Student Level Analysis: SI on One Year Retention

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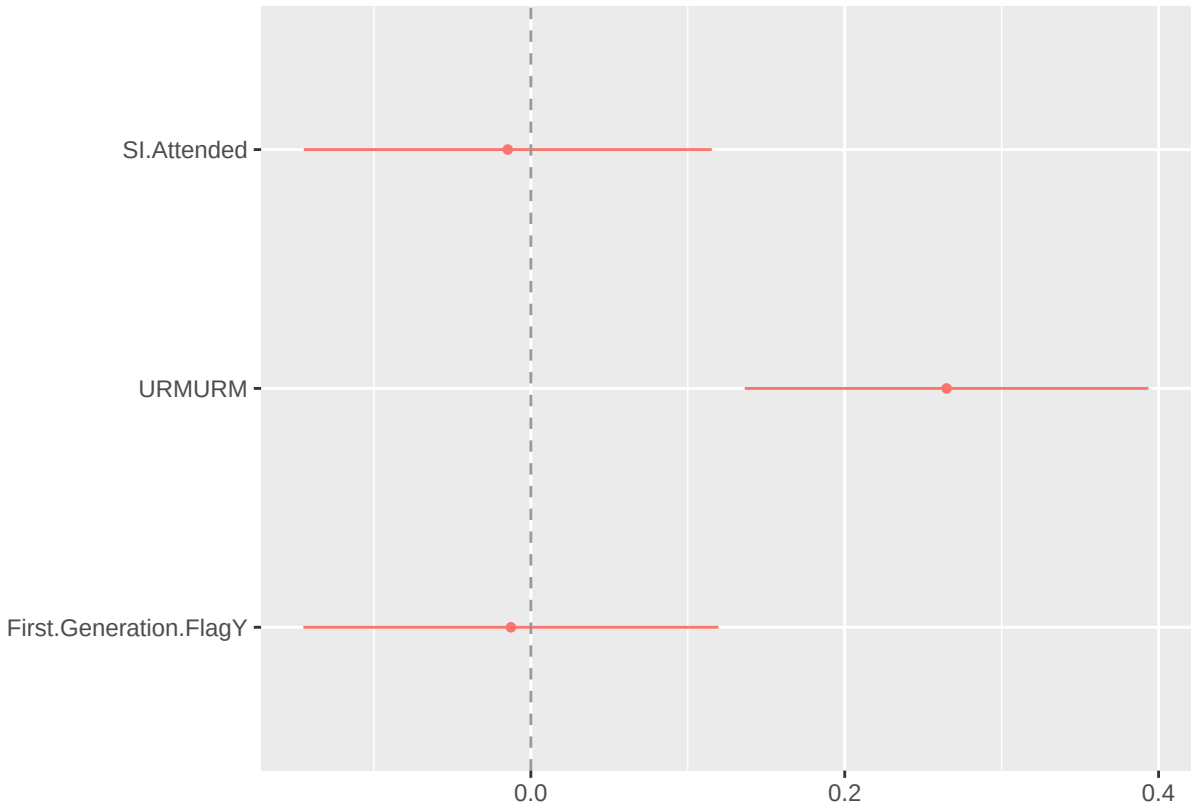
Initial Model

```
fit1<-glm(One.Year.Retention ~ Cohort.Term.Year + SI.Attended + Student.Class.Unit.Attempted + Student.C
summary(fit1)
```

```
##
## Call:
## glm(formula = One.Year.Retention ~ Cohort.Term.Year + SI.Attended +
##     Student.Class.Unit.Attempted + Student.Class.Unit.Passed +
##     URM + Gender.Code + First.Generation.Flag + Academic.Level +
##     Major.1.STEM.Flag + Academic.Standing.Status + HS.GPA + Inst.MD.Persn.Onl.Othr +
##     Course.Fee.Exist.Flag + GE.Class.Flag, family = binomial(link = "logit"),
##     data = d)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -3.2096   0.1647   0.2472   0.3849   3.7439
##
## Coefficients:
##                                      Estimate Std. Error z value Pr(>|z|)
## (Intercept)                         -1.106870   0.665611  -1.663   0.0963
## Cohort.Term.Year2017                 0.202192   0.102136   1.980   0.0477
## Cohort.Term.Year2018                -0.125127   0.102458  -1.221   0.2220
## Cohort.Term.Year2019                -0.579090   0.101165  -5.724 1.04e-08
## Cohort.Term.Year2020                -1.082191   0.134345  -8.055 7.93e-16
## Cohort.Term.Year2021                -8.138094   0.518192 -15.705  < 2e-16
## SI.Attended                         -0.014749   0.066320  -0.222   0.8240
## Student.Class.Unit.Attempted        -0.076773   0.173902  -0.441   0.6589
## Student.Class.Unit.Passed            0.210638   0.019014  11.078  < 2e-16
## URMURM                               0.264928   0.065635   4.036 5.43e-05
## Gender.CodeM                        -0.045478   0.066403  -0.685   0.4934
## Gender.CodeN                        -5.734425 196.968366  -0.029   0.9768
## First.Generation.FlagY              -0.012717   0.067485  -0.188   0.8505
## Academic.LevelJunior                 1.394835   0.156345   8.922  < 2e-16
## Academic.LevelSenior                 1.046228   0.202841   5.158 2.50e-07
## Academic.LevelSophomore              1.539264   0.107162  14.364  < 2e-16
## Major.1.STEM.FlagY                  -0.336792   0.068999  -4.881 1.05e-06
## Academic.Standing.StatusGood Standing  3.668284   0.317591  11.550  < 2e-16
## Academic.Standing.StatusNo Value     3.863948   0.261376  14.783  < 2e-16
## Academic.Standing.StatusProbation    2.728098   0.263216  10.364  < 2e-16
## HS.GPA                              -0.009804   0.080922  -0.121   0.9036
## Inst.MD.Persn.Onl.OthrOnline         0.842629   0.099742   8.448  < 2e-16
```

