NEIGHBOURHOODS OF DENMARK

CAPSTONE PROJECT

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THE BUSINESS PROBLEM

Newly started Danish restaurant franchise experienced great success with their first restaurant located in the city of Kongens Lyngby.

In which other cities are they most likely to experience similar success?

DATA DESCRIPTION

Foursquare location by use of their free Places API

Danish postal codes and region names data

GeoPy library leveraging OpenStreetMap data

Neighbourhood	Neighbourhood Latitude	Neighbourhood Longitude	Venue	Venue Category	Venue Latitude	Venue Longitude
Kongens Lyngby	55.771865	12.505141	Sticks'n'Sushi	Sushi Restaurant	55.770193	12.505784
Kongens Lyngby	55.771865	12.505141	Det Sunde Køkken	Fast Food Restaurant	55.769333	12.505093
Kongens Lyngby	55.771865	12.505141	Wokshop	Thai Restaurant	55.769113	12.505265
Kongens Lyngby	55.771865	12.505141	Big Mamas Pizza House	Pizza Place	55.770937	12.499931
Kongens Lyngby	55.771865	12.505141	Magasin Lyngby	Department Store	55.770190	12.505017
Kongens Lyngby	55.771865	12.505141	Meyers Spisehus	Diner	55.769801	12.505433
Kongens Lyngby	55.771865	12.505141	Gordion Café og Restaurant	Pizza Place	55.767780	12.501952
Kongens Lyngby	55.771865	12.505141	Kinopalæet	Movie Theater	55.771272	12.507214
Kongens Lyngby	55.771865	12.505141	Lyngby Storcenter	Shopping Mall	55.771932	12.505966
Kongens Lyngby	55.771865	12.505141	Lyngby Shawarma	Middle Eastern Restaurant	55.771102	12.506972

DATA:

Postal codes and region names → OpenStreetMap location data → venue data

DATA DESCRIPTION

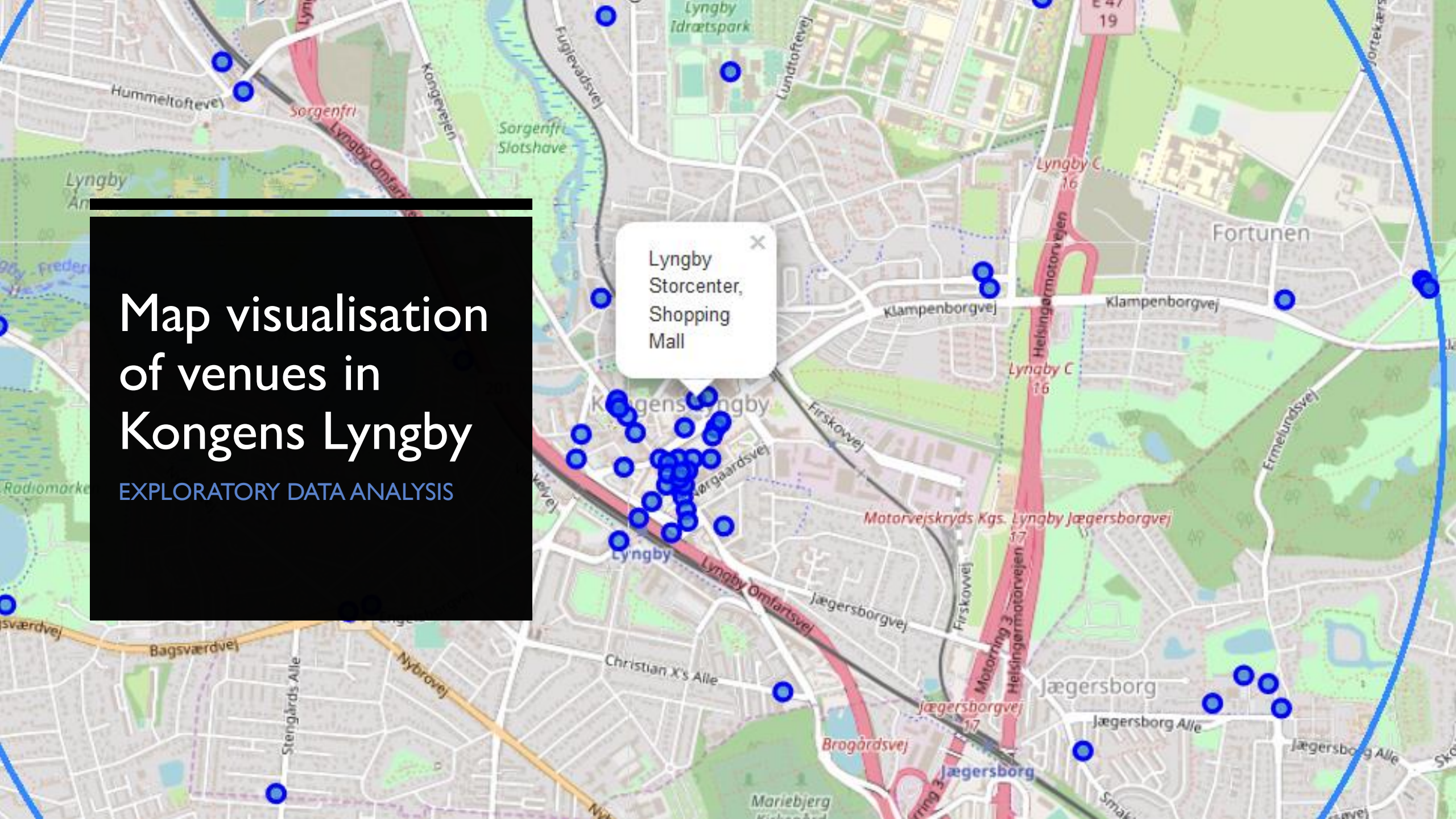| PostalCode	Neighbourhood
1301	København K
2000	Frederiksberg
2100	København Ø
2200	København N
2300	København S

