

Selecting the Best Neighborhood to Open an Art Gallery in São Paulo



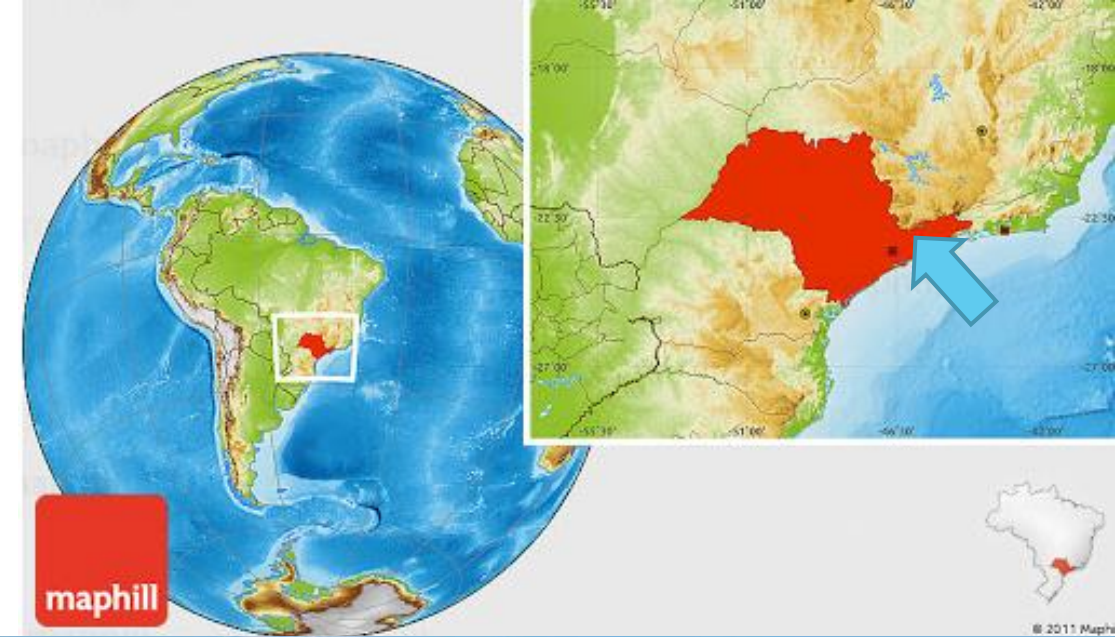
The City: São Paulo, Brazil

- ▶ Biggest city of Brazil;
- ▶ 12th most populous on Earth, with almost 22 million people;
- ▶ 5th city with more museums in the world;
- ▶ More than 90 official neighborhoods in the city;

Question to be answered:

What is the best neighborhood to open an art gallery in São Paulo?

?



Data Acquisition and Cleaning

- File provided in the City Hall website, containing all official neighborhoods and its geographical coordinates (latitude and longitude);

	Borough	Latitude	Longitude
0	Sé Bela Vista	-23.559353	-46.647325
1	Bom Retiro	-23.525558	-46.640975
2	Cambuci	-23.564380	-46.621792
3	Consolação	-23.551929	-46.655807
4	Liberdade	-23.559745	-46.635536
5	República	-23.543598	-46.642705

94 rows, 3 columns

- Foursquare data, obtained with API's, containing the venues close, in a 500m radius, to each location provided.

	Neighborhood	Art Gallery	Art Museum	Art Studio	Arts & Crafts Store	Arts & Entertainment	Auditorium	Antique Shop	Bookstore	Bus Station	Bus Stop	Camera Store	Circus	College Bookstore	College Theater
0	Alto de Pinheiros	0	0	0	0	0	0	0	1	0	0	0	0	0	0
1	Anhanguera	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Aricanduva	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Artur Alvim	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Barra Funda	0	0	0	1	0	0	0	0	0	0	0	0	0	0

