RELATIONSHIP BETWEEN THE STRATUM AND THE LOCATION OF SITES IN BOGOTÁ

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Context

- Bogotá, has a population of close to 8 million inhabitants
- Bogotá is considered a multicultural city
- Opportunities for businesses and educational offer
- Bogotá has a division by strata, into 6 socio-economic strata, 1 being the lowest and 6 the highest
- This in order to identify areas of action and distribute the cost of public services; where the highest strata subsidize the lowest and these at the same time can access educational or health benefits given the stratification

Problem and stakeholders

Problem 1: International Brands in Bogotá

Where to put a point of sale depends on many variables,

- Name the target audience

- Rental price

- Price of public services

- Perception of security

- The economic nature of the neighborhood

- **STRATUM OF THE PLACE**

Any company that is starting its activities in Bogotá is interested in knowing where to locate its sales or work points.
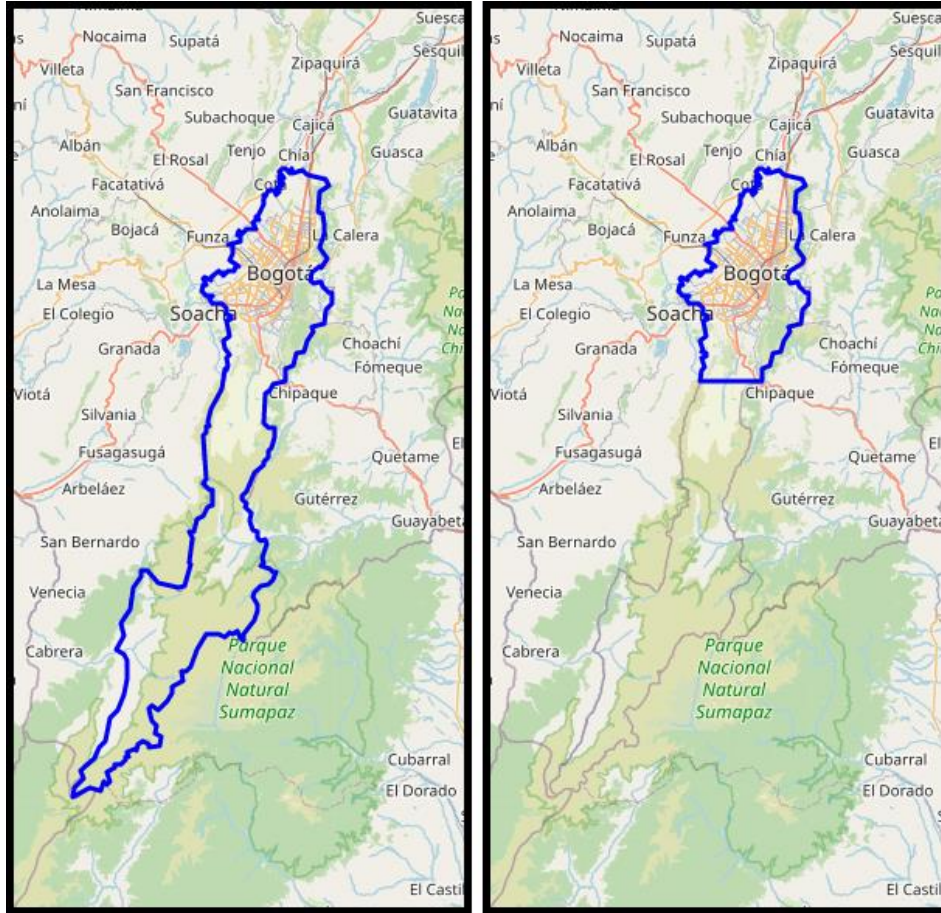
Problem 2: Location of places in Bogotá according to the opinion of users in contrast to their stratum

The quality of life indicators that are taken into account to give the quality of life index, Bogota is placed in position 128 among more tan 450 cities.
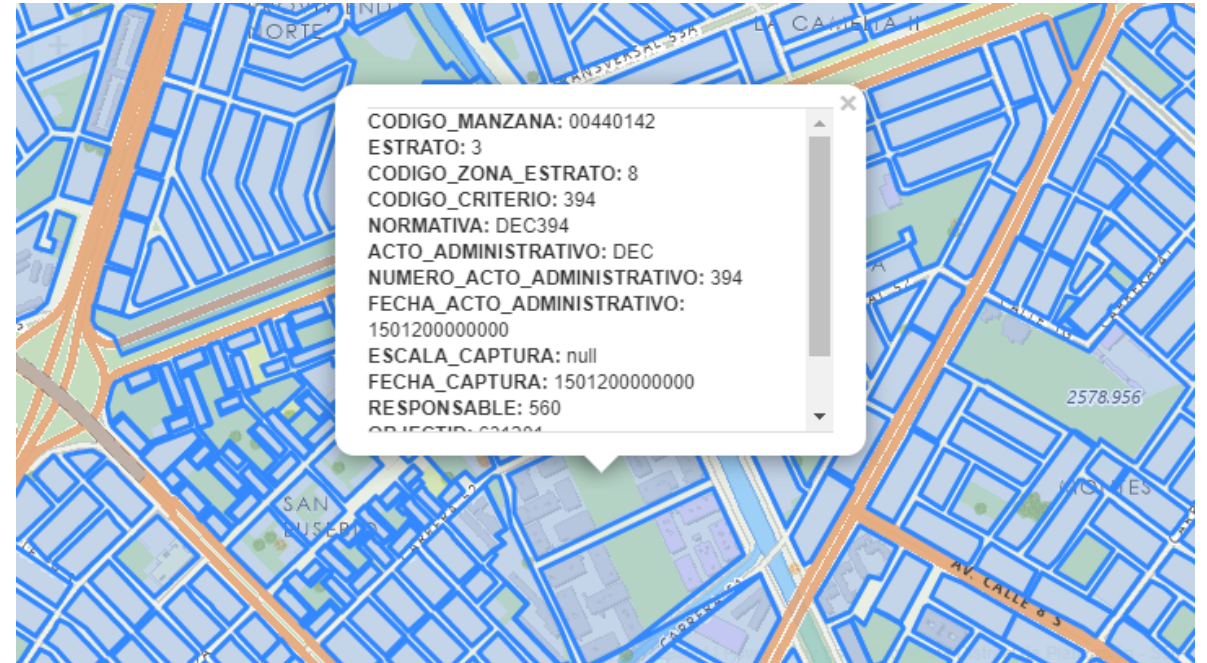
- consumer goods

