The Battle of Neighborhoods – São Paulo

A Pet Shop Location Recommendation

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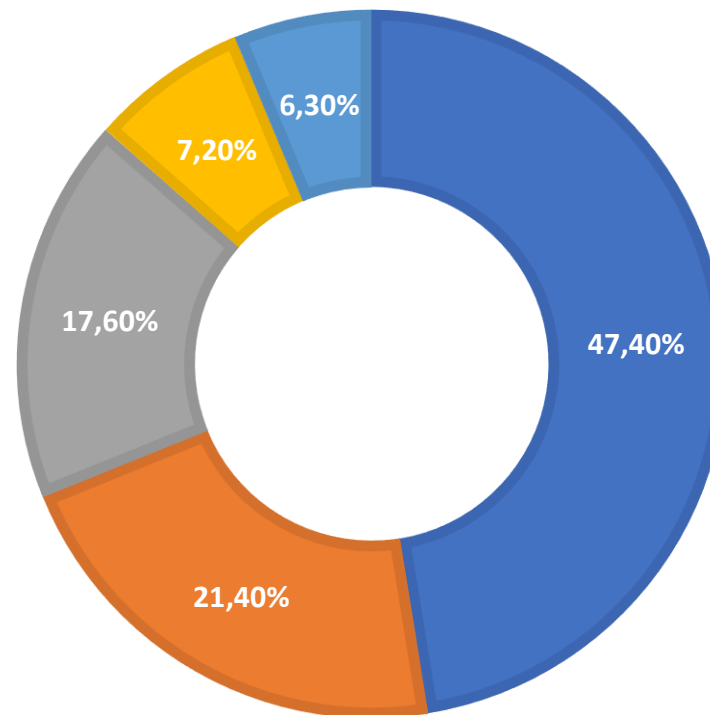- Conclusion

Introduction

Aves canoras e ornamentais
40 milhões

Outros*
2,4 milhões

141,6 milhões

Cães
55,1 milhões

Gatos
24,7 milhões

Peixes ornamentais
19,4 milhões

Crescimento acumulado 2018-2019	Cães	Gatos	Peixes	Aves	Répteis e Pequenos Mamíferos	Média Geral
	1,7%	3,0%	1,5%	0,5%	4,0%	1,7%

Source: http://abinpet.org.br/mercado/

Distribution of Pets in Brazil

■ Southeast ■ Northeast ■ South ■ Midwest ■ North

6,30%
7,20%
17,60%
47,40%
21,40%

Source: http://abinpet.org.br/mercado/

Pet Market in Brazil

Crescimento 2018/2019 por Segmento:

PET VET	15%
PET CARE	8,5%
PET FOOD**	8,4%

Pet Vet 18,4%

Pet Food 73,3%

Pet Care 8,3%

Total em 2019: R$22,3 bilhões
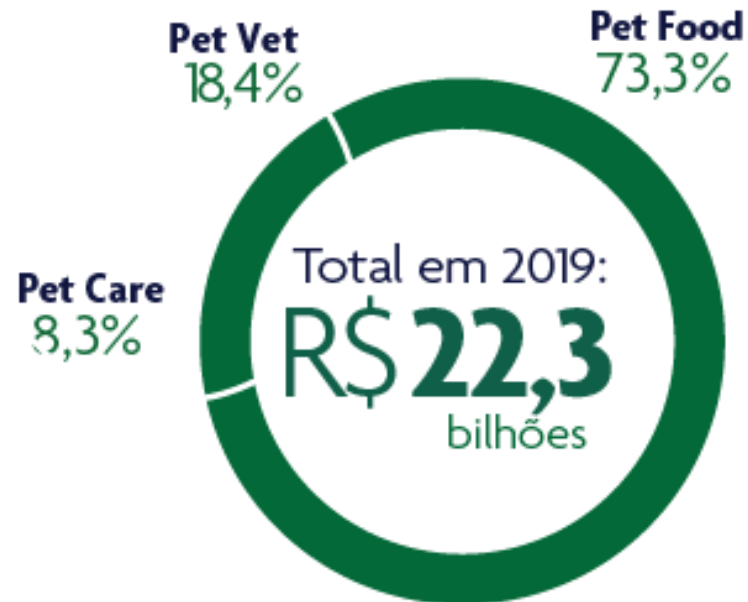
Volume Pet Food (milhões tons):
2018: 2,74 tons - 3,3%
2019: 2,85 tons – 3,9%

Source: http://abinpet.org.br/mercado/

Business Problem

- A businessman is interested in investing in the pet market and wants to open a pet shop in the city of São Paulo, but does not have knowledge about the city, its neighborhoods and characteristics, and wants to know which is the best neighborhood in the city to start his business.

- Therefore, the present project aims to answer the entrepreneur's question by recommending the best neighborhood in the city of São Paulo to open a pet shop.

Data

- To solve the business problem, were used data about the neighborhoods in the city of São Paulo, referring to income, population, location, among others.

- The data on income were taken from the website of the State System of Data Analysis Foundation (SEADE).

- Demographic data of the districts belonging to the Subprefectures were taken from the website of the City of São Paulo.