94 rows, 41 columns

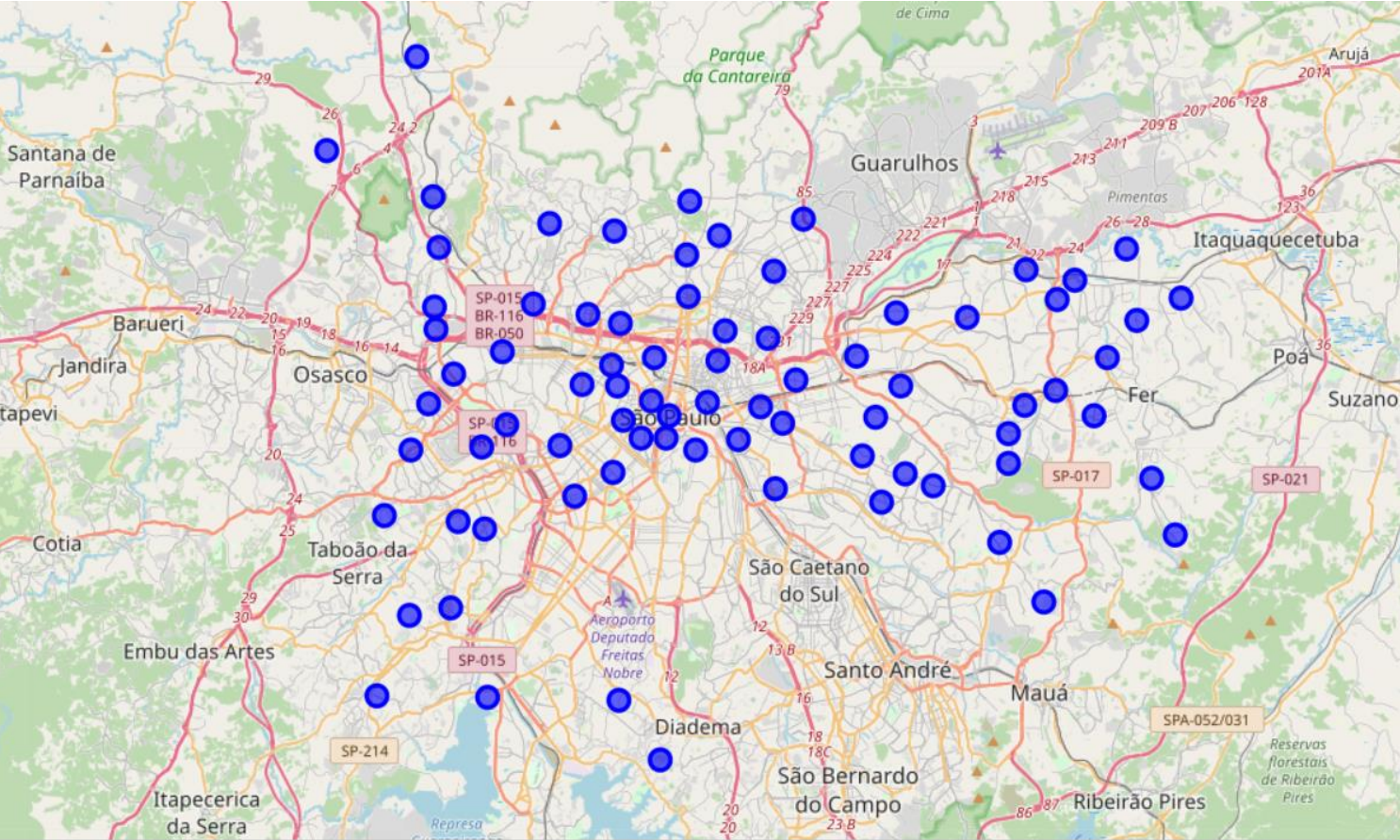


FOURSQUARE

Data obtained from Foursquare, after filtering only art-related venues, close to the neighborhoods.

Exploratory Data Analysis

- ▶ Neighborhood's locations, plotted with folium (very spread, which guarantees diversity of data).