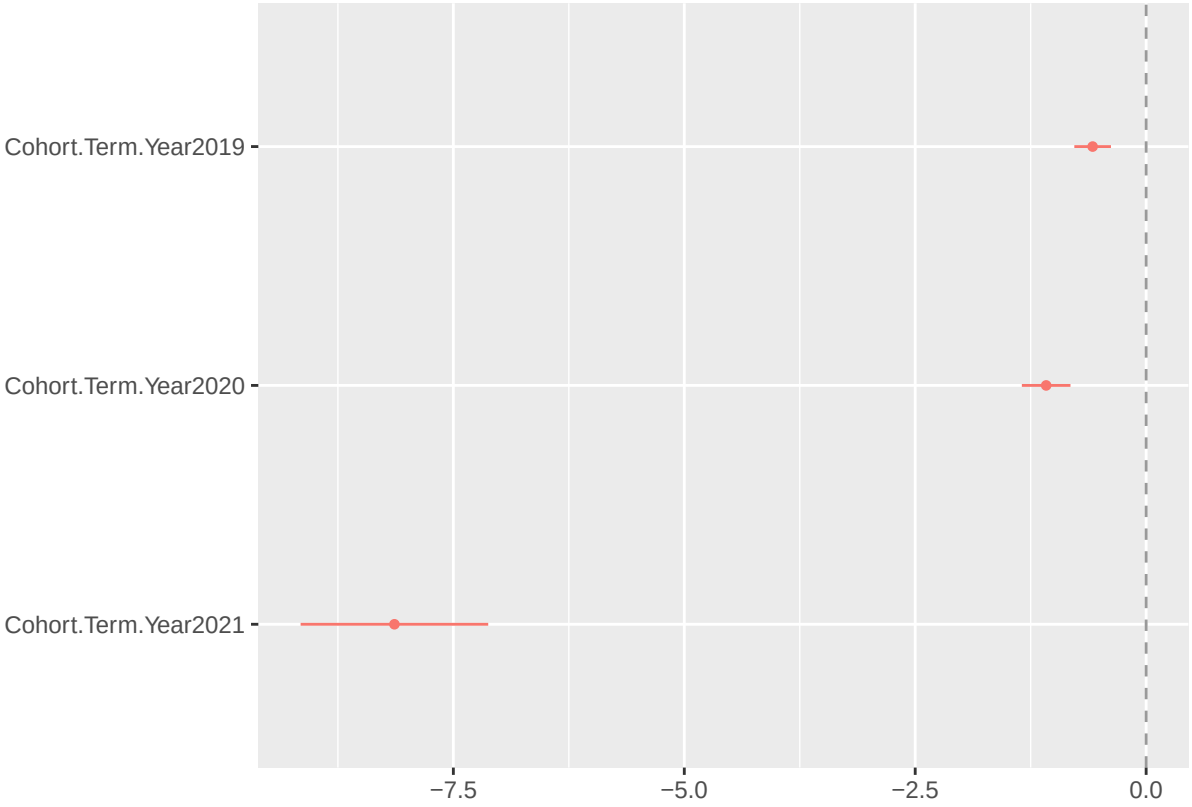
```
## Course.Fee.Exist.FlagY                 -0.024791   0.162599  -0.152   0.8788
## GE.Class.FlagY                         -0.574643   0.087451  -6.571 5.00e-11
##
## (Intercept)                           .
## Cohort.Term.Year2017                  *
## Cohort.Term.Year2018
## Cohort.Term.Year2019                  ***
## Cohort.Term.Year2020                  ***
## Cohort.Term.Year2021                  ***
## SI.Attended
## Student.Class.Unit.Attempted
## Student.Class.Unit.Passed             ***
## URMURM                                ***
## Gender.CodeM
## Gender.CodeN
## First.Generation.FlagY
## Academic.LevelJunior                  ***
## Academic.LevelSenior                  ***
## Academic.LevelSophomore               ***
## Major.1.STEM.FlagY                    ***
## Academic.Standing.StatusGood Standing ***
## Academic.Standing.StatusNo Value      ***
## Academic.Standing.StatusProbation     ***
## HS.GPA
## Inst.MD.Persn.Onl.OthrOnline          ***
## Course.Fee.Exist.FlagY
## GE.Class.FlagY                        ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 12190.6  on 19651  degrees of freedom
## Residual deviance:  7978.9  on 19628  degrees of freedom
##   (4 observations deleted due to missingness)
## AIC: 8026.9
##
## Number of Fisher Scoring iterations: 10
```

```r
m1<-tidy(fit1) %>%
  filter(term == "SI.Attended" | term == "URMURM" | term == "First.Generation.FlagY")
dwplot(m1) +
    geom_vline(xintercept = 0, colour = "grey60", linetype = 2)
```




```
m2<-tidy(fit1) %>%
  filter(term == "Cohort.Term.Year2019" | term == "Cohort.Term.Year2020" | term ==  "Cohort.Term.Year20

dwplot(m2) +
    geom_vline(xintercept = 0, colour = "grey60", linetype = 2)
```



