

FindMyCoffee



Data Science Project 1 - Northwestern University
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What is FindMyCoffee? - Project Summary



- **Hypothesis:** If the coffee shop location has a higher population and more visibility, then opening a coffee shop in that area will result in higher success and more business.
- FindMyCoffee helps hopeful coffee shop owners determine which area of Chicago to open their shop
- Predicts coffee shop success based on neighborhood population (visibility), and competition of other successful businesses

Questions



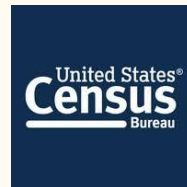
- 1) **Which neighborhood in Chicago currently has the most coffee-shop competition?**
- 2) **Does the population of an area in Chicago impact the success of a coffee shop?**
- 3) **How can coffee-shop owners predict where to open their next location/new shop in Chicago?**

FindMyCoffee Definitions



- **‘Popular’ Coffee Shop:** More than 50 Yelp Reviews with an Average Rating of 4 stars or higher (out of 5 total stars possible)
- **‘Poor Performing’ Coffee Shop:** Average Rating of 2 or fewer stars on Yelp (out of 5 total stars possible)
- **Chicago Neighborhood:** based on Zip Code

Data Used in FindMyCoffee



Yelp API Fusion API

- Figured out how to return more than 50 business data points from the Fusion API
- Determining which data we wanted to include from the JSON

Data from the US Census

“US Zip Codes from 2013 Government Data” - CSV by Eric Hurst

“US Census Population by Zip Code” - CSV by The Splitwise Blog

-Read in CSV files and merged DataFrames

Data Clean-Up and Exploration



- Organized JSON data we needed from the Yelp API into a data frame
- Defined ‘great/popular’ coffee shop (more than 50 reviews, 4 or more average stars) and created a data frame
- Merged Yelp data frame with the Population data frame on Zip Code
- Used GMaps to create Heat Maps - looked for trends between where the ‘great’ coffee shops are located and the population of the area



Data Analysis Findings and Conclusions

Top locations

- Based on market locations with highest number of coffeeshops

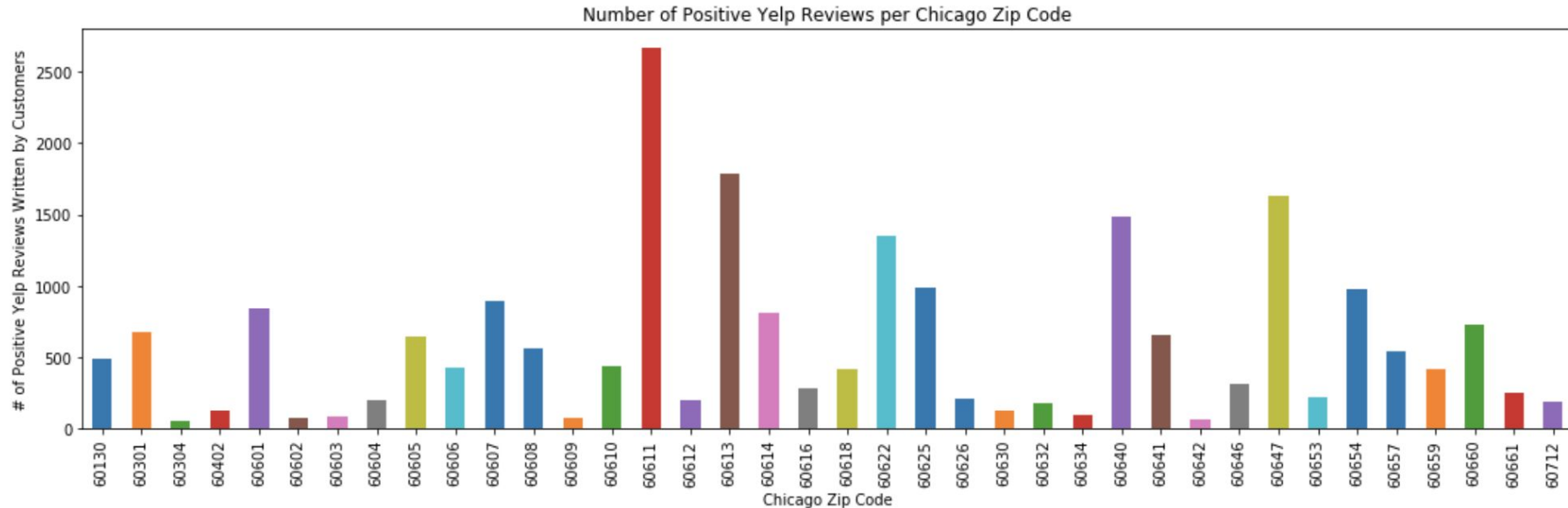
Which neighborhood in Chicago currently has the most coffee shop competition?

