

Analysing Business prospect for tourist venues in Kerala

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Introduction

India is called a sub continent where 'Unity in diversity' is prominently visible. Several states of India represent several cultures. Tourism is one of most important business in India. Kerala is located in the southwestern most part of the country. All of 14 districts are as diverse as prosperous for tourism and new business.

In this analysis, we will analysis below details for state Kerala

1. Tourism details comparison among all districts
2. Business prospects for different districts.

Description of the Data:

The data used are :

- Here, we are scraping data from the below page and converting to pandas dataframe
https://en.wikipedia.org/wiki/List_of_districts_in_India
- Four Square API is being used to get venues details for neighborhoods in Kerala.

Methodology:

In this project India data is taken as a base which contains info of all states and the corresponding districts. Some exploratory data analysis applied –

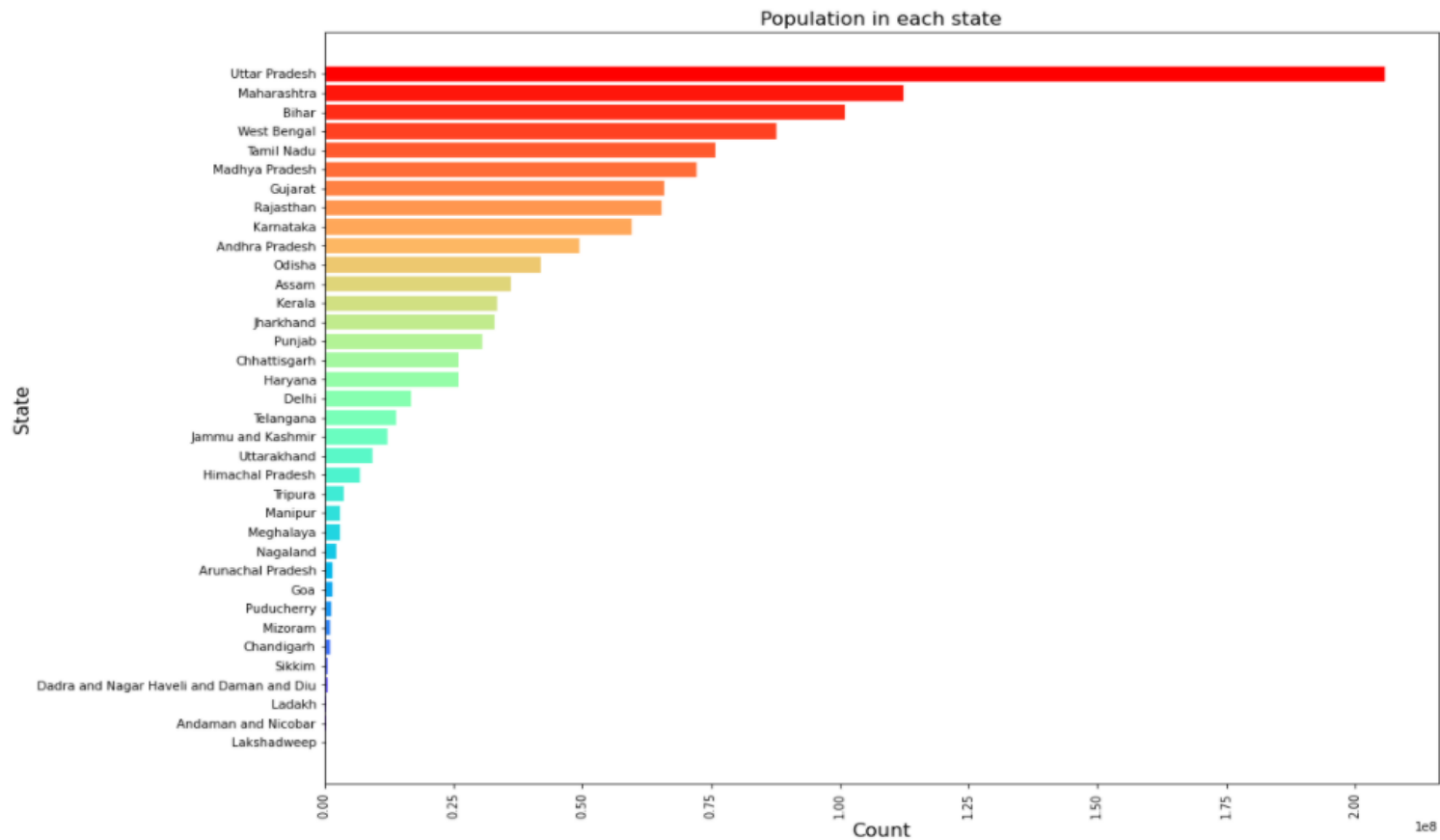
- Bar graph to visualize all state population for India
- From the dataframe we will subset the dataset to get only the records for Kerala,
- Data cleaning with removal of any blank fields.
- Visualize all neighborhood of Kerala using FOLIUM library.
- Bar graph to visualize number of tourist venues in 14 districts of Kerala
- Fetching Latitude and Longitude of neighborhoods using Geopy Library
- Normalizing the data fetched from Foursquare API.