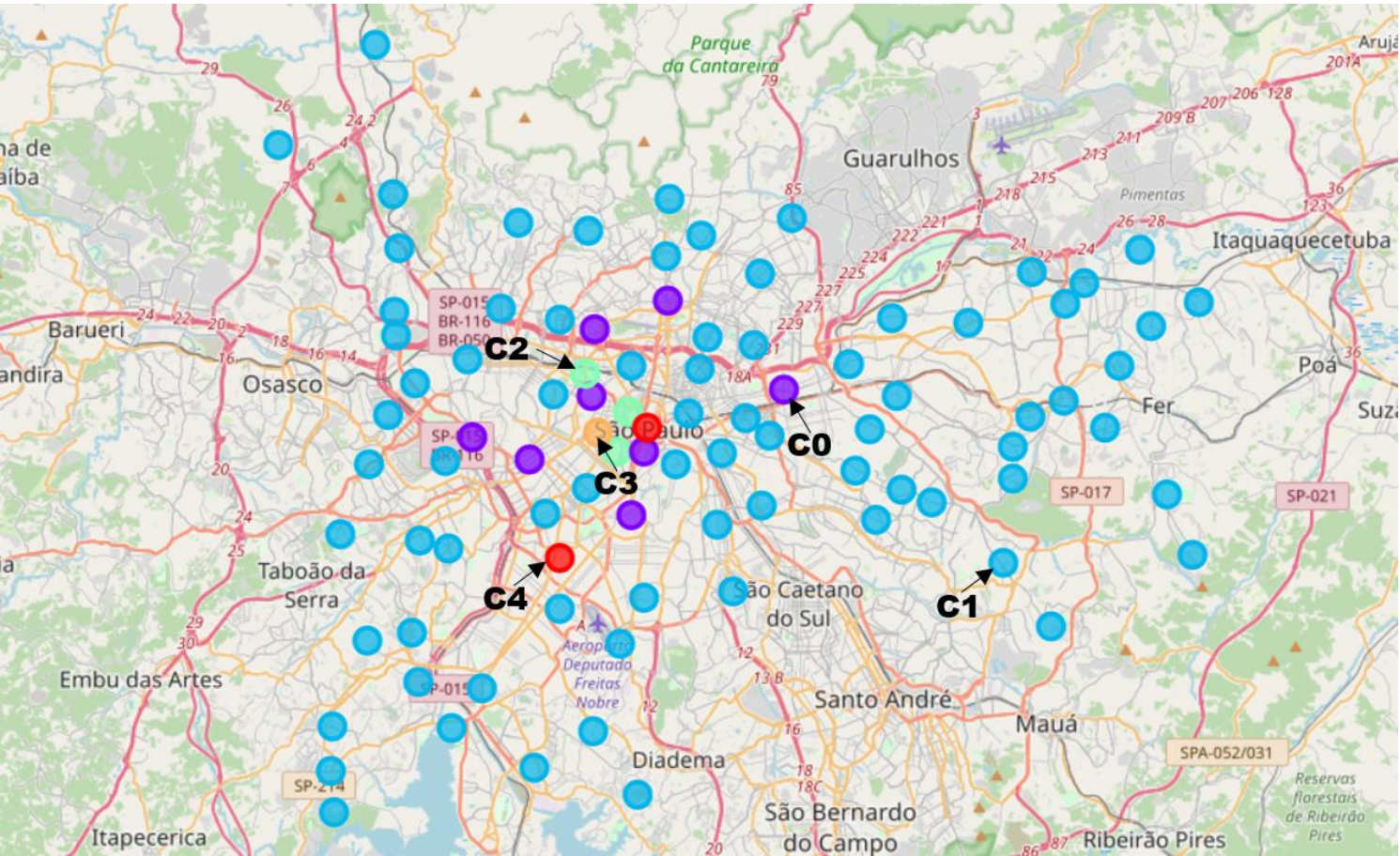


- ▶ Top 10 Neighborhood's with more venues related to art.

Neighborhood	Total
Sé	13
Barra Funda	12
República	12
Consolação	11
Sé Bela Vista	8
Moema	7
Vila Mariana	7
Butantã	6
Liberdade	6
Casa Verde	5

Data Clusterization with *k-means*

► Map generated with folium.