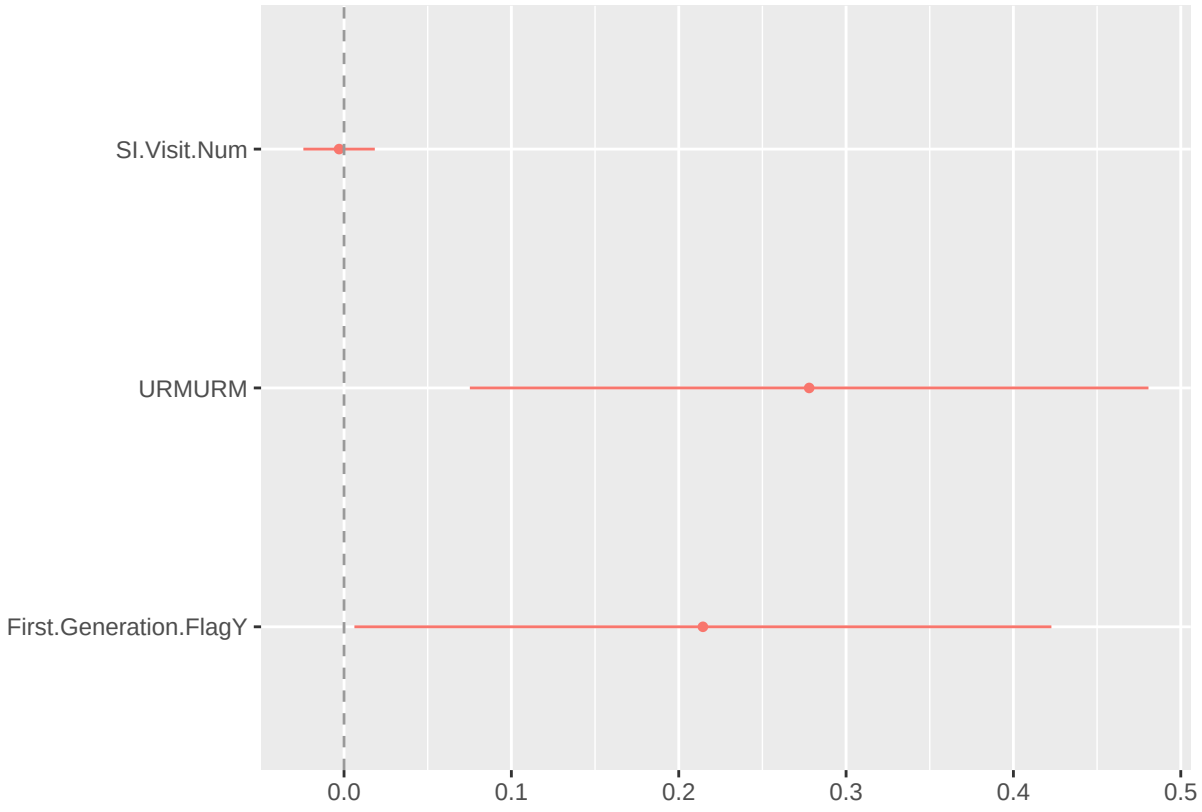

```
fit2<-glm(One.Year.Retention ~ Cohort.Term.Year + SI.Visit.Num + Student.Class.Unit.Attempted + Student
summary(fit2)
```

```
##
## Call:
## glm(formula = One.Year.Retention ~ Cohort.Term.Year + SI.Visit.Num +
##     Student.Class.Unit.Attempted + Student.Class.Unit.Passed +
##     URM + Gender.Code + First.Generation.Flag + Academic.Level +
##     Major.1.STEM.Flag + Academic.Standing.Status + HS.GPA + Inst.MD.Persn.Onl.Othr +
##     Course.Fee.Exist.Flag + GE.Class.Flag, family = binomial(link = "logit"),
##     data = d)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -3.3327   0.1690   0.2482   0.3538   3.3165
##
## Coefficients:
##                                      Estimate Std. Error z value Pr(>|z|)
## (Intercept)                         -1.946786   1.152833  -1.689 0.091277
## Cohort.Term.Year2017                 0.144708   0.152336   0.950 0.342151
## Cohort.Term.Year2018                -0.142839   0.155619  -0.918 0.358685
## Cohort.Term.Year2019                -0.882887   0.149155  -5.919 3.23e-09
## Cohort.Term.Year2020                -1.566676   0.248552  -6.303 2.92e-10
## Cohort.Term.Year2021                -7.935422   1.028119  -7.718 1.18e-14
## SI.Visit.Num                        -0.002956   0.010892  -0.271 0.786054
## Student.Class.Unit.Attempted         0.186617   0.327932   0.569 0.569307
## Student.Class.Unit.Passed            0.210054   0.033391   6.291 3.16e-10
## URMURM                               0.277953   0.103451   2.687 0.007214
```

```
## Gender.CodeM                              -0.065493   0.106670  -0.614 0.539232
## Gender.CodeN                              -6.132622 196.970353  -0.031 0.975162
## First.Generation.FlagY                     0.214455   0.106252   2.018 0.043554
## Academic.LevelJunior                       1.253514   0.214619   5.841 5.20e-09
## Academic.LevelSenior                       1.086190   0.291797   3.722 0.000197
## Academic.LevelSophomore                    1.378521   0.149916   9.195  < 2e-16
## Major.1.STEM.FlagY                        -0.236876   0.111328  -2.128 0.033359
## Academic.Standing.StatusGood Standing      3.873658   0.547184   7.079 1.45e-12
## Academic.Standing.StatusNo Value           3.696305   0.389802   9.483  < 2e-16
## Academic.Standing.StatusProbation          2.598705   0.396364   6.556 5.51e-11
## HS.GPA                                    -0.006194   0.123217  -0.050 0.959907
## Inst.MD.Persn.Onl.OthrOnline               1.033565   0.204884   5.045 4.54e-07
## Course.Fee.Exist.FlagY                    -0.134589   0.310785  -0.433 0.664971
## GE.Class.FlagY                            -0.437617   0.131639  -3.324 0.000886
##
## (Intercept)                              .
## Cohort.Term.Year2017
## Cohort.Term.Year2018
## Cohort.Term.Year2019                     ***
## Cohort.Term.Year2020                     ***
## Cohort.Term.Year2021                     ***
## SI.Visit.Num
## Student.Class.Unit.Attempted
## Student.Class.Unit.Passed                ***
## URMURM                                   **
## Gender.CodeM
## Gender.CodeN
## First.Generation.FlagY                   *
## Academic.LevelJunior                     ***
## Academic.LevelSenior                     ***
## Academic.LevelSophomore                  ***
## Major.1.STEM.FlagY                       *
## Academic.Standing.StatusGood Standing    ***
## Academic.Standing.StatusNo Value         ***
## Academic.Standing.StatusProbation        ***
## HS.GPA
## Inst.MD.Persn.Onl.OthrOnline             ***
## Course.Fee.Exist.FlagY
## GE.Class.FlagY                           ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 4486.1  on 9216  degrees of freedom
## Residual deviance: 3433.5  on 9193  degrees of freedom
##   (10439 observations deleted due to missingness)
## AIC: 3481.5
##
## Number of Fisher Scoring iterations: 10
```

```
m3<-tidy(fit2) %>%
  filter(term == "SI.Visit.Num" | term == "URMURM" | term == "First.Generation.FlagY")
dwplot(m3) +
```

```
    geom_vline(xintercept = 0, colour = "grey60", linetype = 2)
```



