MACPEC

Menu Augmentation Campaign with Popular Ethnic Cuisine

(a Coursera Capstone Assignment for IBM Data Science Professional Certificate)

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Introduction

- **Assume a major restaurant chain operating in Canada and the US would like to augment their menus with a range of dishes of locally popular foreign cuisine. For logistic reasons maximally 5 sets of cities with different cuisines are required.**
- **Our task: Find most popular cuisines in major (more than 100’000 inhabitants) US and Canadian cities and provide them in maximally 5 groups**
- **Knowing the local taste of customers and adapt local menus can have a major impact on large restaurant chains and their business value, because serving popular food will attract more customers. Furthermore local customers may appreciate to find all their most favourite food in a single establishment.**
- **Initial assumption: Popularity of a cuisine may be approximated by its occurrence, in other words, a cuisine that has many restaurants in a town is likely to be popular.**

Data Sources and Cleaning

- Wikipedia for lists of cities in the US and Canada with information on population:
  - https://en.wikipedia.org/wiki/List_of_United_States_cities_by_population
  - https://en.wikipedia.org/wiki/List_of_the_100_largest_municipalities_in_Canada_by_population
- Foursquare for restaurant category information in all cities
- Restaurant categories mostly represent cuisines and automatic assignment was possible but some manual assignment was required, e.g. “Pizza Place” to “Italian”

Data Analysis: K-Means

- Group cities based on culinary preferences of inhabitants, using k=5
- Unexpectedly, the cities clustered into geographical regions:

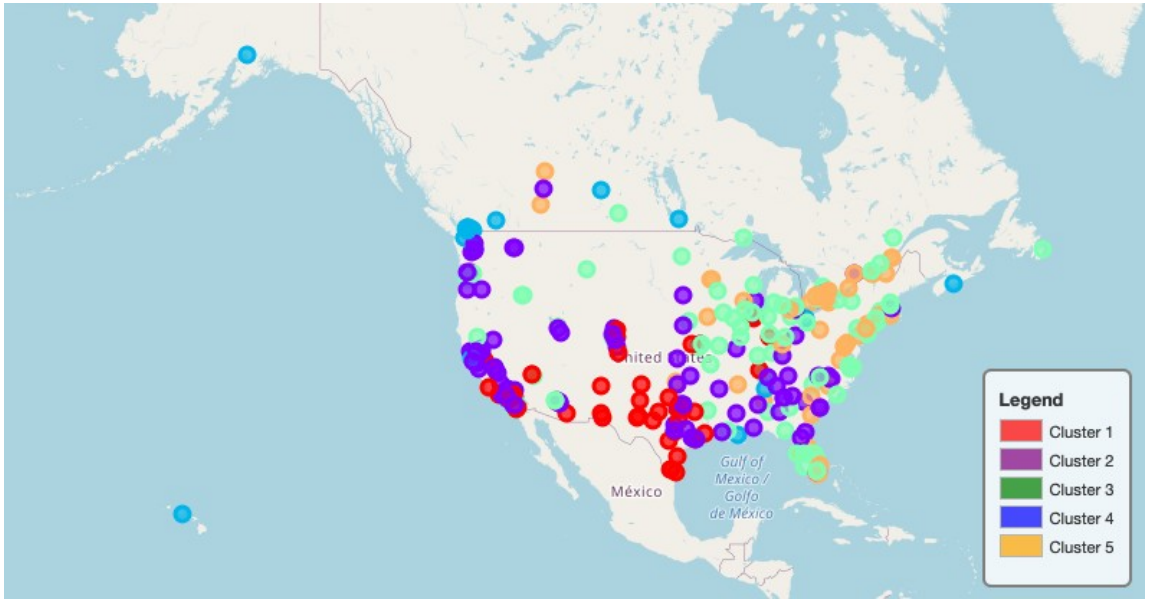
  1) Southern USA

  2) Western/Central USA

  3) Eastern/Central USA

  4) Canada, East. USA, Alaska, Hawaii

  5) Canada and Eastern USA



Data Analysis: Word Clouds - Preparation

- Sort cuisines for each city by their popularity and labeled the 6 most popular cuisines.
- For each cluster, concatenate 6 most popular cuisines of all cities into a string variable
- Draw word clouds representing the cuisine occurrences in the most-popular list.

Data Analysis: Word Clouds - Clusters

Recommendations for clusters:

1) Mexican and International

2) Mexican and Asian

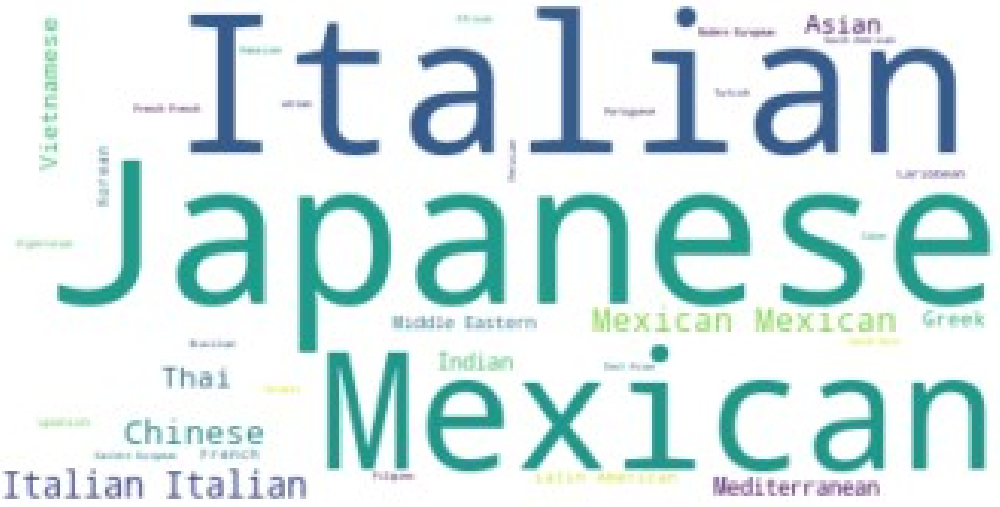
3) Mediterranean and Asian

4) predominantly Asian

5) predominantly Mediterranean/European

Data Analysis: Word Clouds – All Cities

- In general it appears that there are three cuisines among the absolute most popular, Mexican, Asian and Mediterranean.
- We can verify this with a word cloud of all cities, which finds Mexican, Japanese and Italian as the three most popular cuisines, which closely represents Mexican, Asian and Mediterranean cuisine.



Results

Based on our analysis we group the major North American cities into the following five groups:

1) Mexican-centred cuisine in Southern USA
2) Mexican and Asian food in whole USA but more concentrated in western part
3) Mediterranean and Asian cuisine in whole USA but slightly favouring eastern part
4) Asian cuisines popular in some cities in Canada, Eastern USA and off-mainland
5) Mediterranean/European cuisine favoured in some cities in Canada and Eastern USA

The detailed lists of cities in each cluster can be found in the supplied Jupyter notebook.

Conclusions

- Analysed major cities (with more than 100’000 inhabitants) of Canada and the USA in terms of their populace’s (ethnic) culinary preferences.
- Identified dominant cuisines in each city.
- Clustered similar cities based on the occurrence of cuisines into 5 groups.
- Assumed and argued that local occurrence of restaurants of a cuisine type is directly related the cuisine’s local popularity.
- Recommended specific cuisine types for each group of cities accordingly.