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ABSTRACT

This report presents a hypothetical business case (by applying data analysis and visualization concepts) for the opening of a Filipino restaurant in Bucharest, Romania

Contents

1. Introduction

1.1. Background

In the latest years, Romania and especially Bucharest has become a very interesting target for tourists and for immigrants.

The lack of work force in the country led to a massive (compared to the whole population level) import of work force from other countries especially Asian countries.

1.2. Problem definition

One of the communities in continuous expansion in Romania is the Philippines community. Given the increasing number of Philippine immigrants. As any immigrant, they long for things that are close to their culture, including food and specific cultural events. The project aims to analyze the best option for a Filipino restaurant/event house to open.

1.3. Target audience

The target audience is a young Filipino cook who came to Romania and who would like to make Filipino cuisine and culture known to Romanians and tourists but in the same time a comfy place for Philippine immigrants to get together and celebrate.

2. Data acquisition and wrangling

2.1. Type of data and data acquisition

- ✓ Number of immigrants to Romania (2009 – 2018) provided by https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Migration_and_migrant_population_statistics
- ✓ Data related to immigration rate from Philippine to Romania which will be used as basis for forecasting provided by https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Migration_and_migrant_population_statistics
- ✓ Bucharest's Districts repartition (GPS coordinates provided by: http://www.searchromania.net/harta_harti/bucuresti/sector_1/)
- ✓ Distribution of Asian Restaurants in Bucharest and clustering in order to identify best location provided by https://foursquare.com/developers/apps/DIN34HGUXANZKGL4DQVENYONQ4ZNEIH5CSWNFMSDV4FULKFT/settings

2.2. Data wrangling

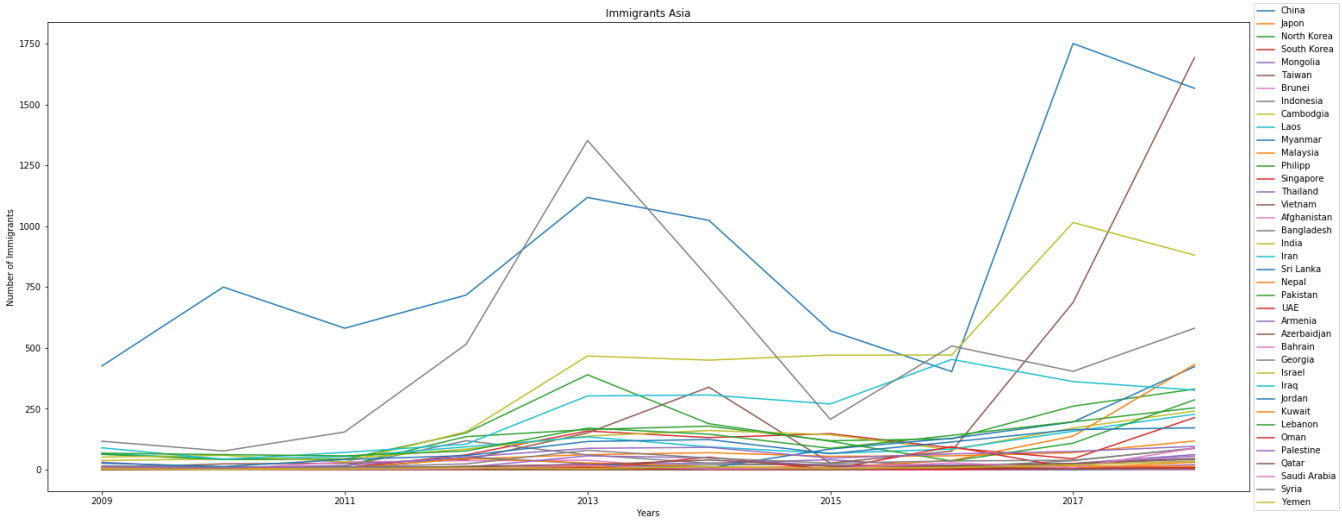
Part of the data are available on different sites in different formats, so I chose to transpose them myself in csv format and import them in python where I cleaned them and transformed them in a friendlier format.

3. Methodology

3.1. Data analysis and visualization

The first data which I analyzed were the data related to the immigration from different countries to Romania in the interval 2009 – 2018.

