

Determining a new place to open a pizza place in San Francisco

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Introduction

Background

Pizza is a booming market in the USA and opening a new location for an established restaurant chain is a large undertaking with many considerations necessary to address before deciding on the location. Such considerations could include pizza restaurants already in the area or crime rate of a neighborhood. Being able to accurately identify a new location based on certain criteria would provide a large advantage when exploring new areas to expand. In this scenario, Odd Moe's pizza is a local chain in NW Oregon region and is looking to expand out of Oregon and into California, specifically San Francisco area. San Francisco already has a large amount of Pizza restaurants, but they are looking to compete and break into the market. Odd Moe's is confident that they can offer a new pizza experience but wants to run their new site in a safe environment and area of the City.

Interest

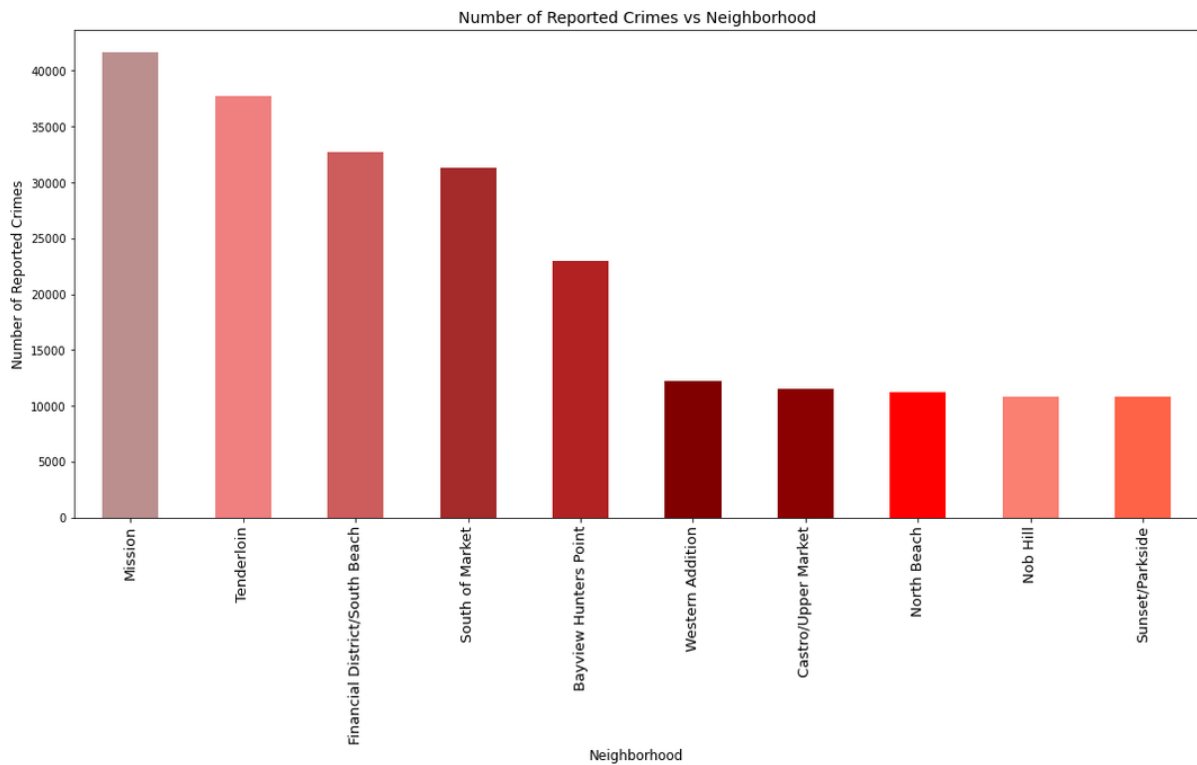
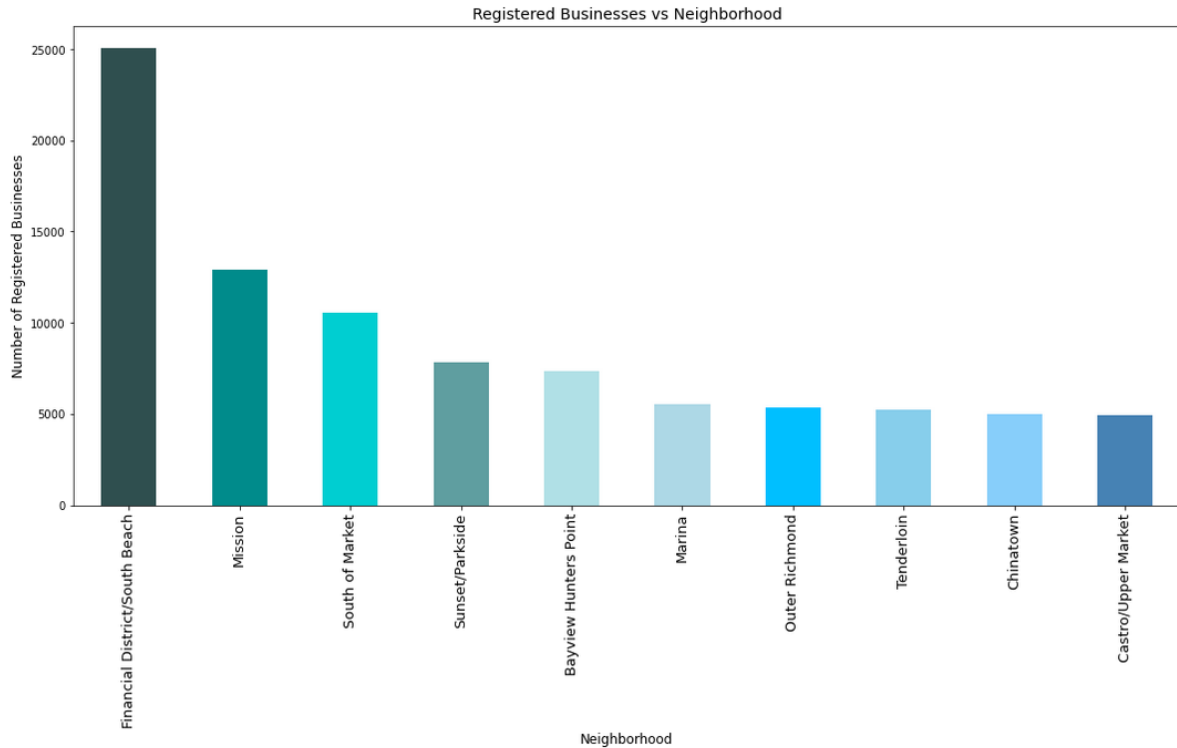
Odd Moe's franchising division would be very interested in the information discovered by conducting this project as they would be able to find the neighborhood or area best suited for a new restaurant and that falls in line with their criteria.

