

# Battle of Neighborhood

Twin Cities (Minneapolis / St Paul)

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## Problem Statement

- ▶ To recommend the best neighborhood(s) to accommodate a French food café, market, take-out or restaurant in Minneapolis / Saint Paul cities, often combined under the term of Twin Cities.
- ▶ To understand the similarities and difference between the neighborhoods using Unsupervised Mean Clustering Algorithm
- ▶ The population in the Twin /cities is incredibly diverse in age and ethnicity and with a high focus on healthy lifestyle. The numbers and diversity of the restaurants are notable and significant to satisfy a variety of backgrounds and curious minds.
- ▶ In 2017, Minneapolis-St. Paul-Bloomington, MN-WI had a population of 3.6M people with a median age of 37 and a median household income of \$76,856. The student population is about 270,000.

# Data acquisition and cleaning

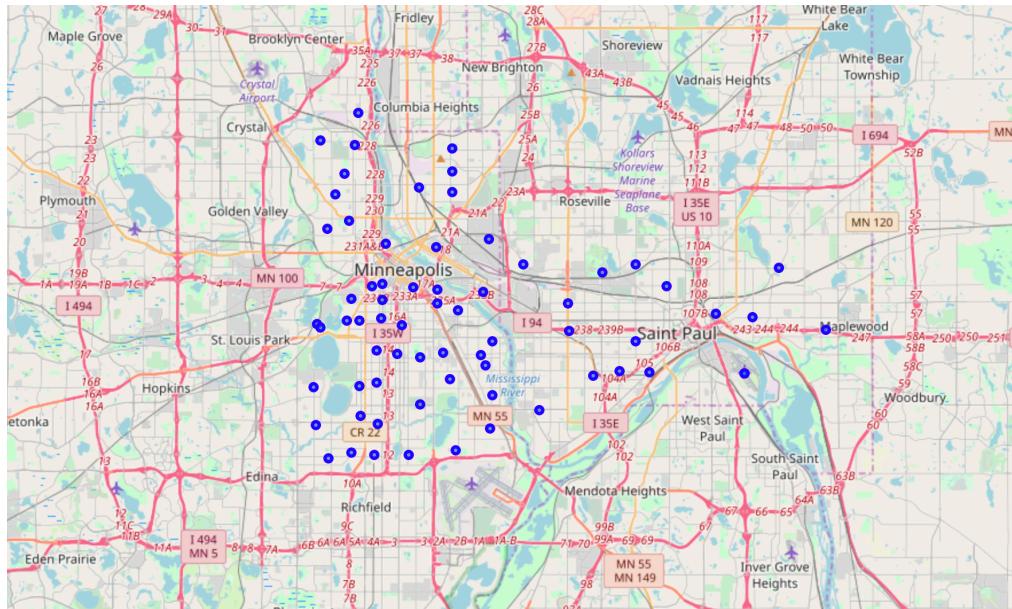
Based on definition of our problem, factors that will influence our decision are:

- Number of existing restaurants in the neighborhoods (any kind of restaurant / café)
- Number of and distance to French restaurants/Business in the neighborhoods.

I decided to use the identification of Neighborhood across Minneapolis and St Paul (not the counties). Following data sources will be needed to extract/generate the required information:

- ▶ Capture the neighborhoods from this source:  
<https://www.mncompass.org/profiles/neighborhoods/minneapolis-saint-paul#!community-areas> and using this file MSP Neighborhoods\_2013-2017.csv (location of neighborhood will be determined by coordinates added using geocoder)
- ▶ Number of restaurants and type as well as location in every neighborhood will be obtained using Foursquare API.
- ▶ Forming neighborhood clusters based on venue categories using unsupervised k-mean clustering algorithm (sklearn) and Elbow method for best K.

