Realtor.com Web Scraping & A Simple Linear Model For Sale Price Prediction

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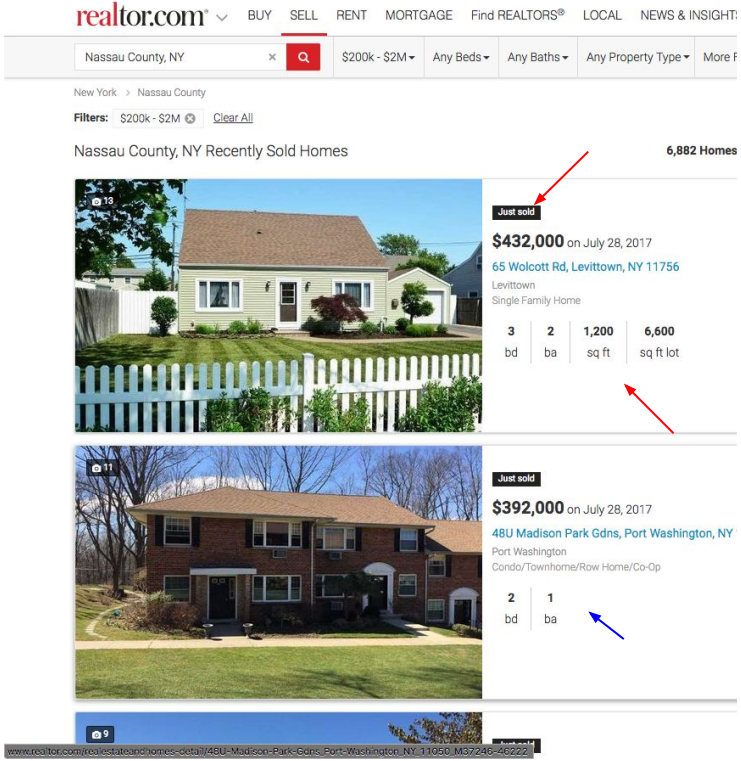
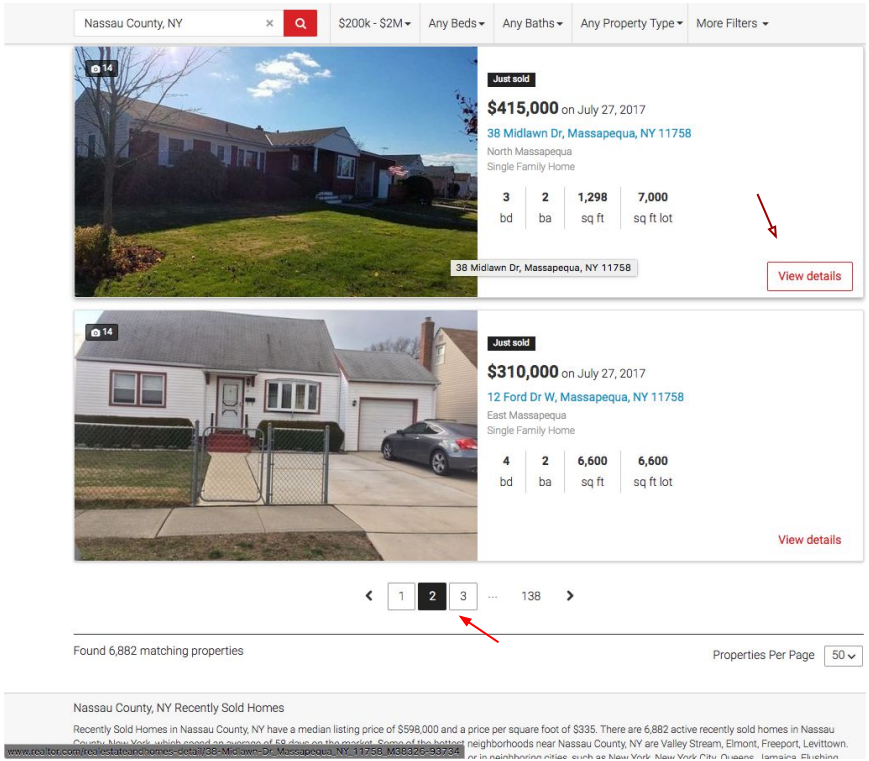
Introduction & Motivation

1. Real estate play big role in economy
    a. Residential real estate
    b. Commercial real estate
2. Real estate has huge impact on employment, income and consumer spending
3. Real estate provides basic needs and tools for investment
4. A good model with high accuracy on sale price prediction has great value to guide such investment, both short term and long term.
5. Where, When and How Much?

