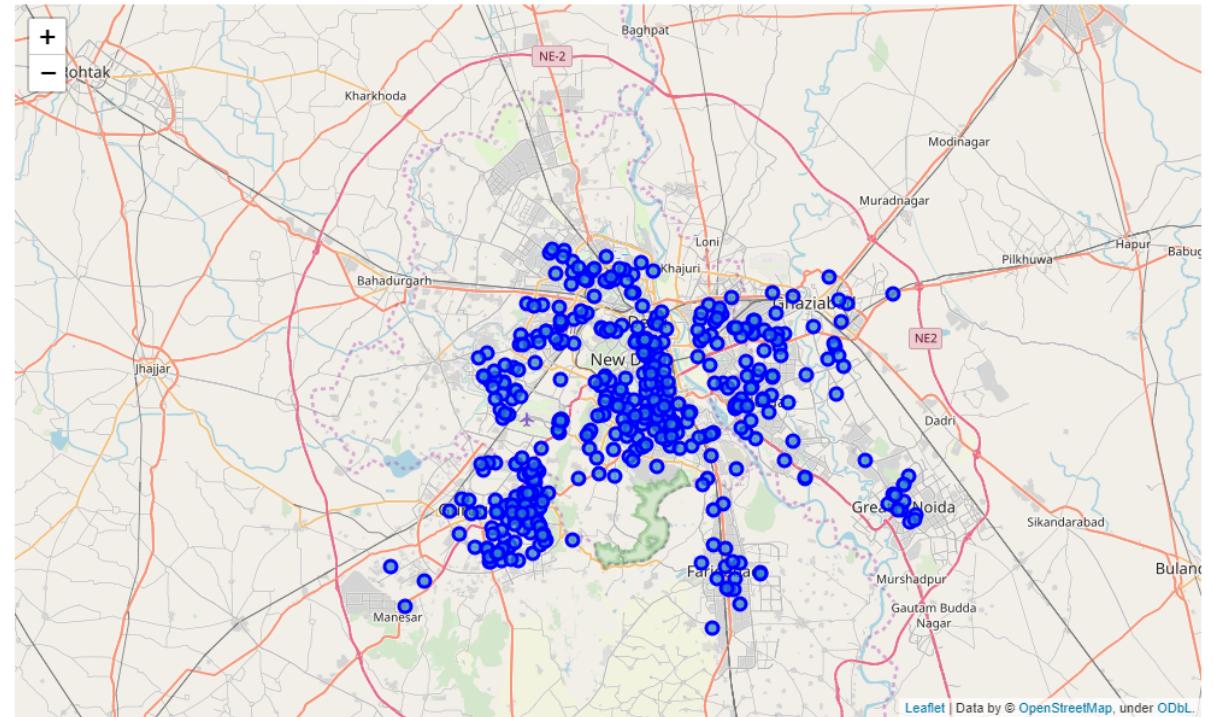


Restaurant Data Analysis in Delhi NCR



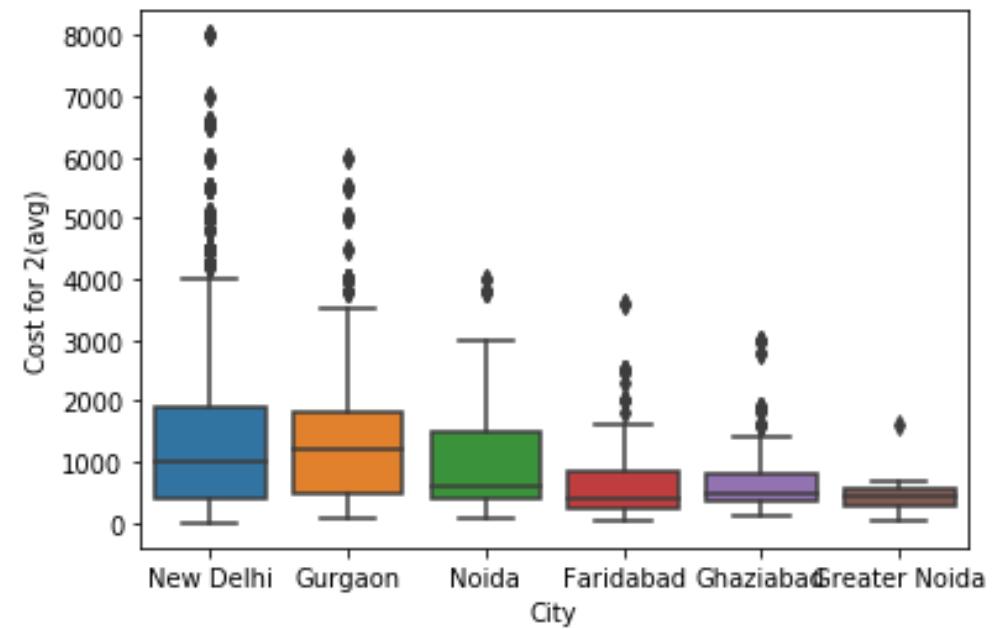
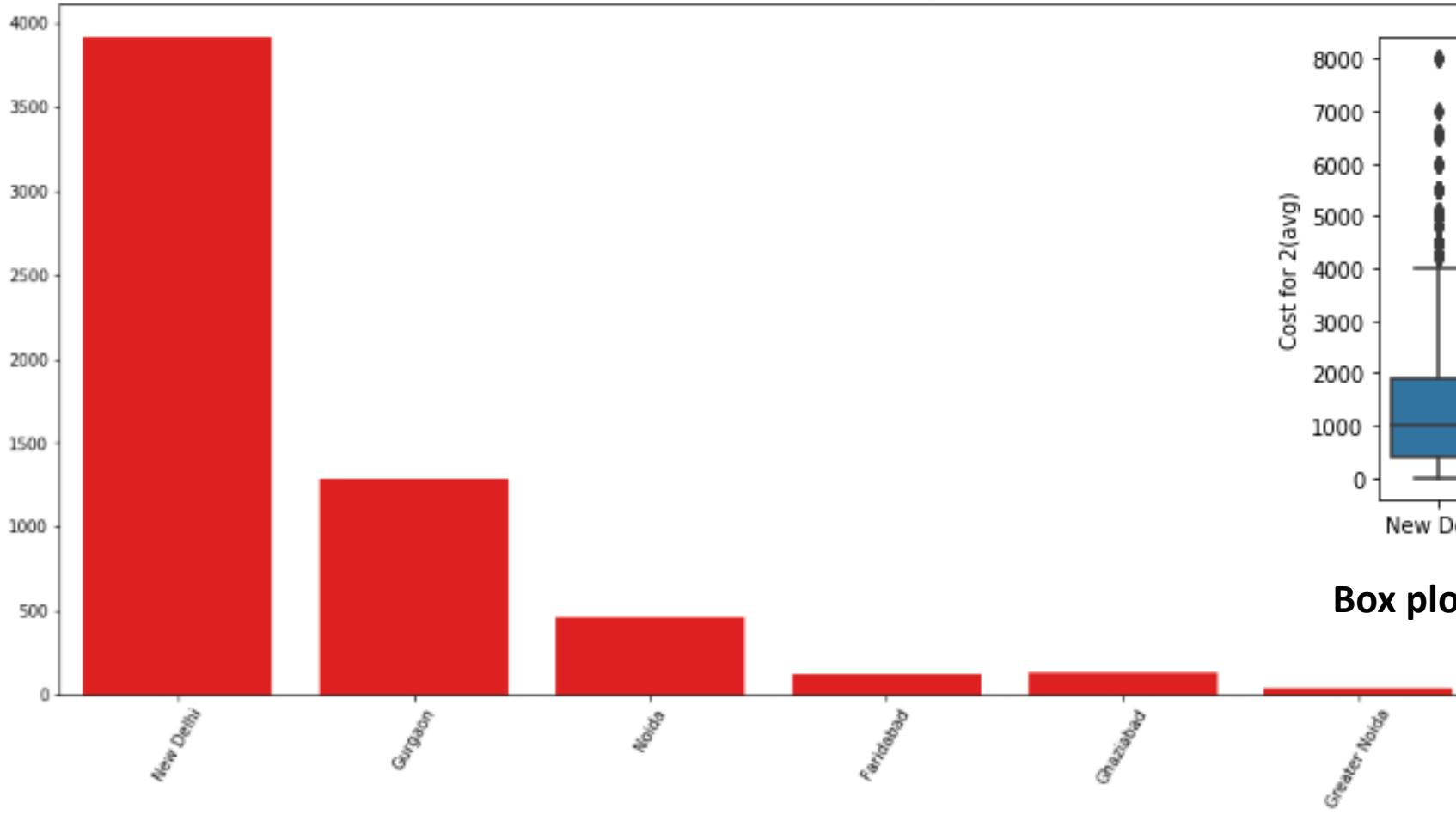
Introduction

- The competition in restaurant industry is very intense. Also since population of city has grown so much many sub cities have grown around Delhi, collectively called as Delhi NCR. These sub cities further add to the competition in restaurant industry.
- Visualization of Data is created to get information where the most of restaurants are located, which types of cusines are preferred , what is cost for 2 people etc. and **give a broader picture to anyone who wish to open restaurant in city.**
- Here I have assumed that input costing (raw material, rent, salary, etc.) of every restaurant is same and has not taken it into consideration.

Data

- To consider problem we can list data as follows:
- Data was collected from a file kaggle.
<https://www.kaggle.com/rabhar/zomato-restaurants-in-india>
- It contained data of all cities of India. I cleaned the data and data of only Delhi NCR was created which included New Delhi, Gurgaon, Noida, Greater Noida, Faridabad.
- Various features of restaurants like Delivery, Takeaway , Seating etc. were explored.
- This data was further cleaned to remove missing and duplicate values.
- Various visualizations were created to draw certain conclusions.

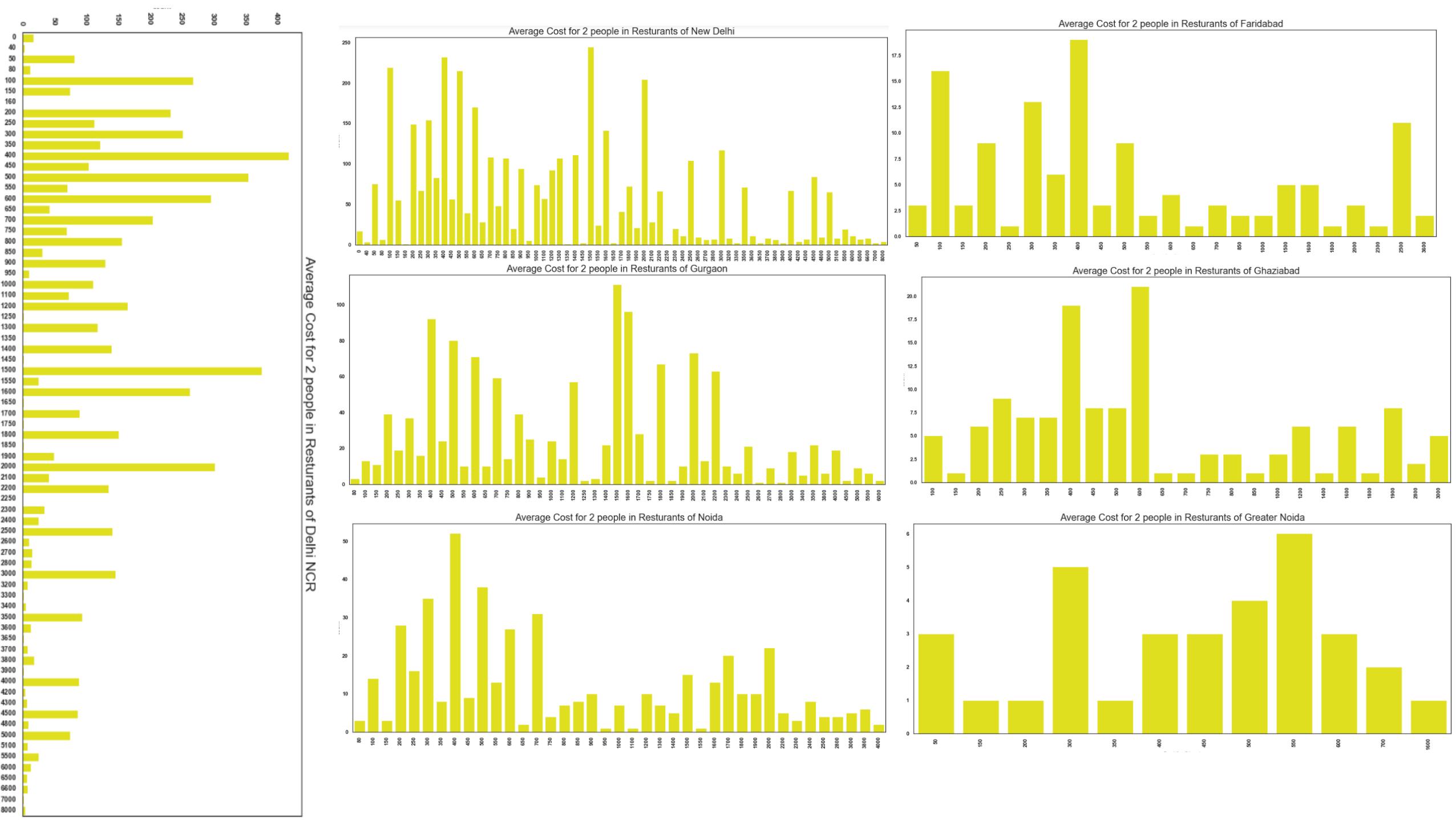
Number of Restaurants in various cities of Delhi NCR region



Box plot of Citi wise average cost for 2 people

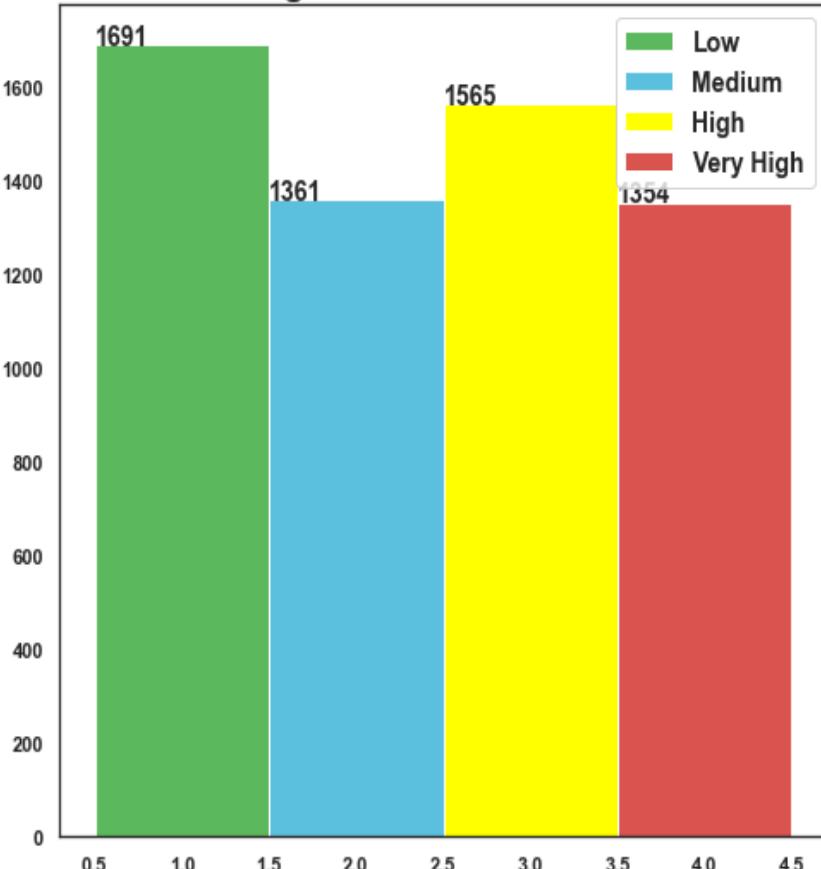
Restaurant's Average Cost for 2 people in Delhi NCR Region

City	Restaurant's Average Cost for 2 people		
	Minimum (in ₹)	Maximum (in ₹)	Most Frequent (in ₹)
Delhi-NCR	0	8000	400
New Delhi	0	8000	1500
Gurgaon	80	6000	1500
Noida	80	4000	400
Faridabad	50	3600	400
Ghaziabad	100	3000	600
Greater Noida	50	1600	560

