Project Milestone 2

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### Basic Information

* Project Title: Unstable Housing and Hypertension-Related Emergency Department Hospitalizations among Health Center Patients
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### Key Links

* GitHub repository: <https://github.com/chenssteve/NRSG741final.git>
* Data Source:
  + Health Center Patient Survey <https://bphc.hrsa.gov/datareporting/research/hcpsurvey/index.html>

### Project Objectives

*What is the primary focal question that you are trying to answer? What would you like to learn and accomplish?*

The objective of this project is to determine whether there is an association between unstable housing and hypertension-associated emergency department utilization among patients seeking care at federally qualified health centers (FQHCs). The results of the study will inform the role of housing in determining health care utilization among safety net clinic patients.

Note that this question is completely different than the original study question proposed in Project Milestone 1. This is due to changing personal research interests as well as a desire to align the project’s research outcomes with my MSPH thesis, which will leverage this dataset as well.

### Data

*From where and how are you acquiring your data? Provide a link to your data source.*

The Health Center Patient Survey (HCPS) is a nationally representative survey of patients who receive care at federally-funded safety net health centers. The survey is sponosred by the Health Resources & Services Administration and provides data on how well health centers meet the health care needs of the medically underserved. The HCPS is administered every five years, with the most recent dataset obtained in 2014. Survey data is obtained from in-person, one-on-one interview with a nationally representative sample of health center patients.

The dataset is [publicly available](https://bphc.hrsa.gov/datareporting/research/hcpsurvey/index.html) on the HRSA website for download. It is availale in SPSS, SAS, and STATA file formats.

### Methods

The dataset was appropriately imported into R from the STATA file format.

library(foreign)  
data <- read.dta("/Users/Steve/Box Sync/Emory MSPH/Spring 2019/NRSG 741/NRSG741final/PUF.dta")

Relevant variables were selected from the dataset.

* Identification and survey weights: zrid, analwt, vestr
* Hypertension indicators: con10, con10c
* Emergency room use due to hypertension: foll\_conf3e
* Unstable housing indicators: liv6, liv7\_r, liv4, liv1\_r
* Sociodemographic covariates: intage\_r, edit\_gen, final\_race, ins2, ins4, ins5, ins6, ins7, ins8, ins9, education, fpl, int4, dmo1, urban
* Facility indicators: ptype

library(dplyr)

##   
## 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

subsetdata <- data %>% select("zrid", "analwt", "vestr", "verep", "con10", "con10c",   
 "liv6", "liv7\_r", "liv4", "liv1\_r", "foll\_conf3e", "intage\_r", "edit\_gen",   
 "final\_race", "ins2", "ins4", "ins5", "ins6", "ins7", "ins8", "ins9", "education",   
 "fpl", "int4", "dmo1", "urban", "ptype")

The study sample included all adults (aged 18 years or older) who reported being told by a doctor or health professional that they had high blood pressure. The data was cleaned appropriately.

* Hypertension: con10/con10c: “YES”
* Age: intage\_r: 18+

subsetdata1 <- subsetdata %>% filter(intage\_r != "0-11" & intage\_r != "12-17") %>%   
 filter(con10 == "YES" | con10c == "YES")

Next, we created a new variable to identify those individuals who lived in unstable housing. Unstable housing was defined using similar critiera found in previous studies. They included those who reported that were staying in a house or apartment that they did not own or rent, those who did not have enough money to pay their rent or mortgage, and those who reported two or more moves within the past year. Those who reported none of these issues were classifed as having stable housing. Individuals experiencing homelessness were removed from the study sample, given their unique health care challenges faced that may be different from those faced by individuals living in unstable housing.

# Remove individuals experiencing homelessness.  
subsetdata2 <- subsetdata1 %>% filter(liv1\_r == "A HOUSE, TOWNHOUSE, OR MOBILE HOME" |   
 liv1\_r == "AN APARTMENT OR CONDO")  
  
# Create indicator variable for unstable housing.  
subsetdata2$unstable <- NA  
  
subsetdata2$unstable[subsetdata2$liv4 == "YES"] <- "NO"  
subsetdata2$unstable[subsetdata2$liv6 == "NO"] <- "NO"  
subsetdata2$unstable[subsetdata2$liv7\_r == "0" | subsetdata2$liv7\_r == "1"] <- "NO"  
subsetdata2$unstable[subsetdata2$liv4 == "NO"] <- "YES"  
subsetdata2$unstable[subsetdata2$liv6 == "YES"] <- "YES"  
subsetdata2$unstable[subsetdata2$liv7\_r == "2" | subsetdata2$liv7\_r == "3" |   
 subsetdata2$liv7\_r == "4"] <- "YES"  
  
