

New Business Viability: Korean Barbecue Restaurant in Barão Geraldo, Brazil

Date: July, 2020

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Project: IBM Applied Data Science Capstone Project
This is part of the Coursera and IBM course on data science.

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Abstract

In the last decade, South Korean culture interest increased exponentially due the global phenomena called K-Pop, using this new found interest as leverage, this work elaborates on the viability of opening a new Korean Barbecue Restaurant in the region of Barão Geraldo, a district of Campinas City, São Paulo, Brazil. Two studies were made: first a popularity search in São Paulo state using Google Trends to gauge the interest in some Korean culture and cuisine terms; second a web scraping of Barão Geraldo neighborhood CEPs (similar to postal codes) and acquisition of their corresponding coordinates via a free API named "CEP Aberto", these data were later used with Foursquare API to retrieve information about venues and their categories within the district central region. With all the information, it was possible to measure that there is an increase in Korean Cuisine popularity on São Paulo state and assess, with K-Means Machine Learning algorithm, the best location for a new Korean Barbecue Restaurant.

1 Introduction

In 2012, the song "Gangnam Style" by the Psy, was the first YouTube video to achieve 1 billion views [1], this was one of the many hits that the K-Pop music genre would produce throughout the years.

It has been 8 years since then and the phenomenon called "Hallyu", or Korean Wave, has taken up the world even if the term is not well know [2]. The Korean music industry, with its K-Pop, has been on of the most lucrative of the past years, ranking in 2018 at the 6th position among the top 10 music markets worldwide [3]. Due to strategic social media usage and smart marketing strategies, K-Pop helped put South Korean culture at the spotlight, and it does not seems to be getting out of it so soon.

Things could not be different in Brazil. The Hallyu has already reached the biggest Latin America country, which South Korea already have a 60 years of good diplomatic ties. Besides the economic and technological investments, South Korea intend to expand its culture and cultural values in Brazil [4]. This seems to be the right time for new Korean inspired venues throughout Brazil.

1.1 Business Proposition

Using this new found Korean culture interest and a promise of "cultural expansion", it is proposed to open a Korean Barbecue Restaurant in Barão Geraldo, a district of Campinas city, São Paulo.

However, are there any interest in this kind of cuisine in São Paulo state where Campinas is? Would this restaurant have too much competition or almost none? And where would be a good location for opening it?

1.2 Problem Pre Analysis

Barão Geraldo is home of Unicamp, the second best Brazilian University. It is a hub for different people and cultures. Because of the various student exchange agreements that the university has, South Korea being in this list, it would already have a good customer base. Besides this, Barão Geraldo is a huge technological center with three more universities, hospitals and the National Laboratory of Synchrotron Light, what contributes for very diverse customer base.

Both Brazilian and Korean cuisines have a method that are a style of barbecue: "Churrasco" and "Gogi-gu-i", respectively. They have their similarities, although Korean barbecue tends to be a little more seasoned (meats can be marinated) than it's Brazilian counterpart. In the other hand, Brazilian barbecue restaurants, called "churrascarias", have a "culture" of having every kind of food possible, it not unusual to come by a churrascaria that has pasta, pizzas or Japanese food on its menu. So, Korean Barbecue would probably be well received by Brazilians as well.

2 Data Acquisition and Analysis

2.1 Popularity

2.1.1 Data Acquisition

South Korean culture has been a trend worldwide, would it be still the same case in Brazil? A quick search in Google Trends could answer that.

First it is important to explain how Google Trends "Interest Number" works. Each term popularity is normalized by its peak popularity, so 100 means that this is the highest popularity of the term, while a number like "10" represents that the term is only 10% popular when compared to its peak.

Taking 2011 as the start of this study and São Paulo State as the region of interest, the first analysis made is related to South Korean culture, so terms like *Coreia Do Sul* (South Korea), K-Pop, *Culinária Coreana* (Korean Cuisine) and *Dorama* (Korean Drama) were chosen to be the first indicators (Figure 1).

