

# Conjoint Experiment Regression

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```
library(data.table)

library(sandwich)
library(lmtest)

library(AER)

library(ggplot2)
library(patchwork)

library(stargazer)
```

## Load Data

```
##              id choiceNum candNum              college exp
##    1: R_OGkP9YSiNDMukb7          1          1      Boston University  5
##    2: R_OGkP9YSiNDMukb7          1          2      Stanford University  7
##    3: R_OGkP9YSiNDMukb7          2          1      Boston University  7
##    4: R_OGkP9YSiNDMukb7          2          2      Virginia Tech      6
##    5: R_OGkP9YSiNDMukb7          3          1 George Washington University  7
##    ---
## 2158: R_zeaJCDw8vld0P73          3          2 George Washington University  7
## 2159: R_zeaJCDw8vld0P73          4          1      Virginia Tech      6
## 2160: R_zeaJCDw8vld0P73          4          2      Virginia Tech      7
## 2161: R_zeaJCDw8vld0P73          5          1 George Washington University  7
## 2162: R_zeaJCDw8vld0P73          5          2      Boston University  6
##              job gender ethnicity filtered preference Y
##    1:   Software Engineer   Male   White   TRUE          2 0
##    2: Sales Representative Female   White   TRUE          2 1
##    3: Sales Representative   Male    POC  FALSE          1 1
##    4: Sales Representative   Male    POC  TRUE           1 0
##    5:   Software Engineer   Male   White  FALSE          1 1
##    ---
## 2158: Sales Representative   Male    POC   TRUE          1 0
## 2159:      Consultant      Male   White  FALSE          2 0
## 2160: Sales Representative   Male   White  TRUE          2 1
## 2161:      Data Analyst   Male    POC  FALSE          1 1
## 2162:      Consultant      Male    POC   TRUE          1 0
##              resp_ethnicity resp_sex      resp_age      resp_education
##    1: Black or African American   Male 35-44 years old Bachelors Degree
##    2: Black or African American   Male 35-44 years old Bachelors Degree
```

```
##      3: Black or African American      Male 35-44 years old      Bachelors Degree
##      4: Black or African American      Male 35-44 years old      Bachelors Degree
##      5: Black or African American      Male 35-44 years old      Bachelors Degree
##      ---
## 2158:                White      Male 35-44 years old High School Graduate
## 2159:                White      Male 35-44 years old High School Graduate
## 2160:                White      Male 35-44 years old High School Graduate
## 2161:                White      Male 35-44 years old High School Graduate
## 2162:                White      Male 35-44 years old High School Graduate
##      college_binary  job_binary male top50 front_facing_role
##      1:            1-50  back-facing      1      1              0
##      2:            1-50 front-facing      0      1              1
##      3:            1-50 front-facing      1      1              1
##      4:           50-100 front-facing      1      0              1
##      5:           50-100  back-facing      1      0              0
##      ---
## 2158:           50-100 front-facing      1      0              1
## 2159:           50-100 front-facing      1      0              1
## 2160:           50-100 front-facing      1      0              1
## 2161:           50-100  back-facing      1      0              0
## 2162:            1-50 front-facing      1      1              1
```

## Regression

### Basic Model

```
# model with only beauty filter indicator, the feature we are most interested in investigating
basic_mod = lm(Y ~ filtered, data=d)

basic_mod$cluster_se <- sqrt(diag(vcovCL(basic_mod, cluster = d[, id])))

stargazer(
  basic_mod,
  se = list(basic_mod$cluster_se),
  type = 'text'
)
```

```
##
## =====
##                        Dependent variable:
##                        -----
##                        Y
## -----
## filtered                0.011
##                        (0.022)
##
## Constant                0.494***
##                        (0.011)
##
## -----
## Observations            2,162
## R2                      0.0001
```