# Remove individuals who did not answer (1) whether they owned or rented  
# their home, (2) whether they had challenges affording rent/mortgage, or  
# (3) the number of times they have moved.  
subsetdata3 <- subsetdata2 %>% filter(!is.na(unstable))  
  
# Confirm the dataset was cleaned.  
library(janitor)

##   
## Attaching package: 'janitor'

## The following objects are masked from 'package:stats':  
##   
## chisq.test, fisher.test

subsetdata3 %>% janitor::tabyl(liv4, unstable)

## liv4 NO YES  
## Refusal 0 0  
## Don't know 0 0  
## YES 1327 582  
## NO 0 232

subsetdata3 %>% janitor::tabyl(liv6, unstable)

## liv6 NO YES  
## Refusal 1 0  
## Don't know 1 1  
## YES 0 493  
## NO 1325 88  
## <NA> 0 232

subsetdata3 %>% janitor::tabyl(liv7\_r, unstable)

## liv7\_r NO YES  
## 0 1122 358  
## 1 205 71  
## 2 0 92  
## 3 0 32  
## 4 0 29  
## NA 0 232

We then removed and cleaned the focal dependent variable measuring self-reported hypertension-related ER utilization. As part of the survey, participants were asked whether they visited the hospital or emergency room due to hypertension. We are only interested in those who responded “Yes” or “No.”

subsetdata4 <- subsetdata3  
subsetdata4$foll\_conf3e[subsetdata4$foll\_conf3e == "Don't know"] <- NA  
  
subsetdata4 <- subsetdata4 %>% filter(!is.na(foll\_conf3e))  
  
subsetdata4 %>% janitor::tabyl(foll\_conf3e, unstable)

## foll\_conf3e NO YES  
## Refusal 0 0  
## Don't know 0 0  
## YES 100 102  
## NO 1061 587

finalsub <- subsetdata4  
  
finalsub$er <- relevel(finalsub$foll\_conf3e, ref = "NO")

Lastly, we included and cleaned the sociodemographic covariate measures, including age, gender, race, education, income, primary language, nationality, urbanicity, insurance, and center type.

# Create indicator variable for insured / uninsred.  
finalsub$ins <- NA  
  
finalsub$ins[finalsub$ins2 == "NO"] <- "NO"  
finalsub$ins[finalsub$ins4 == "NO"] <- "NO"  
finalsub$ins[finalsub$ins5 == "NO"] <- "NO"  
finalsub$ins[finalsub$ins6 == "NO"] <- "NO"  
finalsub$ins[finalsub$ins7 == "NO"] <- "NO"  
finalsub$ins[finalsub$ins8 == "NO"] <- "NO"  
finalsub$ins[finalsub$ins9 == "NO"] <- "NO"  
  
finalsub$ins[finalsub$ins2 == "YES"] <- "YES"  
finalsub$ins[finalsub$ins4 == "YES"] <- "YES"  
finalsub$ins[finalsub$ins5 == "YES"] <- "YES"  
finalsub$ins[finalsub$ins6 == "YES"] <- "YES"  
finalsub$ins[finalsub$ins7 == "YES"] <- "YES"  
finalsub$ins[finalsub$ins8 == "YES"] <- "YES"  
finalsub$ins[finalsub$ins9 == "YES"] <- "YES"  
  
finalsub$ins.f <- factor(finalsub$ins, levels = c("YES", "NO"))  
  
# Clean missing values for race and nationality.  
finalsub$race\_char <- as.character(finalsub$final\_race)  
finalsub$race\_char[finalsub$race\_char == "Refusal"] <- NA  
finalsub$race <- factor(finalsub$race\_char, levels = c("NonHispanic White",   
 "NonHispanic Black", "NonHispanic Asian", "NonHispanic Other", "Hispanic"))  
  
finalsub$dmo1[finalsub$dmo1 == "Don't know"] <- NA  
  
# Convert education into a factor to accurately present it as a categorical  
# variable.  
finalsub$education.f <- factor(finalsub$education, levels = 1:3, labels = c("Less than high school",   
 "High school", "More than high school"))  
  
