Manuscript for MADA Project

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# 1. Part 1

## 1.1 Description of data and data source

The data is a count of residents with at least one COVID-19 vaccination by demographic in the state of Georgia released by the Georgia Department of Public Health. The data has 1962 observations. The data is uploaded weekly.

You can download the data from this link: <https://www.arcgis.com/home/item.html?id=17a8a4af79e5453a9132aaa29fb4ad22>

## 1.2 Why did I choose this data?

As a graduate research assistant, I am participating in an evaluation being conducted on a COVID-19 health literacy and vaccine hesitancy program in Albany, GA. This secondary data will be used to determine whether the program will produce a significant increase in COVID-19 vaccinations within the target zipcodes of 31701, 31705 and 31707.

##Loading the Data

#looading packages  
library(readxl) #for loading Excel files  
library(here) #to set paths

here() starts at /Users/jacobmatta/Documents/R/JM-MADA-Project

library(dplyr) #for description summary of data

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

#loading data  
rawdata\_location <- here::here("data","raw\_data","rawdata.xlsx")  
rawdata <- readxl::read\_excel(rawdata\_location)  
  
#loading data code book for reference   
codebook\_location <-here::here("data","raw\_data","Code\_book\_Vaccination\_Demog\_.xlsx")  
  
codebook <- readxl::read\_excel(codebook\_location)

New names:  
• `` -> `...2`

##Summary Descriptions of Data

glimpse(rawdata)

Rows: 1,962  
Columns: 184  
$ FIPS <chr> "13003960300", "13005970100", "13005970202", "13…  
$ GEONAME <chr> "Atkinson County tract 960300", "Bacon County tr…  
$ COUNTY\_ID <chr> "13003", "13005", "13005", "13009", "13011", "13…  
$ COUNTY\_NAME <chr> "Atkinson County", "Bacon County", "Bacon County…  
$ FAsianNHPI\_10\_17\_VAX <dbl> 0, 0, -1, 0, 0, -1, -1, -1, 0, 0, 0, 0, -1, -1, …  
$ FAsianNHPI\_10\_17\_POP <dbl> 0, 0, 26, 0, 0, -1, 0, 0, 0, 0, 0, 0, 0, 0, -1, …  
$ MAsianNHPI\_10\_17\_VAX <dbl> 0, 0, -1, 0, 0, 7, -1, 0, 0, 0, -1, -1, -1, -1, …  
$ MAsianNHPI\_10\_17\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, -1, 0,…  
$ UAsianNHPI\_10\_17\_VAX <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
$ UAsianNHPI\_10\_17\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
$ FAsianNHPI\_18\_44\_VAX <dbl> -1, -1, -1, 0, 10, -1, 14, 0, -1, -1, -1, 6, -1,…  
$ FAsianNHPI\_18\_44\_POP <dbl> 0, 0, 0, 0, 0, -1, 35, 0, -1, -1, 0, 0, -1, 0, 6…  
$ MAsianNHPI\_18\_44\_VAX <dbl> 0, -1, -1, 0, 7, 20, 18, 0, -1, -1, -1, 7, -1, -…  
$ MAsianNHPI\_18\_44\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, -1, -1, 0, 0, -1, 0, 26,…  
$ UAsianNHPI\_18\_44\_VAX <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
$ UAsianNHPI\_18\_44\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ FAsianNHPI\_45\_64\_POP <dbl> 0, 0, 0, -1, -1, 0, -1, 0, 0, -1, 0, 0, 43, 0, -…  
$ MAsianNHPI\_45\_64\_VAX <dbl> 0, 0, -1, -1, 7, 7, -1, -1, -1, -1, 0, 5, -1, -1…  
$ MAsianNHPI\_45\_64\_POP <dbl> 0, 0, 0, 0, 0, 0, -1, 0, 0, 0, 0, 0, -1, 0, -1, …  
$ UAsianNHPI\_45\_64\_VAX <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
$ UAsianNHPI\_45\_64\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ FAsianNHPI\_05\_09\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ MAsianNHPI\_05\_09\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ FAsianNHPI\_65Plus\_POP <dbl> 0, 0, 0, 0, 0, 0, -1, 0, 0, 0, 0, 0, 0, 0, -1, 0…  
$ MAsianNHPI\_65Plus\_VAX <dbl> 0, 0, -1, -1, -1, 6, 8, 0, -1, -1, 0, -1, 6, 0, …  
$ MAsianNHPI\_65Plus\_POP <dbl> 0, 0, 0, 0, 0, 0, 26, 0, 0, -1, 0, 0, 0, 0, -1, …  
