Data_607_Project_2_Anthony_Arroyo_Untidy_Dataset_Rental

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About the dataset:

This dataset was taken from the following website:

https://catalog.data.gov/dataset/dof-cooperative-comparable-rental-income-queens-fy-2011-2012

DOF: Cooperative Comparable Rental Income – Queens – FY 2011/2012

The Department of Finance (DOF) is required by NY State law to value condominiums or cooperatives as if they were residential rental apartment buildings. DOF uses income information from rental properties similar in physical features and location to the condominiums or cooperatives. DOF applies this income data to the condominium or cooperative and determine its value in the same way DOF values rental apartment buildings. This is update annually.

```
# Upload the libraries.

library(tidyr)
library(tidyverse)
```

What is the Net Value per Rental? Which is the most expensive and which is the cheapest?

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.2 --
## v ggplot2 3.3.6     v dplyr   1.0.9
## v tibble  3.1.8     v stringr 1.4.1
## v readr   2.1.2     v forcats 0.5.2
## v purrr   0.3.4
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(dplyr)
library(ggplot2)
```

```r
# Import the data from github.
# Link is provided to the csv file below:
# https://github.com/enidroman/data_607_data_aquisition_and_management_project/blob/main/Anthony%20Arro

urlfile <- "https://raw.githubusercontent.com/enidroman/data_607_data_aquisition_and_management_project/

comp_rental <- read.csv(urlfile)
comp_rental
```

```
##   COMPARABLE.RENTAL...1...Boro.Block.Lot COMPARABLE.RENTAL...1...Neighborhood
## 1                           4-08276-0658                           DOUGLASTON
## 2                           4-03173-0013                            REGO PARK
## 3                           4-02134-0013                          FOREST HILLS
## 4                           4-01268-0001                       JACKSON HEIGHTS
## 5                           4-05046-0040                        FLUSHING-NORTH
## 6                           4-03155-0027                            REGO PARK
## 7                           4-03329-0054                          KEW GARDENS
## 8                           4-08276-0658                           DOUGLASTON
##   COMPARABLE.RENTAL...1...Total.Units COMPARABLE.RENTAL...1...Year.Built
## 1                                  54                                1977
## 2                                  61                                1949
## 3                                 123                                1963
## 4                                  66                                1951
## 5                                  63                                1959
## 6                                 286                                1959
## 7                                  54                                1924
## 8                                  54                                1977
##   COMPARABLE.RENTAL...1...Gross.SqFt
## 1                              27690
## 2                              70910
## 3                             135400
## 4                              57888
## 5                              58399
## 6                             275197
## 7                              54300
## 8                              27690
##   COMPARABLE.RENTAL...1...Estimated.Gross.Income
## 1                                         390932
## 2                                        1130670
## 3                                        1872338
## 4                                         860870
## 5                                         899224
## 6                                        4668060
## 7                                         814069
## 8                                         390932
##   COMPARABLE.RENTAL...2...Boro.Block.Lot COMPARABLE.RENTAL...2...Neighborhood
## 1                           4-03205-0024                          FOREST HILLS
## 2                           4-02135-0013                          FOREST HILLS
## 3                           4-01279-0001                       JACKSON HEIGHTS
## 4                           4-05046-0006                        FLUSHING-NORTH
## 5                           4-03234-0051                          FOREST HILLS
## 6                           4-03322-0014                           KEW GARDENS
## 7                           4-15555-0001                          FAR ROCKAWAY
```

