



# A Study of the Effect of Surroundings on Store Sales

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# Presentation Outline

1. Business Objectives
2. Data Source
3. Methodology
4. Evaluation/Results
5. Summary

# Business Objectives:



Determine the factors that lead to sales



Recommend new store locations based on surroundings attributes



Open new store

# Data Source

Source: sales\_granular.csv

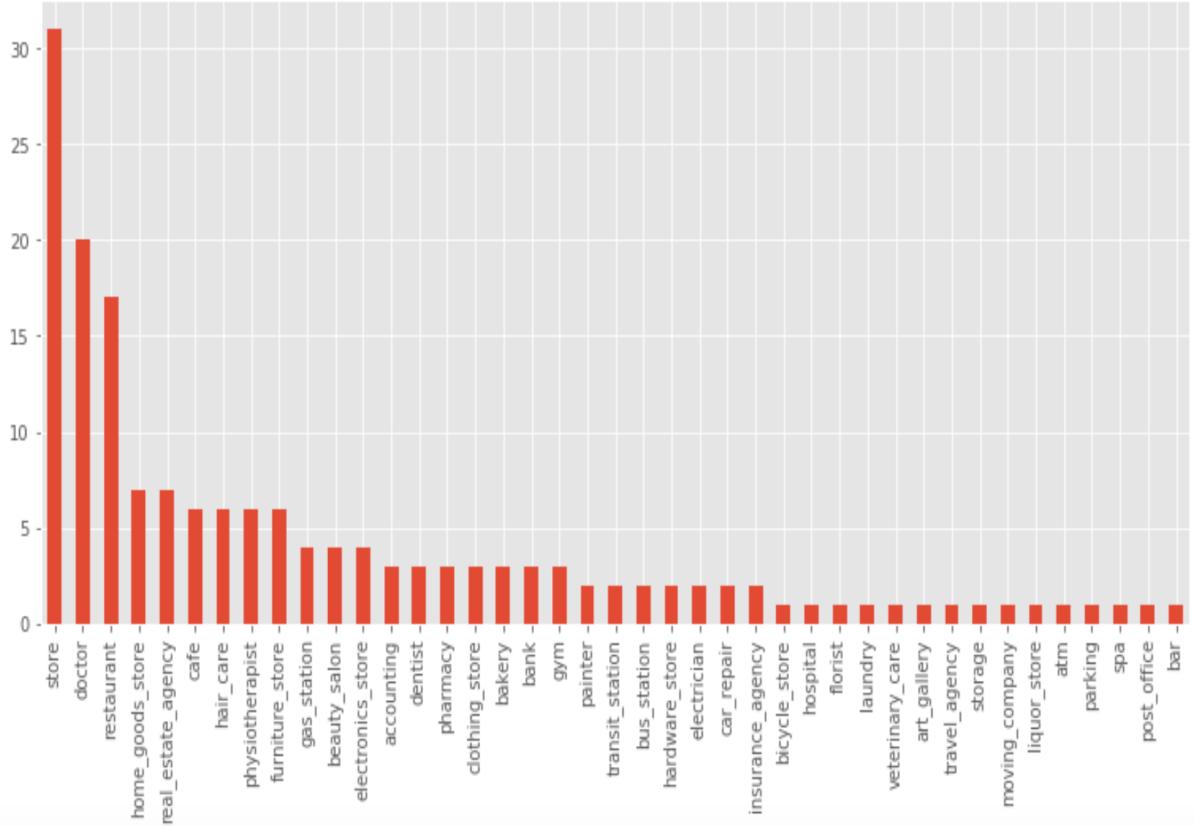
- Rows – 905
- Columns - 11937
- Primary Feature – Total sales in 1 year (2016-2017)
  - Assume cyclical nature of business
  - All stores were open during the 1 year timeframe



