

# **Starbucks in Quito, EC**

## **Finding the Best Location for the First Starbucks in Quito**

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Submitted as part of IBM's Data Science Specialization  
Applied Data Science Capstone Project

# Background

**There are no Starbucks shops in Ecuador, not even in its capital city, Quito.**

**Starbucks is interested in opening its first shop there but they would like to know what the best neighborhood or area in the city is the best for their enterprise to be successful.**

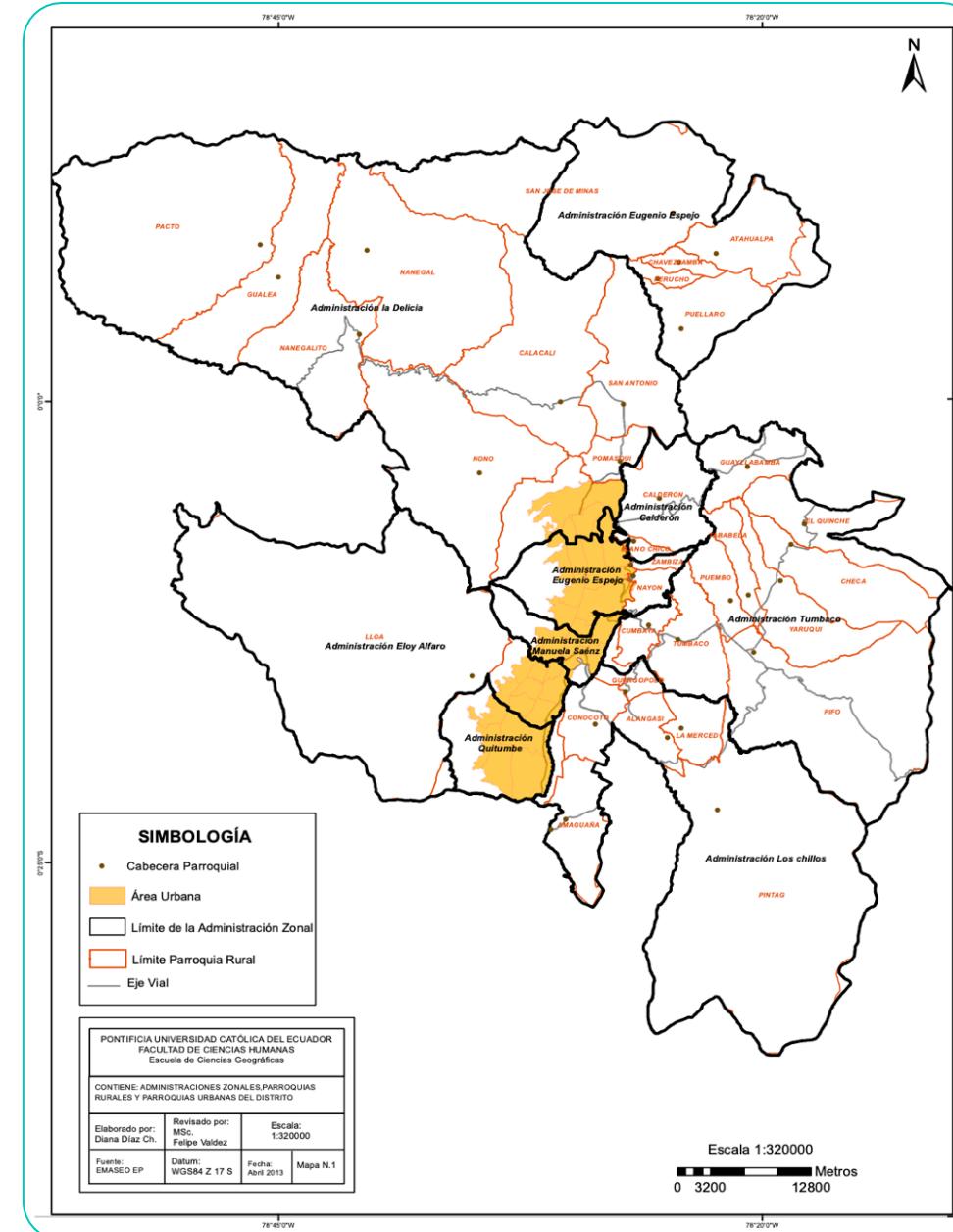


# Data

- 2 main data sources:
  - Quito's municipality website: database with city's neighborhoods and their geographical coordinates.
  - Foursquare API: venues and venue categories data.