Methodology and Target Audience

- Methodology
    - Session 1: Load and Data Wrangling.
    - Session 2: Geocoding.
    - Session 3: Data Exploration and Visualization.
    - Session 4: Clustering.
    - Session 5: Exploring the Neighborhoods.
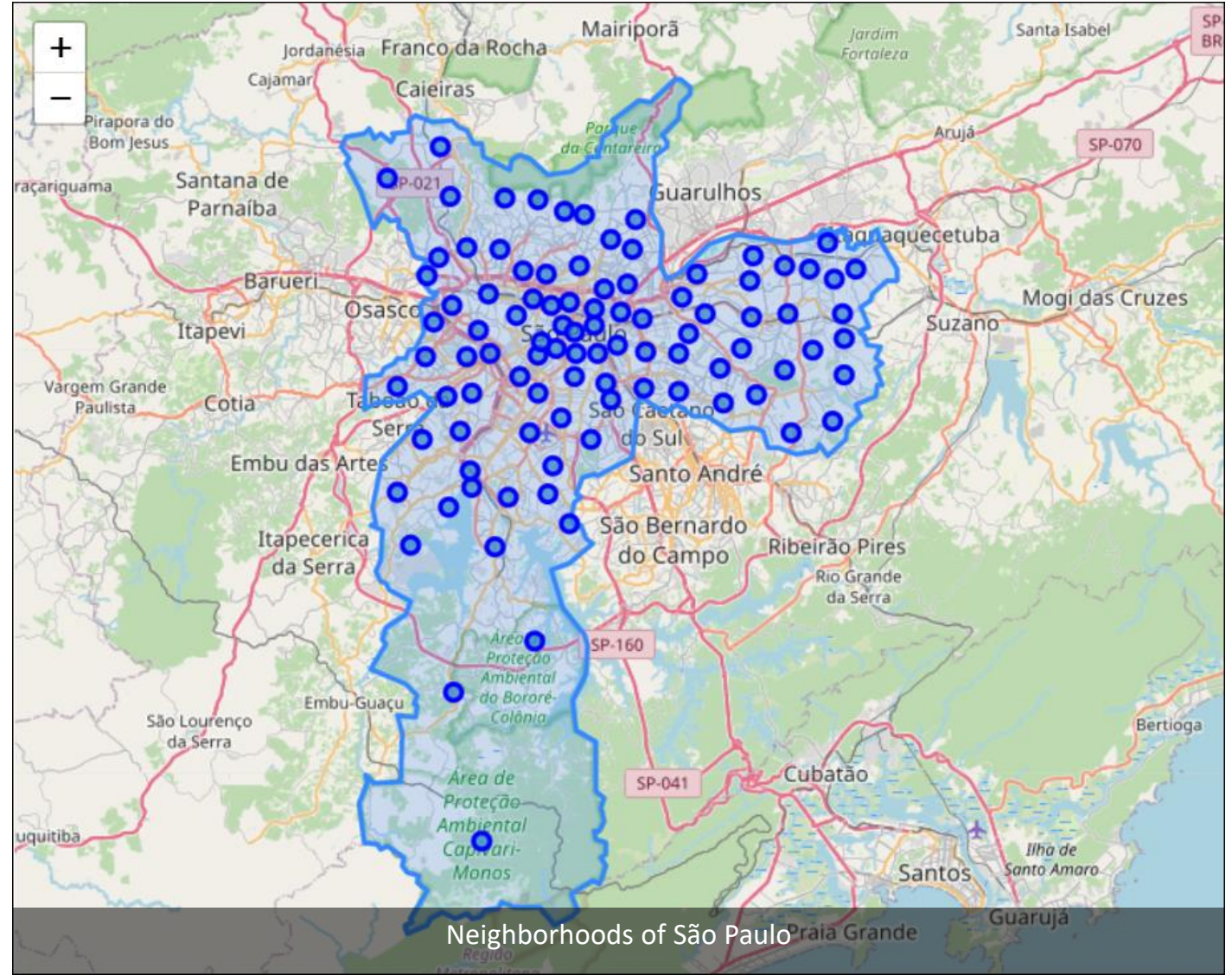   - Session6: Conclusion