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$ UAsianNHPI\_65Plus\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ FAsianNHPI\_00\_04\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ MAsianNHPI\_00\_04\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ UAsianNHPI\_00\_04\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ MBlack\_10\_17\_VAX <dbl> 0, 0, -1, 73, -1, -1, -1, -1, 0, 22, 33, 115, 75…  
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$ UBlack\_10\_17\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
$ FBlack\_18\_44\_VAX <dbl> 6, -1, 50, 253, -1, 11, 23, 28, 15, 82, 130, 346…  
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$ UBlack\_18\_44\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ UBlack\_05\_09\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ FBlack\_65Plus\_POP <dbl> 0, 0, -1, 183, 0, 0, 0, 38, -1, 128, 240, 270, 1…  
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$ UNone\_18\_44\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ FNone\_45\_64\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ MNone\_05\_09\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ UNone\_05\_09\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ FNone\_65Plus\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ UOtherRace\_45\_64\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ UOtherRace\_05\_09\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ UOtherRace\_65Plus\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
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$ UWhite\_10\_17\_VAX <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
$ UWhite\_10\_17\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
$ FWhite\_18\_44\_VAX <dbl> 94, 118, 124, 70, 261, 147, 174, 66, 148, 135, 1…  
$ FWhite\_18\_44\_POP <dbl> 267, 347, 544, 214, 873, 350, 398, 172, 335, 221…  
$ MWhite\_18\_44\_VAX <dbl> 155, 83, 103, 72, 213, 108, 120, 56, 97, 78, 14,…  
$ MWhite\_18\_44\_POP <dbl> 197, 494, 531, 328, 888, 386, 455, 167, 303, 180…  
$ UWhite\_18\_44\_VAX <dbl> 0, 0, -1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,…  
$ UWhite\_18\_44\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
$ FWhite\_45\_64\_VAX <dbl> 80, 135, 152, 83, 302, 149, 166, 76, 165, 88, 28…  
$ FWhite\_45\_64\_POP <dbl> 140, 347, 280, 112, 595, 327, 347, 115, 322, 127…  
$ MWhite\_45\_64\_VAX <dbl> 72, 117, 119, 82, 240, 131, 151, 65, 143, 72, -1…  
$ MWhite\_45\_64\_POP <dbl> 170, 448, 320, 137, 757, 372, 327, 152, 328, 126…  
$ UWhite\_45\_64\_VAX <dbl> -1, 0, 0, -1, 0, 0, 0, 0, 0, -1, 0, 0, 0, 0, 0, …  
$ UWhite\_45\_64\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
$ FWhite\_05\_09\_VAX <dbl> -1, 0, -1, -1, -1, 6, 7, 0, -1, -1, 0, -1, -1, -…  
$ FWhite\_05\_09\_POP <dbl> -1, 0, 66, 46, 165, 56, 66, 0, 53, -1, 0, 0, 0, …  
$ MWhite\_05\_09\_VAX <dbl> 0, 0, -1, -1, -1, 6, 6, 0, -1, 6, -1, -1, -1, 5,…  
$ MWhite\_05\_09\_POP <dbl> 0, 0, 87, 29, 228, 74, 74, 0, 104, 0, -1, 0, 0, …  
$ UWhite\_05\_09\_VAX <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
$ UWhite\_05\_09\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
$ FWhite\_65Plus\_VAX <dbl> 56, 135, 159, 86, 298, 94, 87, 80, 165, 87, 26, …  
$ FWhite\_65Plus\_POP <dbl> 67, 258, 309, 208, 463, 215, 111, 142, 332, 100,…  
$ MWhite\_65Plus\_VAX <dbl> 52, 107, 125, 68, 256, 63, 98, 63, 116, 39, 19, …  
$ MWhite\_65Plus\_POP <dbl> 88, 185, 262, 123, 380, 111, 92, 155, 231, 62, 3…  
$ UWhite\_65Plus\_VAX <dbl> 0, 0, 0, 0, -1, 0, 0, 0, 0, 0, 0, 0, 0, -1, 0, -…  
$ UWhite\_65Plus\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
$ FWhite\_00\_04\_VAX <dbl> 0, 0, 0, 0, 0, 0, -1, 0, 0, 0, 0, -1, -1, -1, 0,…  
$ FWhite\_00\_04\_POP <dbl> 0, 0, 0, 0, 0, 0, 127, 0, 0, 0, 0, 65, 0, 29, 0,…  
$ MWhite\_00\_04\_VAX <dbl> 0, -1, 0, 0, 0, -1, -1, 0, 0, -1, 0, 0, 0, 0, 0,…  
$ MWhite\_00\_04\_POP <dbl> 0, 54, 0, 0, 0, 52, 122, 0, 0, -1, 0, 0, 0, 0, 0…  
$ UWhite\_00\_04\_VAX <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …  
$ UWhite\_00\_04\_POP <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, …