Web Scraping on Realtor using Scrapy, ~ 28,000 properties

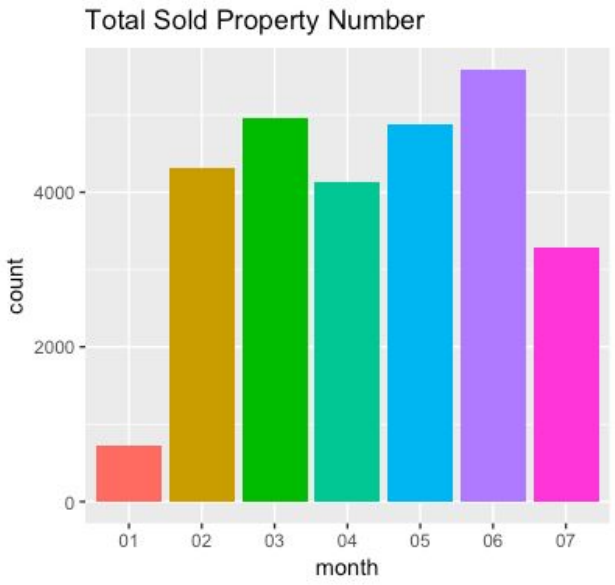


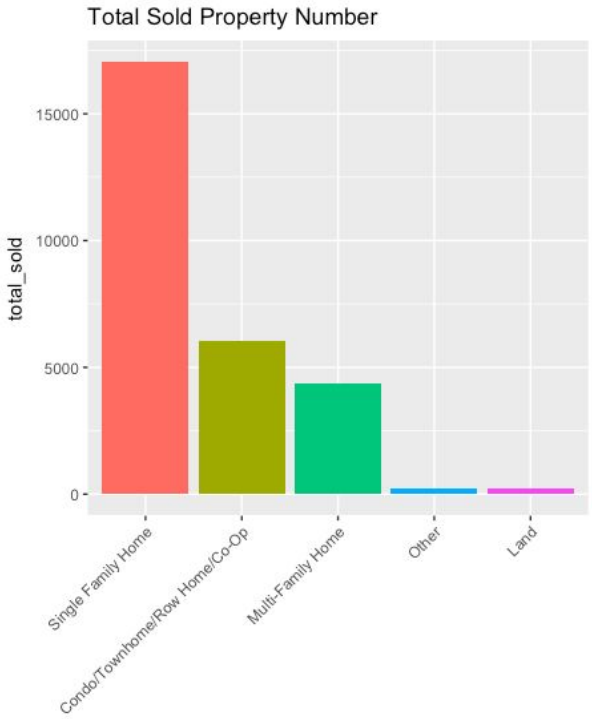


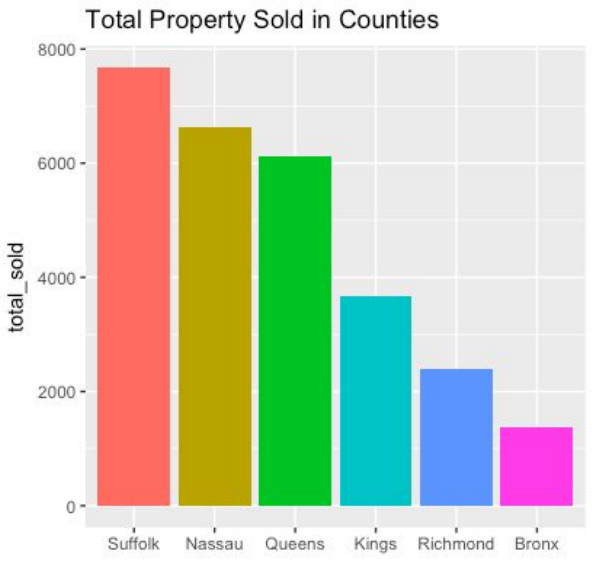
Dataset & Geographical info

- Six counties in New York City and Long Island Area
- Key features:
  - Number of Bedroom
  - Number of Bathroom
  - Total floor size
  - Lot size
  - City
  - County
  - Zip code