- economic environment

- Accommodation

- medical and health considerations

- natural environment

- political and social environment

- public services and transportation

- Recreation

- schools and education

- sociocultural environment

I consider that they are related to the information that can be obtained from FourSquare are the following consumer goods, economic environment, socio-cultural environment and recreation.
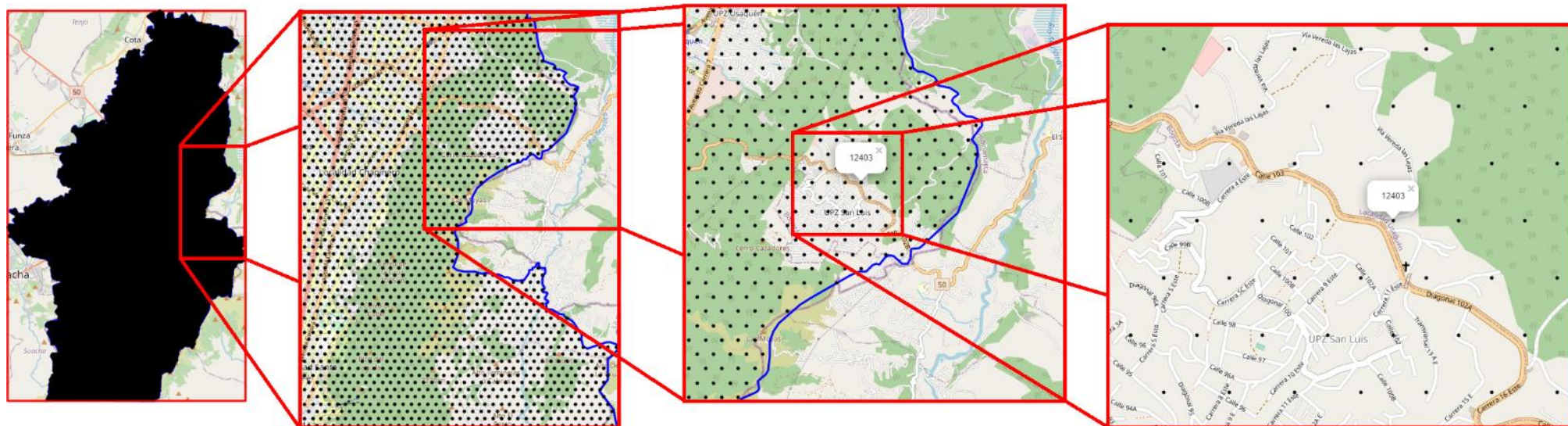
Acquisition and cleaning of data


. Map of the contour of Bogotá

CODIGO_MANZANA: 00440142
ESTRATO: 3
CODIGO_ZONA_ESTRATO: 8
CODIGO_CRITERIO: 394
NORMATIVA: DEC394
ACTO_ADMINISTRATIVO: DEC
NUMERO_ACTO_ADMINISTRATIVO: 394
FECHA_ACTO_ADMINISTRATIVO:
1501200000000
ESCALA_CAPTURA: null
FECHA_CAPTURA: 1501200000000
RESPONSABLE: 560

Map with the polygons of each block in Bogotá and their information including the stratum