Machine learning technique –

-
- We will use Clustering technique to segment the neighborhoods and cluster them using K-MEANS clustering to get the clusters with similarities in their venues.

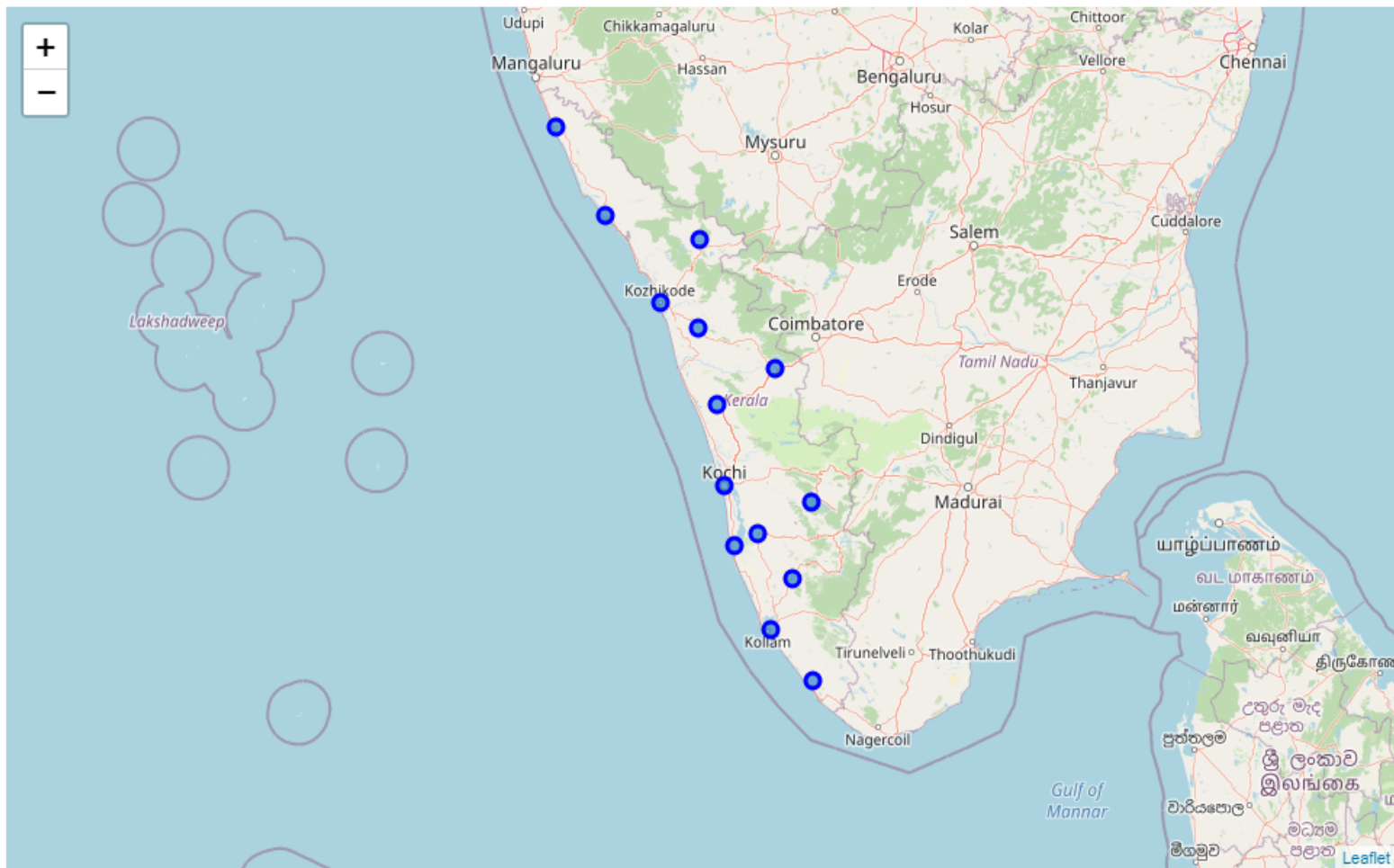
Data Presentation

Bar plot to visualize all state population for India

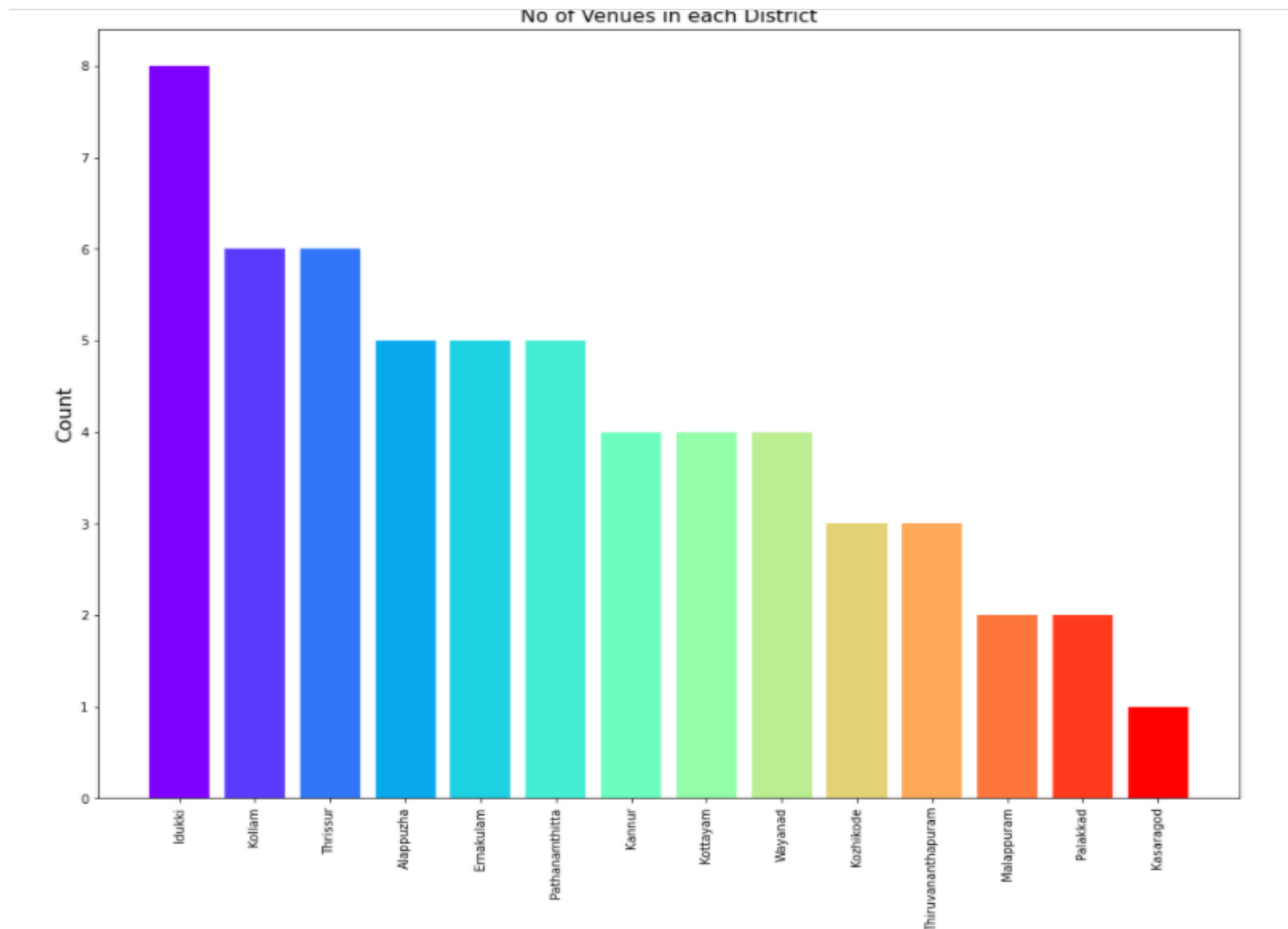


Visualize all Districts of Kerala using FOLIUM library

Out[55]:

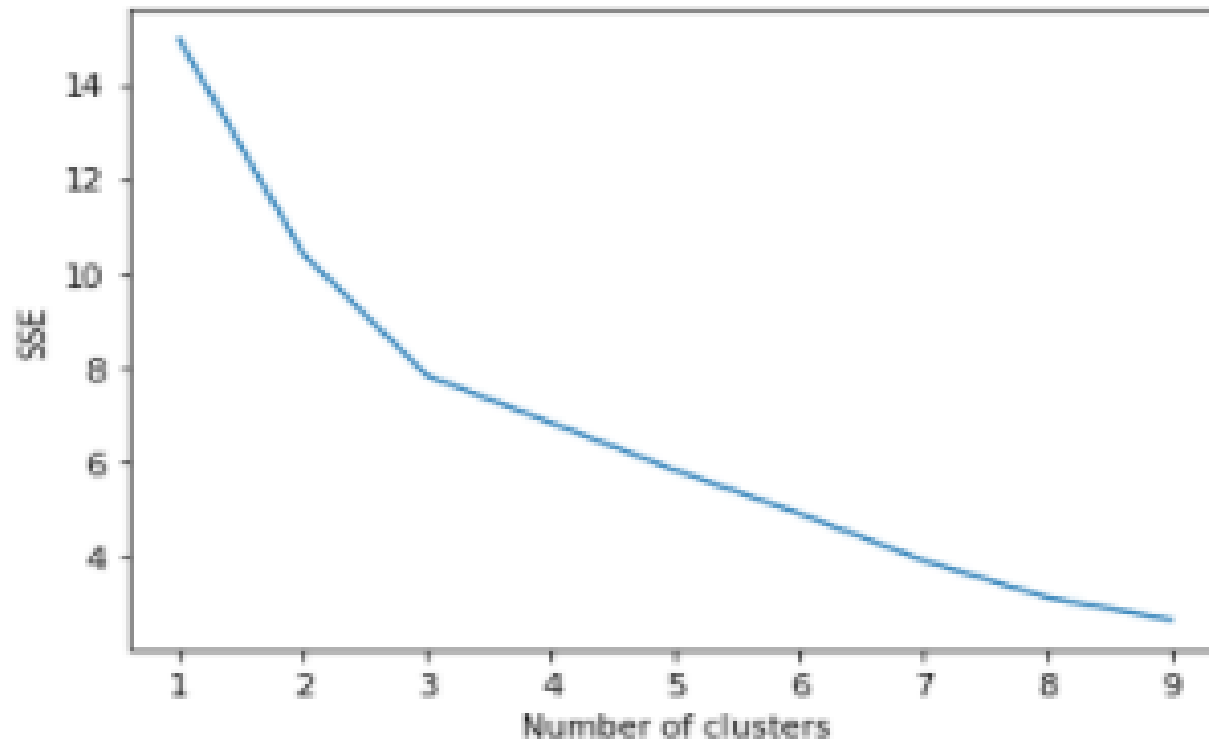


Bar graph to visualize number of tourist venues in 14 districts of Kerala



K-means clustering algorithm :

