



Manhattan Coffee Shop

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Introduction

Business Problem: “Where to open a coffee shop in Manhattan?”

- Target stakeholders who are interested in investing in a coffee shop in Manhattan



Data source

- Coffee data from the US Department of Agriculture
Use: analyze the US domestic coffee consumption trend
Source: <https://apps.fas.usda.gov/psdonline/app/index.html#/app/downloads>
- Geoinformation accessed from the Foursquare API
Use: access geolocation details of manhattan
Source: <https://foursquare.com/developers/explore>
- Manhattan neighborhood name data from NYU Spatial Data Repository
Use: access neighborhoods location details of manhattan
Source: <https://apps.fas.usda.gov/psdonline/app/index.html#/app/downloads>

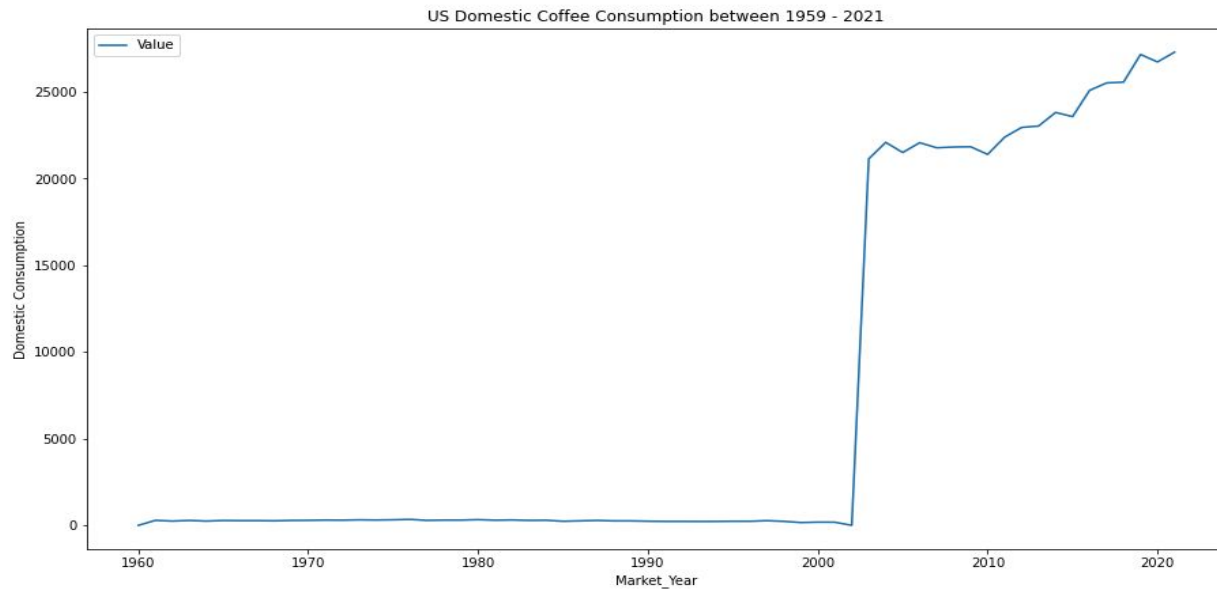


Methodology

- Data Visualization
 - Line plots
 - Horizontal bar chart
 - Pie chart

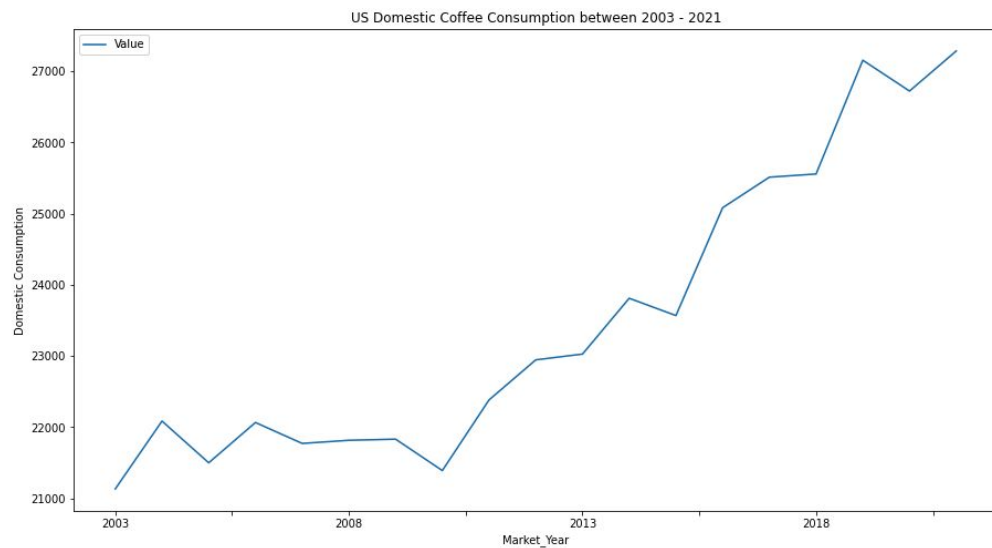
Line Pots

- Visualize the US domestic consumption between 1959 -2021



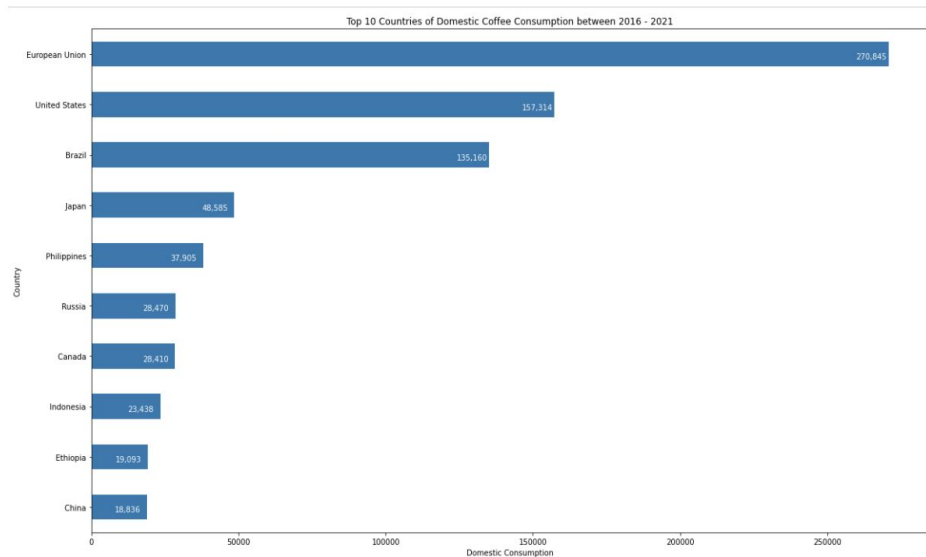
Line Pots

- Visualize the US domestic consumption between 2003 - 2021



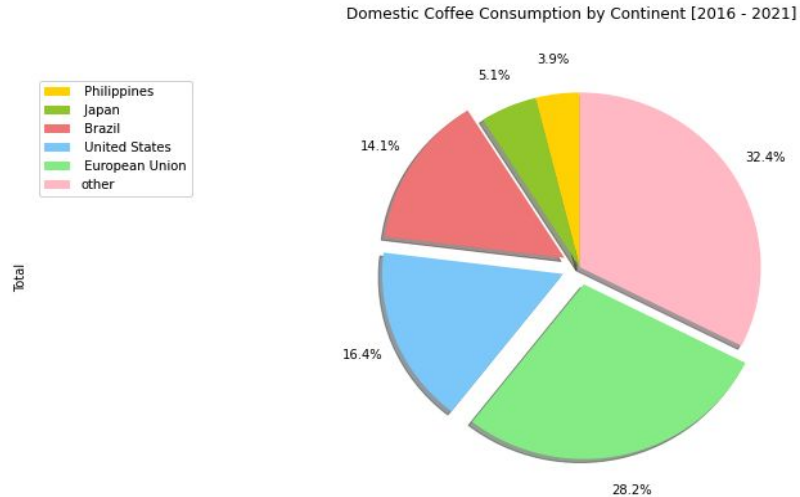