Acquisition and cleaning of data

Grid of points on which requests for places were made to Four Square in Bogotá

Acquisition and cleaning of data
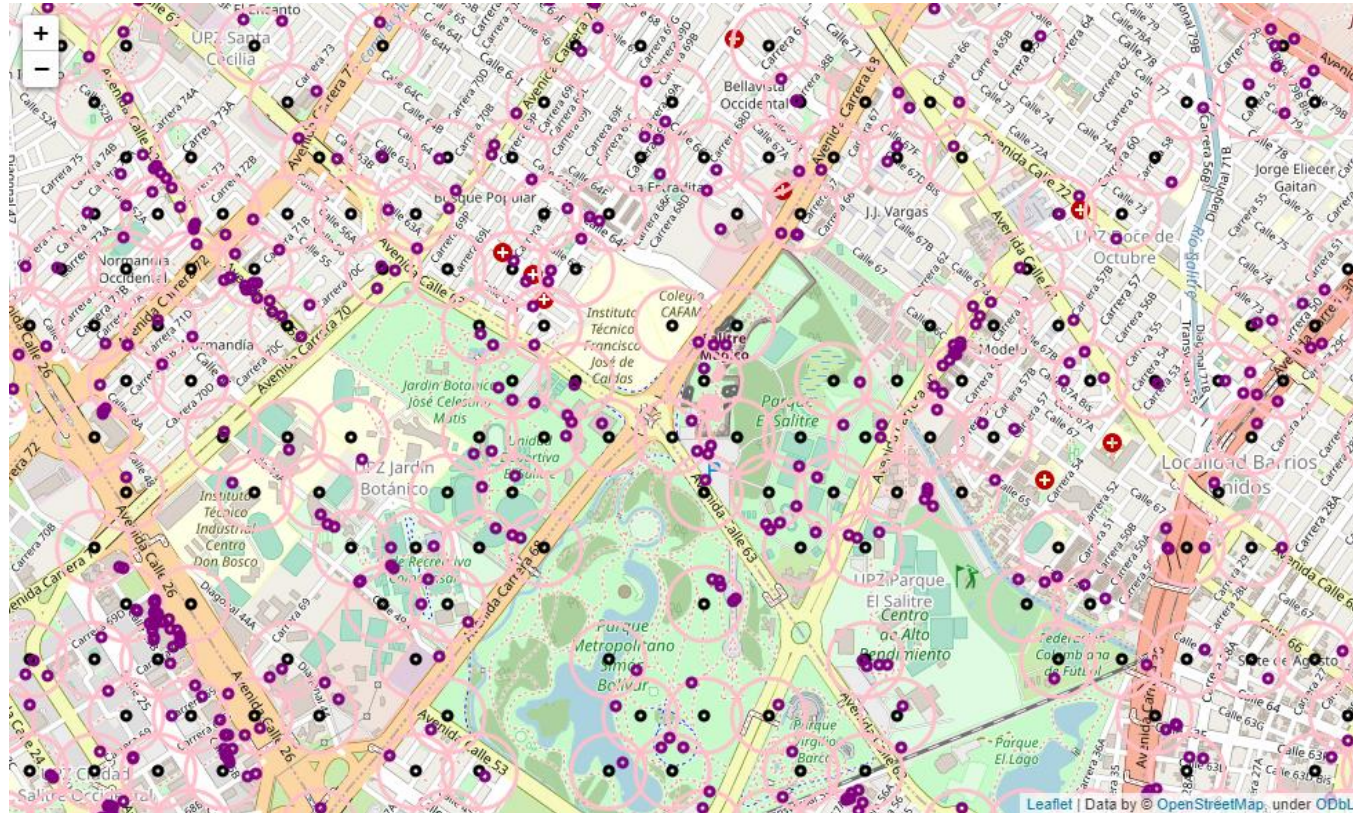
Map of a region of Bogotá, in purple the places found in a pink circle centered on the points of the black grid
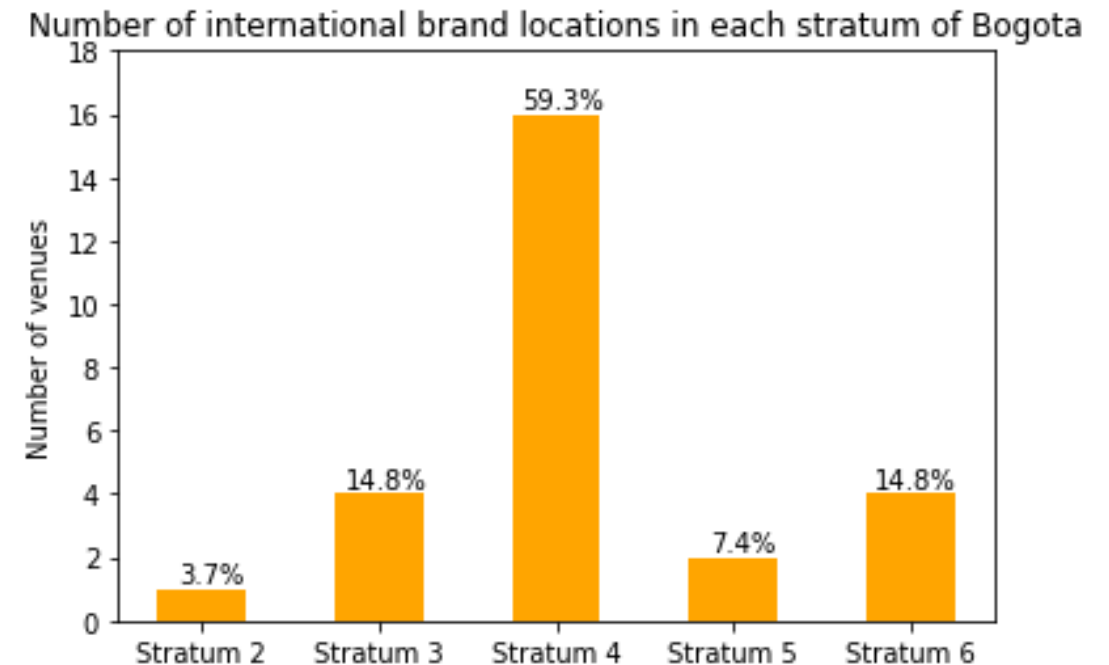
Acquisition and cleaning of data

- Final data frame Columns (7488 venues)

  - Name
  - Categorie
  - Lat
  - Long
  - Id
  - NumPunto

  - Estrato
  - CRat
  - Rat
  - CFot
  - COpi

- List of internationally recognized brands from Forbes and About World Top Companies Value

