

# Ice Cream Shop Opportunity in Sandy Springs, GA

Applied Data Science Capstone

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# Introduction

- I am interested in opening an ice cream shop somewhere in the Sandy Springs suburb of Atlanta
- According to a variety of websites, it is recommended that you consider the following:
  - Be in an area that has a lot of foot traffic, especially in the Spring and Summer
  - Open the shop near restaurants, parks, athletic fields, beach, schools or other places where most families with their children tend to stroll during the warmer months
  - It should be easily accessible both by foot and by car
  - Be able to accommodate a lot of customers, not just inside your store but also when it comes to parking spaces
- I think that Sandy Springs, GA offers a unique opportunity with an area that fits the profile of the ideal ice cream consumer

# Data

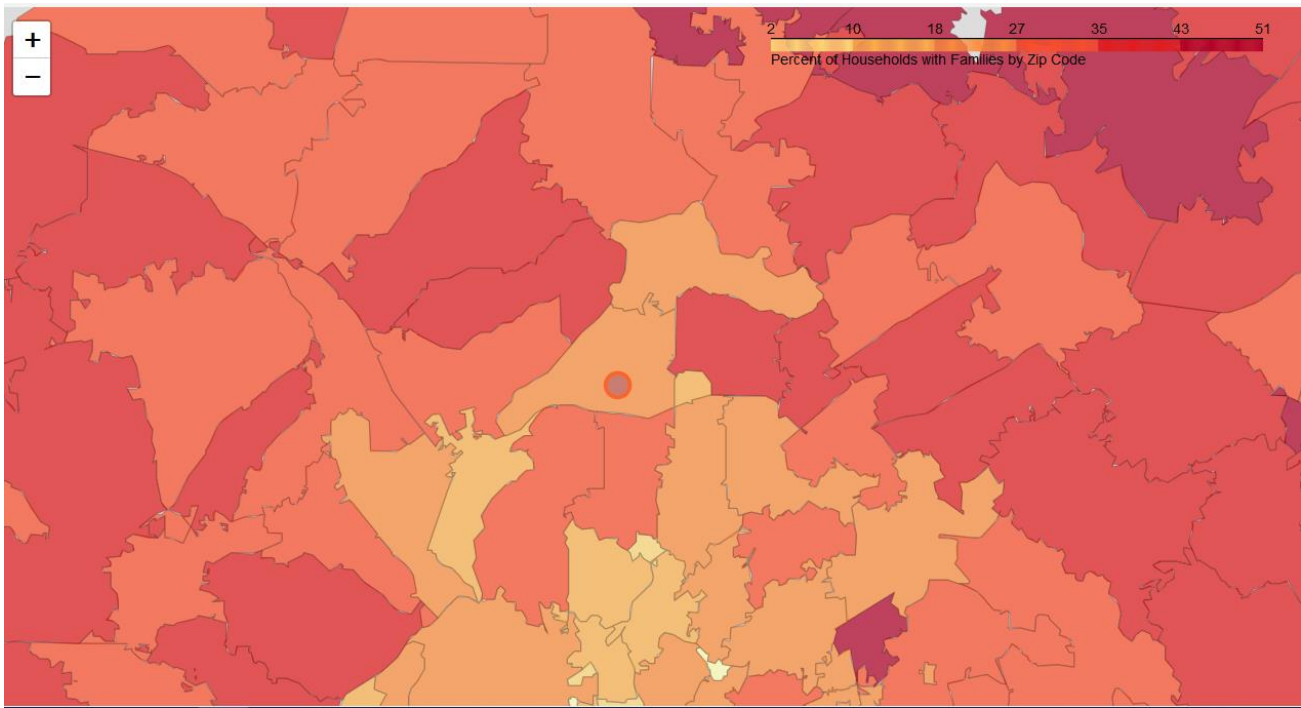
- To figure out where to establish an ice cream shop, I intend to:
  - Leverage Foursquare data that will look at the current locations of ice cream shops around the area, to see where there are availabilities and attractive locations based on parking, school locations, parks and rec areas, restaurant adjacency, etc.
  - Leverage publicly available data on Fulton County demographics to find the most ideal location based on households with families.
    - <https://gisdata.fultoncountyga.gov/datasets/GARC::household-composition-by-zip-code-2018/data>
  - Leverage OpenDataDE for json file on the State of Georgia for zip code level information
    - <https://github.com/OpenDataDE/State-zip-code-GeoJSON/find/master>
  - Leverage Kaggle for revenue data on ice cream sales

# Methodology

- Use demographic data to prove that Sandy Springs is a good area to open an ice cream store because of the percentage of available families with kids
- Use Choropleth and folium mapping to figure out the best areas to open an ice cream store based on parking, restaurant adjacencies, proximity to schools
- Use recent data from Kaggle to determine the relationship that good weather, available in Atlanta for a long stretch of the year, has a positive effect on revenue
- Attempting Machine Learning analysis to look at relative distances among ice cream shops to zip codes that have a high concentration of families