Horizontal Bar Plot

- Visualize the top 10 countries of domestic coffee consumption between 2016 - 2021



Pie Chart

- Visualize the domestic coffee consumption by continent [2016 - 2021]





Foursquare API

```
venues.head()
```

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Marble Hill	40.876551	-73.91066	Arturo's	40.874412	-73.910271	Pizza Place
1	Marble Hill	40.876551	-73.91066	Bikram Yoga	40.876844	-73.906204	Yoga Studio
2	Marble Hill	40.876551	-73.91066	Tibbett Diner	40.880404	-73.908937	Diner
3	Marble Hill	40.876551	-73.91066	Dunkin'	40.877136	-73.906666	Donut Shop
4	Marble Hill	40.876551	-73.91066	Starbucks	40.877531	-73.905582	Coffee Shop



Machine Learning

- One Hot Encoding
- K Neighbourhood Cluster



One Hot Encoding

] :

	Neighborhood	Accessories Store	Adult Boutique	Afghan Restaurant	African Restaurant	American Restaurant	Antique Shop	Arepa Restaurant
0	Battery Park City	0.0	0.0	0.0	0.000000	0.013889	0.0	0.0
1	Carnegie Hill	0.0	0.0	0.0	0.000000	0.011364	0.0	0.0
2	Central Harlem	0.0	0.0	0.0	0.066667	0.044444	0.0	0.0
3	Chelsea	0.0	0.0	0.0	0.000000	0.040000	0.0	0.0
4	Chinatown	0.0	0.0	0.0	0.000000	0.030000	0.0	0.0