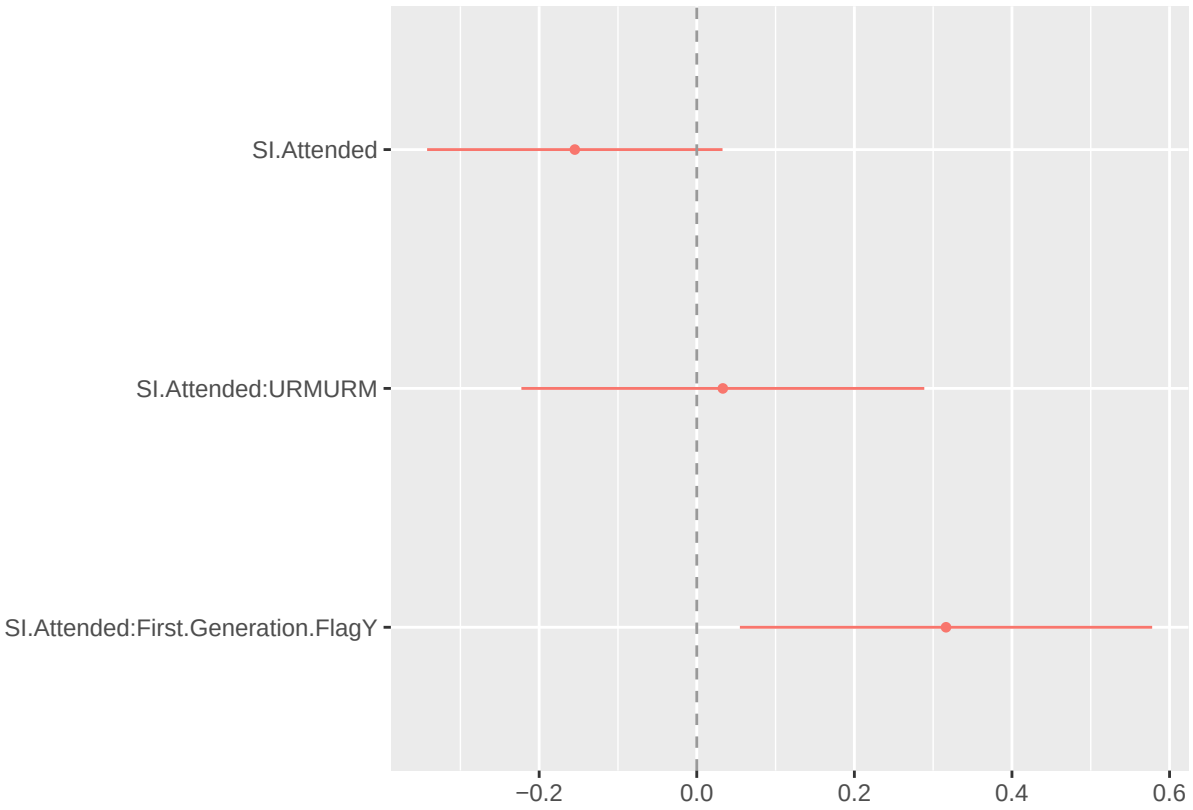
With some interactions

```
fit3<-glm(One.Year.Retention~ Cohort.Term.Year + SI.Attended + Student.Class.Unit.Attempted + Student.C
summary(fit3)
```

```
##
## Call:
## glm(formula = One.Year.Retention ~ Cohort.Term.Year + SI.Attended +
##     Student.Class.Unit.Attempted + Student.Class.Unit.Passed +
##     URM + Gender.Code + First.Generation.Flag + Academic.Level +
##     Major.1.STEM.Flag + Academic.Standing.Status + HS.GPA + Inst.MD.Persn.Onl.Othr +
##     Course.Fee.Exist.Flag + GE.Class.Flag + SI.Attended:URM +
##     SI.Attended:First.Generation.Flag, family = binomial(link = "logit"),
##     data = d)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -3.2493   0.1631   0.2456   0.3842   3.7673
##
## Coefficients:
##                                    Estimate Std. Error z value Pr(>|z|)
## (Intercept)                        -1.14095    0.66626  -1.712  0.08681 .
## Cohort.Term.Year2017                0.20389    0.10221   1.995  0.04606 *
## Cohort.Term.Year2018               -0.11871    0.10272  -1.156  0.24781
## Cohort.Term.Year2019               -0.57593    0.10127  -5.687 1.29e-08 ***
```

```
## Cohort.Term.Year2020                    -1.06601    0.13460  -7.920 2.38e-15 ***
## Cohort.Term.Year2021                    -8.14833    0.51843 -15.717  < 2e-16 ***
## SI.Attended                             -0.15477    0.09564  -1.618  0.10560
## Student.Class.Unit.Attempted            -0.05328    0.17422  -0.306  0.75976
## Student.Class.Unit.Passed                0.21078    0.01903  11.076  < 2e-16 ***
## URMURM                                   0.25277    0.08485   2.979  0.00289 **
## Gender.CodeM                            -0.04796    0.06641  -0.722  0.47024
## Gender.CodeN                            -5.64142  196.96837  -0.029  0.97715
## First.Generation.FlagY                  -0.14650    0.08733  -1.677  0.09345 .
## Academic.LevelJunior                     1.40094    0.15650   8.952  < 2e-16 ***
## Academic.LevelSenior                     1.04997    0.20287   5.176 2.27e-07 ***
## Academic.LevelSophomore                  1.54241    0.10719  14.390  < 2e-16 ***
## Major.1.STEM.FlagY                      -0.33952    0.06906  -4.916 8.82e-07 ***
## Academic.Standing.StatusGood Standing    3.66507    0.31777  11.534  < 2e-16 ***
## Academic.Standing.StatusNo Value         3.86666    0.26149  14.787  < 2e-16 ***
## Academic.Standing.StatusProbation        2.72911    0.26337  10.362  < 2e-16 ***
## HS.GPA                                  -0.01139    0.08110  -0.140  0.88834
## Inst.MD.Persn.Onl.OthrOnline             0.84563    0.09977   8.476  < 2e-16 ***
## Course.Fee.Exist.FlagY                  -0.02346    0.16273  -0.144  0.88537
## GE.Class.FlagY                          -0.57350    0.08743  -6.559 5.40e-11 ***
## SI.Attended:URMURM                       0.03309    0.13045   0.254  0.79974
## SI.Attended:First.Generation.FlagY       0.31633    0.13347   2.370  0.01779 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 12190.6  on 19651  degrees of freedom
## Residual deviance:  7972.5  on 19626  degrees of freedom
##   (4 observations deleted due to missingness)
## AIC: 8024.5
##
## Number of Fisher Scoring iterations: 10
```

```
m4<-tidy(fit3)%>%
  filter(term == "SI.Attended" | term == "SI.Attended:URMURM" | term == "SI.Attended:First.Generation.F
dwplot(m4) +
    geom_vline(xintercept = 0, colour = "grey60", linetype = 2)
```