# Results: Families with Kids

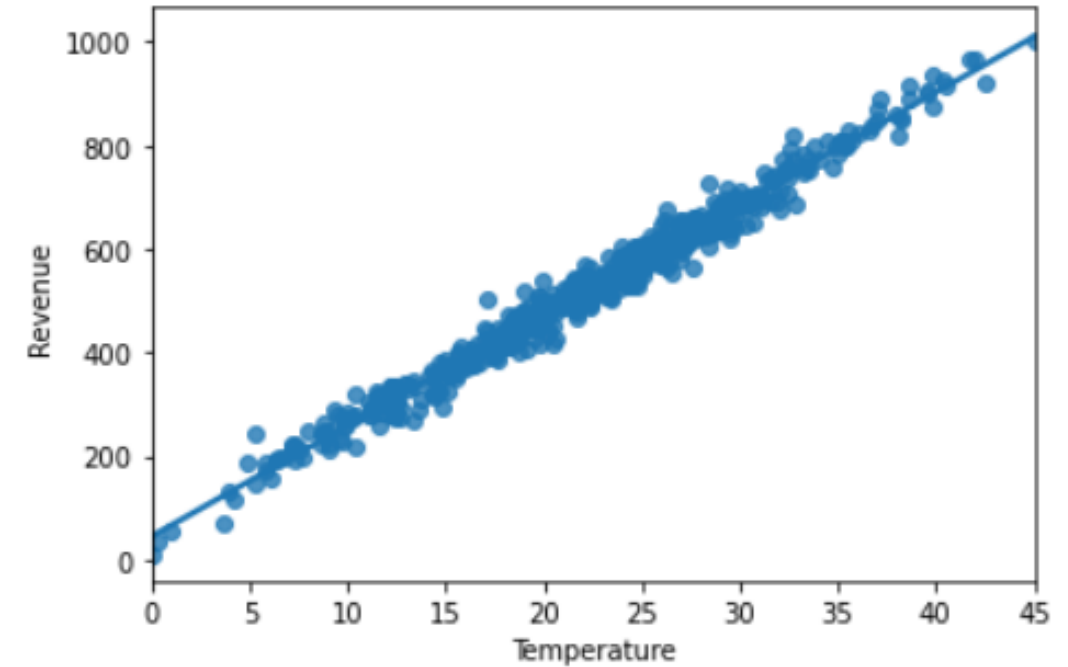
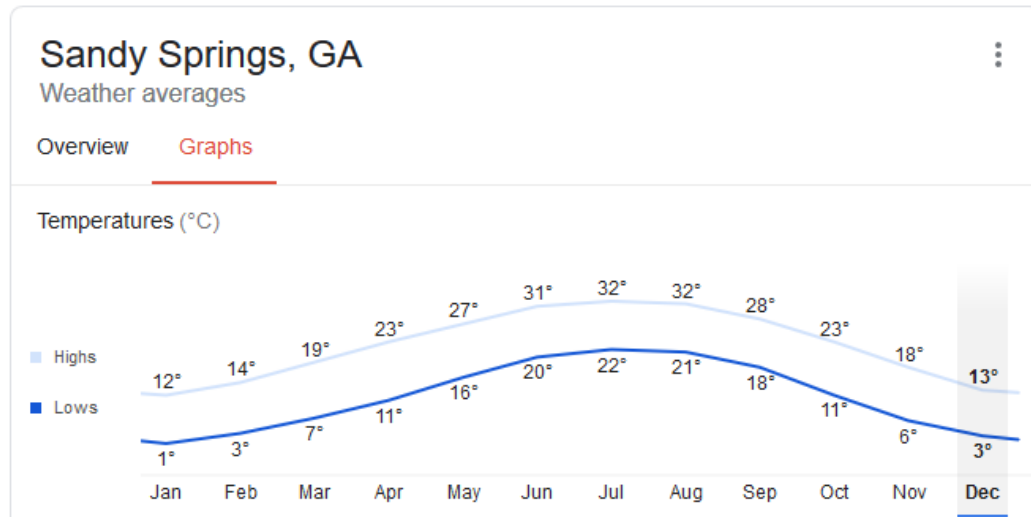
As you can see from the heat map below, as well as in the zip code based data represented to the left, Sandy Springs is a central area to high concentrations of homes with kids, the primary target for any ice cream shop. The shop will draw from adjacent areas, such as Dunwoody and Roswell, which are also represented in the zip code table.



Zip Code	Total HHs	% of Homes w/Kids<18 yrs
30338	14219	54%
30022	24134	53%
30360	5202	52%
30342	12669	51%
30076	16694	51%
30009	6477	50%
30092	14530	49%
30068	12166	46%
30075	19559	45%
30328	16437	45%
30327	9178	44%
30346	3033	43%
30350	17060	42%
30319	19336	42%
30339	12263	34%
Atlanta Metro	1779786	47%

# Results: Good Weather Will Drive Revenue

The Sandy Springs, GA area benefits from being located in the Southern part of the United States, where pleasant weather is available for the majority of the months of the year, allowing an ice cream shop to maximize its revenue across more months out of the year. As you can see from the temperature trends (in degrees Celsius, taken from a Google search), there is good sales potential from March to the beginning of November. Based on 2018 ice cream sales data retrieved from Kaggle, you see a definite positive linear relationship between increased temperature and ice cream sales revenue.