METHODOLOGY

Data cleaning

Exploratory data analysis

Feature selection for machine learning

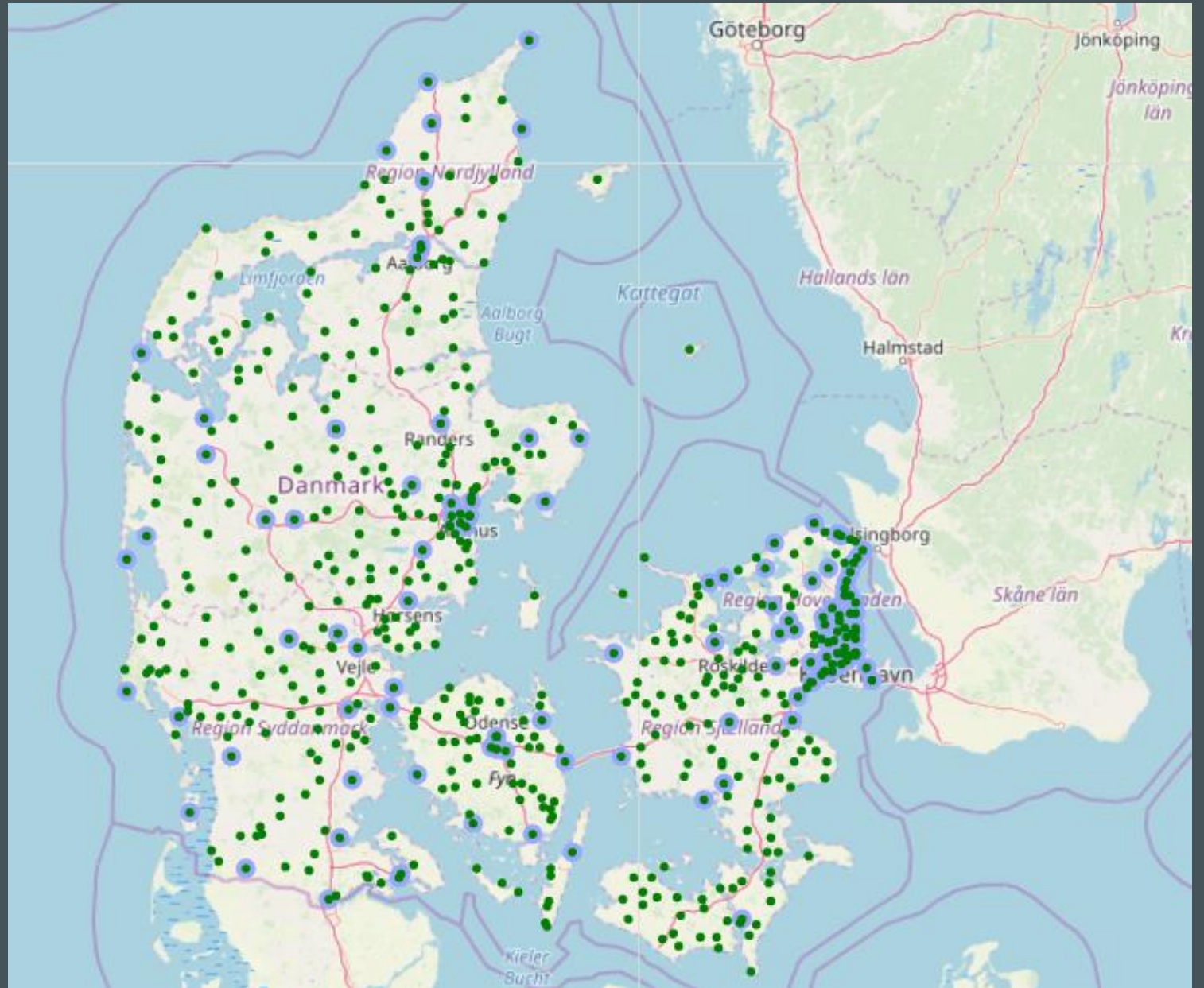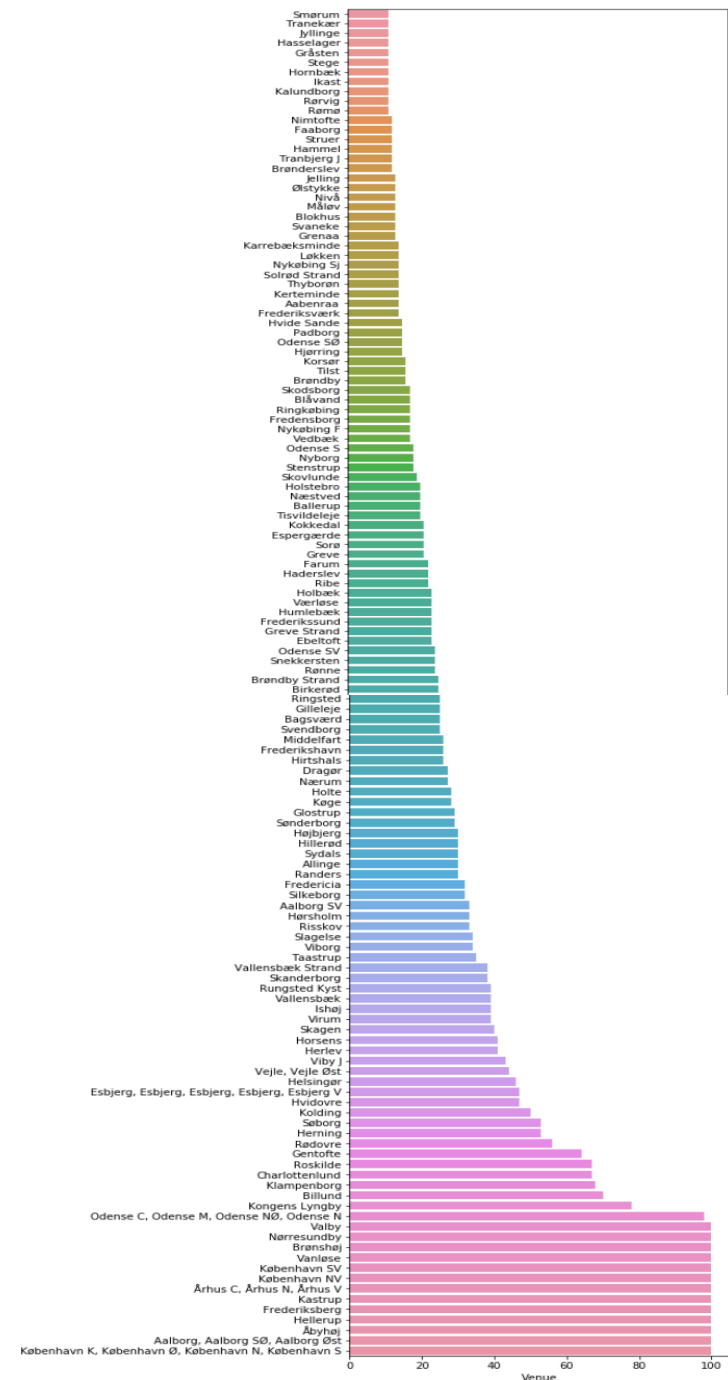# Map visualisation of venues in Kongens Lyngby

EXPLORATORY DATA ANALYSIS

Map visualisation of all the Danish neighbourhoods and where enough Foursquare data is available

FEATURE SELECTION

Venue density visualization after tail cut-off

FEATURE SELECTION

```
----Kongens Lyngby----
                        venue  freq
0              Grocery Store    0.09
1                     Bakery    0.06
2    Furniture / Home Store    0.05
3                Supermarket    0.05
4       Gym / Fitness Center    0.04
```

```
----Hellerup----
                        venue  freq
0              Grocery Store    0.11
1                       Café    0.06
2       Gym / Fitness Center    0.06
3                     Bakery    0.06
4                Pizza Place    0.05
```