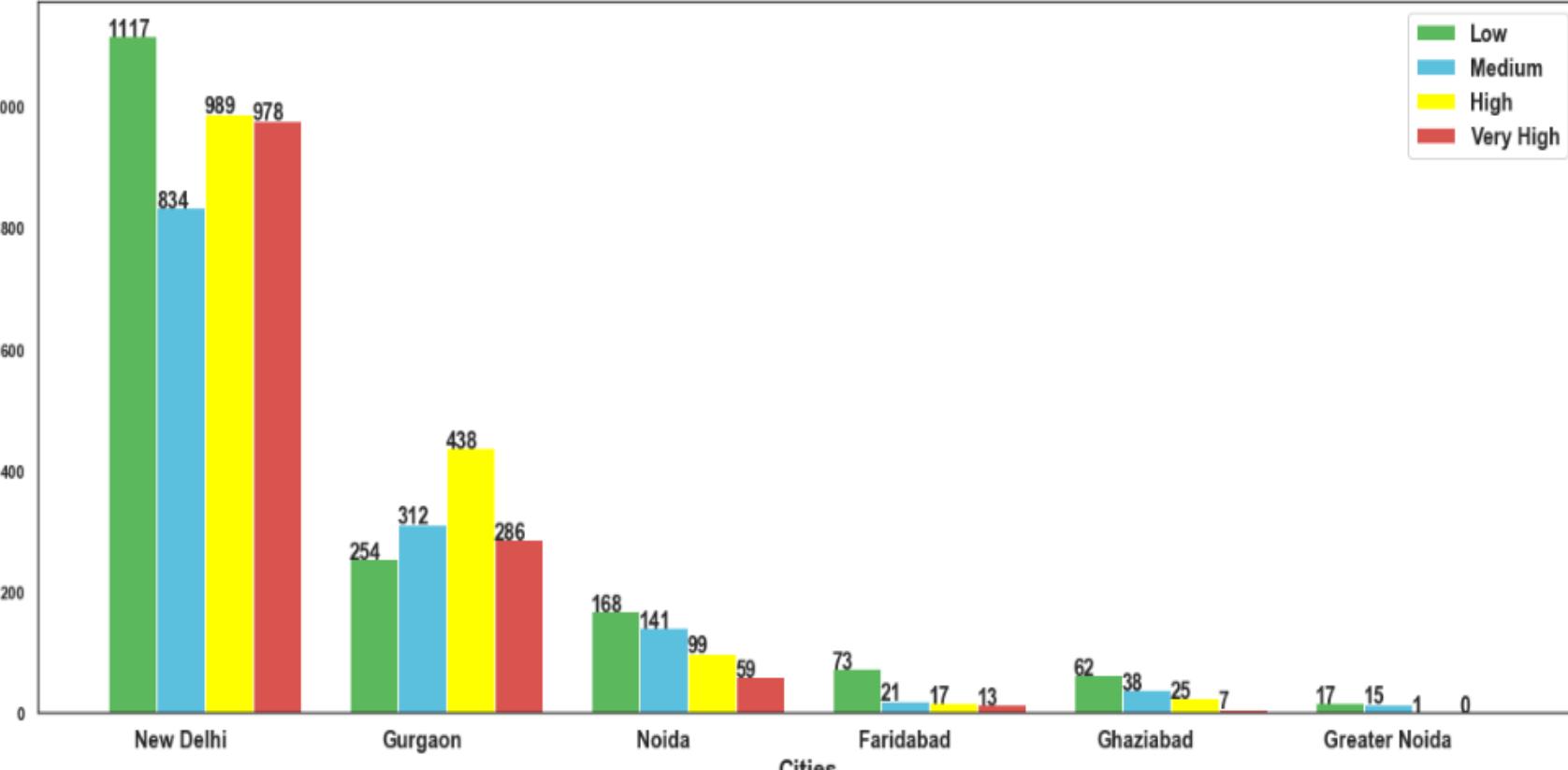


Price Range of Restaurants

Price Range of Restaurant in Delhi NCR

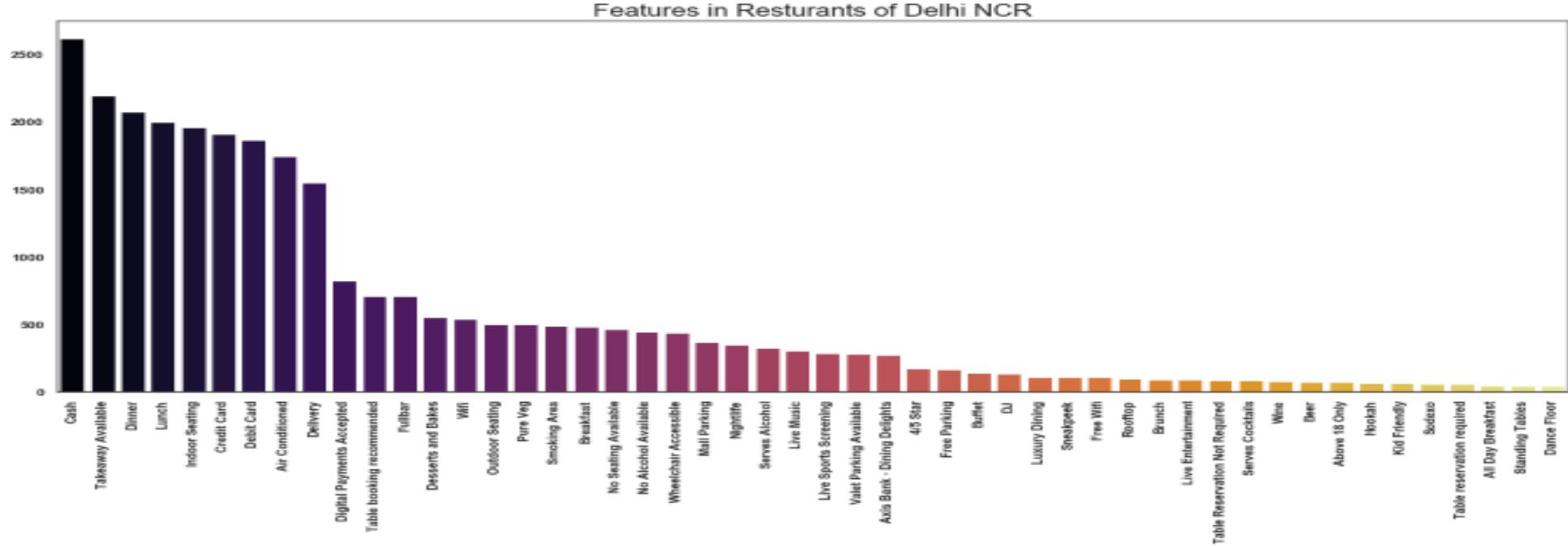


Price Range of Restaurant in Cities Of Delhi NCR

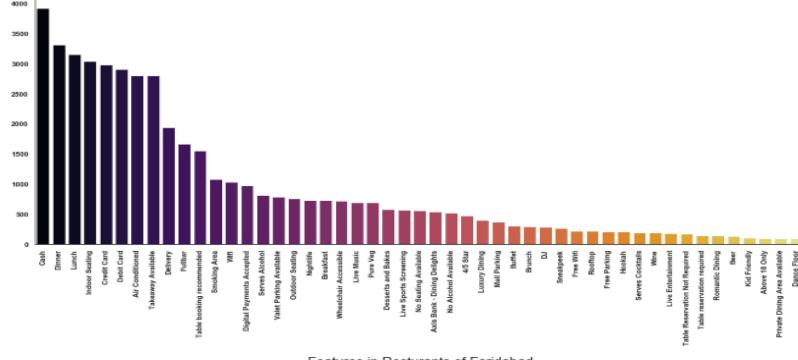


Features of Restaurants

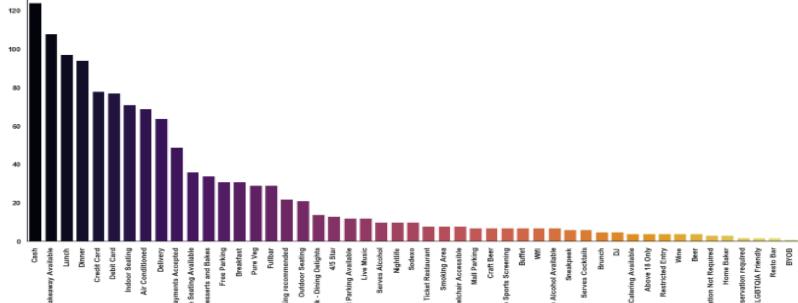
City	Top three Features in Restaurant		
	First	Second	Third
Delhi-NCR	Cash	Takeaway Available	Dinner
New Delhi	Cash	Dinner	Lunch
Gurgaon	Cash	Dinner	Credit Card
Noida	Cash	Takeaway Available	Dinner
Faridabad	Cash	Takeaway Available	Lunch
Ghaziabad	Cash	Dinner	Takeaway Available
Greater Noida	Cash	Delivery	Dinner



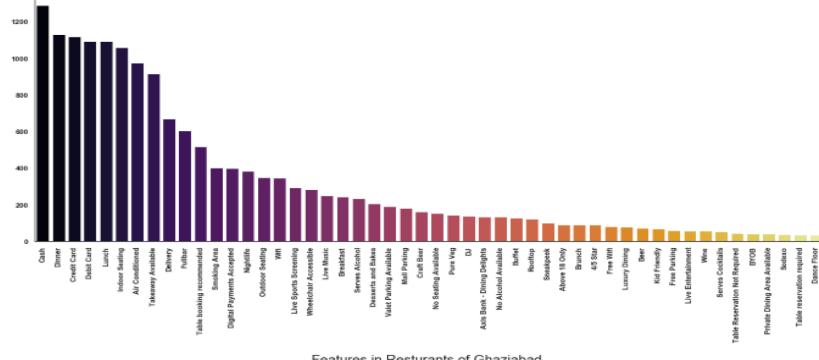
Features in Restaurants of New Delhi



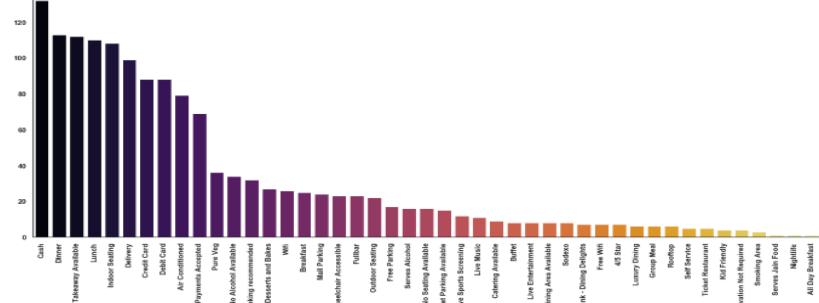
Features in Restaurants of Faridabad



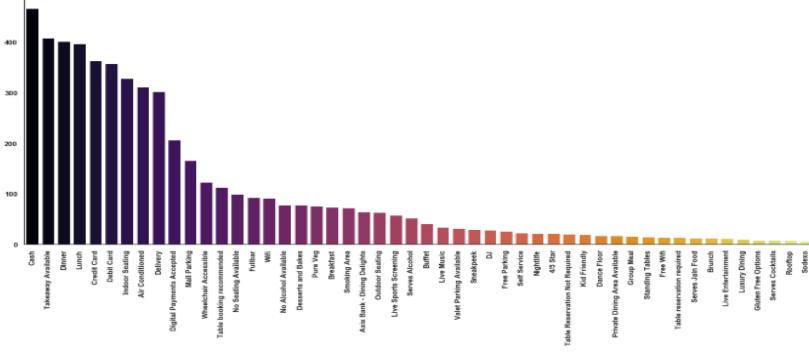
Features in Restaurants of Gurgaon



Features in Restaurants of Ghaziabad



Features in Restaurants of Noida



Features in Restaurants of Greater Noida

Features of Restaurants (in detail)

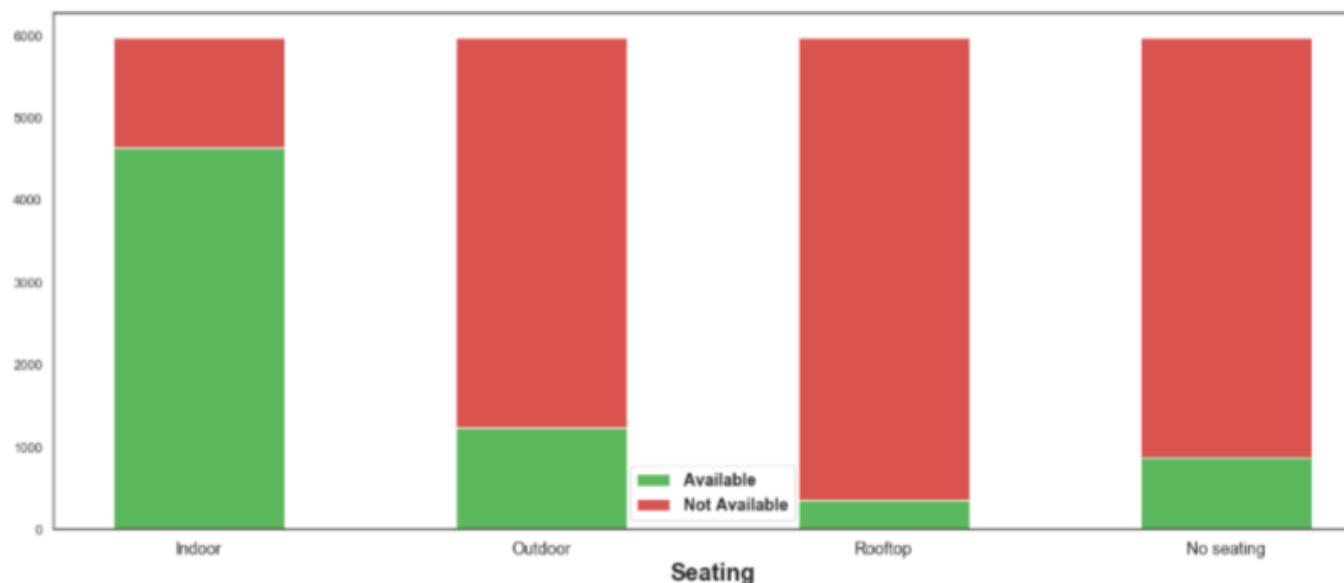
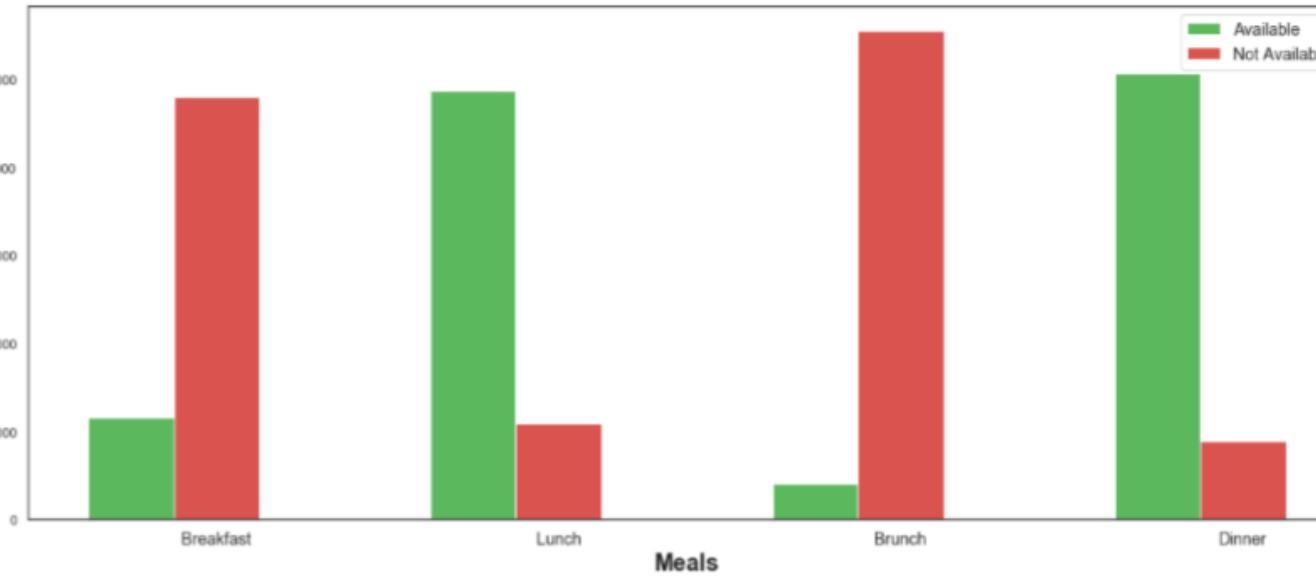


Table Booking Available in Resturants of Delhi NCR

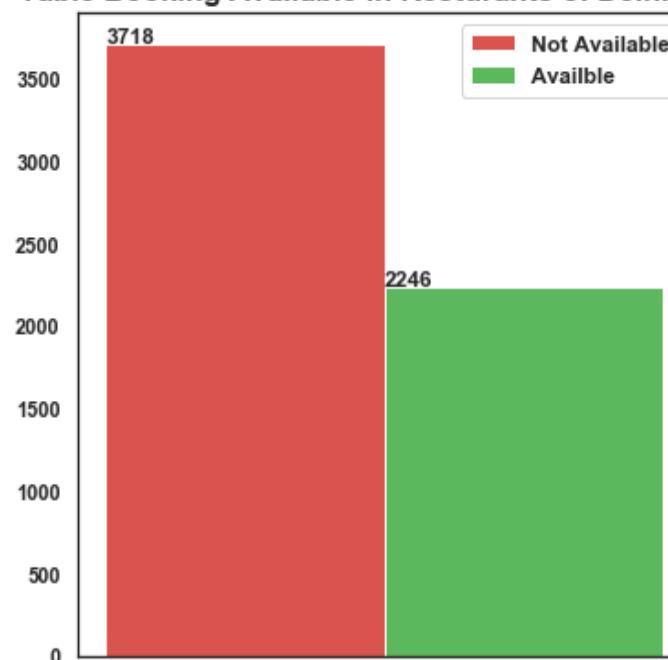
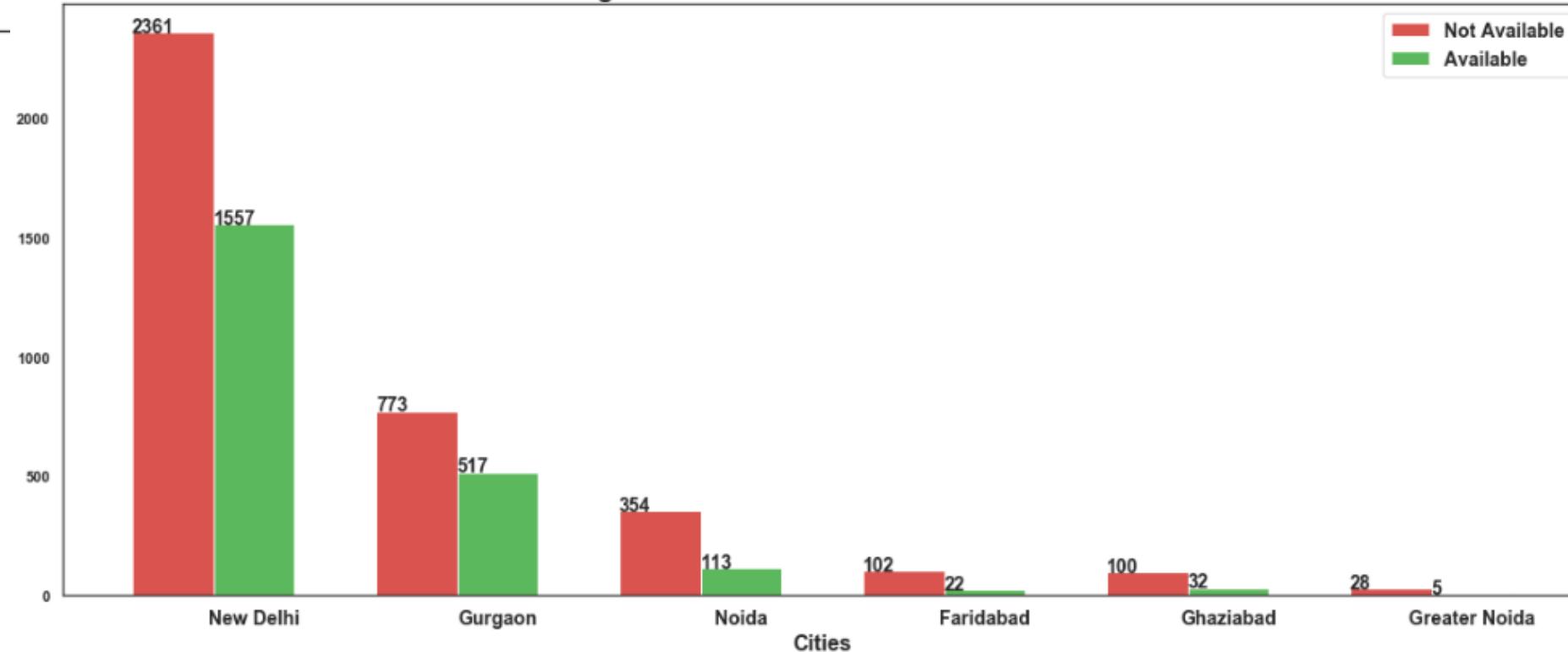
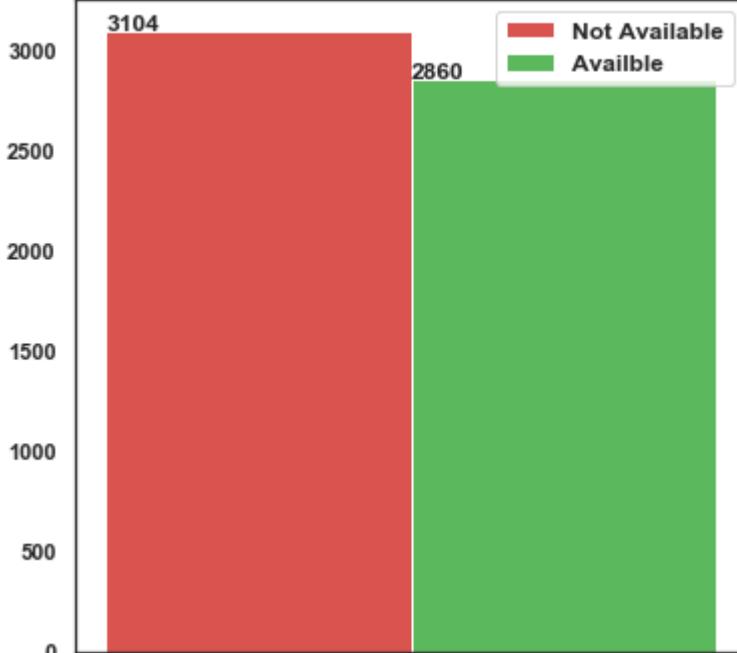


Table Booking Feature of Restaurants (in detail)

Table Booking Available in Resturants of Cities in Delhi NCR

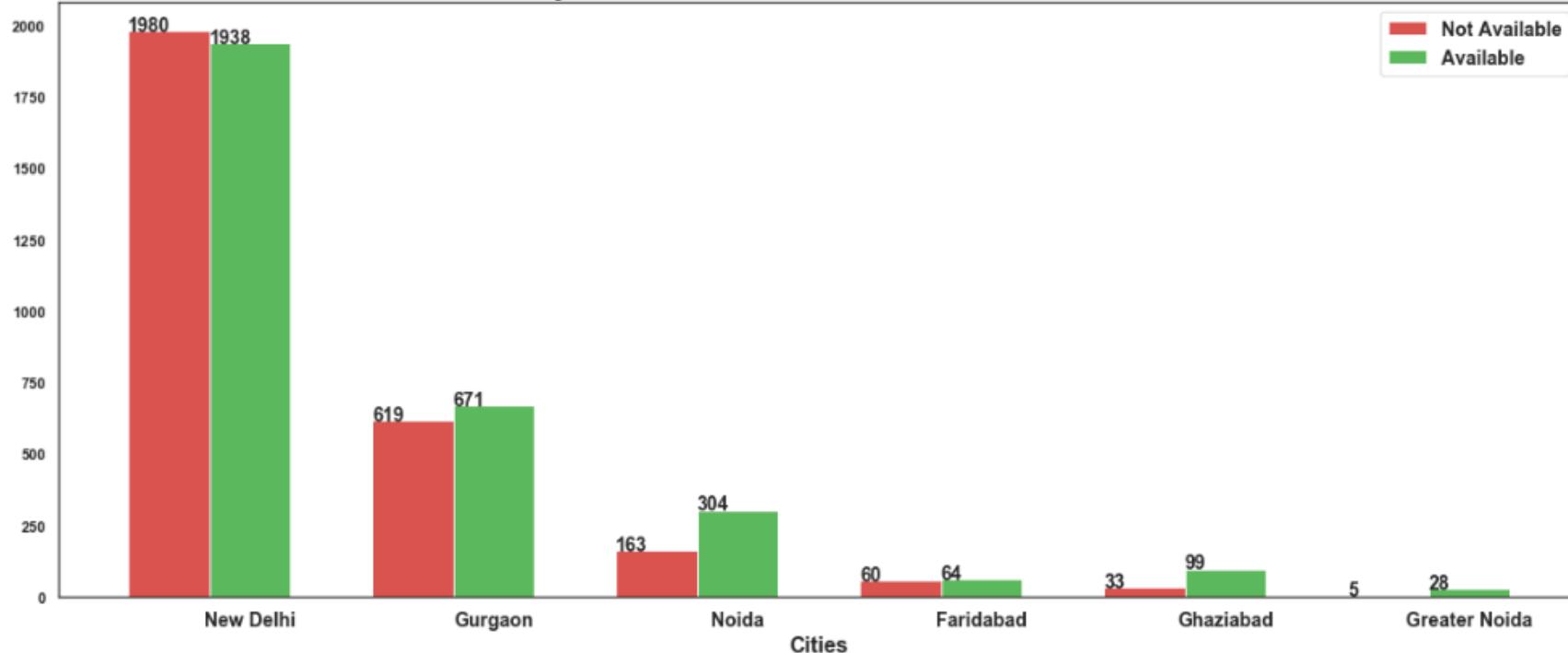


Delivery Available in Restaurants of Delhi NCR

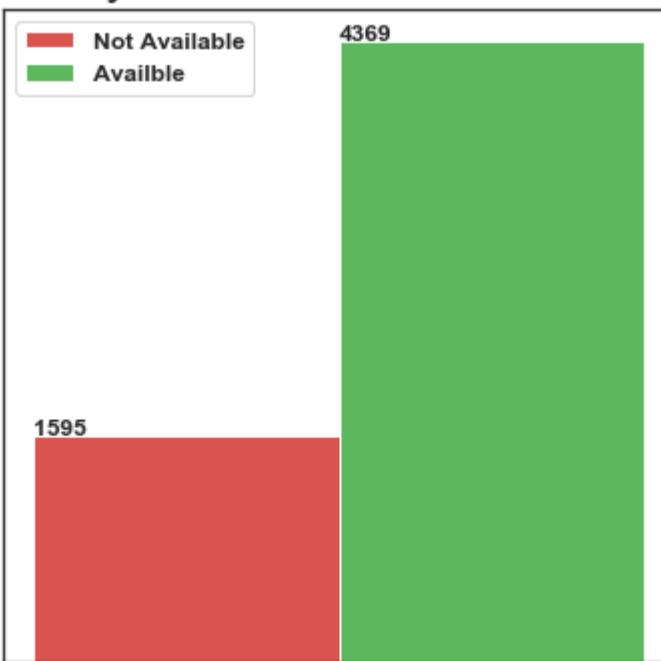


Delivery Feature of Restaurants (in detail)