```
## 8                            4-01268-0001                          JACKSON HEIGHTS
##   COMPARABLE.RENTAL...2...Total.Units COMPARABLE.RENTAL...2...Year.Built
## 1                                  20                                1931
## 2                                 135                                1960
## 3                                  96                                1950
## 4                                  45                                1968
## 5                                 228                                1929
## 6                                  84                                1928
## 7                                 108                                1950
## 8                                  66                                1951
##   COMPARABLE.RENTAL...2...Gross.SqFt
## 1                              24408
## 2                             137700
## 3                              95000
## 4                              41398
## 5                             174480
## 6                              83727
## 7                              87926
## 8                              57888
##   COMPARABLE.RENTAL...2...Estimated.Gross.Income
## 1                                         372944
## 2                                        1889772
## 3                                        1035405
## 4                                         605749
## 5                                        3520549
## 6                                        1220740
## 7                                        1077972
## 8                                         860870
```

DATA CLEANING AND TRANSFORMATION

In observing the dataset I see that:

1. The first 6 columns are Comparable Rental 1 and the 6 columns after are Comparable Rental 2. Seem to have been 2 different datasets joined together. In order to combine the columns I need to delete the extra 6 columns and bring down the obersavations from the those columns to the first 6 columns. To do that I had to create 2 dataframes, one with the Comparable Rental 1 and the second with the Comparable Rental 2.

2. The columns need to be renamed. I then renamed each columns from both data frames. Then I was able to rebind the 2 dataframes and combine the first 6 columns and the second 6 columns.

3. The analysis that Anthony Arroyo wanted to make with this dataframe is to determine the net value of each unit. Need to create and add a column for Estimated Expense and Net Operating Income with observations to perform the analysis.

4. Need to calculate, create, and add a column called Net Value of Rental.

```
# Created a new dataframe witn Comparable Rental 1 only.

comp_rental1 <- select(comp_rental, COMPARABLE.RENTAL...1...Boro.Block.Lot, COMPARABLE.RENTAL...1...Nei

comp_rental1
```

5. Need to check the classification for the observation in each column to make sure that the class is correct. Otherwise need to convert them to the correct class.

```
##   COMPARABLE.RENTAL...1...Boro.Block.Lot COMPARABLE.RENTAL...1...Neighborhood
## 1                          4-08276-0658                           DOUGLASTON
## 2                          4-03173-0013                            REGO PARK
## 3                          4-02134-0013                         FOREST HILLS
## 4                          4-01268-0001                       JACKSON HEIGHTS
## 5                          4-05046-0040                        FLUSHING-NORTH
## 6                          4-03155-0027                            REGO PARK
## 7                          4-03329-0054                          KEW GARDENS
## 8                          4-08276-0658                           DOUGLASTON
##   COMPARABLE.RENTAL...1...Total.Units COMPARABLE.RENTAL...1...Year.Built
## 1                                  54                                1977
## 2                                  61                                1949
## 3                                 123                                1963
## 4                                  66                                1951
## 5                                  63                                1959
## 6                                 286                                1959
## 7                                  54                                1924
## 8                                  54                                1977
##   COMPARABLE.RENTAL...1...Gross.SqFt
## 1                              27690
## 2                              70910
## 3                             135400
## 4                              57888
## 5                              58399
## 6                             275197
## 7                              54300
## 8                              27690
##   COMPARABLE.RENTAL...1...Estimated.Gross.Income
## 1                                         390932
## 2                                        1130670
## 3                                        1872338
## 4                                         860870
## 5                                         899224
## 6                                        4668060
## 7                                         814069
## 8                                         390932
```

```
# Renamed the columns in comp_rental1.

rename_comp_rental1 <- comp_rental1 %>%
  rename(Boro_Block_Lot = COMPARABLE.RENTAL...1...Boro.Block.Lot,
         Neighborhood = COMPARABLE.RENTAL...1...Neighborhood,
         Total_Units = COMPARABLE.RENTAL...1...Total.Units,
```

```
        Year_Built =  COMPARABLE.RENTAL...1...Year.Built,
        Gross_Sq_Ft = COMPARABLE.RENTAL...1...Gross.SqFt,
        Gross_Income =  COMPARABLE.RENTAL...1...Estimated.Gross.Income)

rename_comp_rental1
```

```
##   Boro_Block_Lot    Neighborhood Total_Units Year_Built Gross_Sq_Ft
## 1   4-08276-0658      DOUGLASTON          54       1977       27690
## 2   4-03173-0013       REGO PARK          61       1949       70910
## 3   4-02134-0013    FOREST HILLS         123       1963      135400
## 4   4-01268-0001 JACKSON HEIGHTS          66       1951       57888
## 5   4-05046-0040  FLUSHING-NORTH          63       1959       58399
## 6   4-03155-0027       REGO PARK         286       1959      275197
## 7   4-03329-0054     KEW GARDENS          54       1924       54300
## 8   4-08276-0658      DOUGLASTON          54       1977       27690
##   Gross_Income
## 1       390932
## 2      1130670
## 3      1872338
## 4       860870
## 5       899224
## 6      4668060
## 7       814069
## 8       390932
```

