

Restaurants in Haute-Savoie

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Introduction

Our study is on one of province of France,Haute-Savoie. haute-saoie is a region in the Alps of eastern France. There are many ski resorts in the Mont Blanc mountain range include popular Chamonix, with access to a large area of ski and snowboard runs. there are many resturants , and historical places . this area has very importance for its tourisim. One of best site for opening resturant here because of geolocation of this area. The idea of this study is to help people planning to open a new restaurant in Haute-Savoie. In order to chose the right location by providing data about the income and population of each neighborhood as well as the competitors already present on the same regions.

Data Acquisition & Cleaning

To provide the stakeholders the necessary information I'll be combining Haute-savoie data that contains Population, Average income per Neighborhood with Haute-savoie's Neighborhoods shapefile and Foursquare API to collect competitors on the same neighborhoods. Haute-savoie population data is available in this site <https://www.insee.fr/fr/statistiques/3689656#consulter> Each commune or neighbourhood revenue(income) of Haute-savoie are available on this site <https://www.impots.gouv.fr/portail/statistiques> The data is preprocessed by taking population column and code of all commune in Haute-savoie 2016. The income column is taking from impot.fr website . I merge these columns in one table and i used that table in my project. From geopy.geocoders i retrieve latitude and longitude of all commune amd append in my dataframe.

we use package likes:

- pandas
- Numpy
- Json
- GEOpy
- Matplotlib
- Sklearn
- Folium
- Requests

	Code	Commune	Population	Income
0	74001	Abondance	1408	3797589
1	74002	Alby-sur-Chéran	2580	3070608
2	74003	Alex	1052	1363040
3	74004	Allèves	409	403747
4	74005	Allinges	4433	5816560

GEOLOCATION-Latitude-Longitude:

We find latitude and longitude of each commune and append the list of latitude and longitude of each commune in haute savoie with our data set.

	Code	Commune	Population	Income	lat	lon
0	74001	Abondance	1408	3797589	46.280661	6.719857
1	74002	Alby-sur-Chéran	2580	3070608	45.819054	6.020555
2	74003	Alex	1052	1363040	45.888900	6.237960
3	74004	Allèves	409	403747	45.751970	6.080210
4	74005	Allinges	4433	5816560	46.336782	6.464975

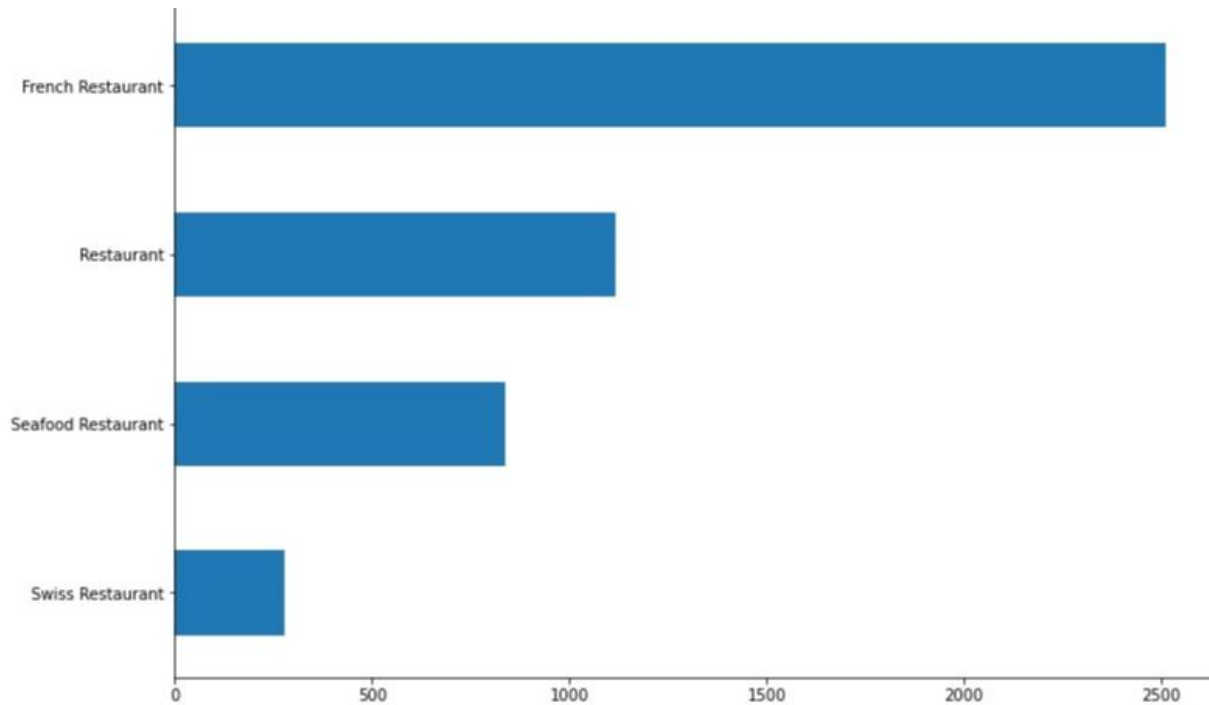
Methodology:

We create the data flow to get the data by using API, then extract the restaurants information. we take food category value from FourSquare app. extracting all information about restaurants we use machine learning algorithm 'CLUSTER' to find where one can open restaurant according to population and income of particular commune.

	Code	Commune	Population	Income	lat	lon	CategoryFood	FoodInformation
0	74001	Abondance	1408	3797589	46.280661	6.719857	{'meta': {'code': 200, 'requestId': '5fdf1002b...}}	{'Name': ['Hôtel-Restaurant du Port Yvoire', '...']}
1	74002	Alby-sur-Chéran	2580	3070608	45.819054	6.020555	{'meta': {'code': 200, 'requestId': '5fdf10026...}}	{'Name': ['Hôtel-Restaurant du Port Yvoire', '...']}
2	74003	Alex	1052	1363040	45.888900	6.237960	{'meta': {'code': 200, 'requestId': '5fdf10028...}}	{'Name': ['Hôtel-Restaurant du Port Yvoire', '...']}
3	74004	Allèves	409	403747	45.751970	6.080210	{'meta': {'code': 200, 'requestId': '5fdf10025...}}	{'Name': ['Hôtel-Restaurant du Port Yvoire', '...']}
4	74005	Allinges	4433	5816560	46.336782	6.464975	{'meta': {'code': 200, 'requestId': '5fdf10038...}}	{'Name': ['Hôtel-Restaurant du Port Yvoire', '...']}

We use k-mean clustering. we explore the cluster information we can get the initial results

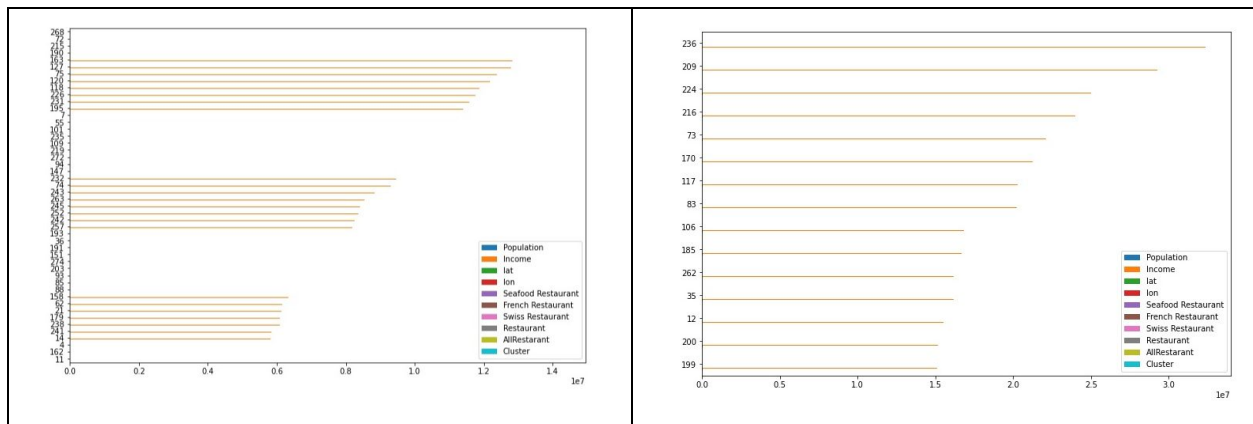
- French Restaurant
- rest Restaurant like asian restaurants are very popular in this region



The number of french resturants are more than 2500 in this region. Resturants shows the asian resturants which are more than 1000. It is very important information for the stake holder.

Results & Finding:

The value of k-mean is 5. The number of clusters are 5. Shown in below fig are the cluster 1 and cluster 2 against the income of each cluster.



Commune near the geneva border have high income salaries. Geo-location of all communes like annemasse ,meussey etc are the best location to open French , or asian food restaurants