summary(rawdata)

FIPS GEONAME COUNTY\_ID COUNTY\_NAME   
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 Class :character Class :character Class :character Class :character   
 Mode :character Mode :character Mode :character Mode :character   
   
   
   
 FAsianNHPI\_10\_17\_VAX FAsianNHPI\_10\_17\_POP MAsianNHPI\_10\_17\_VAX  
 Min. : -1.00 Min. : -1.000 Min. : -1.000   
 1st Qu.: -1.00 1st Qu.: 0.000 1st Qu.: -1.000   
 Median : 0.00 Median : 0.000 Median : 0.000   
 Mean : 6.64 Mean : 9.195 Mean : 6.759   
 3rd Qu.: 5.00 3rd Qu.: 0.000 3rd Qu.: 5.000   
 Max. :344.00 Max. :404.000 Max. :323.000   
 MAsianNHPI\_10\_17\_POP UAsianNHPI\_10\_17\_VAX UAsianNHPI\_10\_17\_POP  
 Min. : -1.000 Min. :-1.000000 Min. :0   
 1st Qu.: 0.000 1st Qu.: 0.000000 1st Qu.:0   
 Median : 0.000 Median : 0.000000 Median :0   
 Mean : 9.214 Mean :-0.003568 Mean :0   
 3rd Qu.: 0.000 3rd Qu.: 0.000000 3rd Qu.:0   
 Max. :642.000 Max. : 0.000000 Max. :0   
 FAsianNHPI\_18\_44\_VAX FAsianNHPI\_18\_44\_POP MAsianNHPI\_18\_44\_VAX  
 Min. : -1.00 Min. : -1.00 Min. : -1.00   
 1st Qu.: -1.00 1st Qu.: 0.00 1st Qu.: -1.00   
 Median : 7.00 Median : 0.00 Median : 6.00   
 Mean : 38.35 Mean : 46.44 Mean : 35.08   
 3rd Qu.: 35.00 3rd Qu.: 51.00 3rd Qu.: 29.00   
 Max. :985.00 Max. :1048.00 Max. :1039.00   
 MAsianNHPI\_18\_44\_POP UAsianNHPI\_18\_44\_VAX UAsianNHPI\_18\_44\_POP  
 Min. : -1.00 Min. :-1.00000 Min. :0   
 1st Qu.: 0.00 1st Qu.: 0.00000 1st Qu.:0   
 Median : 0.00 Median : 0.00000 Median :0   
 Mean : 43.46 Mean :-0.06167 Mean :0   
 3rd Qu.: 45.00 3rd Qu.: 0.00000 3rd Qu.:0   
 Max. :1492.00 Max. : 0.00000 Max. :0   
 FAsianNHPI\_45\_64\_VAX FAsianNHPI\_45\_64\_POP MAsianNHPI\_45\_64\_VAX  
 Min. : -1.00 Min. : -1.00 Min. : -1.00   
 1st Qu.: -1.00 1st Qu.: 0.00 1st Qu.: -1.00   
 Median : 0.00 Median : 0.00 Median : 0.00   
 Mean : 21.71 Mean : 24.51 Mean : 19.26   
 3rd Qu.: 19.00 3rd Qu.: 27.00 3rd Qu.: 13.00   
 Max. :840.00 Max. :751.00 Max. :865.00   
 MAsianNHPI\_45\_64\_POP UAsianNHPI\_45\_64\_VAX UAsianNHPI\_45\_64\_POP  
 Min. : -1.00 Min. :-1.00000 Min. :0   
 1st Qu.: 0.00 1st Qu.: 0.00000 1st Qu.:0   
 Median : 0.00 Median : 0.00000 Median :0   
 Mean : 21.76 Mean :-0.04893 Mean :0   
 3rd Qu.: 0.00 3rd Qu.: 0.00000 3rd Qu.:0   
 Max. :899.00 Max. : 0.00000 Max. :0   
 FAsianNHPI\_05\_09\_VAX FAsianNHPI\_05\_09\_POP MAsianNHPI\_05\_09\_VAX  
 Min. : -1.000 Min. : -1.000 Min. : -1.000   
 1st Qu.: -1.000 1st Qu.: 0.000 1st Qu.: -1.000   
 Median : 0.000 Median : 0.000 Median : 0.000   
 Mean : 1.986 Mean : 4.712 Mean : 2.067   
 3rd Qu.: 0.000 3rd Qu.: 0.000 3rd Qu.: 0.000   
 Max. :172.000 Max. :335.000 Max. :161.000   
 MAsianNHPI\_05\_09\_POP UAsianNHPI\_05\_09\_VAX UAsianNHPI\_05\_09\_POP  
 Min. : -1.000 Min. :-1.0000000 Min. :0   
 1st Qu.: 0.000 1st Qu.: 0.0000000 1st Qu.:0   
 Median : 0.000 Median : 0.0000000 Median :0   
 Mean : 5.079 Mean :-0.0005097 Mean :0   
 3rd Qu.: 0.000 3rd Qu.: 0.0000000 3rd Qu.:0   
 Max. :363.000 Max. : 0.0000000 Max. :0   
 FAsianNHPI\_65Plus\_VAX FAsianNHPI\_65Plus\_POP MAsianNHPI\_65Plus\_VAX  
 Min. : -1.000 Min. : -1.000 Min. : -1.000   
 1st Qu.: -1.000 1st Qu.: 0.000 1st Qu.: -1.000   
 Median : -1.000 Median : 0.000 Median : 0.000   
 Mean : 7.034 Mean : 7.964 Mean : 5.595   
 3rd Qu.: 6.000 3rd Qu.: 0.000 3rd Qu.: 5.000   
 Max. :263.000 Max. :234.000 Max. :259.000   
 MAsianNHPI\_65Plus\_POP UAsianNHPI\_65Plus\_VAX UAsianNHPI\_65Plus\_POP  
