18.00   Min.   :0.0000   Min.   :0.000   Min.   :1.000
##  1st Qu.:20.00   1st Qu.:0.0000   1st Qu.:1.000   1st Qu.:3.000
##  Median :22.00   Median :1.0000   Median :3.000   Median :4.000
##  Mean   :21.87   Mean   :0.5421   Mean   :3.136   Mean   :3.804
##  3rd Qu.:23.50   3rd Qu.:1.0000   3rd Qu.:5.000   3rd Qu.:5.000
##  Max.   :27.00   Max.   :1.0000   Max.   :9.000   Max.   :5.000
##  MonthlyBudget    FitnessNeeds    SavingsGoal     PriceFairness
##  Min.   :  0.00   Min.   :1.00   Min.   :0.000   Min.   :1.000
##  1st Qu.: 20.00   1st Qu.:3.00   1st Qu.:2.000   1st Qu.:3.000
##  Median : 25.00   Median :4.00   Median :3.000   Median :4.000
##  Mean   : 28.39   Mean   :3.72   Mean   :2.879   Mean   :3.477
##  3rd Qu.: 32.50   3rd Qu.:5.00   3rd Qu.:4.000   3rd Qu.:4.000
##  Max.   :150.00   Max.   :5.00   Max.   :5.000   Max.   :5.000
##  FinancialCommitment     Decoy           Option         NDOption
##  Min.   :1.000       Min.   :0.0000   Min.   :1.000   Min.   :1.000
##  1st Qu.:2.000       1st Qu.:0.0000   1st Qu.:1.000   1st Qu.:1.000
##  Median :3.000       Median :1.0000   Median :3.000   Median :1.000
##  Mean   :3.028       Mean   :0.5514   Mean   :2.224   Mean   :1.505
##  3rd Qu.:4.000       3rd Qu.:1.0000   3rd Qu.:3.000   3rd Qu.:2.000
##  Max.   :5.000       Max.   :1.0000   Max.   :3.000   Max.   :3.000
##        In              X2IO             Dc              X2DO
##  Min.   :0.000   Min.   :1.000   Min.   :0.0000   Min.   :0.000
##  1st Qu.:0.000   1st Qu.:1.000   1st Qu.:0.0000   1st Qu.:0.000
```

```
## Median :0.000     Median :1.000      Median :1.0000     Median :3.000
## Mean    :0.243     Mean    :1.682     Mean    :0.7009    Mean    :2.103
## 3rd Qu.:0.000      3rd Qu.:2.000      3rd Qu.:1.0000     3rd Qu.:3.000
## Max.    :1.000     Max.    :3.000     Max.    :1.0000    Max.    :3.000
##    Collective          Score              Binary               X
## Min.    :1.000     Min.    : 3.000    Min.    :0.0000    Length:107
## 1st Qu.:1.000      1st Qu.: 7.000     1st Qu.:0.0000     Class :character
## Median :3.000      Median : 9.000     Median :1.0000     Mode  :character
## Mean    :2.196     Mean    : 9.383    Mean    :0.5981
## 3rd Qu.:3.000      3rd Qu.:12.000     3rd Qu.:1.0000
## Max.    :3.000     Max.    :15.000    Max.    :1.0000
##     X.1                 X.2                 X.3                 X.4
## Length:107          Length:107          Length:107          Length:107
## Class :character    Class :character    Class :character    Class :character
## Mode  :character    Mode  :character    Mode  :character    Mode  :character
##
##
##
##      X.5
## Length:107
## Class :character
## Mode  :character
##
##
##
```

The data has 19 variables. The variables relevant to the analysis are:

1. Age (age of the people surveyed): 18 to 30 was the target age group with the maximum age actually surveyed being 27.

2. GenderMale: A binary for gender with 1 corresponding to male and 0 to female.

3. Working: Years of working experience.

4. GymImportance: Importance of going to the gym on a scale of 1 (lowest importance) to 5 (highest importance).

5. MonthlyBudget: Monthly budget dedicated to gym membership.

6. FitnessNeeds: A variable to capture whether the gym members feel like their fitness needs are/can be satisfied by the membership plans they select from the decoy option pricing range (on a scale of 1 to 5).

7. SavingsGoal: How deeply the subscription plans with the decoy option selected align with the saving goals of the members (on a scale of 1 to 5).

8. PriceFairness: How fair the members think the pricing strategy with the decoy option is (on a scale of 1 to 5).

9. FinancialCommitment: How willing are the members to stick to the selected plan (with the decoy option) in long term (on a scale of 1 to 5).

10. Decoy: Binary for decoy option selection (1 if they select the target option, 0 otherwise).

11. Option: The plan selected from the decoy pricing strategy.

12. NDOption: The plan selected from the pricing range without the decoy option.

Creating new columns with the prices:

Option 1: $25/month (competition)

Option 2: $30/month (decoy)

Option 3: $40/month (target)