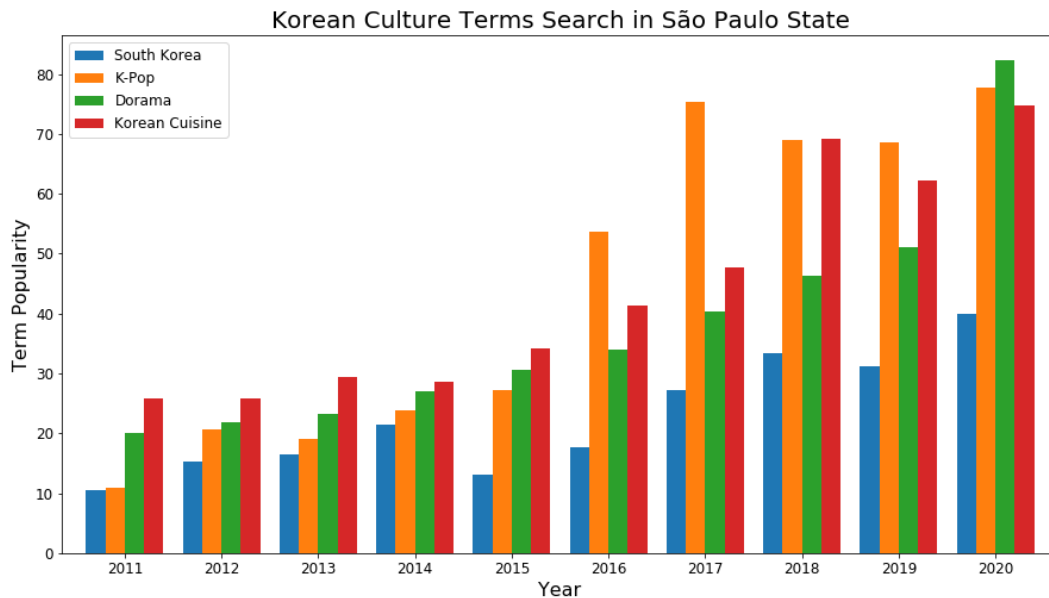


Figure 1: Korean Culture popularity from 2011 to 2020.

Making the same kind of data acquisition, but with the terms *Churrasco Coreano* (Korean Barbecue), Kimchi (a traditional Korean dish) and Bulgogi (a traditional Korean barbecue dish) Figure 2 is plotted.

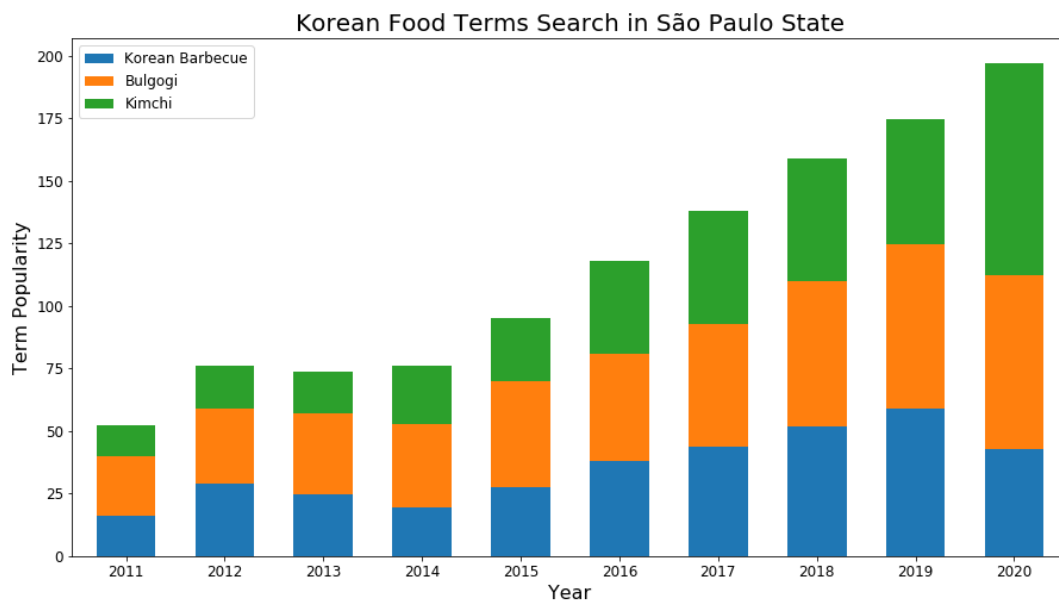


Figure 2: Korean food search popularity.

