

# STA 160 Midterm Project

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4/28/2021

```
library(tidyverse)
```

```
## -- Attaching packages ----- tidyverse 1.3.1 --
```

```
## v ggplot2 3.3.3    v purrr  0.3.4
## v tibble  3.1.0    v dplyr  1.0.5
## v tidyr   1.1.3    v stringr 1.4.0
## v readr   1.4.0    v forcats 0.5.1
```

```
## -- Conflicts ----- tidyverse_conflicts() --
```

```
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(knitr)
```

```
# read in dataset
```

```
data <- read_csv("~/Desktop/Airbnb_NYC_2019.csv", col_types = cols(host_id = col_character(), id = col_
```

## Map of top 100 most expensive Airbnb listings in NYC

```
library(ggmap)
```

```
## Google's Terms of Service: https://cloud.google.com/maps-platform/terms/.
```

```
## Please cite ggmap if you use it! See citation("ggmap") for details.
```

```
# getting top 100 listings by price
```

```
top_data <- data %>% top_n(n = 100, wt = price)
```

```
# get background map
```

```
top_height <- max(top_data$latitude) - min(top_data$latitude)
top_width <- max(top_data$longitude) - min(top_data$longitude)
top_borders <- c(bottom = min(top_data$latitude) - 0.1 * top_height,
                 top    = max(top_data$latitude) + 0.1 * top_height,
                 left   = min(top_data$longitude) - 0.1 * top_width,
                 right  = max(top_data$longitude) + 0.1 * top_width)
```

```
top_map <- get_stamenmap(top_borders, zoom = 12, maptype = "toner-lite")
```

## 42 tiles needed, this may take a while (try a smaller zoom).

## Source : <http://tile.stamen.com/toner-lite/12/1204/1536.png>

## Source : <http://tile.stamen.com/toner-lite/12/1205/1536.png>

## Source : <http://tile.stamen.com/toner-lite/12/1206/1536.png>

## Source : <http://tile.stamen.com/toner-lite/12/1207/1536.png>

## Source : <http://tile.stamen.com/toner-lite/12/1208/1536.png>

## Source : <http://tile.stamen.com/toner-lite/12/1209/1536.png>

## Source : <http://tile.stamen.com/toner-lite/12/1204/1537.png>

## Source : <http://tile.stamen.com/toner-lite/12/1205/1537.png>

## Source : <http://tile.stamen.com/toner-lite/12/1206/1537.png>

## Source : <http://tile.stamen.com/toner-lite/12/1207/1537.png>

## Source : <http://tile.stamen.com/toner-lite/12/1208/1537.png>

## Source : <http://tile.stamen.com/toner-lite/12/1209/1537.png>

## Source : <http://tile.stamen.com/toner-lite/12/1204/1538.png>

## Source : <http://tile.stamen.com/toner-lite/12/1205/1538.png>

## Source : <http://tile.stamen.com/toner-lite/12/1206/1538.png>

## Source : <http://tile.stamen.com/toner-lite/12/1207/1538.png>

## Source : <http://tile.stamen.com/toner-lite/12/1208/1538.png>

## Source : <http://tile.stamen.com/toner-lite/12/1209/1538.png>

## Source : <http://tile.stamen.com/toner-lite/12/1204/1539.png>

## Source : <http://tile.stamen.com/toner-lite/12/1205/1539.png>

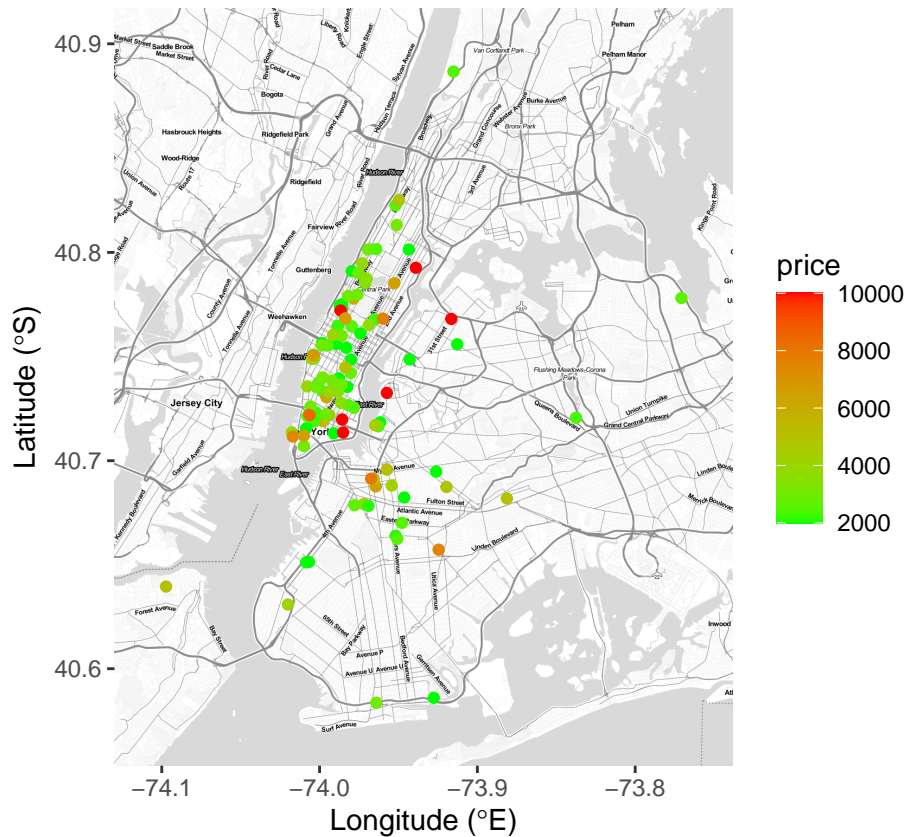
## Source : <http://tile.stamen.com/toner-lite/12/1206/1539.png>