 Min. : -1.000 Min. :-1.00000 Min. :0   
 1st Qu.: 0.000 1st Qu.: 0.00000 1st Qu.:0   
 Median : 0.000 Median : 0.00000 Median :0   
 Mean : 6.228 Mean :-0.03058 Mean :0   
 3rd Qu.: 0.000 3rd Qu.: 0.00000 3rd Qu.:0   
 Max. :195.000 Max. : 0.00000 Max. :0   
 FAsianNHPI\_00\_04\_VAX FAsianNHPI\_00\_04\_POP MAsianNHPI\_00\_04\_VAX  
 Min. :-1.0000 Min. : -1.000 Min. :-1.0000   
 1st Qu.: 0.0000 1st Qu.: 0.000 1st Qu.: 0.0000   
 Median : 0.0000 Median : 0.000 Median : 0.0000   
 Mean : 0.1045 Mean : 3.344 Mean : 0.1713   
 3rd Qu.: 0.0000 3rd Qu.: 0.000 3rd Qu.: 0.0000   
 Max. :37.0000 Max. :263.000 Max. :30.0000   
 MAsianNHPI\_00\_04\_POP UAsianNHPI\_00\_04\_VAX UAsianNHPI\_00\_04\_POP  
 Min. : -1.00 Min. :-1.0000000 Min. :0   
 1st Qu.: 0.00 1st Qu.: 0.0000000 1st Qu.:0   
 Median : 0.00 Median : 0.0000000 Median :0   
 Mean : 4.01 Mean :-0.0005097 Mean :0   
 3rd Qu.: 0.00 3rd Qu.: 0.0000000 3rd Qu.:0   
 Max. :301.00 Max. : 0.0000000 Max. :0   
 FBlack\_10\_17\_VAX FBlack\_10\_17\_POP MBlack\_10\_17\_VAX MBlack\_10\_17\_POP   
 Min. : -1.0 Min. : -1.00 Min. : -1.00 Min. : -1.00   
 1st Qu.: 0.0 1st Qu.: 0.00 1st Qu.: 0.00 1st Qu.: 0.00   
 Median : 24.0 Median : 51.00 Median : 23.00 Median : 56.00   
 Mean : 37.6 Mean : 98.12 Mean : 35.77 Mean : 97.82   
 3rd Qu.: 53.0 3rd Qu.: 137.00 3rd Qu.: 50.00 3rd Qu.: 135.00   
 Max. :1080.0 Max. :1441.00 Max. :1016.00 Max. :1293.00   
 UBlack\_10\_17\_VAX UBlack\_10\_17\_POP FBlack\_18\_44\_VAX FBlack\_18\_44\_POP  
 Min. :-1.000000 Min. :0 Min. : -1.0 Min. : -1.0   
 1st Qu.: 0.000000 1st Qu.:0 1st Qu.: 40.0 1st Qu.: 66.0   
 Median : 0.000000 Median :0 Median : 119.0 Median : 225.0   
 Mean :-0.006626 Mean :0 Mean : 180.5 Mean : 350.4   
 3rd Qu.: 0.000000 3rd Qu.:0 3rd Qu.: 236.0 3rd Qu.: 495.8   
 Max. : 0.000000 Max. :0 Max. :3851.0 Max. :3754.0   
 MBlack\_18\_44\_VAX MBlack\_18\_44\_POP UBlack\_18\_44\_VAX UBlack\_18\_44\_POP  
 Min. : -1.0 Min. : -1 Min. :-1.00000 Min. :0   
 1st Qu.: 30.0 1st Qu.: 69 1st Qu.: 0.00000 1st Qu.:0   
 Median : 83.0 Median : 204 Median : 0.00000 Median :0   
 Mean : 128.4 Mean : 313 Mean :-0.09123 Mean :0   
 3rd Qu.: 160.8 3rd Qu.: 435 3rd Qu.: 0.00000 3rd Qu.:0   
 Max. :3458.0 Max. :4034 Max. :15.00000 Max. :0   
 FBlack\_45\_64\_VAX FBlack\_45\_64\_POP MBlack\_45\_64\_VAX MBlack\_45\_64\_POP  
 Min. : -1.0 Min. : -1.0 Min. : -1.0 Min. : -1.0   
 1st Qu.: 35.0 1st Qu.: 50.0 1st Qu.: 30.0 1st Qu.: 45.0   
 Median : 102.5 Median : 143.0 Median : 82.0 Median : 124.5   
 Mean : 156.2 Mean : 225.2 Mean : 117.8 Mean : 183.3   
 3rd Qu.: 200.0 3rd Qu.: 303.0 3rd Qu.: 153.0 3rd Qu.: 248.0   
 Max. :1860.0 Max. :2999.0 Max. :1226.0 Max. :1935.0   
 UBlack\_45\_64\_VAX UBlack\_45\_64\_POP FBlack\_05\_09\_VAX FBlack\_05\_09\_POP  
 Min. :-1.0000 Min. :0 Min. : -1.000 Min. : -1.00   
 1st Qu.: 0.0000 1st Qu.:0 1st Qu.: -1.000 1st Qu.: 0.00   
 Median : 0.0000 Median :0 Median : 5.000 Median : 27.00   
 Mean :-0.1697 Mean :0 Mean : 7.675 Mean : 55.95   
 3rd Qu.: 0.0000 3rd Qu.:0 3rd Qu.: 12.000 3rd Qu.: 82.00   
 Max. : 7.0000 Max. :0 Max. :132.000 Max. :780.00   
 MBlack\_05\_09\_VAX MBlack\_05\_09\_POP UBlack\_05\_09\_VAX UBlack\_05\_09\_POP  
 Min. : -1.000 Min. : -1.00 Min. :-1.000000 Min. :0   
 1st Qu.: -1.000 1st Qu.: 0.00 1st Qu.: 0.000000 1st Qu.:0   
 Median : 5.000 Median : 28.00 Median : 0.000000 Median :0   
 Mean : 7.528 Mean : 58.17 Mean :-0.004587 Mean :0   
 3rd Qu.: 12.000 3rd Qu.: 85.00 3rd Qu.: 0.000000 3rd Qu.:0   