# Rename variables for easy presentation.  
finalsub$ins <- finalsub$ins.f  
finalsub$age <- finalsub$intage\_r  
finalsub$gender <- finalsub$edit\_gen  
finalsub$education <- finalsub$education.f  
finalsub$fpl <- finalsub$fpl  
finalsub$lang <- finalsub$int4  
finalsub$nation <- finalsub$dmo1  
finalsub$urban <- finalsub$urban  
finalsub$ptype <- finalsub$ptype  
  
finalsub\_demog <- finalsub %>% select("unstable", "er", "gender", "race", "age",   
 "education", "fpl", "lang", "nation", "urban", "ins", "ptype", "zrid", "vestr",   
 "analwt")  
  
# Drop missing categories  
finalsub\_demog <- droplevels(finalsub\_demog)

### Analysis

We first conducted descriptive analyses of both unweighted and weighted data. Statistical comparisons for significance were conducted using chi square and ANOVA tests.

library(tableone)  
varser = c("er", "age", "gender", "race", "education", "fpl", "lang", "nation",   
 "urban", "ins", "ptype")  
vars = c("age", "gender", "race", "education", "fpl", "lang", "nation", "urban",   
 "ins", "ptype")  
  
# Unweighted  
tab1\_uw <- tableone::CreateTableOne(vars = varser, strata = "unstable", data = finalsub\_demog)  
  
tab1\_uw

## Stratified by unstable  
## NO YES p test  
## n 1161 689   
## er = YES (%) 100 ( 8.6) 102 (14.8) <0.001   
## age (%) <0.001   
## 18-20 2 ( 0.2) 1 ( 0.1)   
## 21-25 9 ( 0.8) 7 ( 1.0)   
## 26-34 35 ( 3.0) 33 ( 4.8)   
## 35-44 117 (10.1) 112 (16.3)   
## 45-54 286 (24.6) 238 (34.5)   
## 55-64 426 (36.7) 236 (34.3)   
## 65-74 211 (18.2) 50 ( 7.3)   
## 75 or older 75 ( 6.5) 12 ( 1.7)   
## gender = Female (%) 729 (62.8) 439 (63.7) 0.727   
## race (%) <0.001   
## NonHispanic White 293 (25.3) 195 (28.3)   
## NonHispanic Black 329 (28.4) 204 (29.6)   
## NonHispanic Asian 85 ( 7.3) 17 ( 2.5)   
## NonHispanic Other 123 (10.6) 52 ( 7.5)   
## Hispanic 329 (28.4) 221 (32.1)   
## education (%) 0.020   
## Less than high school 526 (45.4) 276 (40.1)   
## High school 306 (26.4) 177 (25.7)   
## More than high school 327 (28.2) 235 (34.2)   
## fpl (%) <0.001   
## Less than or Equal to 100% FPL 659 (57.1) 479 (69.6)   
## 101% to 138% FPL 214 (18.5) 112 (16.3)   
## 139% to 199% FPL 128 (11.1) 67 ( 9.7)   
## 200% to 299% FPL 85 ( 7.4) 18 ( 2.6)   
## 300% to 399% FPL 30 ( 2.6) 8 ( 1.2)   
## 400% or More than FPL 38 ( 3.3) 4 ( 0.6)   
## lang = NO (%) 741 (63.8) 474 (68.8) 0.033   
## nation = NO (%) 341 (29.4) 187 (27.3) 0.359   
## urban = Rural (%) 397 (34.2) 207 (30.0) 0.074   
## ins = NO (%) 26 ( 2.2) 18 ( 2.6) 0.725   
## ptype (%) <0.001   
## Public Housing Primary Care 123 (10.6) 55 ( 8.0)   
## Migrant Health Center 102 ( 8.8) 78 (11.3)   
## Health Care for the Homeless 42 ( 3.6) 150 (21.8)   
## Community Health Center 894 (77.0) 406 (58.9)

# summary(tab1\_uw)  
  
# Weighted  
library(survey)

## Loading required package: grid

## Loading required package: Matrix

## Loading required package: survival

##   
## Attaching package: 'survey'

## The following object is masked from 'package:graphics':  
##   
## dotchart

finalsub\_demog$analwt <- as.numeric(finalsub\_demog$analwt)  
hcpssurvey <- svydesign(ids = ~zrid, strata = ~vestr, weights = ~analwt, data = finalsub\_demog)  
  
tab1 <- tableone::svyCreateTableOne(vars = varser, strata = "unstable", data = hcpssurvey)  
tab1