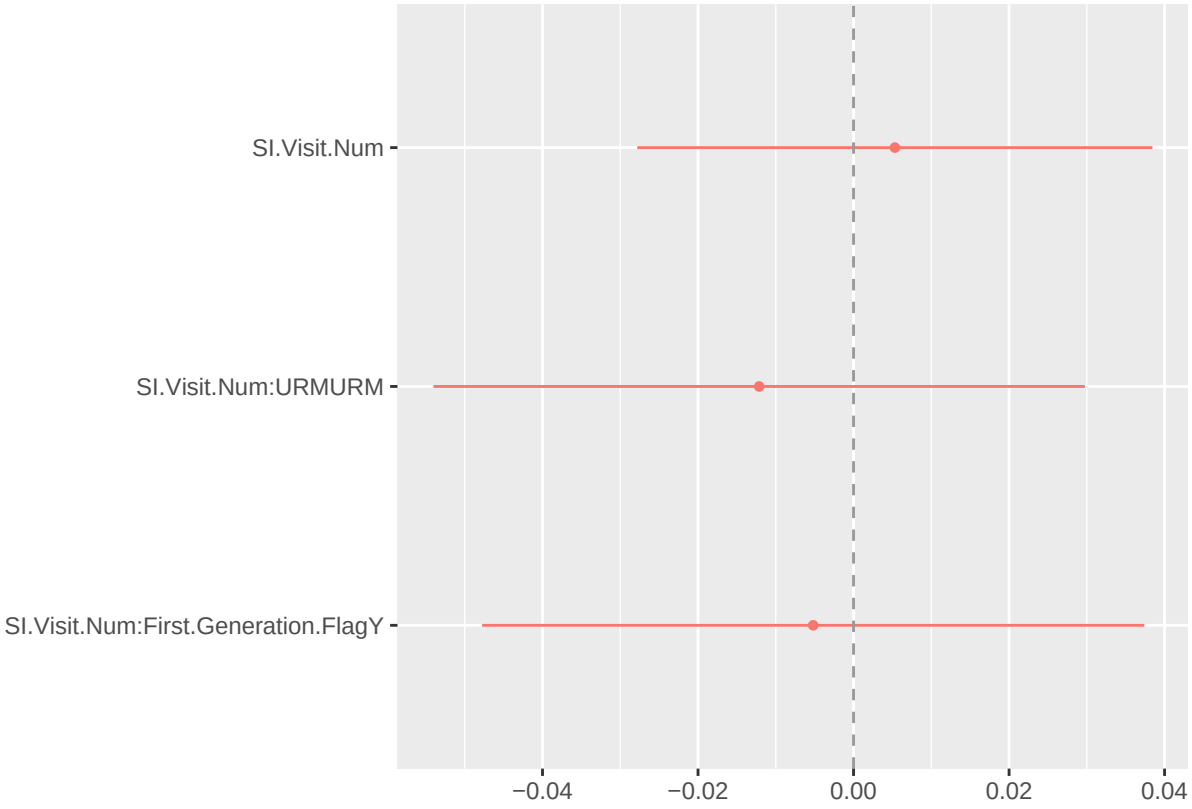

```
fit4<-glm(One.Year.Retention~ Cohort.Term.Year + SI.Visit.Num + Student.Class.Unit.Attempted + Student.C
summary(fit4)
```

```
##
## Call:
## glm(formula = One.Year.Retention ~ Cohort.Term.Year + SI.Visit.Num +
##     Student.Class.Unit.Attempted + Student.Class.Unit.Passed +
##     URM + Gender.Code + First.Generation.Flag + Academic.Level +
##     Major.1.STEM.Flag + Academic.Standing.Status + HS.GPA + Inst.MD.Persn.Onl.Othr +
##     Course.Fee.Exist.Flag + GE.Class.Flag + SI.Visit.Num:URM +
##     SI.Visit.Num:First.Generation.Flag, family = binomial(link = "logit"),
##     data = d)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -3.3411   0.1688   0.2472   0.3526   3.3263
##
## Coefficients:
##                                      Estimate Std. Error z value Pr(>|z|)
## (Intercept)                         -1.971840   1.153625  -1.709 0.087404
## Cohort.Term.Year2017                 0.146517   0.152379   0.962 0.336285
## Cohort.Term.Year2018                -0.143731   0.155661  -0.923 0.355821
## Cohort.Term.Year2019                -0.883849   0.149493  -5.912 3.37e-09
## Cohort.Term.Year2020                -1.564661   0.249037  -6.283 3.32e-10
## Cohort.Term.Year2021                -7.937781   1.028416  -7.718 1.18e-14
## SI.Visit.Num                         0.005315   0.016901   0.314 0.753146
## Student.Class.Unit.Attempted         0.180232   0.328223   0.549 0.582926
## Student.Class.Unit.Passed            0.210057   0.033389   6.291 3.15e-10
```

```
## URMURM                                  0.339549   0.151442   2.242 0.024954
## Gender.CodeM                           -0.062670   0.106762  -0.587 0.557198
## Gender.CodeN                           -6.097729 196.970363  -0.031 0.975303
## First.Generation.FlagY                  0.240214   0.156840   1.532 0.125623
## Academic.LevelJunior                    1.253815   0.214642   5.841 5.18e-09
## Academic.LevelSenior                    1.083634   0.291821   3.713 0.000205
## Academic.LevelSophomore                 1.378038   0.149936   9.191  < 2e-16
## Major.1.STEM.FlagY                     -0.236797   