 Max. :137.000 Max. :1306.00 Max. : 0.000000 Max. :0   
 FBlack\_65Plus\_VAX FBlack\_65Plus\_POP MBlack\_65Plus\_VAX MBlack\_65Plus\_POP  
 Min. : -1.00 Min. : -1.00 Min. : -1.00 Min. : -1.00   
 1st Qu.: 8.00 1st Qu.: 0.00 1st Qu.: -1.00 1st Qu.: 0.00   
 Median : 47.50 Median : 60.00 Median : 29.00 Median : 39.00   
 Mean : 80.81 Mean : 98.25 Mean : 49.33 Mean : 63.06   
 3rd Qu.:111.00 3rd Qu.:138.00 3rd Qu.: 72.00 3rd Qu.: 90.75   
 Max. :871.00 Max. :987.00 Max. :547.00 Max. :701.00   
 UBlack\_65Plus\_VAX UBlack\_65Plus\_POP FBlack\_00\_04\_VAX FBlack\_00\_04\_POP   
 Min. :-1.0000 Min. :0 Min. :-1.00000 Min. : -1.00   
 1st Qu.: 0.0000 1st Qu.:0 1st Qu.:-1.00000 1st Qu.: 0.00   
 Median : 0.0000 Median :0 Median : 0.00000 Median : 0.00   
 Mean :-0.1208 Mean :0 Mean :-0.08002 Mean : 40.30   
 3rd Qu.: 0.0000 3rd Qu.:0 3rd Qu.: 0.00000 3rd Qu.: 49.75   
 Max. : 5.0000 Max. :0 Max. :21.00000 Max. :1425.00   
 MBlack\_00\_04\_VAX MBlack\_00\_04\_POP UBlack\_00\_04\_VAX UBlack\_00\_04\_POP  
 Min. :-1.000000 Min. : -1.00 Min. :-1.000000 Min. :0   
 1st Qu.:-1.000000 1st Qu.: 0.00 1st Qu.: 0.000000 1st Qu.:0   
 Median : 0.000000 Median : 0.00 Median : 0.000000 Median :0   
 Mean :-0.006626 Mean : 40.50 Mean :-0.001019 Mean :0   
 3rd Qu.: 0.000000 3rd Qu.: 55.75 3rd Qu.: 0.000000 3rd Qu.:0   
 Max. :22.000000 Max. :916.00 Max. : 0.000000 Max. :0   
 FNone\_10\_17\_VAX FNone\_10\_17\_POP MNone\_10\_17\_VAX MNone\_10\_17\_POP  
 Min. :-1.0000 Min. :0 Min. :-1.0000 Min. :0   
 1st Qu.:-1.0000 1st Qu.:0 1st Qu.:-1.0000 1st Qu.:0   
 Median : 0.0000 Median :0 Median : 0.0000 Median :0   
 Mean : 0.3767 Mean :0 Mean : 0.5051 Mean :0   
 3rd Qu.: 0.0000 3rd Qu.:0 3rd Qu.: 0.0000 3rd Qu.:0   
 Max. :47.0000 Max. :0 Max. :63.0000 Max. :0   
 UNone\_10\_17\_VAX UNone\_10\_17\_POP FNone\_18\_44\_VAX FNone\_18\_44\_POP  
 Min. :-1.000000 Min. :0 Min. : -1.00 Min. :0   
 1st Qu.: 0.000000 1st Qu.:0 1st Qu.: -1.00 1st Qu.:0   
 Median : 0.000000 Median :0 Median : 8.00 Median :0   
 Mean :-0.008665 Mean :0 Mean : 13.63 Mean :0   
 3rd Qu.: 0.000000 3rd Qu.:0 3rd Qu.: 19.00 3rd Qu.:0   
 Max. : 0.000000 Max. :0 Max. :433.00 Max. :0   
 MNone\_18\_44\_VAX MNone\_18\_44\_POP UNone\_18\_44\_VAX UNone\_18\_44\_POP  
 Min. : -1.00 Min. :0 Min. :-1.0000 Min. :0   
 1st Qu.: -1.00 1st Qu.:0 1st Qu.: 0.0000 1st Qu.:0   
 Median : 8.00 Median :0 Median : 0.0000 Median :0   
 Mean : 14.63 Mean :0 Mean :-0.1346 Mean :0   
 3rd Qu.: 18.00 3rd Qu.:0 3rd Qu.: 0.0000 3rd Qu.:0   
 Max. :573.00 Max. :0 Max. :24.0000 Max. :0   
 FNone\_45\_64\_VAX FNone\_45\_64\_POP MNone\_45\_64\_VAX MNone\_45\_64\_POP  
 Min. : -1.00 Min. :0 Min. : -1.00 Min. :0   
 1st Qu.: -1.00 1st Qu.:0 1st Qu.: 0.00 1st Qu.:0   
 Median : 8.00 Median :0 Median : 8.00 Median :0   
 Mean : 12.34 Mean :0 Mean : 12.37 Mean :0   
 3rd Qu.: 16.00 3rd Qu.:0 3rd Qu.: 16.00 3rd Qu.:0   
 Max. :191.00 Max. :0 Max. :166.00 Max. :0   
 UNone\_45\_64\_VAX UNone\_45\_64\_POP FNone\_05\_09\_VAX FNone\_05\_09\_POP  
 Min. :-1.0000 Min. :0 Min. :-1.0000 Min. :0   
 1st Qu.: 0.0000 1st Qu.:0 1st Qu.:-1.0000 1st Qu.:0   
 Median : 0.0000 Median :0 Median : 0.0000 Median :0   
 Mean :-0.1284 Mean :0 Mean : 0.2334 Mean :0   
 3rd Qu.: 0.0000 3rd Qu.:0 3rd Qu.: 0.0000 3rd Qu.:0   
 Max. :54.0000 Max. :0 Max. :28.0000 Max. :0   
 MNone\_05\_09\_VAX MNone\_05\_09\_POP UNone\_05\_09\_VAX UNone\_05\_09\_POP  
 Min. :-1.0000 Min. :0 Min. :-1.000000 Min. :0   
 1st Qu.:-1.0000 1st Qu.:0 1st Qu.: 0.000000 1st Qu.:0   