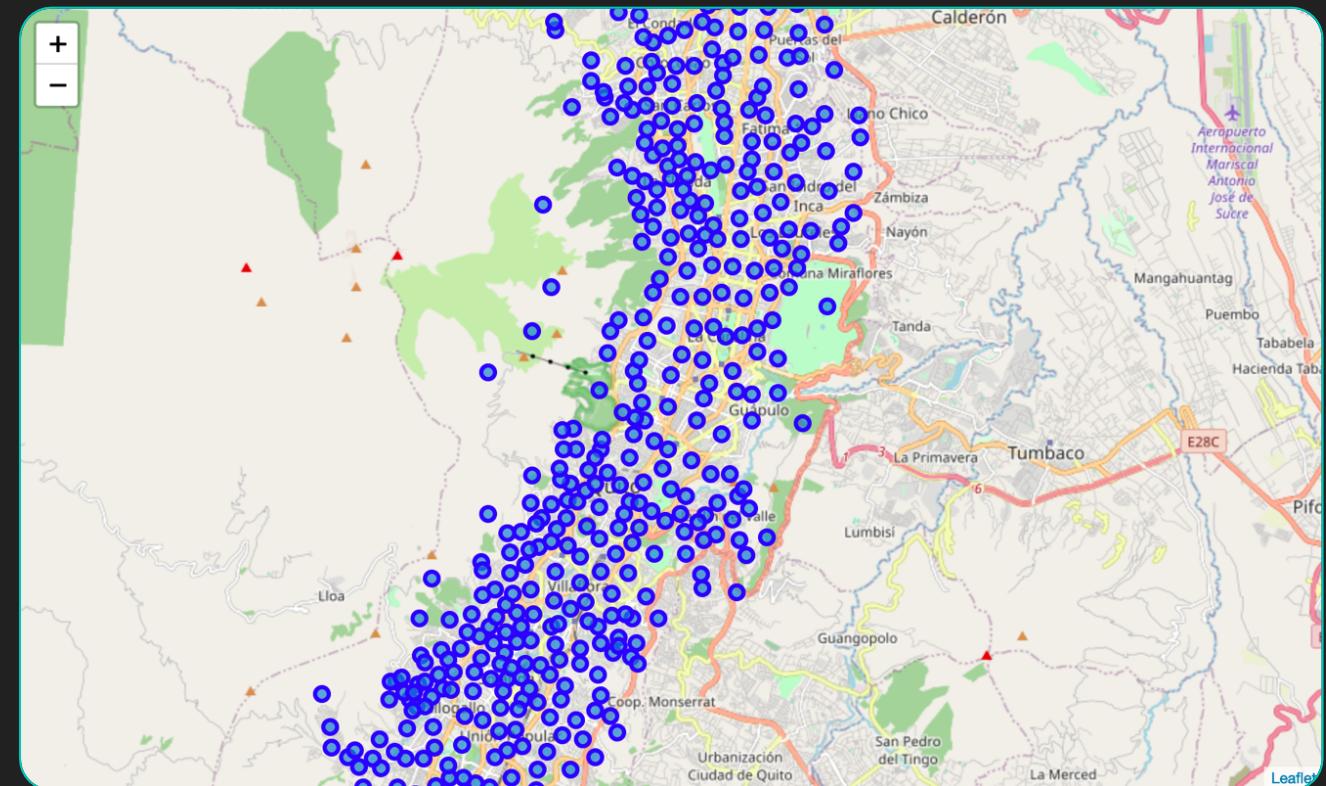
# Quito's neighborhoods

- The Metropolitan District of Quito is huge. We decide to work only with neighborhoods included in its urban area, colored in yellow in this map.



# Mapping neighborhoods

- We use Folium to create a map of Quito and we superimpose each of its urban neighborhoods with their coordinates.



# Exploring neighborhoods in Quito

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	NUEVA VIDA	-0.273928	-78.563715	S29C Y OE12E	-0.272326	-78.563025	Bus Stop
1	NUEVA VIDA	-0.273928	-78.563715	Mariachi Fiesta Mexicana	-0.275757	-78.565411	Convention Center
2	VENCEREMOS	-0.272159	-78.564992	S29C Y OE12E	-0.272326	-78.563025	Bus Stop
3	VENCEREMOS	-0.272159	-78.564992	Mariachi Fiesta Mexicana	-0.275757	-78.565411	Convention Center
4	AVIACION CIVIL	-0.155464	-78.487854	Menestras del Primo	-0.155252	-78.488654	Restaurant
5	AVIACION CIVIL	-0.155464	-78.487854	Cachorros	-0.153951	-78.491237	Gym
6	AVIACION CIVIL	-0.155464	-78.487854	La Michoacana	-0.158246	-78.490567	Mexican Restaurant
7	AVIACION CIVIL	-0.155464	-78.487854	El Manglar De Las Conchas	-0.155171	-78.488566	Seafood Restaurant
8	AVIACION CIVIL	-0.155464	-78.487854	Los legitimos helados de paila de la Concepcion	-0.153525	-78.491681	Ice Cream Shop
9	AVIACION CIVIL	-0.155464	-78.487854	La tortilla	-0.153528	-78.490682	Arepa Restaurant