0.111292  -2.128 0.033361
## Academic.Standing.StatusGood Standing   3.879565   0.546928   7.093 1.31e-12
## Academic.Standing.StatusNo Value        3.704094   0.389549   9.509  < 2e-16
## Academic.Standing.StatusProbation       2.604648   0.396090   6.576 4.84e-11
## HS.GPA                                 -0.004808   0.123410  -0.039 0.968924
## Inst.MD.Persn.Onl.OthrOnline            1.032036   0.205261   5.028 4.96e-07
## Course.Fee.Exist.FlagY                 -0.139299   0.310939  -0.448 0.654157
## GE.Class.FlagY                         -0.435963   0.131673  -3.311 0.000930
## SI.Visit.Num:URMURM                    -0.012137   0.021374  -0.568 0.570143
## SI.Visit.Num:First.Generation.FlagY    -0.005187   0.021725  -0.239 0.811272
##
## (Intercept)                           .
## Cohort.Term.Year2017
## Cohort.Term.Year2018
## Cohort.Term.Year2019                  ***
## Cohort.Term.Year2020                  ***
## Cohort.Term.Year2021                  ***
## SI.Visit.Num
## Student.Class.Unit.Attempted
## Student.Class.Unit.Passed             ***
## URMURM                                *
## Gender.CodeM
## Gender.CodeN
## First.Generation.FlagY
## Academic.LevelJunior                  ***
## Academic.LevelSenior                  ***
## Academic.LevelSophomore               ***
## Major.1.STEM.FlagY                    *
## Academic.Standing.StatusGood Standing ***
## Academic.Standing.StatusNo Value      ***
## Academic.Standing.StatusProbation     ***
## HS.GPA
## Inst.MD.Persn.Onl.OthrOnline          ***
## Course.Fee.Exist.FlagY
## GE.Class.FlagY                        ***
## SI.Visit.Num:URMURM
## SI.Visit.Num:First.Generation.FlagY
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 4486.1  on 9216  degrees of freedom
## Residual deviance: 3433.1  on 9191  degrees of freedom
##   (10439 observations deleted due to missingness)
## AIC: 3485.1
##
```

```
## Number of Fisher Scoring iterations: 10
```

```
m5<-tidy(fit4)%>%
  filter(term == "SI.Visit.Num" | term == "SI.Visit.Num:URMURM" | term == "SI.Visit.Num:First.Generatio
dwplot(m5) +
    geom_vline(xintercept = 0, colour = "grey60", linetype = 2)
```