# Data Source

Source: Surroundings.json

Surrounding count for store 10055





# Methodology

# Approach

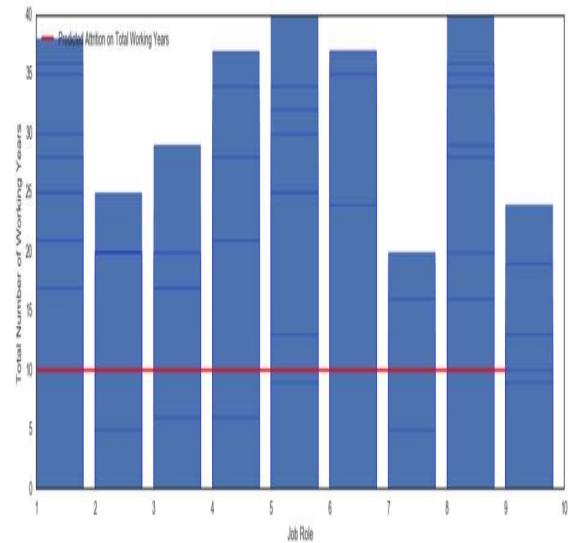
Features  
extracted from  
raw data

Build linear  
regression model  
using multiple  
techniques

Optimal model  
identified through  
testing and  
evaluation

Identified top  
variables that  
explained sales

	store_code	total_rev	atm	bakery	bank	bar	beauty_salon
0	10055	41585.0	1.0	3.0	3.0	1.0	4.0
1	10077	13977.0	0.0	1.0	0.0	0.0	0.0
2	10079	263099.0	3.0	3.0	1.0	4.0	4.0
3	10086	43896.0	0.0	0.0	0.0	1.0	2.0
4	10111	28111.0	0.0	0.0	0.0	0.0	0.0



# Methodology

## Algorithm:

- OLS
- Linear Regression
- Lasso

## Tools:

- Jupyter notebook
- Pandas
- Sklearn
- Seaborn & Matplotlib

# Methodology

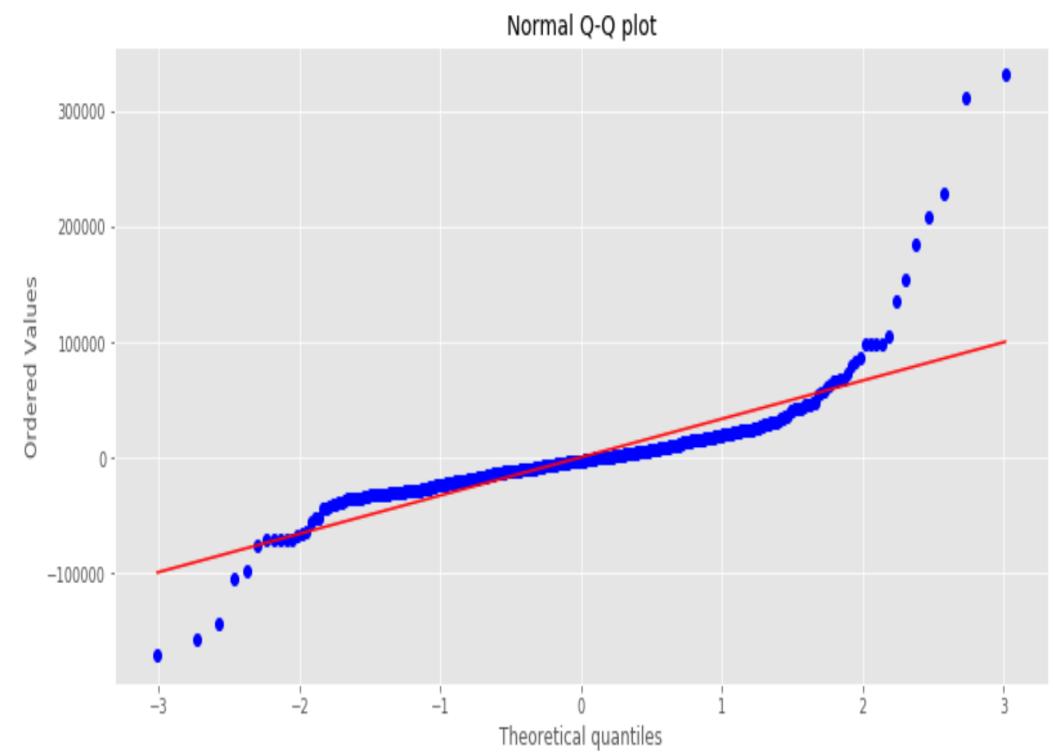
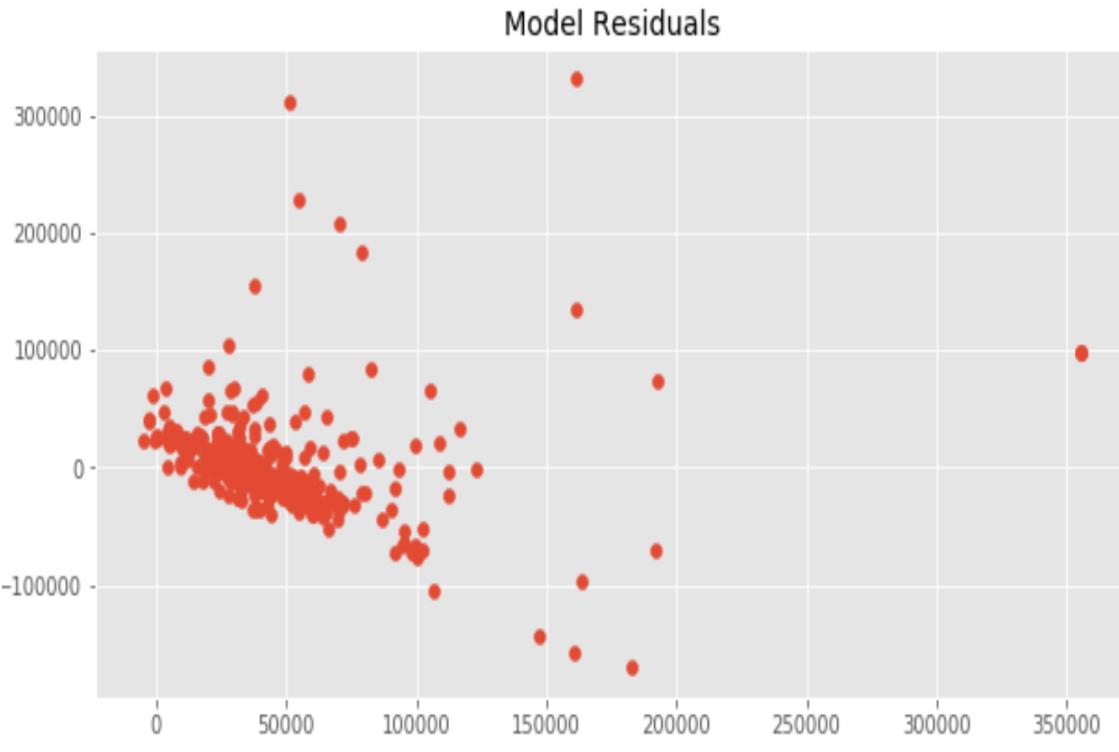
## Algorithm:

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# Methodology





# Evaluation/Results

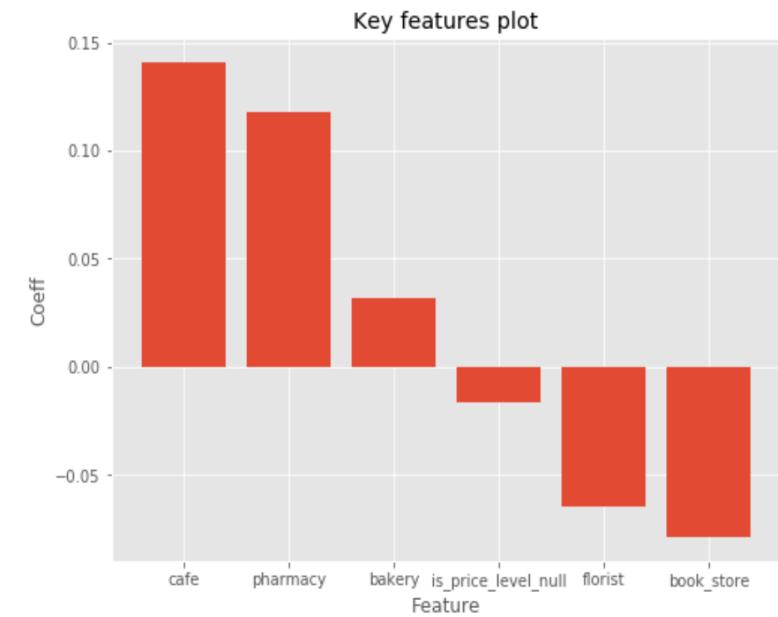
# Accuracy Percentage

Machine Learning Algorithm	Test Accuracy Percentage /R_square
OLS	0.68
Linear Regression	0.41
Lasso	0.34

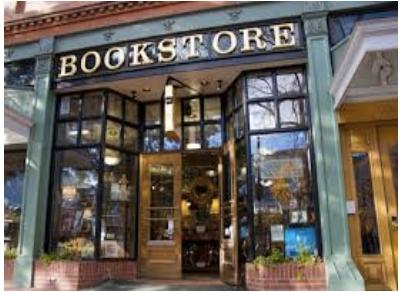
# Summary of the top factors identified as sales as identified by Lasso

The top 3 factors that were identified are as follows:

1. Number of pharmacies present
2. Number of café's present
3. Number of bakeries present



## Other things to consider :



Presence of bookstores & florists negatively impact store sales



# Summary

## Recommendations:

Build new store close  
to café's & bakeries

Pharmacy traffic  
affects store sales  
positively

Florists and bookstore  
presence decrease  
store sales

## Improvements & Future Work:

- Need more data to build more accurate model
- Store latitude & longitude would be useful in fine tuning features
- Use sentiment scores on reviews as part of features set (translations needed)

# Q & A