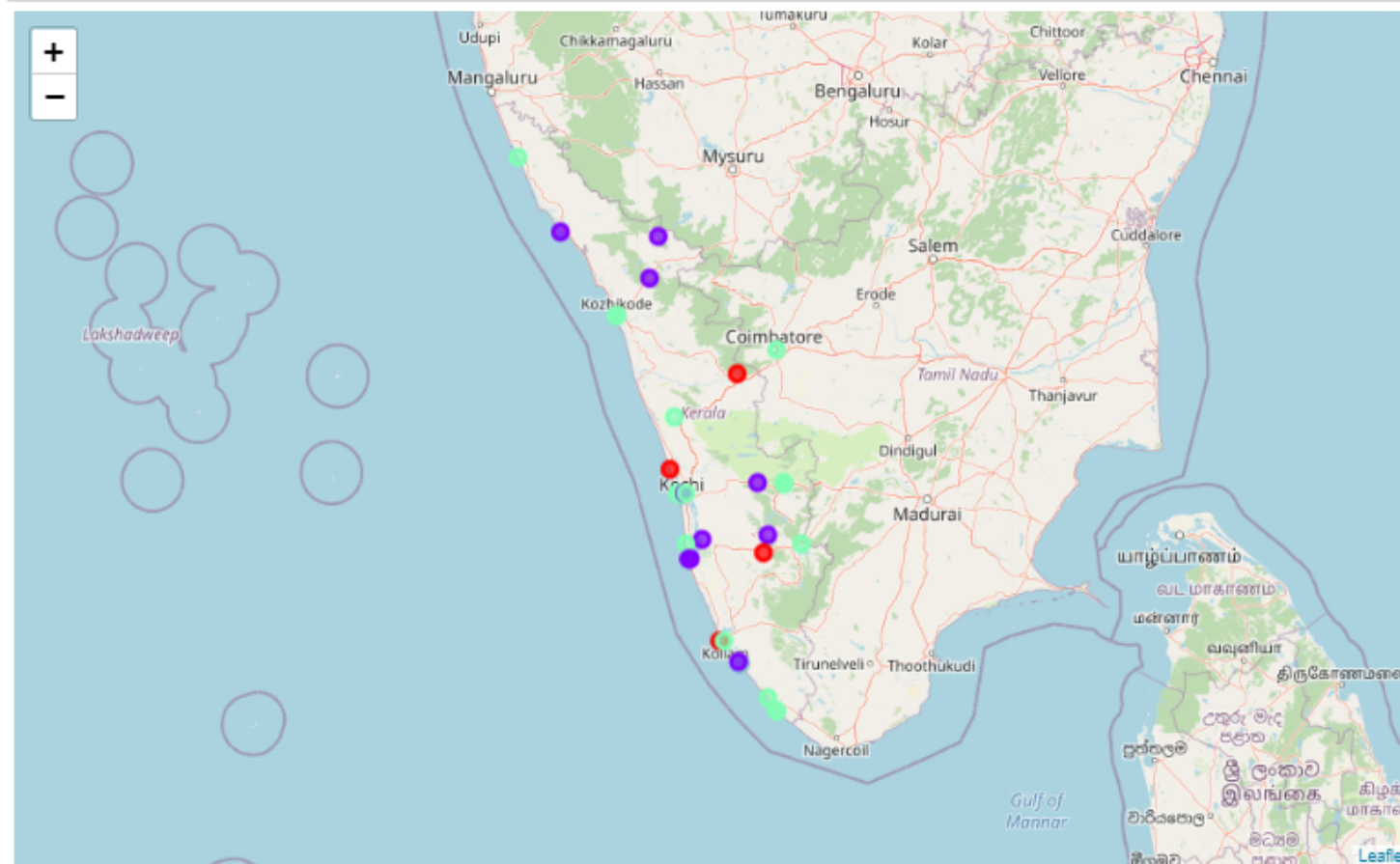
Here elbow method is used to determine the optimum value of k to perform K-means clustering. The graph obtained is below.



Result

Representation of clusters in Map with different colours

The colors purple, green, and red represents three clusters respectively



Most common business in clusters at the respective venues :

Cluster 1

```
: nearby_business_merged.loc[nearby_business_merged['Cluster Labels'] == 0, nearby_business_merged.columns[[0] + list(range(4,
```

	Venue	1st Most Common Business	2nd Most Common Business	3rd Most Common Business	4th Most Common Business	5th Most Common Business	6th Most Common Business	7th Most Common Business	8th Most Common Business	9th Most Common Business	10th Most Common Business
1	Alappuzha	Indian Restaurant	Restaurant	Vegetarian / Vegan Restaurant	Clothing Store	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Coffee Shop
7	Alappuzha Light House	Indian Restaurant	Seafood Restaurant	Café	Vegetarian / Vegan Restaurant	Coffee Shop	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store
15	Kumarakom Backwaters	Boat or Ferry	Vegetarian / Vegan Restaurant	Coffee Shop	Fast Food Restaurant	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Clothing Store
24	Alappuzha Beach	Indian Restaurant	Vegetarian / Vegan Restaurant	Fried Chicken Joint	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Coffee Shop	Clothing Store
66	Durbar Hall Art Gallery	Indian Restaurant	Hotel	Gastropub	Bakery	Fried Chicken Joint	Seafood Restaurant	Restaurant	Breakfast Spot	Café	Coffee Shop
104	Vagamon Meadows	Indian Restaurant	Vegetarian / Vegan Restaurant	Fried Chicken Joint	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Coffee Shop	Clothing Store
131	Cheyappar Falls, Munnar	Indian Restaurant	Café	Vegetarian / Vegan Restaurant	Coffee Shop	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Clothing Store
153	Baby Beach	Indian Restaurant	Vegetarian / Vegan Restaurant	Fried Chicken Joint	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Coffee Shop	Clothing Store
169	Varkala Beach	Indian Restaurant	Hotel	Seafood Restaurant	Café	Juice Bar	Vegetarian / Vegan Restaurant	Coffee Shop	Diner	Dessert Shop	Department Store
204	Black Beach	Indian Restaurant	Café	Restaurant	Vegetarian / Vegan Restaurant	Coffee Shop	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store
394	Lakkidi View Point	Indian Restaurant	Café	Vegetarian / Vegan Restaurant	Coffee Shop	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Clothing Store