# Analyzing each neighborhoods venue categories

- We used one-hot encoding to explore the neighborhoods in terms of the frequency of occurrence of each venue category nearby.

----10 DE JUNIO----

	venue	freq
0	Gym / Fitness Center	0.25
1	Restaurant	0.25
2	Athletics & Sports	0.25
3	Shopping Mall	0.25
4	Airport Terminal	0.00

----ESTADIO ATAHUALPA----

	venue	freq
0	Italian Restaurant	0.12
1	Coffee Shop	0.06
2	Japanese Restaurant	0.04
3	Seafood Restaurant	0.04
4	Sushi Restaurant	0.04

----1RA ZONA AEREA----

	venue	freq
0	Bus Station	0.25
1	Coffee Shop	0.25
2	Seafood Restaurant	0.25
3	Pizza Place	0.25
4	Airport Terminal	0.00

----EUGENIO ESPEJO----

	venue	freq
0	Restaurant	0.33
1	Breakfast Spot	0.33
2	BBQ Joint	0.33
3	Pet Store	0.00
4	Other Great Outdoors	0.00

----1RO MAYO MONJAS----

	venue	freq
0	Construction & Landscaping	0.2
1	Park	0.2
2	Auto Workshop	0.2
3	BBQ Joint	0.2
4	Seafood Restaurant	0.2

----FELIXRIVADENEIRA----

	venue	freq
0	Restaurant	0.14
1	Asian Restaurant	0.14
2	Farmers Market	0.14
3	Gym	0.14
4	Gym / Fitness Center	0.14

----2 DE FEBRERO----

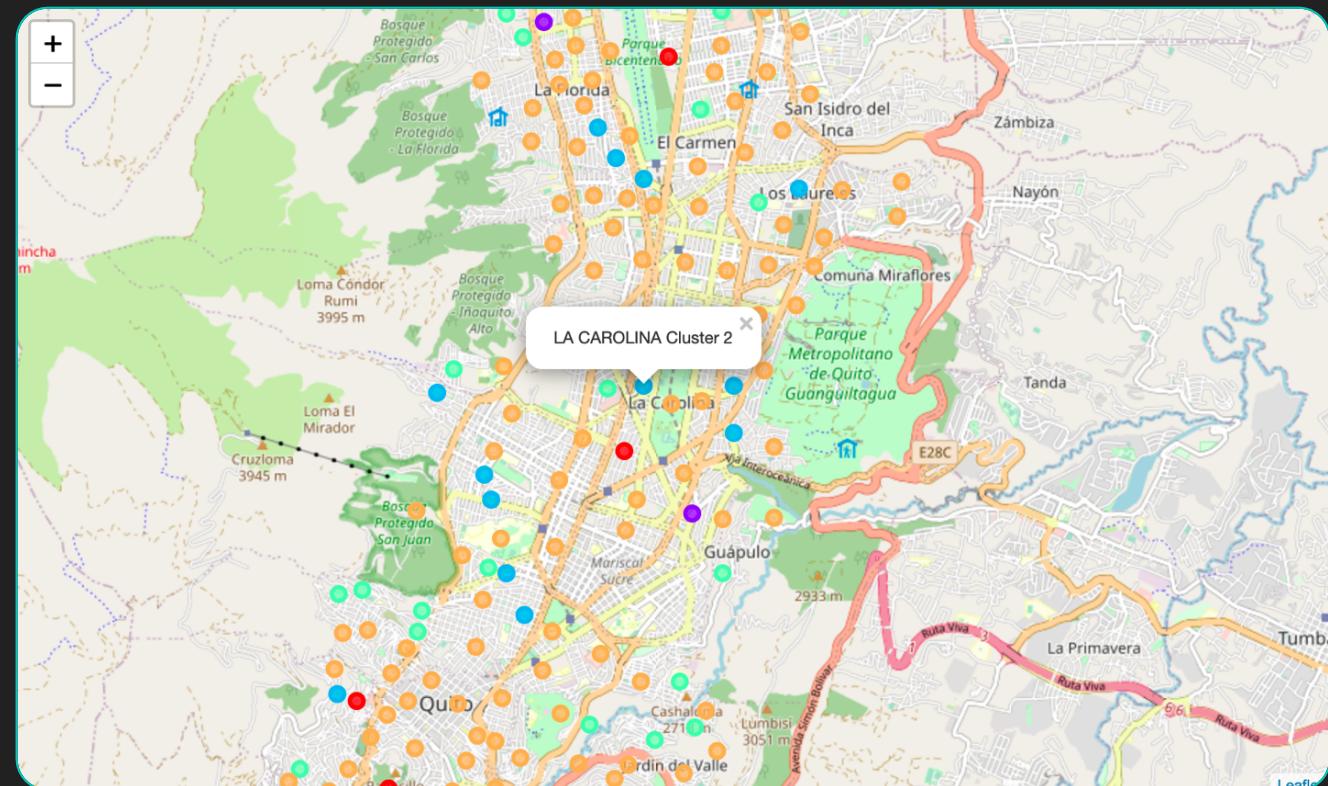
	venue	freq
0	Restaurant	0.2
1	Pharmacy	0.2
2	Business Service	0.2
3	Asian Restaurant	0.2
4	Seafood Restaurant	0.2