DoD URM

```
dod_data_urm <- d %>% group_by(URM, SI.Attended)
```

Modeling the Difference of Differences: URM

```
dod_mod_urm <- glm(One.Year.Retention ~ SI.Attended*URM,  family = binomial(link = "logit"), data=dod_da
coef(dod_mod_urm)
```

```
##        (Intercept)        SI.Attended             URMURM SI.Attended:URMURM
##         2.02961992         0.58260076        -0.02749662         0.09998787
```

Writing contrasts

- b0 = Intercept
- b1 = SI
- b2 = URM
- b3 = SI * URM

First I define each of the 4 groups, and the calculate the gap within SI and for no SI.

```
# URM = No & SI = Yes
URM.no_SI.yes <- matrix(c(1, 1, 0, 0), 1)
```

```
# URM = Yes & SI = Yes
URM.yes_SI.yes <- matrix(c(1, 1, 1, 1), 1)
(URM.gap_SI.yes <- URM.no_SI.yes - URM.yes_SI.yes)
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    0    0   -1   -1
```

```
# URM = No & SI = No
URM.no_SI.no <- matrix(c(1, 0, 0, 0), 1)
# URM = Yes & SI = No
URM.yes_SI.no <- matrix(c(1, 0, 1, 0), 1)
(URM.gap_SI.no <- URM.no_SI.no - URM.yes_SI.no)
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    0    0   -1    0
```

difference of differences: URM gap for No SI - URM gap for SI

```
(K <- URM.gap_SI.no - URM.gap_SI.yes)
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    0    0    0    1
```

```
mind.the.gap.urm <- glht(dod_mod_urm, linfct = K)
summary(mind.the.gap.urm)
```

```
##
##   Simultaneous Tests for General Linear Hypotheses
##
## Fit: glm(formula = One.Year.Retention ~ SI.Attended * URM, family = binomial(link = "logit"),
##     data = dod_data_urm)
##
## Linear Hypotheses:
##        Estimate Std. Error z value Pr(>|z|)
## 1 == 0  0.09999    0.10385   0.963    0.336
## (Adjusted p values reported -- single-step method)
```

```
confint(mind.the.gap.urm)
```

```
##
##   Simultaneous Confidence Intervals
##
## Fit: glm(formula = One.Year.Retention ~ SI.Attended * URM, family = binomial(link = "logit"),
##     data = dod_data_urm)
##
## Quantile = 1.96
## 95% family-wise confidence level
##
##
## Linear Hypotheses:
##        Estimate lwr      upr
## 1 == 0  0.09999 -0.10356  0.30353
```

The difference between URM yes and URM does not significantly differ between SI yes and SI no.

DoD First gen

```
dod_data_first <- d %>% group_by(First.Generation.Flag, SI.Attended)
```

Modeling the Difference of Differences: URM

```
dod_mod_first <- glm(One.Year.Retention ~ SI.Attended*First.Generation.Flag,  family = binomial(link =
coef(dod_mod_first)
```

```
##                          (Intercept)                         SI.Attended
##                           1.98632845                           0.62174997
##              First.Generation.FlagY SI.Attended:First.Generation.FlagY
##                           0.08861735                           0.01078202
```

Writing contrasts (Same as URM) * b0 = Intercept * b1 = SI * b2 = First * b3 = SI * First

First I define each of the 4 groups, and the calculate the gap within SI and for no SI.

```
# First = No & SI = Yes
First.no_SI.yes <- matrix(c(1, 1, 0, 0), 1)
# First = Yes & SI = Yes
First.yes_SI.yes <- matrix(c(1, 1, 1, 1), 1)
(First.gap_SI.yes <- First.no_SI.yes - First.yes_SI.yes)
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    0    0   -1   -1
```

```
# First = No & SI = No
First.no_SI.no <- matrix(c(1, 0, 0, 0), 1)
# First = Yes & SI = No
First.yes_SI.no <- matrix(c(1, 0, 1, 0), 1)
(First.gap_SI.no <- First.no_SI.no - First.yes_SI.no)
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    0    0   -1    0
```

difference of differences: First gap for No SI - First gap for SI

```
(L <- First.gap_SI.no - First.gap_SI.yes)
```

```
##      [,1] [,2] [,3] [,4]
## [1,]    0    0    0    1
```

```
mind.the.gap.first <- glht(dod_mod_first, linfct = L)
summary(mind.the.gap.first)
```

```
##
##   Simultaneous Tests for General Linear Hypotheses
##
## Fit: glm(formula = One.Year.Retention ~ SI.Attended * First.Generation.Flag,
##     family = binomial(link = "logit"), data = dod_data_first)
##
## Linear Hypotheses:
##        Estimate Std. Error z value Pr(>|z|)
## 1 == 0  0.01078    0.10737     0.1     0.92
## (Adjusted p values reported -- single-step method)
```