```
# Created a new dataframe witn Comparable Rental 2 only.

comp_rental2 <- select(comp_rental, COMPARABLE.RENTAL...2...Boro.Block.Lot, COMPARABLE.RENTAL...2...Neig

comp_rental2
```

```
##   COMPARABLE.RENTAL...2...Boro.Block.Lot COMPARABLE.RENTAL...2...Neighborhood
## 1                           4-03205-0024                          FOREST HILLS
## 2                           4-02135-0013                          FOREST HILLS
## 3                           4-01279-0001                       JACKSON HEIGHTS
## 4                           4-05046-0006                        FLUSHING-NORTH
## 5                           4-03234-0051                          FOREST HILLS
## 6                           4-03322-0014                           KEW GARDENS
## 7                           4-15555-0001                          FAR ROCKAWAY
## 8                           4-01268-0001                       JACKSON HEIGHTS
##   COMPARABLE.RENTAL...2...Total.Units COMPARABLE.RENTAL...2...Year.Built
## 1                                  20                                1931
## 2                                 135                                1960
## 3                                  96                                1950
## 4                                  45                                1968
## 5                                 228                                1929
## 6                                  84                                1928
## 7                                 108                                1950
## 8                                  66                                1951
##   COMPARABLE.RENTAL...2...Gross.SqFt
## 1                              24408
## 2                             137700
## 3                              95000
```

```
## 4                                41398
## 5                               174480
## 6                                83727
## 7                                87926
## 8                                57888
##   COMPARABLE.RENTAL...2...Estimated.Gross.Income
## 1                                         372944
## 2                                        1889772
## 3                                        1035405
## 4                                         605749
## 5                                        3520549
## 6                                        1220740
## 7                                        1077972
## 8                                         860870
```

```
# Renamed the columns in comp_rental2.

rename_comp_rental2 <- comp_rental2 %>%
  rename(Boro_Block_Lot = COMPARABLE.RENTAL...2...Boro.Block.Lot,
         Neighborhood = COMPARABLE.RENTAL...2...Neighborhood,
         Total_Units = COMPARABLE.RENTAL...2...Total.Units,
         Year_Built =  COMPARABLE.RENTAL...2...Year.Built,
         Gross_Sq_Ft = COMPARABLE.RENTAL...2...Gross.SqFt,
         Gross_Income =  COMPARABLE.RENTAL...2...Estimated.Gross.Income)

rename_comp_rental2
```

```
##   Boro_Block_Lot    Neighborhood Total_Units Year_Built Gross_Sq_Ft
## 1   4-03205-0024    FOREST HILLS          20       1931       24408
## 2   4-02135-0013    FOREST HILLS         135       1960      137700
## 3   4-01279-0001 JACKSON HEIGHTS          96       1950       95000
## 4   4-05046-0006  FLUSHING-NORTH          45       1968       41398
## 5   4-03234-0051    FOREST HILLS         228       1929      174480
## 6   4-03322-0014     KEW GARDENS          84       1928       83727
## 7   4-15555-0001    FAR ROCKAWAY         108       1950       87926
## 8   4-01268-0001 JACKSON HEIGHTS          66       1951       57888
##   Gross_Income
## 1       372944
## 2      1889772
## 3      1035405
## 4       605749
## 5      3520549
## 6      1220740
## 7      1077972
## 8       860870
```

```
# Merged both dataframes to make it into 1 dataframe again.

new_comp_rental <- rbind(rename_comp_rental1, rename_comp_rental2)