## Source : <http://tile.stamen.com/toner-lite/12/1207/1539.png>

## Source : <http://tile.stamen.com/toner-lite/12/1208/1539.png>

```
## Source : http://tile.stamen.com/toner-lite/12/1209/1539.png
## Source : http://tile.stamen.com/toner-lite/12/1204/1540.png
## Source : http://tile.stamen.com/toner-lite/12/1205/1540.png
## Source : http://tile.stamen.com/toner-lite/12/1206/1540.png
## Source : http://tile.stamen.com/toner-lite/12/1207/1540.png
## Source : http://tile.stamen.com/toner-lite/12/1208/1540.png
## Source : http://tile.stamen.com/toner-lite/12/1209/1540.png
## Source : http://tile.stamen.com/toner-lite/12/1204/1541.png
## Source : http://tile.stamen.com/toner-lite/12/1205/1541.png
## Source : http://tile.stamen.com/toner-lite/12/1206/1541.png
## Source : http://tile.stamen.com/toner-lite/12/1207/1541.png
## Source : http://tile.stamen.com/toner-lite/12/1208/1541.png
## Source : http://tile.stamen.com/toner-lite/12/1209/1541.png
## Source : http://tile.stamen.com/toner-lite/12/1204/1542.png
## Source : http://tile.stamen.com/toner-lite/12/1205/1542.png
## Source : http://tile.stamen.com/toner-lite/12/1206/1542.png
## Source : http://tile.stamen.com/toner-lite/12/1207/1542.png
## Source : http://tile.stamen.com/toner-lite/12/1208/1542.png
## Source : http://tile.stamen.com/toner-lite/12/1209/1542.png
```

```
# map of top 100 most expensive listings
ggmap(top_map) +
  geom_point(data = top_data, mapping = aes(x = longitude, y = latitude,
                                             col = price)) +
  scale_color_gradient(low = "green", high = "red") +
  xlab(expression(paste("Longitude (", degree,"E)"))) +
  ylab(expression(paste("Latitude (", degree,"S)")))
```



Most of the expensive listings (Red being more expensive and green being relatively less) are along the East River.

## Code Appendix

```
knitr::opts_chunk$set(echo = TRUE)
library(tidyverse)
library(knitr)

# read in dataset
data <- read_csv("~/Desktop/Airbnb_NYC_2019.csv", col_types = cols(host_id = col_character(), id = col_character(), price = col_double(), latitude = col_double(), longitude = col_double()))
library(ggmap)

# getting top 100 listings by price
top_data <- data %>% top_n(n = 100, wt = price)

# get background map
top_height <- max(top_data$latitude) - min(top_data$latitude)
top_width <- max(top_data$longitude) - min(top_data$longitude)
top_borders <- c(bottom = min(top_data$latitude) - 0.1 * top_height,
                 top = max(top_data$latitude) + 0.1 * top_height,
                 left = min(top_data$longitude) - 0.1 * top_width,
                 right = max(top_data$longitude) + 0.1 * top_width)

top_map <- get_stamenmap(top_borders, zoom = 12, maptype = "toner-lite")

# map of top 100 most expensive listings
```

```
ggmap(top_map) +  
  geom_point(data = top_data, mapping = aes(x = longitude, y = latitude,  
                                             col = price)) +  
  scale_color_gradient(low = "green", high = "red") +  
  xlab(expression(paste("Longitude (", degree,"E)"))) +  
  ylab(expression(paste("Latitude (", degree,"S)")))
```