Battle at the Bars

Kristopher Knight

1. Introduction

In the city of New Orleans there are hundreds of places to eat, dance, listen to music, and enjoy the wonderful cultural arts this city has to offer. Nothing in the world is quite like it and nothing compares to the wild night life you can experience in the bars of this city. There is a plethora of diversity and unique bars in this city, not just bourbon street. Unfortunately, New Orleans is also home to some very unsavory characters and a lagniappe of crime. In this report I hope to use data science to find the best and safest bars New Orleans has to offer and where to go or stay away from.

2. Data

I plan to use the Foursquare API to locate the bars of New Orleans and join that with the 2019 "Calls for service" database as provided by Orleans Parish Communication District (OPCD), the administrative office of 9-1-1 for the City of New Orleans. The data contained in Foursquare API should provide the name, location, and their likes. The OPCD call data contains the location of incidents and the types of incidents.

The OPCD data was obtained from the https://data.nola.gov/Public-Safety-and-Preparedness/Calls-for-Service-2019 website and did not contain any identifiable information or any juvenile information. Also, this data did not contain any coordinate information concerning sexual related crimes to protect the privacy of victims. As the OPCD specifically states, "attempts to derive specific addresses are strictly prohibited", for the purposes of this exercise, all visualizations and data should be considered approximate. Also, all addresses have been excluded from all data processing. This is also explained later in this report.

The data contained over 460,000 samples from the year 2019. To clean the data there were 147 different types of calls identifying the type of crime committed. As I'm not interested in the traffic citations, traffic incidents, routine checks, and other various incidents, including some maritime incidents, this information was removed from the dataset. I also removed all data that was missing or incomplete.

3. Methodology

First, I created a method of obfuscating sensitive information by storing my client id and secret in a separate file and calling that file in to its own data frame. I then tested the using the search, explore, and likes endpoint to ensure my URL strings for RESTful API calls worked as expected.

However, upon further investigation I found the number of bars the Foursquare API returned per call was limited to 50. To work around this, I used a web scrape from Wikipedia to find the geographical location for all the neighborhoods of New Orleans. I then iterate through these neighborhoods leveraging the location data several times calling the RESTful API of Foursquare. Each iteration I gradually increase the radius to cast a wider net by overlapping each surrounding neighborhood. The result was a data frame

consisting of over 6000 rows. After removing the duplicates, I was left with the unique id and location data for 576 unique bars and plotted the results in Figure 2. I also iterated through all 576 bars calling the RESTful API endpoint "likes" for each bar obtaining the number of likes for each and join this to the data frame.

Then came the task to pre-process and clean the data for the OPCD "calls for service" CSV. Here is where I created another data frame selecting only the incident text and latitude and longitude for each service call. I then drop all incomplete and missing data. Then I formatted the data to make it usable and leveraged an array to filter incident types that are not of concern for this project.

In order to join the tables of local bars to the location data I had to reduce the precision of the location data for both data frames to 4 decimal places. This brought the precision of the data to 11.132m, approximately 36 feet. This allowed me to join the tables using the latitude and longitude, specifically using a left join.

Now that I had a data frame containing both the OPCD and bar data. I leveraged one hot encoding, group by, and sort to count the number of calls that were made to each bar and the likes. This also allows the results for most common reasons for each call to a bar.

4. Results

The resulting information allows me to show the most liked and the most 911 calls for service for each bar in New Orleans. It also allows me to do a statistical correlation analysis to see if the number of 911 calls is somehow related to the number of likes a bar receives.