The distribution of data is presented in the following graph:



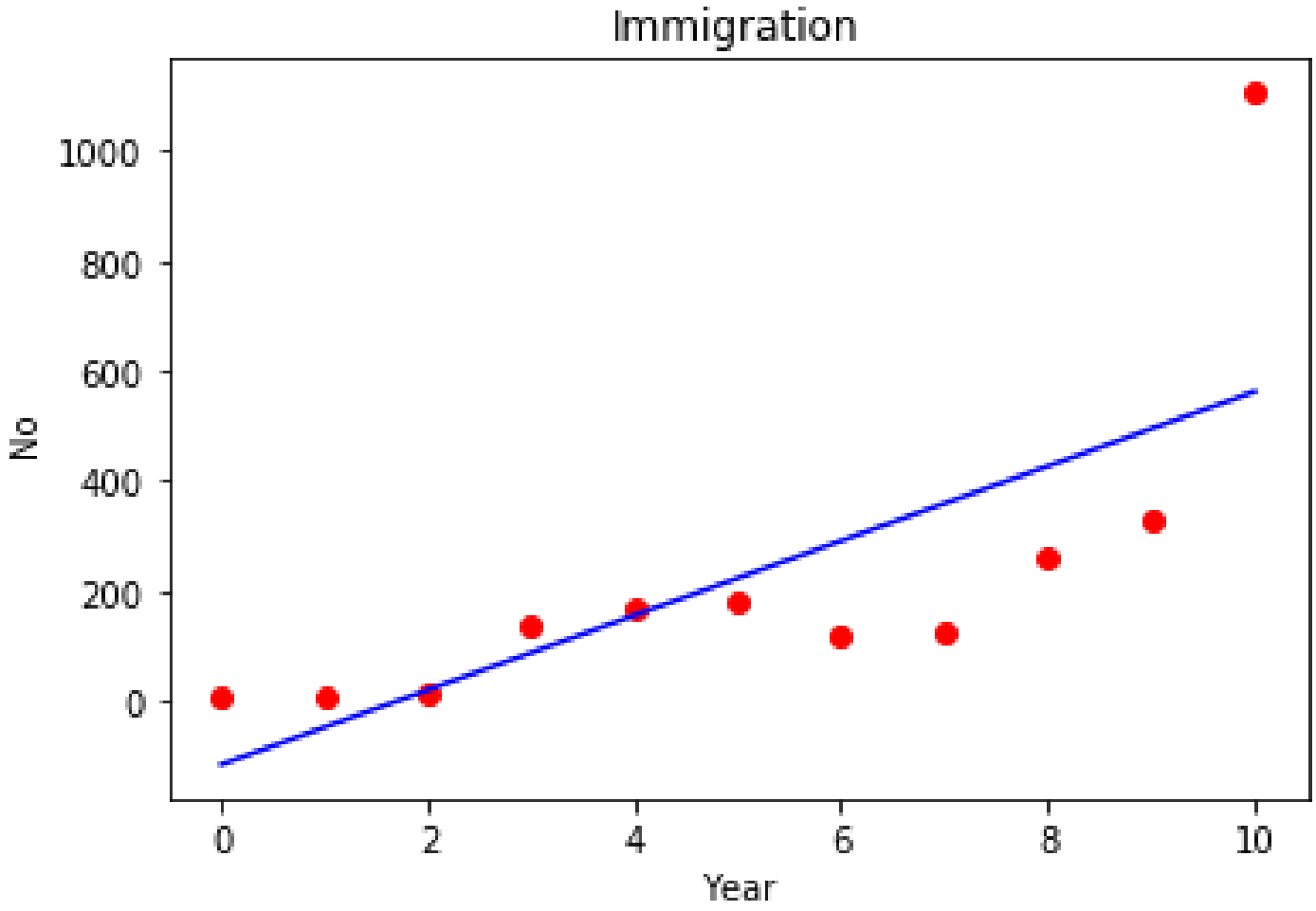
The top 6 countries in terms of immigrants during 2009 and 2018 were extracted and are presented in the below table:

	2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Total**
China	426	750	581	717	1118	1024	571	403	1750	1566	7774
Vietnam	8	24	27	41	151	339	28	76	687	1692	4814
Israel	52	59	32	156	467	450	471	471	1015	881	4734
Syria	117	77	155	515	1352	787	207	508	404	581	2384
Iraq	90	43	71	105	303	307	270	453	362	327	1918