Data Sources

Cities often publish data sites for different demographics. In this instance San Francisco has publicly available datasets for businesses and crime rates that will be utilized. The datasets can be found [here](#) and [here](#). The last data source used is the Foursquare API which provides information on already established businesses for a given location, in this instance the city of San Francisco.

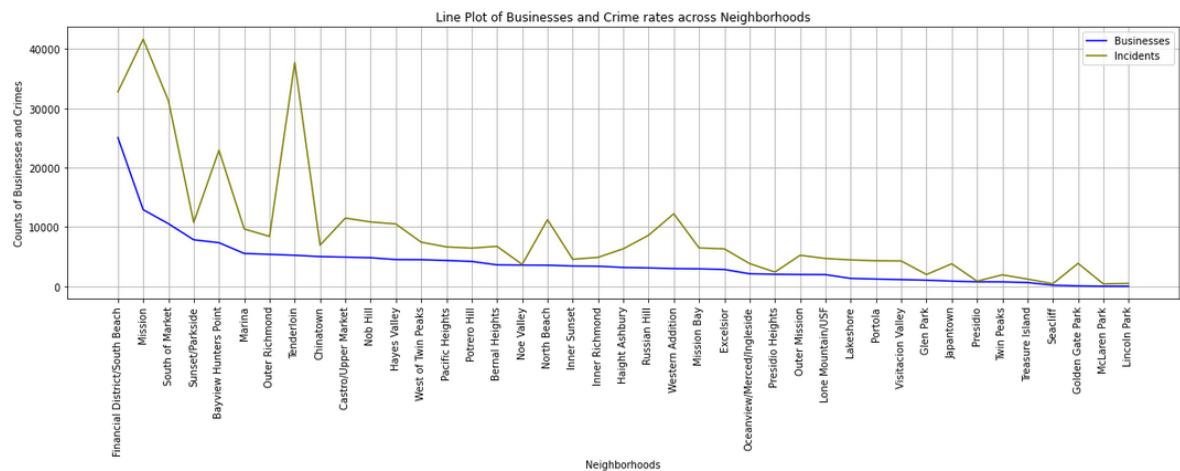
Methodology

To start, looking at the dataset on San Francisco neighborhoods there was necessary areas to clean up, such as removing rows with incomplete information. The range of business openings were set to 15 years, starting on 01/01/2005 to current date. The range allowed for enough historical data in order to show trends on the types of businesses that were opened during the time period. Initial data analysis was done to determine the neighborhoods with the highest aggregate of businesses and crime rates, shown below.



The charts allow a generalized view of the top neighborhoods for businesses and the neighborhoods with the highest amount of crime, in this instance that is the Financial District and Mission neighborhoods respectively. Going further, a chart was created to show the number of businesses and

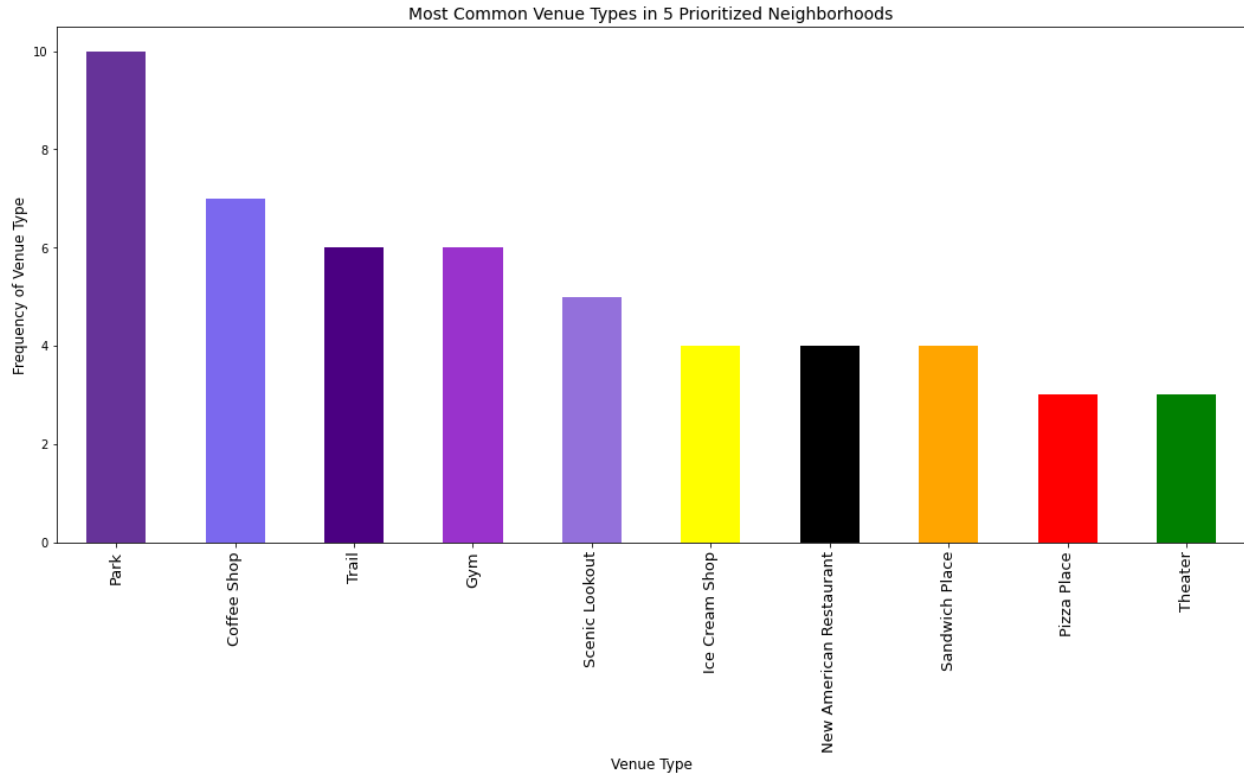
crime rates on the same plot to allow for a quick comparative glance for neighborhoods with good blend of business and lower crime rates.