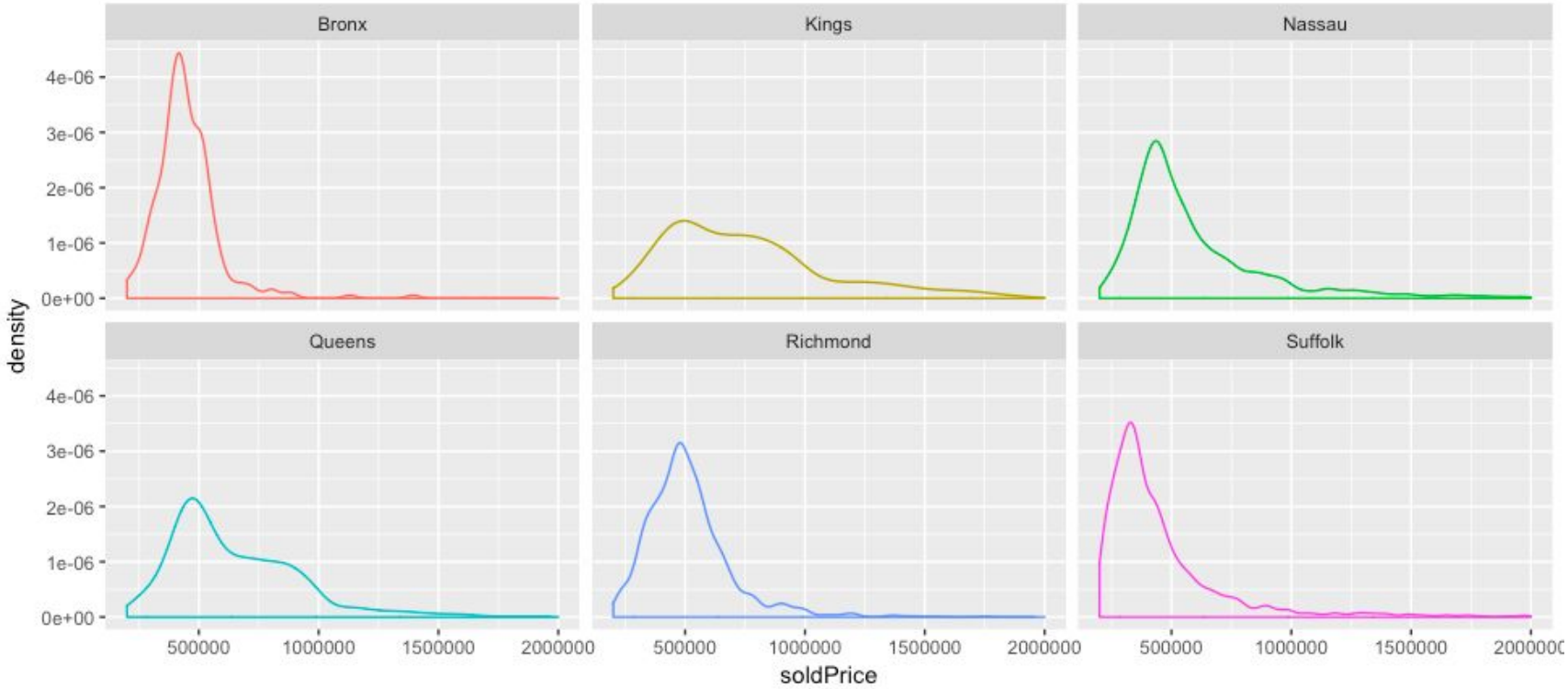
Basic EDA: Total Number of Sold Property 2017.1 ~ 2017.7



