> setwd('C:/Users/guanz/Desktop/JIW2/Week11')

> exitdata <- read.csv('MarketExitAll\_week11.csv')

>

> exitdata$ExitedMarketIn2016 <- factor(exitdata$ExitedMarketIn2016)

>

> # old tests

>

> exitfit <- glm(ExitedMarketIn2016 ~ TotalPC\_2014\_Quintile1 + TotalPC\_2014\_Quintile5,

+ data=exitdata, family="binomial")

> summary(exitfit)

Call:

glm(formula = ExitedMarketIn2016 ~ TotalPC\_2014\_Quintile1 + TotalPC\_2014\_Quintile5,

family = "binomial", data = exitdata)

Deviance Residuals:

Min 1Q Median 3Q Max

-0.7718 -0.4930 -0.4930 -0.3050 2.4864

Coefficients:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -2.0463 0.2216 -9.235 < 2e-16 \*\*\*

TotalPC\_2014\_Quintile1 0.9877 0.3582 2.757 0.00583 \*\*

TotalPC\_2014\_Quintile5 -0.9982 0.6311 -1.582 0.11368

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 256.23 on 332 degrees of freedom

Residual deviance: 242.70 on 330 degrees of freedom

AIC: 248.7

Number of Fisher Scoring iterations: 5

> coefficients(exitfit)

(Intercept) TotalPC\_2014\_Quintile1 TotalPC\_2014\_Quintile5

-2.0462893 0.9876824 -0.9982331

>

> exitfit <- glm(ExitedMarketIn2016 ~ TotalPC\_2014\_Quintile1 + TotalPC\_2014\_Quintile2

+ + TotalPC\_2014\_Quintile4 + TotalPC\_2014\_Quintile5 + IndRTPMM\_2014,

+ data=exitdata, family="binomial")

> summary(exitfit)

Call:

glm(formula = ExitedMarketIn2016 ~ TotalPC\_2014\_Quintile1 + TotalPC\_2014\_Quintile2 +

TotalPC\_2014\_Quintile4 + TotalPC\_2014\_Quintile5 + IndRTPMM\_2014,

family = "binomial", data = exitdata)

Deviance Residuals:

Min 1Q Median 3Q Max

-0.8679 -0.5654 -0.4503 -0.3050 2.5163

Coefficients:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -2.3204754 0.4279069 -5.423 5.87e-08 \*\*\*

TotalPC\_2014\_Quintile1 1.2546565 0.5126245 2.448 0.0144 \*

TotalPC\_2014\_Quintile2 0.5743605 0.5485663 1.047 0.2951

TotalPC\_2014\_Quintile4 0.1671488 0.5854505 0.286 0.7753

TotalPC\_2014\_Quintile5 -0.7626739 0.7408130 -1.030 0.3032

IndRTPMM\_2014 0.0006925 0.0022908 0.302 0.7624

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 256.23 on 332 degrees of freedom

Residual deviance: 241.36 on 327 degrees of freedom

AIC: 253.36

Number of Fisher Scoring iterations: 5

> coefficients(exitfit)

(Intercept) TotalPC\_2014\_Quintile1 TotalPC\_2014\_Quintile2 TotalPC\_2014\_Quintile4 TotalPC\_2014\_Quintile5 IndRTPMM\_2014

-2.3204754094 1.2546565142 0.5743604842 0.1671488224 -0.7626738821 0.0006924825

>

> # 4 outcomes:

> # 1. log MM 16

> # 2. log MM 16 - log MM 14

> # 3. transfers 16

> # 4. transfers 16 - transfers 14

>

> # 3 dependent variable sets:

> # A. total PC 14 + transfers 14

> # B. total PC 14 + transfers 14 + reins 14

> # C. transfers 14 + reins 14

>

> # new tests

>

> # 1A

> exitfit <- glm(LogMM16 ~ TotalPC\_2014 + IndRTPMM\_2014,

+ data=exitdata)

> summary(exitfit)

Call:

glm(formula = LogMM16 ~ TotalPC\_2014 + IndRTPMM\_2014, data = exitdata)

Deviance Residuals:

Min 1Q Median 3Q Max

-3.5160 -0.4441 0.0766 0.5127 1.7426

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 5.1415605 0.0523406 98.233 < 2e-16 \*\*\*

TotalPC\_2014 0.0022827 0.0007245 3.151 0.00179 \*\*

IndRTPMM\_2014 -0.0028506 0.0006652 -4.285 2.46e-05 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for gaussian family taken to be 0.6880966)