Methodology and results

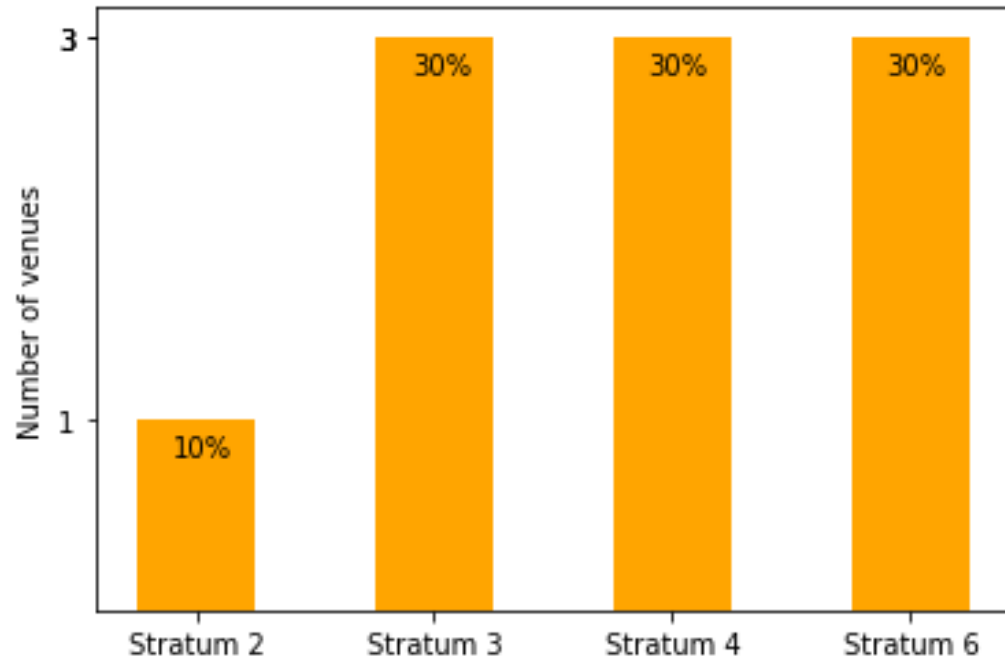**Problem 1: International Brands in Bogotá**
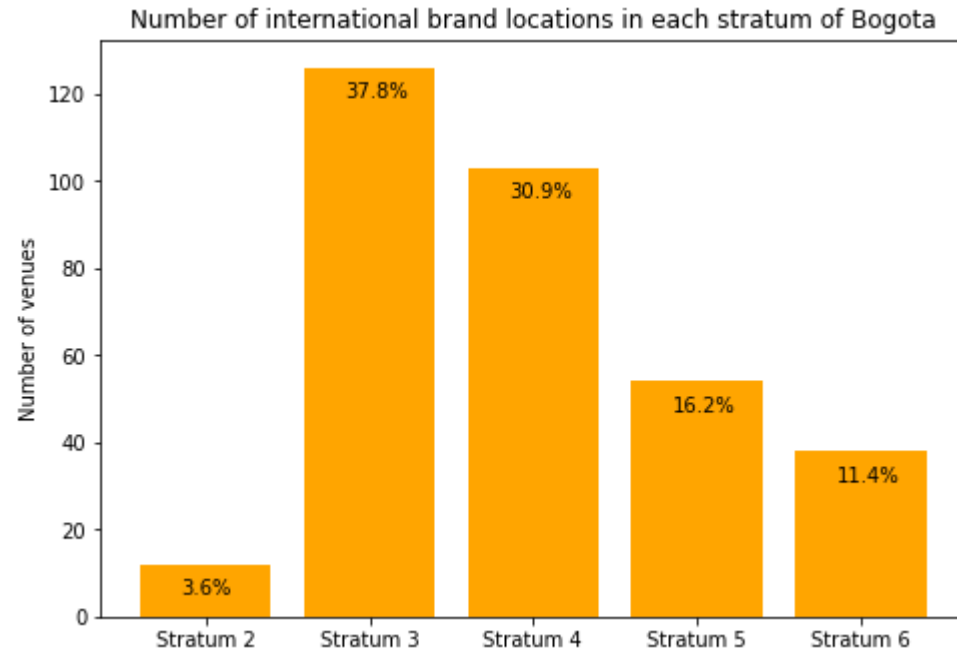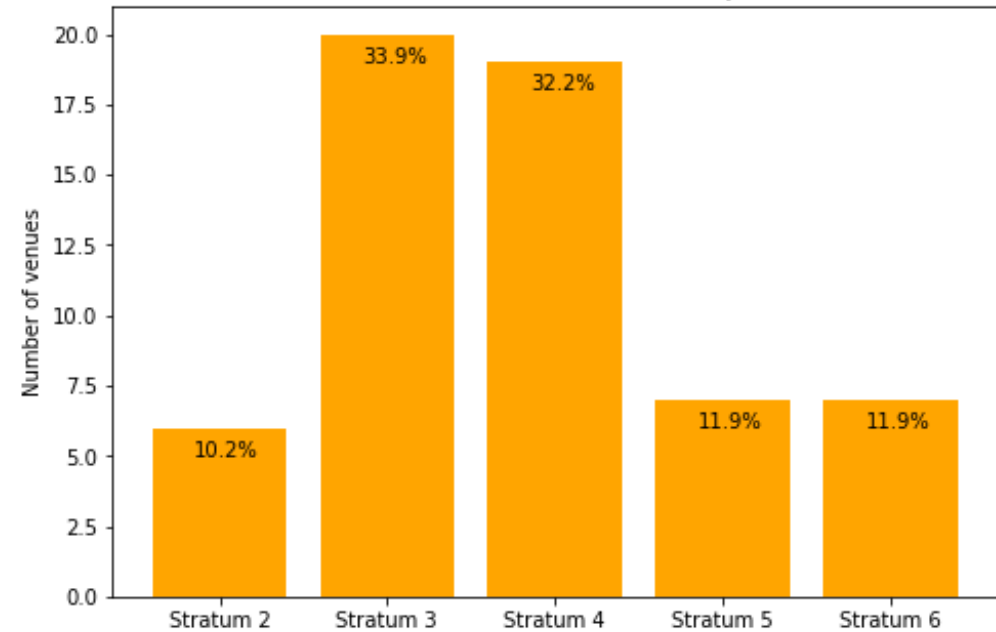