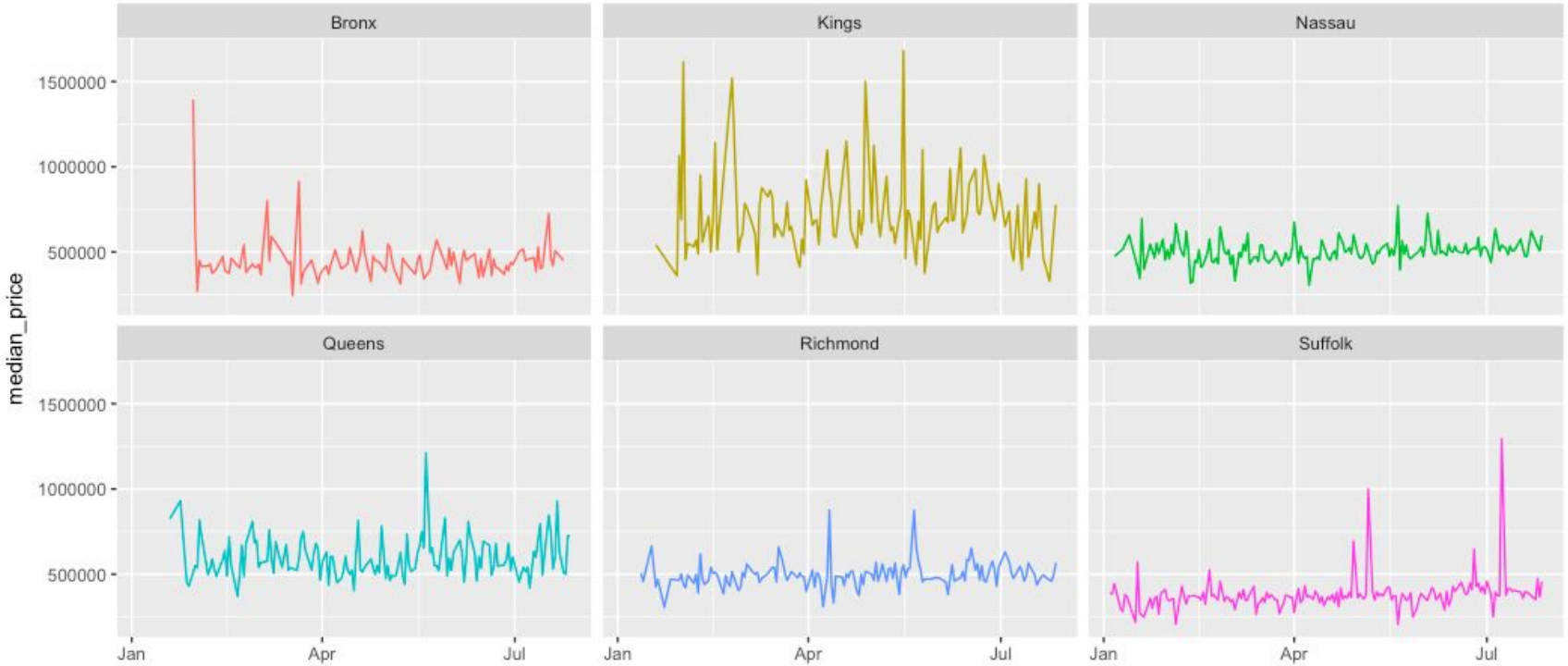




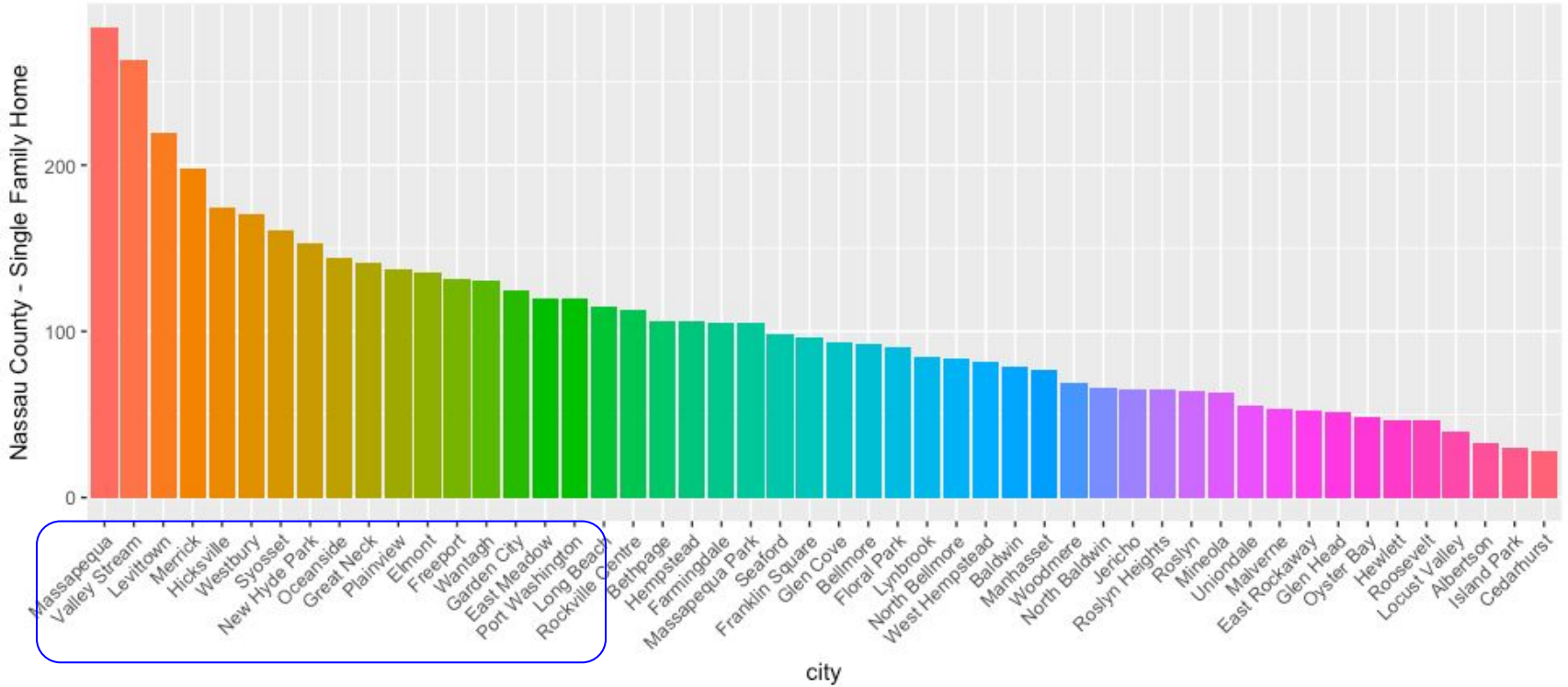
Basic EDA: Distribution of SFH