2.1.2 Data Analysis

Figure 1 shows that all of the terms popularities are rapidly growing throughout the years in São Paulo. This is a good indicator that there is a interest in this kind of culture. From Figure 2 it is noticeable that there

have been a increase as well, although "Korean Barbecue" and "Bulgogi" are not as popular as "Kimchi", both terms are beginning to increase like the other searched terms. Moreover, Kimchi could be on the restaurant menu, increasing the marketing and possible income.

It is important to notice that all São Paulo state has been used as the base for these analysis. Campinas is the state's third biggest city with a population with over one million, behind only of the capital São Paulo and Guarulhos, and it is Brazil's tenth richest city. With all this in mind, this popularity search could be a little biased towards São Paulo city, but Campinas would not fall to far behind.

2.2 Venue Distribution

Foursquare, in a nutshell, is a location platform that allow users to "check in" on different places, rate and give tips about them. This kind of data is extremely useful for data science when dealing with smart business opening, as it can be used to quickly gather information about venue distribution in a region.

To use Foursquare's API effectively, the region of interest should be defined, in this case Barão Geraldo, and its neighborhoods latitudes and longitudes listed. The API searches its database for venues within a defined radius centered in each of the coordinates, returning venue information, like its location, category, rating, price, tips etc. So, first and foremost, a web scraping must be done so to list Barão Geraldo's neighborhoods.

Brazil does not have a traditional postal code system, instead there is a system called Postal Code Addressing, or CEP. It was created in 1971 to facilitate mail distribution, but despite having a defined and helpful structure, the CEP system lacks a clear "meaning", it sometimes refers to a place like a factory, sometimes to a street, a neighborhood or even a whole city. Moreover, there are no complete public CEP number lists available online. Partial lists can be acquired through some webpages via search engines.

Even though there is a way to scrape this, the CEP system does not have an associated geolocation system until this day. It is extremely difficult to find the latitudes and longitudes for each CEP, and whatever information is available is charged by Brazil's Postal Service. Mind that this is a public information and should be free. Anyway, because of this, the most difficult task will be acquire each CEP geolocation and associate it with it's neighborhood.

2.2.1 Data Acquisition

Due the lack of information about CEPs and geolocation, this study will be restricted to Barão Geraldo's central region, where most of the markets and venues are. The search engine from [Guia Mais](#) was used to get the list of all CEP numbers with "Barão Geraldo" on its description (Figure 3)

	BAIRRO	CIDADE/ESTADO	CEP
70	Barão Geraldo	Campinas, SP	13084070
92	Barão Geraldo	Campinas, SP	13084175
90	Barão Geraldo	Campinas, SP	13084030
87	Barão Geraldo	Campinas, SP	13084020
83	Barão Geraldo	Campinas, SP	13084015

Figure 3: List with the first 5 CEP numbers.

The latitude and longitudes for each number was acquired via a free API called "CEP Aberto", a project that has as its goal build a free public database for CEP numbers and its geolocations [5]. Figure 4

With these locations and coordinates, Foursquare API can be used get venue information. For this project the key features are venue category and location.

2.2.2 Data Analysis

An analysis that can be made is related to the number of venues by category in the region. Sorting the result by category and dropping the categories that have only 1 venue in the region, since it would not influence in the decision, Figure 5 can be plotted.

Plotting each venue on top of Barão Geraldo's map, as in Figure 6, one can notice that there is a concentration of venues along one of the district's venues.

It looks like that there is also a tendency of venue category. Using K-Means machine learning algorithm is possible to cluster similar regions.