Null deviance: 224.79 on 305 degrees of freedom

Residual deviance: 208.49 on 303 degrees of freedom

(27 observations deleted due to missingness)

AIC: 758.98

Number of Fisher Scoring iterations: 2

> coefficients(exitfit)

(Intercept) TotalPC\_2014 IndRTPMM\_2014

5.141560502 0.002282678 -0.002850635

>

> # 1B

> exitfit <- glm(LogMM16 ~ TotalPC\_2014 + IndRTPMM\_2014 + IndReinsPMM\_2014,

+ data=exitdata)

> summary(exitfit)

Call:

glm(formula = LogMM16 ~ TotalPC\_2014 + IndRTPMM\_2014 + IndReinsPMM\_2014,

data = exitdata)

Deviance Residuals:

Min 1Q Median 3Q Max

-3.4561 -0.4154 0.1073 0.5201 1.7422

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 5.0508272 0.0831996 60.707 < 2e-16 \*\*\*

TotalPC\_2014 0.0025210 0.0007431 3.393 0.000785 \*\*\*

IndRTPMM\_2014 -0.0035741 0.0008412 -4.249 2.87e-05 \*\*\*

IndReinsPMM\_2014 0.0016433 0.0011726 1.401 0.162094

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for gaussian family taken to be 0.6859139)

Null deviance: 224.79 on 305 degrees of freedom

Residual deviance: 207.15 on 302 degrees of freedom

(27 observations deleted due to missingness)

AIC: 759

Number of Fisher Scoring iterations: 2

> coefficients(exitfit)

(Intercept) TotalPC\_2014 IndRTPMM\_2014 IndReinsPMM\_2014

5.050827245 0.002521008 -0.003574125 0.001643334

>

> # 1C

> exitfit <- glm(LogMM16 ~ IndRTPMM\_2014 + IndReinsPMM\_2014,

+ data=exitdata)

> summary(exitfit)

Call:

glm(formula = LogMM16 ~ IndRTPMM\_2014 + IndReinsPMM\_2014, data = exitdata)

Deviance Residuals:

Min 1Q Median 3Q Max

-3.4558 -0.4275 0.0884 0.5254 1.7749

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 5.163982 0.077532 66.605 < 2e-16 \*\*\*

IndRTPMM\_2014 -0.002715 0.000816 -3.327 0.000985 \*\*\*

IndReinsPMM\_2014 0.000733 0.001161 0.631 0.528298

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for gaussian family taken to be 0.7097038)

Null deviance: 224.79 on 305 degrees of freedom

Residual deviance: 215.04 on 303 degrees of freedom

(27 observations deleted due to missingness)

AIC: 768.45

Number of Fisher Scoring iterations: 2

> coefficients(exitfit)

(Intercept) IndRTPMM\_2014 IndReinsPMM\_2014

5.1639818943 -0.0027151431 0.0007330234

>

> # 2A

> exitfit <- glm(LogChangeMM1614 ~ TotalPC\_2014 + IndRTPMM\_2014,

+ data=exitdata)

> summary(exitfit)

Call:

glm(formula = LogChangeMM1614 ~ TotalPC\_2014 + IndRTPMM\_2014,

data = exitdata)

Deviance Residuals:

Min 1Q Median 3Q Max

-3.05386 -0.25836 0.01707 0.33215 2.50325

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 0.0560994 0.0426917 1.314 0.190

TotalPC\_2014 0.0002508 0.0005910 0.424 0.672

IndRTPMM\_2014 0.0002954 0.0005426 0.544 0.587

(Dispersion parameter for gaussian family taken to be 0.4577822)

Null deviance: 138.98 on 305 degrees of freedom

Residual deviance: 138.71 on 303 degrees of freedom

(27 observations deleted due to missingness)

AIC: 634.28

Number of Fisher Scoring iterations: 2

> coefficients(exitfit)

(Intercept) TotalPC\_2014 IndRTPMM\_2014

0.0560993948 0.0002507819 0.0002953835

>

> # 2B

> exitfit <- glm(LogChangeMM1614 ~ TotalPC\_2014 + IndRTPMM\_2014 + IndReinsPMM\_2014,

+ data=exitdata)

> summary(exitfit)

Call:

glm(formula = LogChangeMM1614 ~ TotalPC\_2014 + IndRTPMM\_2014 +

IndReinsPMM\_2014, data = exitdata)

Deviance Residuals:

Min 1Q Median 3Q Max

-3.00025 -0.26806 0.02363 0.29883 2.54394

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -0.0251106 0.0678168 -0.370 0.711

TotalPC\_2014 0.0004641 0.0006057 0.766 0.444

IndRTPMM\_2014 -0.0003522 0.0006857 -0.514 0.608

IndReinsPMM\_2014 0.0014709 0.0009558 1.539 0.125

(Dispersion parameter for gaussian family taken to be 0.4557243)

Null deviance: 138.98 on 305 degrees of freedom

Residual deviance: 137.63 on 302 degrees of freedom

(27 observations deleted due to missingness)

AIC: 633.89

Number of Fisher Scoring iterations: 2

> coefficients(exitfit)

(Intercept) TotalPC\_2014 IndRTPMM\_2014 IndReinsPMM\_2014

-0.0251105873 0.0004640971 -0.0003521696 0.0014708512

>

> # 2C

> exitfit <- glm(LogChangeMM1614 ~ IndRTPMM\_2014 + IndReinsPMM\_2014,

+ data=exitdata)

> summary(exitfit)

Call:

glm(formula = LogChangeMM1614 ~ IndRTPMM\_2014 + IndReinsPMM\_2014,

data = exitdata)

Deviance Residuals:

Min 1Q Median 3Q Max

-3.00020 -0.26900 0.02498 0.29981 2.54564

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -0.0042797 0.0620863 -0.069 0.945

IndRTPMM\_2014 -0.0001940 0.0006534 -0.297 0.767

IndReinsPMM\_2014 0.0013033 0.0009298 1.402 0.162

(Dispersion parameter for gaussian family taken to be 0.4551032)

Null deviance: 138.98 on 305 degrees of freedom

Residual deviance: 137.90 on 303 degrees of freedom

(27 observations deleted due to missingness)

AIC: 632.48

Number of Fisher Scoring iterations: 2

> coefficients(exitfit)

(Intercept) IndRTPMM\_2014 IndReinsPMM\_2014

-0.0042797358 -0.0001940381 0.0013032705

>

> # 3A

> exitfit <- glm(Transfers16 ~ TotalPC\_2014 + IndRTPMM\_2014,

+ data=exitdata)

> summary(exitfit)

Call:

glm(formula = Transfers16 ~ TotalPC\_2014 + IndRTPMM\_2014, data = exitdata)

Deviance Residuals:

Min 1Q Median 3Q Max

-339.54 -34.45 2.31 33.26 645.13

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 5.13320 5.84137 0.879 0.380224

TotalPC\_2014 -0.31563 0.08086 -3.903 0.000117 \*\*\*

IndRTPMM\_2014 1.10579 0.07424 14.894 < 2e-16 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for gaussian family taken to be 8570.415)

Null deviance: 4503726 on 305 degrees of freedom

Residual deviance: 2596836 on 303 degrees of freedom

(27 observations deleted due to missingness)

AIC: 3644.5

Number of Fisher Scoring iterations: 2

> coefficients(exitfit)

(Intercept) TotalPC\_2014 IndRTPMM\_2014

5.1332048 -0.3156345 1.1057894

>

> # 3B

> exitfit <- glm(Transfers16 ~ TotalPC\_2014 + IndRTPMM\_2014 + IndReinsPMM\_2014,

+ data=exitdata)

> summary(exitfit)

Call:

glm(formula = Transfers16 ~ TotalPC\_2014 + IndRTPMM\_2014 + IndReinsPMM\_2014,

data = exitdata)

Deviance Residuals:

Min 1Q Median 3Q Max

-342.93 -35.50 3.14 32.41 651.50

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 3.03958 9.31419 0.326 0.74439

TotalPC\_2014 -0.31014 0.08319 -3.728 0.00023 \*\*\*

IndRTPMM\_2014 1.08910 0.09417 11.565 < 2e-16 \*\*\*

IndReinsPMM\_2014 0.03792 0.13127 0.289 0.77288

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for gaussian family taken to be 8596.419)

Null deviance: 4503726 on 305 degrees of freedom

Residual deviance: 2596118 on 302 degrees of freedom

(27 observations deleted due to missingness)

AIC: 3646.4

Number of Fisher Scoring iterations: 2

> coefficients(exitfit)

(Intercept) TotalPC\_2014 IndRTPMM\_2014 IndReinsPMM\_2014

3.03958455 -0.31013514 1.08909532 0.03791903

>

> # 3C

> exitfit <- glm(Transfers16 ~ IndRTPMM\_2014 + IndReinsPMM\_2014,

+ data=exitdata)