new_comp_rental
```

```
##    Boro_Block_Lot    Neighborhood Total_Units Year_Built Gross_Sq_Ft
```

```
## 1    4-08276-0658      DOUGLASTON          54       1977       27690
## 2    4-03173-0013       REGO PARK          61       1949       70910
## 3    4-02134-0013    FOREST HILLS         123       1963      135400
## 4    4-01268-0001 JACKSON HEIGHTS          66       1951       57888
## 5    4-05046-0040  FLUSHING-NORTH          63       1959       58399
## 6    4-03155-0027       REGO PARK         286       1959      275197
## 7    4-03329-0054     KEW GARDENS          54       1924       54300
## 8    4-08276-0658      DOUGLASTON          54       1977       27690
## 9    4-03205-0024    FOREST HILLS          20       1931       24408
## 10   4-02135-0013    FOREST HILLS         135       1960      137700
## 11   4-01279-0001 JACKSON HEIGHTS          96       1950       95000
## 12   4-05046-0006  FLUSHING-NORTH          45       1968       41398
## 13   4-03234-0051    FOREST HILLS         228       1929      174480
## 14   4-03322-0014     KEW GARDENS          84       1928       83727
## 15   4-15555-0001    FAR ROCKAWAY         108       1950       87926
## 16   4-01268-0001 JACKSON HEIGHTS          66       1951       57888
##    Gross_Income
## 1        390932
## 2       1130670
## 3       1872338
## 4        860870
## 5        899224
## 6       4668060
## 7        814069
## 8        390932
## 9        372944
## 10      1889772
## 11      1035405
## 12       605749
## 13      3520549
## 14      1220740
## 15      1077972
## 16       860870
```

ANALYSIS

In order to do the analysis I had to search on the origional dataset, DOF: Cooperative Comparable Rental Income – Queens – FY 2011/2012, for Estimated Expense and Net Operating Income for each Boro Block Lot and create and add a colomn called Estimated Expense and Net Operating Income with the observations to the dataframe.

Please Note: Gross Income - Estimated Expense = Net Operating Income.

```
# Create and add columns with observation called Estimated Expense and Net Operating Income to be able

Estimated_Expense <- c(149526, 452085, 796014, 374654, 352611, 2367993, 357727, 149526, 165174, 1026891

Net_Operating_Income <- c(241406, 678585, 1076324, 486216, 546613, 2300067, 456342, 241406, 207770, 862

new_comp_rental <- cbind(new_comp_rental, Estimated_Expense, Net_Operating_Income)
```

```
new_comp_rental
```

I only had to add the column for Net Operating Income (which was already on the origional dataset) but I wanted you to show how Net Operating Income was calculated.

```
##    Boro_Block_Lot    Neighborhood Total_Units Year_Built Gross_Sq_Ft
## 1    4-08276-0658      DOUGLASTON          54       1977       27690
## 2    4-03173-0013       REGO PARK          61       1949       70910
## 3    4-02134-0013    FOREST HILLS         123       1963      135400
## 4    4-01268-0001 JACKSON HEIGHTS          66       1951       57888
## 5    4-05046-0040  FLUSHING-NORTH          63       1959       58399
## 6    4-03155-0027       REGO PARK         286       1959      275197
## 7    4-03329-0054     KEW GARDENS          54       1924       54300
## 8    4-08276-0658      DOUGLASTON          54       1977       27690
## 9    4-03205-0024    FOREST HILLS          20       1931       24408
## 10   4-02135-0013    FOREST HILLS         135       1960      137700
## 11   4-01279-0001 JACKSON HEIGHTS          96       1950       95000
## 12   4-05046-0006  FLUSHING-NORTH          45       1968       41398
## 13   4-03234-0051    FOREST HILLS         228       1929      174480
## 14   4-03322-0014     KEW GARDENS          84       1928       83727
## 15   4-15555-0001    FAR ROCKAWAY         108       1950       87926
## 16   4-01268-0001 JACKSON HEIGHTS          66       1951       57888
##    Gross_Income Estimated_Expense Net_Operating_Income
## 1        390932            149526               241406
## 2       1130670            452085               678585
## 3       1872338            796014              1076324
## 4        860870            374654               486216
## 5        899224            352611               546613
## 6       4668060           2367993              2300067
## 7        814069            357727               456342
## 8        390932            149526               241406
## 9        372944            165174               207770
## 10      1889772           1026891               862881
## 11      1035405            553582               481823
## 12       605749            266036               339713
## 13      3520549           1461326              2059223
## 14      1220740            647210               573530
## 15      1077972            484086               593886
## 16       860870            374654               486216
```

```
# Calculate the Net Value for each Unit by dividing Net Operating Income and Total Units at the same ti

net_value_comp_rental <- new_comp_rental
net_value_comp_rental$Net_Value_Per_Rental <- Net_Operating_Income / new_comp_rental$Total_Units
net_value_comp_rental
```

Not sure if the calculation is correct to get the Net Value for each Unit by dividing Net Operating Income and Total Units. This formula I got when I googled.