```
data = data %>%
  mutate(pricesD = case_when(
    Option == 1 ~ 25,
    Option == 2 ~ 30,
    Option == 3 ~ 40
  ))
head(data)
```

```
##   Age GenderMale Working GymImportance MonthlyBudget FitnessNeeds
SavingsGoal
## 1  22          1       3             3          20.0            3
2
## 2  22          1       4             4          17.5            5
2
## 3  23          1       5             5           0.0            2
1
## 4  23          1       3             5          22.5            5
3
## 5  18          0       0             4          62.5            4
5
## 6  21          0       0             3          32.5            4
2
##   PriceFairness FinancialCommitment Decoy Option NDOption In X2IO Dc X2DO
## 1             1                   1     0        1        1   0  1  1    3
## 2             3                   3     0        1        1   0  1  0    0
## 3             4                   1     0        1        1   0  1  0    0
## 4             3                   3     0        1        1   0  1  1    3
## 5             4                   4     1        3        3   1  3  1    3
## 6             5                   4     1        3        3   0  2  1    3
##   Collective Score Binary                                   X X.1 X.2
X.3
## 1          1     4      0
## 2          1     8      0 Collective and decoy should be identical
```

```
## 3            1     6      0                    Withing group comparisons
## 4            1     9      1                        Group comparisons
## 5            3    13      1
## 6            3    11      1                        Literature review
##    X.4 X.5 pricesD
## 1              25
## 2              25
## 3              25
## 4              25
## 5              40
## 6              40
```

summary(data)

```
##       Age            GenderMale          Working         GymImportance
##  Min.   :18.00   Min.   :0.0000   Min.   :0.000   Min.   :1.000
##  1st Qu.:20.00   1st Qu.:0.0000   1st Qu.:1.000   1st Qu.:3.000
##  Median :22.00   Median :1.0000   Median :3.000   Median :4.000
##  Mean   :21.87   Mean   :0.5421   Mean   :3.136   Mean   :3.804
##  3rd Qu.:23.50   3rd Qu.:1.0000   3rd Qu.:5.000   3rd Qu.:5.000
##  Max.   :27.00   Max.   :1.0000   Max.   :9.000   Max.   :5.000
##  MonthlyBudget     FitnessNeeds     SavingsGoal      PriceFairness
##  Min.   :  0.00   Min.   :1.00   Min.   :0.000   Min.   :1.000
##  1st Qu.: 20.00   1st Qu.:3.00   1st Qu.:2.000   1st Qu.:3.000
##  Median : 25.00   Median :4.00   Median :3.000   Median :4.000
##  Mean   : 28.39   Mean   :3.72   Mean   :2.879   Mean   :3.477
##  3rd Qu.: 32.50   3rd Qu.:5.00   3rd Qu.:4.000   3rd Qu.:4.000
##  Max.   :150.00   Max.   :5.00   Max.   :5.000   Max.   :5.000
##  FinancialCommitment     Decoy            Option          NDOption
##  Min.   :1.000       Min.   :0.0000   Min.   :1.000   Min.   :1.000
##  1st Qu.:2.000       1st Qu.:0.0000   1st Qu.:1.000   1st Qu.:1.000
##  Median :3.000       Median :1.0000   Median :3.000   Median :1.000
##  Mean   :3.028       Mean   :0.5514   Mean   :2.224   Mean   :1.505
##  3rd Qu.:4.000       3rd Qu.:1.0000   3rd Qu.:3.000   3rd Qu.:2.000
##  Max.   :5.000       Max.   :1.0000   Max.   :3.000   Max.   :3.000
##        In              X2IO              Dc              X2DO
##  Min.   :0.000   Min.   :1.000   Min.   :0.0000   Min.   :0.000
##  1st Qu.:0.000   1st Qu.:1.000   1st Qu.:0.0000   1st Qu.:0.000
##  Median :0.000   Median :1.000   Median :1.0000   Median :3.000
##  Mean   :0.243   Mean   :1.682   Mean   :0.7009   Mean   :2.103
##  3rd Qu.:0.000   3rd Qu.:2.000   3rd Qu.:1.0000   3rd Qu.:3.000
##  Max.   :1.000   Max.   :3.000   Max.   :1.0000   Max.   :3.000
##    Collective         Score           Binary            X
##  Min.   :1.000   Min.   : 3.000   Min.   :0.0000   Length:107
##  1st Qu.:1.000   1st Qu.: 7.000   1st Qu.:0.0000   Class :character
##  Median :3.000   Median : 9.000   Median :1.0000   Mode  :character
##  Mean   :2.196   Mean   : 9.383   Mean   :0.5981
##  3rd Qu.:3.000   3rd Qu.:12.000   3rd Qu.:1.0000
##  Max.   :3.000   Max.   :15.000   Max.   :1.0000
##      X.1               X.2              X.3               X.4
```