We can see from Figure 1 that there is a slight correlation to having more 911 calls to the number of likes a bare receives. It has a Pearson correlation coefficient of 0.140911 meaning this is not good indicator for correlation and would not be a good fit for predictive modeling.
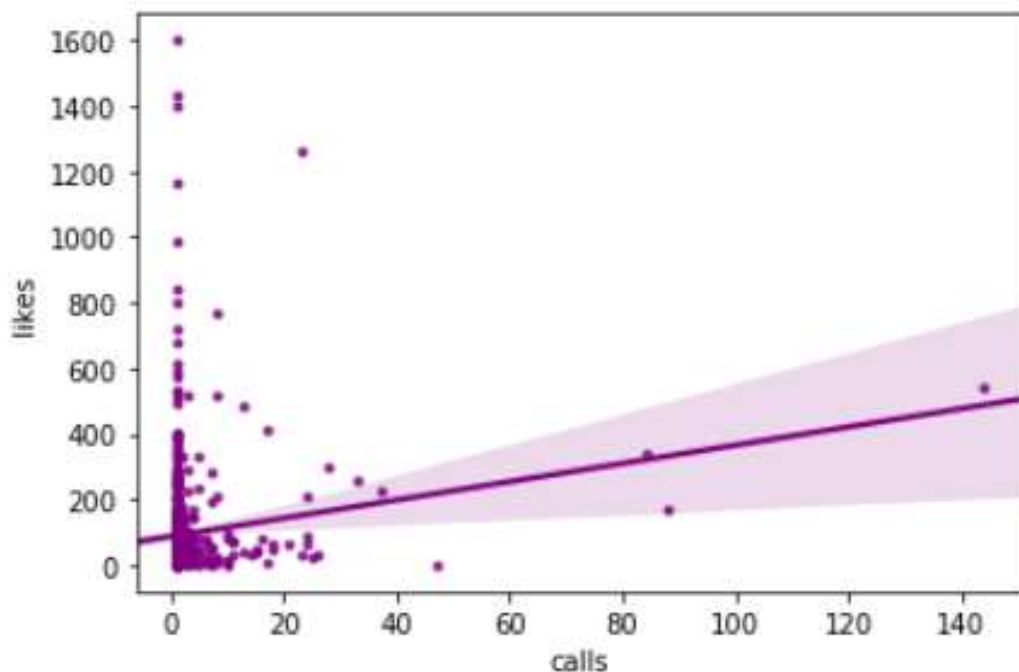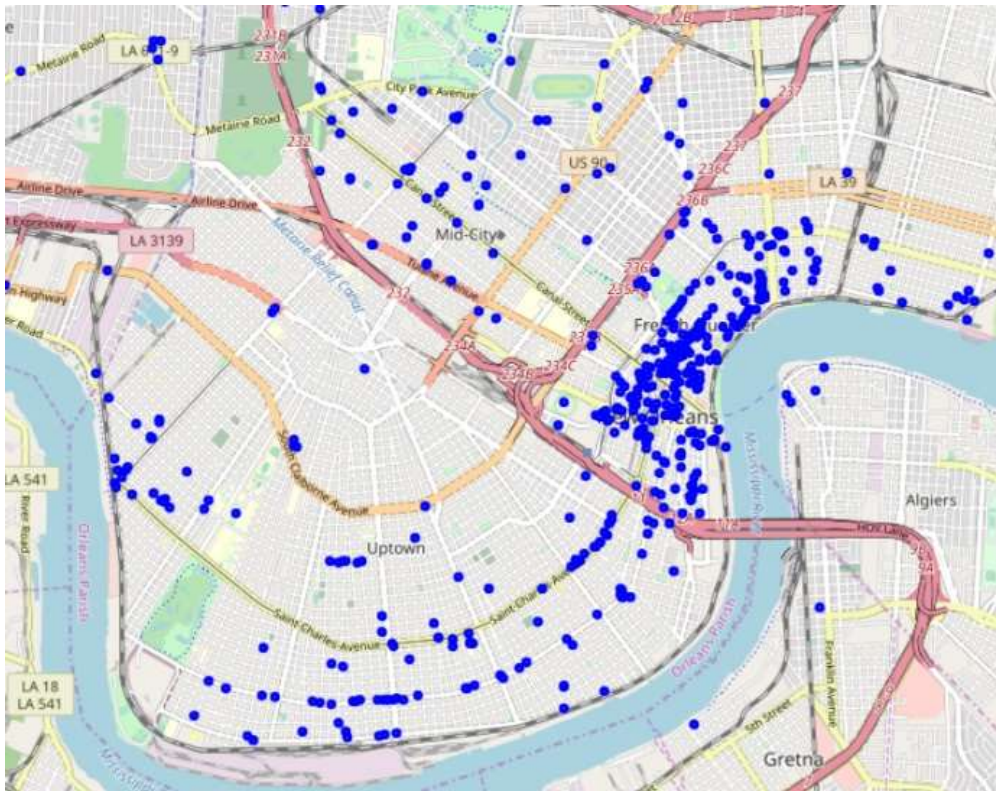

Figure 1

Figure 2

5. Discussion

The winner for the most liked bar in New Orleans goes to, Pat O'Brien's with 1601 likes and only 1 call for the year of 2019! For being in the heart of bourbon street, I'd say that's pretty good. If you ever decide to visit go, I personally recommend a hurricane.