Delivery Available in Restaurants of Cities in Delhi NCR

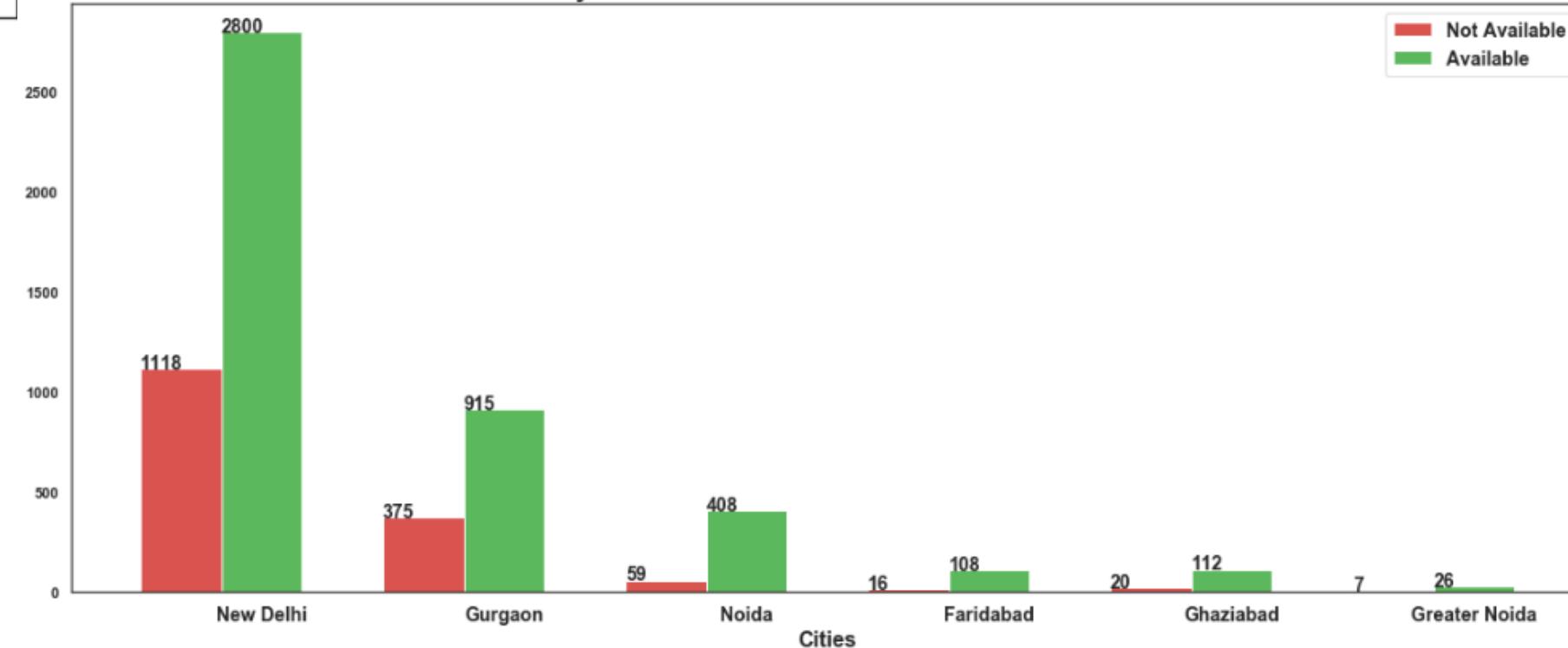


Takeaway Available in Restaurants of Delhi NCR

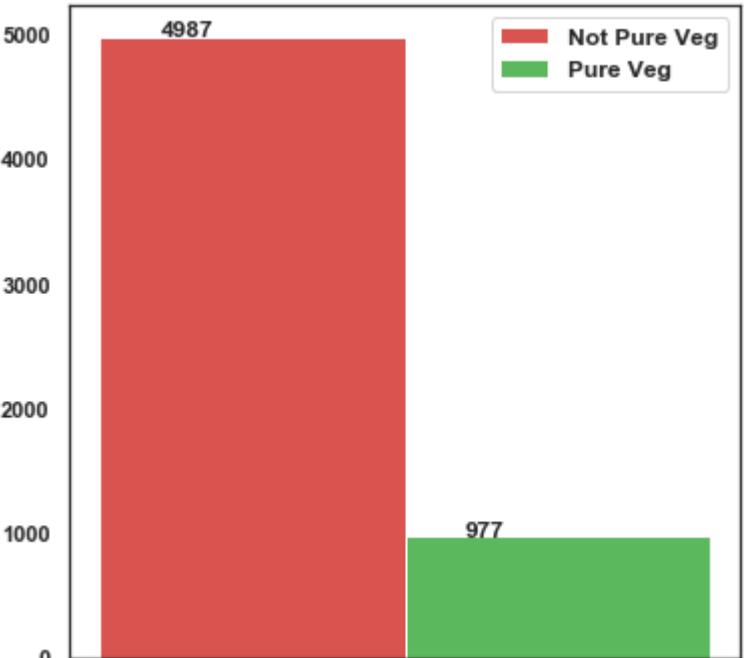


Takeaway Feature of Restaurants (in detail)

Takeaway Available in Restaurants of Cities in Delhi NCR

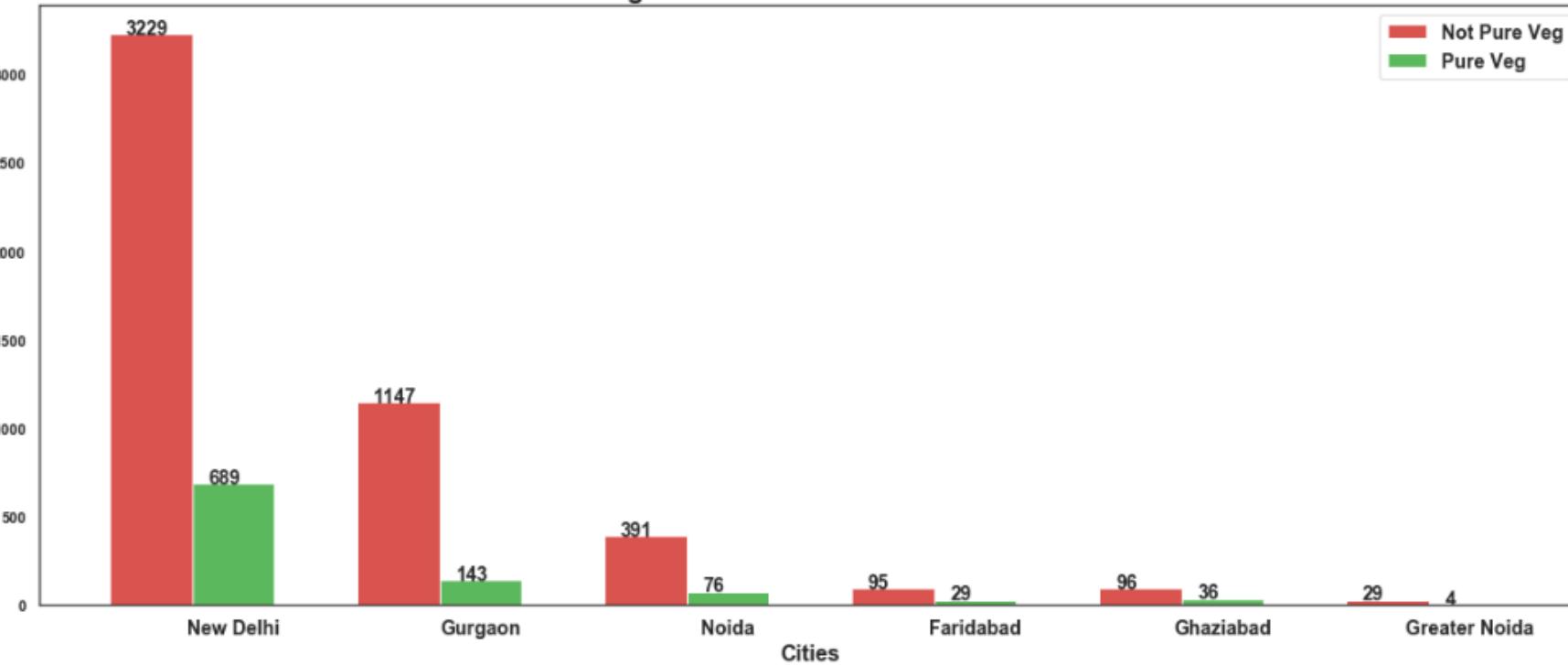


Pure Veg Resturants of Delhi NCR

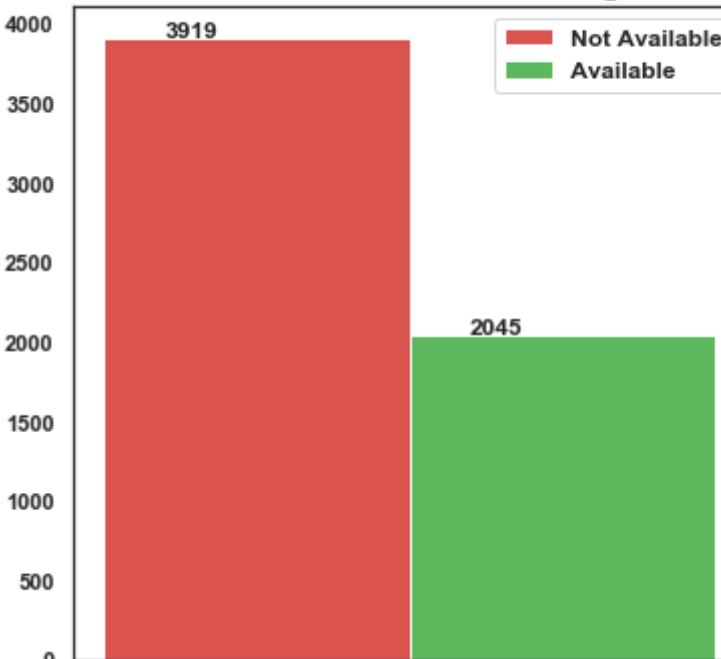


Pure Veg Feature of Restaurants (in detail)

Pure Veg Resturants in Cities of Delhi NCR

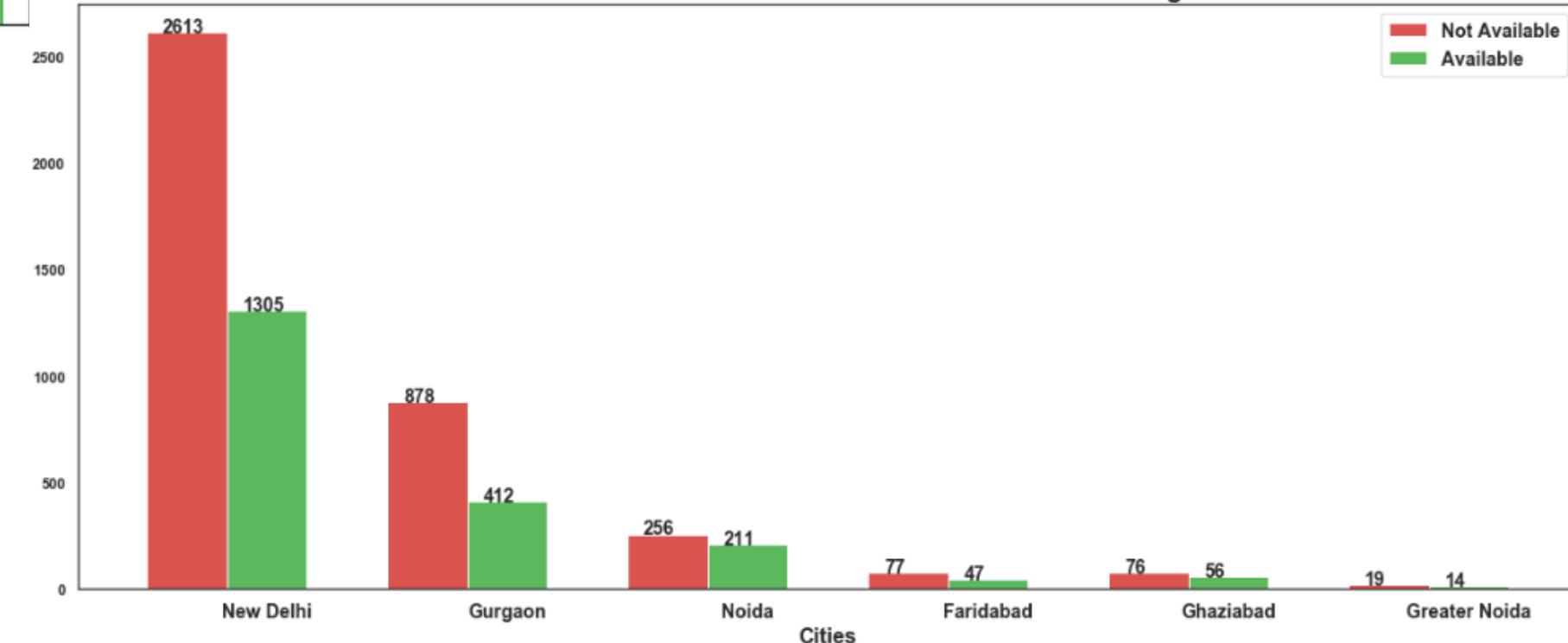


Resturants of Delhi NCR with Parking Available

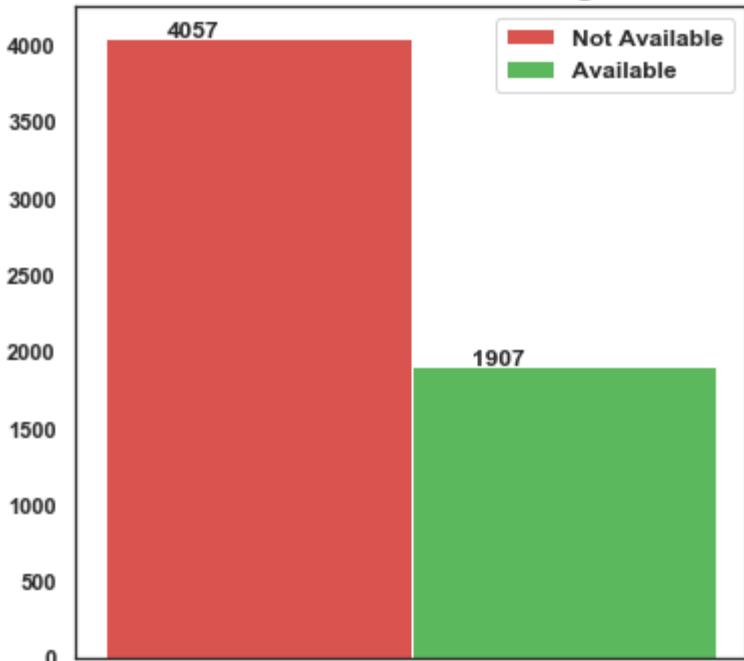


Parking Availability Feature of Restaurants (in detail)

Resturants in Cities of Delhi NCR with Available Parking

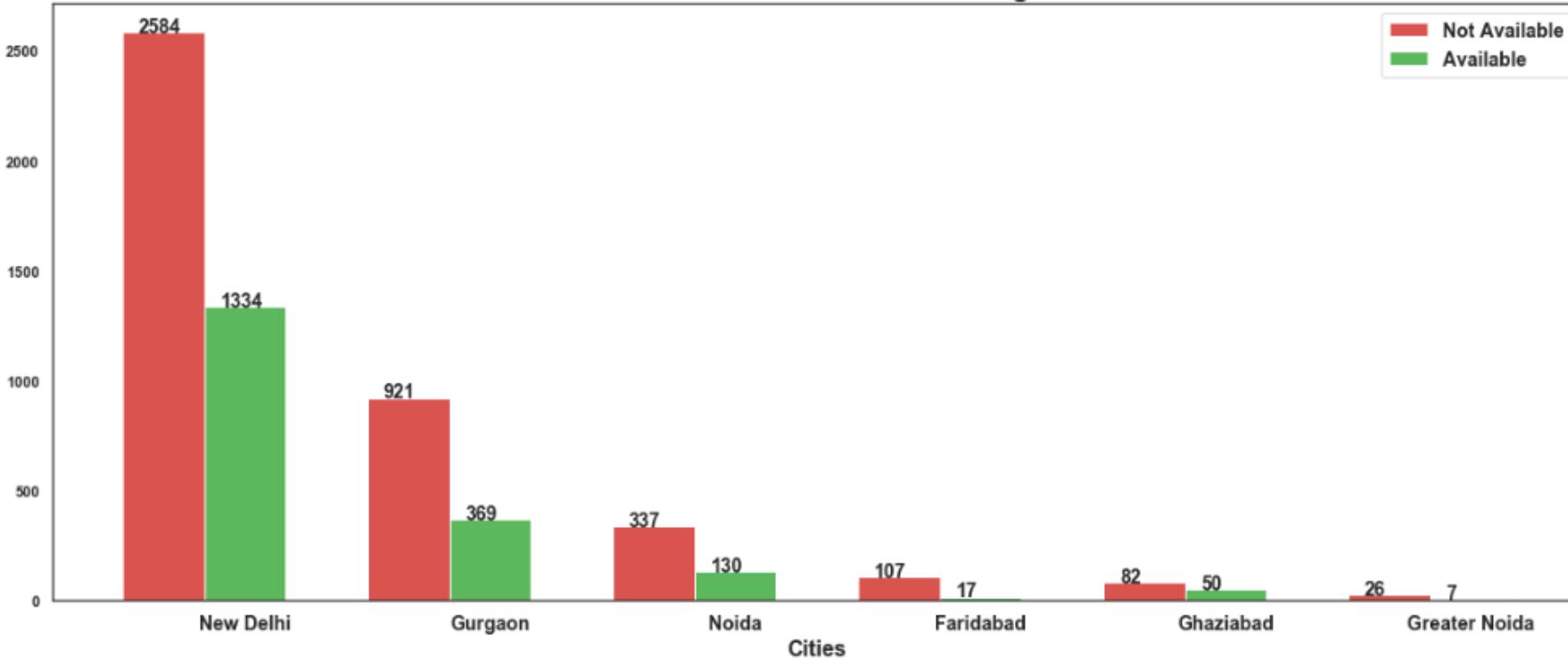


Resturants of Delhi NCR serving Alcohol

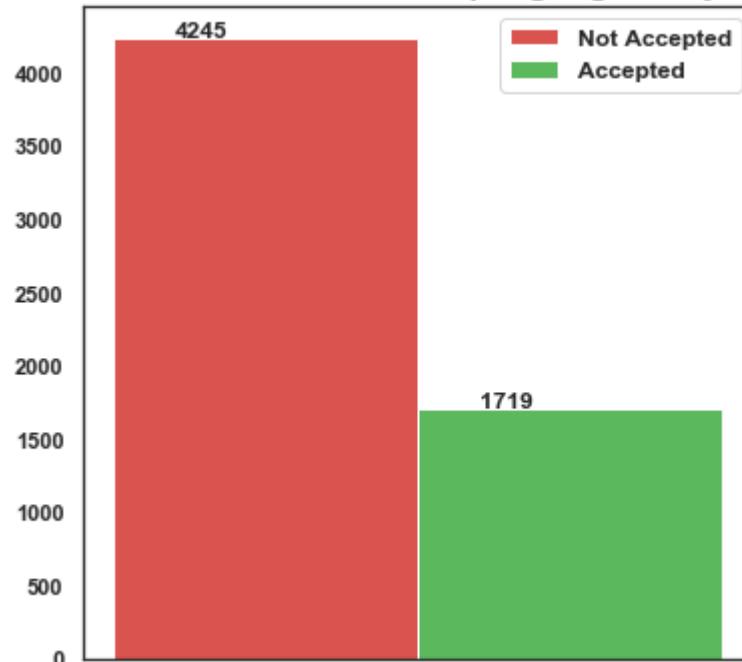


Alcohol serving Feature of Restaurants (in detail)