```
##   Length:107          Length:107          Length:107          Length:107
##   Class :character     Class :character     Class :character     Class :character
##   Mode  :character     Mode  :character     Mode  :character     Mode  :character
##
##
##
##       X.5                pricesD
##   Length:107          Min.   :25.00
##   Class :character     1st Qu.:25.00
##   Mode  :character     Median :40.00
##                        Mean   :33.88
##                        3rd Qu.:40.00
##                        Max.   :40.00
```

```r
data = data%>%
  mutate(pricesND = case_when(
    NDOption == 1 ~ NDOption *25,
    NDOption == 3 ~ NDOption * 40/3
  ))
head(data)
```

```
##    Age GenderMale Working GymImportance MonthlyBudget FitnessNeeds
SavingsGoal
## 1  22          1       3             3          20.0            3
2
## 2  22          1       4             4          17.5            5
2
## 3  23          1       5             5           0.0            2
1
## 4  23          1       3             5          22.5            5
3
## 5  18          0       0             4          62.5            4
5
## 6  21          0       0             3          32.5            4
2
##    PriceFairness FinancialCommitment Decoy Option NDOption In X2IO Dc X2DO
## 1              1                   1     1      0        1      1  0  1  1     3
## 2              3                   3     3      0        1      1  0  1  0     0
## 3              4                   4     1      0        1      1  0  1  0     0
## 4              3                   3     3      0        1      1  0  1  1     3
## 5              4                   4     4      1        3      3  1  3  1     3
## 6              5                   5     4      1        3      3  0  2  1     3
##    Collective Score Binary                                    X X.1 X.2
X.3
## 1          1     4      0
## 2          1     8      0 Collective and decoy should be identical
## 3          1     6      0            Withing group comparisons
## 4          1     9      1                Group comparisons
## 5          3    13      1
## 6          3    11      1                Literature review
```

```
##   X.4 X.5 pricesD pricesND
## 1            25       25
## 2            25       25
## 3            25       25
## 4            25       25
## 5            40       40
## 6            40       40
```