Median Sale Price



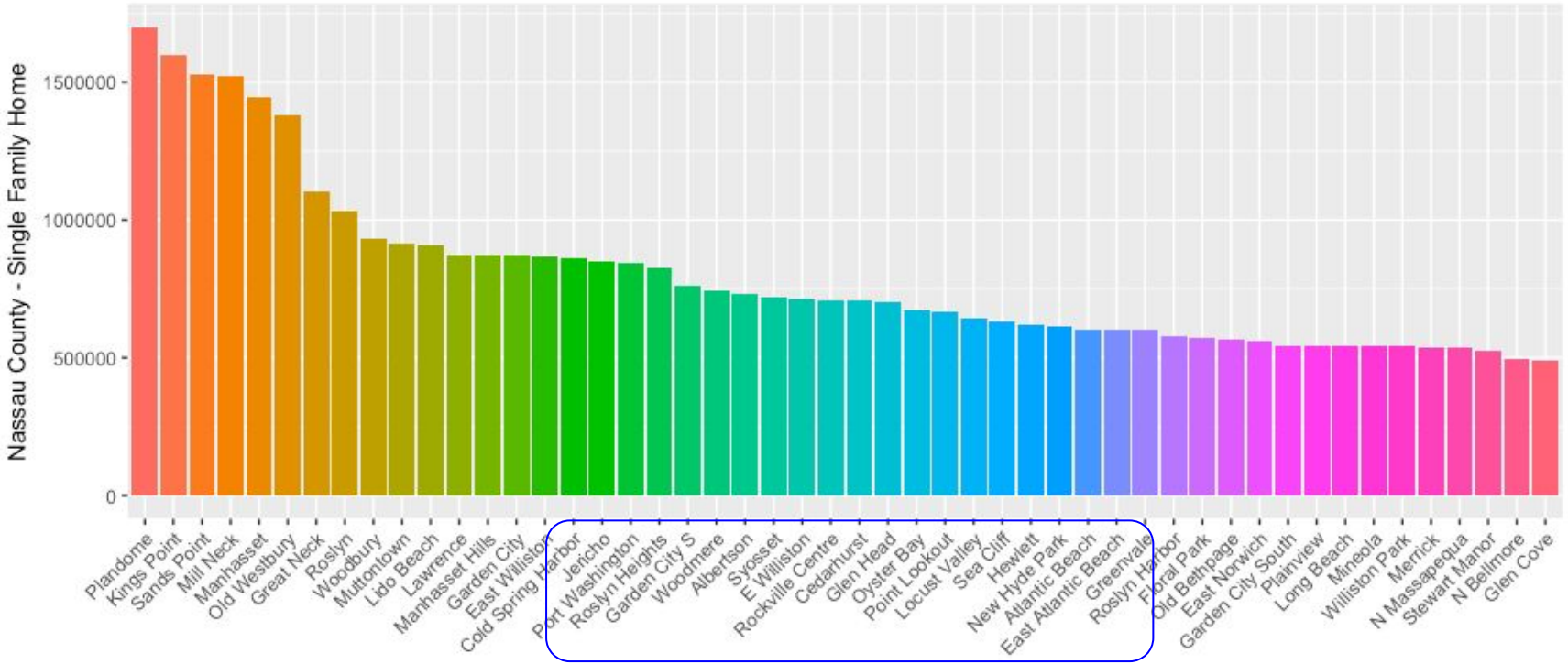
Visualization: Volatility of SFH Median Sale Price