Resturants in Cities of Delhi NCR serving Alcohol

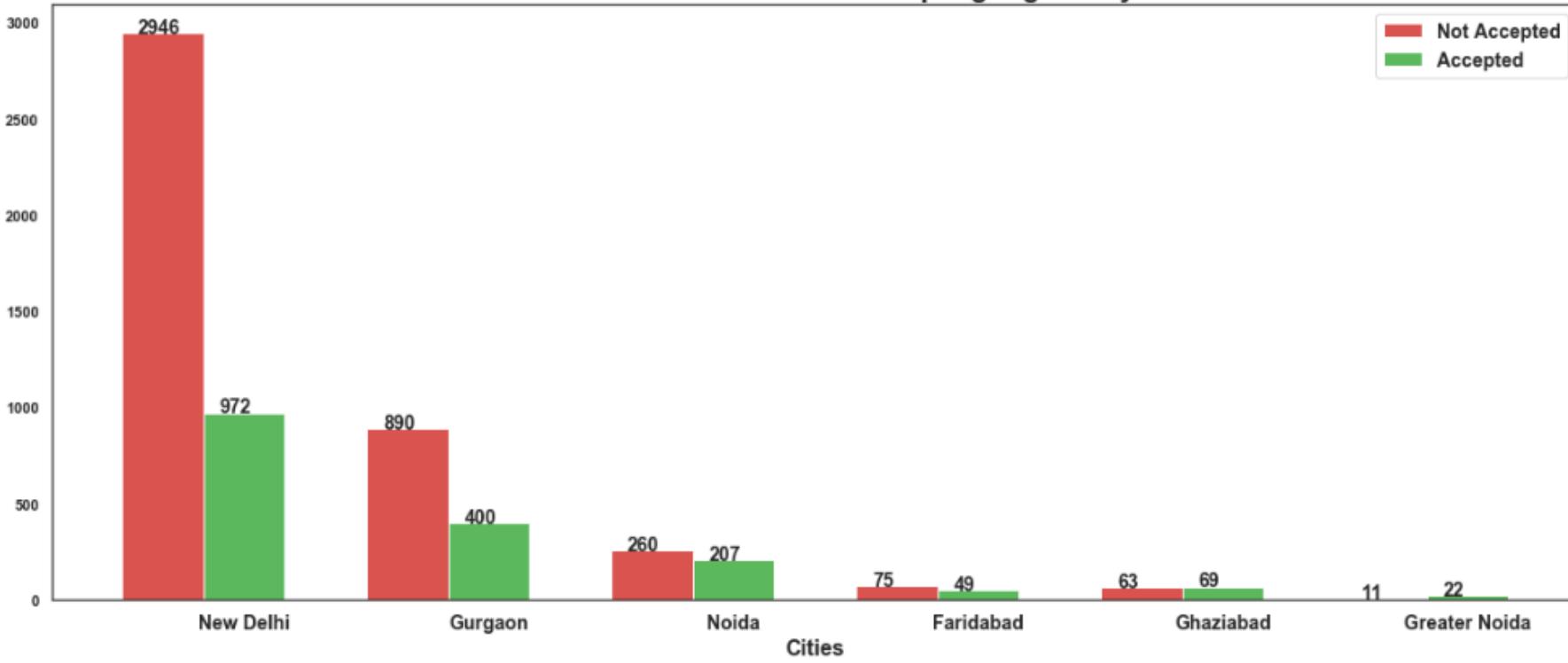


Resturants of Delhi NCR Accepting Digital Payments

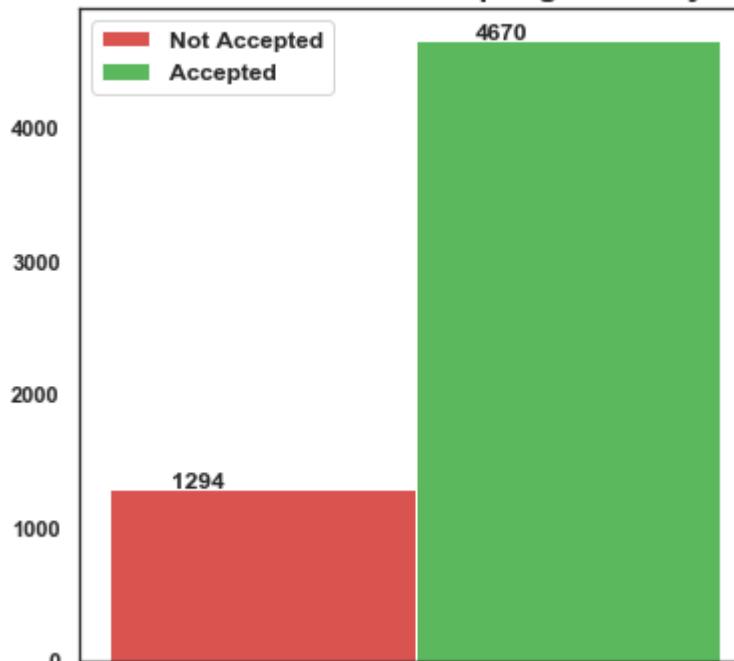


Digital Payment Feature of Restaurants (in detail)

Resturants in Cities of Delhi NCR Accepting Digital Payments

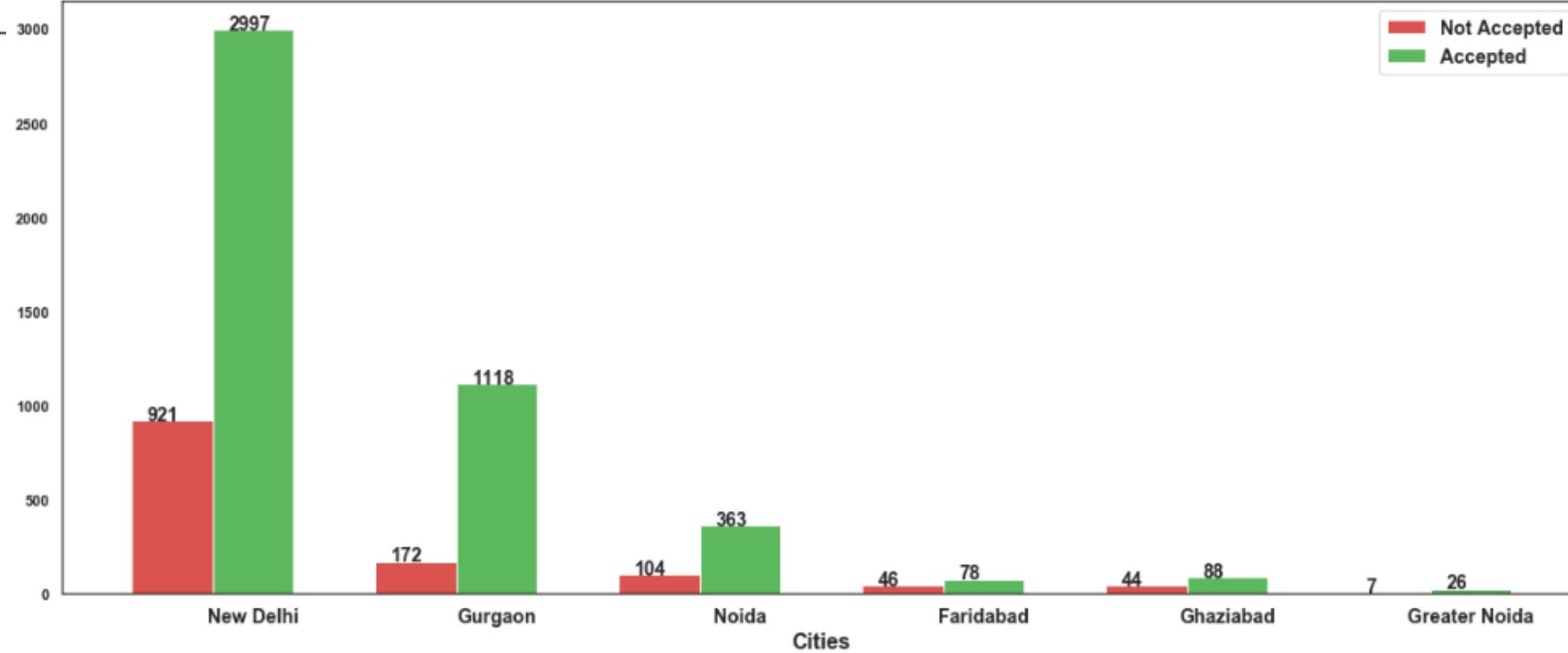


Resturants of Delhi NCR Accepting Card Payments

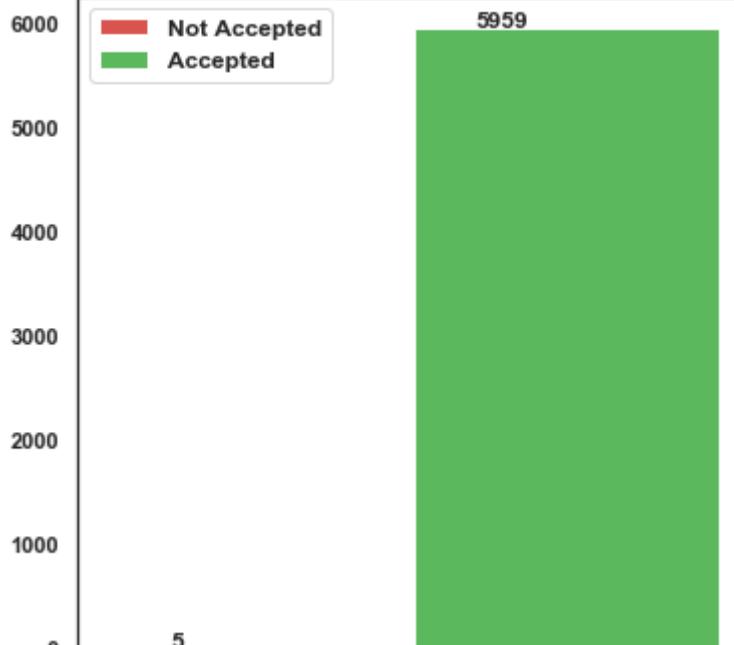


Card Payment Feature of Restaurants (in detail)

Resturants in Cities of Delhi NCR Accepting Card Paymnets

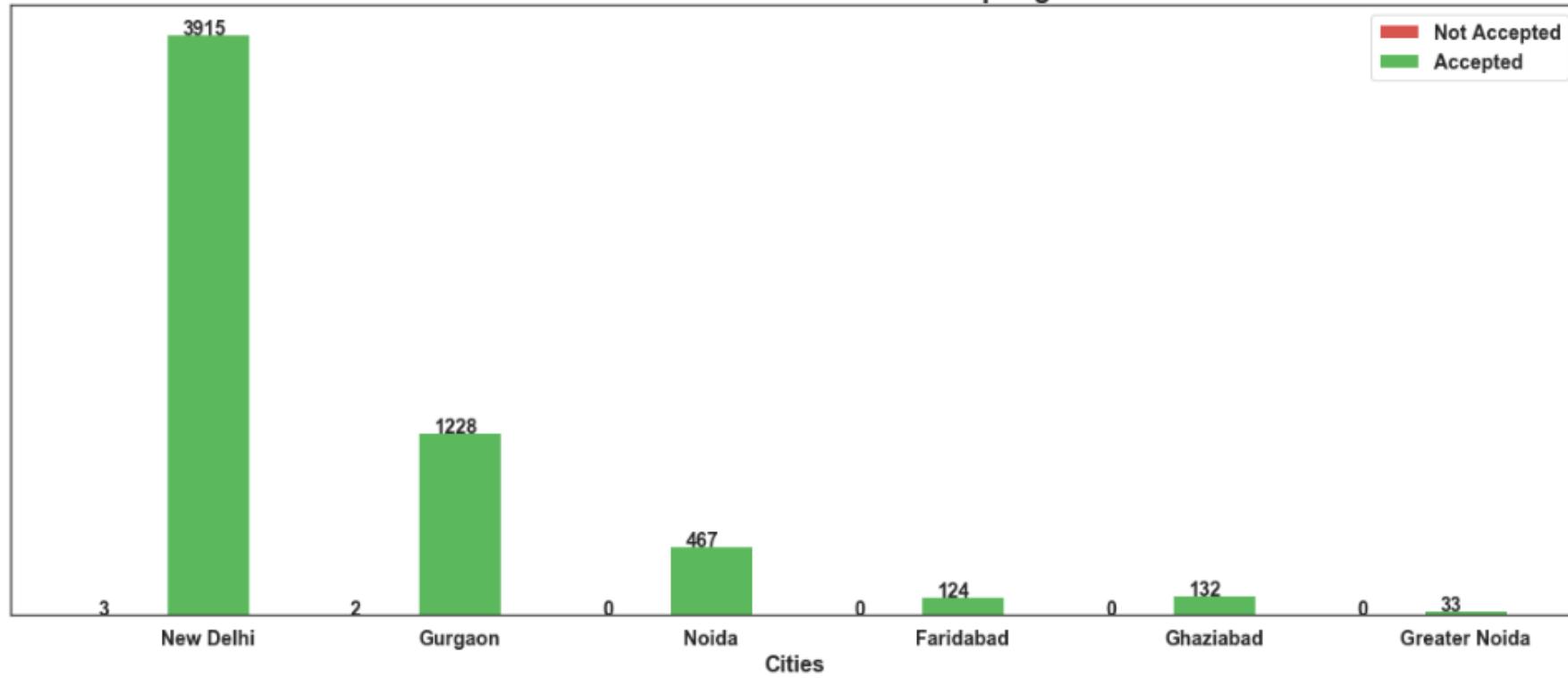


Resturants of Delhi NCR Accepting Cash

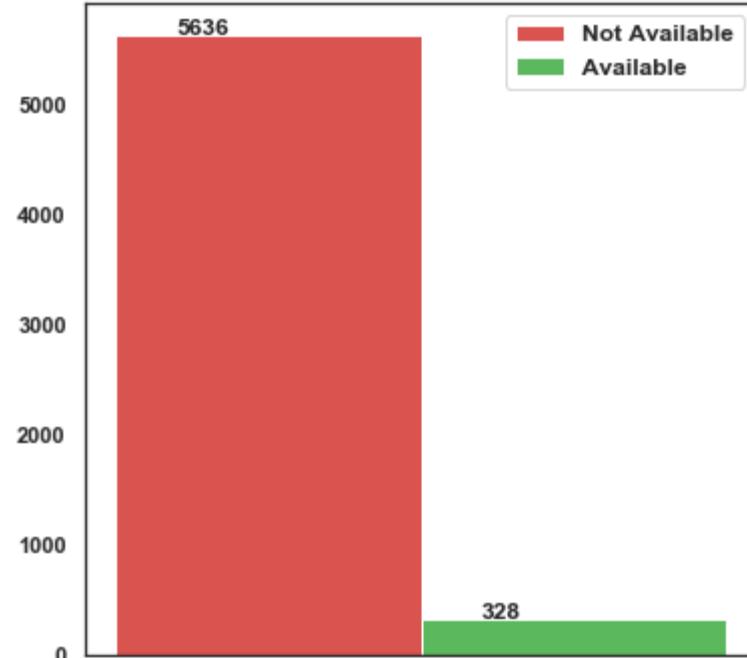


Cash Payment Feature of Restaurants (in detail)

Resturants in Cities of Delhi NCR Accepting Cash

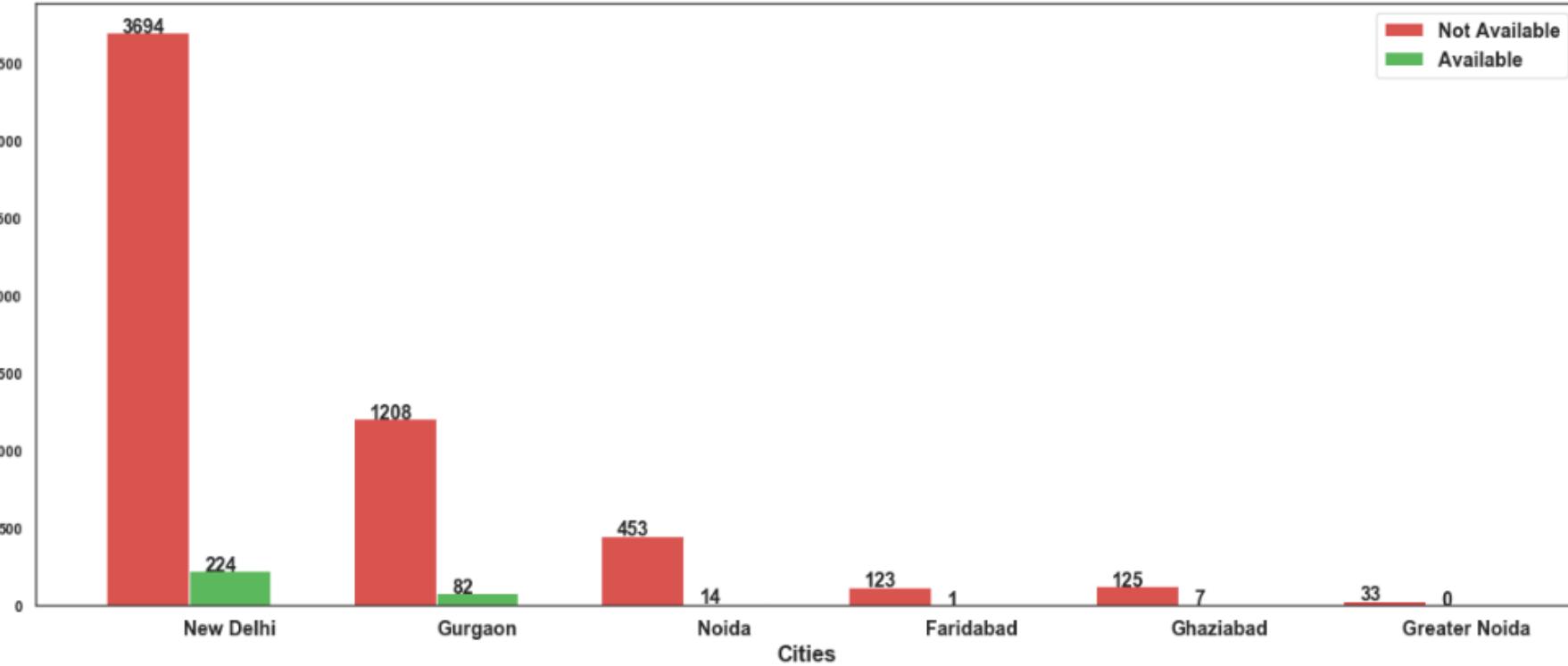


Resturants of Delhi NCR with Free Wifi

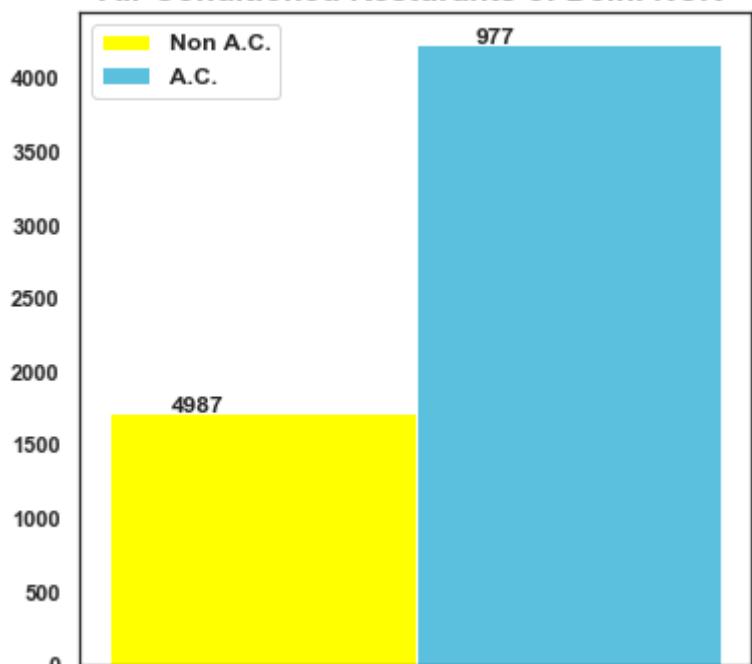


Free Wifi Feature of Restaurants (in detail)