```
##    Boro_Block_Lot    Neighborhood Total_Units Year_Built Gross_Sq_Ft
```

```
## 1    4-08276-0658      DOUGLASTON          54       1977       27690
## 2    4-03173-0013       REGO PARK          61       1949       70910
## 3    4-02134-0013    FOREST HILLS         123       1963      135400
## 4    4-01268-0001 JACKSON HEIGHTS          66       1951       57888
## 5    4-05046-0040  FLUSHING-NORTH          63       1959       58399
## 6    4-03155-0027       REGO PARK         286       1959      275197
## 7    4-03329-0054     KEW GARDENS          54       1924       54300
## 8    4-08276-0658      DOUGLASTON          54       1977       27690
## 9    4-03205-0024    FOREST HILLS          20       1931       24408
## 10   4-02135-0013    FOREST HILLS         135       1960      137700
## 11   4-01279-0001 JACKSON HEIGHTS          96       1950       95000
## 12   4-05046-0006  FLUSHING-NORTH          45       1968       41398
## 13   4-03234-0051    FOREST HILLS         228       1929      174480
## 14   4-03322-0014     KEW GARDENS          84       1928       83727
## 15   4-15555-0001    FAR ROCKAWAY         108       1950       87926
## 16   4-01268-0001 JACKSON HEIGHTS          66       1951       57888
##    Gross_Income Estimated_Expense Net_Operating_Income Net_Value_Per_Rental
## 1        390932            149526               241406             4470.481
## 2       1130670            452085               678585            11124.344
## 3       1872338            796014              1076324             8750.602
## 4        860870            374654               486216             7366.909
## 5        899224            352611               546613             8676.397
## 6       4668060           2367993              2300067             8042.192
## 7        814069            357727               456342             8450.778
## 8        390932            149526               241406             4470.481
## 9        372944            165174               207770            10388.500
## 10      1889772           1026891               862881             6391.711
## 11      1035405            553582               481823             5018.990
## 12       605749            266036               339713             7549.178
## 13      3520549           1461326              2059223             9031.680
## 14      1220740            647210               573530             6827.738
## 15      1077972            484086               593886             5498.944
## 16       860870            374654               486216             7366.909
```

```
# Verified the class for each column.

as.data.frame(sapply(net_value_comp_rental, class))
```

```
##                     sapply(net_value_comp_rental, class)
## Boro_Block_Lot                                character
## Neighborhood                                  character
## Total_Units                                     integer
## Year_Built                                      integer
## Gross_Sq_Ft                                     integer
## Gross_Income                                    integer
## Estimated_Expense                               numeric
## Net_Operating_Income                            numeric
## Net_Value_Per_Rental                            numeric
```

```
# Summary of each column.

summary(net_value_comp_rental)
```

I see the dataframe is 16 rows in length. Boro Block Lot, Neighborhood is class as characters. The Total Units Min is 20.00, 1st Quarter is 54.00, Median 66.00, Mean is 96.44, 3rd Quarter is 111.75, the Max is 286.00. The Year Built Min is 1924, 1st Quarter is 1944, Median 1951, Mean is 1952, 3rd Quarter is 1961, the Max is 1977. The Gross Sq Ft Min is 24408, 1st Quarter is 51075, Median 64655, Mean is 88125, 3rd Quarter is 105100, the Max is 275197. The Gross Income Min is 372944, 1st Quarter is 761989, Median 967314, Mean is 1350694, 3rd Quarter is 1383640, the Max is 4668060. The Gross Income Min is 372944, 1st Quarter is Min 761989, Median 967314, Mean is 1350694, 3rd Quarter is 1383640, the Max is 4668060. The Estimated Expense Min is 149526, 1st Quarter is 330967, Median 413370, Mean is 623693, 3rd Quarter is 684411, the Max is 2367993. The Operating Income Min is 207770, 1st Quarter is 427185, Median 5164150, Mean is 727000, 3rd Quarter is 724659, the Max is 2300067. The Net Value Per Rental Min is 4470, 1st Quarter is 66169, Median 7458, Mean is 7464, 3rd Quarter is 8695, the Max is 11124.