## Stratified by unstable  
## NO YES   
## n 3711604.5 2185213.1   
## er = YES (%) 264421.9 ( 7.1) 272176.7 (12.5)   
## age (%)   
## 18-20 37753.0 ( 1.0) 51597.3 ( 2.4)   
## 21-25 10280.5 ( 0.3) 51378.1 ( 2.4)   
## 26-34 246296.0 ( 6.6) 310317.1 (14.2)   
## 35-44 574714.6 (15.5) 410436.7 (18.8)   
## 45-54 847460.7 (22.8) 510616.1 (23.4)   
## 55-64 1024534.5 (27.6) 647969.1 (29.7)   
## 65-74 652665.9 (17.6) 142542.2 ( 6.5)   
## 75 or older 317899.3 ( 8.6) 60356.7 ( 2.8)   
## gender = Female (%) 1836359.7 (49.5) 1326247.9 (60.7)   
## race (%)   
## NonHispanic White 2212733.5 (59.6) 1387091.7 (63.5)   
## NonHispanic Black 705509.4 (19.0) 414861.3 (19.0)   
## NonHispanic Asian 52476.4 ( 1.4) 11611.1 ( 0.5)   
## NonHispanic Other 203865.0 ( 5.5) 70375.2 ( 3.2)   
## Hispanic 535145.4 (14.4) 301273.8 (13.8)   
## education (%)   
## Less than high school 1395031.7 (37.8) 732949.8 (33.6)   
## High school 932465.4 (25.3) 537220.9 (24.6)   
## More than high school 1361862.2 (36.9) 913467.3 (41.8)   
## fpl (%)   
## Less than or Equal to 100% FPL 1903184.0 (52.3) 1334612.6 (61.3)   
## 101% to 138% FPL 557804.6 (15.3) 357676.9 (16.4)   
## 139% to 199% FPL 382536.2 (10.5) 320284.2 (14.7)   
## 200% to 299% FPL 467506.1 (12.9) 20328.6 ( 0.9)   
## 300% to 399% FPL 131277.9 ( 3.6) 120879.4 ( 5.6)   
## 400% or More than FPL 194037.5 ( 5.3) 22984.8 ( 1.1)   
## lang = NO (%) 2993506.5 (80.7) 1894588.7 (86.7)   
## nation = NO (%) 513631.7 (13.8) 253696.8 (11.6)   
## urban = Rural (%) 2101371.2 (56.6) 1325680.8 (60.7)   
## ins = NO (%) 65807.8 ( 1.8) 15631.2 ( 0.7)   
## ptype (%)   
## Public Housing Primary Care 37663.9 ( 1.0) 19119.5 ( 0.9)   
## Migrant Health Center 63510.8 ( 1.7) 37900.8 ( 1.7)   
## Health Care for the Homeless 112788.7 ( 3.0) 96641.3 ( 4.4)   
## Community Health Center 3497641.1 (94.2) 2031551.5 (93.0)   
## Stratified by unstable  
## p test  
## n   
## er = YES (%) 0.072   
## age (%) 0.012   
## 18-20   
## 21-25   
## 26-34   
## 35-44   
## 45-54   
## 55-64   
## 65-74   
## 75 or older   
## gender = Female (%) 0.060   
## race (%) 0.586   
## NonHispanic White   
## NonHispanic Black   
## NonHispanic Asian   
## NonHispanic Other   
## Hispanic   
## education (%) 0.665   
## Less than high school   
## High school   
## More than high school   
## fpl (%) 0.002   
## Less than or Equal to 100% FPL   
## 101% to 138% FPL   
## 139% to 199% FPL   
## 200% to 299% FPL   
## 300% to 399% FPL   
## 400% or More than FPL   
## lang = NO (%) 0.081   
## nation = NO (%) 0.459   
## urban = Rural (%) 0.472   
## ins = NO (%) 0.063   
## ptype (%) 0.545   
## Public Housing Primary Care   
## Migrant Health Center   
## Health Care for the Homeless   
## Community Health Center

