

Assignment 13.1

#a. Find out top 5 attributes having highest correlation (select only Numeric features).

#b. Find out top 3 reasons for having more crime in a city.

#c. Which all attributes have correlation with crime rate?

```
COBRA_YTD2017<-read.csv('C:/Sourav/R/COBRA-YTD2017.csv')
require(Amelia)
```

```
## Loading required package: Amelia
```

```
## Loading required package: Rcpp
```

```
## ##
```

```
## ## Amelia II: Multiple Imputation
```

```
## ## (Version 1.7.5, built: 2018-05-07)
```

```
## ## Copyright (C) 2005-2018 James Honaker, Gary King and Matthew Blackwell
```

```
## ## Refer to http://gking.harvard.edu/amelia/ for more information
```

```
## ##
```

```
library(Rcpp)
```

```
data<-COBRA_YTD2017
```

```
data[4:10,3] <- rep(NA,7)
```

```
data[1:5,4] <- NA
```

```
data <- data[-c(5,6)]
```

```
summary(data)
```

```
##      MI_PRINX      offense_id      rpt_date
## Min.   :8838438 Min.   :1.608e+08 7/26/2017 : 106
## 1st Qu.:8904204 1st Qu.:1.711e+08 10/16/2017: 103
## Median :8910894 Median :1.720e+08 11/1/2017 : 103
## Mean   :8910851 Mean   :6.523e+08 9/21/2017 : 101
## 3rd Qu.:8917584 3rd Qu.:1.728e+08 11/28/2017: 100
## Max.   :8924410 Max.   :1.730e+11 (Other)   :26239
##                                     NA's      :    7
##      occur_date      poss_time      beat      apt_office_prefix
## 11/17/2017: 110 8:00:00 : 526 Min.   :101.0 :26213
## 10/7/2017 : 106 7:00:00 : 430 1st Qu.:208.0 APT    : 314
## 8/19/2017 : 105 12:00:00: 426 Median :312.0 STE    : 25
## 10/28/2017: 102 10:00:00: 376 Mean   :355.6 ROOM   : 21
## 10/31/2017: 99 9:00:00 : 376 3rd Qu.:505.0 BLDG   : 12
## (Other)   :26232 16:00:00: 375 Max.   :710.0 UNIT   : 12
## NA's      :    5 (Other) :24250 (Other): 162
## apt_office_num      location
##      :22133 1801 HOWELL MILL RD NW : 142
## A      : 120 3393 PEACHTREE RD NE @LENOX MALL : 140
## B      : 108 1275 CAROLINE ST NE @TARGET - CAROLINE : 136
## 1      : 61 3393 PEACHTREE RD NE : 129
```

```

## 2      : 48      835 MARTIN L KING JR DR NW      : 108
## 5      : 46      2841 GREENBRIAR PKWY SW @GREENBRIAR MALL: 95
## (Other): 4243    (Other)                        :26009
##      MinOfucr      MinOfibr_code      dispo_code      MaxOfnum_victims
## Min. :110.0      2305 :9024      :22959      Min. : 0.00
## 1st Qu.:521.0      2404 :2774      10 : 2893      1st Qu.: 1.00
## Median :640.0      2303 :2486      20 : 632      Median : 1.00
## Mean :598.8      2399 :1946      30 : 210      Mean : 1.16
## 3rd Qu.:660.0      2202 :1802      40 : 36      3rd Qu.: 1.00
## Max. :730.0      2308 :1381      60 : 20      Max. :27.00
##      (Other):7346    (Other): 9      NA's :75
##      Shift      Avg.Day      loc_type      UC2.Literal
## Day :6882      Sat :3713      Min. : 1.00      LARCENY-FROM VEHICLE:9840
## Eve :9151      Sun :3569      1st Qu.:13.00      LARCENY-NON VEHICLE :6589
## Morn:7014      Tue :3542      Median :18.00      AUTO THEFT :3197
## Unk :3712      Wed :3539      Mean :20.76      BURGLARY-RESIDENCE :2635
##      Mon :3492      3rd Qu.:20.00      AGG ASSAULT :2024
##      Thu :3455      Max. :99.00      ROBBERY-PEDESTRIAN :1126
##      (Other):5449      NA's :3344      (Other) :1348
##      neighborhood      npu      x
## Downtown : 1828      M : 3077      Min. : -84.55
## Midtown : 1410      E : 2742      1st Qu.: -84.43
## : 1185      B : 2716      Median : -84.40
## Old Fourth Ward : 697      D : 1281      Mean : -83.69
## Lindbergh/Morosgo: 595      V : 1281      3rd Qu.: -84.37
## West End : 571      T : 1140      Max. : 0.00
## (Other) :20473      (Other):14522
##      y
## Min. : 0.00
## 1st Qu.:33.73
## Median :33.76
## Mean :33.47
## 3rd Qu.:33.79
## Max. :33.88
##

```

str(COBRA_YTD2017)

```

## 'data.frame': 26759 obs. of 23 variables:
## $ MI_PRINX : int 8924155 8924156 8924157 8924158 8924159 8924160
8924161 8924162 8924163 8924164 ...
## $ offense_id : num 1.74e+08 1.74e+08 1.74e+08 1.74e+08 1.74e+08 ..
.
## $ rpt_date : Factor w/ 365 levels "1/1/2017","1/10/2017",...: 117
117 117 117 117 117 117 117 117 117 ...
## $ occur_date : Factor w/ 471 levels "1/1/2008","1/1/2015",...: 174 1
45 174 174 176 174 176 176 174 176 ...
## $ occur_time : Factor w/ 1355 levels "", "0:00:00", "0:01:00",...: 955
290 883 763 43 940 112 2 2 2 ...
## $ poss_date : Factor w/ 412 levels "1/1/2015","1/1/2017",...: 147 1

```

```

45 147 147 147 147 147 147 147 147 ...
## $ poss_time      : Factor w/ 1434 levels "", "0:00:00", "0:01:00", ...: 32
902 62 68 50 88 121 722 1024 1056 ...
## $ beat           : int   510 501 303 507 409 612 605 603 605 304 ...
## $ apt_office_prefix: Factor w/ 88 levels "", "#8", "1", "10", ...: 1 1 1 1 1 1
1 1 1 1 ...
## $ apt_office_num  : Factor w/ 2044 levels "", "#5", "]", "`", ...: 1 1 1 1 1
1 213 1 1 1372 ...
## $ location        : Factor w/ 13865 levels ": 565 Main St NE", ...: 9394 1
133 10955 7860 5557 1525 8250 9706 9456 455 ...
## $ MinOfucr        : int   640 640 640 640 640 650 311 640 640 531 ...
## $ MinOfibr_code   : Factor w/ 68 levels "", "1101", "1101A", ...: 51 51 51 5
1 51 50 30 51 51 42 ...
## $ dispo_code      : Factor w/ 8 levels "", "10", "20", "30", ...: 1 1 1 1 1 1
1 1 1 1 ...
## $ MaxOfnum_victims : int   2 1 1 1 2 1 1 1 1 1 ...
## $ Shift           : Factor w/ 4 levels "Day", "Eve", "Morn", ...: 3 4 3 2 3
3 3 3 4 3 ...
## $ Avg.Day         : Factor w/ 8 levels "Fri", "Mon", "Sat", ...: 3 7 3 3 4 4
4 4 3 4 ...
## $ loc_type        : int   13 13 18 18 18 18 26 18 13 26 ...
## $ UC2.Literal     : Factor w/ 11 levels "AGG ASSAULT", ...: 6 6 6 6 6 6 10
6 6 4 ...
## $ neighborhood    : Factor w/ 239 levels "", "Adair Park", ...: 80 117 145
64 3 83 103 164 103 175 ...
## $ npu             : Factor w/ 26 levels "", "A", "B", "C", ...: 14 6 22 14 19
23 23 14 23 22 ...
## $ x               : num  -84.4 -84.4 -84.4 -84.4 -84.5 ...
## $ y               : num  33.8 33.8 33.7 33.8 33.7 ...

```

```
library(car)
```

```
## Loading required package: carData
```

```
fit<-lm(beat~MinOfucr+ MaxOfnum_victims+loc_type+neighborhood+x+y,data =COBRA
A_YTD2017)
```

```
fit
```

```
##
```

```
## Call:
```

```
## lm(formula = beat ~ MinOfucr + MaxOfnum_victims + loc_type +
##     neighborhood + x + y, data = COBRA_YTD2017)
```

```
##
```

```
## Coefficients:
```

```
##              (Intercept)
##              3.088e+02
##              MinOfucr
##              2.221e-02
##              MaxOfnum_victims
##              -2.153e-01
##              loc_type
```

```
## -1.020e-01
## neighborhoodAdair Park
## -5.594e+01
## neighborhoodAdams Park
## -1.071e+01
## neighborhoodAdamsville
## -1.072e+02
## neighborhoodAlmond Park
## -1.922e+02
## neighborhoodAmal Heights
## -8.001e+01
## neighborhoodAnsley Park
## 2.682e+02
## neighborhoodArden/Habersham
## 3.451e+01
## neighborhoodArdmore
## -1.492e+01
## neighborhoodArgonne Forest
## 3.535e+01
## neighborhoodArlington Estates
## -9.771e+01
## neighborhoodAshley Courts
## -4.434e+01
## neighborhoodAshview Heights
## -2.293e+02
## neighborhoodAtkins Park
## 3.590e+02
## neighborhoodAtlanta Industrial Park
## -1.911e+02
## neighborhoodAtlanta University Center
## -2.148e+02
## neighborhoodAtlantic Station
## 2.518e+02
## neighborhoodAudobon Forest
## 4.003e+00
## neighborhoodAudobon Forest West
## -1.011e+01
## neighborhoodBaker Hills
## 2.365e+01
## neighborhoodBakers Ferry
## 3.247e+00
## neighborhoodBankhead
## -1.978e+02
## neighborhoodBankhead/Bolton
## -2.120e+02
## neighborhoodBeecher Hills
## 1.716e+01
## neighborhoodBen Hill
## -1.239e+02
## neighborhoodBen Hill Acres
```