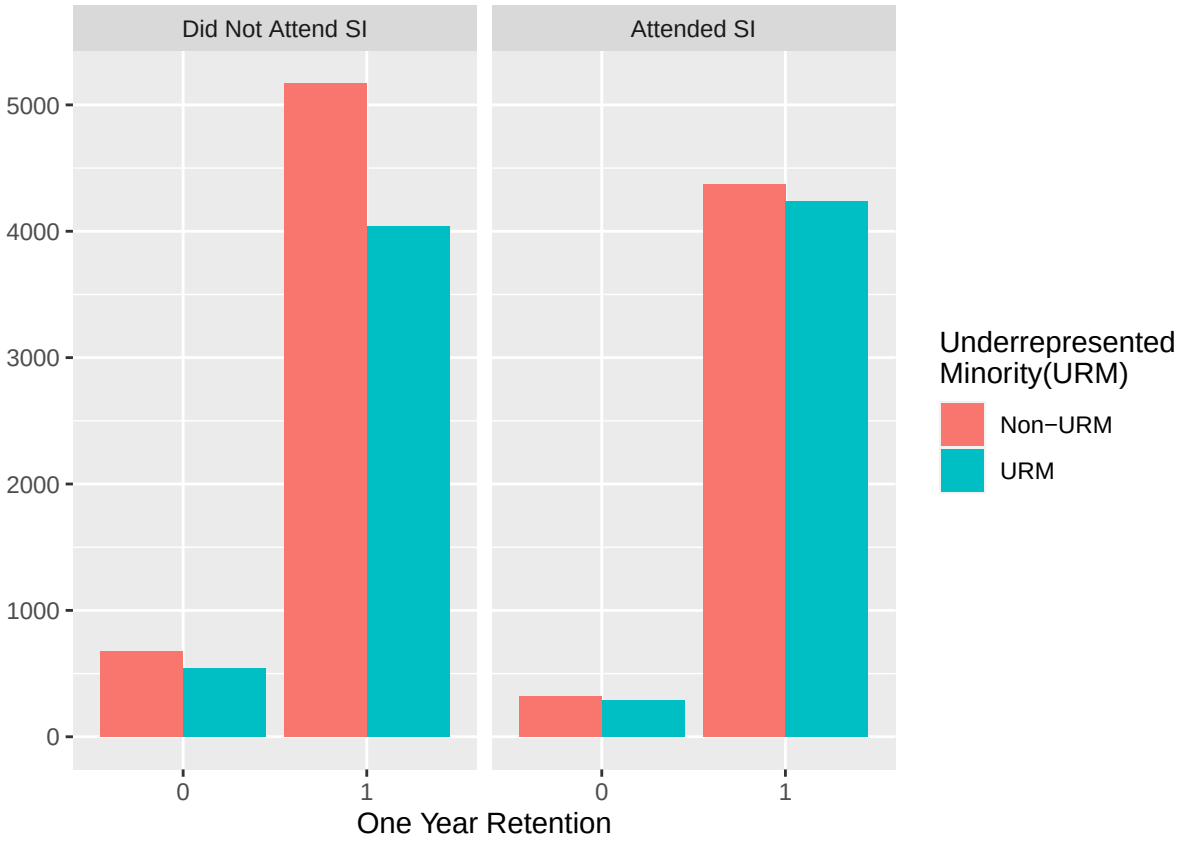
```
confint(mind.the.gap.first)
```

```
##
##   Simultaneous Confidence Intervals
##
## Fit: glm(formula = One.Year.Retention ~ SI.Attended * First.Generation.Flag,
##     family = binomial(link = "logit"), data = dod_data_first)
##
## Quantile = 1.96
## 95% family-wise confidence level
##
##
## Linear Hypotheses:
##        Estimate lwr      upr
## 1 == 0  0.01078 -0.19966  0.22122
```

The difference between First yes and First does not significantly differ between SI yes and SI no.

Plots

```
facet_names<-c(`0` = "Did Not Attend SI", `1` = "Attended SI")
ggplot(dod_data_urm) +
  geom_bar(aes(x=One.Year.Retention, fill=URM),
           position = "dodge") +
  facet_wrap(~SI.Attended, labeller = as_labeller(facet_names)) + xlab("One Year Retention")+ scale_fil
```




```
facet_names<-c(`0` = "Did Not Attend SI", `1` = "Attended SI")
ggplot(dod_data_first) +
  geom_bar(aes(x=One.Year.Retention, fill=First.Generation.Flag),
```

```
          position = "dodge") +
  facet_wrap(~SI.Attended, labeller = as_labeller(facet_names)) + xlab("One Year Retention")+ scale_fil
```