```
##  Boro_Block_Lot     Neighborhood        Total_Units       Year_Built
##  Length:16          Length:16          Min.   : 20.00   Min.   :1924
##  Class :character   Class :character   1st Qu.: 54.00   1st Qu.:1944
##  Mode  :character   Mode  :character   Median : 66.00   Median :1951
##                                        Mean   : 96.44   Mean   :1952
##                                        3rd Qu.:111.75   3rd Qu.:1961
##                                        Max.   :286.00   Max.   :1977
##   Gross_Sq_Ft      Gross_Income     Estimated_Expense Net_Operating_Income
##  Min.   : 24408   Min.   : 372944   Min.   : 149526   Min.   : 207770
##  1st Qu.: 51075   1st Qu.: 761989   1st Qu.: 330967   1st Qu.: 427185
##  Median : 64655   Median : 967314   Median : 413370   Median : 516415
##  Mean   : 88125   Mean   :1350694   Mean   : 623693   Mean   : 727000
##  3rd Qu.:105100   3rd Qu.:1383640   3rd Qu.: 684411   3rd Qu.: 724659
##  Max.   :275197   Max.   :4668060   Max.   :2367993   Max.   :2300067
##  Net_Value_Per_Rental
##  Min.   : 4470
##  1st Qu.: 6169
##  Median : 7458
##  Mean   : 7464
##  3rd Qu.: 8695
##  Max.   :11124
```

```
# Created a dataframe with just Boro Block Lot, Neighborhood, Net Value Per Rentsl.

analysis <- net_value_comp_rental
select(net_value_comp_rental, Boro_Block_Lot, Neighborhood, Total_Units, Net_Operating_Income, Net_Valu
```

```
##    Boro_Block_Lot    Neighborhood Total_Units Net_Operating_Income
## 1    4-08276-0658      DOUGLASTON          54               241406
## 2    4-03173-0013       REGO PARK          61               678585
## 3    4-02134-0013    FOREST HILLS         123              1076324
## 4    4-01268-0001 JACKSON HEIGHTS          66               486216
## 5    4-05046-0040  FLUSHING-NORTH          63               546613
## 6    4-03155-0027       REGO PARK         286              2300067
## 7    4-03329-0054     KEW GARDENS          54               456342
## 8    4-08276-0658      DOUGLASTON          54               241406
## 9    4-03205-0024    FOREST HILLS          20               207770
```

```
## 10   4-02135-0013    FOREST HILLS         135               862881
## 11   4-01279-0001 JACKSON HEIGHTS          96               481823
## 12   4-05046-0006  FLUSHING-NORTH          45               339713
## 13   4-03234-0051    FOREST HILLS         228              2059223
## 14   4-03322-0014     KEW GARDENS          84               573530
## 15   4-15555-0001    FAR ROCKAWAY         108               593886
## 16   4-01268-0001 JACKSON HEIGHTS          66               486216
##    Net_Value_Per_Rental
## 1             4470.481
## 2            11124.344
## 3             8750.602
## 4             7366.909
## 5             8676.397
## 6             8042.192
## 7             8450.778
## 8             4470.481
## 9            10388.500
## 10            6391.711
## 11            5018.990
## 12            7549.178
## 13            9031.680
## 14            6827.738
## 15            5498.944
## 16            7366.909
```

```
# Convert Net Operating Income and Net Value Per Rental to integer from double.

numbers <- analysis
numbers$Net_Operating_Income <- as.integer(numbers$Net_Operating_Income)      # First column is a doubl
numbers$Net_Value_Per_Rental <- as.integer(numbers$Net_Value_Per_Rental)      # Second column is a doub

sapply(numbers, class)
```

Thought if I convert the Net Operating Income from double to interger the graph would fix but did not succeed. Line graph did not work at all for me no lines and doing the conversion from double to interger did not work either.