| | | |
|----|-------------------------------------|------------|
| ## | | -8.011e+01 |
| ## | neighborhoodBen Hill Forest | |
| ## | | -1.018e+02 |
| ## | neighborhoodBen Hill Pines | |
| ## | | -9.275e+01 |
| ## | neighborhoodBen Hill Terrace | |
| ## | | -7.799e+01 |
| ## | neighborhoodBenteen Park | |
| ## | | 2.536e+02 |
| ## | neighborhoodBerkeley Park | |
| ## | | -3.422e+01 |
| ## | neighborhoodBetmar LaVilla | |
| ## | | -8.306e+01 |
| ## | neighborhoodBlair Villa/Poole Creek | |
| ## | | -1.533e+02 |
| ## | neighborhoodBlandtown | |
| ## | | -5.819e+01 |
| ## | neighborhoodBolton | |
| ## | | -3.747e+01 |
| ## | neighborhoodBolton Hills | |
| ## | | -1.732e+02 |
| ## | neighborhoodBoulder Park | |
| ## | | -2.017e+00 |
| ## | neighborhoodBoulevard Heights | |
| ## | | 2.708e+02 |
| ## | neighborhoodBrandon | |
| ## | | -5.773e+00 |
| ## | neighborhoodBrentwood | |
| ## | | -1.044e+02 |
| ## | neighborhoodBriar Glen | |
| ## | | -6.678e+01 |
| ## | neighborhoodBrookhaven | |
| ## | | 1.103e+02 |
| ## | neighborhoodBrookview Heights | |
| ## | | -2.056e+02 |
| ## | neighborhoodBrookwood | |
| ## | | -1.984e+01 |
| ## | neighborhoodBrookwood Hills | |
| ## | | -1.158e+01 |
| ## | neighborhoodBrowns Mill Park | |
| ## | | -1.083e+02 |
| ## | neighborhoodBuckhead Forest | |
| ## | | 6.822e+01 |
| ## | neighborhoodBuckhead Heights | |
| ## | | 8.416e+01 |
| ## | neighborhoodBuckhead Village | |
| ## | | 5.630e+01 |
| ## | neighborhoodBush Mountain | |
| ## | | 2.443e+01 |
| ## | neighborhoodButner/Tell | |

```
## -1.055e+02
## neighborhoodCabbagetown
## 3.089e+02
## neighborhoodCampbellton Road
## -2.648e+01
## neighborhoodCandler Park
## 3.534e+02
## neighborhoodCapitol Gateway
## 2.862e+02
## neighborhoodCapitol View
## -8.205e+01
## neighborhoodCapitol View Manor
## -7.716e+01
## neighborhoodCarey Park
## -1.900e+02
## neighborhoodCarroll Heights
## -2.290e+02
## neighborhoodCarver Hills
## -1.664e+02
## neighborhoodCascade Avenue/Road
## 1.491e+01
## neighborhoodCascade Green
## -3.778e+01
## neighborhoodCascade Heights
## -1.374e+01
## neighborhoodCastleberry Hill
## 1.847e+02
## neighborhoodCastlewood
## 2.267e+01
## neighborhoodCenter Hill
## -2.125e+02
## neighborhoodChalet Woods
## 3.127e+01
## neighborhoodChanning Valley
## -2.311e+01
## neighborhoodChastain Park
## 9.584e+01
## neighborhoodChosewood Park
## -4.798e+01
## neighborhoodCollier Heights
## -2.200e+02
## neighborhoodCollier Hills
## -1.576e+01
## neighborhoodCollier Hills North
## -7.174e+00
## neighborhoodColonial Homes
## -1.751e+00
## neighborhoodCross Creek
## -1.726e+01
## neighborhoodCuster/McDonough/Guice
```

```
##                2.544e+02
##            neighborhoodDeerwood
##                -9.579e+01
##            neighborhoodDixie Hills
##                -2.329e+02
##            neighborhoodDowntown
##                2.113e+02
##            neighborhoodDruid Hills
##                3.727e+02
##            neighborhoodEast Ardley Road
##                -1.065e+01
##            neighborhoodEast Atlanta
##                3.081e+02
##            neighborhoodEast Chastain Park
##                1.171e+02
##            neighborhoodEast Lake
##                3.528e+02
##            neighborhoodEdgewood
##                3.384e+02
##            neighborhoodElmco Estates
##                -9.468e+01
##            neighborhoodEnglish Avenue
##                -1.822e+02
##            neighborhoodEnglish Park
##                -1.962e+02
##            neighborhoodFairburn
##                -8.784e+01
##            neighborhoodFairburn Heights
##                -2.392e+02
##            neighborhoodFairburn Mays
##                -2.608e-01
##            neighborhoodFairburn Road/Wisteria Lane
##                1.013e+01
##            neighborhoodFairburn Tell
##                -9.799e+01
##            neighborhoodFairway Acres
##                -1.051e+02
##            neighborhoodFernleaf
##                -2.435e+01
##            neighborhoodFlorida Heights
##                -1.341e+02
##            neighborhoodFort McPherson
##                -1.178e+00
##            neighborhoodFort Valley
##                -1.903e+01
##            neighborhoodGarden Hills
##                4.575e+01
##            neighborhoodGeorgia Tech
##                2.323e+02
##            neighborhoodGlenrose Heights
```

| | |
|----|------------------------------------|
| ## | -1.316e+02 |
| ## | neighborhoodGrant Park |
| ## | 2.886e+02 |
| ## | neighborhoodGreen Acres Valley |
| ## | -1.467e+01 |
| ## | neighborhoodGreen Forest Acres |
| ## | -8.231e+00 |
| ## | neighborhoodGreenbriar |
| ## | -8.013e+01 |
| ## | neighborhoodGreenbriar Village |
| ## | -7.815e+01 |
| ## | neighborhoodGrove Park |
| ## | -2.037e+02 |
| ## | neighborhoodHammond Park |
| ## | -1.334e+02 |
| ## | neighborhoodHanover West |
| ## | -1.605e+01 |
| ## | neighborhoodHarland Terrace |
| ## | 3.398e+00 |
| ## | neighborhoodHarris Chiles |
| ## | -2.319e+02 |
| ## | neighborhoodHarvel Homes Community |
| ## | -2.362e+02 |
| ## | neighborhoodHeritage Valley |
| ## | -5.375e+01 |
| ## | neighborhoodHigh Point |
| ## | -6.895e+01 |
| ## | neighborhoodHills Park |
| ## | -5.258e+01 |
| ## | neighborhoodHome Park |
| ## | 2.364e+02 |
| ## | neighborhoodHorseshoe Community |
| ## | -2.681e+01 |
| ## | neighborhoodHunter Hills |
| ## | -2.145e+02 |
| ## | neighborhoodHuntington |
| ## | -1.373e+02 |
| ## | neighborhoodInman Park |
| ## | 3.329e+02 |
| ## | neighborhoodIvan Hill |
| ## | 1.963e+01 |
| ## | neighborhoodJoyland |
| ## | -7.231e+01 |
| ## | neighborhoodJust Us |
| ## | -2.265e+02 |
| ## | neighborhoodKings Forest |
| ## | -7.272e+01 |
| ## | neighborhoodKingswood |
| ## | 4.664e+01 |
| ## | neighborhoodKirkwood |


```
## 3.499e+02
## neighborhoodKnight Park/Howell Station
## -1.739e+02
## neighborhoodLake Claire
## 3.634e+02
## neighborhoodLake Estates
## -1.091e+02
## neighborhoodLakewood
## -8.625e+01
## neighborhoodLakewood Heights
## -7.485e+01
## neighborhoodLaurens Valley
## -3.553e+01
## neighborhoodLeila Valley
## -8.211e+01
## neighborhoodLenox
## 8.408e+01
## neighborhoodLincoln Homes
## -1.737e+02
## neighborhoodLindbergh/Morosgo
## 4.112e+01
## neighborhoodLindridge/Martin Manor
## 4.212e+01
## neighborhoodLoring Heights
## -3.741e+01
## neighborhoodMagnum Manor
## -1.892e+01
## neighborhoodMargaret Mitchell
## -3.024e+00
## neighborhoodMarietta Street Artery
## 2.257e+02
## neighborhoodMays
## 8.219e+00
## neighborhoodMeadowbrook Forest
## -7.720e+01
## neighborhoodMechanicsville
## -3.398e+01
## neighborhoodMellwood
## -2.445e+02
## neighborhoodMemorial Park
## -4.356e+00
## neighborhoodMidtown
## 2.483e+02
## neighborhoodMidwest Cascade
## -3.968e+01
## neighborhoodMonroe Heights
## -1.826e+02
## neighborhoodMorningside/Lenox Park
## 1.177e+01
## neighborhoodMozley Park
```

```
## -2.374e+02
## neighborhoodMt. Gilead Woods
## -6.112e+01
## neighborhoodMt. Paran Parkway
## 8.077e+01
## neighborhoodMt. Paran/Northside
## 7.260e+01
## neighborhoodNiskey Cove
## -6.749e+01
## neighborhoodNiskey Lake
## -5.861e+01
## neighborhoodNorth Buckhead
## 8.552e+01
## neighborhoodNorwood Manor
## -7.743e+01
## neighborhoodOakcliff
## -2.579e+02
## neighborhoodOakland
## 2.976e+02
## neighborhoodOakland City
## 1.604e+01
## neighborhoodOld Fairburn Village
## -4.514e+01
## neighborhoodOld Fourth Ward
## 3.293e+02
## neighborhoodOld Gordon
## -2.503e+02
## neighborhoodOrchard Knob
## -1.258e+02
## neighborhoodOrmewood Park
## 2.985e+02
## neighborhoodPaces
## 2.661e+01
## neighborhoodPeachtree Battle Alliance
## 6.536e+00
## neighborhoodPeachtree Heights East
## 3.028e+01
## neighborhoodPeachtree Heights West
## 4.196e+01
## neighborhoodPeachtree Hills
## 2.127e+01
## neighborhoodPeachtree Park
## 6.859e+01
## neighborhoodPenelope Neighbors
## -2.376e+02
## neighborhoodPeoplestown
## -4.417e+01
## neighborhoodPerkerson
## -1.263e+02
## neighborhoodPeyton Forest
```

```
## 2.126e+01
## neighborhoodPiedmont Heights
## 7.225e+00
## neighborhoodPine Hills
## 6.717e+01
## neighborhoodPittsburgh
## -5.171e+01
## neighborhoodPleasant Hill
## 3.884e+01
## neighborhoodPolar Rock
## -9.784e+01
## neighborhoodPomona Park
## -1.539e+01
## neighborhoodPoncey-Highland
## 3.494e+02
## neighborhoodPrinceton Lakes
## -1.367e+02
## neighborhoodRandall Mill
## 3.644e+01
## neighborhoodRebel Valley Forest
## -8.822e+01
## neighborhoodReynoldstown
## 3.229e+02
## neighborhoodRidgecrest Forest
## -3.635e-01
## neighborhoodRidgedale Park
## 9.914e+01
## neighborhoodRidgewood Heights
## -2.189e+01
## neighborhoodRiverside
## -6.176e+01
## neighborhoodRockdale
## -1.745e+02
## neighborhoodRosedale Heights
## -1.086e+02
## neighborhoodRue Royal
## -8.399e+01
## neighborhoodSandlewood Estates
## -8.392e+01
## neighborhoodScotts Crossing
## -1.555e+02
## neighborhoodSherwood Forest
## 2.850e+02
## neighborhoodSouth Atlanta
## -5.961e+01
## neighborhoodSouth River Gardens
## -1.296e+02
## neighborhoodSouth Tuxedo Park
## 5.620e+01
## neighborhoodSouthwest
```