International brand locations in each stratum

Number of international brands in each stratum

Problem 1: International Brands in Bogotá
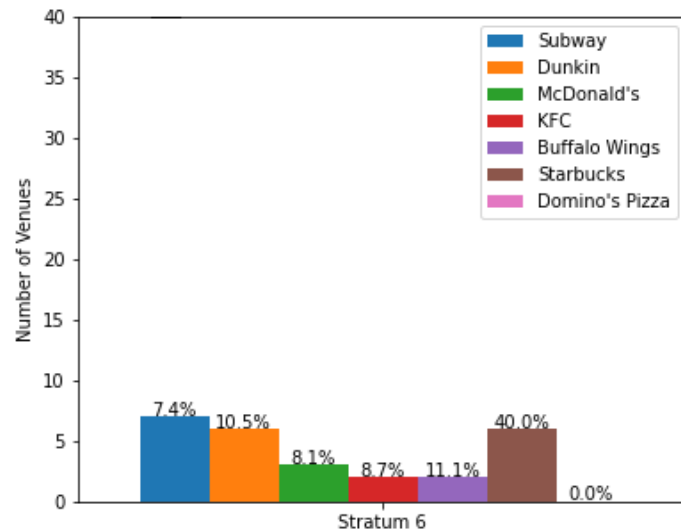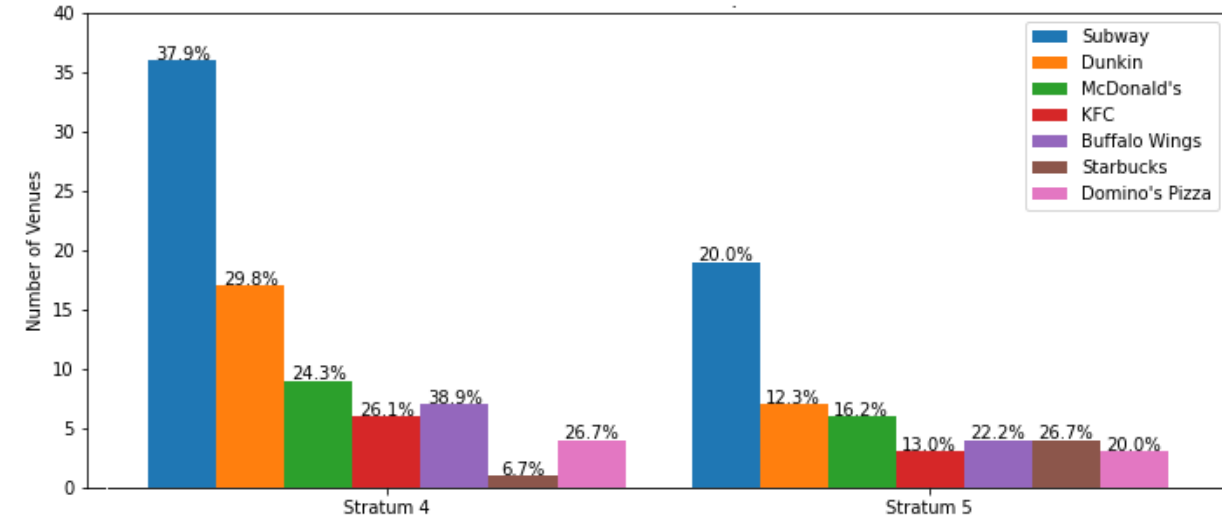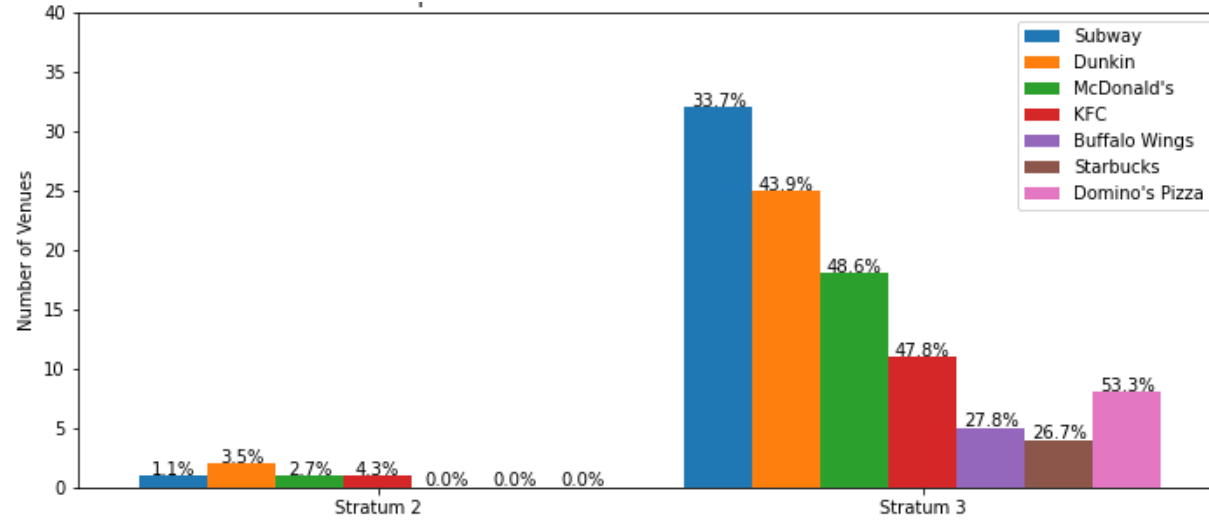

First Quartile

Only one location
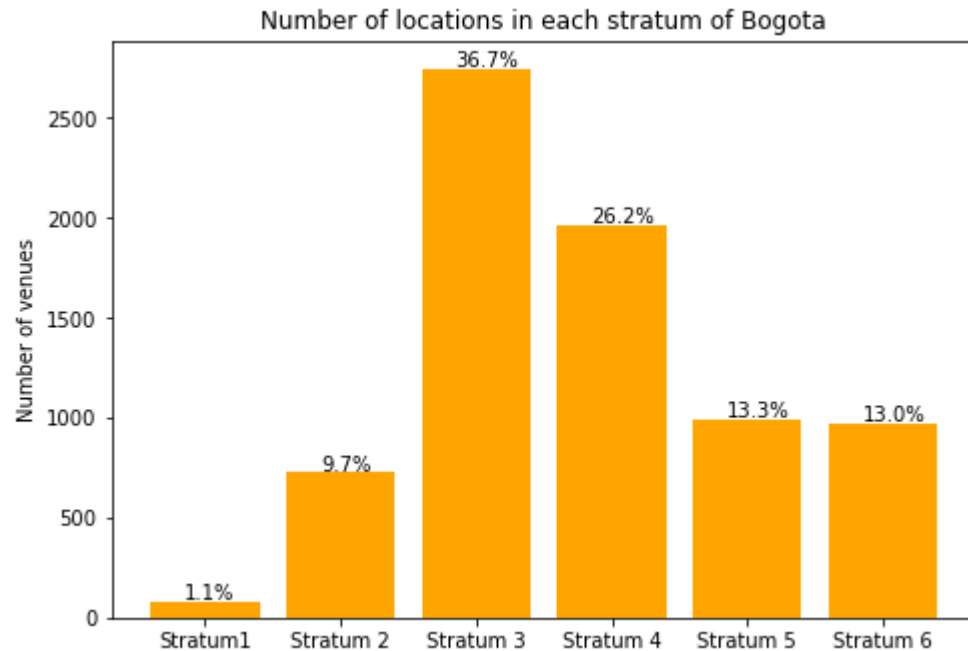
Second and Third Quartile