----FERROVIARIA BAJA----

	venue	freq
0	Seafood Restaurant	0.5
1	Soccer Field	0.5
2	Airport Terminal	0.0
3	Pet Store	0.0
4	Other Great Outdoors	0.0

# Clustering neighborhoods

- The venues data was then trained using a K-means clustering algorithm to get the desired clusters to base the analysis on.
- We created 5 clusters.



# Cluster 1

- This cluster's most common venues seem to be mainly parks, zoos and fields, so it would not be a good match for Starbucks.

## Cluster 1

```
ui0_merged.loc[ui0_merged['Cluster Labels'] == 0, ui0_merged.columns[[2] +
```

	Neighborhood	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
17	STA. BARBARA BAJA	0	Park	Convenience Store	Nightclub	Plaza	Zoo
27	MIRAFLORES ALTO	0	Park	Zoo	Empanada Restaurant	Food	Flower Shop
109	SAN SALVADOR	0	Scenic Lookout	Park	Zoo	Donut Shop	Flea Market
158	TOCTIUCO	0	Business Service	Park	Zoo	Empanada Restaurant	Flower Shop
199	ARGELIA INTERMEDIA	0	Burger Joint	Park	Empanada Restaurant	Food	Flower Shop
236	PAVON GRIJALVA	0	Park	Zoo	Empanada Restaurant	Food	Flower Shop
276	CONSEJO PROVINCIAL	0	Park	Zoo	Empanada Restaurant	Food	Flower Shop
298	CAMPO ALEGRE	0	Arts & Entertainment	Park	Zoo	Empanada Restaurant	Food

# Cluster 2

- Neighborhoods in cluster 2 seem to be surrounded by bus stations, mostly, as well as miscellaneous categories not related with the food and beverages industry. Again, not the best match for our Starbucks shop.

## Cluster 2

```
uio_merged.loc[uio_merged['Cluster Labels'] == 1, uio_merged.columns[[2] + li
```

	Neighborhood	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
22	CAUSAYLLACTA	1	Bus Station	Zoo	Empanada Restaurant	Food	Flower Shop
43	EL ROCIO	1	Bus Station	Fast Food Restaurant	Farmers Market	Soccer Stadium	Grocery Store
68	LA TOLA	1	Brewery	Park	Bus Station	Hostel	Food
71	AREA DE PROTECCION	1	Bus Station	Art Museum	Zoo	Empanada Restaurant	Food
106	ALVARO PEREZ INDEPENDIENTE	1	Convenience Store	Bus Station	Department Store	Zoo	Empanada Restaurant
133	LULUNCOTO	1	Bus Station	Breakfast Spot	Art Museum	Zoo	Entertainment Service
157	HUAYRALLACTA	1	Bus Station	Zoo	Empanada Restaurant	Food	Flower Shop
165	EL COMERCIO	1	Bus Station	Pharmacy	Auto Garage	Pet Store	Zoo
166	LOS LIBERTADORES	1	Martial Arts Dojo	Bus Station	Furniture / Home Store	Bar	Zoo

Latin

# Cluster 3

- Neighborhoods in cluster 3 seem to be surrounded by gyms, mostly, as well as zoos flea markets and flower shops. Again, not the best match for our Starbucks shop.