| | | |
|----|---|------------|
| ## | | -5.395e+01 |
| ## | neighborhoodSpringlake | |
| ## | | -1.311e+01 |
| ## | neighborhoodSummerhill | |
| ## | | -2.700e+01 |
| ## | neighborhoodSwallow Circle/Baywood | |
| ## | | -9.609e+01 |
| ## | neighborhoodSweet Auburn | |
| ## | | 3.076e+02 |
| ## | neighborhoodSylvan Hills | |
| ## | | -1.025e+02 |
| ## | neighborhoodTampa Park | |
| ## | | -1.020e+02 |
| ## | neighborhoodThe Villages at Carver | |
| ## | | -6.709e+01 |
| ## | neighborhoodThe Villages at Castleberry H | |
| ## | | -2.192e+02 |
| ## | neighborhoodThe Villages at East Lake | |
| ## | | 3.413e+02 |
| ## | neighborhoodThomasville Heights | |
| ## | | -5.676e+01 |
| ## | neighborhoodTuxedo Park | |
| ## | | 7.015e+01 |
| ## | neighborhoodUnderwood Hills | |
| ## | | -3.568e+01 |
| ## | neighborhoodVenetian Hills | |
| ## | | 2.570e+00 |
| ## | neighborhoodVine City | |
| ## | | -2.103e+02 |
| ## | neighborhoodVirginia Highland | |
| ## | | 3.581e+02 |
| ## | neighborhoodWashington Park | |
| ## | | -2.107e+02 |
| ## | neighborhoodWesley Battle | |
| ## | | -7.726e+00 |
| ## | neighborhoodWest End | |
| ## | | 3.430e+01 |
| ## | neighborhoodWest Highlands | |
| ## | | -1.699e+02 |
| ## | neighborhoodWest Lake | |
| ## | | -2.236e+02 |
| ## | neighborhoodWest Manor | |
| ## | | -1.777e+00 |
| ## | neighborhoodWest Paces Ferry/Northside | |
| ## | | 4.484e+01 |
| ## | neighborhoodWesthaven | |
| ## | | -2.468e+02 |
| ## | neighborhoodWestminster/Milmar | |
| ## | | 1.349e+01 |
| ## | neighborhoodWestover Plantation | |

```
## -1.964e+01
## neighborhoodWestview
## 4.217e+01
## neighborhoodWestwood Terrace
## 3.232e+01
## neighborhoodWhitewater Creek
## 6.154e+01
## neighborhoodWhittier Mill Village
## -6.355e+01
## neighborhoodWildwood (NPU-C)
## -2.229e+01
## neighborhoodWildwood (NPU-H)
## 7.433e-01
## neighborhoodWildwood Forest
## -1.140e+02
## neighborhoodWilson Mill Meadows
## 1.149e+01
## neighborhoodWisteria Gardens
## 2.528e+01
## neighborhoodWoodfield
## 1.398e+00
## neighborhoodWoodland Hills
## 2.733e+02
## neighborhoodWyngate
## 2.482e+01
## x
## -6.831e+02
## y
## -1.708e+03
```

summary(fit)

```
##
```

```
## Call:
```

```
## lm(formula = beat ~ MinOfucr + MaxOfnum_victims + loc_type +
## neighborhood + x + y, data = COBRA_YTD2017)
```

```
##
```

```
## Residuals:
```

```
##      Min      1Q  Median      3Q      Max
## -529.44  -5.40    0.22    6.06   414.65
```

```
##
```

```
## Coefficients:
```

| | Estimate | Std. Error | t value |
|---------------------------|------------|------------|---------|
| ## (Intercept) | 3.088e+02 | 3.606e+00 | 85.642 |
| ## MinOfucr | 2.221e-02 | 2.590e-03 | 8.575 |
| ## MaxOfnum_victims | -2.153e-01 | 3.911e-01 | -0.550 |
| ## loc_type | -1.020e-01 | 1.629e-02 | -6.258 |
| ## neighborhoodAdair Park | -5.594e+01 | 3.485e+00 | -16.050 |
| ## neighborhoodAdams Park | -1.071e+01 | 5.388e+00 | -1.988 |

| | | | |
|--|------------|-----------|---------|
| ## neighborhoodAdamsville | -1.072e+02 | 3.165e+00 | -33.883 |
| ## neighborhoodAlmond Park | -1.922e+02 | 6.025e+00 | -31.892 |
| ## neighborhoodAmal Heights | -8.001e+01 | 8.495e+00 | -9.419 |
| ## neighborhoodAnsley Park | 2.682e+02 | 5.615e+00 | 47.761 |
| ## neighborhoodArden/Habersham | 3.451e+01 | 1.775e+01 | 1.945 |
| ## neighborhoodArdmore | -1.492e+01 | 7.784e+00 | -1.917 |
| ## neighborhoodArgonne Forest | 3.535e+01 | 1.409e+01 | 2.509 |
| ## neighborhoodArlington Estates | -9.771e+01 | 8.997e+00 | -10.860 |
| ## neighborhoodAshley Courts | -4.434e+01 | 6.127e+00 | -7.237 |
| ## neighborhoodAshview Heights | -2.293e+02 | 3.854e+00 | -59.512 |
| ## neighborhoodAtkins Park | 3.590e+02 | 2.281e+01 | 15.739 |
| ## neighborhoodAtlanta Industrial Park | -1.911e+02 | 8.154e+00 | -23.430 |
| ## neighborhoodAtlanta University Center | -2.148e+02 | 4.086e+00 | -52.588 |
| ## neighborhoodAtlantic Station | 2.518e+02 | 3.440e+00 | 73.210 |
| ## neighborhoodAudobon Forest | 4.003e+00 | 9.935e+00 | 0.403 |
| ## neighborhoodAudobon Forest West | -1.011e+01 | 1.495e+01 | -0.676 |
| ## neighborhoodBaker Hills | 2.365e+01 | 7.551e+00 | 3.132 |
| ## neighborhoodBakers Ferry | 3.247e+00 | 1.767e+01 | 0.184 |
| ## neighborhoodBankhead | -1.978e+02 | 3.669e+00 | -53.917 |
| ## neighborhoodBankhead/Bolton | -2.120e+02 | 9.131e+00 | -23.220 |
| ## neighborhoodBeecher Hills | 1.716e+01 | 1.100e+01 | 1.560 |
| ## neighborhoodBen Hill | -1.239e+02 | 6.952e+00 | -17.828 |
| ## neighborhoodBen Hill Acres | -8.011e+01 | 8.061e+00 | -9.938 |
| ## neighborhoodBen Hill Forest | -1.018e+02 | 2.793e+01 | -3.644 |
| ## neighborhoodBen Hill Pines | -9.275e+01 | 1.619e+01 | -5.730 |
| ## neighborhoodBen Hill Terrace | -7.799e+01 | 7.388e+00 | -10.557 |
| ## neighborhoodBenteen Park | 2.536e+02 | 6.511e+00 | 38.959 |
| ## neighborhoodBerkeley Park | -3.422e+01 | 2.867e+00 | -11.937 |
| ## neighborhoodBetmar LaVilla | -8.306e+01 | 5.885e+00 | -14.114 |
| ## neighborhoodBlair Villa/Poole Creek | -1.533e+02 | 5.487e+00 | -27.930 |
| ## neighborhoodBlandtown | -5.819e+01 | 3.137e+00 | -18.548 |
| ## neighborhoodBolton | -3.747e+01 | 4.300e+00 | -8.715 |
| ## neighborhoodBolton Hills | -1.732e+02 | 1.615e+01 | -10.724 |
| ## neighborhoodBoulder Park | -2.017e+00 | 1.614e+01 | -0.125 |
| ## neighborhoodBoulevard Heights | 2.708e+02 | 6.281e+00 | 43.112 |
| ## neighborhoodBrandon | -5.773e+00 | 1.153e+01 | -0.501 |
| ## neighborhoodBrentwood | -1.044e+02 | 1.501e+01 | -6.955 |
| ## neighborhoodBriar Glen | -6.678e+01 | 1.617e+01 | -4.130 |
| ## neighborhoodBrookhaven | 1.103e+02 | 1.273e+01 | 8.662 |
| ## neighborhoodBrookview Heights | -2.056e+02 | 7.693e+00 | -26.727 |
| ## neighborhoodBrookwood | -1.984e+01 | 7.172e+00 | -2.766 |
| ## neighborhoodBrookwood Hills | -1.158e+01 | 6.011e+00 | -1.927 |
| ## neighborhoodBrowns Mill Park | -1.083e+02 | 3.911e+00 | -27.692 |
| ## neighborhoodBuckhead Forest | 6.822e+01 | 3.968e+00 | 17.195 |
| ## neighborhoodBuckhead Heights | 8.416e+01 | 6.912e+00 | 12.176 |
| ## neighborhoodBuckhead Village | 5.630e+01 | 3.787e+00 | 14.866 |
| ## neighborhoodBush Mountain | 2.443e+01 | 8.318e+00 | 2.937 |
| ## neighborhoodButner/Tell | -1.055e+02 | 2.283e+01 | -4.622 |
| ## neighborhoodCabbagetown | 3.089e+02 | 5.968e+00 | 51.762 |
| ## neighborhoodCampbellton Road | -2.648e+01 | 3.154e+00 | -8.394 |

| | | | |
|--|------------|-----------|---------|
| ## neighborhoodCandler Park | 3.534e+02 | 3.686e+00 | 95.885 |
| ## neighborhoodCapitol Gateway | 2.862e+02 | 6.367e+00 | 44.945 |
| ## neighborhoodCapitol View | -8.205e+01 | 3.850e+00 | -21.314 |
| ## neighborhoodCapitol View Manor | -7.716e+01 | 8.688e+00 | -8.880 |
| ## neighborhoodCarey Park | -1.900e+02 | 4.688e+00 | -40.532 |
| ## neighborhoodCarroll Heights | -2.290e+02 | 6.685e+00 | -34.257 |
| ## neighborhoodCarver Hills | -1.664e+02 | 7.586e+00 | -21.934 |
| ## neighborhoodCascade Avenue/Road | 1.491e+01 | 3.650e+00 | 4.084 |
| ## neighborhoodCascade Green | -3.778e+01 | 1.616e+01 | -2.338 |
| ## neighborhoodCascade Heights | -1.374e+01 | 4.688e+00 | -2.932 |
| ## neighborhoodCastleberry Hill | 1.847e+02 | 2.698e+00 | 68.487 |
| ## neighborhoodCastlewood | 2.267e+01 | 1.621e+01 | 1.398 |
| ## neighborhoodCenter Hill | -2.125e+02 | 3.223e+00 | -65.940 |
| ## neighborhoodChalet Woods | 3.127e+01 | 1.974e+01 | 1.584 |
| ## neighborhoodChanning Valley | -2.311e+01 | 7.515e+00 | -3.075 |
| ## neighborhoodChastain Park | 9.584e+01 | 8.971e+00 | 10.684 |
| ## neighborhoodChosewood Park | -4.798e+01 | 4.335e+00 | -11.068 |
| ## neighborhoodCollier Heights | -2.200e+02 | 2.884e+00 | -76.292 |
| ## neighborhoodCollier Hills | -1.576e+01 | 1.107e+01 | -1.424 |
| ## neighborhoodCollier Hills North | -7.174e+00 | 2.793e+01 | -0.257 |
| ## neighborhoodColonial Homes | -1.751e+00 | 1.772e+01 | -0.099 |
| ## neighborhoodCross Creek | -1.726e+01 | 9.716e+00 | -1.776 |
| ## neighborhoodCuster/McDonough/Guice | 2.544e+02 | 4.403e+00 | 57.784 |
| ## neighborhoodDeerwood | -9.579e+01 | 9.218e+00 | -10.392 |
| ## neighborhoodDixie Hills | -2.329e+02 | 4.114e+00 | -56.621 |
| ## neighborhoodDowntown | 2.113e+02 | 1.675e+00 | 126.187 |
| ## neighborhoodDruid Hills | 3.727e+02 | 7.058e+00 | 52.809 |
| ## neighborhoodEast Ardley Road | -1.065e+01 | 2.279e+01 | -0.467 |
| ## neighborhoodEast Atlanta | 3.081e+02 | 2.643e+00 | 116.587 |
| ## neighborhoodEast Chastain Park | 1.171e+02 | 7.042e+00 | 16.635 |
| ## neighborhoodEast Lake | 3.528e+02 | 3.620e+00 | 97.446 |
| ## neighborhoodEdgewood | 3.384e+02 | 2.413e+00 | 140.246 |
| ## neighborhoodElmco Estates | -9.468e+01 | 1.001e+01 | -9.454 |
| ## neighborhoodEnglish Avenue | -1.822e+02 | 2.800e+00 | -65.058 |
| ## neighborhoodEnglish Park | -1.962e+02 | 9.647e+00 | -20.340 |
| ## neighborhoodFairburn | -8.784e+01 | 8.072e+00 | -10.882 |
| ## neighborhoodFairburn Heights | -2.392e+02 | 5.658e+00 | -42.277 |
| ## neighborhoodFairburn Mays | -2.608e-01 | 4.187e+00 | -0.062 |
| ## neighborhoodFairburn Road/Wisteria Lane | 1.013e+01 | 1.495e+01 | 0.677 |
| ## neighborhoodFairburn Tell | -9.799e+01 | 3.945e+01 | -2.484 |
| ## neighborhoodFairway Acres | -1.051e+02 | 1.619e+01 | -6.490 |
| ## neighborhoodFernleaf | -2.435e+01 | 1.618e+01 | -1.505 |
| ## neighborhoodFlorida Heights | -1.341e+02 | 4.629e+00 | -28.959 |
| ## neighborhoodFort McPherson | -1.178e+00 | 2.790e+01 | -0.042 |
| ## neighborhoodFort Valley | -1.903e+01 | 6.628e+00 | -2.871 |
| ## neighborhoodGarden Hills | 4.575e+01 | 4.233e+00 | 10.810 |
| ## neighborhoodGeorgia Tech | 2.323e+02 | 2.791e+01 | 8.325 |
| ## neighborhoodGlenrose Heights | -1.316e+02 | 3.279e+00 | -40.127 |
| ## neighborhoodGrant Park | 2.886e+02 | 2.533e+00 | 113.945 |
| ## neighborhoodGreen Acres Valley | -1.467e+01 | 1.768e+01 | -0.830 |