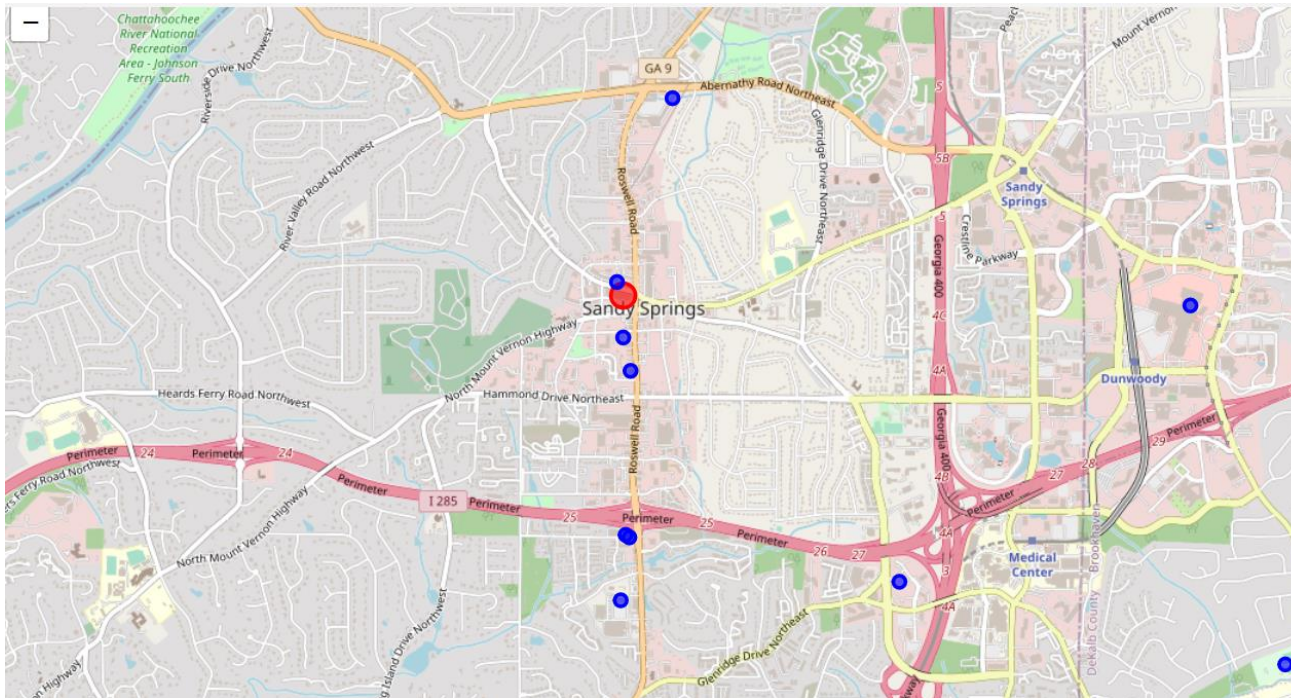


R<sup>2</sup>: 0.977546278174417

MSE: 618.1650069238149

# Results: Competitors

There are a handful of competitive ice cream shops in the area, but not as many as Foursquare makes one think. In fact it incorrectly identified eight entities (marked with a red arrow) as ice cream shops that are not. None the less, the ones that are correctly identified are in places that have adequate parking and are near shopping areas where consumers can easily access the store.