# Initial view with all neighborhoods representing the Twin Cities



## Determining best K based on 2 set of data

(1) Forming neighborhood clusters based on venue categories

Based on this algorithm the best K=3



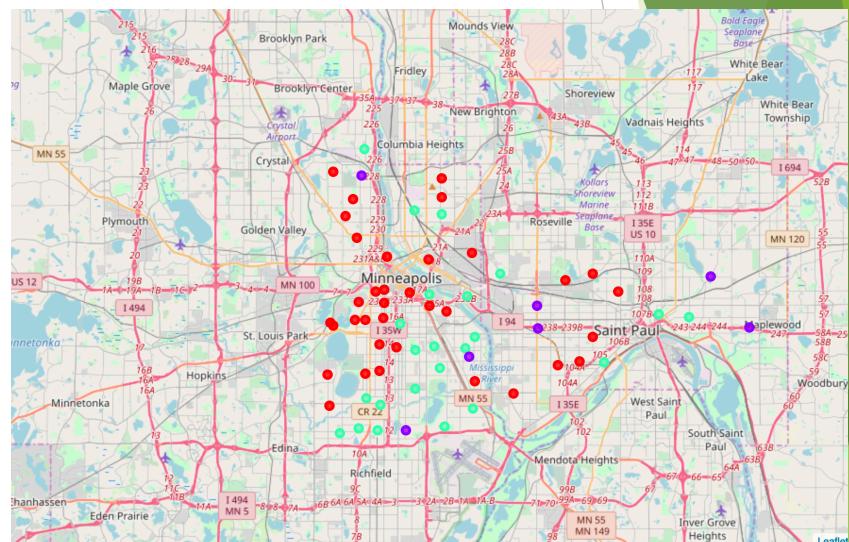
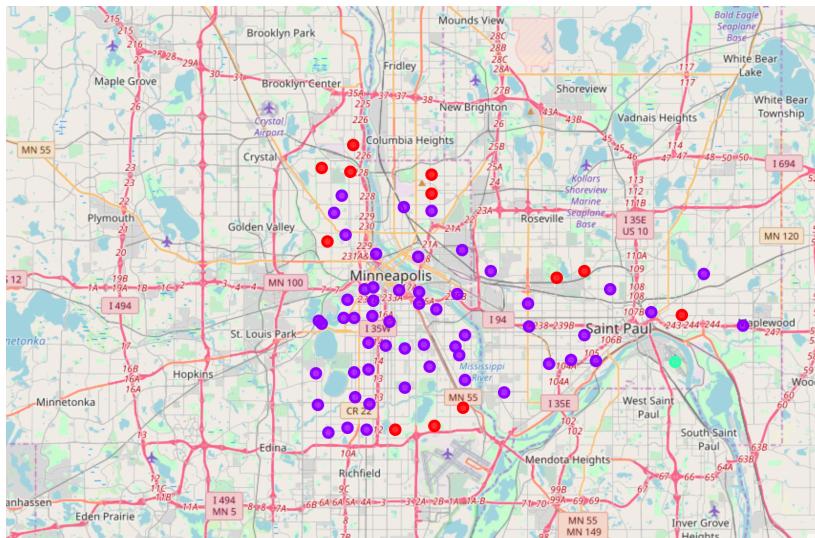
(2) In order to see a better clustering I selected only venues where the venue Category could indicate restaurant or food places. I reran the entire analysis to see the impact on the modeling / clustering outcome

Likewise (1), based on this algorithm and reduced set of data, the best K=3



# Cluster Mapping with K=3 for all neighborhoods / venues

(1) Forming neighborhood clusters based on venue categories



(2) In order to see a better clustering I selected only venues where the venue Category could indicate restaurant or food places

# Discussion and future direction

- ▶ This exercise can be improved by taking into account other factors:
  - ▶ Distance to Students locations
  - ▶ Revenue by household
  - ▶ Access to public transportation
  - ▶ Combining French and Gluten Free options to attract different populations
- ▶ Interesting to notice the following by cluster:
  - ❖ Cluster 0: dominance of American restaurants (although 2 of the neighborhoods with highest number of French restaurants, Fulton and Summit University)
  - ❖ Cluster 1: the more diversified ethnically (beside fast food, you can find many asian restaurant - Chinese, Vietnamese, Asian, Korean, Thai - but also Turkish, Russian, Greek)
  - ❖ Cluster 2: Mexican restaurants are predominant in this cluster (but again 2 neighborhoods with highest # of French food are reported here Armatage and Lynnurst)

Neighborhood	French Restaurant
Armatage	0.040000
Downtown West	0.010000
East Isles	0.010000
Fulton	0.030303
Lynnurst	0.037037
Summit Hill	0.013333
Summit-University	0.025000
Tanglewood	0.015385

# Conclusion

- I would not recommend to open a French restaurant in the neighborhoods from cluster 1 (too diverse ethnically) but it makes more sense to me in neighborhoods from cluster 0 or cluster 2.
- More research needs to be done regarding other criteria: accessibility (public transportation, parking), distance to Students locations, Revenue by household for example.
- But it could also be more like a market offering various food as a take out. the other option would be to look at combining French and Gluten Free options to attract different populations.