| | | | |
|---|------------|-----------|---------|
| ## neighborhoodGreen Forest Acres | -8.231e+00 | 1.400e+01 | -0.588 |
| ## neighborhoodGreenbriar | -8.013e+01 | 2.670e+00 | -30.016 |
| ## neighborhoodGreenbriar Village | -7.815e+01 | 1.404e+01 | -5.568 |
| ## neighborhoodGrove Park | -2.037e+02 | 2.677e+00 | -76.086 |
| ## neighborhoodHammond Park | -1.334e+02 | 3.487e+00 | -38.266 |
| ## neighborhoodHanover West | -1.605e+01 | 1.771e+01 | -0.906 |
| ## neighborhoodHarland Terrace | 3.398e+00 | 3.053e+00 | 1.113 |
| ## neighborhoodHarris Chiles | -2.319e+02 | 5.321e+00 | -43.571 |
| ## neighborhoodHarvel Homes Community | -2.362e+02 | 2.790e+01 | -8.467 |
| ## neighborhoodHeritage Valley | -5.375e+01 | 9.971e+00 | -5.391 |
| ## neighborhoodHigh Point | -6.895e+01 | 9.639e+00 | -7.153 |
| ## neighborhoodHills Park | -5.258e+01 | 4.836e+00 | -10.874 |
| ## neighborhoodHome Park | 2.364e+02 | 2.476e+00 | 95.492 |
| ## neighborhoodHorseshoe Community | -2.681e+01 | 2.790e+01 | -0.961 |
| ## neighborhoodHunter Hills | -2.145e+02 | 3.777e+00 | -56.789 |
| ## neighborhoodHuntington | -1.373e+02 | 2.285e+01 | -6.008 |
| ## neighborhoodInman Park | 3.329e+02 | 2.612e+00 | 127.487 |
| ## neighborhoodIvan Hill | 1.963e+01 | 1.252e+01 | 1.567 |
| ## neighborhoodJoyland | -7.231e+01 | 7.081e+00 | -10.211 |
| ## neighborhoodJust Us | -2.265e+02 | 3.943e+01 | -5.744 |
| ## neighborhoodKings Forest | -7.272e+01 | 5.710e+00 | -12.736 |
| ## neighborhoodKingswood | 4.664e+01 | 2.795e+01 | 1.668 |
| ## neighborhoodKirkwood | 3.499e+02 | 3.518e+00 | 99.454 |
| ## neighborhoodKnight Park/Howell Station | -1.739e+02 | 7.008e+00 | -24.816 |
| ## neighborhoodLake Claire | 3.634e+02 | 5.913e+00 | 61.455 |
| ## neighborhoodLake Estates | -1.091e+02 | 3.947e+01 | -2.764 |
| ## neighborhoodLakewood | -8.625e+01 | 6.602e+00 | -13.064 |
| ## neighborhoodLakewood Heights | -7.485e+01 | 2.594e+00 | -28.855 |
| ## neighborhoodLaurens Valley | -3.553e+01 | 2.790e+01 | -1.273 |
| ## neighborhoodLeila Valley | -8.211e+01 | 6.008e+00 | -13.666 |
| ## neighborhoodLenox | 8.408e+01 | 3.095e+00 | 27.168 |
| ## neighborhoodLincoln Homes | -1.737e+02 | 8.004e+00 | -21.695 |
| ## neighborhoodLindbergh/Morosgo | 4.112e+01 | 2.714e+00 | 15.147 |
| ## neighborhoodLindridge/Martin Manor | 4.212e+01 | 3.498e+00 | 12.041 |
| ## neighborhoodLoring Heights | -3.741e+01 | 3.625e+00 | -10.321 |
| ## neighborhoodMagnum Manor | -1.892e+01 | 1.321e+01 | -1.433 |
| ## neighborhoodMargaret Mitchell | -3.024e+00 | 1.620e+01 | -0.187 |
| ## neighborhoodMarietta Street Artery | 2.257e+02 | 3.741e+00 | 60.326 |
| ## neighborhoodMays | 8.219e+00 | 5.288e+00 | 1.554 |
| ## neighborhoodMeadowbrook Forest | -7.720e+01 | 1.200e+01 | -6.434 |
| ## neighborhoodMechanicsville | -3.398e+01 | 2.337e+00 | -14.540 |
| ## neighborhoodMellwood | -2.445e+02 | 2.792e+01 | -8.758 |
| ## neighborhoodMemorial Park | -4.356e+00 | 2.793e+01 | -0.156 |
| ## neighborhoodMidtown | 2.483e+02 | 1.929e+00 | 128.724 |
| ## neighborhoodMidwest Cascade | -3.968e+01 | 6.914e+00 | -5.739 |
| ## neighborhoodMonroe Heights | -1.826e+02 | 6.535e+00 | -27.947 |
| ## neighborhoodMorningside/Lenox Park | 1.177e+01 | 2.927e+00 | 4.023 |
| ## neighborhoodMozley Park | -2.374e+02 | 4.292e+00 | -55.304 |
| ## neighborhoodMt. Gilead Woods | -6.112e+01 | 1.498e+01 | -4.080 |
| ## neighborhoodMt. Paran Parkway | 8.077e+01 | 3.949e+01 | 2.046 |

| | | | |
|--|------------|-----------|---------|
| ## neighborhoodMt. Paran/Northside | 7.260e+01 | 9.851e+00 | 7.370 |
| ## neighborhoodNiskey Cove | -6.749e+01 | 2.791e+01 | -2.418 |
| ## neighborhoodNiskey Lake | -5.861e+01 | 1.977e+01 | -2.965 |
| ## neighborhoodNorth Buckhead | 8.552e+01 | 3.131e+00 | 27.315 |
| ## neighborhoodNorwood Manor | -7.743e+01 | 6.433e+00 | -12.036 |
| ## neighborhoodOakcliff | -2.579e+02 | 1.495e+01 | -17.252 |
| ## neighborhoodOakland | 2.976e+02 | 8.700e+00 | 34.202 |
| ## neighborhoodOakland City | 1.604e+01 | 2.971e+00 | 5.398 |
| ## neighborhoodOld Fairburn Village | -4.514e+01 | 3.944e+01 | -1.145 |
| ## neighborhoodOld Fourth Ward | 3.293e+02 | 2.142e+00 | 153.720 |
| ## neighborhoodOld Gordon | -2.503e+02 | 8.688e+00 | -28.811 |
| ## neighborhoodOrchard Knob | -1.258e+02 | 6.902e+00 | -18.222 |
| ## neighborhoodOrmewood Park | 2.985e+02 | 3.582e+00 | 83.338 |
| ## neighborhoodPaces | 2.661e+01 | 8.001e+00 | 3.326 |
| ## neighborhoodPeachtree Battle Alliance | 6.536e+00 | 1.109e+01 | 0.589 |
| ## neighborhoodPeachtree Heights East | 3.028e+01 | 1.112e+01 | 2.722 |
| ## neighborhoodPeachtree Heights West | 4.196e+01 | 4.710e+00 | 8.907 |
| ## neighborhoodPeachtree Hills | 2.127e+01 | 5.958e+00 | 3.570 |
| ## neighborhoodPeachtree Park | 6.859e+01 | 5.270e+00 | 13.015 |
| ## neighborhoodPenelope Neighbors | -2.376e+02 | 1.145e+01 | -20.752 |
| ## neighborhoodPeoplestown | -4.417e+01 | 3.498e+00 | -12.628 |
| ## neighborhoodPerkerson | -1.263e+02 | 3.072e+00 | -41.123 |
| ## neighborhoodPeyton Forest | 2.126e+01 | 1.252e+01 | 1.698 |
| ## neighborhoodPiedmont Heights | 7.225e+00 | 3.350e+00 | 2.157 |
| ## neighborhoodPine Hills | 6.717e+01 | 4.197e+00 | 16.003 |
| ## neighborhoodPittsburgh | -5.171e+01 | 2.691e+00 | -19.219 |
| ## neighborhoodPleasant Hill | 3.884e+01 | 1.776e+01 | 2.188 |
| ## neighborhoodPolar Rock | -9.784e+01 | 7.311e+00 | -13.382 |
| ## neighborhoodPomona Park | -1.539e+01 | 2.791e+01 | -0.551 |
| ## neighborhoodPoncey-Highland | 3.494e+02 | 3.385e+00 | 103.210 |
| ## neighborhoodPrinceton Lakes | -1.367e+02 | 2.929e+00 | -46.686 |
| ## neighborhoodRandall Mill | 3.644e+01 | 7.389e+00 | 4.931 |
| ## neighborhoodRebel Valley Forest | -8.822e+01 | 6.979e+00 | -12.641 |
| ## neighborhoodReynoldstown | 3.229e+02 | 4.095e+00 | 78.851 |
| ## neighborhoodRidgecrest Forest | -3.635e-01 | 1.196e+01 | -0.030 |
| ## neighborhoodRidgedale Park | 9.914e+01 | 7.993e+00 | 12.404 |
| ## neighborhoodRidgewood Heights | -2.189e+01 | 1.151e+01 | -1.902 |
| ## neighborhoodRiverside | -6.176e+01 | 4.312e+00 | -14.322 |
| ## neighborhoodRockdale | -1.745e+02 | 5.976e+00 | -29.196 |
| ## neighborhoodRosedale Heights | -1.086e+02 | 6.531e+00 | -16.628 |
| ## neighborhoodRue Royal | -8.399e+01 | 2.793e+01 | -3.007 |
| ## neighborhoodSandlewood Estates | -8.392e+01 | 1.151e+01 | -7.291 |
| ## neighborhoodScotts Crossing | -1.555e+02 | 5.760e+00 | -26.992 |
| ## neighborhoodSherwood Forest | 2.850e+02 | 1.978e+01 | 14.403 |
| ## neighborhoodSouth Atlanta | -5.961e+01 | 4.040e+00 | -14.754 |
| ## neighborhoodSouth River Gardens | -1.296e+02 | 3.460e+00 | -37.469 |
| ## neighborhoodSouth Tuxedo Park | 5.620e+01 | 4.466e+00 | 12.584 |
| ## neighborhoodSouthwest | -5.395e+01 | 3.591e+00 | -15.023 |
| ## neighborhoodSpringlake | -1.311e+01 | 1.068e+01 | -1.228 |
| ## neighborhoodSummerhill | -2.700e+01 | 3.653e+00 | -7.390 |