- Target Audience

This project should be interesting for potential entrepreneurs in the pet industry, as well as consumers who want to better understand the market and the availability of this type of service in the city of São Paulo.
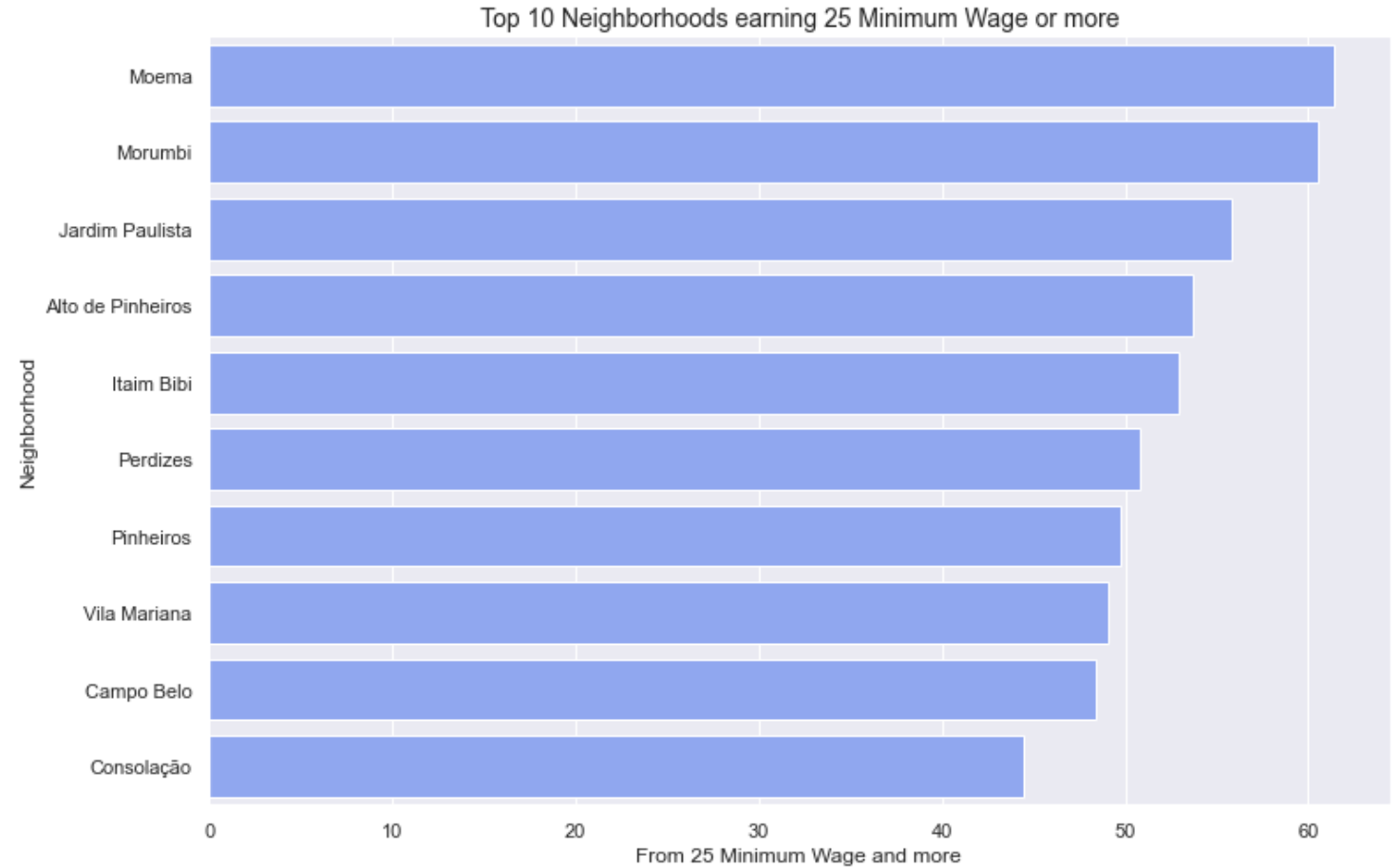
Discussion and Results

Geocoding

Neighborhoods of São Paulo

Discussion and Results

Data Exploratory

Top 10 Neighborhoods earning 25 Minimum Wage or more

Discussion and Results

Geocoding

Top 10 neighborhoods earning 25 minimum wage or more.