- The Loop has a high concentration of popular coffee shops
- Streeterville (near the Loop) and Lakeview East (north of the Loop) have the highest number of positively rated coffee shops and the most businesses competing against one another
- Oak Park and Noble Square have the lowest number of positively rated coffee shops
- Several of the popular coffee shops are open along major streets in Chicago (higher visibility - more foot/car/bike traffic)

Illustrates the number of positive Coffee Shop Yelp Reviews Per Chicago Zip Code

Top 3 Zip Codes with the highest number of Yelp reviews:

- 60611- Streeterville - 2,666 reviews
- 60613- Lakeview East - 1,791 reviews
- 60647- Logan Square - 1,630 reviews



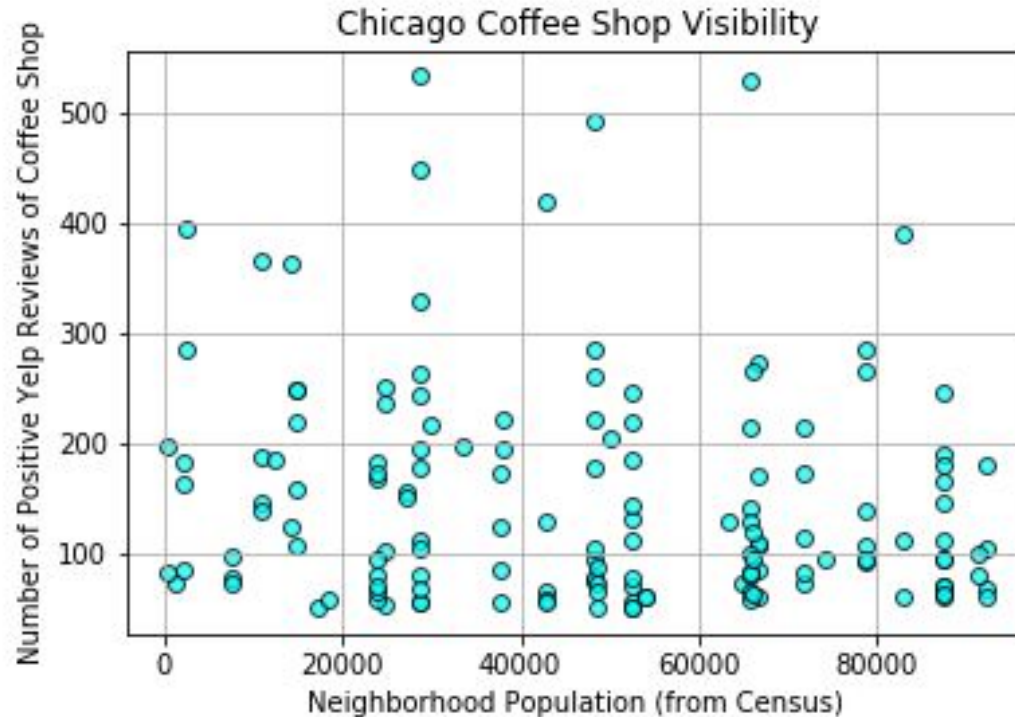
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Does the population of an area in Chicago impact the success of a coffee shop?

- Higher populated areas of the city yield a higher number of popular coffee shops
- Opening a coffee shop near a major road/intersection where there is a higher population (see heat map) will increase visibility and most likely business
- There are more successful coffee shops open in Chicago areas with a higher population (as seen on the heat map)

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- This map illustrates the distribution of 100,000 people across the Chicago metropolitan area and surrounding regions. The color gradient indicates population density, with red representing the highest concentration and green representing the lowest. The highest density is concentrated in the central urban core, particularly around the Loop and downtown areas. Major highways and city names are labeled, providing context for the geographic distribution.