| | | | |
|--|------------|-----------|----------|
| ## neighborhoodSwallow Circle/Baywood | -9.609e+01 | 1.195e+01 | -8.040 |
| ## neighborhoodSweet Auburn | 3.076e+02 | 3.034e+00 | 101.394 |
| ## neighborhoodSylvan Hills | -1.025e+02 | 2.529e+00 | -40.503 |
| ## neighborhoodTampa Park | -1.020e+02 | 1.979e+01 | -5.152 |
| ## neighborhoodThe Villages at Carver | -6.709e+01 | 4.093e+00 | -16.392 |
| ## neighborhoodThe Villages at Castleberry H | -2.192e+02 | 5.609e+00 | -39.073 |
| ## neighborhoodThe Villages at East Lake | 3.413e+02 | 5.933e+00 | 57.521 |
| ## neighborhoodThomasville Heights | -5.676e+01 | 4.229e+00 | -13.421 |
| ## neighborhoodTuxedo Park | 7.015e+01 | 1.079e+01 | 6.498 |
| ## neighborhoodUnderwood Hills | -3.568e+01 | 3.001e+00 | -11.891 |
| ## neighborhoodVenetian Hills | 2.570e+00 | 3.034e+00 | 0.847 |
| ## neighborhoodVine City | -2.103e+02 | 2.562e+00 | -82.070 |
| ## neighborhoodVirginia Highland | 3.581e+02 | 3.043e+00 | 117.673 |
| ## neighborhoodWashington Park | -2.107e+02 | 4.591e+00 | -45.891 |
| ## neighborhoodWesley Battle | -7.726e+00 | 1.501e+01 | -0.515 |
| ## neighborhoodWest End | 3.430e+01 | 2.195e+00 | 15.628 |
| ## neighborhoodWest Highlands | -1.699e+02 | 4.480e+00 | -37.937 |
| ## neighborhoodWest Lake | -2.236e+02 | 5.716e+00 | -39.116 |
| ## neighborhoodWest Manor | -1.777e+00 | 8.697e+00 | -0.204 |
| ## neighborhoodWest Paces Ferry/Northside | 4.484e+01 | 7.275e+00 | 6.164 |
| ## neighborhoodWesthaven | -2.468e+02 | 8.898e+00 | -27.732 |
| ## neighborhoodWestminster/Milmar | 1.349e+01 | 1.621e+01 | 0.832 |
| ## neighborhoodWestover Plantation | -1.964e+01 | 2.282e+01 | -0.861 |
| ## neighborhoodWestview | 4.217e+01 | 3.296e+00 | 12.794 |
| ## neighborhoodWestwood Terrace | 3.232e+01 | 8.310e+00 | 3.889 |
| ## neighborhoodWhitewater Creek | 6.154e+01 | 1.625e+01 | 3.786 |
| ## neighborhoodWhittier Mill Village | -6.355e+01 | 5.825e+00 | -10.910 |
| ## neighborhoodWildwood (NPU-C) | -2.229e+01 | 4.832e+00 | -4.613 |
| ## neighborhoodWildwood (NPU-H) | 7.433e-01 | 8.698e+00 | 0.085 |
| ## neighborhoodWildwood Forest | -1.140e+02 | 1.980e+01 | -5.761 |
| ## neighborhoodWilson Mill Meadows | 1.149e+01 | 7.427e+00 | 1.547 |
| ## neighborhoodWisteria Gardens | 2.528e+01 | 1.061e+01 | 2.383 |
| ## neighborhoodWoodfield | 1.398e+00 | 1.979e+01 | 0.071 |
| ## neighborhoodWoodland Hills | 2.733e+02 | 5.824e+00 | 46.915 |
| ## neighborhoodWyngate | 2.482e+01 | 1.503e+01 | 1.651 |
| ## x | -6.831e+02 | 6.001e+00 | -113.828 |
| ## y | -1.708e+03 | 1.501e+01 | -113.839 |
| ## | Pr(> t) | | |
| ## (Intercept) | < 2e-16 | *** | |
| ## MinOfucr | < 2e-16 | *** | |
| ## MaxOfnum_victims | 0.582092 | | |
| ## loc_type | 3.97e-10 | *** | |
| ## neighborhoodAdair Park | < 2e-16 | *** | |
| ## neighborhoodAdams Park | 0.046818 | * | |
| ## neighborhoodAdamsville | < 2e-16 | *** | |
| ## neighborhoodAlmond Park | < 2e-16 | *** | |
| ## neighborhoodAmal Heights | < 2e-16 | *** | |
| ## neighborhoodAnsley Park | < 2e-16 | *** | |
| ## neighborhoodArden/Habersham | 0.051814 | . | |
| ## neighborhoodArdmore | 0.055272 | . | |

| | |
|--|--------------|
| ## neighborhoodArgonne Forest | 0.012120 * |
| ## neighborhoodArlington Estates | < 2e-16 *** |
| ## neighborhoodAshley Courts | 4.73e-13 *** |
| ## neighborhoodAshview Heights | < 2e-16 *** |
| ## neighborhoodAtkins Park | < 2e-16 *** |
| ## neighborhoodAtlanta Industrial Park | < 2e-16 *** |
| ## neighborhoodAtlanta University Center | < 2e-16 *** |
| ## neighborhoodAtlantic Station | < 2e-16 *** |
| ## neighborhoodAudobon Forest | 0.687009 |
| ## neighborhoodAudobon Forest West | 0.498808 |
| ## neighborhoodBaker Hills | 0.001737 ** |
| ## neighborhoodBakers Ferry | 0.854218 |
| ## neighborhoodBankhead | < 2e-16 *** |
| ## neighborhoodBankhead/Bolton | < 2e-16 *** |
| ## neighborhoodBeecher Hills | 0.118877 |
| ## neighborhoodBen Hill | < 2e-16 *** |
| ## neighborhoodBen Hill Acres | < 2e-16 *** |
| ## neighborhoodBen Hill Forest | 0.000269 *** |
| ## neighborhoodBen Hill Pines | 1.02e-08 *** |
| ## neighborhoodBen Hill Terrace | < 2e-16 *** |
| ## neighborhoodBenteen Park | < 2e-16 *** |
| ## neighborhoodBerkeley Park | < 2e-16 *** |
| ## neighborhoodBetmar LaVilla | < 2e-16 *** |
| ## neighborhoodBlair Villa/Poole Creek | < 2e-16 *** |
| ## neighborhoodBlandtown | < 2e-16 *** |
| ## neighborhoodBolton | < 2e-16 *** |
| ## neighborhoodBolton Hills | < 2e-16 *** |
| ## neighborhoodBoulder Park | 0.900583 |
| ## neighborhoodBoulevard Heights | < 2e-16 *** |
| ## neighborhoodBrandon | 0.616518 |
| ## neighborhoodBrentwood | 3.62e-12 *** |
| ## neighborhoodBriar Glen | 3.64e-05 *** |
| ## neighborhoodBrookhaven | < 2e-16 *** |
| ## neighborhoodBrookview Heights | < 2e-16 *** |
| ## neighborhoodBrookwood | 0.005674 ** |
| ## neighborhoodBrookwood Hills | 0.054002 . |
| ## neighborhoodBrowns Mill Park | < 2e-16 *** |
| ## neighborhoodBuckhead Forest | < 2e-16 *** |
| ## neighborhoodBuckhead Heights | < 2e-16 *** |
| ## neighborhoodBuckhead Village | < 2e-16 *** |
| ## neighborhoodBush Mountain | 0.003316 ** |
| ## neighborhoodButner/Tell | 3.82e-06 *** |
| ## neighborhoodCabbagetown | < 2e-16 *** |
| ## neighborhoodCampbellton Road | < 2e-16 *** |
| ## neighborhoodCandler Park | < 2e-16 *** |
| ## neighborhoodCapitol Gateway | < 2e-16 *** |
| ## neighborhoodCapitol View | < 2e-16 *** |
| ## neighborhoodCapitol View Manor | < 2e-16 *** |
| ## neighborhoodCarey Park | < 2e-16 *** |
| ## neighborhoodCarroll Heights | < 2e-16 *** |

| | | |
|--|----------|-----|
| ## neighborhoodCarver Hills | < 2e-16 | *** |
| ## neighborhoodCascade Avenue/Road | 4.45e-05 | *** |
| ## neighborhoodCascade Green | 0.019380 | * |
| ## neighborhoodCascade Heights | 0.003374 | ** |
| ## neighborhoodCastleberry Hill | < 2e-16 | *** |
| ## neighborhoodCastlewood | 0.162018 | |
| ## neighborhoodCenter Hill | < 2e-16 | *** |
| ## neighborhoodChalet Woods | 0.113263 | |
| ## neighborhoodChanning Valley | 0.002108 | ** |
| ## neighborhoodChastain Park | < 2e-16 | *** |
| ## neighborhoodChosewood Park | < 2e-16 | *** |
| ## neighborhoodCollier Heights | < 2e-16 | *** |
| ## neighborhoodCollier Hills | 0.154439 | |
| ## neighborhoodCollier Hills North | 0.797261 | |
| ## neighborhoodColonial Homes | 0.921295 | |
| ## neighborhoodCross Creek | 0.075671 | . |
| ## neighborhoodCuster/McDonough/Guice | < 2e-16 | *** |
| ## neighborhoodDeerwood | < 2e-16 | *** |
| ## neighborhoodDixie Hills | < 2e-16 | *** |
| ## neighborhoodDowntown | < 2e-16 | *** |
| ## neighborhoodDruid Hills | < 2e-16 | *** |
| ## neighborhoodEast Ardley Road | 0.640317 | |
| ## neighborhoodEast Atlanta | < 2e-16 | *** |
| ## neighborhoodEast Chastain Park | < 2e-16 | *** |
| ## neighborhoodEast Lake | < 2e-16 | *** |
| ## neighborhoodEdgewood | < 2e-16 | *** |
| ## neighborhoodElmco Estates | < 2e-16 | *** |
| ## neighborhoodEnglish Avenue | < 2e-16 | *** |
| ## neighborhoodEnglish Park | < 2e-16 | *** |
| ## neighborhoodFairburn | < 2e-16 | *** |
| ## neighborhoodFairburn Heights | < 2e-16 | *** |
| ## neighborhoodFairburn Mays | 0.950328 | |
| ## neighborhoodFairburn Road/Wisteria Lane | 0.498121 | |
| ## neighborhoodFairburn Tell | 0.013008 | * |
| ## neighborhoodFairway Acres | 8.76e-11 | *** |
| ## neighborhoodFernleaf | 0.132436 | |
| ## neighborhoodFlorida Heights | < 2e-16 | *** |
| ## neighborhoodFort McPherson | 0.966315 | |
| ## neighborhoodFort Valley | 0.004089 | ** |
| ## neighborhoodGarden Hills | < 2e-16 | *** |
| ## neighborhoodGeorgia Tech | < 2e-16 | *** |
| ## neighborhoodGlenrose Heights | < 2e-16 | *** |
| ## neighborhoodGrant Park | < 2e-16 | *** |
| ## neighborhoodGreen Acres Valley | 0.406707 | |
| ## neighborhoodGreen Forest Acres | 0.556440 | |
| ## neighborhoodGreenbriar | < 2e-16 | *** |
| ## neighborhoodGreenbriar Village | 2.61e-08 | *** |
| ## neighborhoodGrove Park | < 2e-16 | *** |
| ## neighborhoodHammond Park | < 2e-16 | *** |
| ## neighborhoodHanover West | 0.364883 | |

