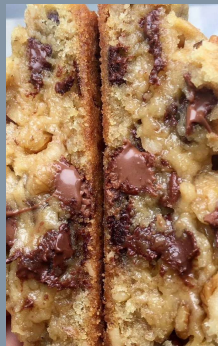




IDENTIFY LOCATION FOR GOURMET BAKERY

Data Science Capstone - Valerie Wrenholt

Business Problem



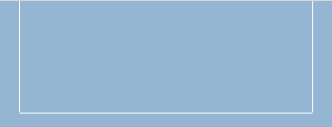
- Cookie shop needs to identify location in Charlotte market to open 2nd location.
- Priorities in selecting location:
 - Based on business trends, the following types of venues nearby are desirable:
 - Performing arts venues
 - Parks
 - Daycares
 - Other similar, complimentary businesses should also be nearby, such as:
 - Coffee shops
 - Ice cream shops
 - Bakeries
 - Pie shops
 - Cupcake shops
 - Donut shops
- The median household income should exceed the regional average.

Data

- For each zip code in the Charlotte metro area, the following website <http://zipatlas.com/us/nc/charlotte/zip-code-comparison/median-household-income.htm> provides:
 - Location data - latitude and longitude
 - Household income information
- The Foursquare API provides venue information.
- Google maps provides distance information and shows nearby restaurants/attractions.

Methodology

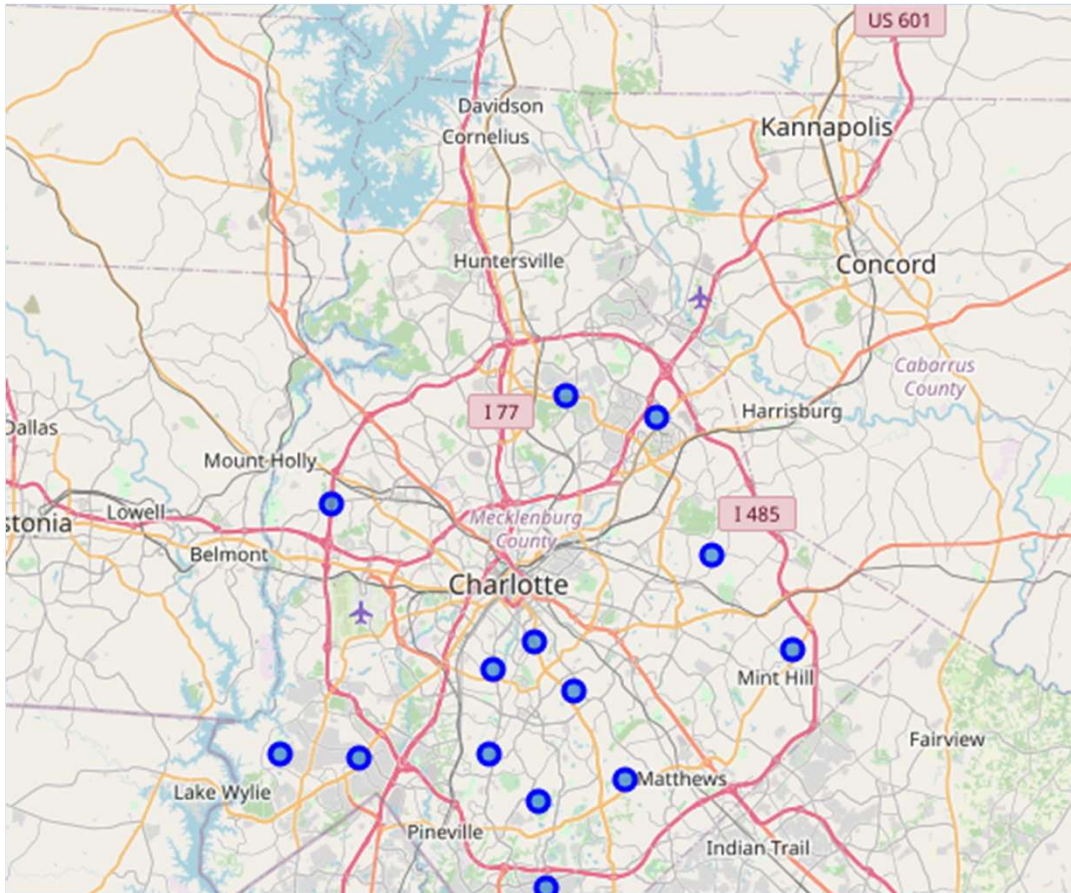
- Import detailed zip code data into a dataframe.
- Analyze median household income for each area.
 - Exclude all zip codes where the median household income is 20% or more below the state average.
- Using the Foursquare API and the latitude and longitude data for each zip code and a radius of 5000 meters (3.1 miles), analyze the types of venues within the area.
 - Calculate the mean of the frequency for each category.
 - Rank the venue information.
- Combine data to determine a suitable location.