## Cluster 3

```
uio_merged.loc[uio_merged['Cluster Labels'] == 2, uio_merged.columns[[2]]]
```

	Neighborhood	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
14	COLINAS DEL SUR	2	Gym	Zoo	Flower Shop	Flea Market	Field
44	LA ESTANCIA	2	Gym	Zoo	Flower Shop	Flea Market	Field
143	YAGUACHI	2	Gym	Fried Chicken Joint	Food & Drink Shop	Flower Shop	Flea Market
177	LA LIBERTAD	2	Gym	Zoo	Flower Shop	Flea Market	Field
314	SANTA LUCICIA 2	2	Gym	Gift Shop	Food & Drink Shop	Flower Shop	Flea Market
320	S.FRANC HUARCAY	2	Gym	Zoo	Flower Shop	Flea Market	Field
359	BUENOS AIRES	2	Gym	Bus Line	Zoo	Flower Shop	Flea Market

# Cluster 4

- This is the first cluster in which its neighborhoods seem to have a high variety of restaurants, which are related to a coffee shop. This cluster is a good candidate for Starbucks to consider when opening their first coffee shop in Quito.

## Cluster 4

```
ui0_merged.loc[ui0_merged['Cluster Labels'] == 3, ui0_merged.columns[[2] +
```

	Neighborhood	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
11	PRESIDENCIA REPUBLICA	3	Seafood Restaurant	Fast Food Restaurant	Pizza Place	Soccer Field	BBQ Joint
35	MADRIGAL	3	Restaurant	Construction & Landscaping	Seafood Restaurant	Bed & Breakfast	Zoo
36	S.PEDRO MONJAS	3	Fast Food Restaurant	Restaurant	Clothing Store	Seafood Restaurant	Zoo
41	MIRAFLORES BAJO	3	Burger Joint	Fast Food Restaurant	Snack Place	Seafood Restaurant	Electronics Store
50	LOS ARRAYANES	3	Pizza Place	Burger Joint	Soccer Field	Seafood Restaurant	Electronics Store
61	VERTIENTES SUR	3	Seafood Restaurant	BBQ Joint	Zoo	Electronics Store	Food
73	PABLO ART SUAREZ	3	Construction & Landscaping	Health & Beauty Service	Seafood Restaurant	Grocery Store	Zoo
80	CHIMBACALLE	3	Print Shop	Diner	Chinese Restaurant	Seafood Restaurant	Zoo
83	MONGE DONOSO	3	Bus Station	Motel	Clothing Store	Seafood Restaurant	Zoo
98	LA VICTORIA	3	Seafood Restaurant	Fried Chicken Joint	Hotel	Farmers Market	History Museum

