CAPSTONE PROJECT (WEEK 2)
APPLIED DATA SCIENCE

SELECTING A NEIGHBORHOOD IN THE CITY OF CHICAGO FOR A NEW RESTAURANT
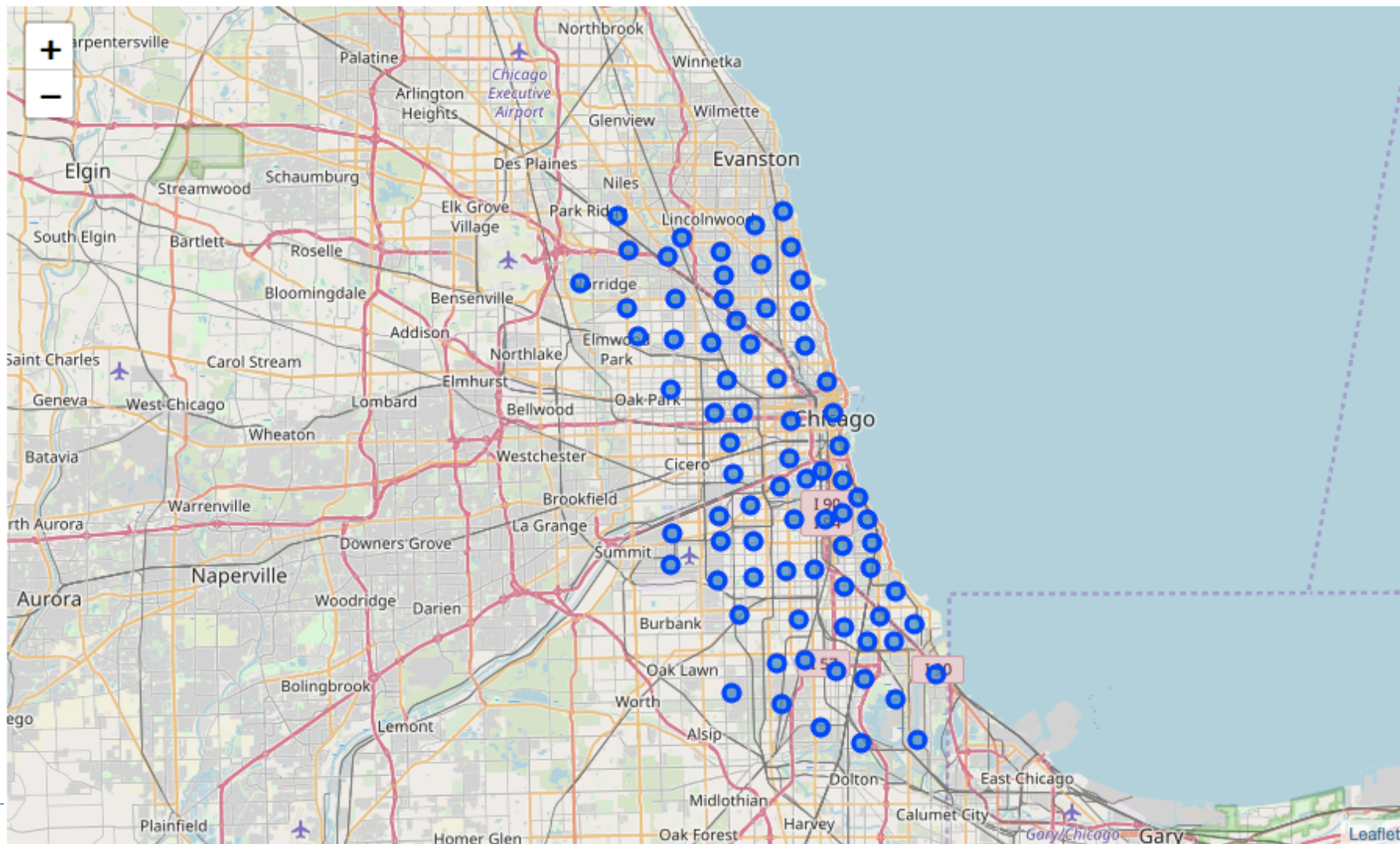
1 ǀ Chicago as a diverse and attractive city