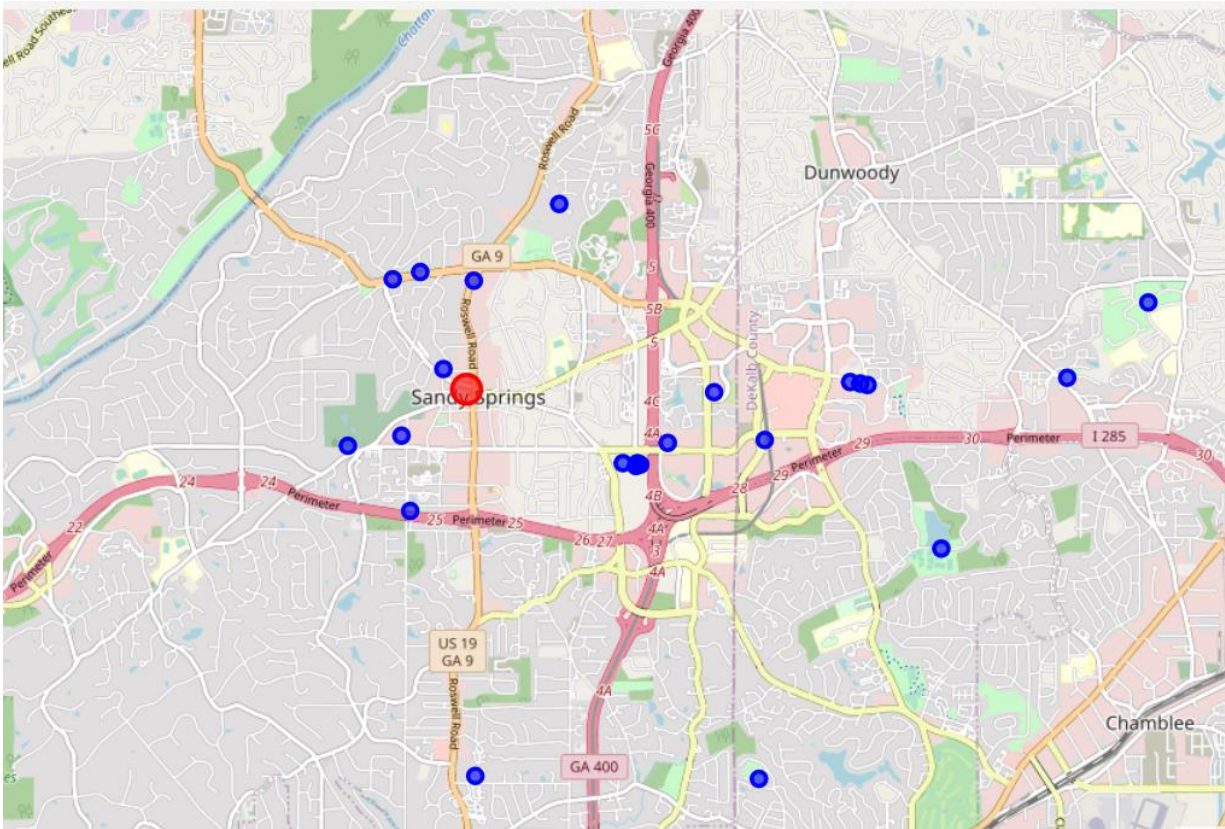






- 0 Bruster's Real Ice Cream
- 1 Baskin Robins 31 Ice Cream and Catering Sandy ...
- 2 Sub Zero Nitrogen Ice Cream
- 3 Greenwood Ice Cream
- 4 Carvel Ice Cream and Bakery
- 5 Bruster's Real Ice Cream
- 6 Braum's Ice Cream & Dairy Stores
- 7 Braum's Ice Cream & Dairy Stores
- 8 Bruster's Ice Cream - Lower Roswell
- 9 Maggie Moo's Ice Cream and Treatery
- 10 Gorins Homemade Ice Cream and Sandwiches - Pie...
- 11 Gorin's Homemade Ice Cream
- 12 Morelli's Gourmet Ice Cream
- 13 CalyRoad Creamery
- 14 → ICE Market Cafe
- 15 → Center Ice Arena
- 16 → center ice parking lot
- 17 → IntercontinentalExchange | ICE - HQ
- 18 → Ice Sensasation
- 19 → Ice Guys
- 20 Kwality Icecream
- 21 → Intercontinentalexchange, Inc.
- 22 → ICE - Madison Conference
- 23 Brusters Lower Roswell #1
- 24 → ICE - Atlanta Conference Room



# Results: Adjacent Parks

There are a number of public parks, playgrounds and recreation areas in the general vicinity, enough to provide ample opportunity consumers who might be looking for a treat to want to search for a local ice cream shop to satisfy their craving. Again, Foursquare infrequently misidentified some areas as public parks (see red arrows), when in fact they were an office or apartment complex. This does not significantly take away from the supply of locations.