# Cluster 5

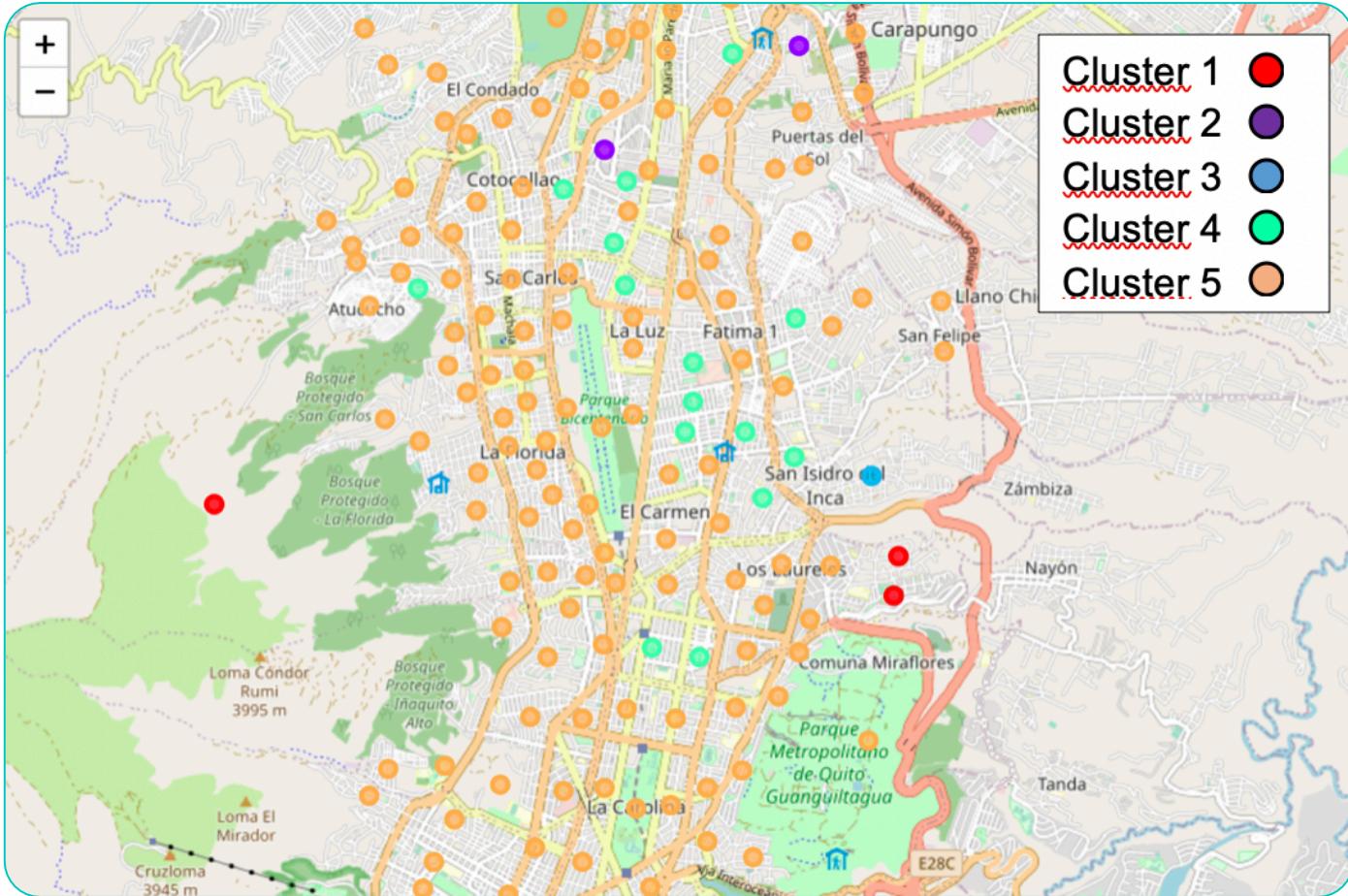
- This is the largest and least specific cluster we obtained. Its structure is hard to interpret, given that its most common venues don't seem to be related. It may or may not be a good fit for Starbucks' ideal neighborhood.

Cluster 5

```
ui0_merged.loc[ui0_merged['Cluster Labels'] == 4, ui0_merged.columns[[2] + list(range(5
```

	Neighborhood	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	NUEVA VIDA	4	Convention Center	Bus Stop	Zoo	Electronics Store	Flower Shop
1	VENCEREMOS	4	Convention Center	Bus Stop	Zoo	Electronics Store	Flower Shop
2	AVIACION CIVIL	4	Restaurant	Pizza Place	Pharmacy	Seafood Restaurant	Sculpture Garden
3	S.MARTHA ALT CHIL	4	Bus Stop	Zoo	Empanada Restaurant	Food	Flower Shop
4	LA RAYA A	4	Restaurant	Cafeteria	Pizza Place	Latin American Restaurant	Garden
5	RUPERTO ALARCON	4	Electronics Store	Zoo	Food	Flower Shop	Flea Market
6	SOLANDA	4	Convenience Store	Plaza	Dessert Shop	Big Box Store	Park
7	EUGENIO ESPEJO	4	Breakfast Spot	Restaurant	BBQ Joint	Zoo	Empanada Restaurant
8	SANTIAGO 1	4	Supermarket	Pizza Place	Pharmacy	Shopping Mall	Zoo
9	S.ROSA CHIL 3ETP	4	Convention Center	Electronics Store	Food	Flower Shop	Flea Market

# The winner? Cluster 4



- The neighborhoods in this cluster are surrounded by venues very much related to the food and beverages industry. These areas are populated with all sorts of restaurants and cafes, making them the ideal place for a world renowned coffee shop to succeed.

# Discussion

- Cluster 5 did not seem to be grouped by any discernible criteria or clear pattern of its venue categories.
- We believe this is due to the fact that many of the neighborhoods did not have more than 1 or 2 venues in the established 500 meters radius.
- We would recommend repeating the analysis by only using neighborhoods with at least 5 venues in their surroundings.

Thank you!

coursera