Venue frequency profile

RESULTS & DISCUSSION

RESULTS & DISCUSSION
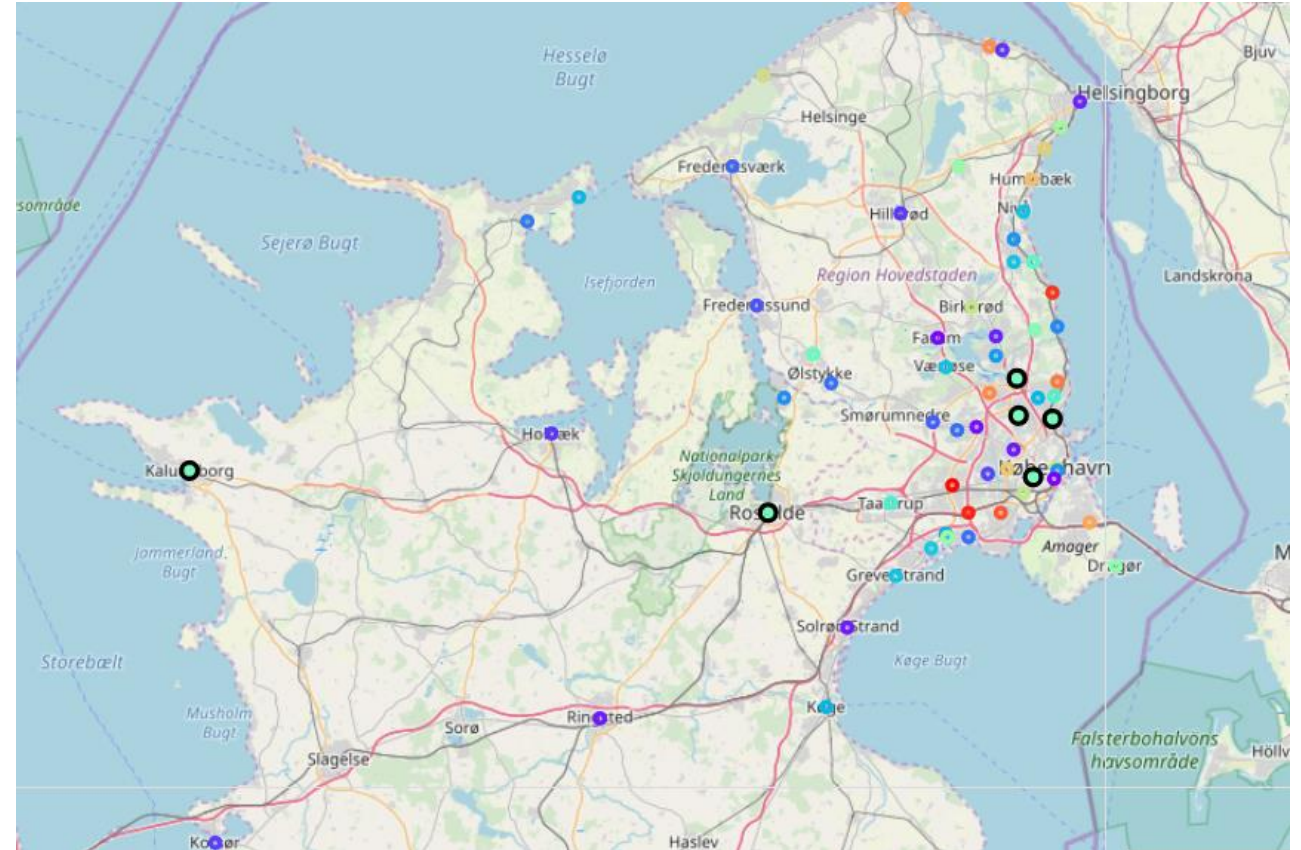
Clustering analysis based on venue frequency profile