◇ **Chicago hosts a food festival every year. The « Taste of Chicago » features diverse food from around the world.**

◇ **Given the success of this show, one might be interested to see where in the city would be the appropriate neighborhood for specialty restaurant.**

2 ｜ Data source, acquisition and cleansing

◇ **US cities neighborhoods data set from the following link:**
https://geo.nyu.edu/catalog/stanford-xq082nw3443

◇ **Data was scrapped into a data frame .**

◇ **Filter on the city of Chicago to get the community areas with their respective population density.**

◇ **We obtained a total of 77 community areas.**
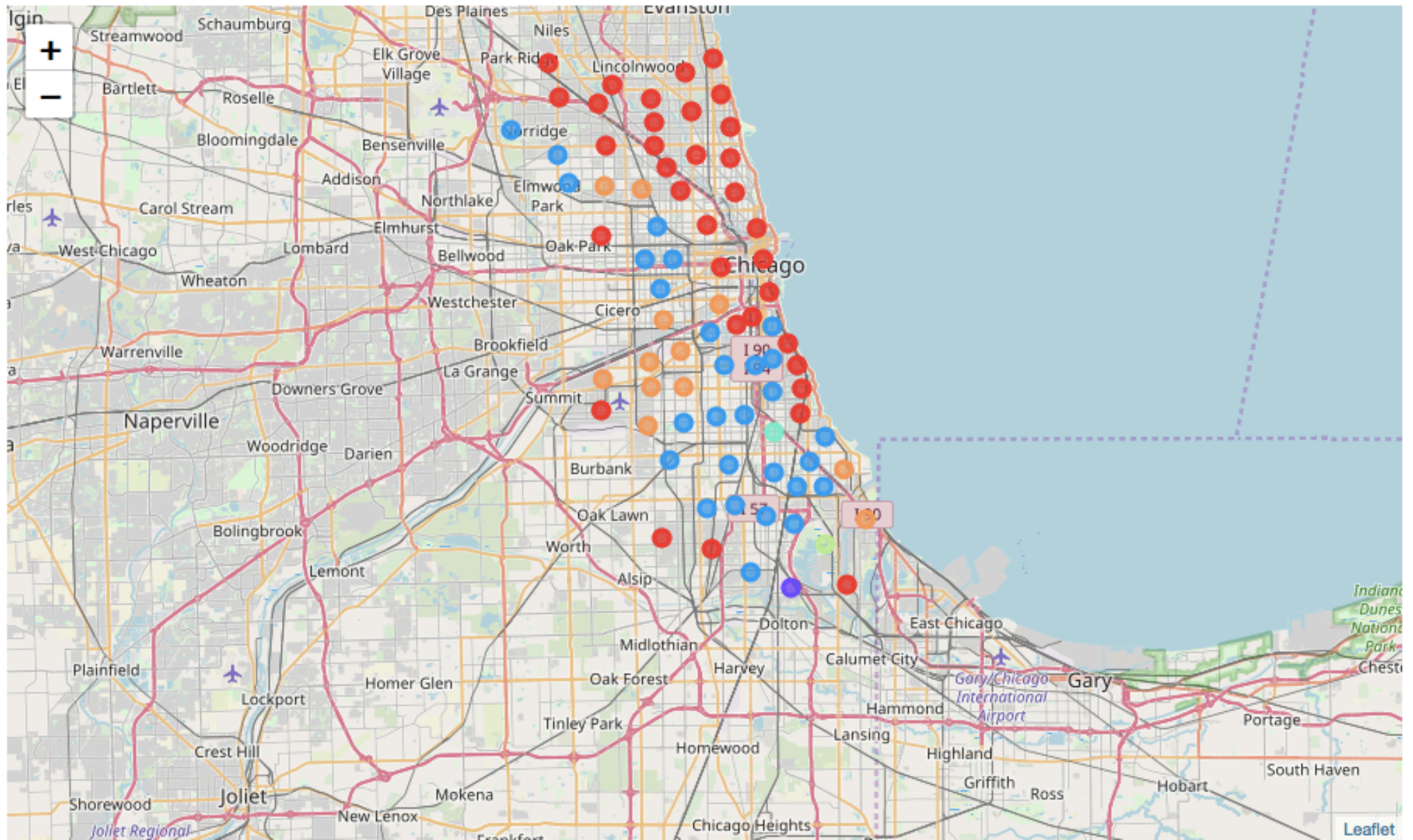
The city of Chicago and its community areas