Discussion and Results

Data Exploratory

Top 10 Neighborhoods earning less than 2 mininum wage

Discussion and Results

Geocoding

Neighborhoods with higher and lower percentages of minimum wages
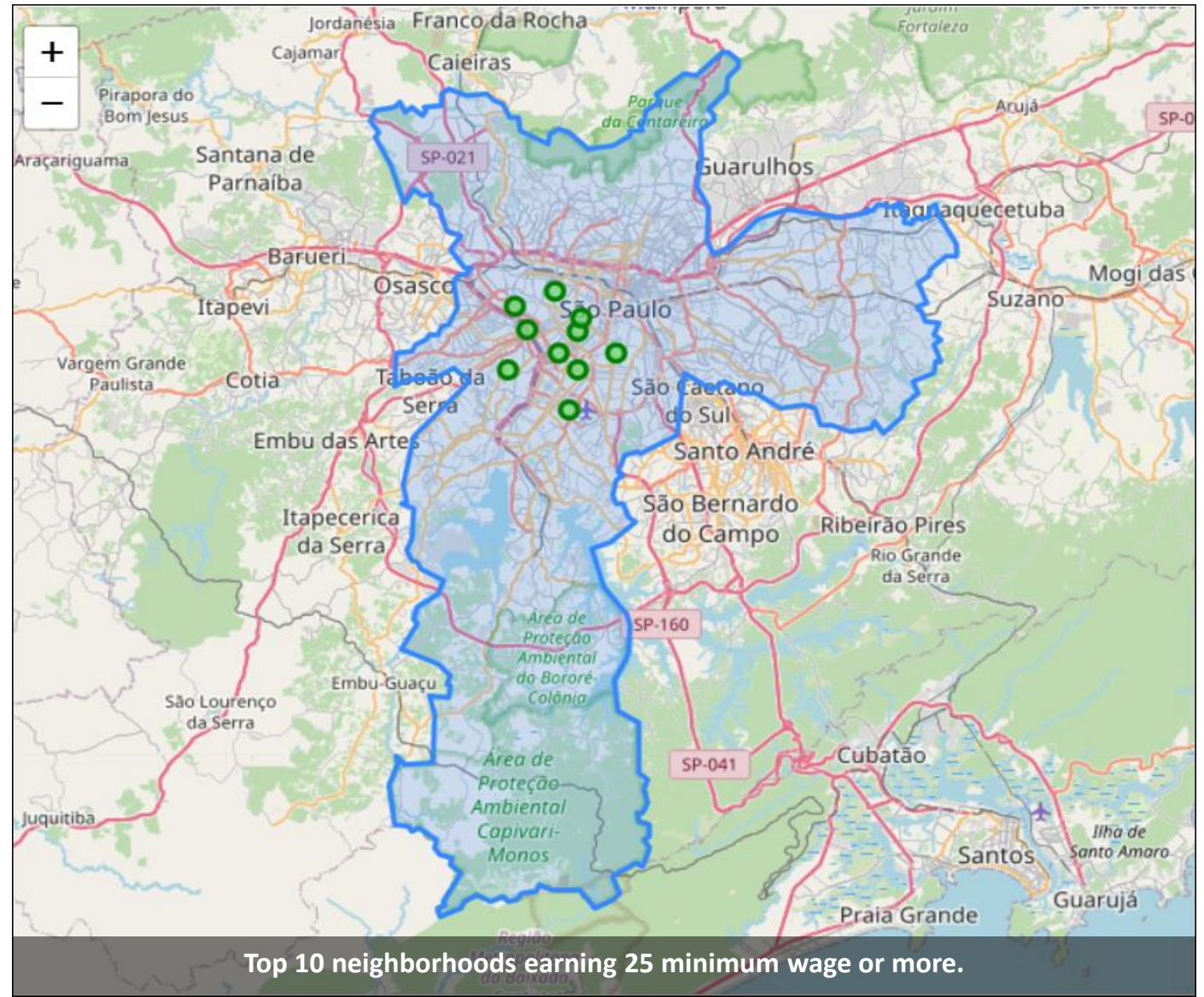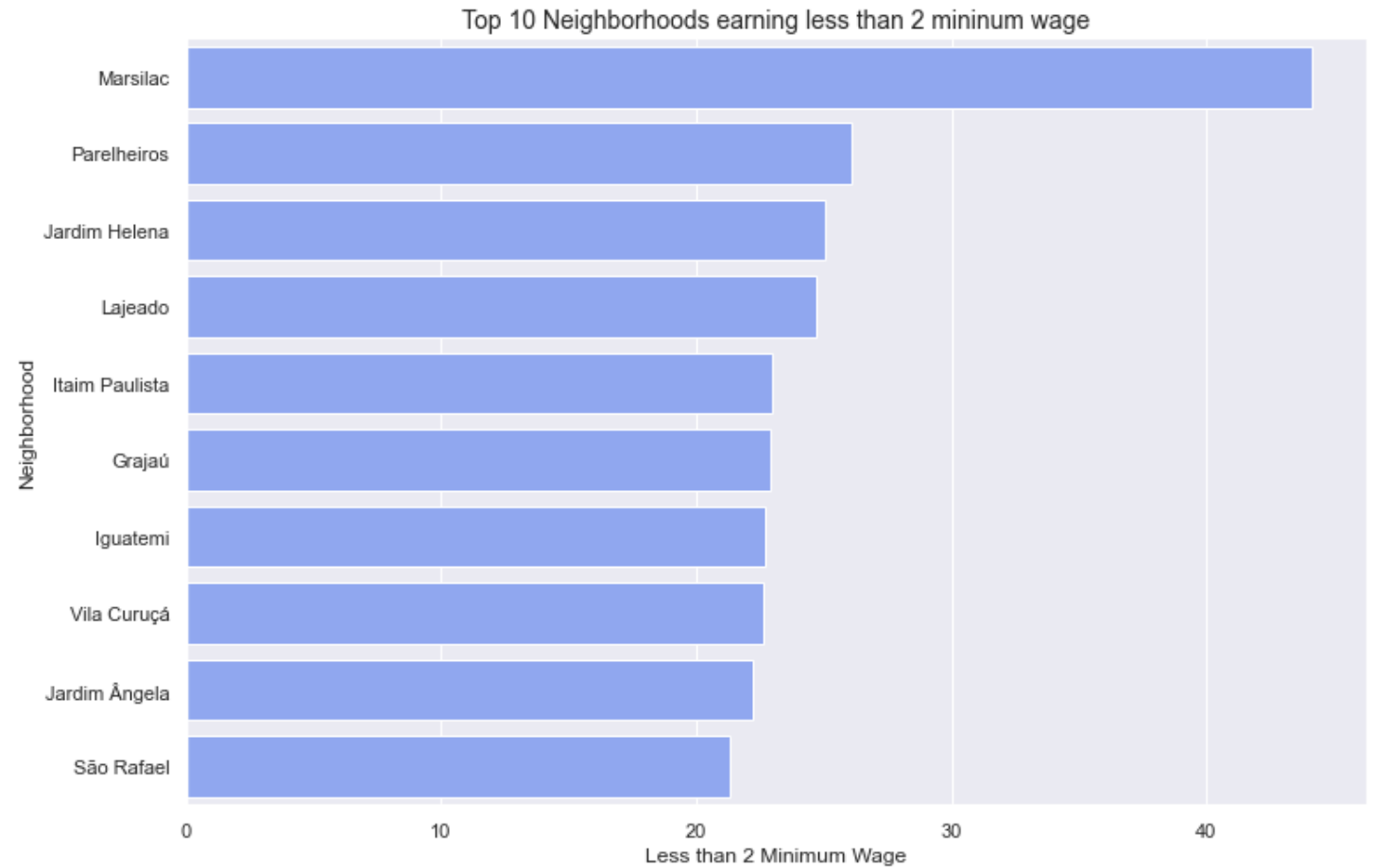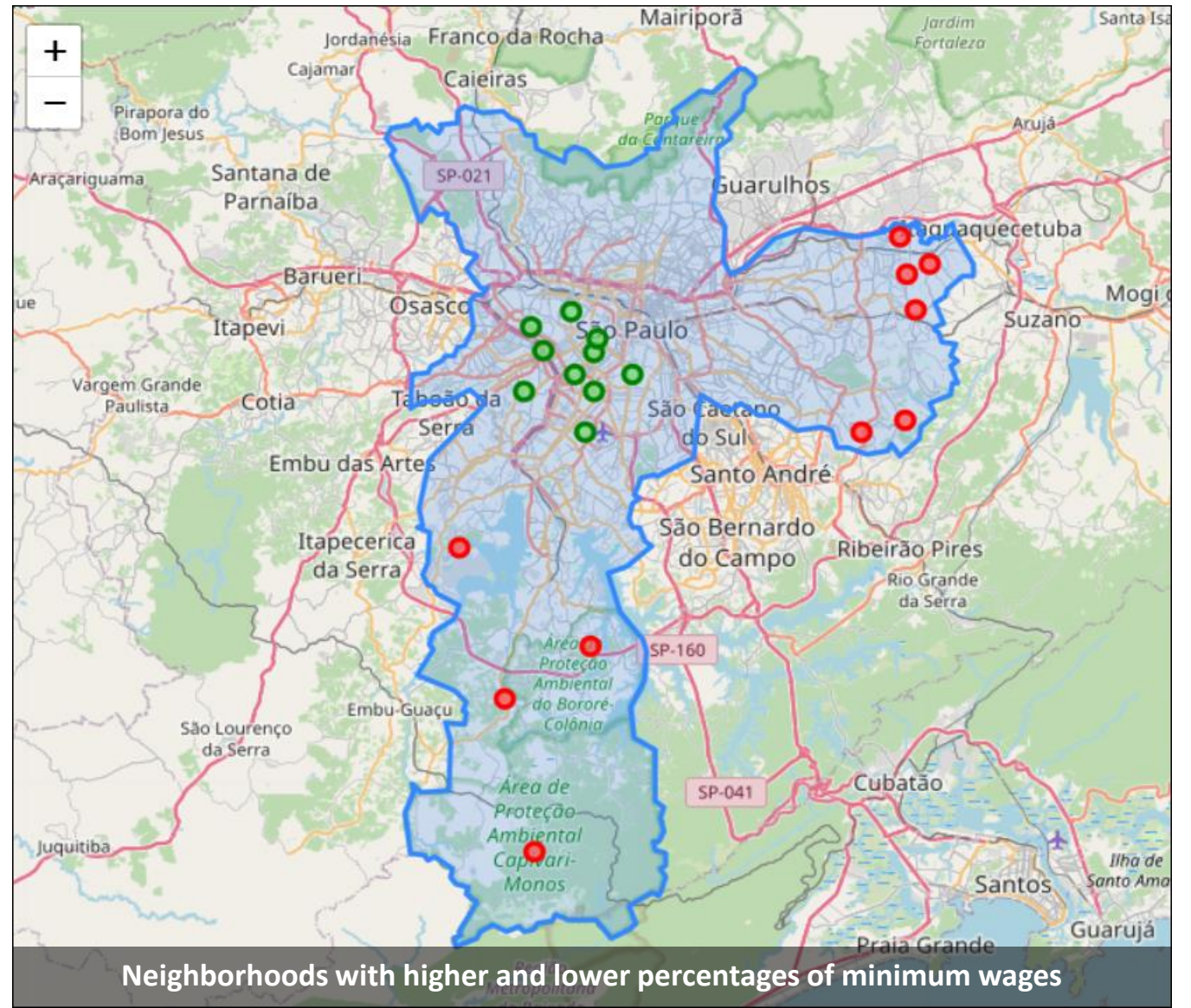
Discussion and Results