| Code | Location | City | Population | Avg. Income | National |
|-------|-----------------------|---------------------------|------------|-------------|----------|
| 28277 | 35.053275, -80.816601 | Charlotte, North Carolina | 33,905 | \$86,713.00 | |
| 28207 | 35.194148, -80.824585 | Charlotte, North Carolina | 8,691 | \$84,232.00 | |
| 28270 | 35.114865, -80.761718 | Charlotte, North Carolina | 25,941 | \$76,795.00 | |
| 28278 | 35.130547, -81.002682 | Charlotte, North Carolina | 6,175 | \$71,420.00 | |
| 28226 | 35.102650, -80.822144 | Charlotte, North Carolina | 35,311 | \$68,636.00 | |
| 28211 | 35.166342, -80.797285 | Charlotte, North Carolina | 27,757 | \$62,371.00 | |
| 28269 | 35.334508, -80.803461 | Charlotte, North Carolina | 42,356 | \$61,899.00 | |
| 28273 | 35.127365, -80.946828 | Charlotte, North Carolina | 18,281 | \$56,437.00 | |
| 28210 | 35.129916, -80.856206 | Charlotte, North Carolina | 40,857 | \$52,286.00 | |
| 28227 | 35.189404, -80.645488 | Charlotte, North Carolina | 39,535 | \$51,189.00 | |
| 28262 | 35.322061, -80.739981 | Charlotte, North Carolina | 18,168 | \$50,538.00 | |
| 28214 | 35.272414, -80.967036 | Charlotte, North Carolina | 20,811 | \$49,534.00 | |
| 28215 | 35.243457, -80.701067 | Charlotte, North Carolina | 41,259 | \$46,729.00 | |
| 28209 | 35.178714, -80.853985 | Charlotte, North Carolina | 19,759 | \$46,175.00 | |

RESULTS

All zip codes with a median income greater than 80% of the state average



RESULTS

Map all zip codes within the area. All are at least 20 miles from the existing location.