- Shows the neighborhood population count vs. the number of positive reviews written (each point represents a zip code)
- Does not show any super significant patterns
- Neighborhoods under 20,000 people have a lower average number of reviews



How can coffee-shop owners predict where to open their next location/new shop in Chicago?

- Opening a shop near a 'large chain' coffee shop (i.e. Dunkin Donuts, McDonalds, 7-Eleven) will most likely not be detrimental to business - could actually help increase business
- A coffee shop located in a more populous area increases the visibility of the coffee shop and will most likely increase business
- Opening a 'large chain' location of a coffee shop is more likely to be poor performing than opening a 'non-chain' coffee shop

-Compares the ‘poor performing’ large chain coffee shops with the total number of locations

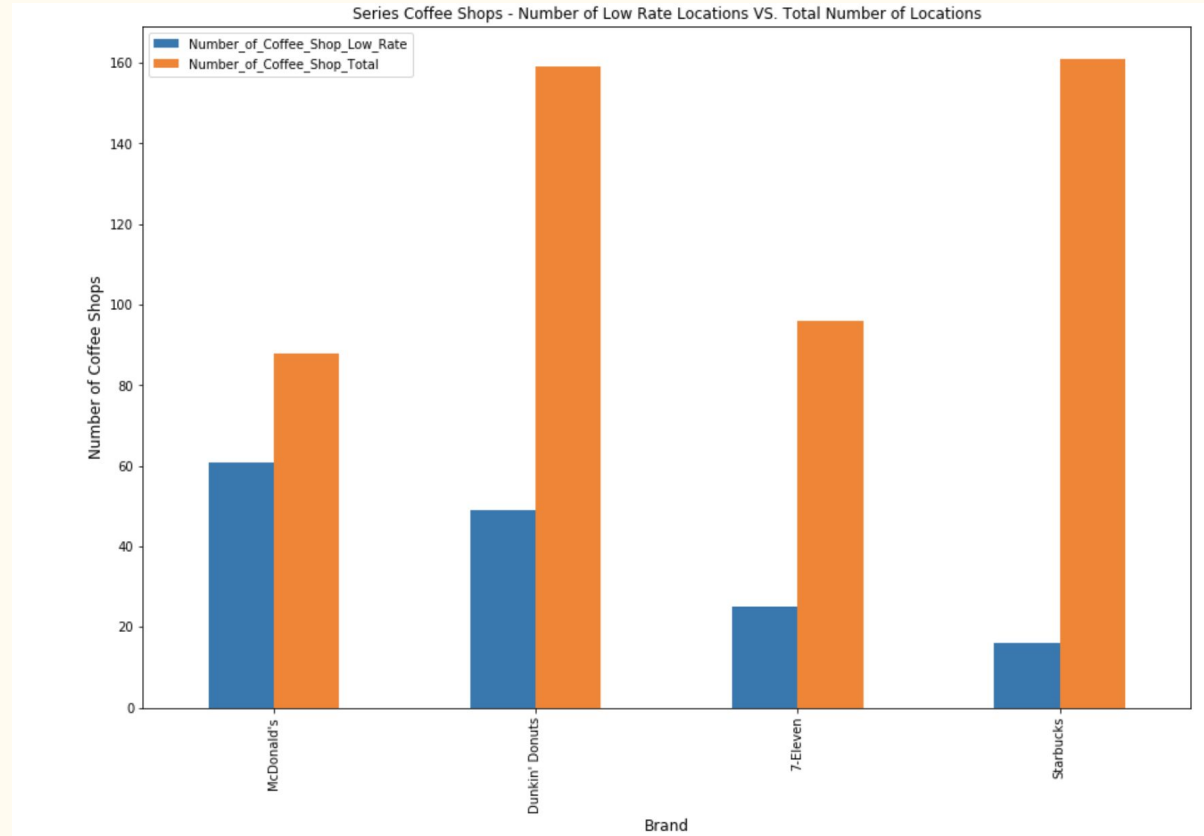
69% of McDonalds

31% of Dunkin’ Donuts

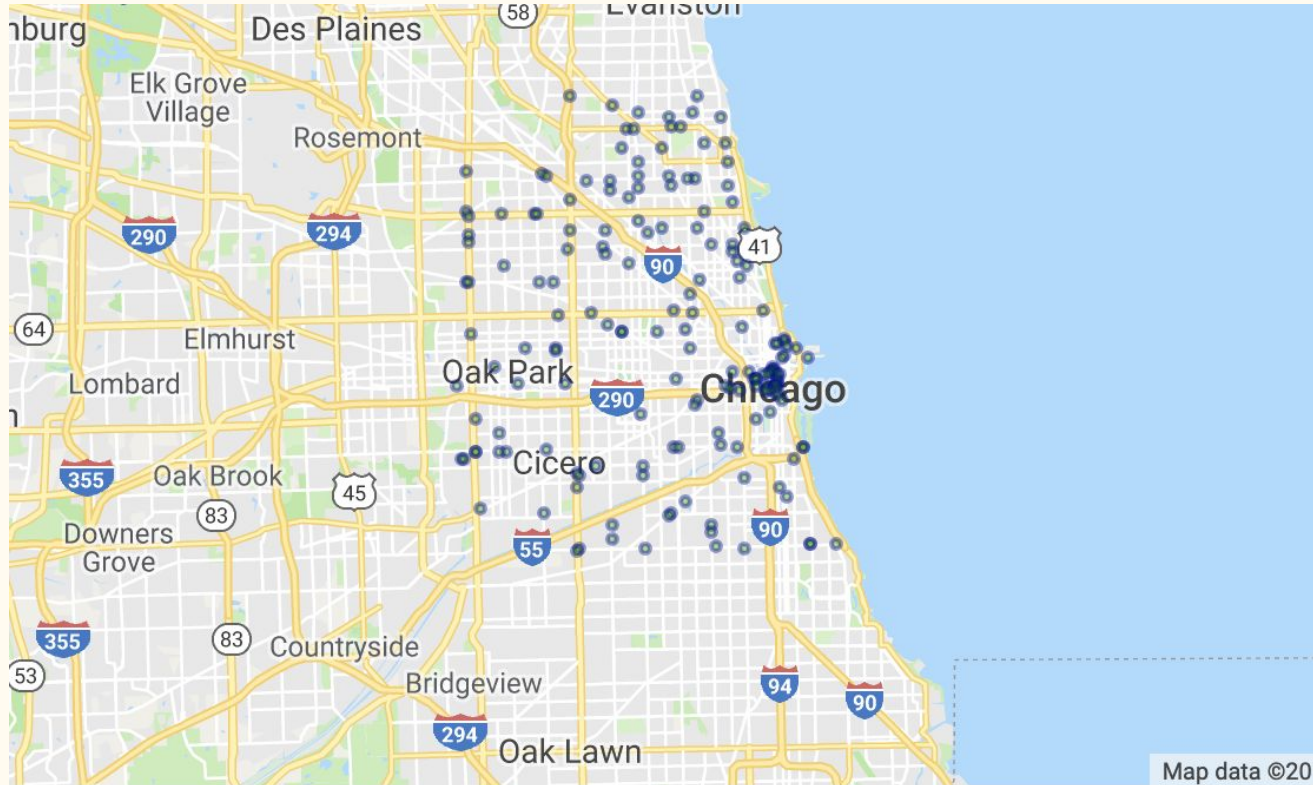
26% of 7-Eleven’s

10% of Starbucks

locations in Chicago are
considered ‘poor-performing’
(average of 2 or fewer stars on
Yelp)



- Illustrates where the Poor Performing Coffee Shops are located
- Each point on the Heat Map is a coffee shop that has an average rating of 2 or fewer stars (out of 5 possible)



Post-Mortem



- How do the rental prices in various areas of Chicago impact the opening of successful coffee shops?
- Include average prices of rent for businesses in areas of Chicago
- Daily limit of Yelp Fusion API Calls (5,000 per day)
- Difficult to find current population by Zip Code data (we wanted to represent the areas/neighborhoods of Chicago by Zip Code)

Time for Question & Answer!