General venue density

Matches among most common venues

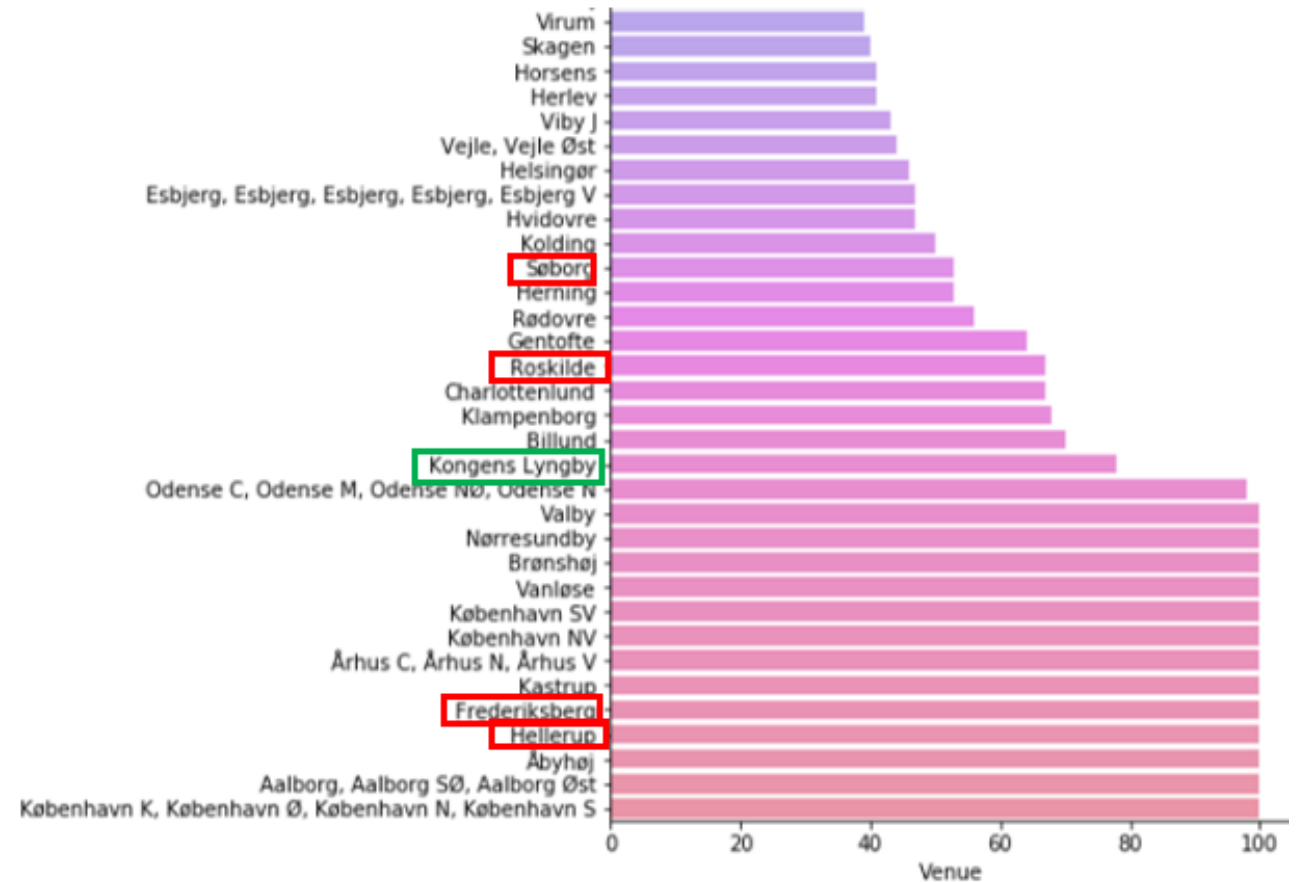K-Means clustering analysis of venue frequency profile grouped Kongens Lyngby with:

- Frederiksber-
- Søborg
- Hellerup
- Roskilde
- Kalundborg

Four of the candidating neighbourhoods have similar general venue density

RESULTS & DISCUSSION

Neighbourhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue	10th Most Common Venue
Frederiksberg	Café	Park	Cocktail Bar	Beer Bar	Bakery	Coffee Shop	Wine Bar	Pizza Place	Music Venue	Scandinavian Restaurant
Kongens Lyngby	Grocery Store	Bakery	Furniture / Home Store	Supermarket	Gym / Fitness Center	Café	Sushi Restaurant	Discount Store	Pizza Place	Burger Joint
Søborg	Grocery Store	Gym / Fitness Center	Bus Station	Bakery	Soccer Field	Pizza Place	Furniture / Home Store	Gym	Stadium	Restaurant
Hellerup	Grocery Store	Bakery	Café	Gym / Fitness Center	Pizza Place	Beach	Sushi Restaurant	Juice Bar	Supermarket	Scandinavian Restaurant
Roskilde	Grocery Store	Music Venue	Café	Restaurant	Shopping Mall	Sushi Restaurant	Beer Bar	Hotel	Gym	Italian Restaurant

Comparison of Kongens Lyngby's most common venues with the remaining similar neighbourhoods in consideration

RESULTS & DISCUSSION

CONCLUSION

Hellerup was been identified as the neighbourhood most similar to Kongens Lyngby.

It is recommended that the newly established franchise investigates if Hellerup could be the location of their next restaurant