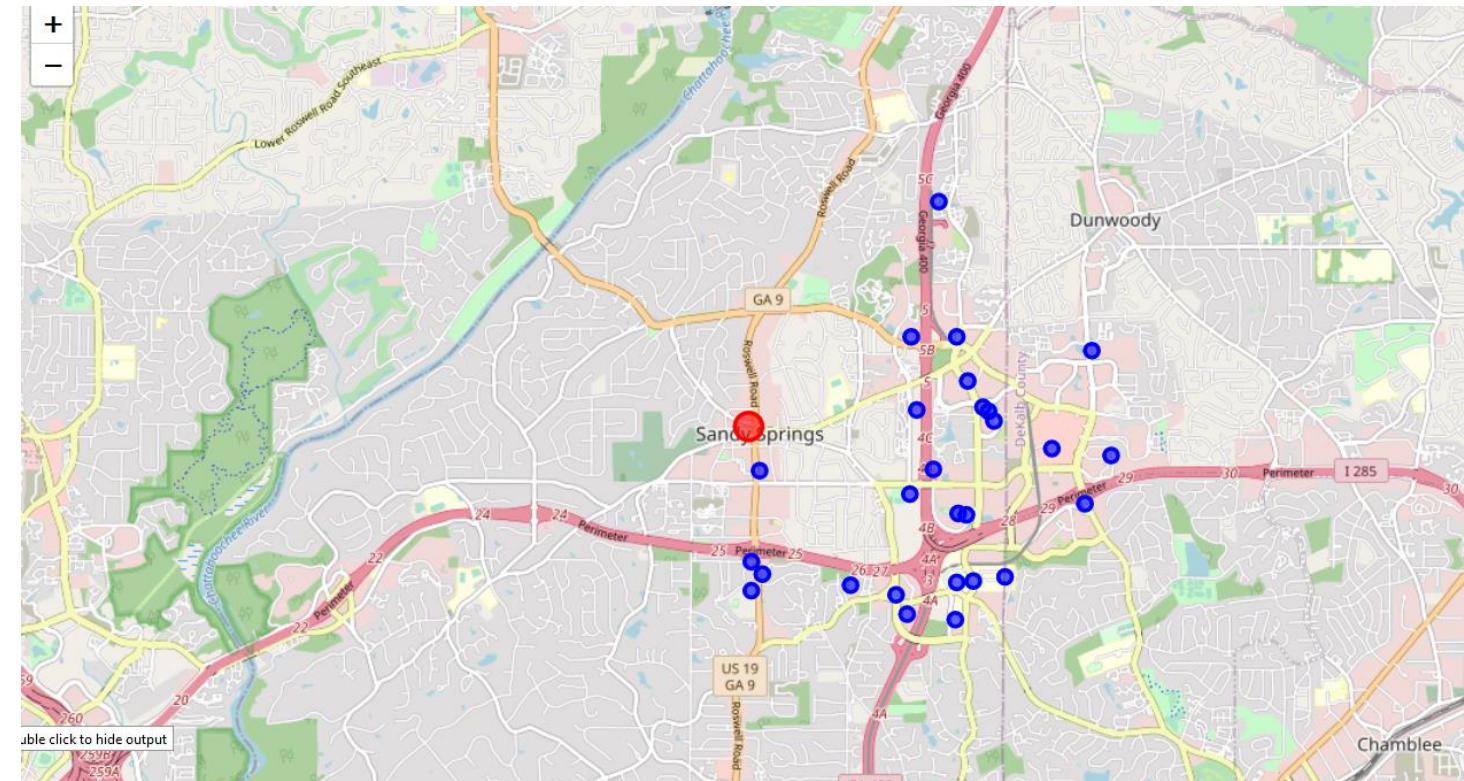


- 0 Allen Road Park
- 1 Park Center 1
- 2 Gym @ Park Towers
- 3  Park at Abernathy Square Apartments
- 4  The Vue @ Park Towers Pool
- 5 Chattahoochee Nature Trails & Park
- 6 Bank of North Georgia Park
- 7 Murphey Candler Park
- 8 Morgan Falls Overlook Park
- 9 Chastain Park
- 10 Cox Central Park 6B
- 11 Brook Run Park
- 12 Lake Forrest Office Park
- 13 Park at Chastain
- 14 Lynwood Park
- 15 Park at Pernoshal Court
- 16 Park towers II
- 17  Lakeside Commons Office Park
- 18 Abernathy Greenway Park and Playground
- 19 Chastain Park Playground
- 20 Park Towers
- 21 Dragonfly Park
- 22  Savannah at Park Place Apartments
- 23 Hammond Park
- 24 Fitness Center @ Savannah at Park Place



# Results: Adjacent Parking

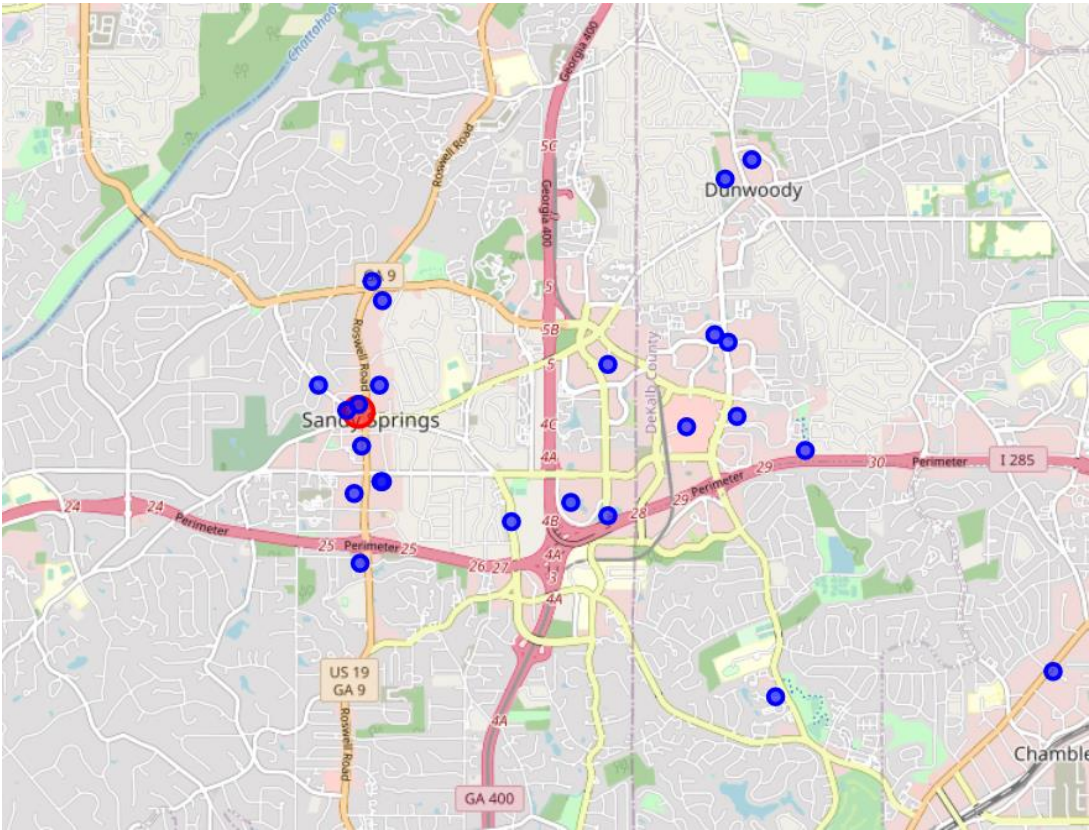
Sandy Springs and the surrounding locations are not a loss for parking. Many of the established lots can be found closely adjacent to the two major highways, 400 and 285, but there is also a limitless amount of parking at strip malls, which are not considered in this list.