Data Exploratory

Box plot of São Paulo areas earning 25 minimum wages or more

Discussion and Results

Clustering
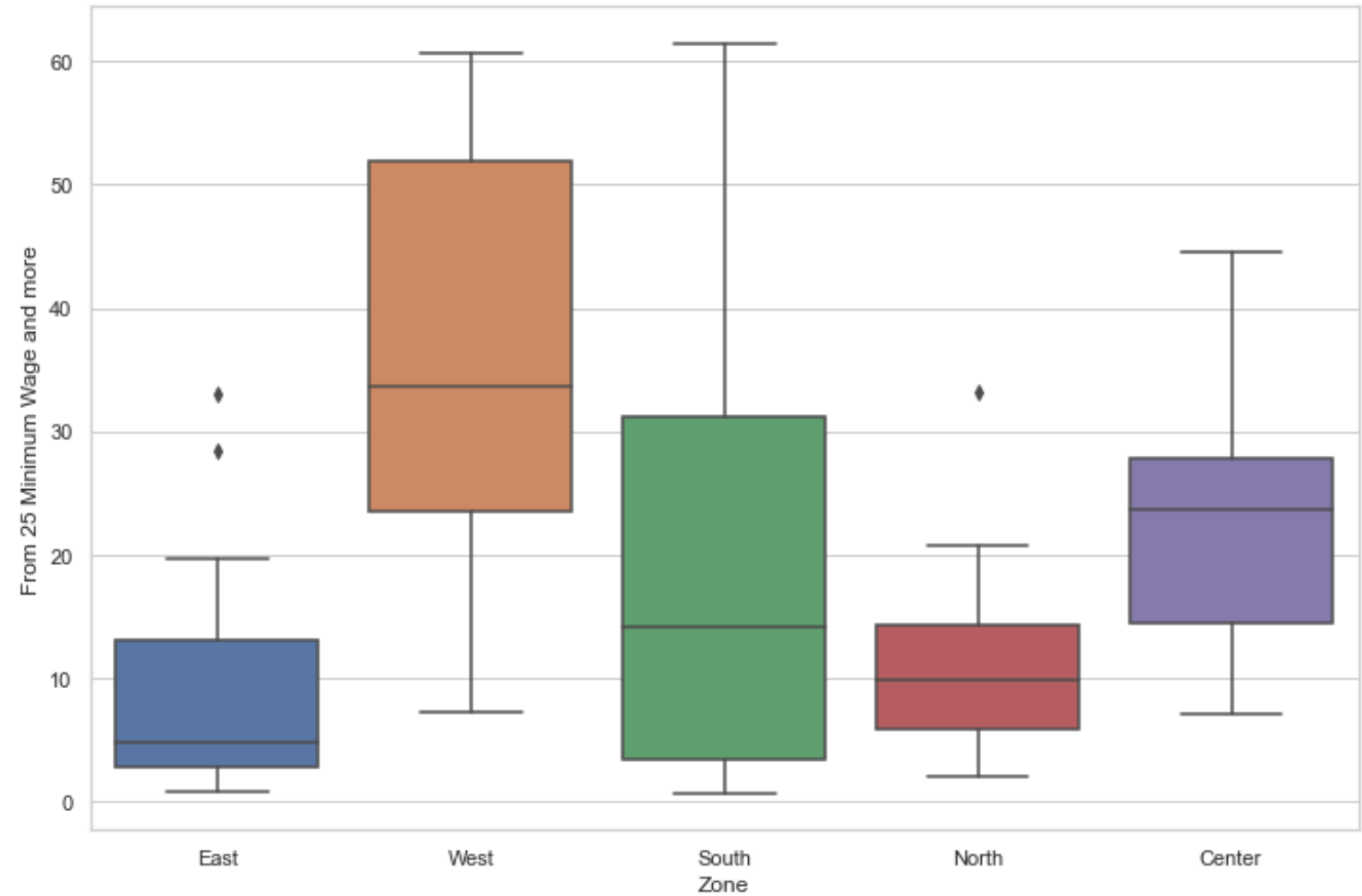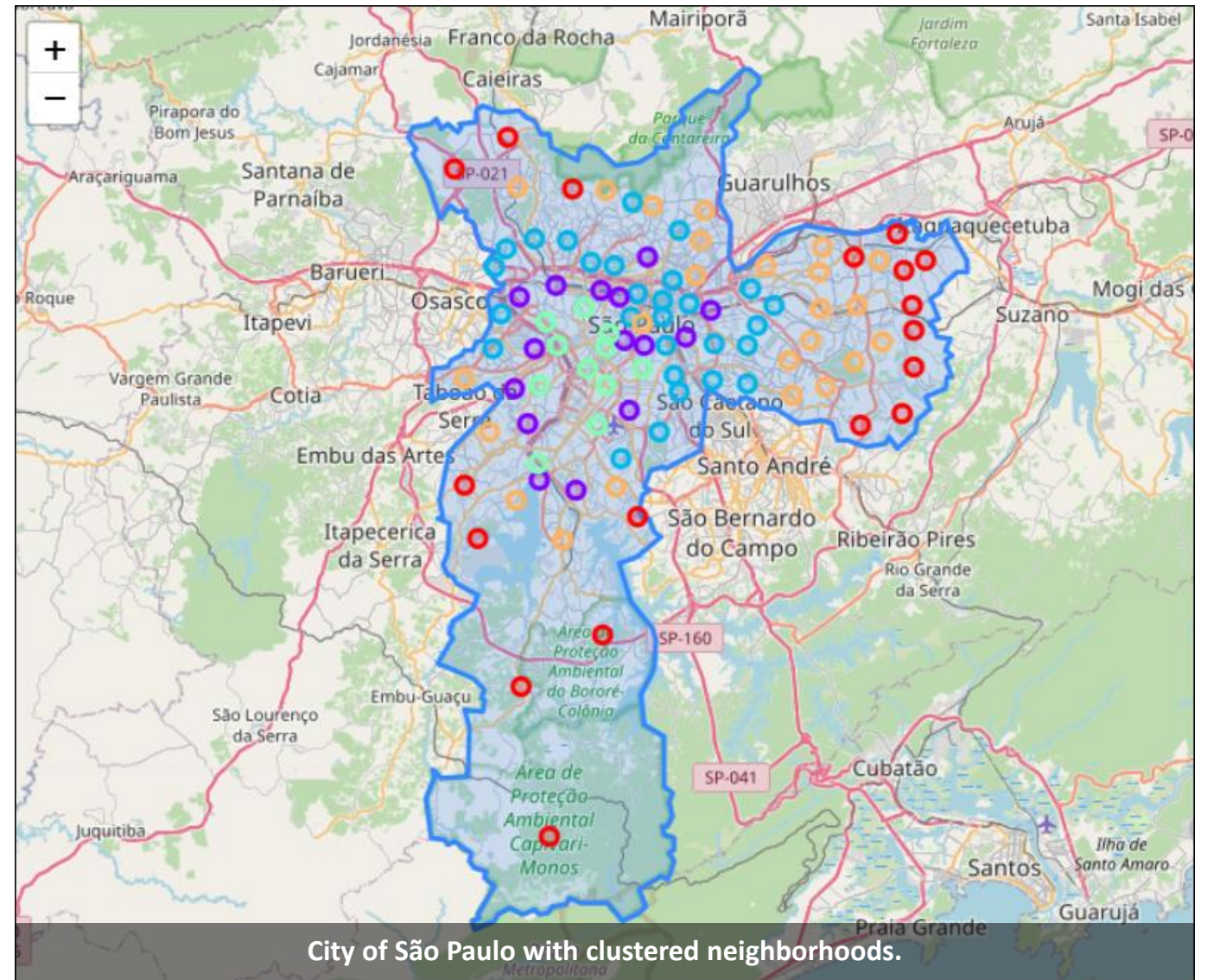