Resturants in Cities of Delhi NCR with Free Wifi

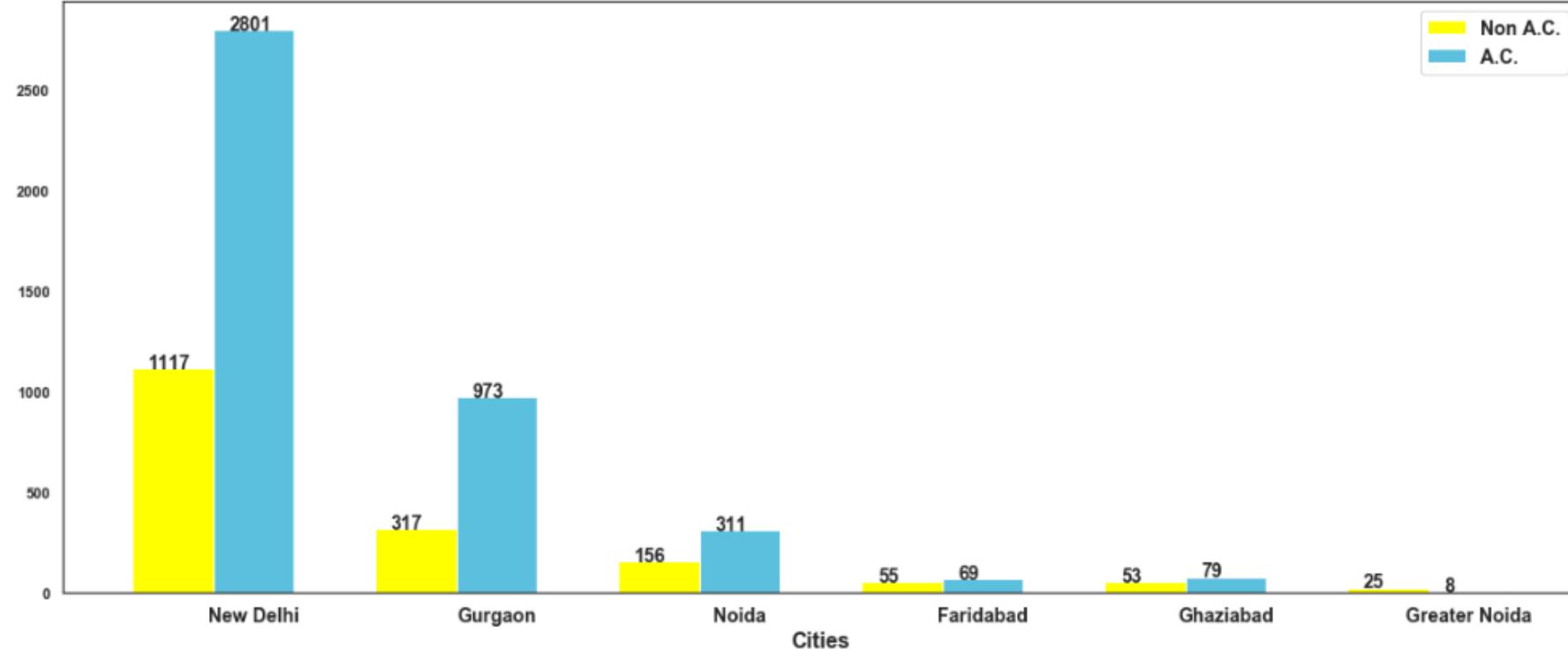


Air Conditioned Restaurants of Delhi NCR

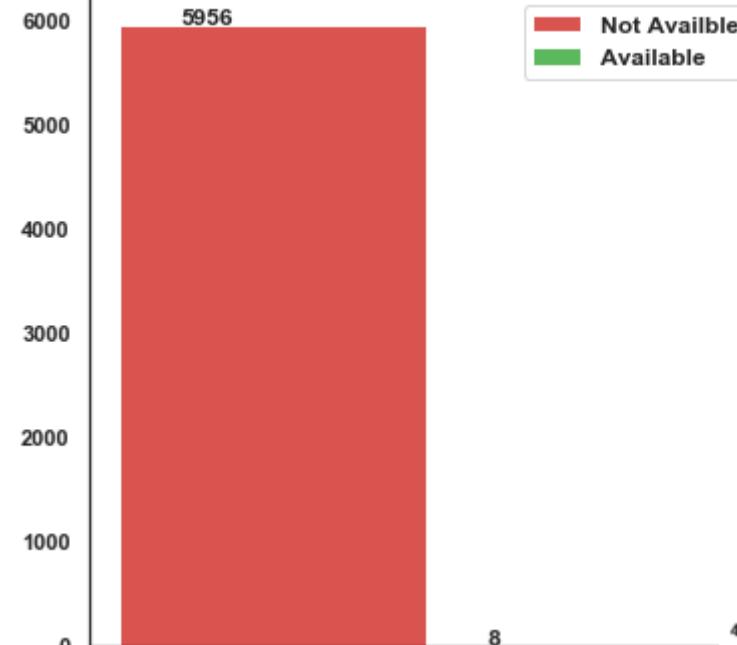


Air Conditioning Feature of Restaurants (in detail)

Air Conditioned Restaurants in Cities of Delhi NCR

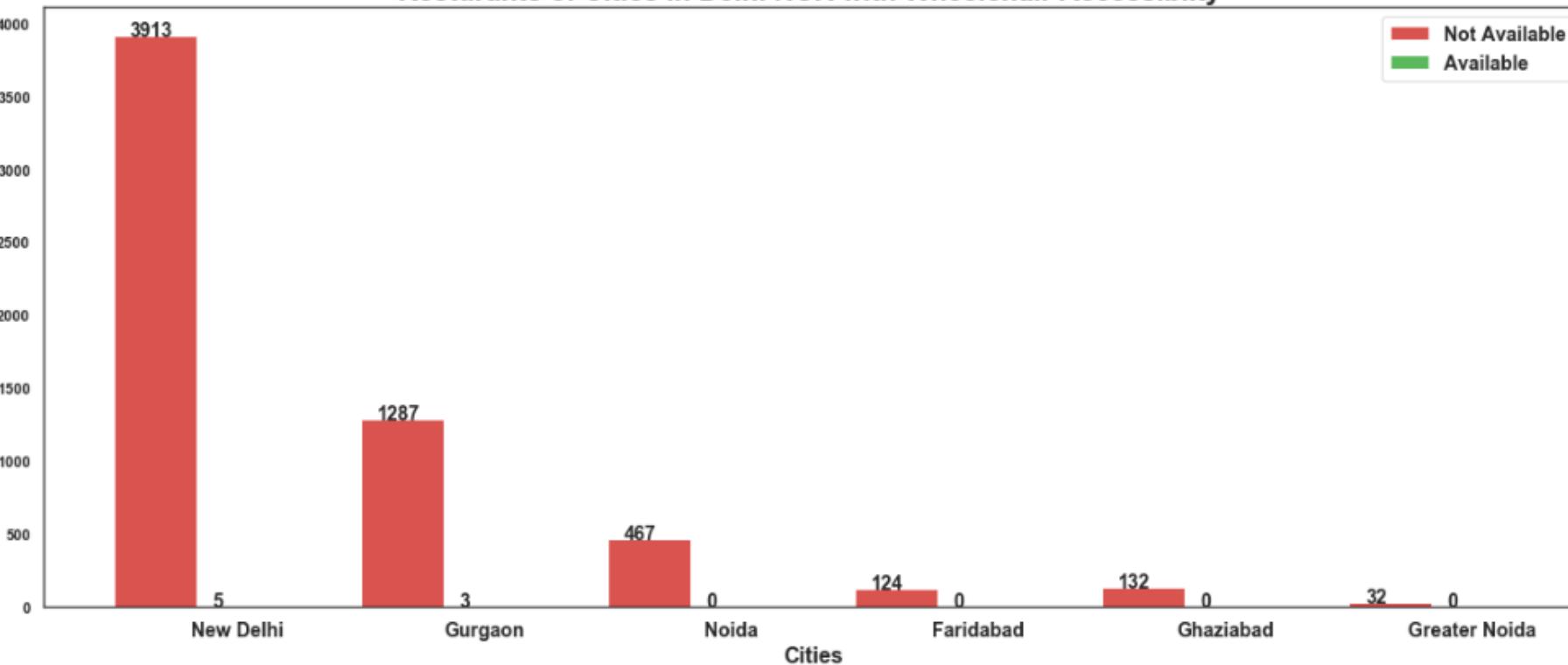


Resturants of Delhi NCR with Wheelchair Accessibility



Wheelchair Accessibility Feature of Restaurants (in detail)

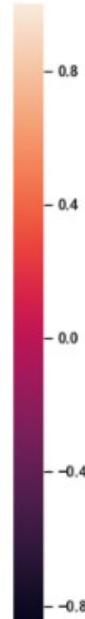
Resturants of Cities in Delhi NCR with Wheelchair Accessibility



Model Building

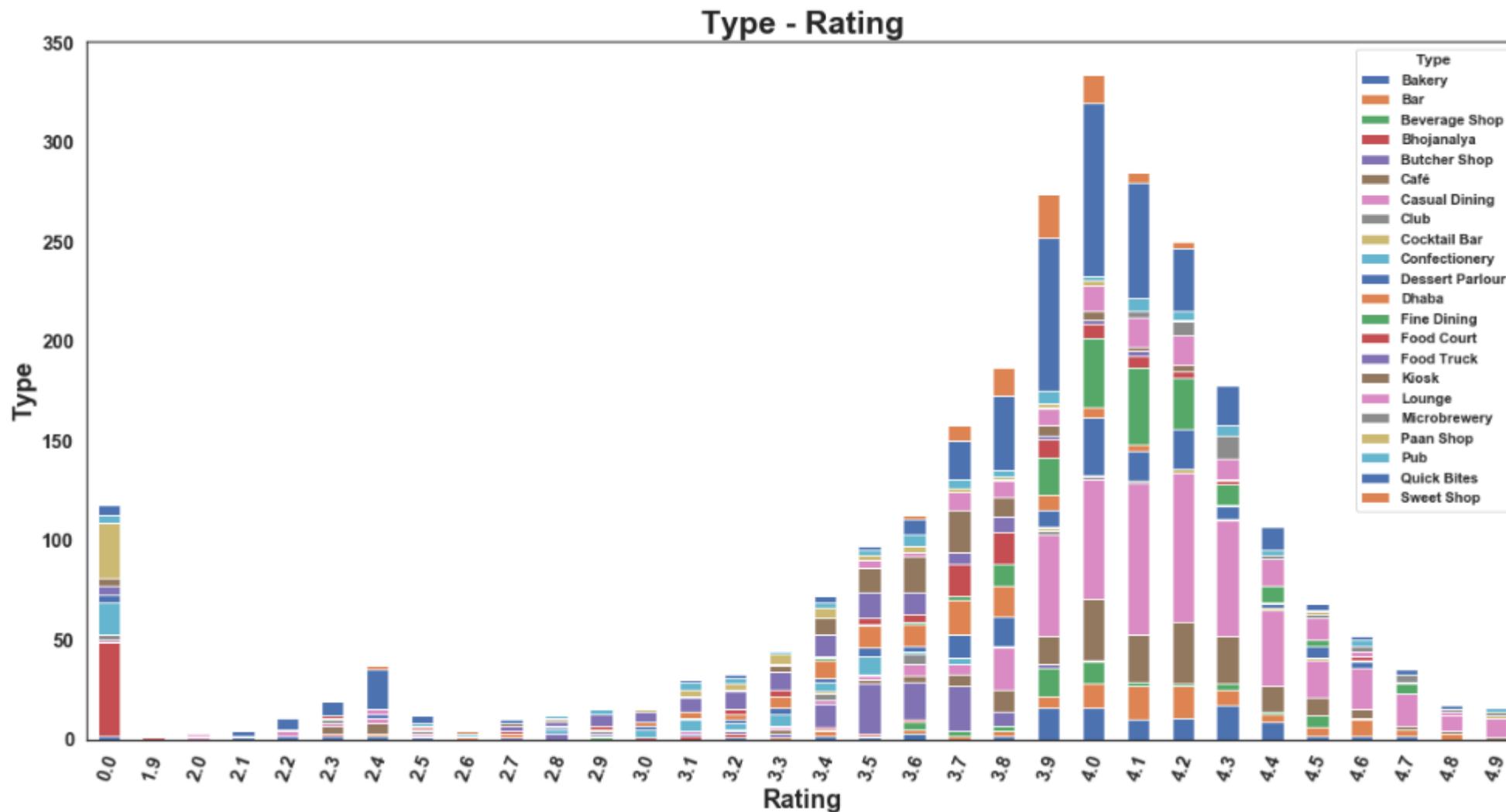
	Id	Name	Type	City	Locality	Latitude	Longitude	Cuisines	Timings	Cost for 2(avg)	Price Range	Features	Ratings(avg)	Rating Text	Votes	Photos	NCR Id	Pure Veg	
1	0.78	0.08	0.022	0.19	0.77	0.76	0.37	0.28	-0.1	0.07	0.65	-0.220	0.22	-0.330	0.410	0.029	0.042		
2	0.016	0.08	1	0.076	0.120	0.250	0.03	0.047	0.1	-0.530	0.34	0.006	0.430	0.42	0.480	0.110	0.076	0.14	
3	0.04	0.022	0.07	1	0.190	0.043	0.044	0.029	0.02	0.03	0.030	0.20	0.034	0.058	0.058	0.092	0.039	1	0.035
4	0.220	0.19	0.12	0.19	1	0.23	0.23	0.09	0.18	-0.120	0.082	0.17	-0.2	0.19	0.260	0.140	0.190	0.047	
5	0.98	0.77	0.02	0.05	0.43	0.23	1	0.99	0.31	0.280	0.084	0.03	0.79	-0.210	0.21	-0.3	0.470	0.040	0.001
6	0.97	0.76	0.030	0.044	0.23	0.99	1	0.31	0.270	0.084	0.03	0.78	-0.210	0.22	-0.3	0.470	0.040	0.004	
7	0.332	0.370	0.042	0.029	0.09	0.31	0.31	1	0.12	0.00	0.060	0.020	0.280	0.048	0.0310	0.140	0.2	0.020	0.073
8	0.28	0.28	0.1	0.025	0.18	0.28	0.27	0.12	1	-0.120	0.092	0.21	-0.140	0.120	-0.190	0.180	0.029	0.041	
9	0.0740	0.110	0.530	0.038	0.130	0.088	0.087	0.018	0.15	1	0.310	0.02	0.36	-0.340	0.35	-0.110	0.038	0.29	
10	0.030	0.070	0.00	0.350	0.020	0.088	0.034	0.038	0.021	0.092	0.31	1	0.010	0.26	0.3	-0.072	0.02	0.19	
11	0.81	0.64	0	0.087	0.034	0.17	0.79	0.78	0.28	0.210	0.29	0.01	1	-0.140	0.150	0.230	0.410	0.034	0.012
12	-0.2	-0.220	-0.430	0.58	0.2	-0.210	0.210	0.040	0.140	0.36	0.26	0.14	1	-0.830	0.56	-0.180	0.058	0.08	
13	0.21	0.22	0.420	0.580	0.19	0.21	0.220	0.0310	0.120	0.340	0.260	0.15	0.83	1	-0.550	0.190	0.058	0.062	
14	-0.3	-0.330	0.480	0.092	0.26	-0.3	-0.3	-0.140	0.190	0.35	0.3	-0.230	0.56	-0.45	1	-0.240	0.098	0.03	
15	0.47	0.41	0.110	0.039	0.14	0.47	0.47	0.2	0.180	0.10	0.72	0.41	0.24	0.190	0.24	1	0.130	0.060	
16	0.04	0.022	0.07	1	0.190	0.043	0.044	0.029	0.02	0.03	0.020	0.034	0.058	0.058	0.092	0.039	1	0.035	
17	0.098	0.042	0.140	0.035	0.048	0.001	0.000	0.000	0.076	0.0410	0.290	0.190	0.019	0.086	0.062	0.030	0.020	1	

	Table Booking	Parking Available	Delivery Available	Takeaway Available	Breakfast	Lunch	Brunch	Dinner	Indoor Seating	Outdoor Seating	Rooftop	No Seating	Liquor served	Digital payment	Card payment	Cash payment	A.C.	Free WiFi	Wheelchair Accessible
1	0.1	0.120	0.180	0.058	0.024	0.11	0.120	0.044	0.099	0.280	0.130	0.0520	0.140	0.15	0.14	0.1	0.058	0.094	
2	0.07	0.032	0.090	0.067	0.130	0.089	0.082	0.034	0.087	0.280	0.005	0.019	0.090	0.060	0.044	0.09	0.067	0.07	
3	0.079	0.060	0.220	0.069	0.064	0.088	0.050	0.050	0.071	0.140	0.06	0.130	0.094	0.060	0.094	0.1	0.020	0.18	
4	0.050	0.048	0.023	0.037	0.029	0.08	0.04	0.028	0.06	0.040	0.068	0.033	0.000	0.000	0.070	0.050	0.014	0.027	
5	0.058	0.060	0.360	0.038	0.048	0.058	0.061	0.180	0.08	0.290	0.086	0.16	0.150	0.270	0.037	0.080	0.190	0.19	
6	0.088	0.070	0.19	0.030	0.040	0.084	0.080	0.030	0.04	0.2	0.024	0.040	0.12	0.1	0.094	0.098	0.084	0.084	
7	0.050	0.050	0.380	0.039	0.040	0.058	0.061	0.160	0.06	0.10	0.360	0.020	0.050	0.20	0.160	0.024	0.024	0.024	
8	0.076	0.130	0.480	0.030	0.120	0.088	0.070	0.120	0.15	0.440	0.390	0.0780	0.340	0.33	0.4	0.120	0.038	0.068	
9	0.040	0.018	0.090	0.038	0.020	0.044	0.038	0.03	0.110	0.070	0.00	0.038	0.060	0.068	0.070	0.020	0.038	0.08	
10	0.058	0.0350	0.007	0.074	0.060	0.058	0.010	0.110	0.090	0.12	0.000	0.007	0.090	0.07	0.09	0.000	0.000	0.000	
11	0.0620	0.110	0.43	0.02	0.110	0.068	0.060	0.130	0.110	0.390	0.360	0.0630	0.290	0.28	0.35	0.1	0.020	0.097	
12	0.039	0.031	0.120	0.036	0.078	0.0430	0.040	0.014	0.074	0.150	0.072	0.020	0.039	0.038	0.070	0.026	0.018	0.031	
13	0.000	0.020	0.026	0.150	0.058	0.008	0.050	0.000	0.010	0.12	0.000	0.000	0.028	0.010	0.020	0.020	0.017	0.100	
14	0.0820	0.150	0.420	0.039	0.120	0.084	0.080	0.064	0.14	0.480	0.330	0.0410	0.350	0.35	0.360	0.120	0.039	0.111	
15	0.020	0.029	0.00	0.080	0.000	0.002	0.020	0.029	0.018	0.026	0.008	0.010	0.018	0.016	0.014	0.000	0.000	0.000	
16	0.010	0.010	0.22	0.040	0.032	0.150	0.15	0.010	0.19	0.450	0.110	0.038	0.000	0.000	0.000	0.000	0.000	0.000	
17	0.010	0.010	0.18	0.008	0.038	0.018	0.018	0.015	0.003	0.130	0.012	0.010	0.030	0.000	0.000	0.000	0.000	0.000	
18	0.010	0.010	0.18	0.008	0.038	0.018	0.018	0.015	0.003	0.130	0.012	0.010	0.030	0.000	0.000	0.000	0.000	0.000	
19	0.008	0.014	0.200	0.020	0.020	0.130	0.020	0.007	0.018	0.012	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	



- Heat Map was built using Kendall correlation.
- Ratings(avg) was dependent variable which depended on various other independent numeric variables.
- Linear Regression R-square score: 0.67
- Decision Tree R-square score: 0.98