- 0 Perimeter Mall Parking Deck
- 1 Parking Garage
- 2 Concourse Parking Deck 1
- 3 Northside Tower Parking Garage
- 4 SP+ Parking
- 5 center ice parking lot
- 6 Three Ravinia Parking Garage
- 7 Parking lot
- 8 Parking Deck
- 9 The Prado Parking Deck
- 10 Parking deck Roof 2 - Lunchtime Nap Spot
- 11 parking garage
- 12 GA 400 Toll Plaza Employee Parking Lot
- 13 park towers parking garage
- 14 Byers Parking Deck
- 15 Childrens Healthcare Parking Deck
- 16 Parking Lot
- 17 Parking Lot Dunwoody Station (Entrance)
- 18 One Glenlake Parking Garage
- 19 Cox - Parking Deck
- 20 Town Brookhaven Parking Lot
- 21 Concourse Parking Deck 2
- 22 Cox Parking Deck 6205
- 23 Glenridge South Parking Deck
- 24 Parking Lot Known As 400

# Results: Adjacent Restaurants

Sandy Springs has a wide variety of different cuisines that are located up and down Roswell Road, which is the main thoroughfare that goes through town. You can see this denoted in the blues dots that are north and south of the Sandy Springs City Center, which is denoted by a larger red dot.

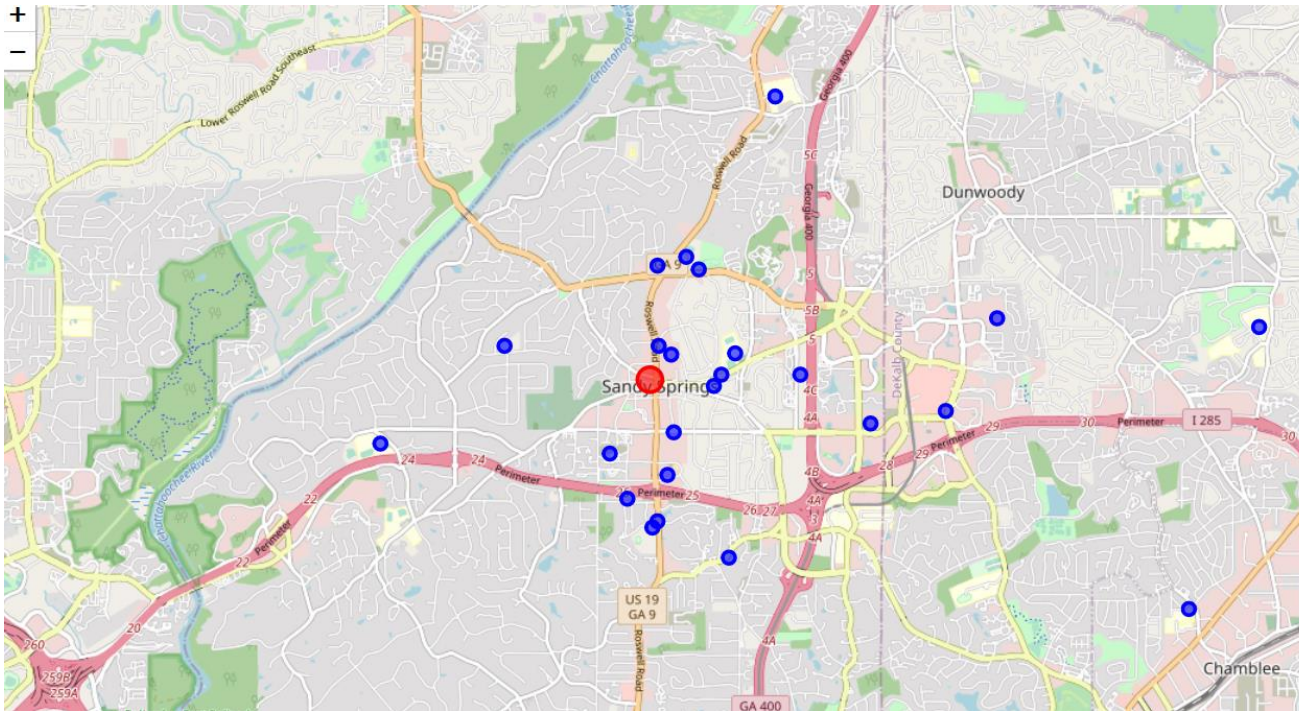


0	Zafron Restaurant
1	The Select Restaurant + Bar
2	El Paraiso Grill Mexican Restaurant
3	Jade Palace Chinese Restaurant
4	National Restaurant Brokers
5	Thai Restaurant Sandy Springs
6	Perkins Restaurant & Bakery Support Center
7	Joy Thai Restaurant
8	Taki Japanese Restaurant
9	Simha Authentic Multi Cuisine Fine Dine Restau...
10	El Torero Mexican Restaurant
11	Shamshiri Persian Restaurant
12	Tomo Japanese Restaurant
13	Restaurant Nasr
14	Arby's Restaurant Group, Inc.
15	Nations Restaurant News
16	North Peking: Super Chinese Restaurant
17	Courtside Restaurant & Cafe
18	Tequila Mexican Restaurant Restaurant
19	HAVEN Restaurant & Bar
20	Chef Rob's Caribbean Cafe
21	Downwind Restaurant & Lounge
22	Aldo's Italian
23	Ippolito's
24	Alexander's Restaurant