 Median : 0.0000 Median :0 Median : 0.000000 Median :0   
 Mean : 0.2472 Mean :0 Mean :-0.007645 Mean :0   
 3rd Qu.: 0.0000 3rd Qu.:0 3rd Qu.: 0.000000 3rd Qu.:0   
 Max. :27.0000 Max. :0 Max. : 0.000000 Max. :0   
 FNone\_65Plus\_VAX FNone\_65Plus\_POP MNone\_65Plus\_VAX MNone\_65Plus\_POP  
 Min. :-1.000 Min. :0 Min. :-1.000 Min. :0   
 1st Qu.:-1.000 1st Qu.:0 1st Qu.:-1.000 1st Qu.:0   
 Median : 0.000 Median :0 Median :-1.000 Median :0   
 Mean : 3.344 Mean :0 Mean : 2.824 Mean :0   
 3rd Qu.: 7.000 3rd Qu.:0 3rd Qu.: 6.000 3rd Qu.:0   
 Max. :53.000 Max. :0 Max. :80.000 Max. :0   
 UNone\_65Plus\_VAX UNone\_65Plus\_POP FNone\_00\_04\_VAX FNone\_00\_04\_POP  
 Min. :-1.00000 Min. :0 Min. :-1.0000 Min. :0   
 1st Qu.: 0.00000 1st Qu.:0 1st Qu.: 0.0000 1st Qu.:0   
 Median : 0.00000 Median :0 Median : 0.0000 Median :0   
 Mean :-0.09684 Mean :0 Mean : 0.1239 Mean :0   
 3rd Qu.: 0.00000 3rd Qu.:0 3rd Qu.: 0.0000 3rd Qu.:0   
 Max. :43.00000 Max. :0 Max. :26.0000 Max. :0   
 MNone\_00\_04\_VAX MNone\_00\_04\_POP UNone\_00\_04\_VAX UNone\_00\_04\_POP  
 Min. :-1.0000 Min. :0 Min. :-1.000000 Min. :0   
 1st Qu.: 0.0000 1st Qu.:0 1st Qu.: 0.000000 1st Qu.:0   
 Median : 0.0000 Median :0 Median : 0.000000 Median :0   
 Mean : 0.1616 Mean :0 Mean :-0.002548 Mean :0   
 3rd Qu.: 0.0000 3rd Qu.:0 3rd Qu.: 0.000000 3rd Qu.:0   
 Max. :20.0000 Max. :0 Max. : 0.000000 Max. :0   
 FOtherRace\_10\_17\_VAX FOtherRace\_10\_17\_POP MOtherRace\_10\_17\_VAX  
 Min. : -1.0 Min. : -1.00 Min. : -1.00   
 1st Qu.: -1.0 1st Qu.: 0.00 1st Qu.: -1.00   
 Median : 8.0 Median : 0.00 Median : 7.00   
 Mean : 16.1 Mean : 21.32 Mean : 15.01   
 3rd Qu.: 22.0 3rd Qu.: 32.00 3rd Qu.: 22.00   
 Max. :507.0 Max. :476.00 Max. :515.00   
 MOtherRace\_10\_17\_POP UOtherRace\_10\_17\_VAX UOtherRace\_10\_17\_POP  
 Min. : -1.00 Min. :-1.000000 Min. :0   
 1st Qu.: 0.00 1st Qu.: 0.000000 1st Qu.:0   
 Median : 0.00 Median : 0.000000 Median :0   
 Mean : 23.78 Mean :-0.004587 Mean :0   
 3rd Qu.: 34.00 3rd Qu.: 0.000000 3rd Qu.:0   
 Max. :809.00 Max. : 0.000000 Max. :0   
 FOtherRace\_18\_44\_VAX FOtherRace\_18\_44\_POP MOtherRace\_18\_44\_VAX  
 Min. : -1.00 Min. : -1.00 Min. : -1.00   
 1st Qu.: -0.75 1st Qu.: 0.00 1st Qu.: 7.00   
 Median : 52.00 Median : 31.00 Median : 43.00   
 Mean : 81.57 Mean : 54.19 Mean : 70.82   
 3rd Qu.:119.75 3rd Qu.: 74.00 3rd Qu.: 100.00   
 Max. :786.00 Max. :1096.00 Max. :2336.00   
 MOtherRace\_18\_44\_POP UOtherRace\_18\_44\_VAX UOtherRace\_18\_44\_POP  
 Min. : -1.00 Min. :-1.00000 Min. :0   
 1st Qu.: 0.00 1st Qu.: 0.00000 1st Qu.:0   
 Median : 32.00 Median : 0.00000 Median :0   
 Mean : 60.44 Mean :-0.05199 Mean :0   
 3rd Qu.: 78.00 3rd Qu.: 0.00000 3rd Qu.:0   
 Max. :1043.00 Max. :10.00000 Max. :0   
 FOtherRace\_45\_64\_VAX FOtherRace\_45\_64\_POP MOtherRace\_45\_64\_VAX  
 Min. : -1.00 Min. : -1.00 Min. : -1.00   
 1st Qu.: -1.00 1st Qu.: -1.00 1st Qu.: -1.00   
 Median : 34.00 Median : 0.00 Median : 31.00   
 Mean : 56.95 Mean : 18.52 Mean : 49.83   
 3rd Qu.: 86.00 3rd Qu.: 30.00 3rd Qu.: 73.00   
 Max. :534.00 Max. :381.00 Max. :588.00   
 MOtherRace\_45\_64\_POP UOtherRace\_45\_64\_VAX UOtherRace\_45\_64\_POP  
 Min. : -1.00 Min. :-1.00000 Min. :0   
 1st Qu.: -1.00 1st Qu.: 0.00000 1st Qu.:0   
 Median : 0.00 Median : 0.00000 Median :0   
 Mean : 19.15 Mean :-0.04383 Mean :0   
 3rd Qu.: 30.00 3rd Qu.: 0.00000 3rd Qu.:0   
 Max. :385.00 Max. : 8.00000 Max. :0   