```
summary(data)
```

```
##       Age            GenderMale         Working        GymImportance
##  Min.   :18.00   Min.   :0.0000   Min.   :0.000   Min.   :1.000
##  1st Qu.:20.00   1st Qu.:0.0000   1st Qu.:1.000   1st Qu.:3.000
##  Median :22.00   Median :1.0000   Median :3.000   Median :4.000
##  Mean   :21.87   Mean   :0.5421   Mean   :3.136   Mean   :3.804
##  3rd Qu.:23.50   3rd Qu.:1.0000   3rd Qu.:5.000   3rd Qu.:5.000
##  Max.   :27.00   Max.   :1.0000   Max.   :9.000   Max.   :5.000
##  MonthlyBudget    FitnessNeeds     SavingsGoal     PriceFairness
##  Min.   :  0.00   Min.   :1.00   Min.   :0.000   Min.   :1.000
##  1st Qu.: 20.00   1st Qu.:3.00   1st Qu.:2.000   1st Qu.:3.000
##  Median : 25.00   Median :4.00   Median :3.000   Median :4.000
##  Mean   : 28.39   Mean   :3.72   Mean   :2.879   Mean   :3.477
##  3rd Qu.: 32.50   3rd Qu.:5.00   3rd Qu.:4.000   3rd Qu.:4.000
##  Max.   :150.00   Max.   :5.00   Max.   :5.000   Max.   :5.000
##  FinancialCommitment     Decoy            Option         NDOption
##  Min.   :1.000       Min.   :0.0000   Min.   :1.000   Min.   :1.000
##  1st Qu.:2.000       1st Qu.:0.0000   1st Qu.:1.000   1st Qu.:1.000
##  Median :3.000       Median :1.0000   Median :3.000   Median :1.000
##  Mean   :3.028       Mean   :0.5514   Mean   :2.224   Mean   :1.505
##  3rd Qu.:4.000       3rd Qu.:1.0000   3rd Qu.:3.000   3rd Qu.:2.000
##  Max.   :5.000       Max.   :1.0000   Max.   :3.000   Max.   :3.000
##       In             X2IO             Dc              X2DO
##  Min.   :0.000   Min.   :1.000   Min.   :0.0000   Min.   :0.000
##  1st Qu.:0.000   1st Qu.:1.000   1st Qu.:0.0000   1st Qu.:0.000
##  Median :0.000   Median :1.000   Median :1.0000   Median :3.000
##  Mean   :0.243   Mean   :1.682   Mean   :0.7009   Mean   :2.103
##  3rd Qu.:0.000   3rd Qu.:2.000   3rd Qu.:1.0000   3rd Qu.:3.000
##  Max.   :1.000   Max.   :3.000   Max.   :1.0000   Max.   :3.000
##    Collective         Score            Binary            X
##  Min.   :1.000   Min.   : 3.000   Min.   :0.0000   Length:107
##  1st Qu.:1.000   1st Qu.: 7.000   1st Qu.:0.0000   Class :character
##  Median :3.000   Median : 9.000   Median :1.0000   Mode  :character
##  Mean   :2.196   Mean   : 9.383   Mean   :0.5981
##  3rd Qu.:3.000   3rd Qu.:12.000   3rd Qu.:1.0000
##  Max.   :3.000   Max.   :15.000   Max.   :1.0000
##      X.1              X.2              X.3              X.4
##  Length:107       Length:107       Length:107       Length:107
##  Class :character Class :character Class :character Class :character
##  Mode  :character Mode  :character Mode  :character Mode  :character
##
```
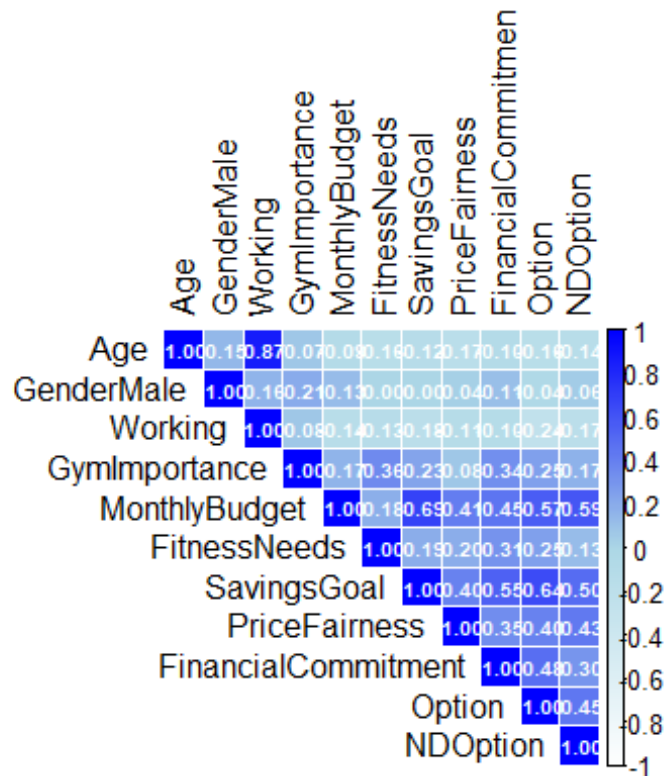
```
##
##
##       X.5                pricesD              pricesND
##  Length:107          Min.   :25.00     Min.   :25.00
##  Class :character    1st Qu.:25.00     1st Qu.:25.00
##  Mode  :character    Median :40.00     Median :25.00
##                      Mean   :33.88     Mean   :28.79
##                      3rd Qu.:40.00     3rd Qu.:32.50
##                      Max.   :40.00     Max.   :40.00
```

Plotting correlation plots:

1. With both, males and females

2. With only males

3. With only females
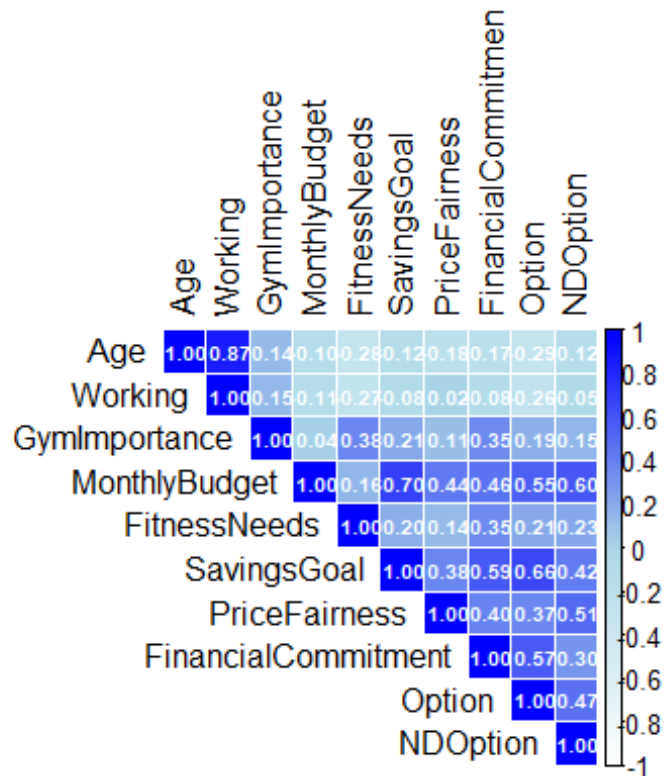
```
corplot = cor(data%>%
  select(Age, GenderMale, Working, GymImportance, MonthlyBudget,
FitnessNeeds, SavingsGoal, PriceFairness, FinancialCommitment, Option,
NDOption))
corrplot(
  corplot,
  method    = "color",