```
## Adjusted R2                -0.0003
## Residual Std. Error      0.500 (df = 2160)
## F Statistic              0.266 (df = 1; 2160)
## =====
## Note:                    *p<0.1; **p<0.05; ***p<0.01
```

## Full Conjoint Model

```
# model with all the features varied in the conjoint experiment
# features: beauty filter, sex, ethnicity, years of experience, job role, college prestige
full_mod = lm(Y ~ filtered + male + ethnicity + exp + front_facing_role + top50,
              data=d)

full_mod$cluster_se <- sqrt(diag(vcovCL(full_mod, cluster = d[, id])))

stargazer(
  full_mod,
  se = list(full_mod$cluster_se),
  type = 'text'
)
```

```
##
## =====
##                               Dependent variable:
##                               -----
##                               Y
## -----
## filtered                      0.012
##                               (0.021)
##
## male                         -0.044**
##                               (0.020)
##
## ethnicityWhite                0.086***
##                               (0.022)
##
## exp                          0.076***
##                               (0.013)
##
## front_facing_role            -0.084***
##                               (0.022)
##
## top50                        -0.013
##                               (0.021)
##
## Constant                     0.063
##                               (0.082)
##
## -----
## Observations                  2,162
## R2                           0.031
## Adjusted R2                  0.029
```

```
## Residual Std. Error      0.493 (df = 2155)
## F Statistic             11.608*** (df = 6; 2155)
## =====
## Note:                   *p<0.1; **p<0.05; ***p<0.01
```

## Full Model with Covariates

```
# model with covariates (respondent demographics)
mod_with_covariates = lm(Y ~ filtered + male + ethnicity + exp + front_facing_role + top50 +
                          resp_sex + resp_ethnicity + resp_age + resp_education, data=d)

mod_with_covariates$cluster_se <- sqrt(diag(vcovCL(mod_with_covariates, cluster = d[, id])))

stargazer(
  mod_with_covariates,
  se = list(mod_with_covariates$cluster_se),
  type = 'text'
)
```

```
##
## =====
##                               Dependent variable:
##                               -----
##                               Y
## -----
## filtered                      0.012
##                               (0.022)
##
## male                         -0.044**
##                               (0.021)
##
## ethnicityWhite                0.086***
##                               (0.022)
##
## exp                           0.077***
##                               (0.014)
##
## front_facing_role            -0.084***
##                               (0.022)
##
## top50                        -0.013
##                               (0.022)
##
## resp_sexMale                  0.001
##                               (0.004)
##
## resp_ethnicityAsian           -0.008
##                               (0.027)
##
## resp_ethnicityBlack or African American -0.017
##                               (0.027)
##
```

```

## resp_ethnicityPrefer not to say          0.003
##                                           (0.029)
##
## resp_ethnicityWhite                     -0.017
##                                           (0.026)
##
## resp_age25-34 years old                 0.006
##                                           (0.009)
##
## resp_age35-44 years old                 0.010
##                                           (0.010)
##
## resp_age45-54 years old                 0.006
##                                           (0.010)
##
## resp_age55-64 years old                 0.009
##                                           (0.013)
##
## resp_age65+ years old                  -0.055*
##                                           (0.031)
##
## resp_educationAssociate Degree          -0.026
##                                           (0.031)
##
## resp_educationBachelors Degree         -0.012
##                                           (0.027)
##
## resp_educationHigh School Graduate     -0.008
##                                           (0.028)
##
## resp_educationMasters Degree           -0.017
##                                           (0.027)
##
## resp_educationOther                    0.040
##                                           (0.042)
##
## resp_educationPhD                      0.008
##                                           (0.030)
##
## Constant                               0.082
##                                           (0.087)
## -----
## Observations                          2,162
## R2                                     0.031
## Adjusted R2                           0.022
## Residual Std. Error                   0.495 (df = 2139)
## F Statistic                          3.159*** (df = 22; 2139)
## =====
## Note:                                *p<0.1; **p<0.05; ***p<0.01

```