| | | |
|---|----------|-----|
| ## neighborhoodHarland Terrace | 0.265752 | |
| ## neighborhoodHarris Chiles | < 2e-16 | *** |
| ## neighborhoodHarvel Homes Community | < 2e-16 | *** |
| ## neighborhoodHeritage Valley | 7.09e-08 | *** |
| ## neighborhoodHigh Point | 8.75e-13 | *** |
| ## neighborhoodHills Park | < 2e-16 | *** |
| ## neighborhoodHome Park | < 2e-16 | *** |
| ## neighborhoodHorseshoe Community | 0.336607 | |
| ## neighborhoodHunter Hills | < 2e-16 | *** |
| ## neighborhoodHuntington | 1.91e-09 | *** |
| ## neighborhoodInman Park | < 2e-16 | *** |
| ## neighborhoodIvan Hill | 0.117151 | |
| ## neighborhoodJoyland | < 2e-16 | *** |
| ## neighborhoodJust Us | 9.39e-09 | *** |
| ## neighborhoodKings Forest | < 2e-16 | *** |
| ## neighborhoodKingswood | 0.095246 | . |
| ## neighborhoodKirkwood | < 2e-16 | *** |
| ## neighborhoodKnight Park/Howell Station | < 2e-16 | *** |
| ## neighborhoodLake Claire | < 2e-16 | *** |
| ## neighborhoodLake Estates | 0.005716 | ** |
| ## neighborhoodLakewood | < 2e-16 | *** |
| ## neighborhoodLakewood Heights | < 2e-16 | *** |
| ## neighborhoodLaurens Valley | 0.202956 | |
| ## neighborhoodLeila Valley | < 2e-16 | *** |
| ## neighborhoodLenox | < 2e-16 | *** |
| ## neighborhoodLincoln Homes | < 2e-16 | *** |
| ## neighborhoodLindbergh/Morosgo | < 2e-16 | *** |
| ## neighborhoodLindridge/Martin Manor | < 2e-16 | *** |
| ## neighborhoodLoring Heights | < 2e-16 | *** |
| ## neighborhoodMagnum Manor | 0.152003 | |
| ## neighborhoodMargaret Mitchell | 0.851911 | |
| ## neighborhoodMarietta Street Artery | < 2e-16 | *** |
| ## neighborhoodMays | 0.120166 | |
| ## neighborhoodMeadowbrook Forest | 1.27e-10 | *** |
| ## neighborhoodMechanicsville | < 2e-16 | *** |
| ## neighborhoodMellwood | < 2e-16 | *** |
| ## neighborhoodMemorial Park | 0.876069 | |
| ## neighborhoodMidtown | < 2e-16 | *** |
| ## neighborhoodMidwest Cascade | 9.66e-09 | *** |
| ## neighborhoodMonroe Heights | < 2e-16 | *** |
| ## neighborhoodMorningside/Lenox Park | 5.77e-05 | *** |
| ## neighborhoodMozley Park | < 2e-16 | *** |
| ## neighborhoodMt. Gilead Woods | 4.52e-05 | *** |
| ## neighborhoodMt. Paran Parkway | 0.040809 | * |
| ## neighborhoodMt. Paran/Northside | 1.77e-13 | *** |
| ## neighborhoodNiskey Cove | 0.015619 | * |
| ## neighborhoodNiskey Lake | 0.003028 | ** |
| ## neighborhoodNorth Buckhead | < 2e-16 | *** |
| ## neighborhoodNorwood Manor | < 2e-16 | *** |
| ## neighborhoodOakcliff | < 2e-16 | *** |

| | | |
|--|----------|-----|
| ## neighborhoodOakland | < 2e-16 | *** |
| ## neighborhoodOakland City | 6.80e-08 | *** |
| ## neighborhoodOld Fairburn Village | 0.252421 | |
| ## neighborhoodOld Fourth Ward | < 2e-16 | *** |
| ## neighborhoodOld Gordon | < 2e-16 | *** |
| ## neighborhoodOrchard Knob | < 2e-16 | *** |
| ## neighborhoodOrmewood Park | < 2e-16 | *** |
| ## neighborhoodPaces | 0.000882 | *** |
| ## neighborhoodPeachtree Battle Alliance | 0.555800 | |
| ## neighborhoodPeachtree Heights East | 0.006487 | ** |
| ## neighborhoodPeachtree Heights West | < 2e-16 | *** |
| ## neighborhoodPeachtree Hills | 0.000358 | *** |
| ## neighborhoodPeachtree Park | < 2e-16 | *** |
| ## neighborhoodPenelope Neighbors | < 2e-16 | *** |
| ## neighborhoodPeoplestown | < 2e-16 | *** |
| ## neighborhoodPerkerson | < 2e-16 | *** |
| ## neighborhoodPeyton Forest | 0.089554 | . |
| ## neighborhoodPiedmont Heights | 0.031022 | * |
| ## neighborhoodPine Hills | < 2e-16 | *** |
| ## neighborhoodPittsburgh | < 2e-16 | *** |
| ## neighborhoodPleasant Hill | 0.028707 | * |
| ## neighborhoodPolar Rock | < 2e-16 | *** |
| ## neighborhoodPomona Park | 0.581376 | |
| ## neighborhoodPoncey-Highland | < 2e-16 | *** |
| ## neighborhoodPrinceton Lakes | < 2e-16 | *** |
| ## neighborhoodRandall Mill | 8.23e-07 | *** |
| ## neighborhoodRebel Valley Forest | < 2e-16 | *** |
| ## neighborhoodReynoldstown | < 2e-16 | *** |
| ## neighborhoodRidgecrest Forest | 0.975746 | |
| ## neighborhoodRidgedale Park | < 2e-16 | *** |
| ## neighborhoodRidgewood Heights | 0.057201 | . |
| ## neighborhoodRiverside | < 2e-16 | *** |
| ## neighborhoodRockdale | < 2e-16 | *** |
| ## neighborhoodRosedale Heights | < 2e-16 | *** |
| ## neighborhoodRue Royal | 0.002637 | ** |
| ## neighborhoodSandlewood Estates | 3.18e-13 | *** |
| ## neighborhoodScotts Crossing | < 2e-16 | *** |
| ## neighborhoodSherwood Forest | < 2e-16 | *** |
| ## neighborhoodSouth Atlanta | < 2e-16 | *** |
| ## neighborhoodSouth River Gardens | < 2e-16 | *** |
| ## neighborhoodSouth Tuxedo Park | < 2e-16 | *** |
| ## neighborhoodSouthwest | < 2e-16 | *** |
| ## neighborhoodSpringlake | 0.219580 | |
| ## neighborhoodSummerhill | 1.51e-13 | *** |
| ## neighborhoodSwallow Circle/Baywood | 9.42e-16 | *** |
| ## neighborhoodSweet Auburn | < 2e-16 | *** |
| ## neighborhoodSylvan Hills | < 2e-16 | *** |
| ## neighborhoodTampa Park | 2.60e-07 | *** |
| ## neighborhoodThe Villages at Carver | < 2e-16 | *** |
| ## neighborhoodThe Villages at Castleberry H | < 2e-16 | *** |

```
## neighborhoodThe Villages at East Lake < 2e-16 ***
## neighborhoodThomasville Heights < 2e-16 ***
## neighborhoodTuxedo Park 8.30e-11 ***
## neighborhoodUnderwood Hills < 2e-16 ***
## neighborhoodVenetian Hills 0.397000
## neighborhoodVine City < 2e-16 ***
## neighborhoodVirginia Highland < 2e-16 ***
## neighborhoodWashington Park < 2e-16 ***
## neighborhoodWesley Battle 0.606691
## neighborhoodWest End < 2e-16 ***
## neighborhoodWest Highlands < 2e-16 ***
## neighborhoodWest Lake < 2e-16 ***
## neighborhoodWest Manor 0.838127
## neighborhoodWest Paces Ferry/Northside 7.23e-10 ***
## neighborhoodWesthaven < 2e-16 ***
## neighborhoodWestminster/Milmar 0.405328
## neighborhoodWestover Plantation 0.389368
## neighborhoodWestview < 2e-16 ***
## neighborhoodWestwood Terrace 0.000101 ***
## neighborhoodWhitewater Creek 0.000153 ***
## neighborhoodWhittier Mill Village < 2e-16 ***
## neighborhoodWildwood (NPU-C) 3.98e-06 ***
## neighborhoodWildwood (NPU-H) 0.931892
## neighborhoodWildwood Forest 8.47e-09 ***
## neighborhoodWilson Mill Meadows 0.121980
## neighborhoodWisteria Gardens 0.017168 *
## neighborhoodWoodfield 0.943692
## neighborhoodWoodland Hills < 2e-16 ***
## neighborhoodWyngate 0.098731 .
## x < 2e-16 ***
## y < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 39.41 on 23172 degrees of freedom
## (3344 observations deleted due to missingness)
## Multiple R-squared:  0.9464, Adjusted R-squared:  0.9459
## F-statistic: 1692 on 242 and 23172 DF, p-value: < 2.2e-16
```

vif(fit)

```
##          GVIF  Df GVIF^(1/(2*Df))
## MinOfucr      1.171762    1      1.082480
## MaxOfnum_victims 1.024168    1      1.012012
## loc_type      1.026056    1      1.012944
## neighborhood 11.793507 237      1.005219
## x      23807.337630    1     154.296266
## y      23818.989658    1     154.334020
```

- P-values are very important because, we can consider linear model to be statistically significant only.
- When both these p-values are less than the pre-determined statistical determined level, which is ideally 0.05.
- This is visually interpreted by the significance stars at the end of the row.
- The more stars beside the variable's p-value, the more significant the variable.

When there is a p-value, there is a null and alternative hypothesis associated with it.