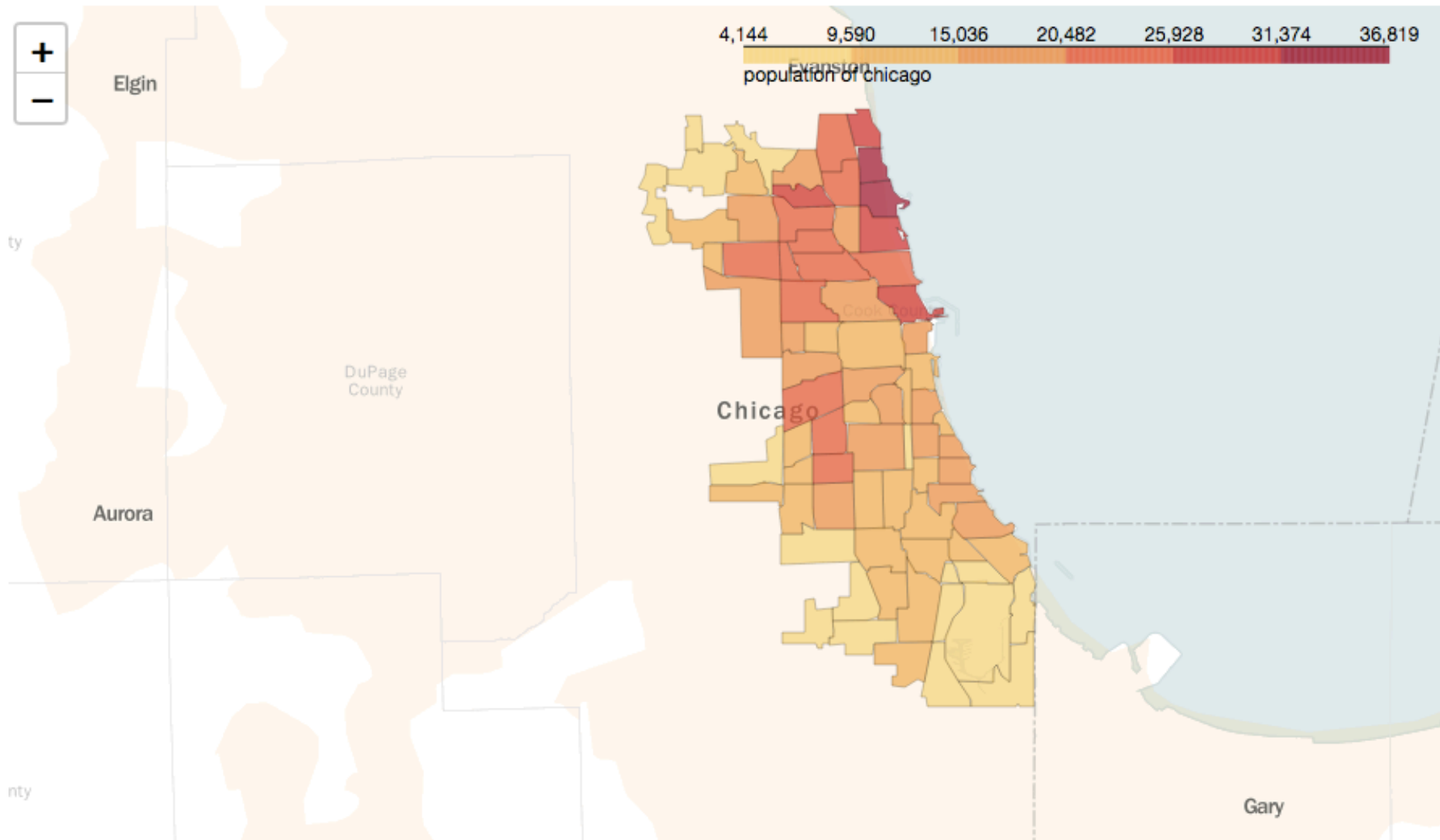◇ Each point on the map represents the center of the community area.

