

Logistic regression AQI data

Michael Andreae

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Insurance status predicts antiemetic use

We investigate the Hypothesis that insurance status predicts antiemetic use in the population in the Public Use File of the Anesthesia Quality Institute with electronic anesthesia records recording antiemetic use.

Load cleaned dataset *myAQI_4_14.Rdata*

we load the cleaned dataset *myAQI_4_14.Rdata*, which we generated in *import_AQI_14Jul2015.Rmd*

```
rm(list = ls())
load("Analysis/Data/myAQI_4_14.Rdata")
str(myAQI_4_14)
```

```
## 'data.frame':    175097 obs. of  10 variables:
## $ Payment      : Factor w/ 4 levels "Commercial","MEDICAID",...: 1 1 1 3 1 3 2 1 3 1 ...
## $ ondansetron   : Factor w/ 2 levels "no Ondan","Ondan": 2 1 2 1 1 2 2 2 1 2 ...
## $ dexamethason  : Factor w/ 2 levels "no Dex","Dex": 1 1 1 1 1 1 1 1 1 1 ...
## $ droperidol    : Factor w/ 2 levels "no Drope","Drope": 1 1 1 1 1 1 1 1 1 1 ...
## $ ondan_dex_either : Factor w/ 2 levels "neither","either": 2 1 2 1 1 2 2 2 1 2 ...
## $ practiceID    : Factor w/ 4 levels "193055","691419",...: 2 2 2 2 2 2 2 2 2 2 ...
## $ case_duration_minutes: int  59 43 190 56 37 116 93 108 70 93 ...
## $ patient_age   : int  50 53 58 73 64 73 19 27 85 59 ...
## $ patient_age_group : Factor w/ 6 levels "1-18","19 - 49",...: 3 3 3 4 3 4 2 2 5 3 ...
## $ patient_sex    : Factor w/ 2 levels "female","male": 2 2 1 2 2 1 1 1 2 2 ...
```

Logistic Regression

Logistic Model 1

We fit a logistic regression model with the a logit link.

```
formula <- ondansetron ~ Payment +patient_age +patient_sex +
  practiceID + case_duration_minutes
fit_logistic <- glm(formula,
  family = binomial(link = "logit"), data = myAQI_4_14)
```

Controlling for age, sex, facility and case duration, antiemetic administration is strongly associated with insurance status as a marker of SES.

```
##
## Call:
## glm(formula = formula, family = binomial(link = "logit"), data = myAQI_4_14)
##
```

```

## Deviance Residuals:
##      Min        1Q      Median        3Q        Max
## -1.6470   -1.1825    0.8003    1.1260    1.4910
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)      3.224e-01  1.817e-02  17.738 < 2e-16 ***
## PaymentMEDICAID  -5.156e-01  1.498e-02 -34.419 < 2e-16 ***
## PaymentMedicare  -4.471e-01  1.328e-02 -33.651 < 2e-16 ***
## PaymentSELF      -1.133e-01  5.296e-02  -2.140  0.0324 *
## patient_age      -1.296e-03  2.849e-04  -4.549 5.40e-06 ***
## patient_sexmale  -1.273e-01  1.004e-02 -12.684 < 2e-16 ***
## practiceID691419  6.669e-01  1.780e-02  37.464 < 2e-16 ***
## practiceID5013437 7.651e-01  1.810e-02  42.267 < 2e-16 ***
## practiceID5610264 -1.047e-01  1.329e-02  -7.874 3.44e-15 ***
## case_duration_minutes -2.149e-04  3.006e-05  -7.148 8.83e-13 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 242460  on 175096  degrees of freedom
## Residual deviance: 234609  on 175087  degrees of freedom
## AIC: 234629
##
## Number of Fisher Scoring iterations: 4

```



```

##              (Intercept)      PaymentMEDICAID      PaymentMedicare
##              1.3803993           0.5971214           0.6395117
##      PaymentSELF      patient_age      patient_sexmale
##              0.8928556           0.9987052           0.8804688
##      practiceID691419      practiceID5013437      practiceID5610264
##              1.9481794           2.1492029           0.9006382
## case_duration_minutes
##              0.9997851

```