 FOtherRace\_05\_09\_VAX FOtherRace\_05\_09\_POP MOtherRace\_05\_09\_VAX  
 Min. :-1.00 Min. : -1.0 Min. :-1.00   
 1st Qu.:-1.00 1st Qu.: 0.0 1st Qu.:-1.00   
 Median :-1.00 Median : 0.0 Median :-1.00   
 Mean : 2.51 Mean : 13.3 Mean : 2.64   
 3rd Qu.: 5.00 3rd Qu.: 0.0 3rd Qu.: 5.00   
 Max. :69.00 Max. :320.0 Max. :39.00   
 MOtherRace\_05\_09\_POP UOtherRace\_05\_09\_VAX UOtherRace\_05\_09\_POP  
 Min. : -1.00 Min. :-1.000000 Min. :0   
 1st Qu.: 0.00 1st Qu.: 0.000000 1st Qu.:0   
 Median : 0.00 Median : 0.000000 Median :0   
 Mean : 14.29 Mean :-0.002548 Mean :0   
 3rd Qu.: 0.00 3rd Qu.: 0.000000 3rd Qu.:0   
 Max. :384.00 Max. : 0.000000 Max. :0   
 FOtherRace\_65Plus\_VAX FOtherRace\_65Plus\_POP MOtherRace\_65Plus\_VAX  
 Min. : -1.00 Min. : -1.000 Min. : -1.00   
 1st Qu.: 6.00 1st Qu.: 0.000 1st Qu.: 7.00   
 Median : 32.00 Median : 0.000 Median : 24.00   
 Mean : 42.22 Mean : 3.843 Mean : 31.21   
 3rd Qu.: 62.00 3rd Qu.: 0.000 3rd Qu.: 45.00   
 Max. :319.00 Max. :118.000 Max. :226.00   
 MOtherRace\_65Plus\_POP UOtherRace\_65Plus\_VAX UOtherRace\_65Plus\_POP  
 Min. : -1.000 Min. :-1.000 Min. :0   
 1st Qu.: 0.000 1st Qu.: 0.000 1st Qu.:0   
 Median : 0.000 Median : 0.000 Median :0   
 Mean : 2.775 Mean :-0.104 Mean :0   
 3rd Qu.: 0.000 3rd Qu.: 0.000 3rd Qu.:0   
 Max. :222.000 Max. : 0.000 Max. :0   
 FOtherRace\_00\_04\_VAX FOtherRace\_00\_04\_POP MOtherRace\_00\_04\_VAX  
 Min. :-1.0000 Min. : -1.00 Min. :-1.0000   
 1st Qu.:-1.0000 1st Qu.: 0.00 1st Qu.:-1.0000   
 Median : 0.0000 Median : 0.00 Median : 0.0000   
 Mean :-0.2569 Mean : 8.46 Mean :-0.2222   
 3rd Qu.: 0.0000 3rd Qu.: 0.00 3rd Qu.: 0.0000   
 Max. :13.0000 Max. :319.00 Max. :13.0000   
 MOtherRace\_00\_04\_POP UOtherRace\_00\_04\_VAX UOtherRace\_00\_04\_POP  
 Min. : -1.000 Min. :-1.000000 Min. :0   
 1st Qu.: 0.000 1st Qu.: 0.000000 1st Qu.:0   
 Median : 0.000 Median : 0.000000 Median :0   
 Mean : 8.969 Mean :-0.001019 Mean :0   
 3rd Qu.: 0.000 3rd Qu.: 0.000000 3rd Qu.:0   
 Max. :362.000 Max. : 0.000000 Max. :0   
 FWhite\_10\_17\_VAX FWhite\_10\_17\_POP MWhite\_10\_17\_VAX MWhite\_10\_17\_POP  
 Min. : -1.00 Min. : -1.0 Min. : -1.00 Min. : -1.0   
 1st Qu.: 12.00 1st Qu.: 40.0 1st Qu.: 11.00 1st Qu.: 41.0   
 Median : 34.00 Median : 109.0 Median : 32.00 Median : 116.0   
 Mean : 47.24 Mean : 153.3 Mean : 46.07 Mean : 159.7   
 3rd Qu.: 70.00 3rd Qu.: 224.8 3rd Qu.: 66.00 3rd Qu.: 235.8   
 Max. :409.00 Max. :1295.0 Max. :1265.00 Max. :1270.0   
 UWhite\_10\_17\_VAX UWhite\_10\_17\_POP FWhite\_18\_44\_VAX FWhite\_18\_44\_POP  
 Min. :-1.00000 Min. :0 Min. : -1.0 Min. : -1.0   
 1st Qu.: 0.00000 1st Qu.:0 1st Qu.: 103.0 1st Qu.: 228.2   
 Median : 0.00000 Median :0 Median : 217.0 Median : 450.5   
 Mean :-0.02599 Mean :0 Mean : 268.1 Mean : 525.6   
 3rd Qu.: 0.00000 3rd Qu.:0 3rd Qu.: 366.0 3rd Qu.: 731.0   
 Max. : 0.00000 Max. :0 Max. :7617.0 Max. :3458.0   
 MWhite\_18\_44\_VAX MWhite\_18\_44\_POP UWhite\_18\_44\_VAX UWhite\_18\_44\_POP  
 Min. : -1.0 Min. : -1.0 Min. :-1.0000 Min. :0   
 1st Qu.: 84.0 1st Qu.: 243.0 1st Qu.: 0.0000 1st Qu.:0   
 Median : 176.5 Median : 466.0 Median : 0.0000 Median :0   
 Mean : 234.1 Mean : 540.1 Mean :-0.1626 Mean :0   
 3rd Qu.: 304.0 3rd Qu.: 737.2 3rd Qu.: 0.0000 3rd Qu.:0   
 Max. :9490.0 Max. :4156.0 Max. :32.0000 Max. :0   
 FWhite\_45\_64\_VAX FWhite\_45\_64\_POP MWhite\_45\_64\_VAX MWhite\_45\_64\_POP  
 Min. : -1.0 Min. : -1.0 Min. : -1.0 Min. : -1.0   