# Results: Adjacent Schools

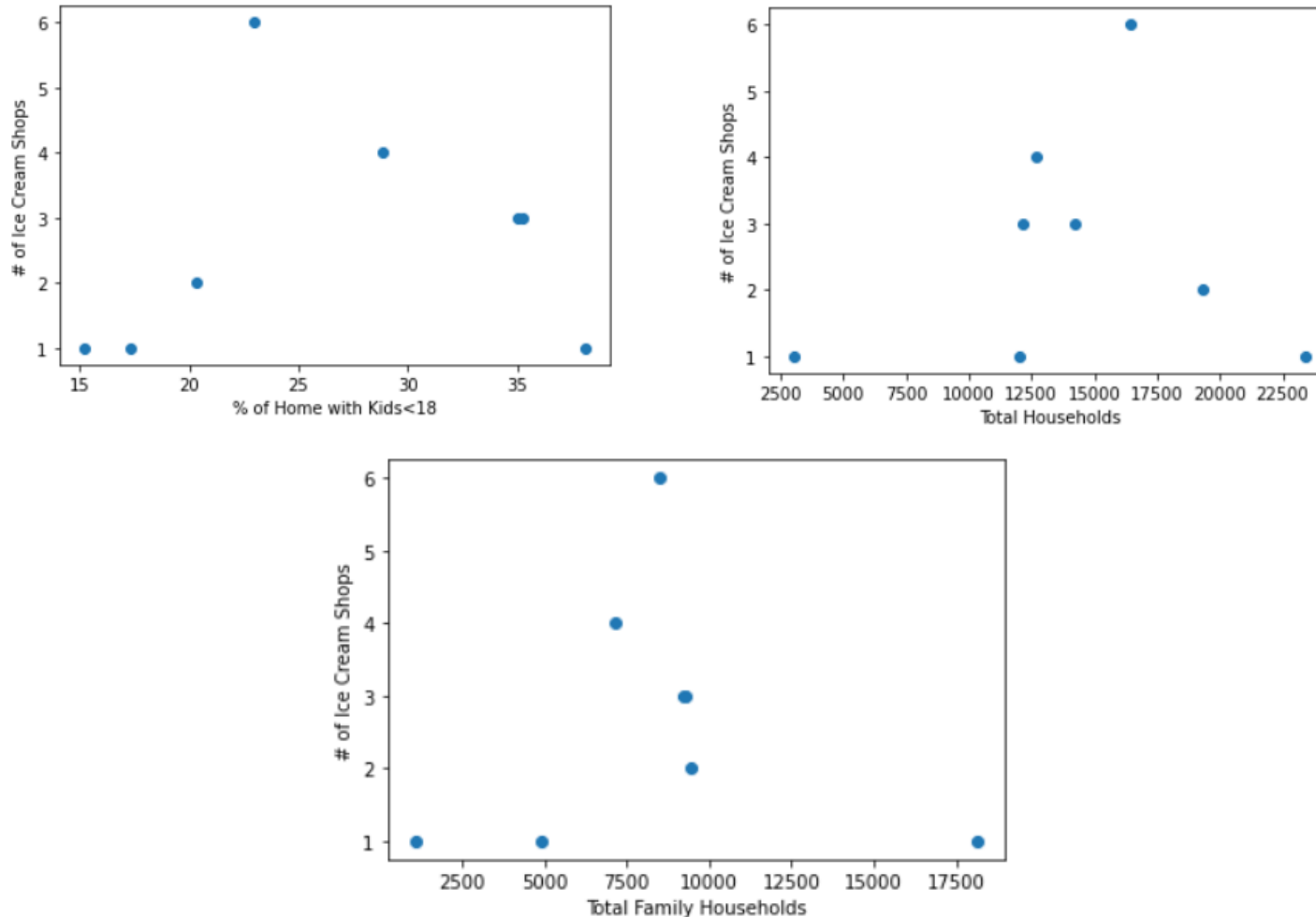
Related to the previous data that spoke to the percentage of homes with kids under the age of 18, there are a number of schools in and around the Sandy Springs area to accommodate the number of kids. Some of these schools are also located near some of the shopping and dining areas of town, giving kids easy access to get some ice cream in between classes or after school.



- 0 Lake Forest Elementary School
- 1 1 ACT DUI & Defensive Driving School
- 2 Riverwood International Charter School
- 3 International School of Skin & Nailcare
- 4 Timber Ridge Elementary School
- 5 Goldfish Swim School - Sandy Springs
- 6 The Goddard School
- 7 The Goddard School
- 8 North Springs Charter School of Arts & Sciences
- 9 Mount Vernon Presbyterian School - Glenn Campus
- 10 Chamblee Charter High School
- 11 Mount Vernon Presbyterian School
- 12 St. Martin's Episcopal School
- 13 MOUNT VERNON PRESBYTERIAN SCHOOL
- 14 Rock Steady School of Ballroom Dance
- 15 Empire Beauty School
- 16 School Of Humanity And Awareness
- 17 School
- 18 The Weber School
- 19 Sandy Springs Charter Middle School
- 20 The Epstein School
- 21 Primrose School of Sandy Springs North
- 22 The Galloway School
- 23 School Bus Stop
- 24 Holy Spirit Preparatory School - Upper School