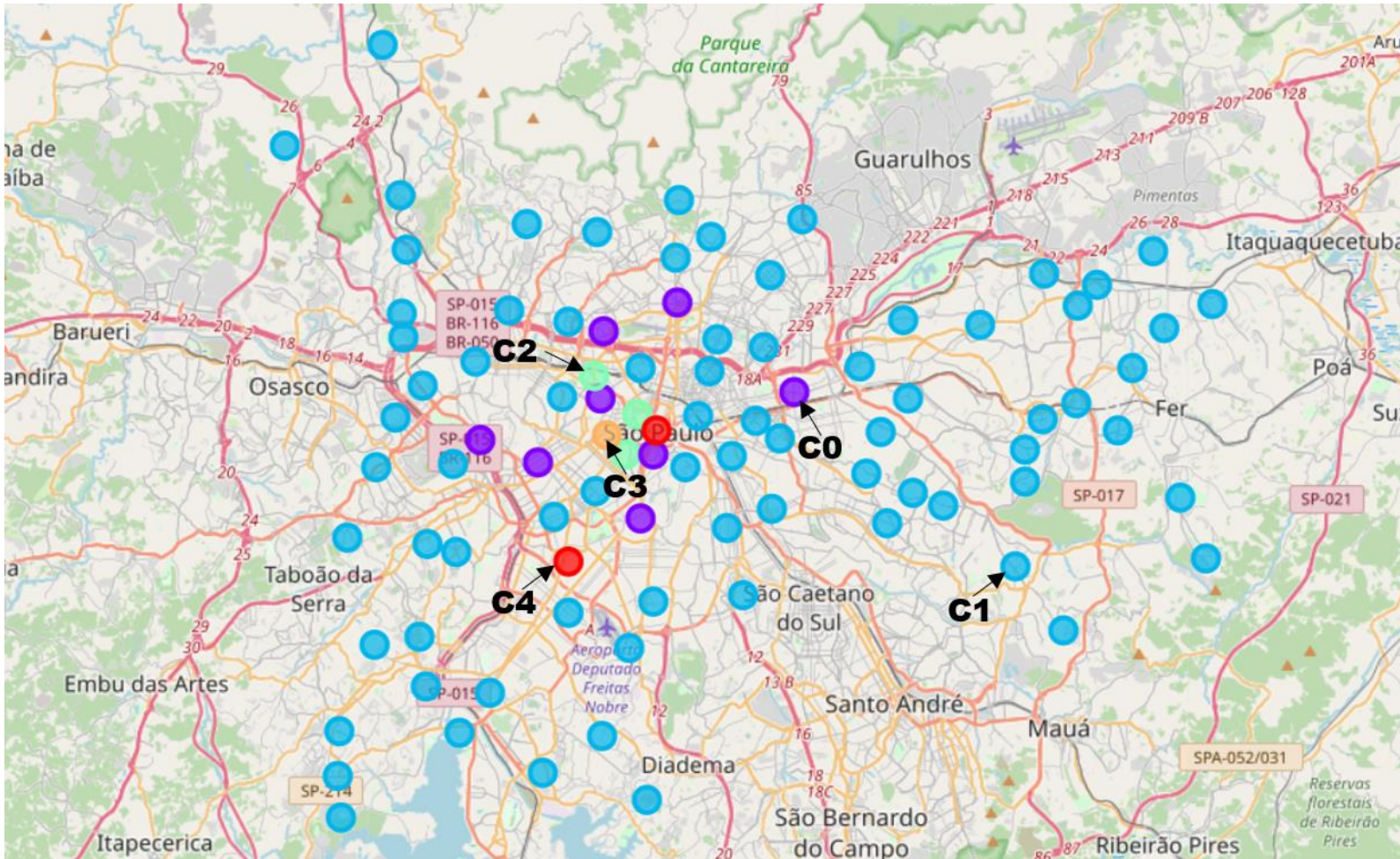


► Table generated that includes neighborhood, location, cluster and most common venues.

	Neighborhood	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	Alto de Pinheiros	Bookstore	Train Station	Dance Studio	Camera Store	Cultural Center	Concert Hall	Community College	College Theater	College Bookstore	Circus
1	Anhanguera	Train Station	Camera Store	Dance Studio	Cultural Center	Concert Hall	Community College	College Theater	College Bookstore	Circus	Bus Stop
2	Aricanduva	Train Station	Camera Store	Dance Studio	Cultural Center	Concert Hall	Community College	College Theater	College Bookstore	Circus	Bus Stop
3	Artur Alvim	Train Station	Camera Store	Dance Studio	Cultural Center	Concert Hall	Community College	College Theater	College Bookstore	Circus	Bus Stop
4	Barra Funda	Theater	Music Venue	Museum	Bus Stop	Arts & Crafts Store	Public Art	Bookstore	Indie Movie Theater	Cultural Center	Movie Theater

Results

- ▶ Map generated with folium.