	Subprefecture	Neighborhood	Latitude	Longitude	Less than 2 Minimum Wage	From 2 to Less than 5 Minimum Wage	From 5 to Less than 10 Minimum Wage	From 10 to Less than 15 Minimum Wage	From 15 to Less than 25 Minimum Wage	From 25 Minimum Wage and more	Zone	Cluster Labels
0	Aricanduva	Aricanduva	-23.578024	-46.511454	11.64	24.95	28.47	13.72	13.33	7.88	East	4
1	Aricanduva	Carrão	-23.551530	-46.537791	9.18	18.17	25.82	14.91	16.35	15.58	East	2
2	Aricanduva	Vila Formosa	-23.566876	-46.546323	8.10	20.08	28.69	13.91	13.08	16.14	East	2
3	Butantã	Butantã	-23.569056	-46.721883	4.93	10.60	16.23	12.10	18.25	37.88	West	1
4	Butantã	Morumbi	-23.596499	-46.717845	4.00	9.05	10.76	5.67	9.95	60.58	West	3
5	Butantã	Raposo Tavares	-23.591610	-46.780359	12.73	27.95	29.05	12.50	10.54	7.24	West	4
6	Butantã	Rio Pequeno	-23.568505	-46.756857	11.80	22.00	22.77	12.38	13.08	17.96	West	2
7	Butantã	Vila Sônia	-23.599771	-46.739201	9.58	16.05	20.05	11.28	13.96	29.07	West	1
8	Campo Limpo	Campo Limpo	-23.632558	-46.759666	16.07	28.25	28.71	11.26	9.96	5.76	South	4
9	Campo Limpo	Capão Redondo	-23.671903	-46.779435	18.30	32.80	29.82	9.36	6.50	3.22	South	0
10	Campo Limpo	Vila Andrade	-23.625687	-46.726989	14.15	25.13	17.41	5.50	6.37	31.44	South	1
11	Capela do Socorro	Cidade Dutra	-23.713964	-46.699088	15.30	27.10	29.26	12.03	9.64	6.67	South	4
12	Capela do Socorro	Grajaú	-23.785907	-46.665197	22.92	35.87	28.21	7.55	4.08	1.38	South	0
13	Capela do Socorro	Socorro	-23.668885	-46.718615	8.65	13.72	24.01	12.82	17.58	23.22	South	1
14	Casa Verde	Cachoeirinha	-23.449511	-46.663661	15.74	29.57	28.54	11.17	9.35	5.62	North	4
15	Casa Verde	Casa Verde	-23.505927	-46.656138	8.51	19.05	28.32	13.74	14.49	15.90	North	2
16	Casa Verde	Limão	-23.503315	-46.675272	11.30	24.80	25.49	14.25	13.54	10.62	North	2
17	Cidade Ademar	Cidade Ademar	-23.673012	-46.655281	16.73	28.46	28.84	10.73	8.66	6.58	South	4
18	Cidade Ademar	Pedreira	-23.696144	-46.637628	21.24	32.70	28.57	8.86	5.60	3.03	South	0
19	Cidade Tiradentes	Cidade Tiradentes	-23.582497	-46.409207	20.47	36.92	31.23	7.53	3.08	0.76	East	0

Data frame with cluster labels column

Discussion and Results

Geocoding the Neighborhoods by clusters

City of São Paulo with clustered neighborhoods.

Discussion and Results

Analysing the Clusters

Percentage distribution over income classes, by cluster

	Cluster0	Cluster1	Cluster2	Cluster3	Cluster4
Less than 2 Minimum Wage – Class E	22,77	6,55	9,77	3,53	14,37
From 2 to Less than 5 Minimum Wage – Class D	35,54	13,57	20,03	6,52	27,76
From 5 to Less than 10 Minimum Wage – Class C	27,81	20,22	26,52	13,33	29,85
From 10 to Less than 15 Minimum Wage – Class B2	7,83	11,95	14,07	9,32	12,36
From 15 to Less than 25 Minimum Wage – Class B1	4,26	16,53	14,62	15,47	9,97
From 25 Minimum Wage and more – Class A	1,79	31,18	14,98	51,83	5,69

Discussion and Results

Analyzing the Clusters

- **Cluster0:**
  - most families belong to the classes E, D and C;
  - characterized by the poorest neighborhoods in the city of São Paulo;

- **Cluster1:**
  - highest percentage of the families in the Class A;
  - characterized by neighborhoods with better infrastructure and income distribution in relation to Cluster0

- **Cluster2:**
  - identified a more homogeneous income distribution among the neighborhoods;
  - there is no income class much more significant than another;

- **Cluster3:**
  - characterized by the highest percentage of families in the Class A;
  - lowest percentage of families in the Class E;
  - Neighborhoods in this cluster are in the West and South zones of the city, with better infrastructure, hotels, pet friendly spaces and many green area places;

- **Cluster4:**
  - predominance of families between classes C, D and E;
  - as in cluster0, it has little infrastructure;

Discussion and Results

Result 1

After analyzing each of the clusters and considering the research that points out that 24% of dog owners belong to class A, it was concluded that **Cluster3 has the greatest potential for the installation of the pet shop**, as it concentrates the neighborhoods with the greatest percentage of families in class A, with greater infrastructure, with many parks and open-air spaces, ideal for walking with the pet, in addition to pet friendly establishments.

