Which Street in Boston Generated the Most Money in Parking Tickets in February and March of 2015?

An Exploration of Boston, MA Smart City Data

Rhonald Reside

Saint Peter's University

Data Science Institute

RReside@saintpeters.edu

Abstract

This study will explore Boston Massachusetts parking ticket data set downloaded from their smart city data. I would use Tableau, R Programming language, and Google maps as my tools. I have about three objectives from the study. First I would like to create a list of the top five locations that generated income for the city of Boston. I would include in the list the general street address of the ticket, total amount that was generated and total number of tickets issued for that specific address. My second objective is create a heat map of location of where tickets were issued. My final objective is to describe and pin point the exact location that generated the most income for the city of Boston in the months of February and March in the year of 2015.

Introduction

In February and March of 2015, the City of Boston issued 17,641 parking tickets. This generated $ 740,000.00 for the two months alone. It would be interesting to see which streets were most regulated by parking enforcements in theses months. We can hope to determine what is the main reason for such enforcement. And finally see how much this location generated in income for the city of Boston during these two months. The research was inspired by a podcast by Enrico Bertini and Moritz Stefaner. They interviewed a data scientist named Ben Wellington, who did a similar work on New York City's smart city data.

This study can help parking enforcement establish clearer signs that would help drivers from receiving parking tickets. They can also use this study to increase enforcement of certain areas that otherwise was probably missed. Also on the other end of the spectrum, drivers can use this study as a warning of where to park and use caution where here is high enforcement of parking regulation. I think one to note is that the parking tickets data is during the months of February and March in 2015. Drivers and parking enforcers behave differently in the cold months vs the warm months

Main Objectives

I am interested in locating which street was issuing the most parking tickets and therefore generating the most money. I used various tools to get to my conclusion which include R Programming, Tableau, and Google maps.

1. List the streets that generated the most income for the city of Boston in February and March 2015. It would include the street address, total amount and total violations.

2. Use the geographic data to create a heat map of the locations where a parking violation was issued.

3. Locate the top address where the most parking ticket were issued and try to see why so many violations were issued.

Tools and Methods

The parking data was downloaded from the City of Boston's smart city data. The data contained six variables: Latitude, Longitude, Accuracy Score, Accuracy Type, Street, City, State, County, Zip, County, Violation, and Fine amount. I used MS Excel and R programming to clean and structure the data into a usable format for Tableau. There were some missing geographic coordinates that need to be researched so that it can be plotted in Tableau. I then used R Programming to find the top five locations where parking violations were issued. Then with the top location, I used Google maps to get a picture of the location. I also used Google maps to look for blocked street signs or reasons for the violations. Finally, I used Tableau to use the geographic codes to create a heat map of all the parking violations that was issued to the city of Boston in the months of February and March.

For this study there were a few variable that was not needed. I did not need Accuracy Score, Accuracy Type, and County. These three variable not included in any of the information that was created. As I expected, there was a decent amount of clean up when regarding the geographic coordinates. I spent a descent amount of time transcribing a street address into a latitude and longitude. I used Google maps to fill in the geographic codes . This was an important step so that I built an accurate heat map in Tableau.