4 | Foursquare API and clustering of venues

◇ We explored the venues in the city and used the API to request the most common venues in each area.

◇ Given the size on the city and the abundance of venues, we used K-mean to group the areas into six clusters
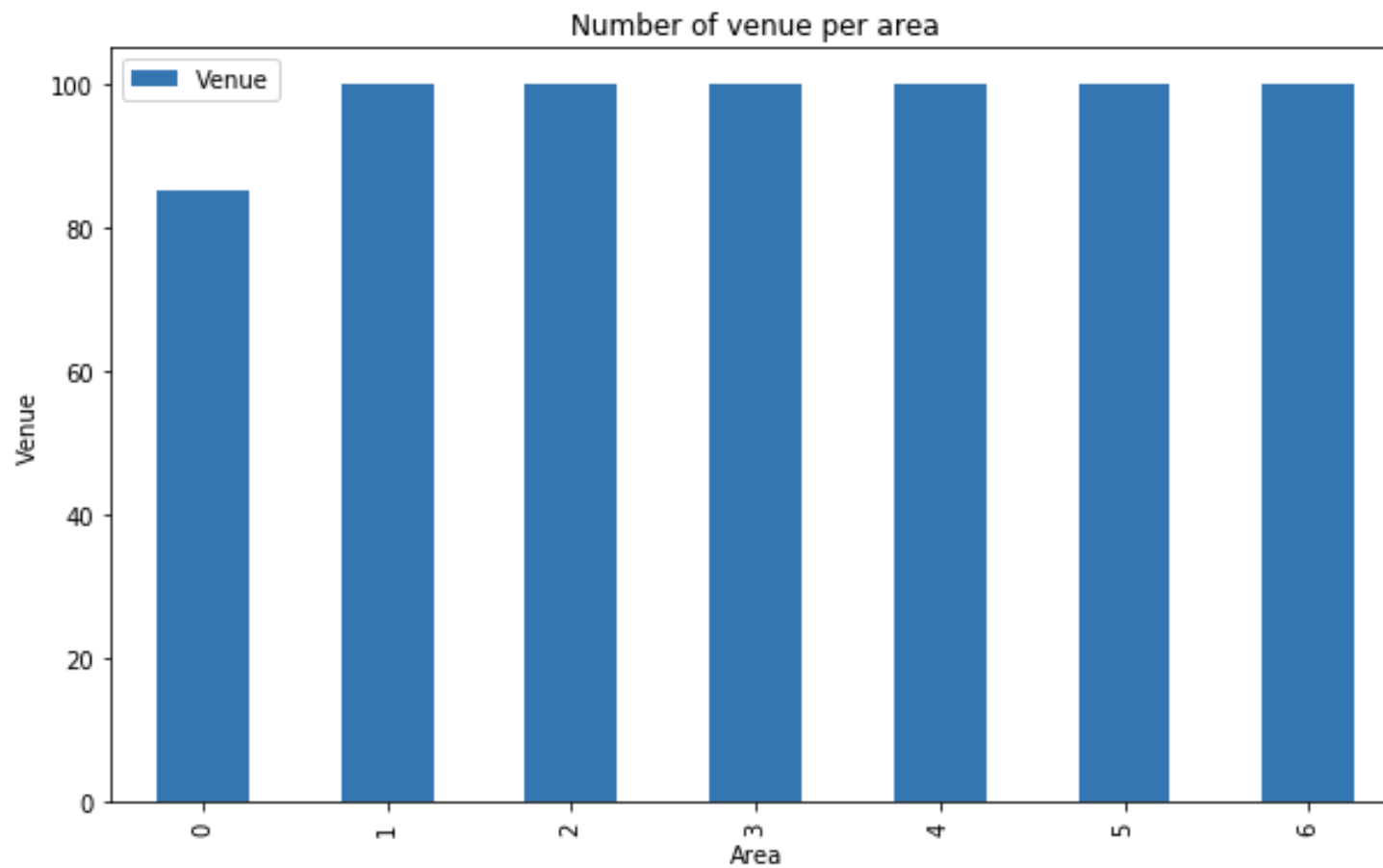
A view of the Clusters