# Weighted All  
tab2 <- tableone::svyCreateTableOne(vars = varser, data = hcpssurvey)  
tab2

##   
## Overall   
## n 5896817.7   
## er = YES (%) 536598.5 ( 9.1)   
## age (%)   
## 18-20 89350.3 ( 1.5)   
## 21-25 61658.7 ( 1.0)   
## 26-34 556613.1 ( 9.4)   
## 35-44 985151.3 (16.7)   
## 45-54 1358076.8 (23.0)   
## 55-64 1672503.5 (28.4)   
## 65-74 795208.1 (13.5)   
## 75 or older 378255.9 ( 6.4)   
## gender = Female (%) 3162607.5 (53.6)   
## race (%)   
## NonHispanic White 3599825.2 (61.1)   
## NonHispanic Black 1120370.7 (19.0)   
## NonHispanic Asian 64087.5 ( 1.1)   
## NonHispanic Other 274240.3 ( 4.7)   
## Hispanic 836419.2 (14.2)   
## education (%)   
## Less than high school 2127981.6 (36.2)   
## High school 1469686.2 (25.0)   
## More than high school 2275329.5 (38.7)   
## fpl (%)   
## Less than or Equal to 100% FPL 3237796.6 (55.7)   
## 101% to 138% FPL 915481.5 (15.7)   
## 139% to 199% FPL 702820.3 (12.1)   
## 200% to 299% FPL 487834.7 ( 8.4)   
## 300% to 399% FPL 252157.3 ( 4.3)   
## 400% or More than FPL 217022.3 ( 3.7)   
## lang = NO (%) 4888095.2 (82.9)   
## nation = NO (%) 767328.5 (13.0)   
## urban = Rural (%) 3427052.1 (58.1)   
## ins = NO (%) 81439.0 ( 1.4)   
## ptype (%)   
## Public Housing Primary Care 56783.4 ( 1.0)   
## Migrant Health Center 101411.6 ( 1.7)   
## Health Care for the Homeless 209430.0 ( 3.6)   
## Community Health Center 5529192.7 (93.8)

# summary(tab1)

We then used logistic regression to analyze the association between unstable housing and hypertension-related emergency department visits, while controlling for the various sociodemographic covariates. Three models were created, two reduced models using unweighted and weighted data, and one comprehensive model including sociodemographic covariates using weighted data.

# Basic model, unadjusted for survey weights  
model\_basic\_unadjust <- glm(er ~ unstable, family = binomial, data = finalsub\_demog)  
summary(model\_basic\_unadjust)

##   
## Call:  
## glm(formula = er ~ unstable, family = binomial, data = finalsub\_demog)  
##   
## Deviance Residuals:   
## Min 1Q Median 3Q Max   
## -0.5661 -0.5661 -0.4244 -0.4244 2.2144   
##   
## Coefficients:  
## Estimate Std. Error z value Pr(>|z|)   
## (Intercept) -2.3618 0.1046 -22.578 < 2e-16 \*\*\*  
## unstableYES 0.6117 0.1498 4.083 4.45e-05 \*\*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for binomial family taken to be 1)  
##   
## Null deviance: 1275.8 on 1849 degrees of freedom  
## Residual deviance: 1259.3 on 1848 degrees of freedom  
## AIC: 1263.3  
##   
## Number of Fisher Scoring iterations: 5

exp(coef(model\_basic\_unadjust))

## (Intercept) unstableYES   
## 0.09425071 1.84364566

# Basic model, adjusted for survey weights  
model\_basic <- svyglm(er ~ unstable, family = binomial(link = "logit"), design = hcpssurvey)

## Warning in eval(family$initialize): non-integer #successes in a binomial  
## glm!

summary(model\_basic)

##   
## Call:  
## svyglm(formula = er ~ unstable, design = hcpssurvey, family = binomial(link = "logit"))  
##   
## Survey design:  
## svydesign(ids = ~zrid, strata = ~vestr, weights = ~analwt, data = finalsub\_demog)  
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) -2.5678 0.2314 -11.10 <2e-16 \*\*\*  
## unstableYES 0.6178 0.3471 1.78 0.0753 .   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for binomial family taken to be 1.000541)  
##   
## Number of Fisher Scoring iterations: 4

exp(coef(model\_basic))

## (Intercept) unstableYES   
## 0.07670666 1.85478941

# Detailed model, adjusted for survey weights  
model <- svyglm(er ~ unstable + age + gender + race + education + fpl + lang +   
 nation + urban + ins + ptype, family = binomial(link = "logit"), design = hcpssurvey)

## Warning in eval(family$initialize): non-integer #successes in a binomial  
## glm!

summary(model)