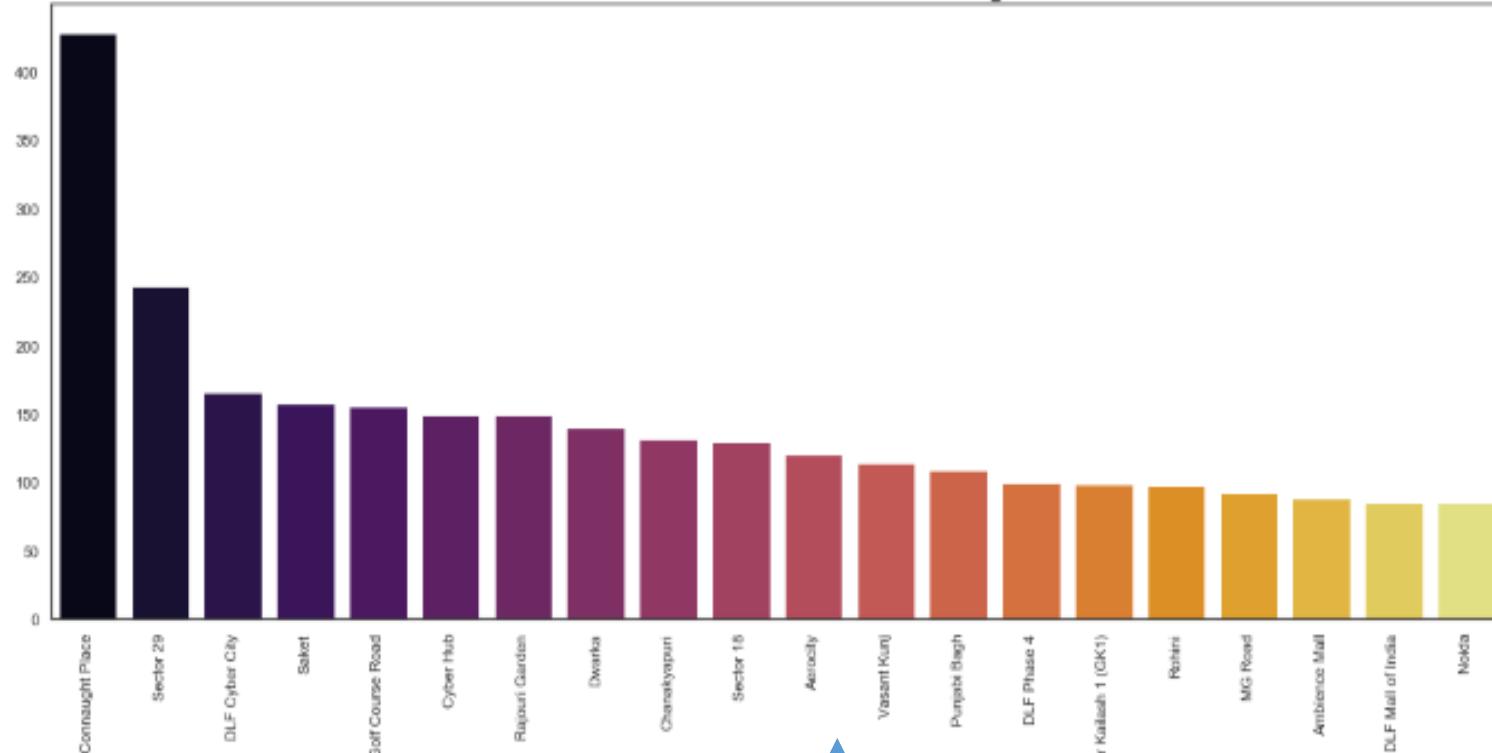
Type and Rating combined chart



Popular Localities of Restaurants in Delhi NCR

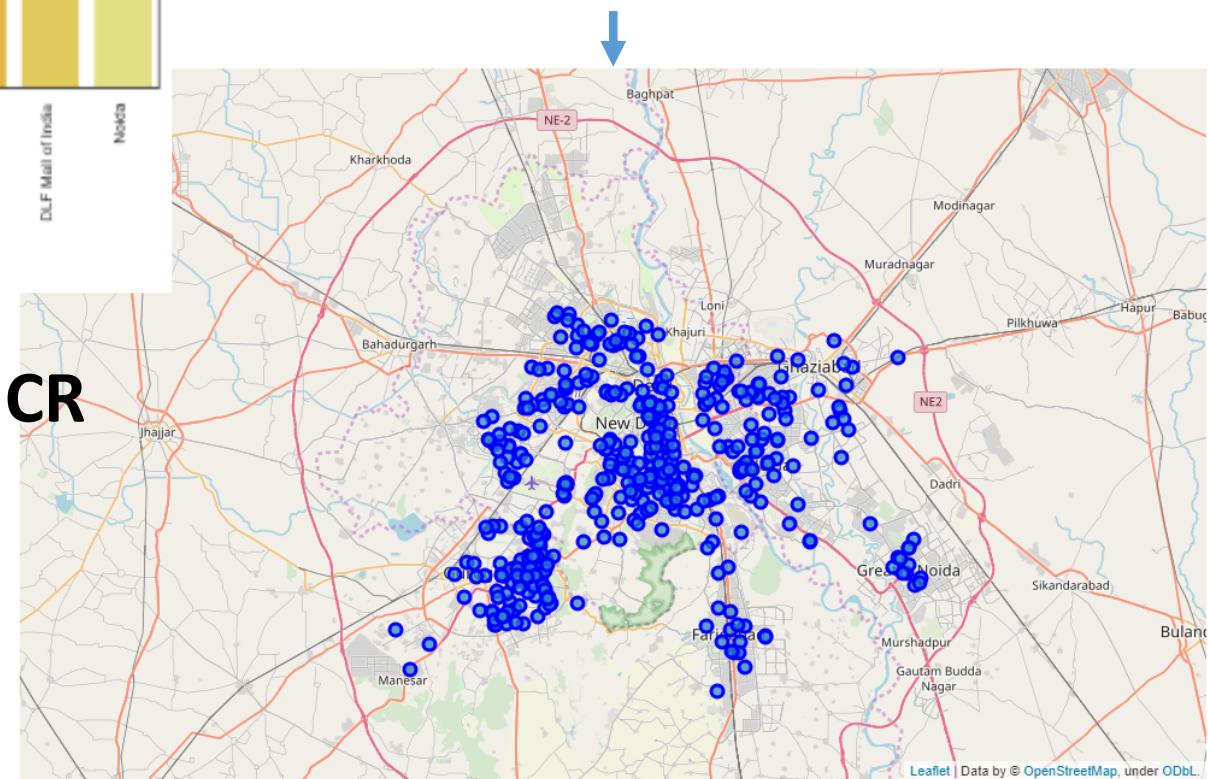
City	Top three Localities having Restaurant		
	First	Second	Third
Delhi-NCR	Connaught Place	Sector 29	DLF Cyber City
New Delhi	Connaught Place	Saket	Rajouri Garden
Gurgaon	Sector 29	DLF Cyber City	Golf Course Road
Noida	Sector 18	DLF Mall of India	Noida
Faridabad	NIT	Sector 16	Vivanta by Taj
Ghaziabad	Indirapuram	Indirapuram Habitat Center	Raj Nagar
Greater Noida	Delta 1	Gaur City 1	Knowledge Park

Resturants in various localities of NCR region

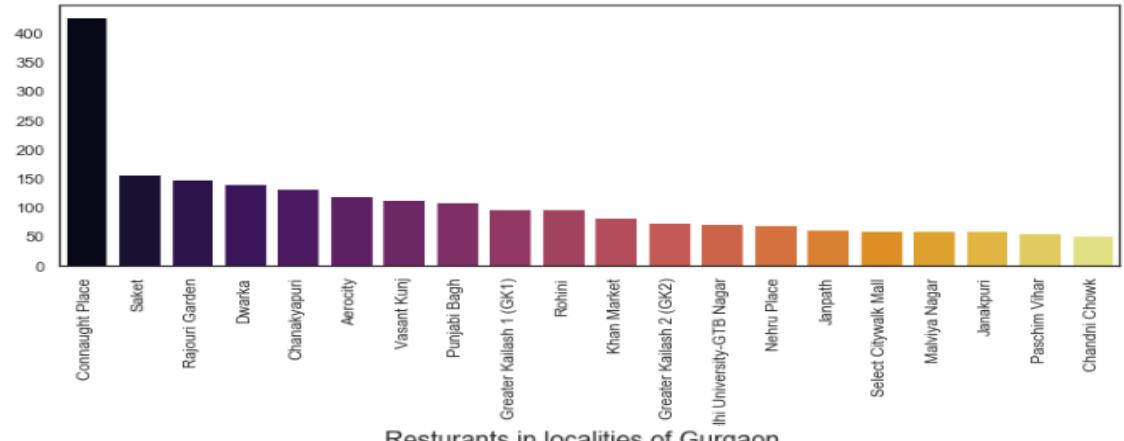


Popular Localities of Restaurants in Delhi NCR

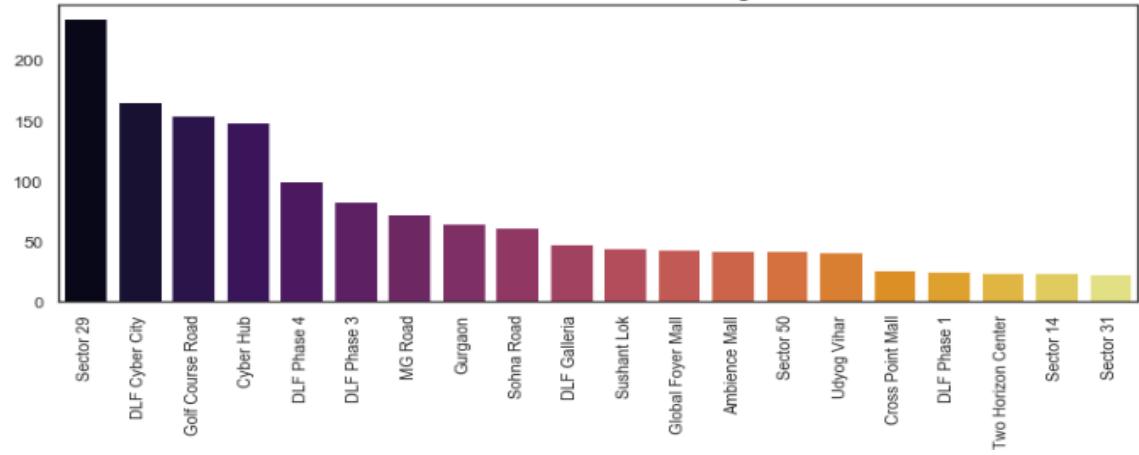
Map of Localities of Restaurants in Delhi NCR



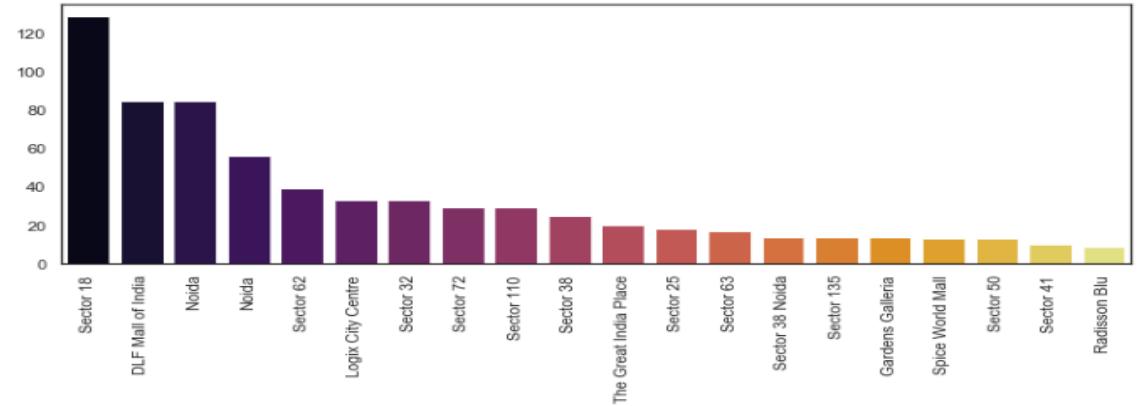
Restaurants in localities of New Delhi



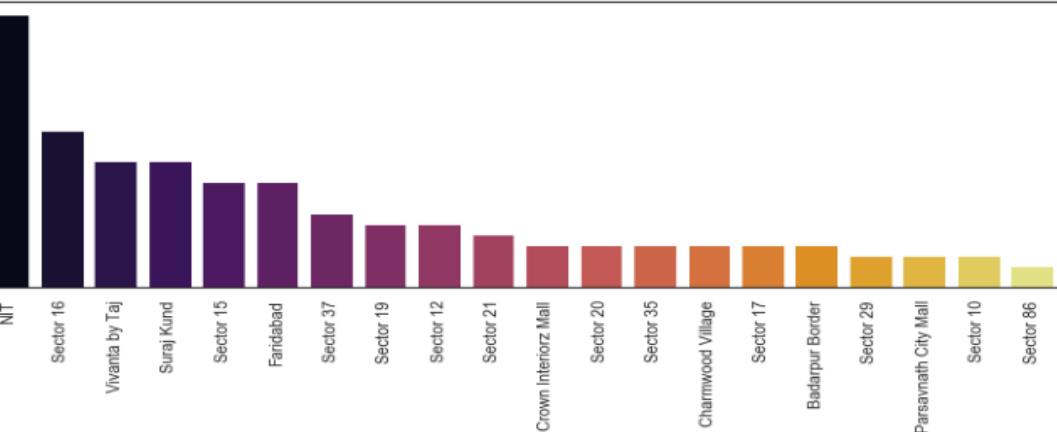
Restaurants in localities of Gurgaon



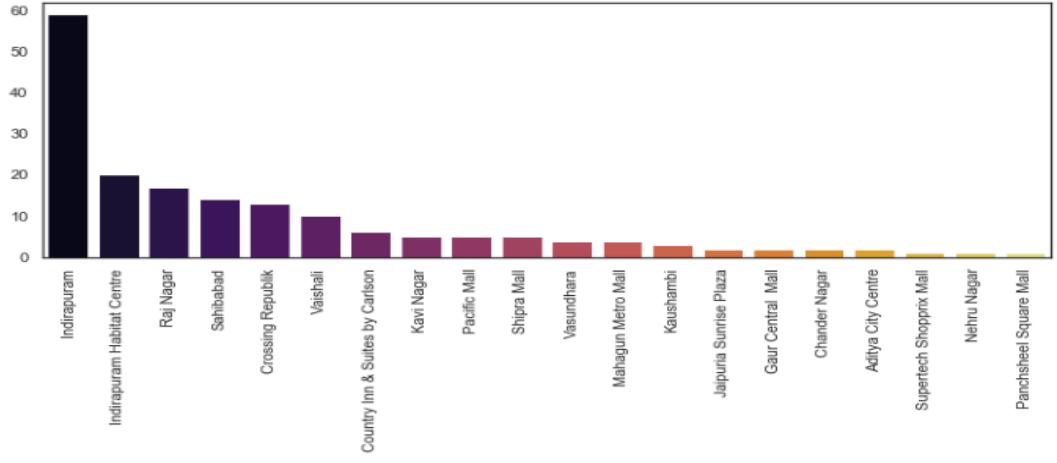
Restaurants in localities of Noida



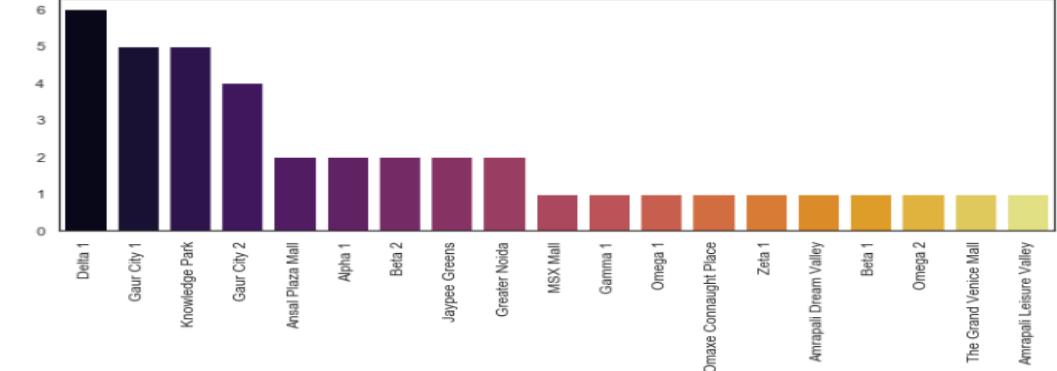
Restaurants in localities of Faridabad

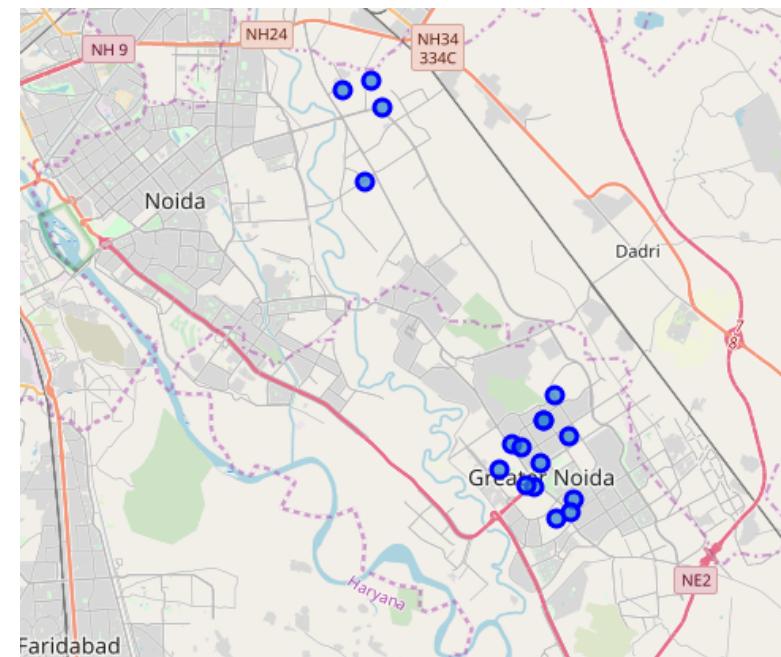
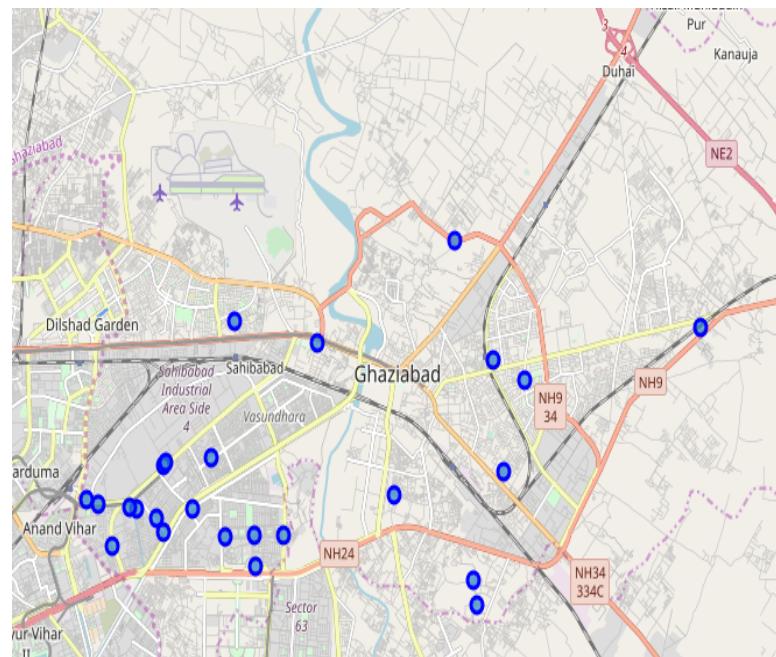
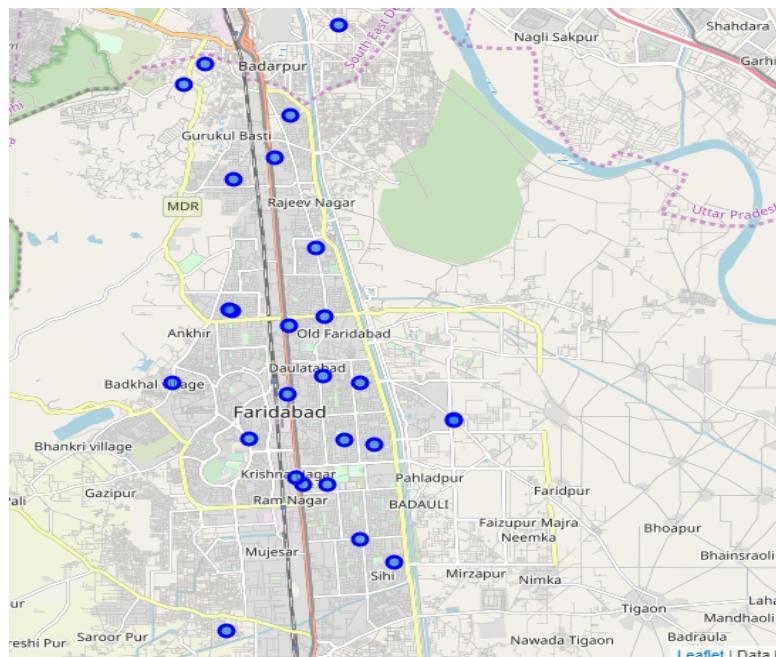
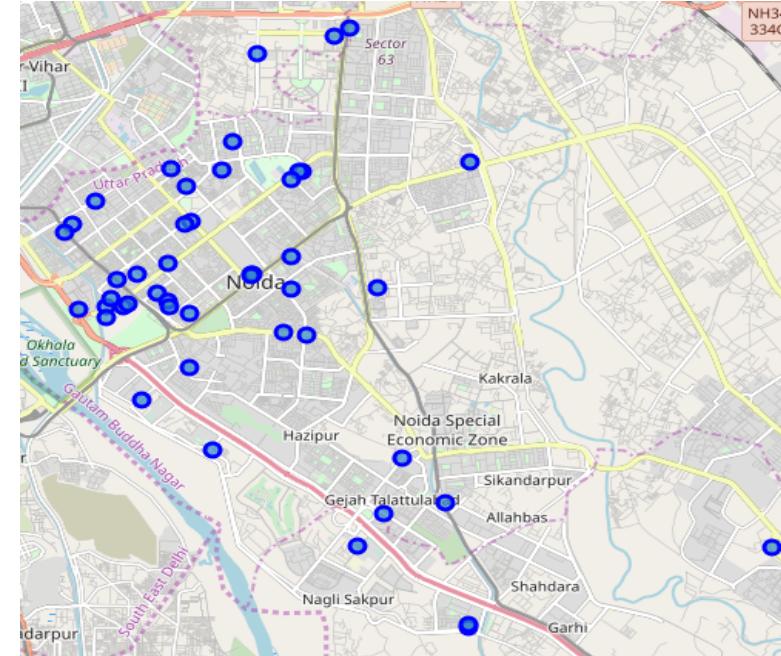
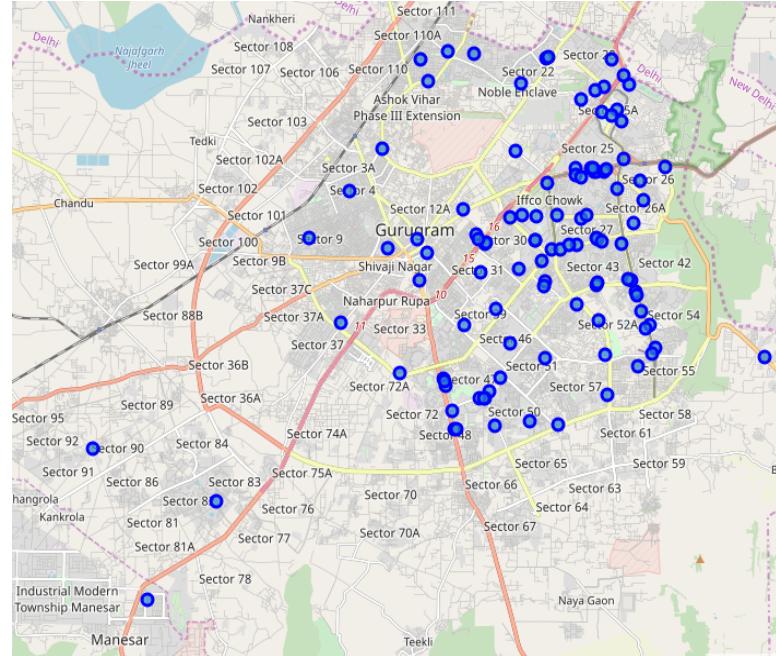
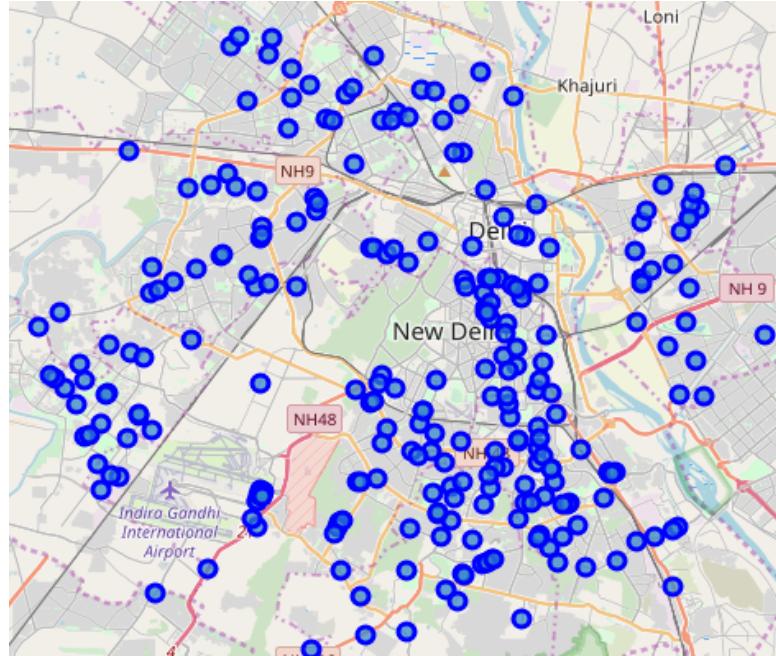