  tl.col = ("black"),
   col = colorRampPalette(c("white", "lightblue", "blue"))(200),
  addgrid.col = "white",
  addCoef.col = "white",
  number.cex = 0.6,
  type = "upper")
```

Correlation matrix (upper triangle):

	Age	GenderMale	Working	GymImportance	MonthlyBudget	FitnessNeeds	SavingsGoal	PriceFairness	FinancialCommitment	Option	NDOption
Age	1.00	0.15	0.87	0.07	0.09	0.16	0.12	0.17	0.10	0.16	0.14
GenderMale		1.00	0.16	0.21	0.13	0.00	0.00	0.04	0.11	0.04	0.06
Working			1.00	0.08	0.14	0.13	0.18	0.11	0.19	0.24	0.17
GymImportance				1.00	0.17	0.36	0.23	0.08	0.34	0.25	0.17
MonthlyBudget					1.00	0.18	0.69	0.41	0.45	0.57	0.59
FitnessNeeds						1.00	0.19	0.20	0.31	0.25	0.13
SavingsGoal							1.00	0.40	0.55	0.64	0.50
PriceFairness								1.00	0.35	0.40	0.43
FinancialCommitment									1.00	0.48	0.30
Option										1.00	0.45
NDOption											1.00

```r
male_data = data %>%
  filter(GenderMale == 1)
corplot = cor(male_data%>%
  select(Age, Working, GymImportance, MonthlyBudget, FitnessNeeds,
SavingsGoal, PriceFairness, FinancialCommitment, Option, NDOption))
corrplot(
  corplot,
  method    = "color",

  tl.col = ("black"),
   col = colorRampPalette(c("white", "lightblue", "blue"))(200),
  addgrid.col = "white",
  addCoef.col = "white",
  number.cex = 0.6,
  type = "upper")
```
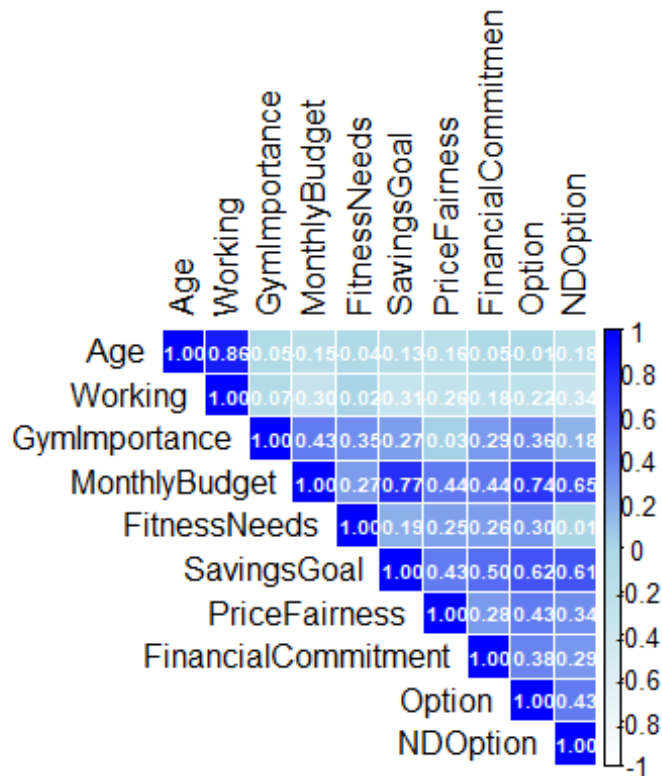
```r
female_data = data %>%
  filter(GenderMale == 0)
corplot = cor(female_data%>%
  select(Age, Working, GymImportance, MonthlyBudget, FitnessNeeds,
SavingsGoal, PriceFairness, FinancialCommitment, Option, NDOption))
corrplot(
  corplot,
  method    = "color",
 tl.col = ("black"),
   col = colorRampPalette(c("white", "lightblue", "blue"))(200),
  addgrid.col = "white",
  addCoef.col = "white",
  number.cex = 0.6,
  type = "upper")
```

Correlation matrix (upper triangular heatmap):

	Age	Working	GymImportance	MonthlyBudget	FitnessNeeds	SavingsGoal	PriceFairness	FinancialCommitment	Option	NDOption
Age	1.00	0.86	0.05	0.15	0.04	0.13	0.16	0.05	0.01	0.18
Working		1.00	0.07	0.30	0.02	0.31	0.26	0.18	0.22	0.34
GymImportance			1.00	0.43	0.35	0.27	0.03	0.29	0.36	0.18
MonthlyBudget				1.00	0.27	0.77	0.44	0.44	0.74	0.65
FitnessNeeds					1.00	0.19	0.25	0.26	0.30	0.01
SavingsGoal						1.00	0.43	0.50	0.62	0.61
PriceFairness							1.00	0.28	0.43	0.34
FinancialCommitment								1.00	0.38	0.29
Option									1.00	0.43
NDOption										1.00

```
model = glm(Decoy ~  Age:GenderMale + MonthlyBudget:Age + Working , data =
data, family = binomial)

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

summary (model)

##
## Call:
## glm(formula = Decoy ~ Age:GenderMale + MonthlyBudget:Age + Working,
##     family = binomial, data = data)
##
## Coefficients:
##                   Estimate Std. Error z value Pr(>|z|)
## (Intercept)       -9.367057   2.346762  -3.991 6.57e-05 ***
## Working           -0.560612   0.192049  -2.919  0.00351 **
## Age:GenderMale    -0.076864   0.039396  -1.951  0.05105 .
## Age:MonthlyBudget  0.023721   0.005383   4.407 1.05e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 147.201  on 106  degrees of freedom
## Residual deviance:  42.193  on 103  degrees of freedom
## AIC: 50.193
```