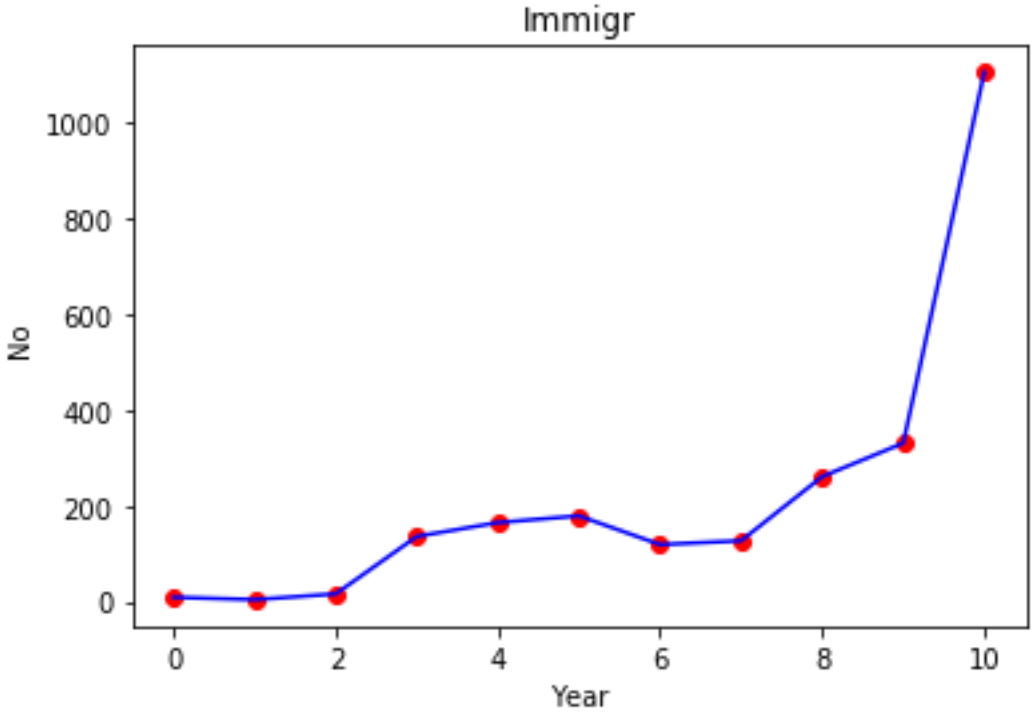
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Philipp	9	4	16	136	165	179	119	127	261	331	1422

As it can be noticed, Philippine holds the 6th place with a strong increase in the late years.
In order to get a more detailed picture, data for Philippine immigrants were separately extracted and treated. The number of immigrants from 2019 was also added.
In order to detect a specific distribution per year, linear regression and polynomial regression were used for trend analysis.

Graph: Linear regression analysis



Graph: 10th order polynomial regression



The best trend was obtained with a 10th order polynomial regression for which r2 score w as: **0.9999999999903308**

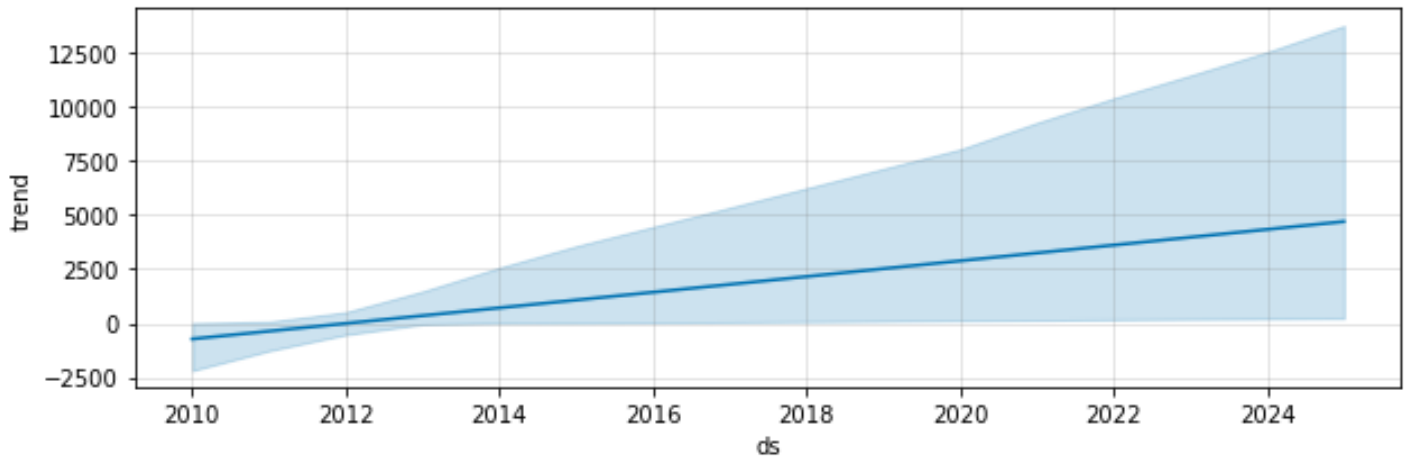
By using prophet module, a projection in time for 5 years was done.
The obtained forecasted data are presented below:

Table: 5 year forecast for Philippine immigration to Romania

	ds	yhat	yhat_lower	yhat_upper
11	2020-12-31	882.036986	689.755585	1062.329670
12	2021-12-31	1105.271906	905.544382	1288.131548
13	2022-12-31	1391.343738	1200.492714	1579.094413
14	2023-12-31	1358.169397	1174.224716	1552.529075

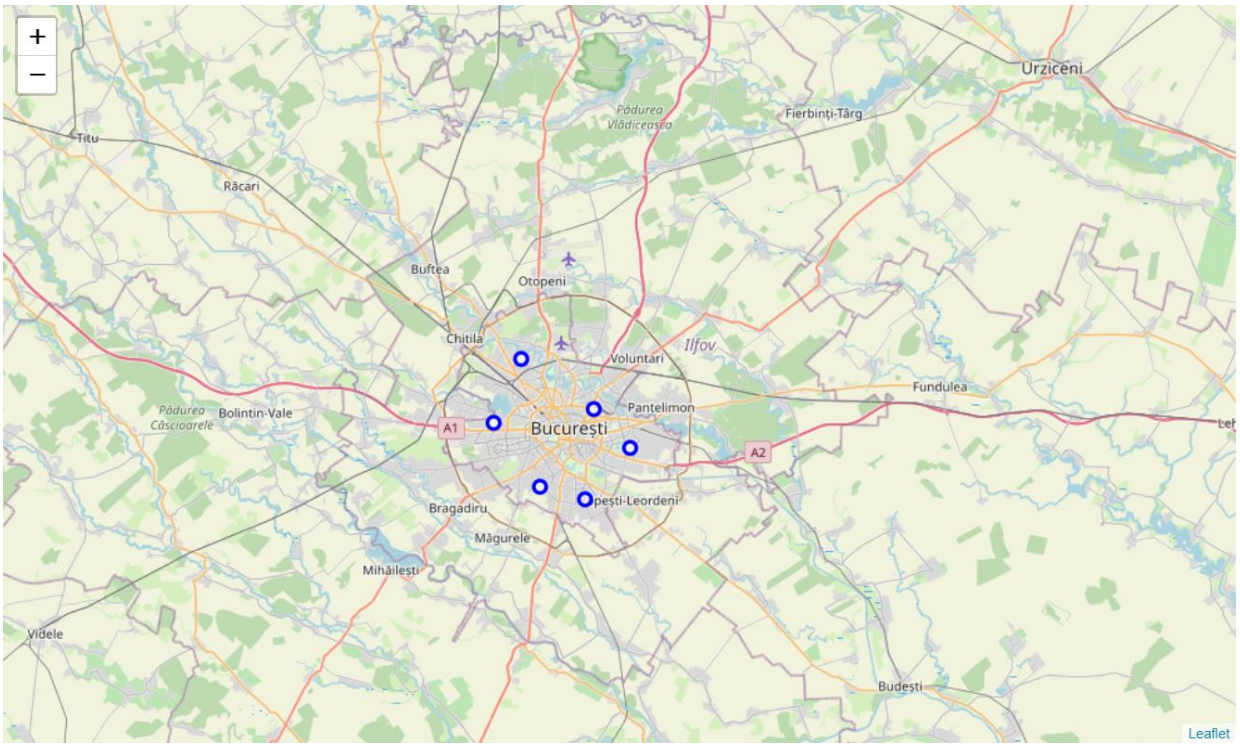
	ds	yhat	yhat_lower	yhat_upper
15	2024-12-31	2139.761373	1945.239566	2338.995757

Graph: 5 year forecast for Philippine immigration to Romania



In order to choose the best place to set up the restaurant, an analysis of Asian restaurants representativity in Bucharest was done.