Restaurants in localities of Ghaziabad

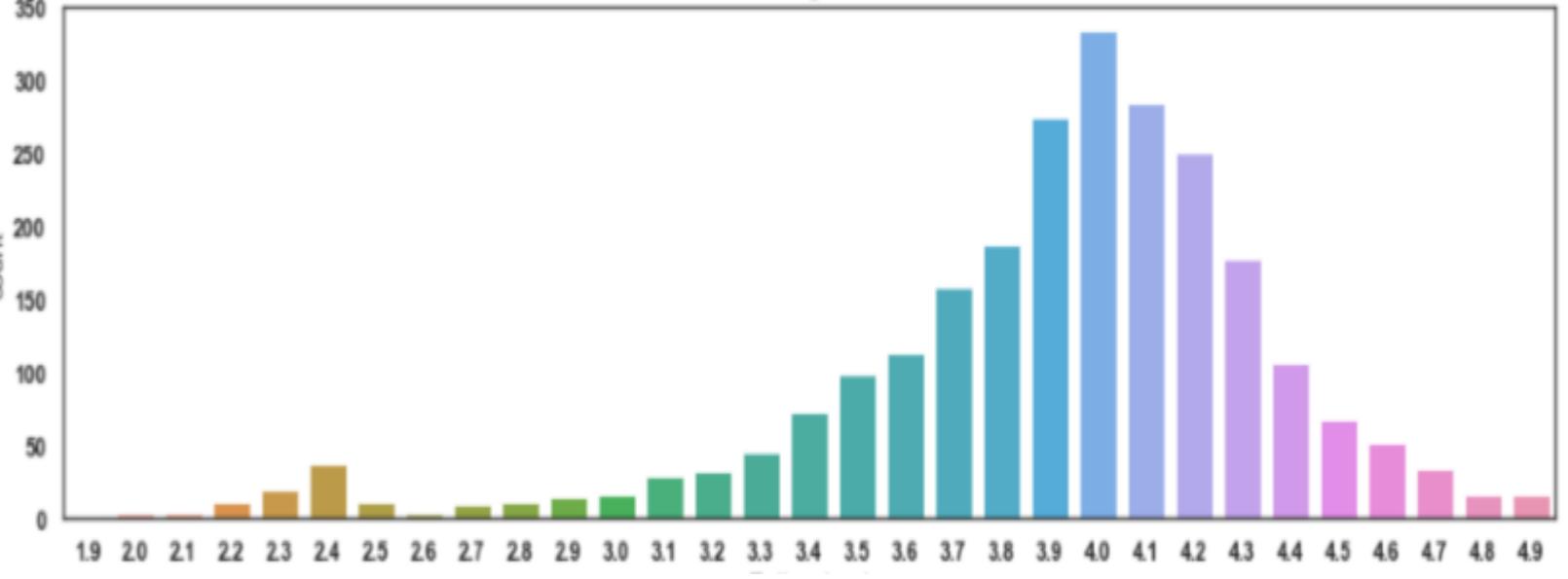


Restaurants in localities of Greater Noida

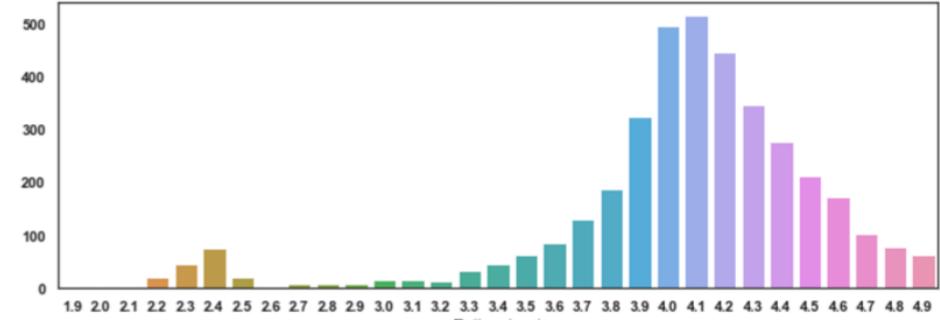




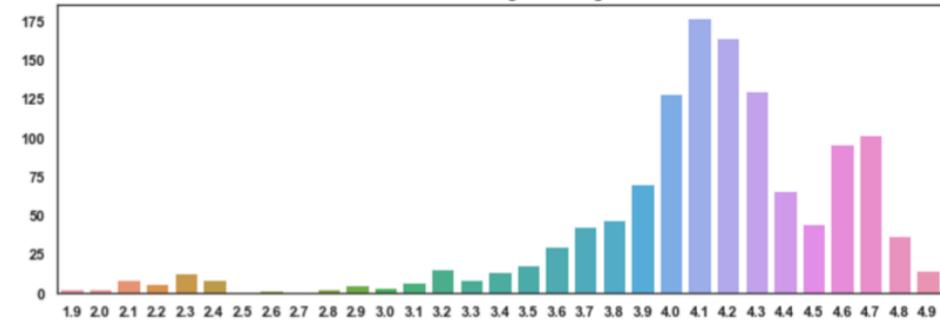
Restaurant Ratings in Delhi NCR



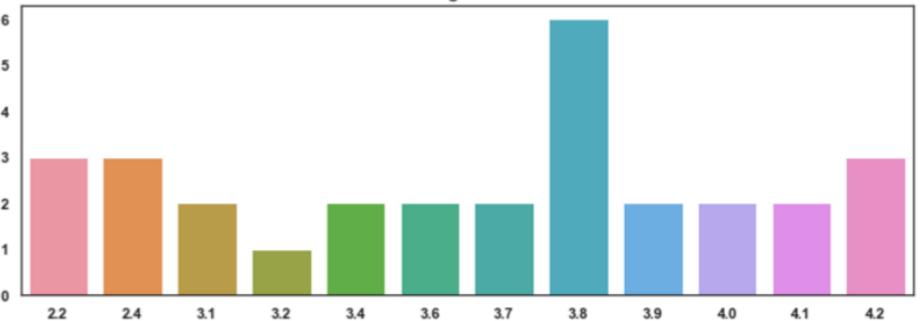
Restaurant Ratings in New Delhi



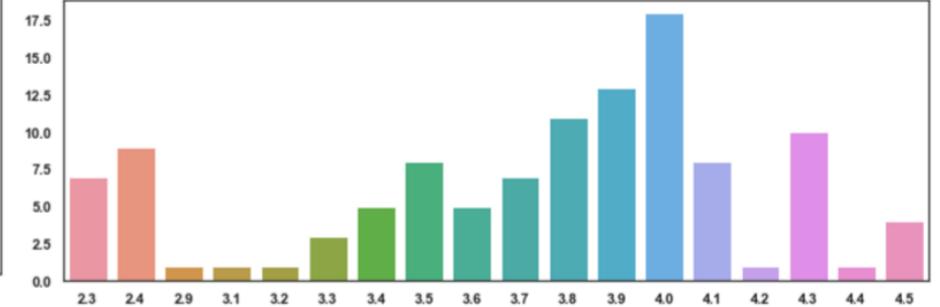
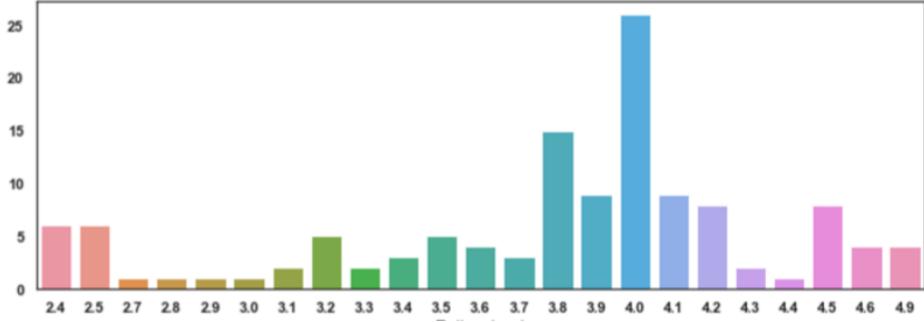
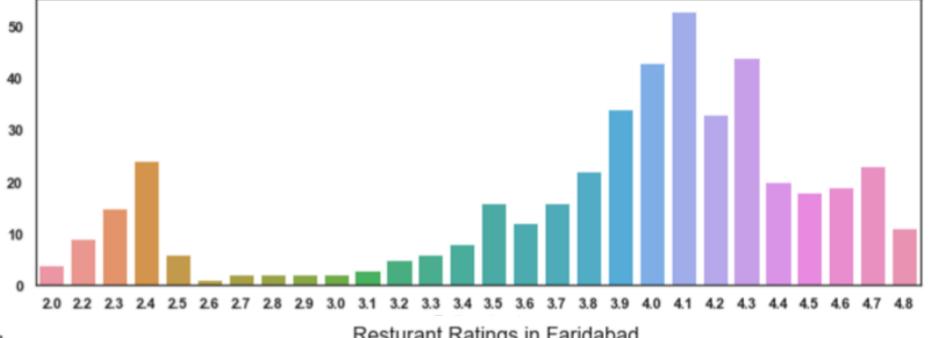
Restaurant Ratings in Gurgaon