```
##       Boro_Block_Lot         Neighborhood          Total_Units
##          "character"          "character"            "integer"
##           Year_Built          Gross_Sq_Ft         Gross_Income
##            "integer"            "integer"            "integer"
##    Estimated_Expense Net_Operating_Income Net_Value_Per_Rental
##            "numeric"            "integer"            "integer"
```

Please note for some reason my bar graph and scatter plot is only plotting 14 observations instead of 16.

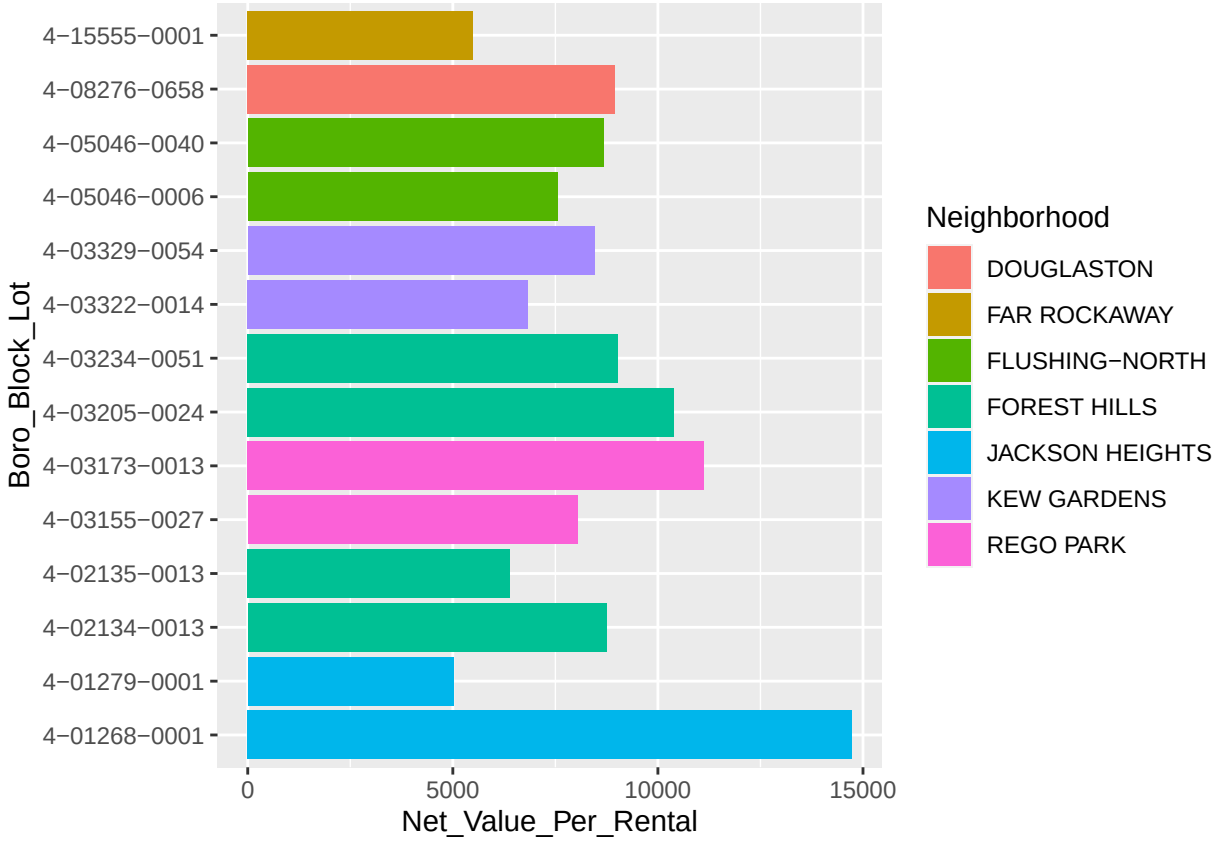
Not sure if the calculation are correct the Net Value for each Unit by dividing Net Operating Income and Total Units .

```
# Bar gaph showing Net Value per Boro Block Lot by Neighborhood.

#ggplot(numbers, aes(x = Net_Value_Per_Rental, y = Boro_Block_Lot, colour = Neighborhood)) +
  #geom_line()