```
## 
## Number of Fisher Scoring iterations: 8
```

Explanation of Coefficients

Working (-0.561): A statistically significant negative coefficient (p < 0.01) indicates that with each additional year of work experience, the odds of selecting the decoy option decrease. This suggests that more experienced individuals may be more cautious or financially rational, making them less susceptible to pricing manipulations.

Age × GenderMale (-0.077): This marginally significant interaction (p ≈ 0.051) implies that the effect of age on decoy selection differs by gender. Specifically, as age increases, males may become less likely to select the decoy option compared to females, potentially reflecting gender-based differences in value perception or risk-taking.

Age × MonthlyBudget (0.024): A highly significant and positive interaction (p < 0.001) indicates that older individuals with higher gym budgets are more likely to choose the decoy option. This may reflect a higher valuation of premium or "better" plans by this demographic, who might view the target option as better value due to increased disposable income or fitness commitment.

```r
decoy_revenue = sum(data$pricesD, na.rm=T)
non_decoy_revenue = sum(data$pricesND, na.rm =T)
decoy_revenue
```

```
## [1] 3625
```

```r
non_decoy_revenue
```

```
## [1] 3080
```

```r
revenue_difference = decoy_revenue - non_decoy_revenue
revenue_difference
```

```
## [1] 545
```

```r
sum(data$Option[data$Option == 1], na.rm = TRUE)
```

```
## [1] 35
```

```r
sum(data$Option[data$Option == 2], na.rm = TRUE)/2
```

```
## [1] 13
```

```r
sum(data$Option[data$Option == 3], na.rm = TRUE)/3
```

```
## [1] 59
```

```r
sum(data$NDOption[data$NDOption == 1], na.rm = TRUE)
```

```
## [1] 80
```

```r
sum(data$NDOption[data$NDOption == 2], na.rm = TRUE)/2
```

```
## [1] 0
```

```r
sum(data$NDOption[data$NDOption == 3], na.rm = TRUE)/3
```

```
## [1] 27
```

```r
sum(data$pricesD[data$pricesD == 25], na.rm = TRUE)/
sum(data$pricesND[data$pricesND == 25], na.rm = TRUE)
```

```
## [1] 0.4375
```

```r
sum(data$pricesD[data$pricesD == 40], na.rm = TRUE)
```

```
## [1] 2360
```

```r
sum(data$pricesND[data$pricesND == 40], na.rm = TRUE)
```

```
## [1] 1080
```

```r
my_table = data.frame(
  Options_selected = c("Option 1 (competition)", "Option 2 (decoy)", "Option
3(target)", "Total"),
  Sales_decoy = c(35, 13, 59, 107),
  Sales_non_decoy = c(80, 0, 27, 107),
  Revenue_decoy = c("$875", "$390", "$2,360", "$3,625"),
  Revenue_non_decoy = c("$2,000", "$0", "$1,080", "$3,080"))

print(my_table)
```

```
##          Options_selected Sales_decoy Sales_non_decoy Revenue_decoy
## 1 Option 1 (competition)          35              80          $875
## 2       Option 2 (decoy)          13               0          $390
## 3       Option 3(target)          59              27        $2,360
## 4                  Total         107             107        $3,625
##   Revenue_non_decoy
## 1            $2,000
## 2                $0
## 3            $1,080
## 4            $3,080
```

The decoy option (option 2) not only increased the selection of the target (option 3) membership but also significantly boosted its revenue, confirming the decoy's effectiveness in influencing consumer preference toward more expensive options.

In presence of the decoy option:

1. Option 1 sales decreased from 80 to 35 units. The revenue generated went from 2,000 to 875 (56.25% decrease).

2. Option 3 sales increased from 27 to 59 units. The revenue generated went from 1,080 to 2,360 (118.519% increase).

3. The overall revenue increased from 3,080 to 3,625 (17.695% increase).