Restaurant Ratings in Greater Noida



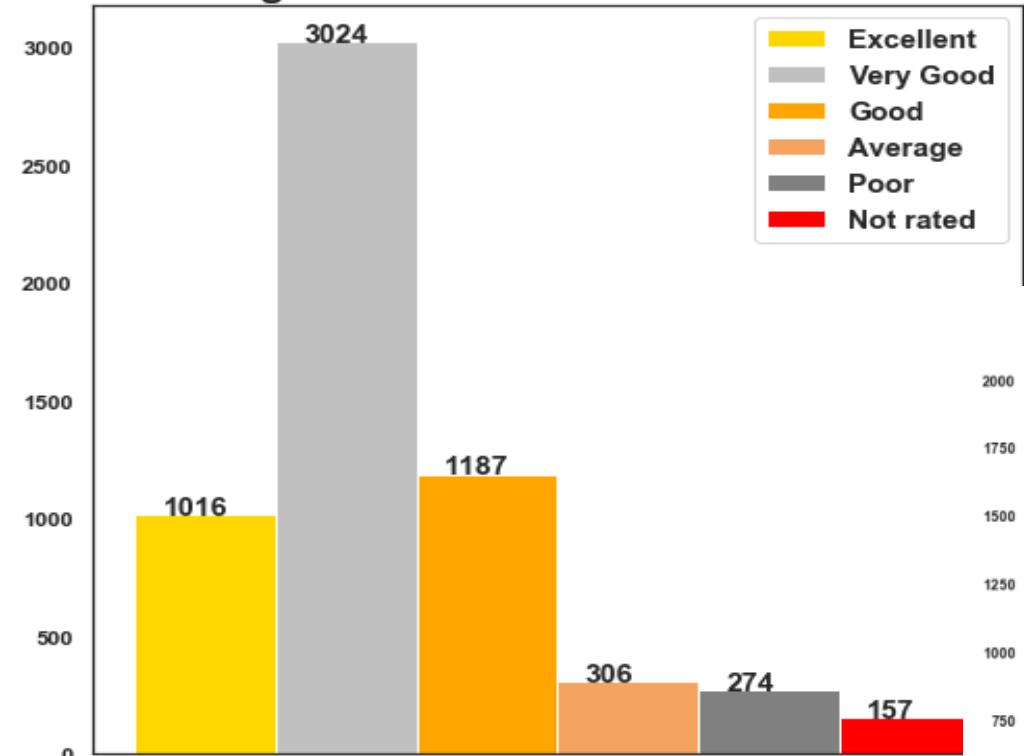
Restaurant Ratings in Noida



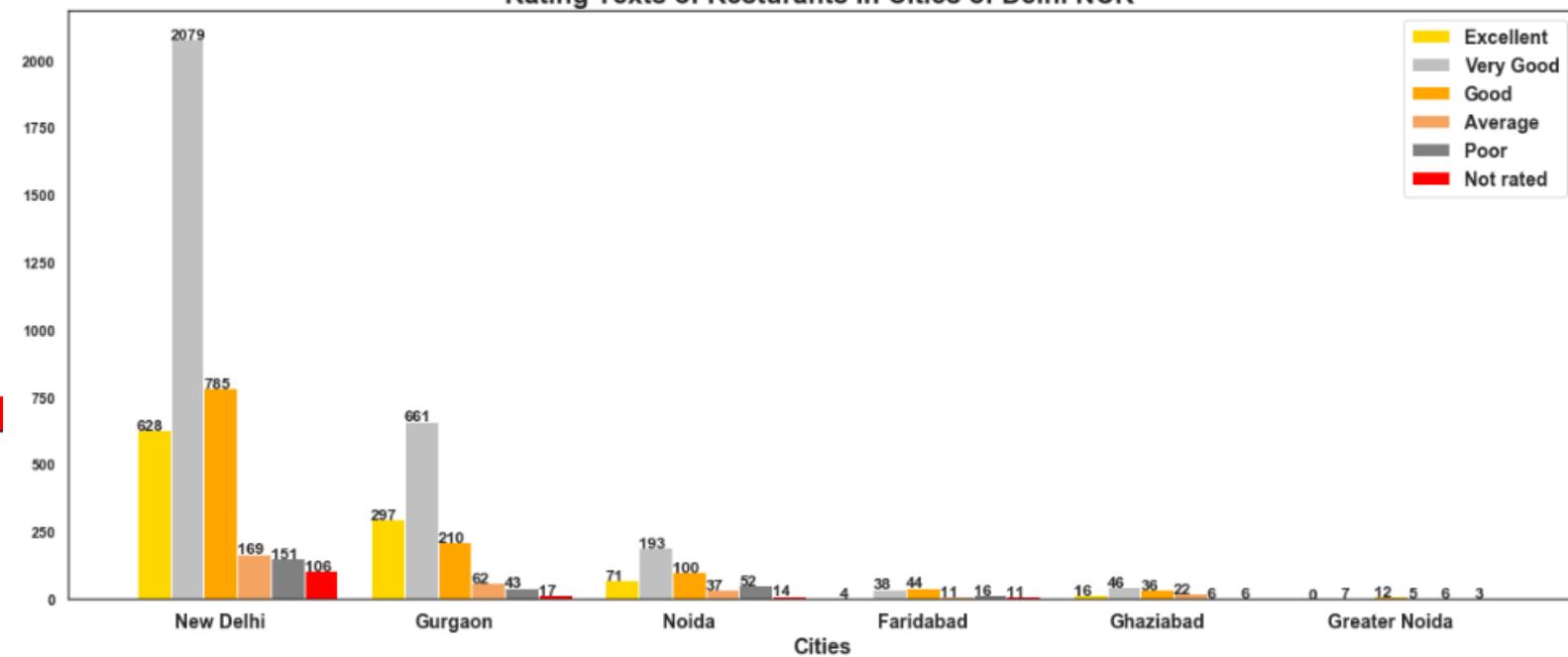
Rating of Restaurants in Delhi NCR

Rating Texts of Restaurants

Rating Texts of Restaurants in Delhi NCR

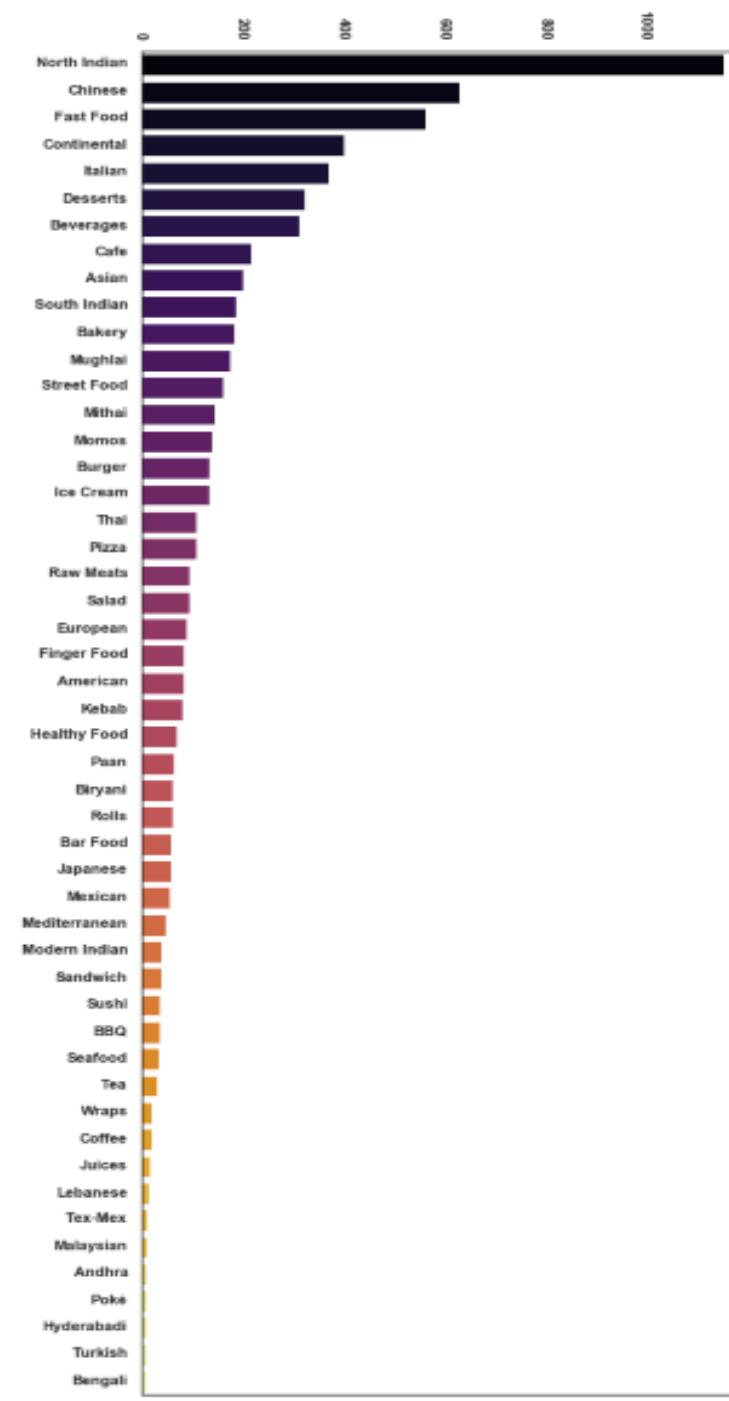


Rating Texts of Restaurants in Cities of Delhi NCR

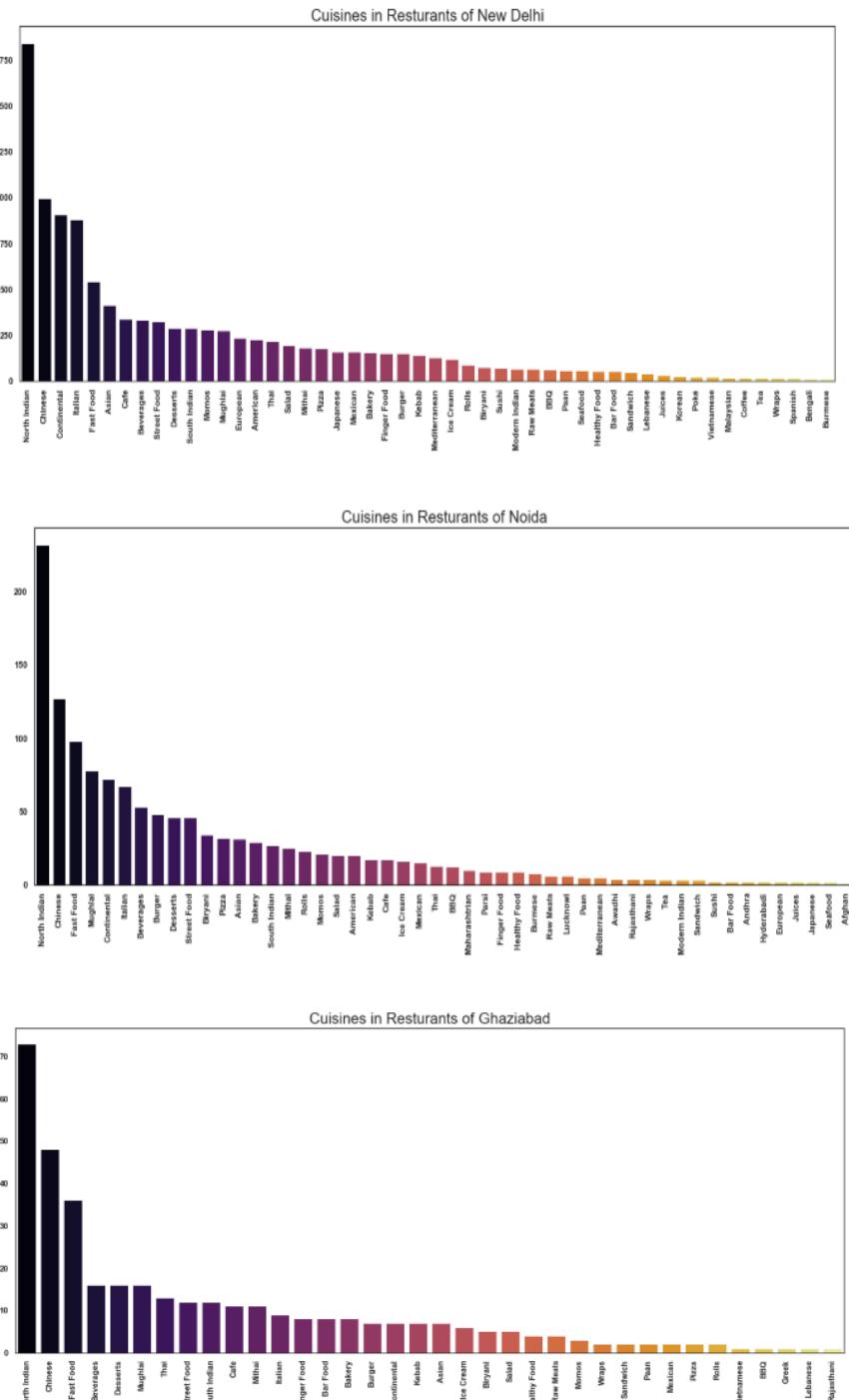


Popular Cuisines of Restaurants in Delhi NCR

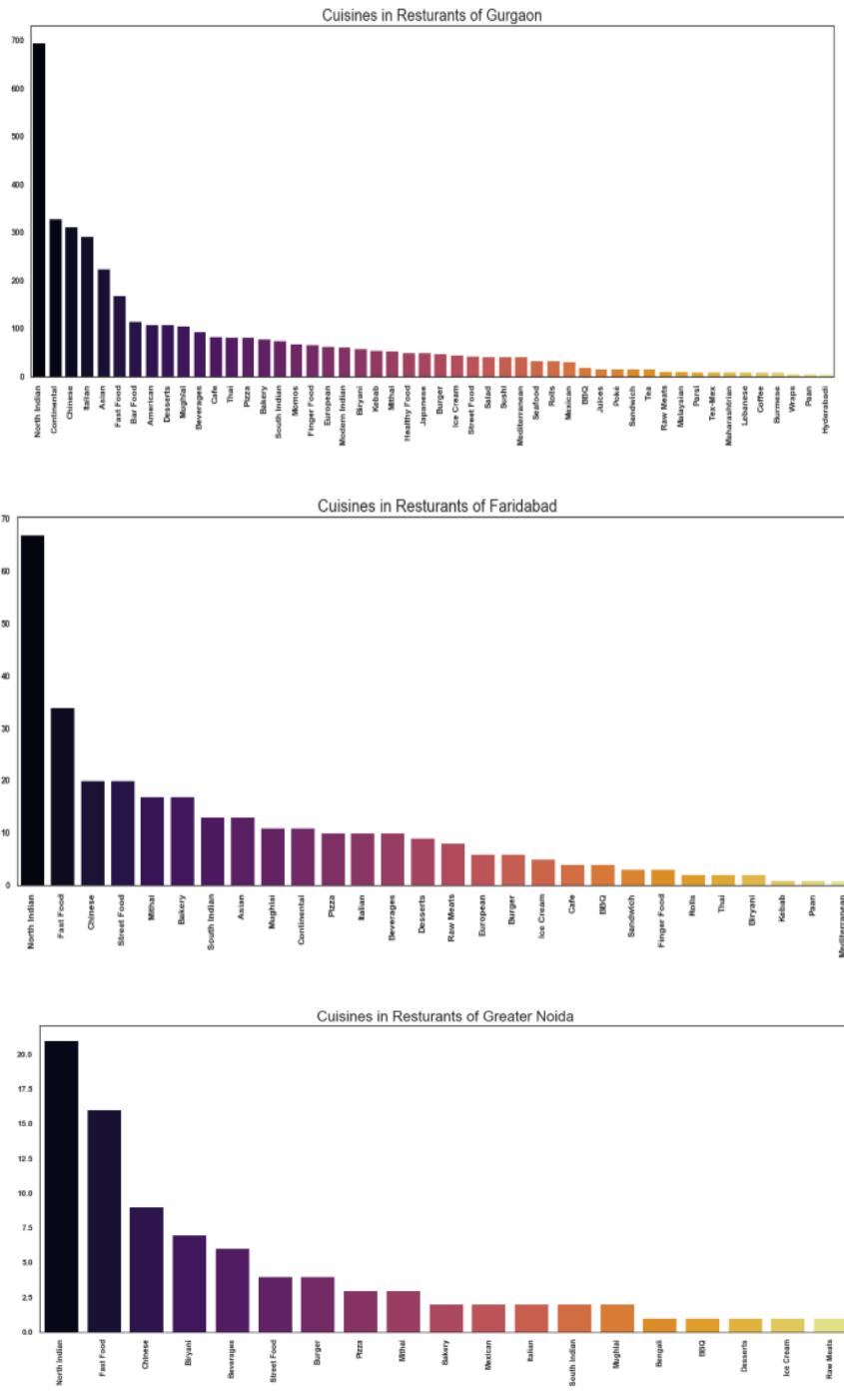
City	Top three Cuisines in Restaurant		
	First	Second	Third
Delhi-NCR	North Indian	Chinese	Fast Food
New Delhi	North Indian	Chinese	Continental
Gurgaon	North Indian	Continental	Chinese
Noida	North Indian	Chinese	Fast Food
Faridabad	North Indian	Fast Food	Chinese
Ghaziabad	North Indian	Chinese	Fast Food
Greater Noida	North Indian	Fast Food	Chinese



Cuisines in Restaurants of Delhi NCR



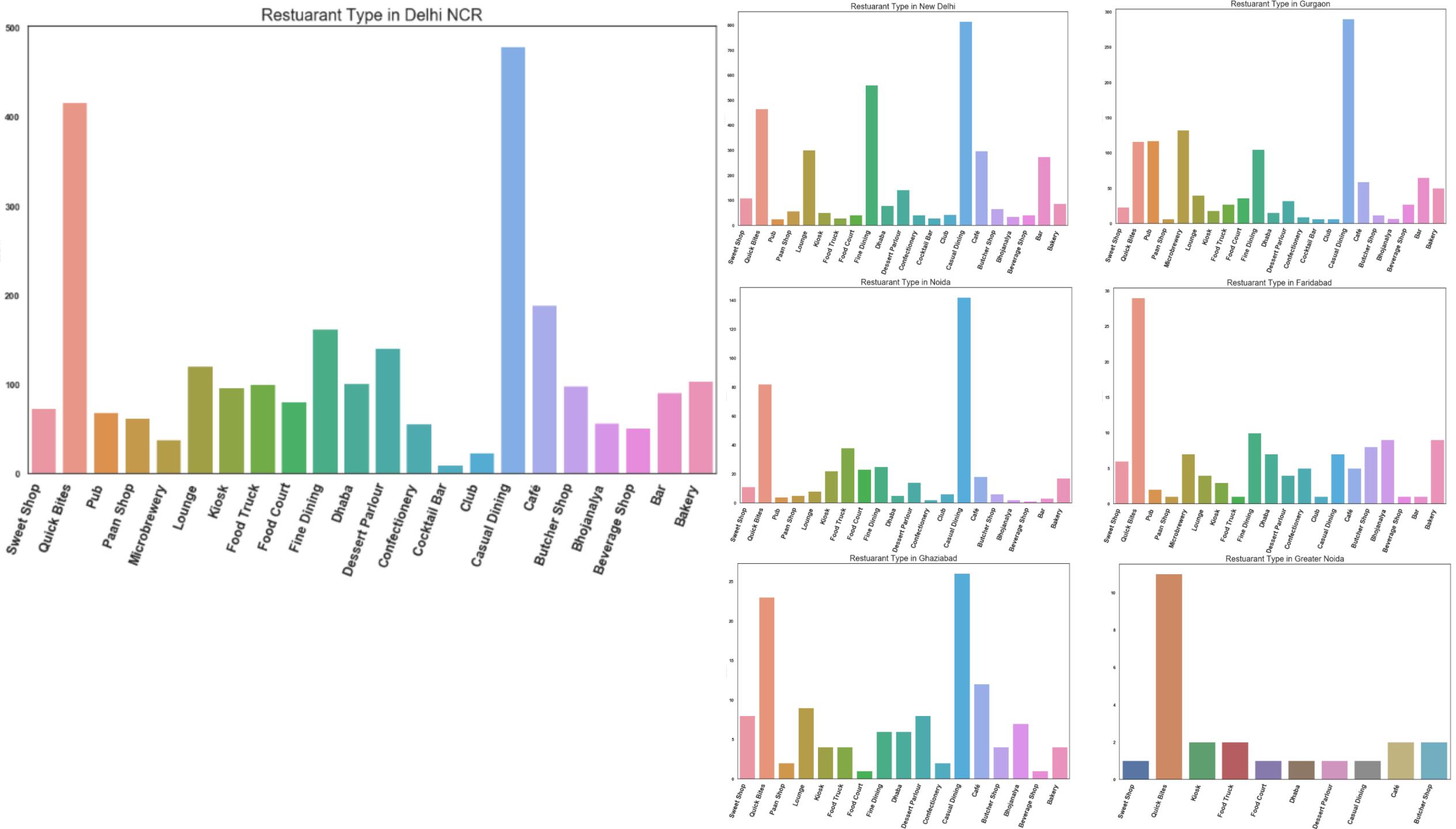
Cuisines in Restaurants of Ghaziabad



Cuisines in Restaurants of Greater Noida

Popular Restaurant Types in Delhi NCR

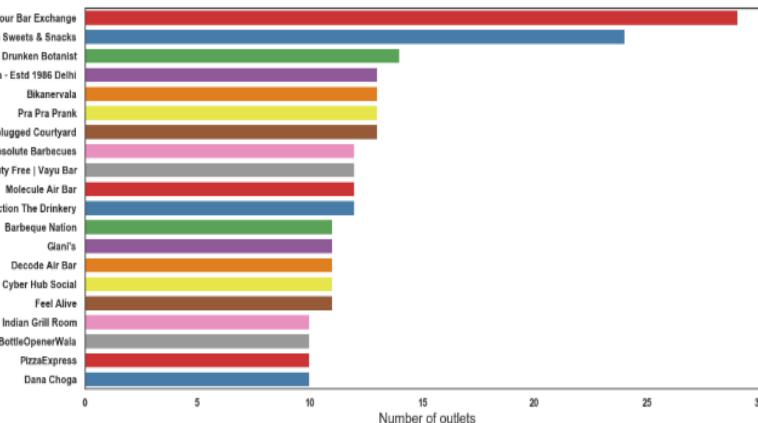
City	Top three Restaurant Types		
	First	Second	Third
Delhi-NCR	Casual Dining	Quick Bites	Cafe
New Delhi	Casual Dining	Fine Dining	Quick Bites
Gurgaon	Casual Dining	Microbrewery	Pub
Noida	Casual Dining	Quick Bites	Food Truck
Faridabad	Quick Bites	Fine Dining	Bhojanalya, Bakery
Ghaziabad	Casual Dining	Quick Bites	Cafe
Greater Noida	Quick Bites	Kiosk, Food Truck, Café, Butcher Shop	Sweet shop, Food court, Dhaba, Desert Parlour, Casual Dining



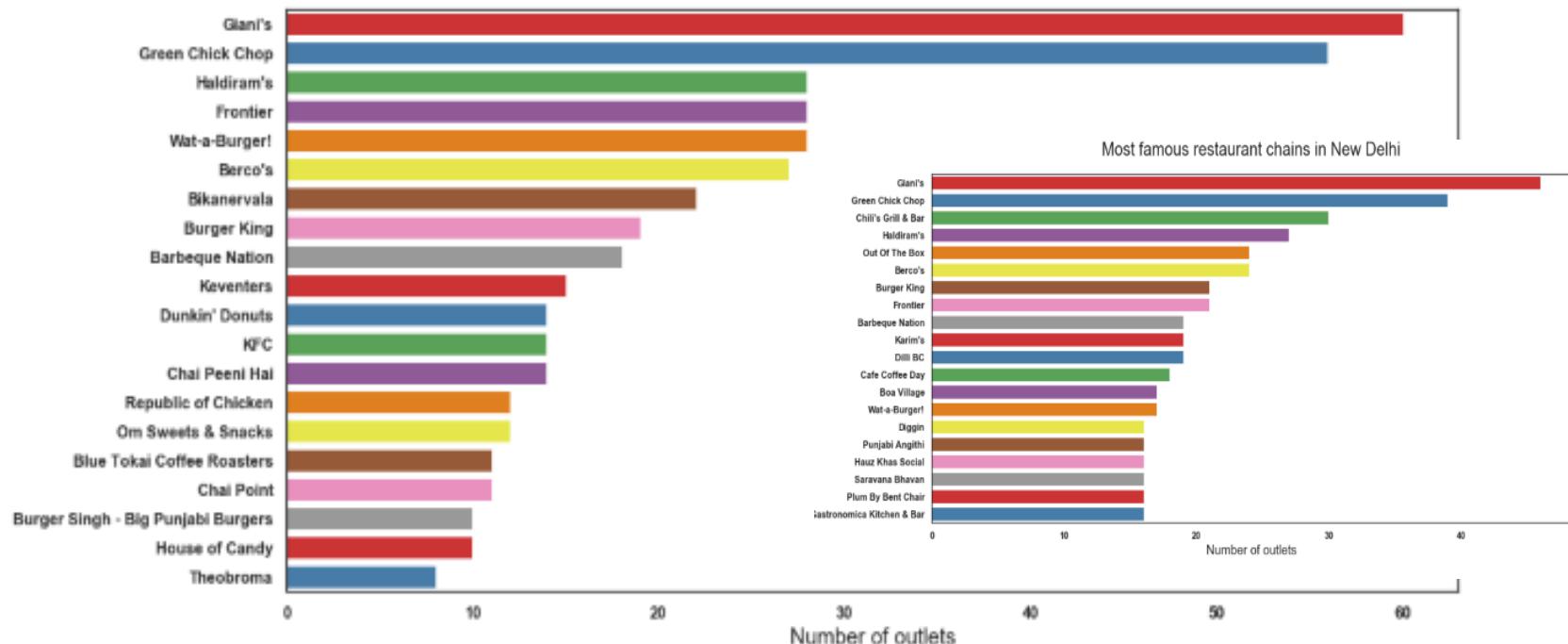
Famous Restaurant chain in Delhi NCR

City	Most famous Restaurant chain		
	First	Second	Third
Delhi-NCR	Giani's	Green Chick Chop	Haldiram's
New Delhi	Giani's	Green Chick Chop	Chilli's Grill & Bar
Gurgaon	Vapour Bar Exchange	Om Sweets & Snacks	The Drunken Botanist
Noida	Chilli's Grill & Bar	I Sacked Newton	SodaBottleOpenerWala
Faridabad	Om Sweets & Snacks	Pizza Live	Paranada Vivanta by Taj
Ghaziabad	The Flying Dutchman	The Mask Café & Lounge	Berco's
Greater Noida	Faasos	Biryani Chaska	Delight Pizza

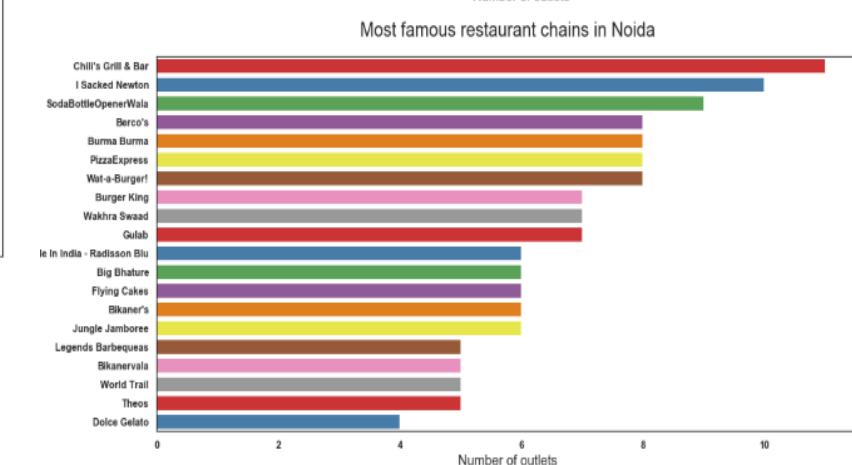
Most famous restaurant chains in Gurgaon



Most famous restaurant chains in Delhi NCR

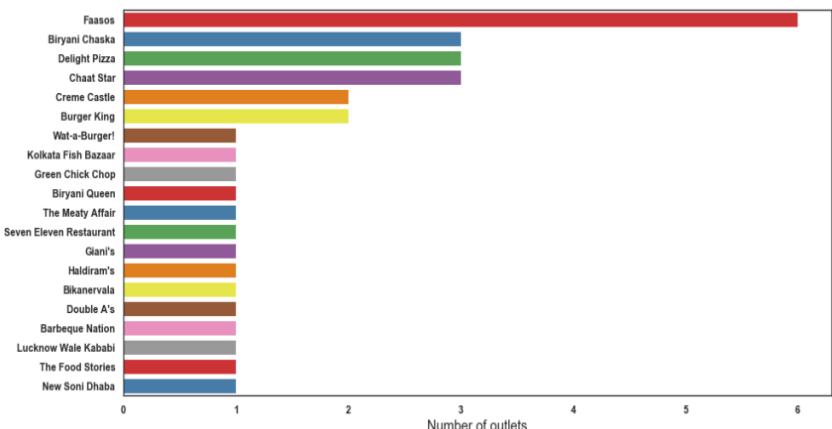


Most famous restaurant chains in New Delhi

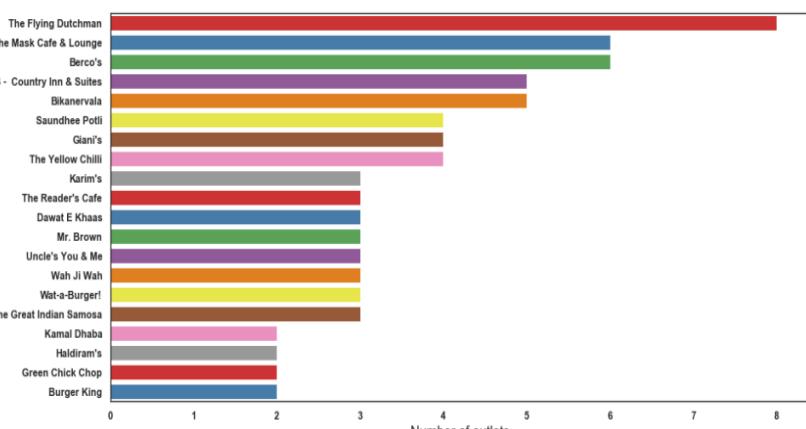


Most famous restaurant chains in Noida

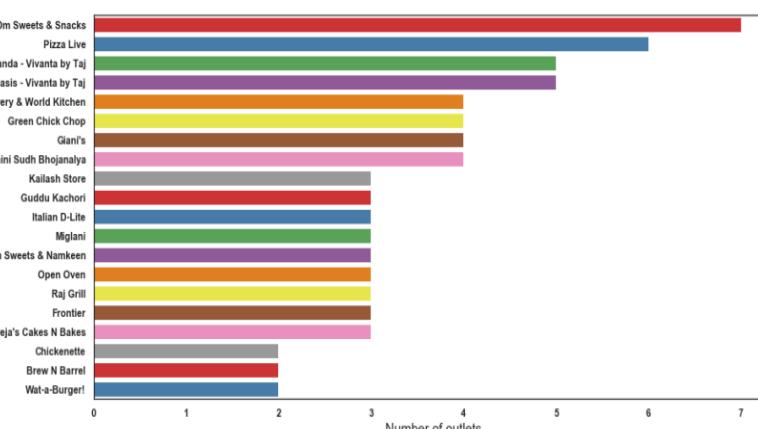
Most famous restaurant chains in Greater Noida



Most famous restaurant chains in Ghaziabad



Most famous restaurant chains in Faridabad



Conclusion and future directions

- Built useful models to predict Average Ratings of Restaurants.
- Accuracy of the models has room for improvement.
- Created various visualizations of various parameters of Restaurants to find best possible criteria of every parameter
- Capture more of Parameters of Restaurants.
- Ideas include:
 - Physical data (connectivity to various metro and bus stations , seating capacity etc.)
 - Financial data (Rent, salary of staff, raw material cost , etc.)
 - Other (Chef special menu, hospitality of staff, etc.)