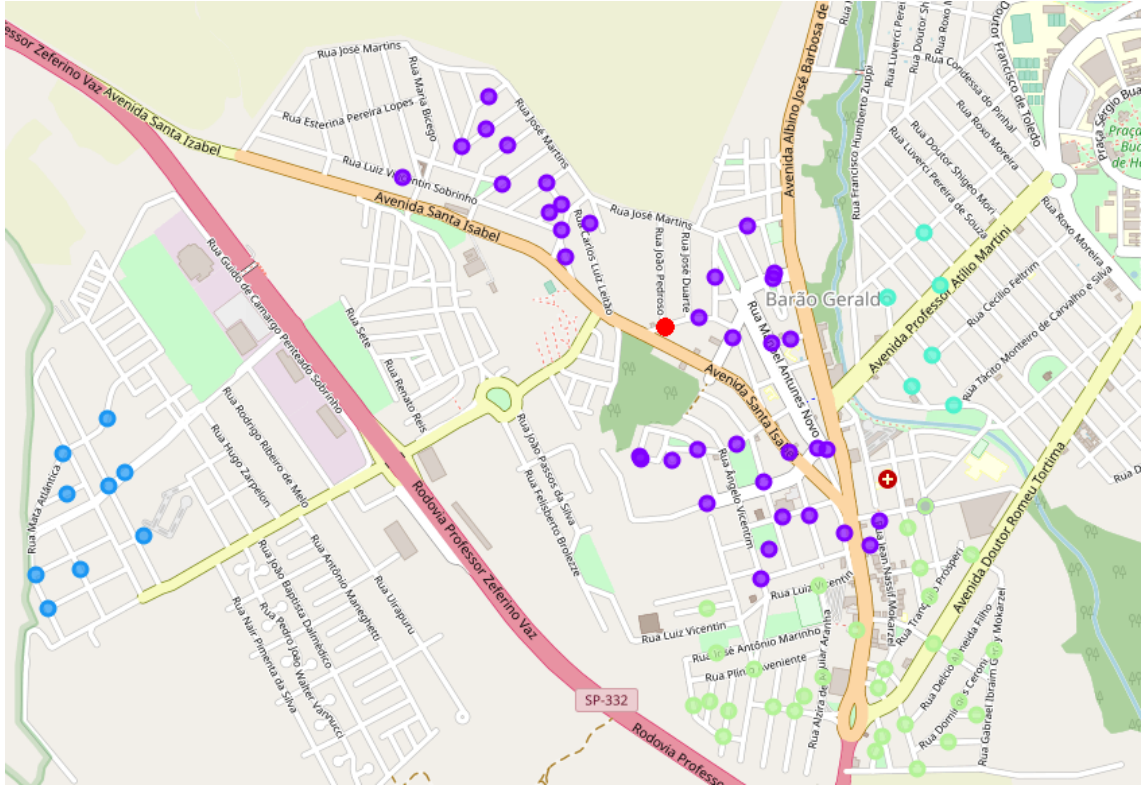


Figure 4: Barão Geraldo map, where each circle color represents a different neighborhood.

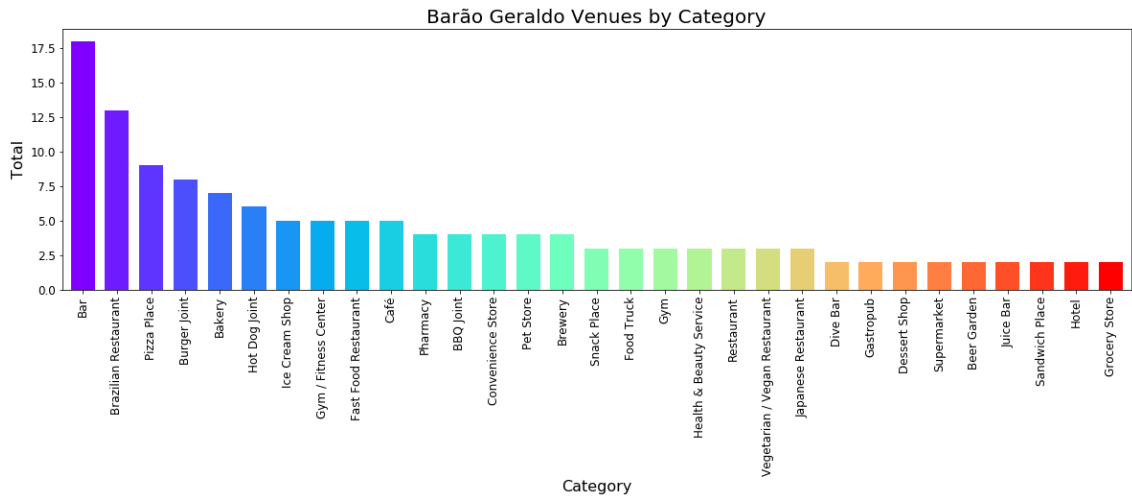


Figure 5: Venue categories distribution.

Due to the great quantity of outliers and venue categories, the value of different kinds of clusters is set to 10 ($K = 10$) and it is set to evaluate the 5 most common venues around each region. Figure 7 cleans the map, but the tendency along the avenue continues and now is possible to notice the existence of a common cluster (the bluish-purple one).