Between 4 and 12 locations

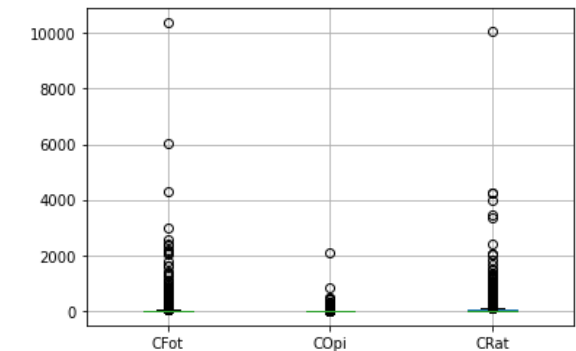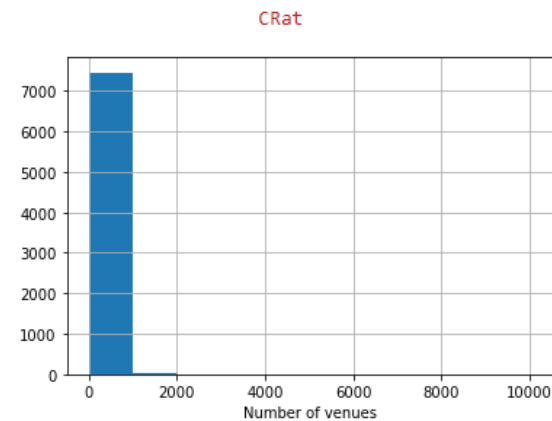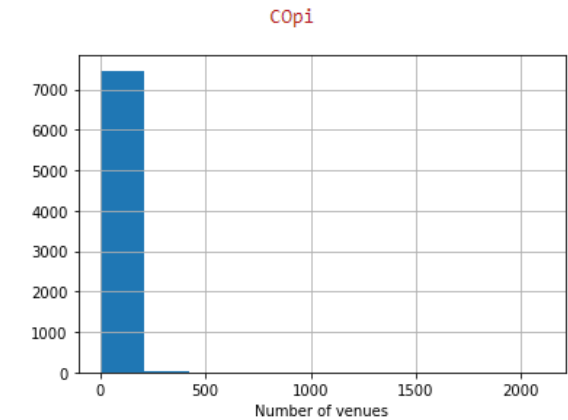# Problem 1: International Brands in Bogotá

Number of locations in each stratum of international brands with more than 12 locations

Problem 2: Location of places in Bogotá according to the opinion of users in contrast to their stratum

Number of places in each stratum of all the places
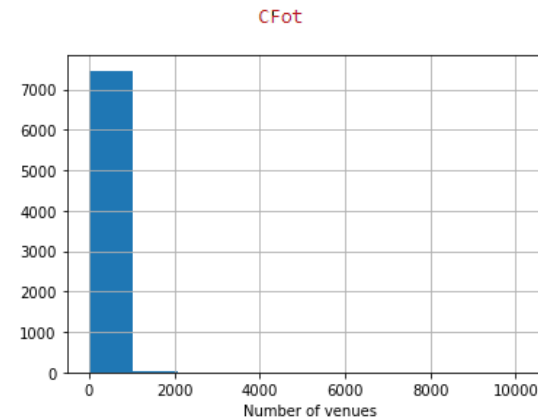
Histograms and box plot of the columns of appreciation of the users of the places

Problem 2: Location of places in Bogotá according to the opinion of users in contrast to their stratum
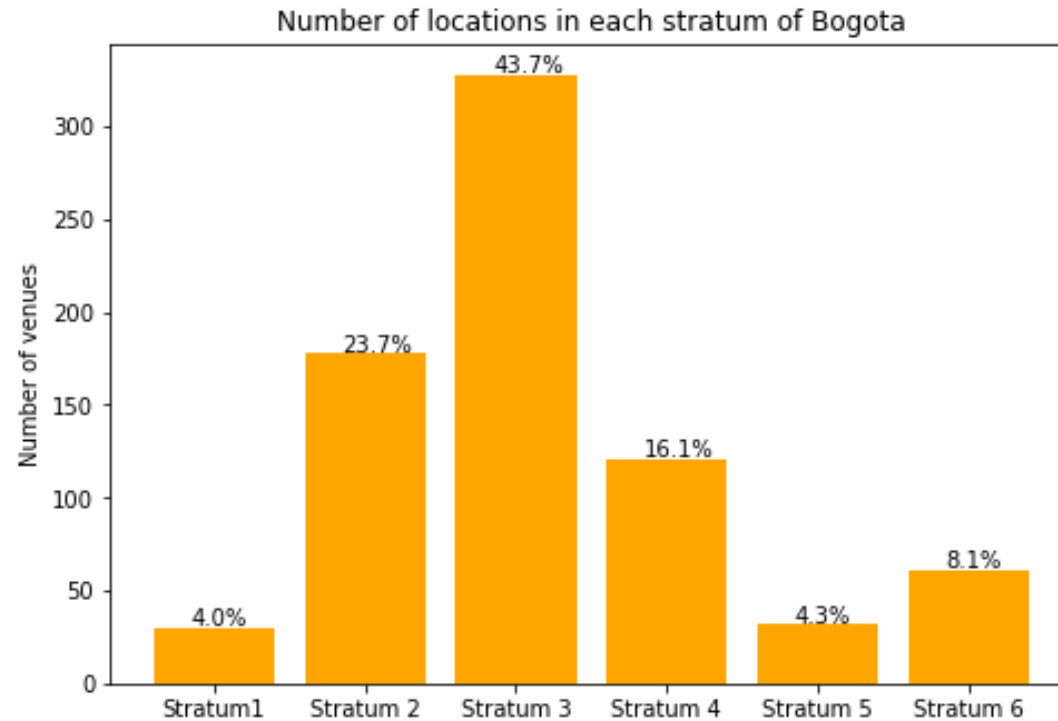
Number of places per stratum of the places that have the appreciation columns at zero (750 places)

Problem 2: Location of places in Bogotá according to the opinion of users in contrast to their stratum