# Results: Attempt at Pursuing Machine Learning

Number of Ice Cream Shops Versus  
Households, Family HHLs and HHLs with Kids<18



I attempted to use Machine Learning techniques, but I came to learn very quickly that the amount of data that I had was not conducive to this method. To start, I looked at scatterplots that showed the number of ice cream shops in the general area crossed with the demographic data that I received from the Fulton County Government office. As you can see in the plots below:

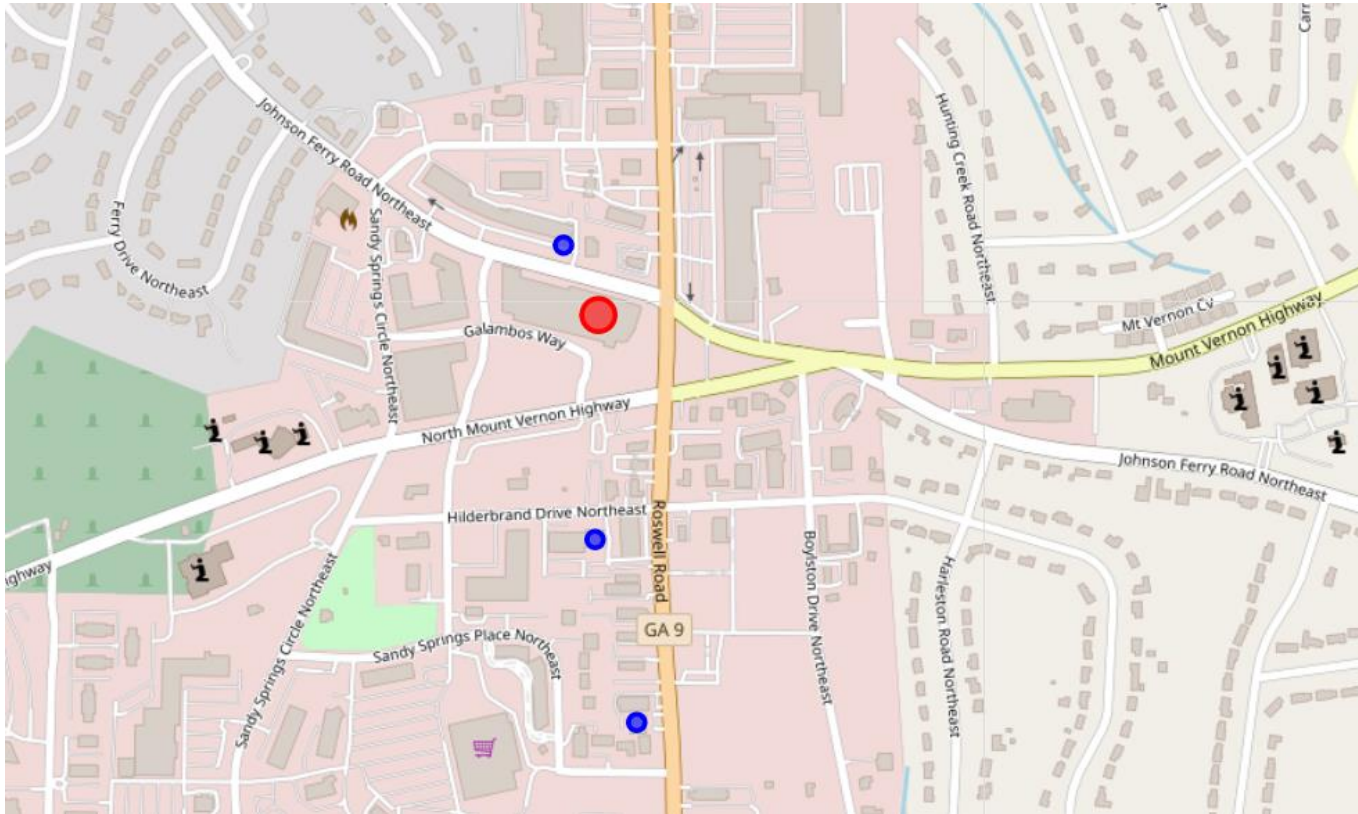
- (a) there is clearly not enough data reflected in the surrounding area,
- (b) the results in the scatterplots are very inconsistent and
- (c) there is no real indication of any type of relationship between the variables, all of which is driven by the minimal amount of available data.

# Discussion

- While there is some competition in the area, there still appears to be an opportunity to serve the community with an ice cream shop
- The area is not only home to a significant number of families, supported by the array of schools and local park and recreation areas, but it also has a robust consumer area that is supported by an array of restaurants
- Add to this the recent development of Sandy Springs City Center, where there is a newly-constructed indoor concert venue and adjacent outdoor events venue
- There would be an advantage to helping expand the business district on the east side of town, where there is space, along with accessibility to people, schools, places of worship and parking
- Regarding Machine Learning techniques used, one option could've been to expand the analysis to a larger area, but that may or may not have yielded results applicable to Sandy Springs.



# Conclusion



Drilling down closer in the Sandy Springs map that was developed, there is a better **opportunity to establish an ice cream store on the east side of Roswell Road**, either on Johnson Ferry Road or Mount Vernon Highway, giving access to some of the churches and synagogues, townhome developments and Mount Vernon School.

It would also be close enough to parking at City Center that is available on the east side of Roswell Road.