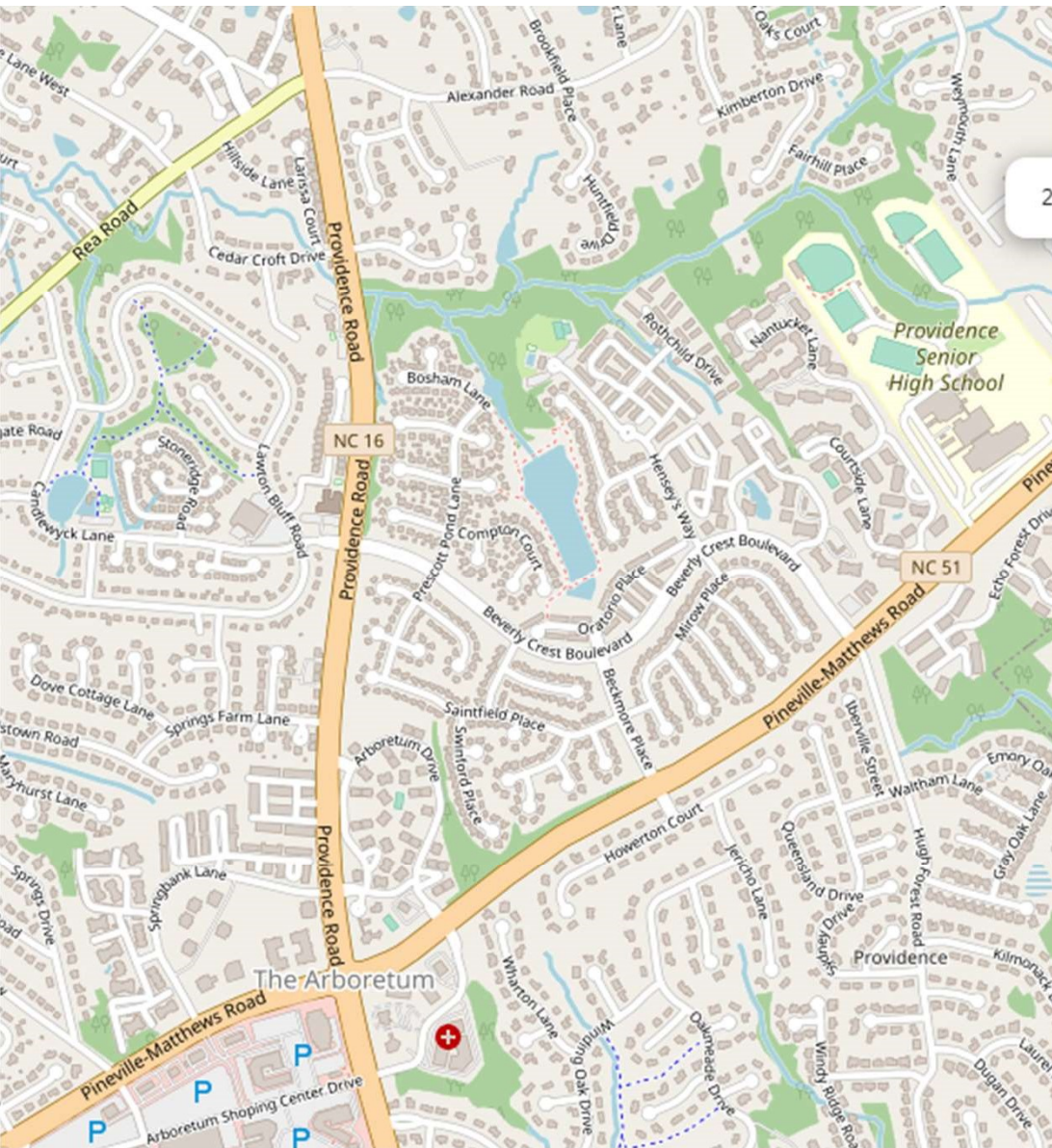
| | Zip Code | 1st Most Common Venue | 2nd Most Common Venue | 3rd Most Common Venue | 4th Most Common Venue | 5th Most Common Venue | 6th Most Common Venue | 7th Most Common Venue | 8th Most Common Venue | 9th Most Common Venue | 10th Most Common Venue |
|----|----------|------------------------------|-----------------------|--------------------------|-----------------------|------------------------|-----------------------|-----------------------|------------------------|---------------------------------|------------------------|
| 0 | 28207 | American Restaurant | Pizza Place | Park | Bakery | Grocery Store | Peruvian Restaurant | Mexican Restaurant | Italian Restaurant | Southern / Soul Food Restaurant | Brewery |
| 1 | 28209 | Brewery | American Restaurant | Mediterranean Restaurant | Mexican Restaurant | Park | Burger Joint | Pizza Place | Bakery | BBQ Joint | Italian Restaurant |
| 2 | 28210 | American Restaurant | Mexican Restaurant | Furniture / Home Store | Clothing Store | Steakhouse | Department Store | Pizza Place | Chinese Restaurant | Mediterranean Restaurant | Sporting Goods Shop |
| 3 | 28211 | American Restaurant | Pizza Place | Mexican Restaurant | Steakhouse | Furniture / Home Store | Clothing Store | Department Store | Toy / Game Store | Grocery Store | Shopping Mall |
| 4 | 28214 | Gas Station | Pizza Place | Hotel | Convenience Store | Supermarket | Sandwich Place | Discount Store | Fast Food Restaurant | Pharmacy | Gastropub |
| 5 | 28215 | Pizza Place | Fast Food Restaurant | Discount Store | Convenience Store | Supermarket | Gas Station | Video Store | Chinese Restaurant | Fried Chicken Joint | Sandwich Place |
| 6 | 28226 | Pizza Place | Chinese Restaurant | Golf Course | Supermarket | Grocery Store | Japanese Restaurant | Mexican Restaurant | American Restaurant | Deli / Bodega | Cosmetics Shop |
| 7 | 28227 | Fast Food Restaurant | Pizza Place | Discount Store | American Restaurant | Sandwich Place | Convenience Store | Supermarket | Pharmacy | Ice Cream Shop | Gas Station |
| 8 | 28262 | Gym | American Restaurant | Coffee Shop | Sandwich Place | Bakery | Hotel | Ice Cream Shop | Furniture / Home Store | Fast Food Restaurant | Mexican Restaurant |