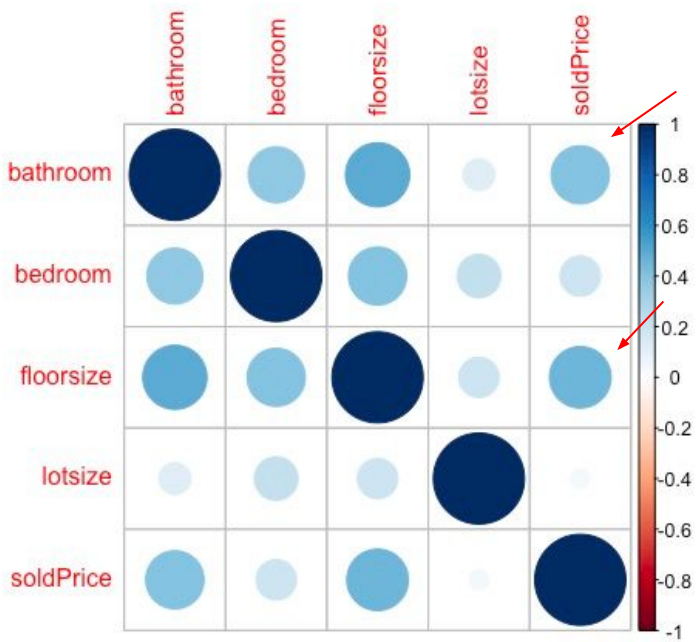
Basic EDA: Sold SFH Number Ranking in Nassau