Bucharest is divided into 6 districts as per following map:



Using Foursquare, all restaurants with Chinese, Japanese, Thai, Vietnamese and Filipino specific from Bucharest were listed.

The distribution of each type of restaurant per district is presented below:

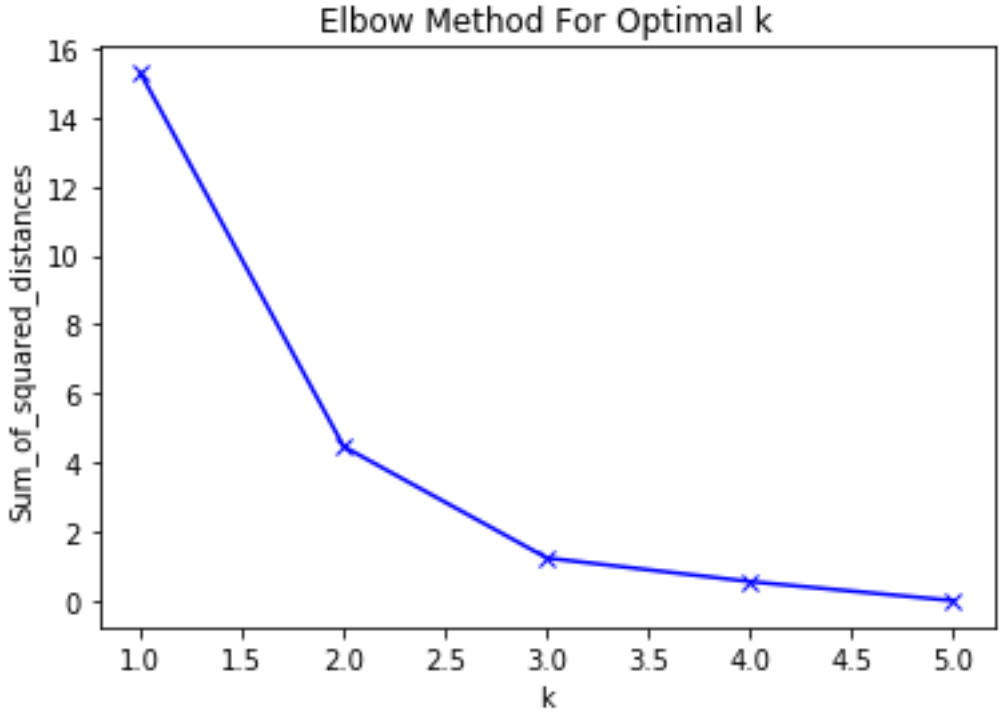
District	Venue	Frequency
Sector 1	Chinese Restaurant	0.40
	Japanese Restaurant	0.35
	Vietnamese Restaurant	0.17
	Thai Restaurant	0.07
	Filipino Restaurant	0.02
Sector 2	Chinese Restaurant	0.67
	Japanese Restaurant	0.33
	Vietnamese Restaurant	0.00
	Thai Restaurant	0.00
	Filipino Restaurant	0.00
Sector 3	Chinese Restaurant	1.00
	Japanese Restaurant	0.00
	Vietnamese Restaurant	0.00
	Thai Restaurant	0.00

	Filipino Restaurant	0.00
Sector 4	Chinese Restaurant	0.57
	Japanese Restaurant	0.43
	Vietnamese Restaurant	0.00
	Thai Restaurant	0.00
	Filipino Restaurant	0.00
Sector 5	Chinese Restaurant	0.00
	Japanese Restaurant	0.00
	Vietnamese Restaurant	0.00
	Thai Restaurant	0.00
	Filipino Restaurant	0.00
Sector 6	Chinese Restaurant	1.00
	Japanese Restaurant	0.00
	Vietnamese Restaurant	0.00
	Thai Restaurant	0.00
	Filipino Restaurant	0.00

As it can be noticed, the most variety of restaurants is in first district.