Discussion and Results

Exploring the Neighborhoods of Cluster3 with Foursquare API

Top 10 venues for each neighborhood

	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	Ice Cream Shop	Plaza	Pet Store	Brazilian Restaurant	Flower Shop	Italian Restaurant	Pizza Place	Coffee Shop	Dessert Shop	Bar
1	Campo Belo	Ice Cream Shop	Bar	Brazilian Restaurant	Pizza Place	Pet Store	Chocolate Shop	Vegetarian / Vegan Restaurant	Gym	Burger Joint	Italian Restaurant
2	Consolação	Ice Cream Shop	Pizza Place	Hotel	Brazilian Restaurant	Cultural Center	Restaurant	Café	Italian Restaurant	Bookstore	Art Museum
3	Itaim Bibi	Ice Cream Shop	Italian Restaurant	Restaurant	Pet Store	Gym / Fitness Center	Athletics & Sports	Cycle Studio	Brazilian Restaurant	Café	Salad Place
4	Jardim Paulista	Ice Cream Shop	Bookstore	Brazilian Restaurant	Hotel	Pizza Place	Italian Restaurant	Restaurant	Cultural Center	Café	Pet Store
5	Moema	Ice Cream Shop	Bar	Restaurant	Italian Restaurant	Chocolate Shop	Pizza Place	Art Museum	Athletics & Sports	Cycle Studio	Gym / Fitness Center
6	Morumbi	Gym / Fitness Center	Coffee Shop	Gym	Ice Cream Shop	Shopping Mall	Japanese Restaurant	Hotel	Pharmacy	Butcher	Café
7	Perdizes	Ice Cream Shop	Pet Store	Park	Plaza	Pizza Place	Brazilian Restaurant	Bookstore	Hostel	Northeastern Brazilian Restaurant	Café
8	Pinheiros	Italian Restaurant	Ice Cream Shop	Plaza	French Restaurant	Brazilian Restaurant	Restaurant	Café	Japanese Restaurant	Athletics & Sports	Hostel
9	Santo Amaro	Pet Store	Steakhouse	Gym / Fitness Center	Supermarket	Coffee Shop	Hotel	Bar	Bakery	Gym	Italian Restaurant
10	Vila Mariana	Ice Cream Shop	Restaurant	Dessert Shop	Cultural Center	Burger Joint	Bar	Pizza Place	Park	Brazilian Restaurant	Gym

- **Pet Store** category is one of the most frequent in the cluster3, appearing among the **10 most common categories in 6 of the 11 explored neighborhoods**.
- **Pet Store** is the most common category in the **Santo Amaro** neighborhood, the second most common in the **Perdizes** neighborhood, and the third most common in **Alto de Pinheiros**.

Discussion and Results

Result 2

- The neighborhoods in which the **Pet Store** category is not among the 10 most common were considered to have the greatest potential for the installation of the pet shop;

- They are: **Consolação**, **Jardim Paulista**, **Moema**, **Morumbi**, **Pinheiros** and **Vila Mariana**.

- The **Foursquare API** was used to list the pet store locations found in each of these neighborhoods, as shown in the table below.

Neighborhood	Number of Pet Stores
Pinheiros	4
Morumbi	6
Moema	15
Vila Mariana	18
Consolação	21

Number of pet stores per Neighborhood

Conclusion

- After analyzing the neighborhoods in the city of São Paulo, it can be concluded that there are 3 potential neighborhoods to start a pet shop service, they are: **Pinheiros**, **Morumbi**, and **Moema**.

Conclusion

1st place – Pinheiros

Is known as a neighborhood that receives people from the most diverse backgrounds: students, businessmen, musicians and artists. Likewise, commerce is wide and varied: trendy restaurants, bars, offices of large companies, luxury shopping malls and popular stores. Parks, renowned hospitals, schools and universities of excellence are also nearby. It is a mix of residential and commercial spaces. We can expect low competitiveness for the new pet shop service, since we found only 4 registered pet shops in the neighborhood.

Conclusion

2nd place – Morumbi

Neighborhood located in the West Zone of the city of São Paulo, has excellent infrastructure and has hotels, shopping malls, hospitals, restaurants and commercial buildings. Morumbi also has the second highest percentage of residents earning 25 minimum wages or more, and among the neighborhoods above it is the one with the second lowest number of pet shops, only 6. Low competitiveness and high-income residents are good factors to start a pet shop service in the neighborhood.

Conclusion

3rd place – Moema

Neighborhood located in the South Zone of São Paulo. Like the other neighborhoods already mentioned, it has excellent infrastructure and services. Among the neighborhoods where residents earn 25 minimum wages or more, it occupies the eighth position. Potential competitiveness is expected for a pet shop service, since 18 services of this category were registered in the neighborhood.

Thank You!!!

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