The most interesting cluster for this study is Cluster 1. Figure 8 shows the venue categories that the algorithm grouped together.

3 Results

Based on the first study, there is in fact a increasing interest in Korean culture and cuisine. Terms like "Bulgogi" and "Korean Barbecue" are beginning to increase in popularity, this could mean that in a near future these terms would exponentially grow as well, implying that opening a restaurant in such a period could be very profitable.

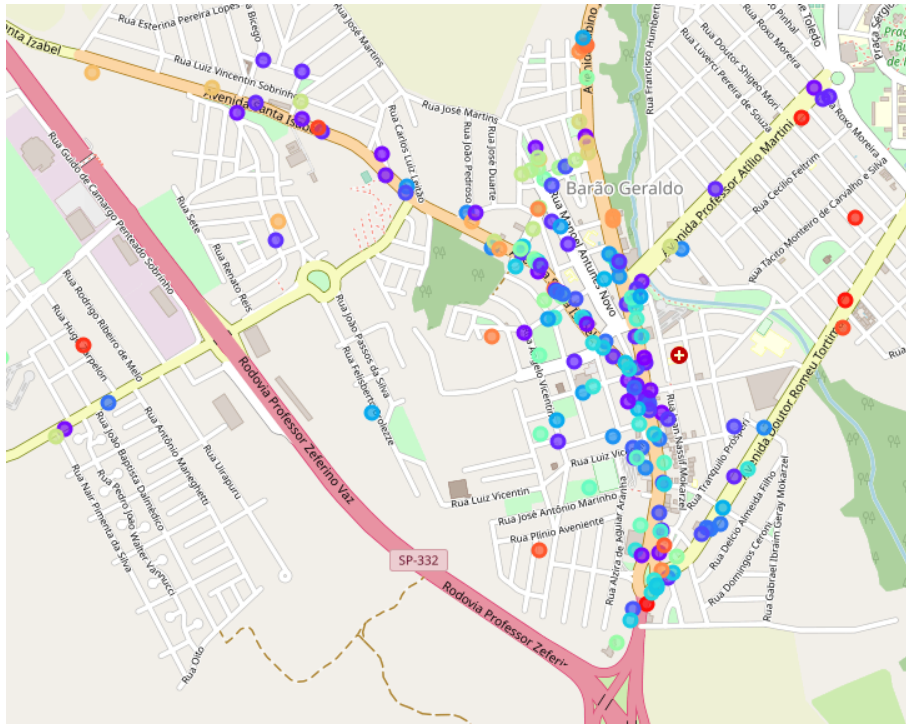


Figure 6: Location of venues on Barão Geraldo. Each color represents a different category.