Results

As we see in Figure 1, the heat map that was created on Tableau represented the city of Boston. The more concentrated the red spots are on the map, the more tickets were issued for that exact geographic code. As we can see, there is high concentration of parking violation along the street of Hanover Street, zip code 02109. Just by looking at Google maps for this location, it looks like a shopping districts which includes, eateries, bars, and shops.
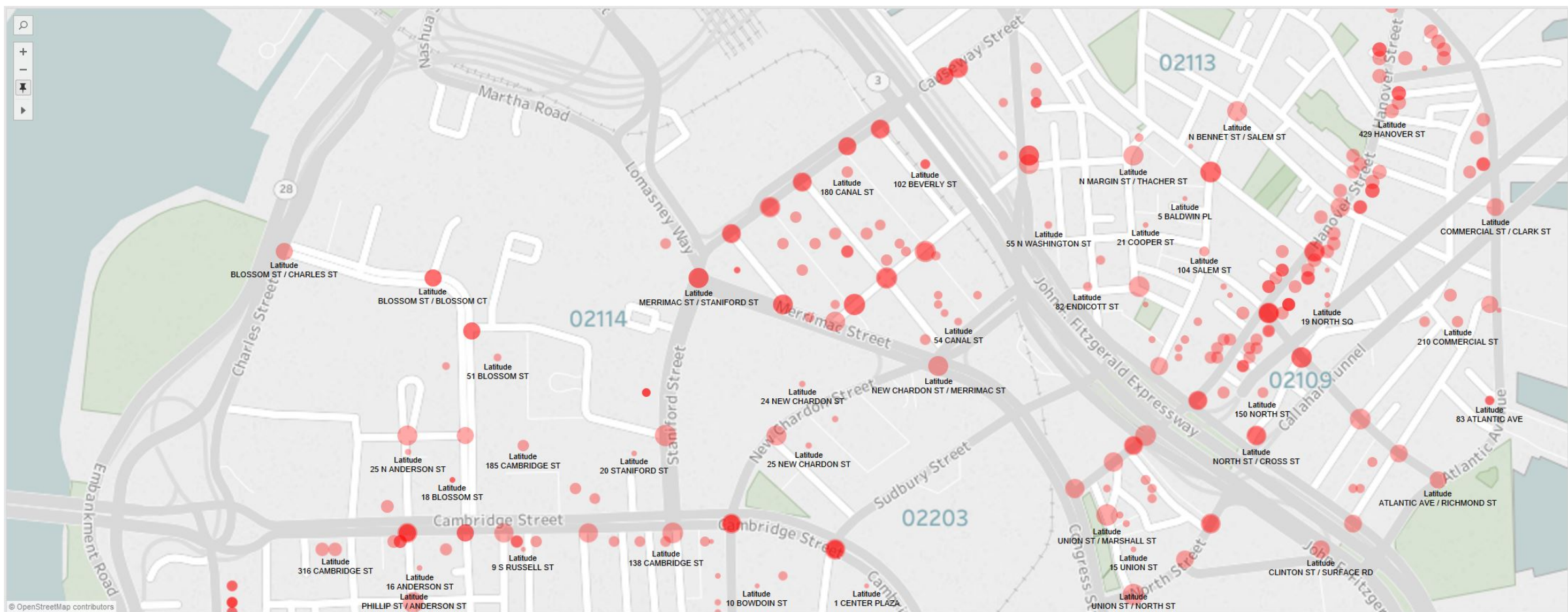

Figure 1: Figure caption

In table 1, I created a list with the top 5 locations that had the most parking violation , their total amount generated, and their closest street address that was given. The amounts range from $ 3,440.00 to $ 2,050.00. At the bottom of the list was Federal St / High ST. These five locations generated about $ 14,575.00 alone for the city of Boston in the month of February and March.

Location	Total Amount	Issued Tickets
107 MERRIMAC ST	$ 3,440.00	61
15 UNION ST	$ 3,250.00	33
AT PUBLIC LOT / W BROADWAY	$ 3,060.00	81
25 NEW CHARDON ST	$ 2,775.00	45
FEDERAL ST / HIGH ST	$ 2,050.00	49

Table 1: Table of Top 5 Locations of the Most Amount

Toping our list of the most generated income for the city of Boston was 107 Merrimac Street. This location generated $ 3,440.00 with a total of 61 tickets. I used Google Maps to get a better picture of the location. It looks like a hotel called the Boxer. When you zoom in to the location, it looks like a "No Parking" in front of the hotel. This location was the busiest because it brought in about 61 tickets. If you were to break this down, it would roughly be 1 parking ticket per day.

Figure 2: 107 MERRIMAC ST. The Boxer Hotel

Conclusions

- 107 Merrimac Street produced the most money for the City of Boston in parking tickets in February and March of 2015.

- Top five location produced a total of $ 14,575.00 and a total of 269 tickets

- Hanover Street in the City of Boston had the highest concentration of tickets for the month of February and March 2015

- 17,641 tickets were issued of these two months

- A total of $740,480.00 was generated in these two months.

References

[1] Enrico Bertini and Moritz Stefaner. 66: I quant ny finding surprising stories in nyc open data with ben wellington, January 2016.

[2] data.cityofboston.gov. City of boston.gov : Parking tickets issued 2/23/2015 - 3/1/2015, February 2015.