◇A few areas are denser than the majority. These are the areas where we can focus the remainder of the analysis

A sample of densely populated areas

◇ **We will explore venues in these areas to see the frequency of recurrence on venues in the restaurant category**

	State	City	Area	PopDensity	Latitude	Longitude
760	IL	Chicago	Uptown	34483.802381	41.9659	-87.654329
766	IL	Chicago	Edgewater	36499.086047	41.9869	-87.662182
785	IL	Chicago	Albany Park	27295.919149	41.9682	-87.721486
788	IL	Chicago	Rogers Park	30763.919048	42.0101	-87.669898
792	IL	Chicago	Logan Square	25074.923656	41.9237	-87.698424

Number of venue per area

◇**The dense areas have a lot of venues, which is expected in a large city like Chicago**

```
----Albany Park----
                     venue  freq
0           Coffee Shop      0.05
1    Chinese Restaurant      0.05
2          Pizza Place      0.05
3                 Park      0.04
4    Korean Restaurant      0.04
5   Mexican Restaurant      0.04
6     Asian Restaurant      0.04
7          Supermarket      0.04
8      Thai Restaurant      0.02
9       Shipping Store      0.02


----Edgewater----
                     venue  freq
0           Coffee Shop      0.04
1     Asian Restaurant      0.04
2                 Café      0.04
3                  Bar      0.03
4   Mexican Restaurant      0.03
5         Antique Shop      0.03
6       Sandwich Place      0.03
7    Italian Restaurant     0.03
8      Thai Restaurant      0.03
9         Burger Joint      0.03


----Lake View----
                     venue  freq
0          Pizza Place      0.05
1       Sandwich Place      0.04
2    Italian Restaurant     0.04
3                  Gym      0.04
```

The top venues in each area:

Lots of restaurant in Edgewater and Uptown, but very few Rogers Park.

```
0    American Restaurant    0.08
1                 Hotel      0.08
2           Pizza Place      0.04
3            Steakhouse      0.04
4     Italian Restaurant     0.04
5                   Bar      0.03
6     Salon / Barbershop     0.03
7         Grocery Store      0.03
8  New American Restaurant   0.03
9                   Gym      0.03


----Rogers Park----
                     venue  freq
0                 Beach      0.08
1        Sandwich Place      0.06
2                   Bar      0.04
3           Coffee Shop      0.04
4           Pizza Place      0.04
5                  Park      0.04
6                  Café      0.04
7   Fast Food Restaurant     0.03
8                Bakery      0.03
9                  Bank      0.03


----Uptown----
                           venue  freq
0   Vietnamese Restaurant        0.09
1             Coffee Shop        0.06
2      Chinese Restaurant        0.04
3        Sushi Restaurant        0.04
4         Thai Restaurant        0.04
5             Pizza Place        0.03
6          Breakfast Spot        0.03
7           Grocery Store        0.03
8  Vegetarian / Vegan Restaurant  0.03
9                    Park        0.03
```

Conclusion and future directions

With more time and resources, one could built model to further analyze the neighborhoods of the city and further explore venues.

An analysis can also be done if we have data on restaurant frequentation and preferences of group of population in each area.

With the limited analysis conducted here, I would recommend the area of Rogers Park as the ideal location for a new restaurant.