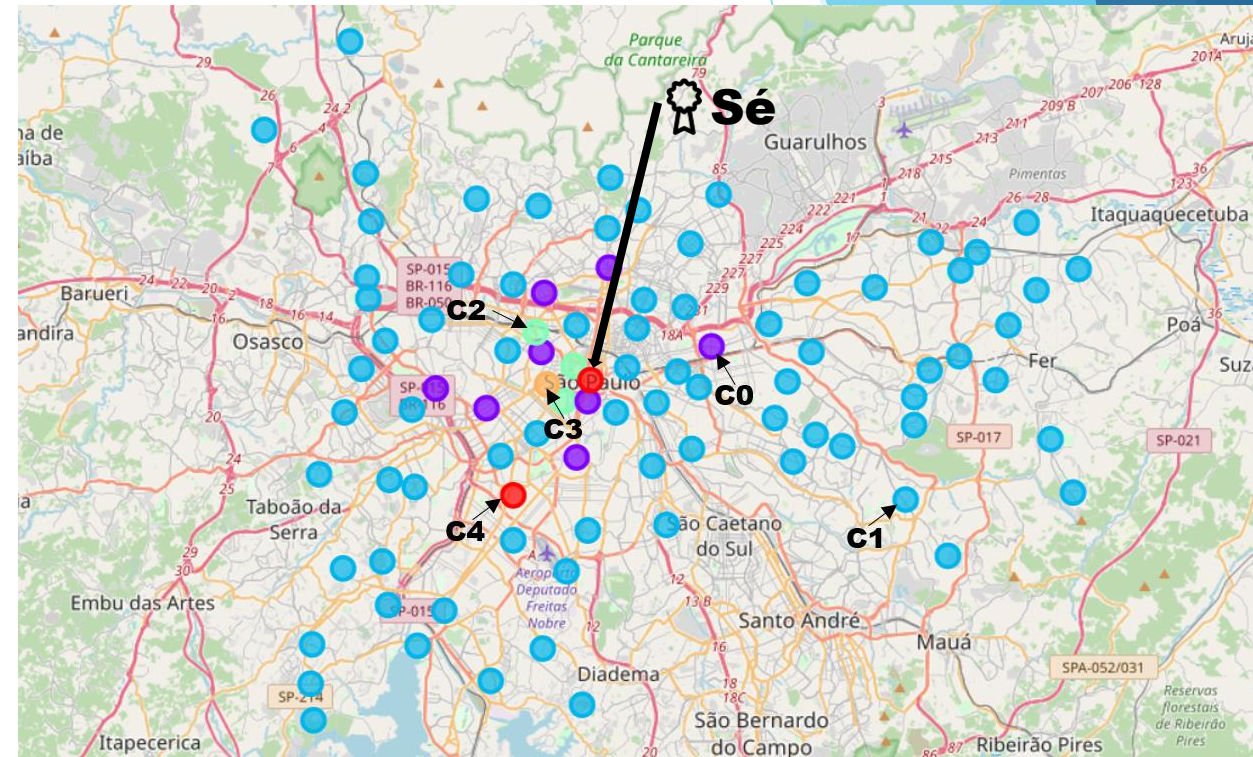


- ▶ The best boroughs are the red (C4), orange (C3) and green circles (C2).
- ▶ The purple (C0) points have a few art-related venues, but less than than C2, C3 and C4.
- ▶ The blue points (C1) have very few or even don't have any art-related venues.

Results

- Best neighborhoods to open an art gallery in São Paulo:

Position	Neighborhood Name	Cluster
1 st	Sé 🏆	C-4
2 nd	Moema	C-4
3 rd	Consolação	C-3
4 th	Bela Vista	C-2
5 th	República	C-2



- The results are very appropriate, since all these neighborhoods are very artistic in their own way. *Sé*, *Bela Vista*, *Consolação* and *República* are central and old locations, where there are many museums and art galleries. *Moema* is a new neighborhood, but it is a very hipster place, composed mainly by young people. Therefore, the recommendation above matches perfectly with the reality of São Paulo.

Conclusion

- ▶ This project started with one CSV file containing data from neighborhoods and its geographical coordinates. In addition, it was obtained from foursquare art-related venues of each neighborhood. After that initial phase, a machine learning technique, called *k-means* clusterization was used to group all the similar neighborhoods together and to check which of them were the best ones to open an Art Gallery in São Paulo.
- ▶ It was possible to see that more central the boroughs have more chance to have many art-related venues, increasing the chances of a good business in the area. Table 10 summarize all the results, showing that Sé is the best location for our art gallery. It makes sense, since it is the neighborhood with more art galleries in the city and it the neighborhood with more general art-related venues.
- ▶ Therefore, **Sé would certainly be the recommendation of this report for anyone that seeks to open an art gallery in São Paulo.** The code, all the data and analysis utilized in this report is available in GitHub.