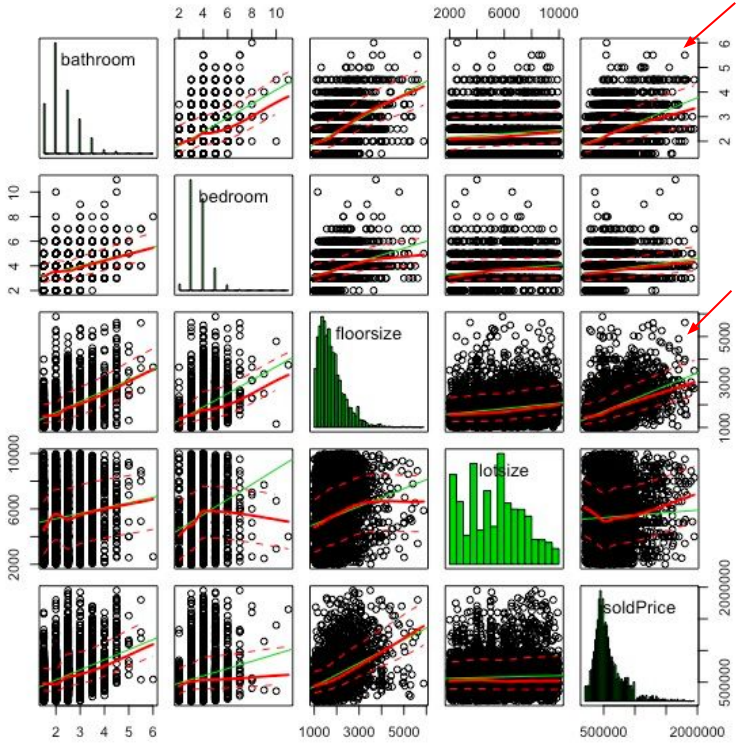


Basic EDA: SFH Median Price Ranking in Nassau

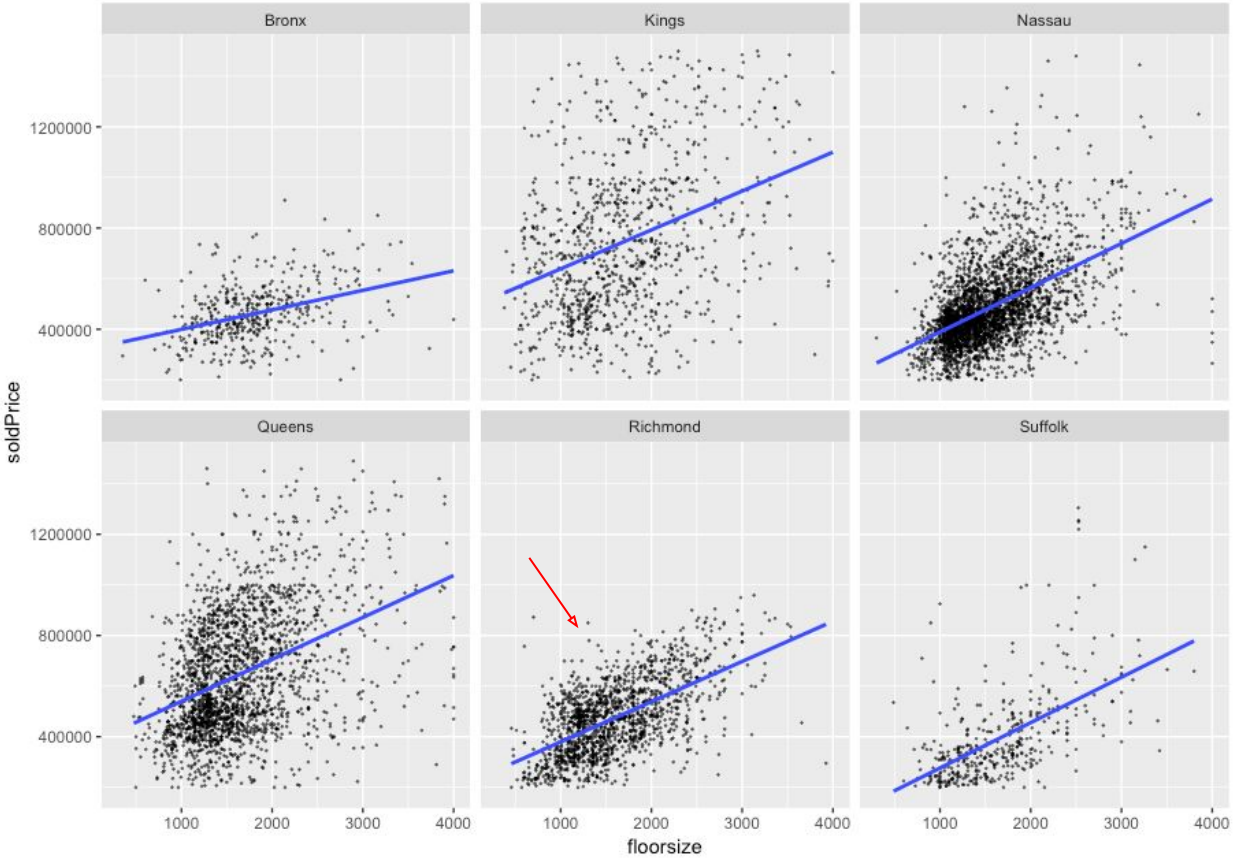


Correlation Matrix

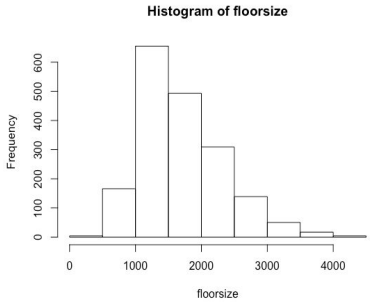


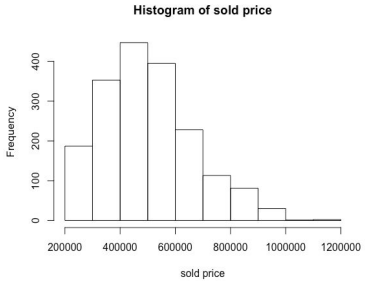


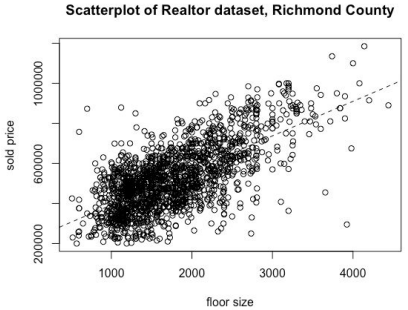
Scatter Plot: floor size ~ sold price



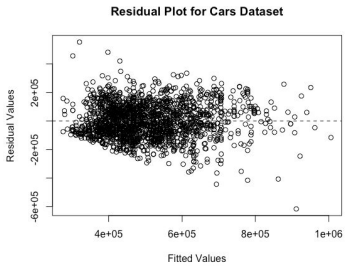
A Simple Linear Regression Model (Richmond County)

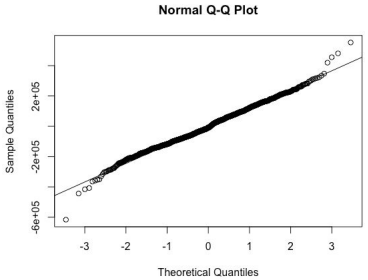


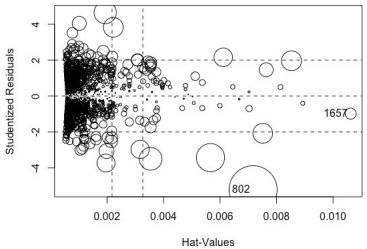




Y = 173 * X + 192000





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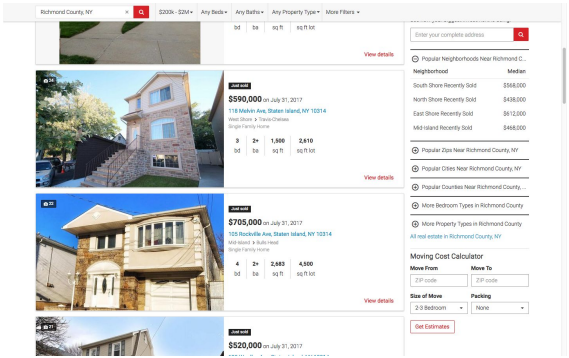
Call:
lm(formula = soldPrice ~ floorsize, data = df2)

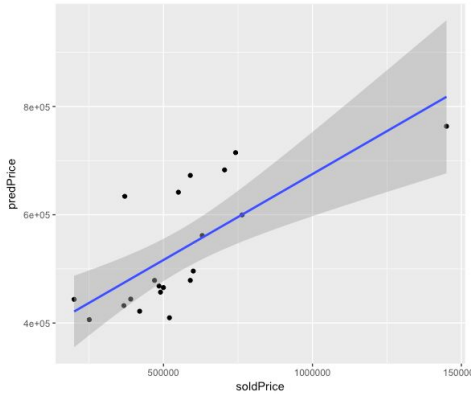
Residuals:
    Min      1Q  Median      3Q     Max