One Hot Encoding

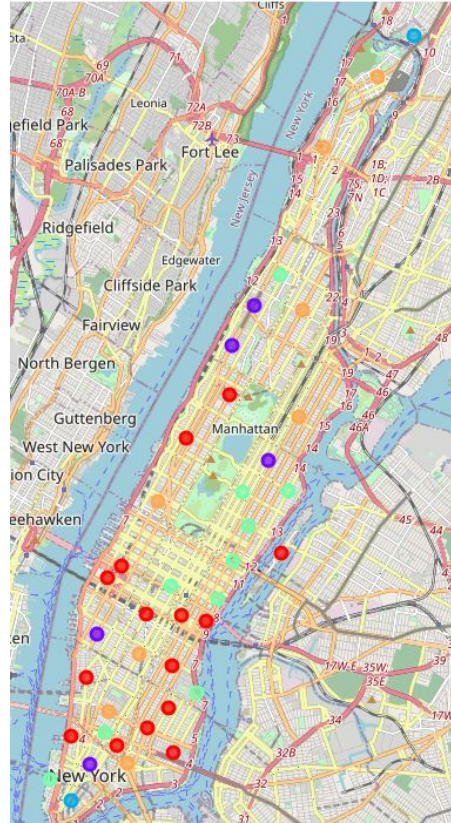
	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	
0	Battery Park City	Park	Hotel	Gym	Coffee Shop	Shopping Mall	M
1	Carnegie Hill	Coffee Shop	Café	Yoga Studio	Bakery	Wine Shop	
2	Central Harlem	African Restaurant	Chinese Restaurant	French Restaurant	Gym / Fitness Center	American Restaurant	Cos
3	Chelsea	Coffee Shop	Art Gallery	American Restaurant	Seafood Restaurant	Hotel	
4	Chinatown	Chinese Restaurant	Bakery	Cocktail Bar	Dessert Shop	Vietnamese Restaurant	



K Neighbourhood Cluster

	Borough	Neighborhood	Latitude	Longitude	Cluster Labels	Coffee Shop
0	Manhattan	Marble Hill	40.876551	-73.910660	2	0.130435
1	Manhattan	Chinatown	40.715618	-73.994279	4	0.020000
2	Manhattan	Washington Heights	40.851903	-73.936900	4	0.024096
3	Manhattan	Inwood	40.867684	-73.921210	4	0.016949
4	Manhattan	Hamilton Heights	40.823604	-73.949688	3	0.064516

K Neighbourhood Cluster





Results

US domestic coffee consumption

1. US domestic coffee consumption jumps from the year 2003 based on the line pots. The trend is that domestic consumption is **ascending**.
2. US domestic coffee consumption between 2016 - 2021 is **ranked 2rd**, based on the horizontal bar plot. The 1st is the European Union.
3. US domestic coffee consumption by continent between 2016 - 2021 is **16.4%**, **ranked 2rd**. The 1st is the European Union, which is 28.2%.



Results

Manhattan coffee shop

1. The category 'Coffee shop' is **a most common venue** among neighborhoods in manhattan, based on the one hot encoding.
2. Manhattan neighborhoods are clustered based on the frequency of the coffee shop venue. The map of the neighborhoods shows the clusters in different colors and represents the different popularities of the coffee shop. The Neighbourhood '**Financial District**' on the map shows the significant popularities compared to other neighborhoods. The cluster label 3 shows a large number of neighborhoods cover **shopping areas**, like soho, fifth avenue, time square, etc.,



Discussion

After carefully analyzing the data retrieved from the US agriculture department, the US is the second largest country that consumes **157,314** ‘Thousand 60-Kilogram Bags’ green coffee since 2016. Also, Manhattan is so called ‘the city that never sleeps’. This project of opening a coffee shop is **with high possibility**.



Discussion

Recommendations

The location of the coffee shop can be the financial district or shopping areas in manhattan.

- Financial District

Wall Street must be the best location for a brand opening coffee shop with espressos.

- Shopping Area

Soho is better than fifth avenue because the luxury shops on fifth avenue usually provide cocktails and coffee to customers. It's much convenient for customers to step for a cup of coffee among the shops in Soho.



Conclusion

- The top 10 most common venues dataframe shows that Manhattan is a great place for living and tourism. Coffee shops in Manhattan provide people here a relaxing atmosphere and an optional working place with modern/old fashion design.
- In conclusion, the project of Manhattan Coffee Shop is designed for the Coursera/IBM course 'Applied Data Science Capstone'. This project helps me not only understand the machine learning algorithms, but also apply them in a real-life project.