Cluster 2

```
: nearby_business_merged.loc[nearby_business_merged['Cluster Labels'] == 1, nearby_business_merged.columns[[0] + list(range(4, 12))]]
```

	Venue	1st Most Common Business	2nd Most Common Business	3rd Most Common Business	4th Most Common Business	5th Most Common Business	6th Most Common Business	7th Most Common Business	8th Most Common Business	9th Most Common Business	10th Most Common Business
20	Marari Beach	Hotel	Vegetarian / Vegan Restaurant	Fried Chicken Joint	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Coffee Shop	Clothing Store
28	Springr	Snack Place	Indian Restaurant	Market	Vegetarian / Vegan Restaurant	Clothing Store	Diner	Dessert Shop	Department Store	Convenience Store	Coffee Shop
34	David Hall	Hotel	Asian Restaurant	Café	Seafood Restaurant	Coffee Shop	Indian Restaurant	Italian Restaurant	Cajun / Creole Restaurant	Mediterranean Restaurant	Restaurant
59	Pepper House	Hotel	Seafood Restaurant	Vegetarian / Vegan Restaurant	Clothing Store	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Coffee Shop
92	Rajiv Gandhi indoor stadium	Indian Restaurant	Asian Restaurant	Hotel	Sandwich Place	Burger Joint	Fast Food Restaurant	Coffee Shop	Diner	Dessert Shop	Department Store
107	The Panoramic Getaway Hotel	Hotel	Vegetarian / Vegan Restaurant	Fried Chicken Joint	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Coffee Shop	Clothing Store
110	Kadathanadan Kalari Centre, Thekkady	Hotel	Indian Restaurant	Market	Vegetarian / Vegan Restaurant	Coffee Shop	Diner	Dessert Shop	Department Store	Convenience Store	Clothing Store
129	Tea Gardens, Munnar	Hotel	Vegetarian / Vegan Restaurant	Fried Chicken Joint	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Coffee Shop	Clothing Store
137	Punarjani Traditional Village	Hotel	Vegetarian / Vegan Restaurant	Fried Chicken Joint	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Coffee Shop	Clothing Store
158	Bekal Fort	Hotel	Vegetarian / Vegan Restaurant	Fried Chicken Joint	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Coffee Shop	Clothing Store
164	Kollam-Asramam ground	Asian Restaurant	Bakery	Juice Bar	Coffee Shop	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Clothing Store
189	South Cliff Beach	Restaurant	Hotel	Seafood Restaurant	Convenience Store	Pizza Place	Music Store	Juice Bar	Vegetarian / Vegan Restaurant	Cajun / Creole Restaurant	Dessert Shop

Cluster 3

```
: nearby_business_merged.loc[nearby_business_merged['Cluster Labels'] == 2, nearby_business_merged.columns[[0] + list(range(4, 12))]]
```

	Venue	1st Most Common Business	2nd Most Common Business	3rd Most Common Business	4th Most Common Business	5th Most Common Business	6th Most Common Business	7th Most Common Business	8th Most Common Business	9th Most Common Business	10th Most Common Business
141	Mundakkayam	Asian Restaurant	Gift Shop	Bakery	Bistro	Boat or Ferry	Breakfast Spot	Burger Joint	Café	Cajun / Creole Restaurant	Fried Chicken Joint
160	Thirumullavaram Beach	Seafood Restaurant	Vegetarian / Vegan Restaurant	Clothing Store	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Coffee Shop	Cajun / Creole Restaurant
291	Malampuzha Dam and Garden	Tourist Information Center	Vegetarian / Vegan Restaurant	Fast Food Restaurant	Eastern European Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Coffee Shop	Clothing Store
343	Cheral Beach	Eastern European Restaurant	Vegetarian / Vegan Restaurant	Tourist Information Center	Fast Food Restaurant	Diner	Dessert Shop	Department Store	Convenience Store	Coffee Shop	Clothing Store

Conclusion

In this project, we have analyzed the tourist venues for each Kerala District using of the Foursquare API. By K-means clustering algorithm, we have clustered the tourist spots based on exploring the frequency of the businesses that are present which could help us indicate a business opportunity that could be established in the locality so that the business could attract as many tourists as possible.