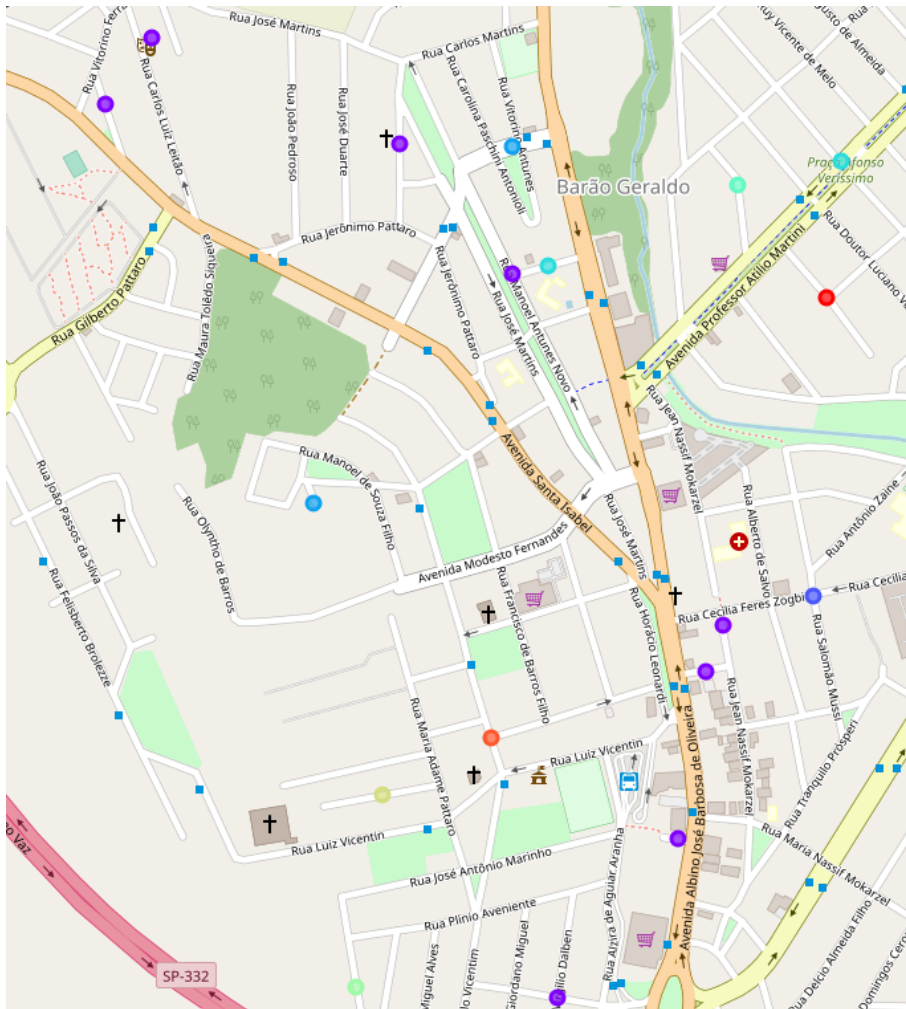


Figure 7: Venue Cluster distribution on Barão Geraldo.

	cep	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	13084070	Bar	Brazilian Restaurant	Pizza Place	Ice Cream Shop	Japanese Restaurant
1	13084175	Brazilian Restaurant	Vegetarian / Vegan Restaurant	Restaurant	Brewery	Burger Joint
3	13084020	Hot Dog Joint	Gym / Fitness Center	Café	Health & Beauty Service	Beer Garden
12	13084200	Pizza Place	Bakery	Hotel	Gastropub	Sandwich Place
19	13085850	Fast Food Restaurant	Gymnastics Gym	Dive Shop	Clothing Store	Coffee Shop
24	13084065	Brazilian Restaurant	Café	BBQ Joint	Supermarket	Bus Stop
51	13084225	Comfort Food Restaurant	Hot Dog Joint	Vegetarian / Vegan Restaurant	Dive Shop	Clothing Store
53	13082754	Park	School	Brazilian Restaurant	Gym	BBQ Joint
54	13082762	Grocery Store	BBQ Joint	Food Truck	Restaurant	Dive Bar
75	13084756	Burger Joint	Ice Cream Shop	Dive Bar	Toy / Game Store	Bar
76	13084762	Convenience Store	Brazilian Restaurant	Vegetarian / Vegan Restaurant	Dive Bar	Clothing Store

Figure 8: Cluster 1 elements.

The last section explored the venue categories that exist in Barão Geraldo central region. Note that there are only a few Japanese restaurants and almost none Chinese or Thai restaurants in the region as they don't appear on Figure 5 graph, also there are no Korean restaurants of any kind. However, there is a reasonable amount of BBQ Joints (Brazilian Churrascarias) in the region.

After applying the K-Means algorithm, all possible regions for opening a restaurant were filtered out to only a few, with Cluster 1 been the most relevant, as it is made by different kinds of restaurants and food joints.

4 Discussion

Barão Geraldo has a very diverse venue composition, the three main venue categories on the region are Bars, Brazilian Restaurants (for obvious reasons) and Pizza Places, this implies that there would not be too much competition or been just more of the same. Moreover, because of Brazil's Churrascarias already existing customer base, a Korean Barbecue restaurant would blend in nicely.

5 Conclusion

Despite the limited amount of geolocation data available, it was possible to evaluate the viability of a new Korean Barbecue on the region of Barão Geraldo.

The increasing popularity of Korean Cuisine, levered by the Hallyu world phenomenon, implies that this is the right time for opening a Korean Barbecue Restaurant. Barão Geraldo would be a great location too: low competition with other similar restaurants, a good similarity with Brazilians Churrascarias and with the university providing a good customer diversity.

Machine learning provided a good region filter for possible best opening locations. Every cluster 1 location is interesting, but CEP number 13084070 is the probably the best bet.

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