Number of places in each stratum of the most numerous brands

Bar diagram by stratum of the places that have 1, 2 or 3 zeros at the appreciation columns at zero
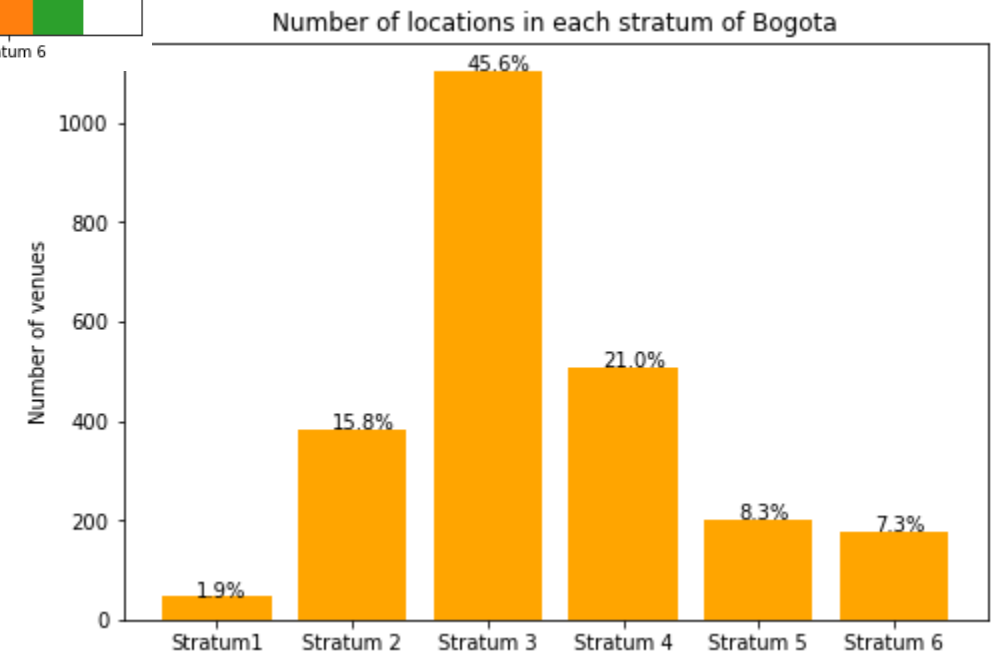
Number of locations in each stratum of Bogota

Problem 2: Location of places in Bogotá according to the opinion of users in contrast to their stratum

Bar diagram by stratum of the places that do not have zeros in the appreciation columns

Problem 2: Location of places in Bogotá according to the opinion of users in contrast to their stratum

Classification of places and Clustering
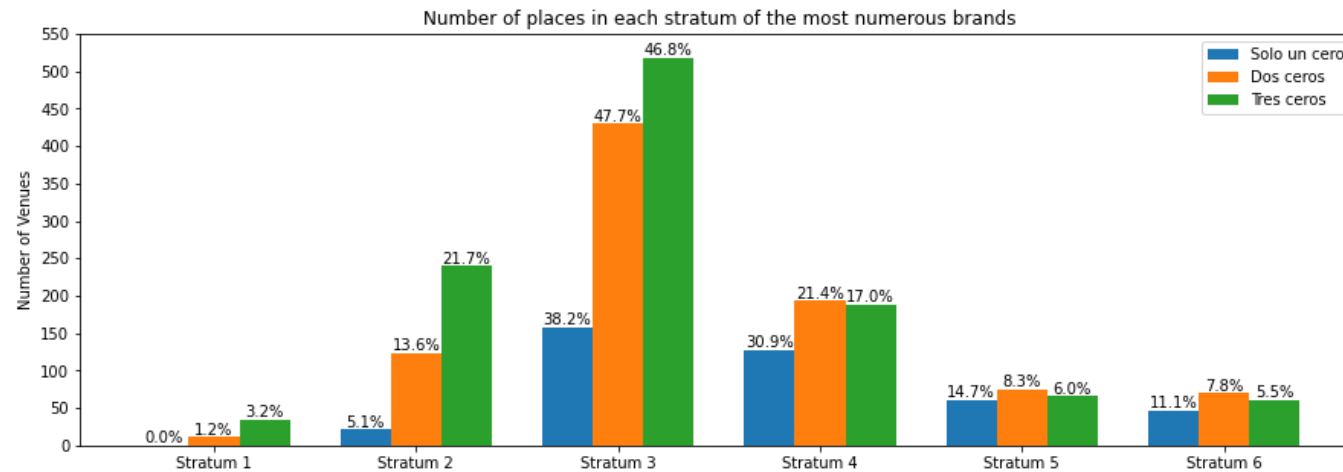
- Lowest category: all zeros

- Highest category: values far above average

- Intermediate category: union of dafa frames that are not very above average and have 1, 2 or 3 zeros

- Clustering was applied to the intermediate category using from 3 to 7 clusters

Number of Clusters	Mean Estratum	Mean Count	Mean SumC
3	0.49	1127.39	50.0299
4	0.44	858.81	50.6050
5	0.39	938.66	49.8859
6	0.36	825.79	49.4438
7	0.35	783.96	48.7309