-616611  -83303   -8800   81689  552702

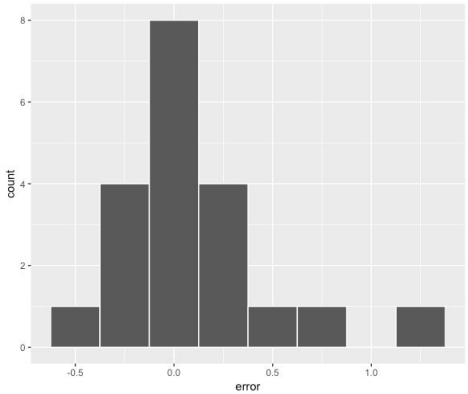
Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept) 1.919e+05  8.038e+03   23.88   <2e-16 ***
floorsize   1.834e+02  4.401e+00   41.67   <2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 119600 on 1835 degrees of freedom
Multiple R-squared:  0.4862,                    Adjusted R-squared:
0.4859
F-statistic:  1736 on 1 and 1835 DF,  p-value: < 2.2e-16
```

Model validation & Conclusion







- Most recent property closing data from last three days (7.28 -7.31), 20 sold properties
- Floor size has significant impact to the sale price
- Need more data to build multiple linear regression model
- Need more time to search better deal

Shiny App, coming soon