Taking the top 5 neighborhoods with crime instances and combining it with their respective business count, we are able to determine the potential neighborhood to open the new restaurant. Using <https://latlong.net> to grab latitude and longitude the following table was produced.

	Neighborhood	Businesses	Crimes	Coordinates	Latitude	Longitude
0	Sunset/Parkside	7839	10767	(37.749690, -122.494880)	37.749690	-122.494880
1	Marina	5538	9657	(39.820580, -84.887010)	39.820580	-84.887010
2	Outer Richmond	5383	8410	(37.803850, -122.450350)	37.803850	-122.450350
3	Chinatown	5011	6925	(37.765730, -122.435470)	37.765730	-122.435470
4	Castro/Upper Market	4924	11495	(37.758430, -122.448440)	37.758430	-122.448440

After the target neighborhoods were identified, Sunset/Parkside, Marina, Outer Richmond, Chinatown, and Castro/Upper Market, the Foursquare API was utilized to explore venues that were already open in those neighborhoods.



The chart shows that the top venues for the 5 prioritized neighborhoods are Parks, Coffee Shops, and Trails. Pizza Places are near the bottom in frequency which points to a potential of one of the neighborhoods being ideal to open a new pizza place. After further analysis on the venues found in each of the 5 neighborhoods, it was found that Marina and Sunset/Parkside neighborhoods had pizza places among the top 20 most frequent venue types. As Odd Moe's does not shirk competition, these two neighborhoods could be the top candidates to open the new location.

----Marina----			----Sunset/Parkside----		
	venue	freq		venue	freq
0	Sandwich Place	0.07	0	Coffee Shop	0.10
1	Theater	0.07	1	Chinese Restaurant	0.07
2	Bagel Shop	0.07	2	Playground	0.07
3	American Restaurant	0.07	3	Trail	0.07
4	Gym	0.07	4	Ice Cream Shop	0.07
5	Video Store	0.07	5	Pizza Place	0.03
6	Pizza Place	0.07	6	Grocery Store	0.03
7	Cosmetics Shop	0.03	7	Record Shop	0.03
8	Restaurant	0.03	8	Empanada Restaurant	0.03
9	Discount Store	0.03	9	Dumpling Restaurant	0.03
10	Pharmacy	0.03	10	Donut Shop	0.03
11	ATM	0.03	11	Liquor Store	0.03
12	Fast Food Restaurant	0.03	12	Dive Bar	0.03
13	Rock Club	0.03	13	Sandwich Place	0.03
14	Gas Station	0.03	14	Dim Sum Restaurant	0.03
15	History Museum	0.03	15	Cocktail Bar	0.03
16	Ice Cream Shop	0.03	16	Korean Restaurant	0.03
17	Food	0.03	17	Beer Bar	0.03
18	Pub	0.03	18	Vietnamese Restaurant	0.03
19	Coffee Shop	0.03	19	Bakery	0.03

Lastly, K-means clustering was used to see if the theory of Marina or Sunset/Parkside would be ideal locations to open the new restaurant. After completing the clustering, Marina and Sunset/Parkside neighborhoods were placed in their own cluster while Castro/Upper Market, Chinatown, and Outer Richmond were placed in the other cluster.

Results

During the data analysis it was found that the ideal neighborhood to open Odd Moe's new location would be the Marina neighborhood. In the Marina neighborhood, Pizza Places are tied in 1st as the most frequent venue which provides the competition that Odd Moe's is seeking but also indicates that there are already a large number of patrons that enjoy pizza. With those top two neighborhoods

Discussion

As mentioned in the Results section, based on the criteria laid out at the start of the project, the Marina neighborhood would be the ideal location for the San Francisco Odd Moe's location. It has an audience of pizza lovers and other pizza restaurants to compete with. It also has a safe environment with a lower crime rate than other potential neighborhoods in San Francisco.

Conclusion

In this study, I analyzed Crime and Neighborhood statistics for the city of San Francisco in order to provide guidance on where a new Pizza place could be opened up and have the potential to be successful in the market. Neighborhoods with a high amount of businesses and lower amounts of crime rates were identified in order to determine a safe environment for the Odd Moe's brand while also placing it in an area with a large amount of previously established businesses. The methodology developed in this study can be applied to any number of cities and restaurant types.