ggplot(numbers, aes(x = Net_Value_Per_Rental, y = Boro_Block_Lot, fill = Neighborhood)) +
  geom_col()
```

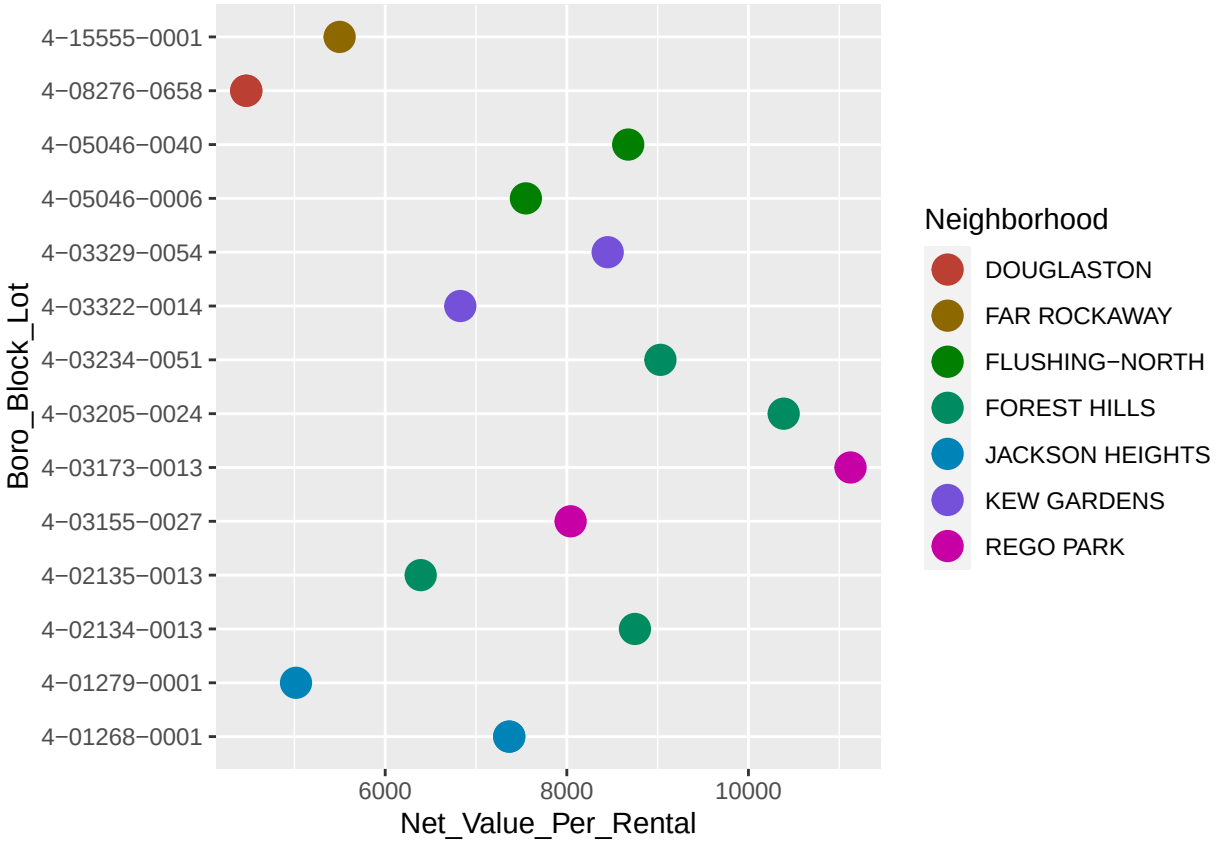
As per the below graphs Bar Block Lot in Jackson Heights is has more expensive Net Value Per Rent at close to 15000. The lowest Net Value Per Rent is Bar Block Lot in Jackson Heights also at close to 5000. Looking at the numbers from the above dataframe Bar Block Lot in Rego Park has the most expensive Net Value Per Rent at 11124.344 and the lowest is Douglaston at 4470.481.




```
ggplot(numbers, aes(x = Net_Value_Per_Rental, y = Boro_Block_Lot, colour = Neighborhood)) +
  geom_point(size = 5) +

  scale_shape_manual(values = c(1,2,3,4,5,6,7)) +

  scale_colour_hue(l = 45)
```



CONCLUSION

As I stated before as per above graphs Bar Block Lot in Jackson Heights is the most expensive Net Value Per Rent at close to 15000. The lowest Net Value Per Rent is Bar Block Lot in Jackson Heights also at close to 5000. Looking at the numbers from the above dataframe Bar Block Lot in Rego Park has the most expensive Net Value Per Rent at 11124.344 and the lowest is Douglaston at 4470.481. As per the numbers this is all do to the Net Operating Income that is taken to account to maintain the buildings. Further investigation is need to find out the real cause of the high and low Net Value Per Rent.