 1st Qu.: 93.0 1st Qu.: 158.0 1st Qu.: 84.0 1st Qu.: 163.0   
 Median : 202.0 Median : 367.0 Median : 182.0 Median : 354.0   
 Mean : 248.5 Mean : 428.3 Mean : 225.8 Mean : 419.3   
 3rd Qu.: 343.0 3rd Qu.: 614.0 3rd Qu.: 313.0 3rd Qu.: 609.0   
 Max. :1666.0 Max. :2660.0 Max. :1589.0 Max. :2677.0   
 UWhite\_45\_64\_VAX UWhite\_45\_64\_POP FWhite\_05\_09\_VAX FWhite\_05\_09\_POP   
 Min. :-1.0000 Min. :0 Min. :-1.0 Min. : -1.00   
 1st Qu.:-1.0000 1st Qu.:0 1st Qu.:-1.0 1st Qu.: 0.00   
 Median : 0.0000 Median :0 Median : 6.0 Median : 62.00   
 Mean :-0.1447 Mean :0 Mean :10.6 Mean : 86.18   
 3rd Qu.: 0.0000 3rd Qu.:0 3rd Qu.:16.0 3rd Qu.: 128.00   
 Max. :16.0000 Max. :0 Max. :92.0 Max. :1009.00   
 MWhite\_05\_09\_VAX MWhite\_05\_09\_POP UWhite\_05\_09\_VAX UWhite\_05\_09\_POP  
 Min. : -1.00 Min. : -1.0 Min. :-1.000000 Min. :0   
 1st Qu.: -1.00 1st Qu.: 0.0 1st Qu.: 0.000000 1st Qu.:0   
 Median : 6.00 Median : 68.0 Median : 0.000000 Median :0   
 Mean : 10.77 Mean : 91.3 Mean :-0.006116 Mean :0   
 3rd Qu.: 16.00 3rd Qu.:136.0 3rd Qu.: 0.000000 3rd Qu.:0   
 Max. :110.00 Max. :809.0 Max. : 0.000000 Max. :0   
 FWhite\_65Plus\_VAX FWhite\_65Plus\_POP MWhite\_65Plus\_VAX MWhite\_65Plus\_POP  
 Min. : -1.0 Min. : -1.0 Min. : -1.0 Min. : -1.0   
 1st Qu.: 83.0 1st Qu.: 112.0 1st Qu.: 64.0 1st Qu.: 86.0   
 Median : 179.0 Median : 249.5 Median : 146.0 Median : 198.0   
 Mean : 217.4 Mean : 286.4 Mean : 176.3 Mean : 231.2   
 3rd Qu.: 305.8 3rd Qu.: 416.8 3rd Qu.: 249.0 3rd Qu.: 334.0   
 Max. :1345.0 Max. :1478.0 Max. :1088.0 Max. :1254.0   
 UWhite\_65Plus\_VAX UWhite\_65Plus\_POP FWhite\_00\_04\_VAX FWhite\_00\_04\_POP  
 Min. :-1.0000 Min. :0 Min. :-1.000 Min. : -1.00   
 1st Qu.: 0.0000 1st Qu.:0 1st Qu.:-1.000 1st Qu.: 0.00   
 Median : 0.0000 Median :0 Median : 0.000 Median : 0.00   
 Mean :-0.2013 Mean :0 Mean : 1.608 Mean : 58.99   
 3rd Qu.: 0.0000 3rd Qu.:0 3rd Qu.: 0.000 3rd Qu.: 99.00   
 Max. : 6.0000 Max. :0 Max. :55.000 Max. :725.00   
 MWhite\_00\_04\_VAX MWhite\_00\_04\_POP UWhite\_00\_04\_VAX UWhite\_00\_04\_POP  
 Min. :-1.000 Min. : -1.00 Min. :-1.000000 Min. :0   
 1st Qu.:-1.000 1st Qu.: 0.00 1st Qu.: 0.000000 1st Qu.:0   
 Median : 0.000 Median : 0.00 Median : 0.000000 Median :0   
 Mean : 1.698 Mean : 62.37 Mean :-0.003568 Mean :0   
 3rd Qu.: 0.000 3rd Qu.:102.75 3rd Qu.: 0.000000 3rd Qu.:0   
 Max. :65.000 Max. :836.00 Max. : 0.000000 Max. :0

## 1.3 Questions/Hypotheses to be addressed

Using this data, I would like to explore whether the COVID-19 health literacy and vaccine hesitancy program in Albany, GA is causing a noticeable increase in vaccinations within the zipcodes 31701, 31705, 31707.

##Predictors and Outcomes My goal is to stratify the data by race and age and observe the difference due to those demographics.

##Overall Goal Since the data is updated weekly by the Georgia Department of Public Health, I am seeking to establish an efficient method of processing and cleaning the data to produce a data set with the target zip codes. Then I intend to analyze in hopes of observing the amount of vaccinations in the given week. I can then apply that data cleaning and analyzing process to each proceeding week to compare results and examine whether there is an increase in vaccination rates within the time of the health literacy program.

##Important Notes I have been downloading this data weekly since Septemember 17th and I will continue doing so until the end of the intervention in Albany.