| 9 | 28269 | Pizza Place | Gym | Coffee Shop | Sandwich Place | Chinese Restaurant | Ice Cream Shop | Fast Food Restaurant | Trail | Supermarket | American Restaurant |
| 10 | 28270 | American Restaurant | Park | Mexican Restaurant | Pizza Place | Fast Food Restaurant | Grocery Store | Supermarket | Donut Shop | Ice Cream Shop | Clothing Store |
| 11 | 28273 | Theme Park Ride / Attraction | Pizza Place | Hotel | Grocery Store | Sandwich Place | Mexican Restaurant | American Restaurant | Fast Food Restaurant | BBQ Joint | Italian Restaurant |
| 12 | 28277 | Grocery Store | Pizza Place | American Restaurant | Breakfast Spot | Supermarket | Burger Joint | Seafood Restaurant | Cosmetics Shop | Golf Course | Pharmacy |
| 13 | 28278 | Sandwich Place | Pizza Place | Coffee Shop | Department Store | Discount Store | Pharmacy | Grocery Store | Fast Food Restaurant | Furniture / Home Store | Spa |

RESULTS

Using Foursquare data, identify complimentary and ideal nearby venues.

Discussion

- From the venue data, in the zip code 28270:
 - The 2nd most common venue is Parks.
 - The 8th and 9th most popular venues are Donut Shops and Ice Cream Shops.
- No other zip code has more than one match to either the proximity to desirable venues or proximity to similar businesses.
- From the income data, 28270:
 - Ranks 3rd among Charlotte area zip codes and 998th in the nation
 - The median household income for this area is \$76,795, 34% above the median household income for the state.
- This means that there is sufficient disposable income to support luxury/non-essential purchases.
- This is further proven out by the prevalence of donut and ice cream shops within the area.



Recommendation

- The best zip code for the new business is 28270.
- This location has multiple parks and supports multiple donut and ice cream shops.
- Further, the median household income for this area is well above both the state and national average.
- This location in south Charlotte has concentrated residential areas and a nearby large public high school with over 2,000 students.
- The location is 38 miles away from the current location, so there would be little to no customer overlap.
- The Arboretum shopping center (red dot) may be an ideal spot and has space available for lease (<https://www.loopnet.com/Listing/3333-3351-Pineville-Matthews-Rd-Charlotte-NC/11969586/>).