Null and Alternate Hypothesis

- In Linear regression, the Null Hypothesis is that the coefficients associated with the variables is equal to zero.
- The alternate hypothesis is that the coefficients are not equal to zero.
- There exists a relationship between the independent variable in question and the dependent variable.

| | GVIF | Df | $GVIF^{(1/(2*Df))}$ |
|------------------|--------------|-----|---------------------|
| beat | 18.615002 | 1 | 4.314511 |
| MaxOfnum_victims | 1.016947 | 1 | 1.008438 |
| loc_type | 1.027692 | 1 | 1.013752 |
| neighborhood | 201.207857 | 237 | 1.011253 |
| x | 37103.058286 | 1 | 192.621542 |
| y | 37121.328278 | 1 | 192.668960 |

Coefficient, Estimate, std.error, Tval

&Pr(>|t|)

| | | | | |
|------------------------------------|----------|----------|--------|----------|
| neighborhoodIvan Hill | 0.18995 | 31.7182 | 0.006 | 0.995222 |
| neighborhoodPomona Park | -0.70578 | 70.67374 | -0.01 | 0.992032 |
| neighborhoodEast Ardley Road | 0.81515 | 57.71572 | 0.014 | 0.988731 |
| neighborhoodOrchard Knob | 0.78361 | 17.60243 | 0.045 | 0.964492 |
| neighborhoodCascade Heights | -0.54782 | 11.8724 | -0.046 | 0.963197 |
| neighborhoodCollier Hills | -1.57088 | 28.03153 | -0.056 | 0.955311 |
| neighborhoodGreen Forest Acres | 2.03632 | 35.43986 | 0.057 | 0.954181 |
| neighborhoodAmal Heights | -1.74562 | 21.55404 | -0.081 | 0.935452 |
| neighborhoodGlenrose Heights | 0.69584 | 8.58791 | 0.081 | 0.935423 |
| neighborhoodScotts Crossing | -1.25164 | 14.81232 | -0.084 | 0.93266 |
| neighborhoodBrookwood | 2.04586 | 18.16387 | 0.113 | 0.910322 |
| neighborhoodBuckhead Heights | 1.97872 | 17.55909 | 0.113 | 0.910278 |
| neighborhoodSandlewood Estates | -3.36595 | 29.18066 | -0.115 | 0.90817 |
| neighborhoodHeritage Valley | 2.94675 | 25.26591 | 0.117 | 0.907155 |
| neighborhoodMt. Paran/Northside | -3.01141 | 24.97503 | -0.121 | 0.904027 |
| neighborhoodPolar Rock | 2.54844 | 18.58454 | 0.137 | 0.890932 |
| neighborhoodArden/Habersham | 6.64751 | 44.94562 | 0.148 | 0.882422 |
| neighborhoodMozley Park | -1.87526 | 11.56441 | -0.162 | 0.871183 |
| neighborhoodRidgedale Park | 3.38582 | 20.30795 | 0.167 | 0.867589 |
| neighborhoodFairburn | -4.33549 | 20.49293 | -0.212 | 0.832452 |
| neighborhoodNiskey Cove | 15.94718 | 70.69396 | 0.226 | 0.82153 |
| neighborhoodAudobon Forest | -5.97875 | 25.15904 | -0.238 | 0.812164 |
| neighborhoodMeadowbrook Forest | -8.17084 | 30.40992 | -0.269 | 0.788171 |
| neighborhoodChosewood Park | -3.06345 | 11.00551 | -0.278 | 0.780741 |
| neighborhoodChastain Park | 6.54934 | 22.77241 | 0.288 | 0.773656 |
| neighborhoodGreenbriar | 1.99187 | 6.8906 | 0.289 | 0.77253 |
| neighborhoodCascade Green | 12.02139 | 40.91864 | 0.294 | 0.768923 |
| neighborhoodPeyton Forest | 9.89081 | 31.7177 | 0.312 | 0.755166 |
| neighborhoodMt. Paran Parkway | 31.53809 | 100.0009 | 0.315 | 0.752477 |
| neighborhoodMonroe Heights | 5.36775 | 16.82558 | 0.319 | 0.749712 |
| neighborhoodMarietta Street Artery | -3.3602 | 10.18978 | -0.33 | 0.741583 |
| neighborhoodAlmond Park | 5.15041 | 15.58872 | 0.33 | 0.741106 |
| neighborhoodOld Fairburn Village | 33.39344 | 99.87213 | 0.334 | 0.738109 |
| neighborhoodEnglish Park | -8.81457 | 24.64719 | -0.358 | 0.720624 |
| neighborhoodBeecher Hills | -10.1116 | 27.86253 | -0.363 | 0.716677 |
| neighborhoodFairburn Tell | 37.84429 | 99.91444 | 0.379 | 0.704864 |
| neighborhoodFairway Acres | 15.97263 | 41.04548 | 0.389 | 0.697173 |
| neighborhoodHorseshoe Community | -27.5546 | 70.65781 | -0.39 | 0.696561 |
| neighborhoodBrookhaven | 13.62287 | 32.29803 | 0.422 | 0.673185 |
| neighborhoodHuntington | 24.97747 | 57.91696 | 0.431 | 0.666281 |
| neighborhoodCabbagetown | -7.00131 | 15.96335 | -0.439 | 0.660965 |
| neighborhoodLake Claire | -7.20788 | 16.14665 | -0.446 | 0.655312 |

| | | | | |
|---|----------|----------|--------|----------|
| neighborhoodDeerwood | 11.11434 | 23.39644 | 0.475 | 0.63476 |
| neighborhoodOld Gordon | 10.85688 | 22.39042 | 0.485 | 0.627759 |
| neighborhoodBen Hill Pines | -19.9293 | 41.01709 | -0.486 | 0.627059 |
| neighborhoodDixie Hills | -5.46251 | 11.11481 | -0.491 | 0.623104 |
| neighborhoodBakers Ferry | -22.2155 | 44.75458 | -0.496 | 0.619627 |
| neighborhoodGeorgia Tech | 37.27899 | 70.77658 | 0.527 | 0.598397 |
| neighborhoodRebel Valley Forest | -9.37548 | 17.73253 | -0.529 | 0.597007 |
| neighborhoodPeachtree Park | 7.34794 | 13.39376 | 0.549 | 0.583279 |
| neighborhoodFort McPherson | -40.5911 | 70.64509 | -0.575 | 0.565583 |
| neighborhoodPittsburgh | -4.17695 | 6.86732 | -0.608 | 0.543037 |
| neighborhoodCapitol View | -6.00118 | 9.84386 | -0.61 | 0.542108 |
| neighborhoodLindridge/Martin Manor | 5.64553 | 8.88628 | 0.635 | 0.525233 |
| neighborhoodBolton Hills | 26.19894 | 41.00062 | 0.639 | 0.522837 |
| neighborhoodAshview Heights | -6.7408 | 10.47775 | -0.643 | 0.520007 |
| neighborhoodPine Hills | 6.89367 | 10.68744 | 0.645 | 0.518917 |
| neighborhoodAtkins Park | -39.4179 | 58.07207 | -0.679 | 0.497287 |
| neighborhoodFairburn Road/Wisteria Lane | 27.48272 | 37.85613 | 0.726 | 0.46786 |
| neighborhoodBen Hill Terrace | -13.6516 | 18.75246 | -0.728 | 0.466629 |
| neighborhoodEast Chastain Park | 13.9809 | 17.93875 | 0.779 | 0.435771 |
| neighborhoodBrookwood Hills | 12.08225 | 15.22187 | 0.794 | 0.427353 |
| neighborhoodLaurens Valley | 57.13108 | 70.6623 | 0.809 | 0.418806 |
| neighborhoodButner/Tell | -46.879 | 57.83658 | -0.811 | 0.417637 |
| neighborhoodBriar Glen | 33.76307 | 40.9596 | 0.824 | 0.409777 |
| neighborhoodNorwood Manor | -13.8523 | 16.34179 | -0.848 | 0.396636 |
| neighborhoodBush Mountain | -18.4889 | 21.06651 | -0.878 | 0.380147 |
| neighborhoodCollier Hills North | 64.48398 | 70.71828 | 0.912 | 0.361861 |
| neighborhoodBoulder Park | -37.335 | 40.8767 | -0.913 | 0.361064 |
| neighborhoodCapitol Gateway | 16.08137 | 16.81071 | 0.957 | 0.338772 |
| neighborhoodMidtown | -6.27314 | 6.39659 | -0.981 | 0.326751 |
| neighborhoodGreen Acres Valley | -44.0883 | 44.76003 | -0.985 | 0.324638 |
| neighborhoodKingswood | 69.87008 | 70.79024 | 0.987 | 0.323652 |
| neighborhoodRidgewood Heights | 29.60442 | 29.1443 | 1.016 | 0.309741 |
| neighborhoodBen Hill | -18.325 | 17.72395 | -1.034 | 0.301189 |
| neighborhoodNiskey Lake | 51.94337 | 50.06304 | 1.038 | 0.299486 |
| neighborhoodPleasant Hill | 46.81742 | 44.96644 | 1.041 | 0.297811 |
| neighborhoodMellwood | 74.03428 | 70.81976 | 1.045 | 0.295854 |
| neighborhoodRidgecrest Forest | -31.9837 | 30.27555 | -1.056 | 0.290787 |
| neighborhoodCarroll Heights | -19.4876 | 17.35058 | -1.123 | 0.261378 |
| neighborhoodPeachtree Heights East | 31.94805 | 28.1669 | 1.134 | 0.256705 |
| neighborhoodPiedmont Heights | 9.70736 | 8.48279 | 1.144 | 0.252487 |
| neighborhoodColonial Homes | 51.51639 | 44.87369 | 1.148 | 0.250968 |
| neighborhoodMechanicsville | -6.86339 | 5.94492 | -1.154 | 0.248308 |
| neighborhoodAudobon Forest west | 43.72563 | 37.86685 | 1.155 | 0.248217 |

| | | | | |
|-------------------------------|----------|----------|--------|----------|
| neighborhoodJust Us | 115.469 | 99.91957 | 1.156 | 0.247849 |
| neighborhoodHunter Hills | -11.8921 | 10.2068 | -1.165 | 0.243985 |
| neighborhoodMagnum Manor | 39.36476 | 33.44073 | 1.177 | 0.239148 |
| neighborhoodEnglish Avenue | -9.10065 | 7.71194 | -1.18 | 0.237983 |
| neighborhoodCastlewood | 48.53463 | 41.06086 | 1.182 | 0.237211 |
| neighborhoodGrove Park | -9.03229 | 7.57827 | -1.192 | 0.233326 |
| neighborhoodSherwood Forest | -61.4391 | 50.32317 | -1.221 | 0.22214 |
| neighborhoodLincoln Homes | -25.341 | 20.47369 | -1.238 | 0.215827 |
| neighborhoodChalet woods | -62.9557 | 49.99941 | -1.259 | 0.207997 |
| neighborhoodMays | -16.939 | 13.39209 | -1.265 | 0.205937 |
| neighborhoodAtlantic Station | -12.9455 | 9.665 | -1.339 | 0.180446 |
| neighborhoodMargaret Mitchell | 57.26396 | 41.01351 | 1.396 | 0.162661 |
| neighborhoodMemorial Park | 99.55969 | 70.72029 | 1.408 | 0.159205 |
| neighborhoodHome Park | -10.4807 | 7.4012 | -1.416 | 0.156767 |
| neighborhoodRosedale Heights | -23.7742 | 16.63523 | -1.429 | 0.152975 |
| neighborhoodLoring Heights | 13.41215 | 9.19966 | 1.458 | 0.144883 |
| neighborhoodBuckhead Village | 14.2879 | 9.63622 | 1.483 | 0.13816 |
| neighborhoodPerkerson | 12.11922 | 8.05798 | 1.504 | 0.132595 |
| neighborhoodHammond Park | -13.7955 | 9.10457 | -1.515 | 0.129728 |
| neighborhoodBen Hill Forest | 108.5586 | 70.73677 | 1.535 | 0.124875 |
| neighborhoodBen Hill Acres | -31.6404 | 20.45652 | -1.547 | 0.121946 |
| neighborhoodAshley Courts | -24.0345 | 15.53165 | -1.547 | 0.121768 |
| neighborhoodHanover West | 69.5929 | 44.85392 | 1.552 | 0.120785 |
| neighborhoodLindbergh/Morosgo | 10.80412 | 6.9074 | 1.564 | 0.117799 |
| neighborhoodFlorida Heights | -18.9446 | 11.93221 | -1.588 | 0.112371 |
| neighborhoodMt. Gilead woods | -61.4997 | 37.94528 | -1.621 | 0.105086 |
| neighborhoodOakcliff | 62.09365 | 38.09146 | 1.63 | 0.10309 |

```
lm(formula = MinOfucr ~ beat + MaxOfnum_victims + loc_type +
  neighborhood + x + y, data = COBRA_YTD2017)
```