##   
## Call:  
## svyglm(formula = er ~ unstable + age + gender + race + education +   
## fpl + lang + nation + urban + ins + ptype, design = hcpssurvey,   
## family = binomial(link = "logit"))  
##   
## Survey design:  
## svydesign(ids = ~zrid, strata = ~vestr, weights = ~analwt, data = finalsub\_demog)  
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)  
## (Intercept) -16.65893 1.33807 -12.450 < 2e-16  
## unstableYES 0.37839 0.39647 0.954 0.3400  
## age21-25 14.74390 1.50302 9.810 < 2e-16  
## age26-34 13.72258 1.20828 11.357 < 2e-16  
## age35-44 12.72610 1.22837 10.360 < 2e-16  
## age45-54 13.24186 1.12074 11.815 < 2e-16  
## age55-64 12.89239 1.24019 10.396 < 2e-16  
## age65-74 12.82167 1.16724 10.985 < 2e-16  
## age75 or older 11.88090 1.21795 9.755 < 2e-16  
## genderFemale -0.16614 0.32610 -0.509 0.6105  
## raceNonHispanic Black 1.70348 0.43300 3.934 8.67e-05  
## raceNonHispanic Asian 0.26479 0.96342 0.275 0.7835  
## raceNonHispanic Other 2.13533 0.66286 3.221 0.0013  
## raceHispanic 0.68701 0.57015 1.205 0.2284  
## educationHigh school -0.54072 0.47487 -1.139 0.2550  
## educationMore than high school 0.50327 0.39364 1.279 0.2012  
## fpl101% to 138% FPL -0.95468 0.59836 -1.595 0.1108  
## fpl139% to 199% FPL -0.58263 0.61668 -0.945 0.3449  
## fpl200% to 299% FPL -1.43034 0.78341 -1.826 0.0680  
## fpl300% to 399% FPL -2.97599 0.96166 -3.095 0.0020  
## fpl400% or More than FPL -1.43079 1.20184 -1.191 0.2340  
## langNO 0.02361 0.63283 0.037 0.9702  
## nationNO 0.56914 0.56638 1.005 0.3151  
## urbanRural 0.40476 0.34065 1.188 0.2349  
## insNO -1.07013 0.80885 -1.323 0.1860  
## ptypeMigrant Health Center 0.13208 0.62945 0.210 0.8338  
## ptypeHealth Care for the Homeless -0.27049 0.74131 -0.365 0.7152  
## ptypeCommunity Health Center 0.40438 0.43325 0.933 0.3508  
##   
## (Intercept) \*\*\*  
## unstableYES   
## age21-25 \*\*\*  
## age26-34 \*\*\*  
## age35-44 \*\*\*  
## age45-54 \*\*\*  
## age55-64 \*\*\*  
## age65-74 \*\*\*  
## age75 or older \*\*\*  
## genderFemale   
## raceNonHispanic Black \*\*\*  
## raceNonHispanic Asian   
## raceNonHispanic Other \*\*   
## raceHispanic   
## educationHigh school   
## educationMore than high school   
## fpl101% to 138% FPL   
## fpl139% to 199% FPL   
## fpl200% to 299% FPL .   
## fpl300% to 399% FPL \*\*   
## fpl400% or More than FPL   
## langNO   
## nationNO   
## urbanRural   
## insNO   
## ptypeMigrant Health Center   
## ptypeHealth Care for the Homeless   
## ptypeCommunity Health Center   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## (Dispersion parameter for binomial family taken to be 1.183402)  
##   
## Number of Fisher Scoring iterations: 14

exp(coef(model))

## (Intercept) unstableYES   
## 5.822649e-08 1.459936e+00   
## age21-25 age26-34   
## 2.530436e+06 9.112607e+05   
## age35-44 age45-54   
## 3.364148e+05 5.634637e+05   
## age55-64 age65-74   
## 3.972776e+05 3.701517e+05   
## age75 or older genderFemale   
## 1.444809e+05 8.469298e-01   
## raceNonHispanic Black raceNonHispanic Asian   
## 5.493003e+00 1.303152e+00   
## raceNonHispanic Other raceHispanic   
## 8.459801e+00 1.987767e+00   
## educationHigh school educationMore than high school   
## 5.823290e-01 1.654119e+00   
## fpl101% to 138% FPL fpl139% to 199% FPL   
## 3.849366e-01 5.584273e-01   
## fpl200% to 299% FPL fpl300% to 399% FPL   
## 2.392278e-01 5.099683e-02   
## fpl400% or More than FPL langNO   
## 2.391194e-01 1.023894e+00   
## nationNO urbanRural   
## 1.766744e+00 1.498945e+00   
## insNO ptypeMigrant Health Center   
## 3.429636e-01 1.141194e+00   
## ptypeHealth Care for the Homeless ptypeCommunity Health Center   
## 7.630042e-01 1.498369e+00

### Next Steps

The next steps will involve writing up study analysis results and conclusions. Careful consideration will be made as to how best to visually present this data.