I was also able to extrapolate the top 10 bars with the highest number of calls and the topmost common reasons as well as the percentage for each. The results for this exercise highlight some of the darker side of New Orleans showing that certain bars might not be the safest places to go. However, there is a lot of error in this assumption. There is a gap of information in the extrapolated data that could be fine-tuned with more information on the types of incidents and where the location data is coming from. For instance, if the data comes from the officer's vehicle which may have been parked next to the bar than this would not necessarily indicative that the call came from that bar.

name	likes
Pat O'Brien's	1601
Mercedes-Benz Superdome	1435
House of Blues Restaurant & Bar	1403
Lafitte's Blacksmith Shop	1260
Acme Oyster House	1167
The Carousel Bar & Lounge	991
The Spotted Cat Music Club	844
Commander's Palace	801
The Ruby Slipper	767
Bacchanal Wine	722

Bar Name	# of Calls
Oceana Grill	144
Famous Door	88
Sheraton New Orleans Hotel	84
Midtown Hotel	47
The Beach on Bourbon	37
Bourbon Pub & Parade	33
Cat's Meow	28
Burgundy Bar at The Saint Hotel	26
Monkey Board	25
Krazy Korner	24

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----New Orleans----
                              call   freq
0           DISTURBANCE OTHER  0.24
1        DOMESTIC DISTURBANCE  0.09
2      SIMPLE BURGLARY VEHICLE 0.07
3                       THEFT  0.05
4      SIMPLE CRIMINAL DAMAGE  0.04
5                  SHOPLIFTING 0.04
6              SIMPLE BATTERY  0.04
7      SIMPLE BATTERY DOMESTIC 0.04
8                   AUTO THEFT 0.03
9              DRUG VIOLATIONS 0.03
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name	1st Most Common Call	2nd Most Common Call	3rd Most Common Call	4th Most Common Call	5th Most Common Call	6th Most Common Call	7th Most Common Call	8th Most Common Call	9th Most Common Call
Oceana Grill	DISTURBANCE OTHER	DRUG VIOLATIONS	THEFT	ILLEGAL CARRYING OF WEAPON- GUN	PICKPOCKET	FIGHT	THEFT BY FRAUD	SIMPLE BATTERY	DOMESTIC DISTURBANCE
Famous Door	DISTURBANCE OTHER	FIGHT	THEFT	DRUG VIOLATIONS	ILLEGAL CARRYING OF WEAPON- GUN	PICKPOCKET	SIMPLE BATTERY	THEFT BY FRAUD	SIMPLE BATTERY DOMESTIC
Sheraton New Orleans Hotel	THEFT	DISTURBANCE OTHER	THEFT BY FRAUD	SIMPLE BATTERY	SIMPLE BATTERY DOMESTIC	DOMESTIC DISTURBANCE	PROWLER	FIGHT	PICKPOCKET
Midtown Hotel	DISTURBANCE OTHER	THEFT	SIMPLE BATTERY	THEFT BY FRAUD	FIGHT	DOMESTIC DISTURBANCE	AUTO THEFT	OBSCENITY, EXPOSING	SIMPLE BATTERY DOMESTIC
The Beach on Bourbon	DISTURBANCE OTHER	THEFT	THEFT BY FRAUD	SIMPLE BATTERY	PICKPOCKET	SIMPLE BATTERY DOMESTIC	AGGRAVATED ASSAULT	FIRE	ILLEGAL CARRYING OF WEAPON- GUN
Bourbon Pub & Parade	DISTURBANCE OTHER	SIMPLE BATTERY	FIGHT	PICKPOCKET	NOISE COMPLAINT	DRUG VIOLATIONS	DOMESTIC DISTURBANCE	THEFT	SIMPLE ROBBERY, PROPERTY SNATCHING
Cat's Meow	DISTURBANCE OTHER	SIMPLE BATTERY	THEFT	PICKPOCKET	FIGHT	THEFT BY FRAUD	BUSINESS BURGLARY	EXTORTION THREATS	DRUG VIOLATIONS
Burgundy Bar at The Saint Hotel	DISTURBANCE OTHER	THEFT	DOMESTIC DISTURBANCE	SILENT 911 CALL	SIMPLE BATTERY	DRUG VIOLATIONS	UNAUTHORIZED USE OF VEHICLE	OBSCENITY, EXPOSING	BUSINESS BURGLARY
Monkey Board	DISTURBANCE OTHER	THEFT	FIGHT	DOMESTIC DISTURBANCE	SIMULTANEOS STOLEN/RECOVERY VEHICLE	AUTO THEFT	SIMPLE BATTERY	BUSINESS BURGLARY	EXTORTION THREATS
Krazy Korner	PICKPOCKET	THEFT	THEFT BY FRAUD	DISTURBANCE OTHER	SIMPLE BATTERY	SIMPLE ROBBERY	FIGHT	VIOLATION OF PROTECTION ORDER	BUSINESS BURGLARY

6. Conclusion

In this project, I dove into the exploratory analysis of Orleans Parish Communication District call data and the local bars of New Orleans. I identified the most liked bar in New Orleans, and the most common 911 call description. I built a map of the New Orleans bars and plotted Pearson correlation of emergency calls to "likes". This data is inciteful and could be used to model future projects. It also highlights several problems that developers face daily, and how data science can be used to find even more incites.