Coefficients:

(Intercept)

beat

183.98780

0.14243

Call:

```
lm(formula = MinOfucr ~ beat + MaxOfnum_victims + loc_type +
  neighborhood + x + y, data = COBRA_YTD2017)
```

Residuals:

| | | | | |
|---------|--------|--------|-------|--------|
| Min | 1Q | Median | 3Q | Max |
| -333.96 | -36.06 | 21.83 | 61.68 | 438.61 |

```
vif(fi)>5
```

| | GVIF | Df | GVIF^(1/(2*Df)) |
|------------------|-------|-------|-----------------|
| beat | TRUE | FALSE | FALSE |
| MaxOfnum_victims | FALSE | FALSE | FALSE |
| loc_type | TRUE | TRUE | FALSE |
| neighborhood | TRUE | TRUE | FALSE |
| x | TRUE | FALSE | TRUE |
| y | TRUE | FALSE | TRUE |

**#b. Find out top 3 reasons for having more crime in a city.
Which all attributes have correlation with crime rate?**

```
at$dayofWeek <- weekdays(as.Date(at$occur_date))
```

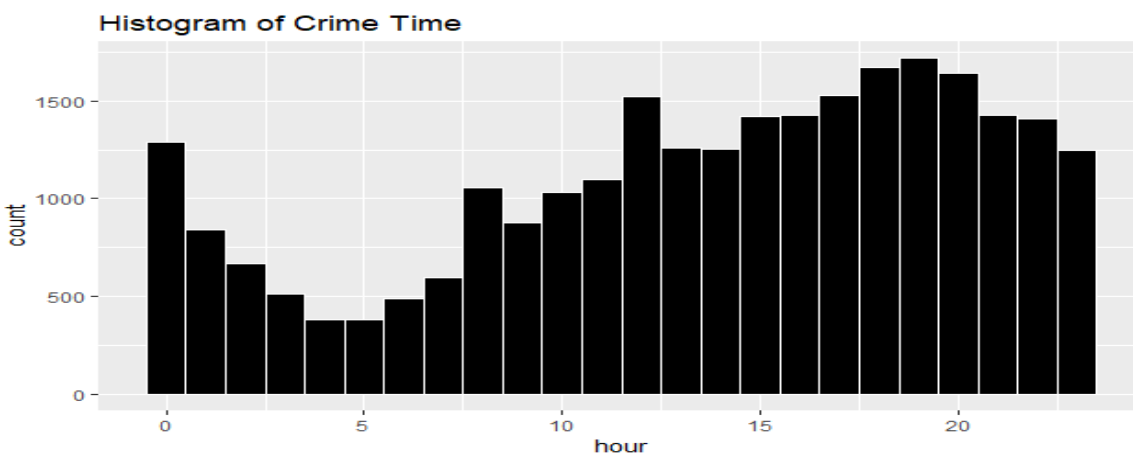
```
at$hour <- sub(":.*", "", at$occur_time)
```

```
at$hour <- as.numeric(at$hour)
```

```
ggplot(aes(x = hour), data = at) + geom_histogram(bins = 24, color='white', fill='black') +
```

```
ggtitle('Histogram of Crime Time')
```

#The crime time distribution appears bimodal with peaking around midnight and again at the noon, then again between 6pm and 8pm.



```
#topCrimes_1 <- topCrimes %>% group_by(`UC2 Literal`,occur_time) %>%
```

```
#summarise(total = n())
```

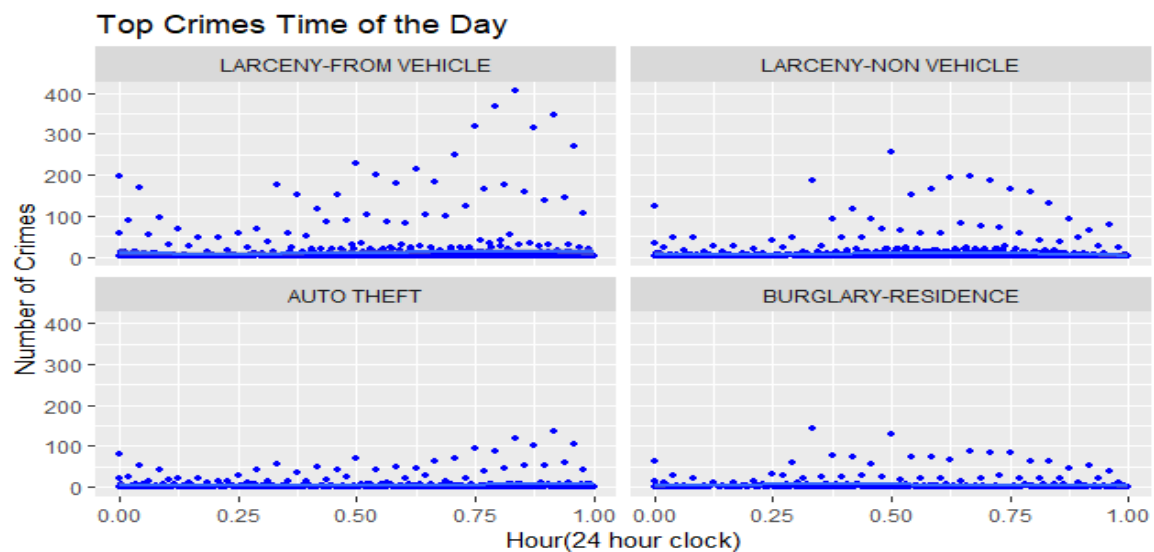
```
#ggplot(aes(x = occur_time, y = total), data = topCrimes_1) +
```

```
#geom_point(colour="blue", size=1) +
```

```
#geom_smooth(method="loess") +
#xlab('Hour(24 hour clock)') +
# ylab('Number of Crimes') +
#ggtitle('Top Crimes Time of the Day') +
#facet_wrap(~`UC2 Literal`)
```

#Downtown and midtown are the most common locations where crimes take place, followed by Old Fourth Ward and West End.

larceny theft are the top crimes in Atlanta followed by aggravated assault



```

kable(count(COBRA_YTD2017, loc_type, sort=TRUE), "html", col.names=c("Crime Type",
"Frequency")) %>%

kable_styling(bootstrap_options="striped", full_width=FALSE)

COBRA_YTD2017 %>%

  group_by(days, loc_type) %>%

  summarize(freq=n()) %>%

  ggplot(aes(reorder(days, -freq), freq)) +

  geom_bar(aes(fill=loc_type), position="dodge", stat="identity", width=0.8, color="black") +

  xlab("Day of Week") +

  ylab("Frequency") +

  labs(fill="Crime Type") +

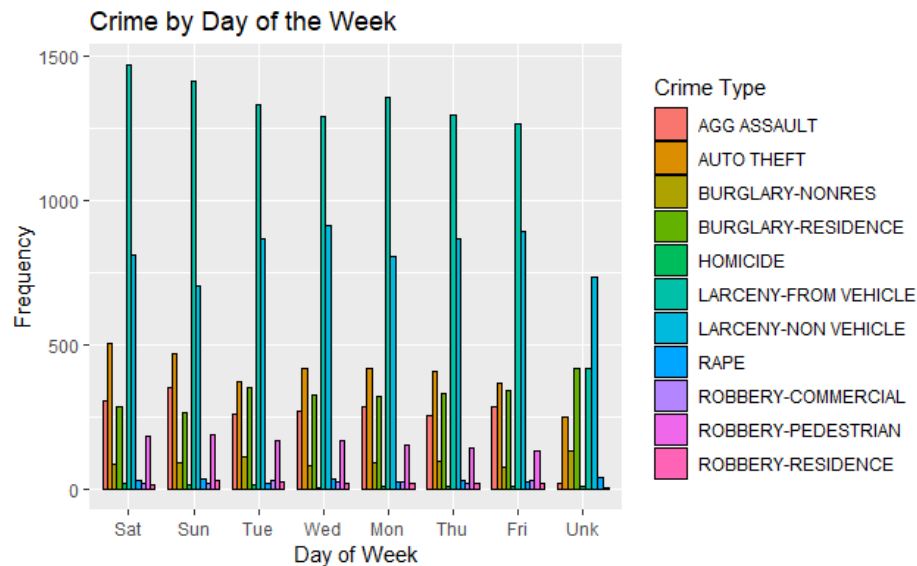
  ggtitle("Crime by Day of the Week")

kable

```

#The data provides crime type frequency and crime by day of the week.#Among the high crime categories, larceny tend to increase on Fridays and Saturdays. while burglary residence generally occurred more often during the weekdays than the weekends. Auto theft were least reported on Thursdays and increase for the weekends.

| Crime Type | Frequency |
|----------------------|-----------|
| LARCENY-FROM VEHICLE | 9840 |
| LARCENY-NON VEHICLE | 6589 |
| AUTO THEFT | 3197 |
| BURGLARY-RESIDENCE | 2635 |
| AGG ASSAULT | 2024 |
| ROBBERY-PEDESTRIAN | 1126 |
| BURGLARY-NONRES | 758 |
| RAPE | 226 |
| ROBBERY-COMMERCIAL | 157 |



R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see <http://rmarkdown.rstudio.com>.

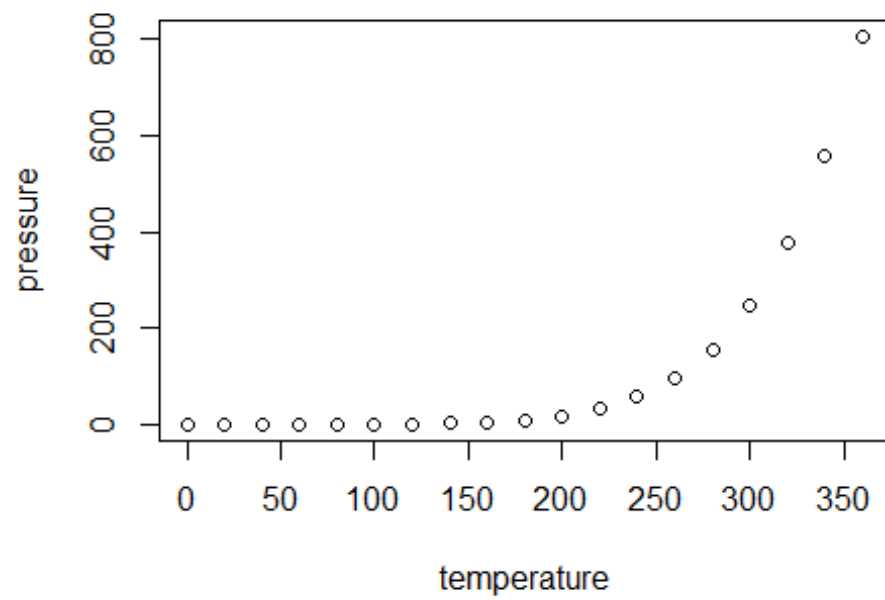
When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
summary(cars)
```

```
##      speed      dist
##  Min.   : 4.0    Min.   :  2.00
##  1st Qu.:12.0    1st Qu.: 26.00
##  Median :15.0    Median : 36.00
##  Mean   :15.4    Mean    : 42.98
##  3rd Qu.:19.0    3rd Qu.: 56.00
##  Max.   :25.0    Max.    :120.00
```

Including Plots

You can also embed plots, for example:



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.