> summary(exitfit)

Call:

glm(formula = Transfers16 ~ IndRTPMM\_2014 + IndReinsPMM\_2014,

data = exitdata)

Deviance Residuals:

Min 1Q Median 3Q Max

-333.24 -33.11 3.56 27.83 698.51

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -10.8807 8.7127 -1.249 0.213

IndRTPMM\_2014 0.9834 0.0917 10.725 <2e-16 \*\*\*

IndReinsPMM\_2014 0.1499 0.1305 1.149 0.251

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for gaussian family taken to be 8962.343)

Null deviance: 4503726 on 305 degrees of freedom

Residual deviance: 2715590 on 303 degrees of freedom

(27 observations deleted due to missingness)

AIC: 3658.2

Number of Fisher Scoring iterations: 2

> coefficients(exitfit)

(Intercept) IndRTPMM\_2014 IndReinsPMM\_2014

-10.8807338 0.9834232 0.1499057

>

> # 4A

> exitfit <- glm(ChangeTransfers1614 ~ TotalPC\_2014 + IndRTPMM\_2014,

+ data=exitdata)

> summary(exitfit)

Call:

glm(formula = ChangeTransfers1614 ~ TotalPC\_2014 + IndRTPMM\_2014,

data = exitdata)

Deviance Residuals:

Min 1Q Median 3Q Max

-339.54 -34.45 2.31 33.26 645.13

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 5.13320 5.84137 0.879 0.380224

TotalPC\_2014 -0.31563 0.08086 -3.903 0.000117 \*\*\*

IndRTPMM\_2014 0.10579 0.07424 1.425 0.155209

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for gaussian family taken to be 8570.415)

Null deviance: 2730749 on 305 degrees of freedom

Residual deviance: 2596836 on 303 degrees of freedom

(27 observations deleted due to missingness)

AIC: 3644.5

Number of Fisher Scoring iterations: 2

> coefficients(exitfit)

(Intercept) TotalPC\_2014 IndRTPMM\_2014

5.1332048 -0.3156345 0.1057894

>

> # 4B

> exitfit <- glm(ChangeTransfers1614 ~ TotalPC\_2014 + IndRTPMM\_2014 + IndReinsPMM\_2014,

+ data=exitdata)

> summary(exitfit)

Call:

glm(formula = ChangeTransfers1614 ~ TotalPC\_2014 + IndRTPMM\_2014 +

IndReinsPMM\_2014, data = exitdata)

Deviance Residuals:

Min 1Q Median 3Q Max

-342.93 -35.50 3.14 32.41 651.50

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) 3.03958 9.31419 0.326 0.74439

TotalPC\_2014 -0.31014 0.08319 -3.728 0.00023 \*\*\*

IndRTPMM\_2014 0.08910 0.09417 0.946 0.34486

IndReinsPMM\_2014 0.03792 0.13127 0.289 0.77288

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for gaussian family taken to be 8596.419)

Null deviance: 2730749 on 305 degrees of freedom

Residual deviance: 2596118 on 302 degrees of freedom

(27 observations deleted due to missingness)

AIC: 3646.4

Number of Fisher Scoring iterations: 2

> coefficients(exitfit)

(Intercept) TotalPC\_2014 IndRTPMM\_2014 IndReinsPMM\_2014

3.03958454 -0.31013514 0.08909532 0.03791903

>

> # 4C

> exitfit <- glm(ChangeTransfers1614 ~ IndRTPMM\_2014 + IndReinsPMM\_2014,

+ data=exitdata)

> summary(exitfit)

Call:

glm(formula = ChangeTransfers1614 ~ IndRTPMM\_2014 + IndReinsPMM\_2014,

data = exitdata)

Deviance Residuals:

Min 1Q Median 3Q Max

-333.24 -33.11 3.56 27.83 698.51

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -10.88073 8.71267 -1.249 0.213

IndRTPMM\_2014 -0.01658 0.09170 -0.181 0.857

IndReinsPMM\_2014 0.14991 0.13048 1.149 0.251

(Dispersion parameter for gaussian family taken to be 8962.343)

Null deviance: 2730749 on 305 degrees of freedom

Residual deviance: 2715590 on 303 degrees of freedom

(27 observations deleted due to missingness)

AIC: 3658.2

Number of Fisher Scoring iterations: 2

> coefficients(exitfit)

(Intercept) IndRTPMM\_2014 IndReinsPMM\_2014

-10.88073379 -0.01657683 0.14990570