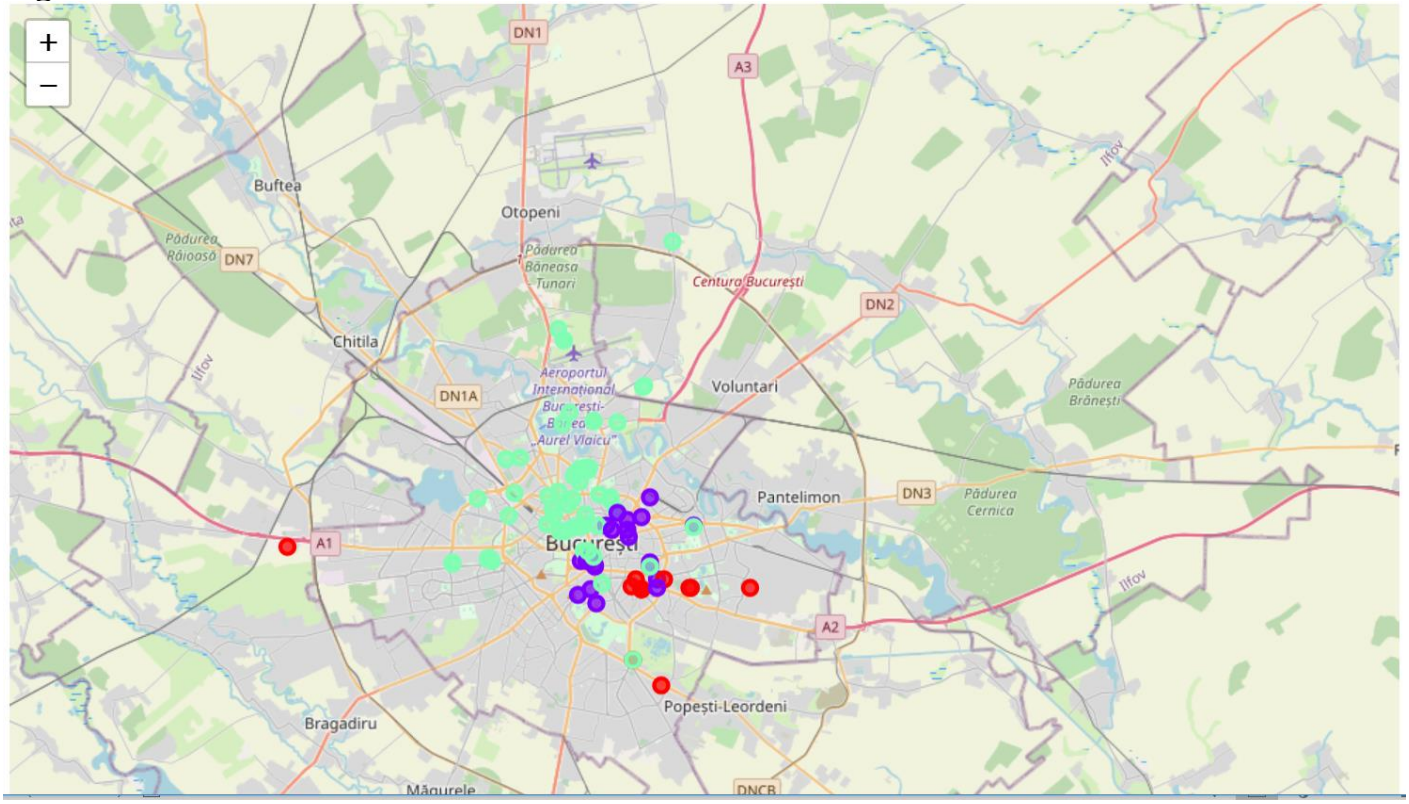
In order to better analyze the distribution, the restaurants were clustered. For the choice of best cluster number, the Elbow Method was utilized.

Graph: Elbow Method for number of clusters choice



The best fit is obtained with 3 clusters.
The clusters were mapped by latitude and longitude attributes of the restaurant.

Fig: clusters distribution



4. Results and discussions

From the analyzed data, following conclusions can be drawn:

- Asian and especially Filipino immigration in Romania is increasing and will continue to increase in the coming years.
- Bucharest has a rather low distribution of Asian restaurant and only 1 Filipino restaurant situated in Bucharest suburbia.
- Most of Asian restaurants are situated in the first district which is well known as the business core of Bucharest, most of the offices being located here.
- There is a very low number of Asian restaurants (only Chinese restaurants) in the 3rd district, district where Old Town is located, so not too much variety for the tourists visiting Bucharest.

5. Conclusion

Based on presented analysis, a Filipino restaurant opening in Bucharest is feasible.
The best place to open the restaurant would be Old City given the facility to get there, the affluence of tourists visiting the place and the lack of Asian restaurants in the area.