

neighborhood name as the key index, see figure 2 for the first 5 rows and the last 10 columns of the dataframe.

	2019-09	2019-10	2019-11	2019-12	2020-01	2020-02	2020-03	2020-04	2020-05	2020-06
Neighborhood										
Upper West Side	1233923.0	1226329.0	1228089.0	1234873.0	1232891.0	1228788.0	1218444.0	1218807.0	1214683.0	1210707.0
Upper East Side	929593.0	927350.0	926257.0	927430.0	927683.0	929749.0	925260.0	925438.0	925215.0	933518.0
East New York	341233.0	340846.0	340971.0	340998.0	342076.0	343255.0	344385.0	345332.0	345130.0	345802.0
Washington Heights	566566.0	560402.0	556665.0	552960.0	548861.0	544782.0	541350.0	538371.0	533715.0	531615.0
Astoria	513852.0	514333.0	513360.0	514066.0	514298.0	514380.0	513222.0	513961.0	514368.0	515600.0

Figure 2

Dataset 3 (from Foursquare) was extracted first in a json file, flattened (json normalize method), filtered to the venues and their categories, and keeping the location data, see figure 3 for the first five rows of the dataframe.

	name	categories	lat	lng
0	The Bar Room at Temple Court	Hotel Bar	40.711448	-74.006802
1	The Beekman, A Thompson Hotel	Hotel	40.711173	-74.006702
2	Alba Dry Cleaner & Tailor	Laundry Service	40.711434	-74.006272
3	Gibney Dance Center Downtown	Dance Studio	40.713923	-74.005661
4	The Class by Taryn Toomey	Gym / Fitness Center	40.712753	-74.008734

Figure 3

## FEATURE SELECTION

After cleaning the data, we ended with 3 datasets: the first with 306 neighborhoods and the required location data, the second with 190 neighborhoods and ZHVI 296 months' time series and the third with 10,058 venues, neighborhoods, categories and location data.

The field in common in the 3 datasets is the neighborhood and was selected as the key index to link the 3 datasets. The number of venues and neighborhoods will need to be reduced after the exploratory data analysis.

[2] NYU Spatial Data Repository ([https://geo.nyu.edu/catalog/nyu\\_2451\\_34572](https://geo.nyu.edu/catalog/nyu_2451_34572))

[3] Zillow Research Data (<https://www.zillow.com/research/data/>)

[4] Foursquare Developer (<https://developer.foursquare.com/>)