Std of SumC means vs Number of Cluster

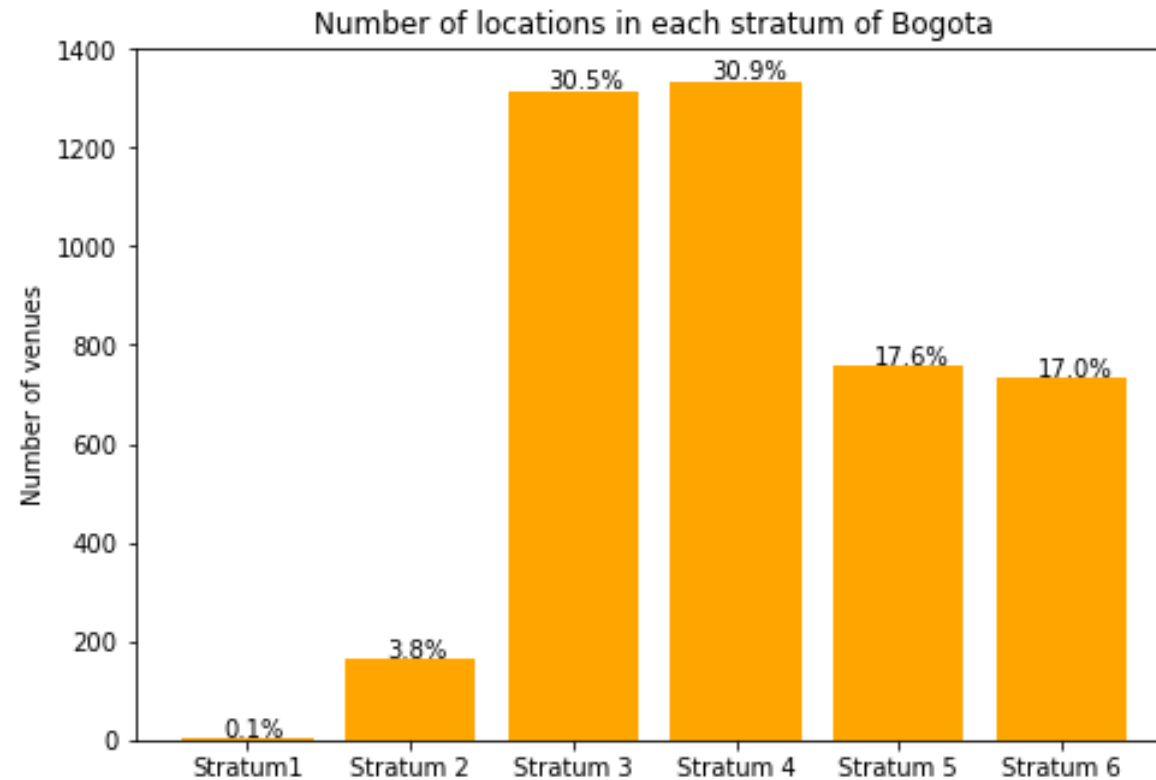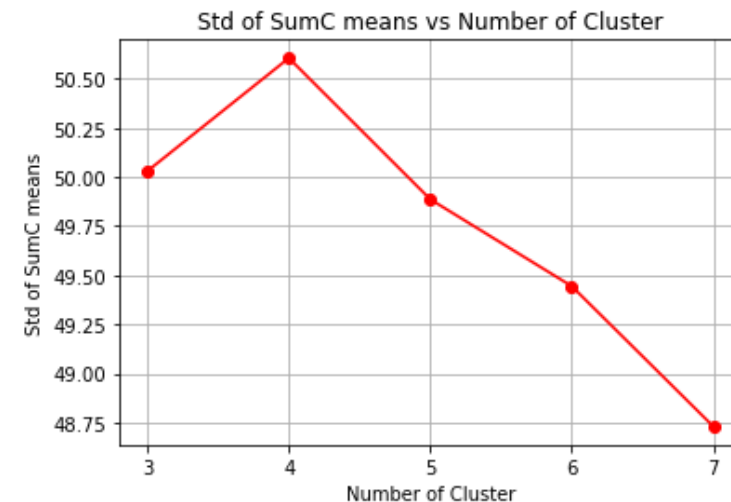# Problem 2: Location of places in Bogotá according to the opinion of users in contrast to their stratum

- The distribution of 4 clusters was chosen

Clasification	Description	Count	Average Stratum	Std Straum	Kurtosis
A	All Zeros Venues	750.0	3.173333	1.197163	0.469789
B	Cluster 0 Label	1872.0	3.262821	1.102616	0.543549
C	Cluster 1 Label	2443.0	3.972984	1.101004	-0.670343
D	Cluster 2 Label	1047.0	4.125119	1.140515	-0.907376
E	Cluster 3 Label	508.0	4.236220	1.179755	-1.001810
F	Highly Appreciated Places	868.0	4.354839	1.181709	-0.962634

Classification of the places of Bogotá in 6 categories
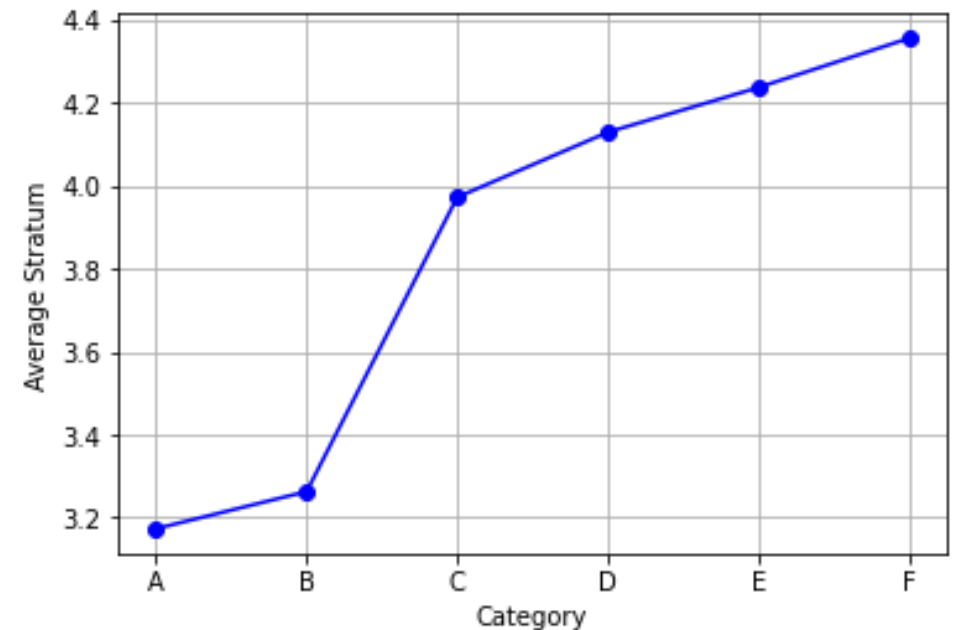
Average stratum vs category

Conclusions

- When the brand proposes to have only one point, they prefer in 60% of cases to locate it in a middle stratum high (4.1 on average), brands with between 4 and twelve points were mainly located in the middle stratum (3.2 on average), brands with more than 12 points were located in the medium-high stratum (3.9 on average), it is also worth noting that no international brand has points in the lower stratum of the city. The

- The places were classified into six categories, the lowest being A, the highest category F and the intermediate categories B, C, D and E that were determined by the clustering algorithm. From this classification, the average stratum of the places in each category was obtained, resulting in the lowest category (A) having the lowest stratum on average (3.17 middle stratum), and as the category increases the stratum increases, the Highest category (F) has the highest average stratum (4.35 upper middle stratum). It was expected to see a more marked trend such that in the lowest category the stratum was approximately 2 and in the highest category the stratum was close to 6.

- The trends were not found as marked as expected because there are public places such as theaters, parks, squares, shopping centers and the airport, among others, that provide a pleasant and highly remembered experience to the public regardless of the stratum in which it is located the place.

- It can be said that if there is a tendency for the places with the best appreciation by users to be found in the highest strata, but this is not the rule.