

The Battle of Neighborhoods: NYC Families

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Finding Best Neighborhoods for Families in NYC

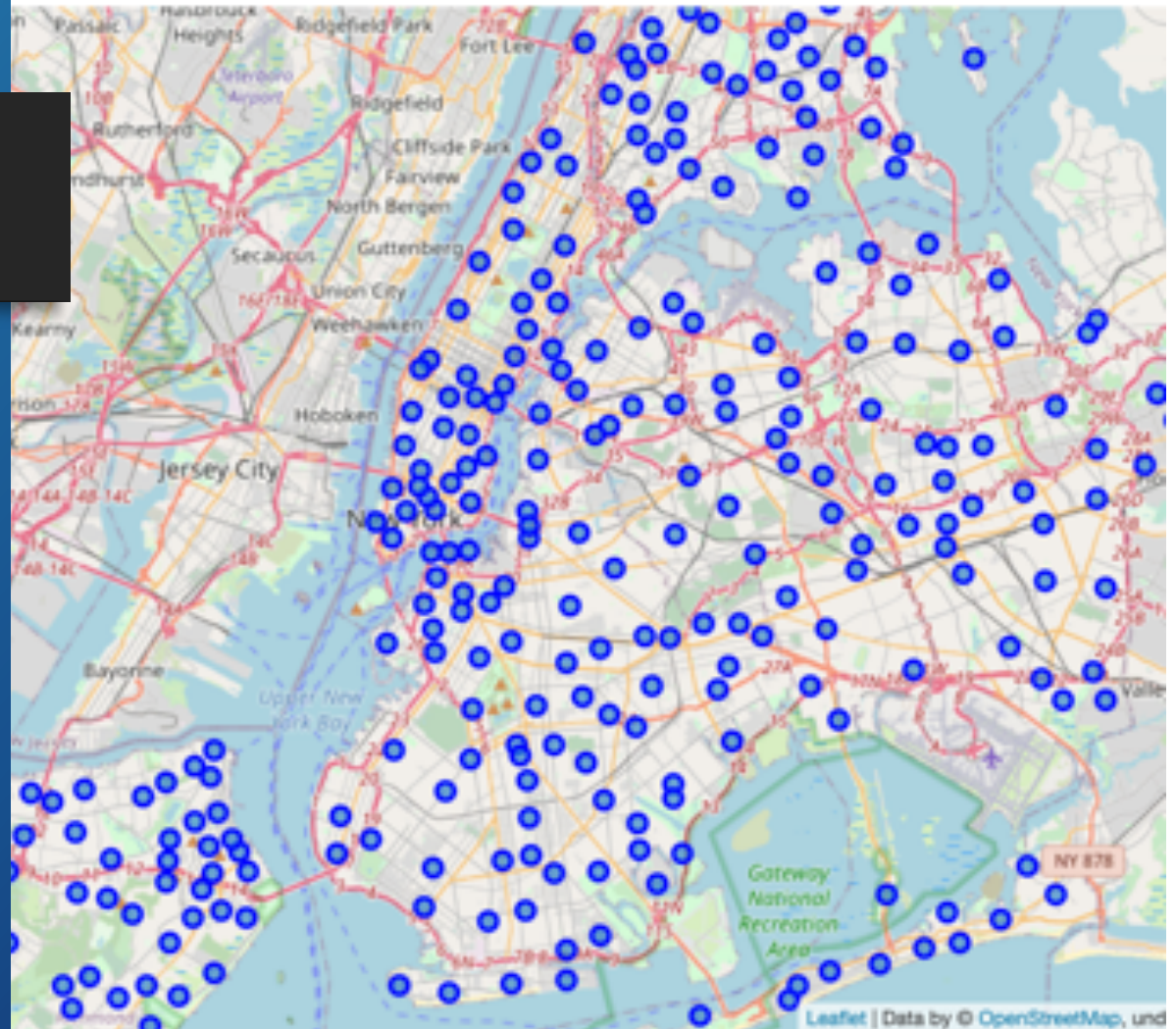
- New York City is a heavily populated city attracting people for business, art, travel, etc.
- Urban environment
 - Only some areas can be suitable for children
- Investigate which neighborhoods have parks, playgrounds, schools, pharmacies, etc.
- Important for families in NYC
 - Also real estate companies trying to help people find and choose homes

Data Acquisition and Usage

- NYC neighborhoods with latitude and longitude:
https://cocl.us/new_york_dataset
 - Used to generate list of NYC neighborhoods
- Foursquare API
 - Explore queries performed to gather nearby venues for each neighborhood

Exploring the NYC Neighborhood Data

Map of the neighborhoods from the dataset in NYC



Focusing on the Venue Categories that Relate to the Problem

- Foursquare API venue data filtered to only include venues related to family living and care

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Wakefield	40.894705	-73.847201	Lollipops Gelato	40.894123	-73.845892	Dessert Shop
1	Wakefield	40.894705	-73.847201	Walgreens	40.896528	-73.844700	Pharmacy
2	Wakefield	40.894705	-73.847201	Carvel Ice Cream	40.890487	-73.848568	Ice Cream Shop
3	Wakefield	40.894705	-73.847201	Rite Aid	40.896649	-73.844846	Pharmacy
4	Wakefield	40.894705	-73.847201	Dunkin'	40.890459	-73.849089	Donut Shop

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Wakefield	40.894705	-73.847201	Walgreens	40.896528	-73.844700	Pharmacy
1	Wakefield	40.894705	-73.847201	Rite Aid	40.896649	-73.844846	Pharmacy
2	Co-op City	40.874294	-73.829939	Rite Aid	40.870345	-73.828302	Pharmacy
3	Co-op City	40.874294	-73.829939	The Park	40.877645	-73.830836	Park
4	Riverdale	40.890834	-73.912585	Bell Tower Park	40.889178	-73.908331	Park



Clustering Based on the Frequency of Each Venue Category in Each Neighborhood

- K-means clustering used to group neighborhoods based on present venue types
- Neighborhoods in each clusters assessed to label clusters

Cluster Labels	Neighborhood	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	Borough	Latitude	Longitude	
0	4	Allerton	Playground	Pharmacy	School	Recreation Center	Park	Kids Store	Daycare	Baby Store	Bronx	40.865788	-73.859319
1	4	Annadale	Pharmacy	Park	School	Recreation Center	Playground	Kids Store	Daycare	Baby Store	Staten Island	40.538114	-74.178549
2	0	Arden Heights	Pharmacy	School	Recreation Center	Playground	Park	Kids Store	Daycare	Baby Store	Staten Island	40.549286	-74.185887
3	0	Arrochar	Pharmacy	School	Recreation Center	Playground	Park	Kids Store	Daycare	Baby Store	Staten Island	40.596313	-74.067124
4	2	Arverne	Playground	School	Recreation Center	Pharmacy	Park	Kids Store	Daycare	Baby Store	Queens	40.589144	-73.791992

Determined Cluster Labels:

CLUSTER 0: Pharmacy
 CLUSTER 1: Park
 CLUSTER 2: Playground
 CLUSTER 3: Park & Playground
 CLUSTER 4: Pharmacy & Playground/Park

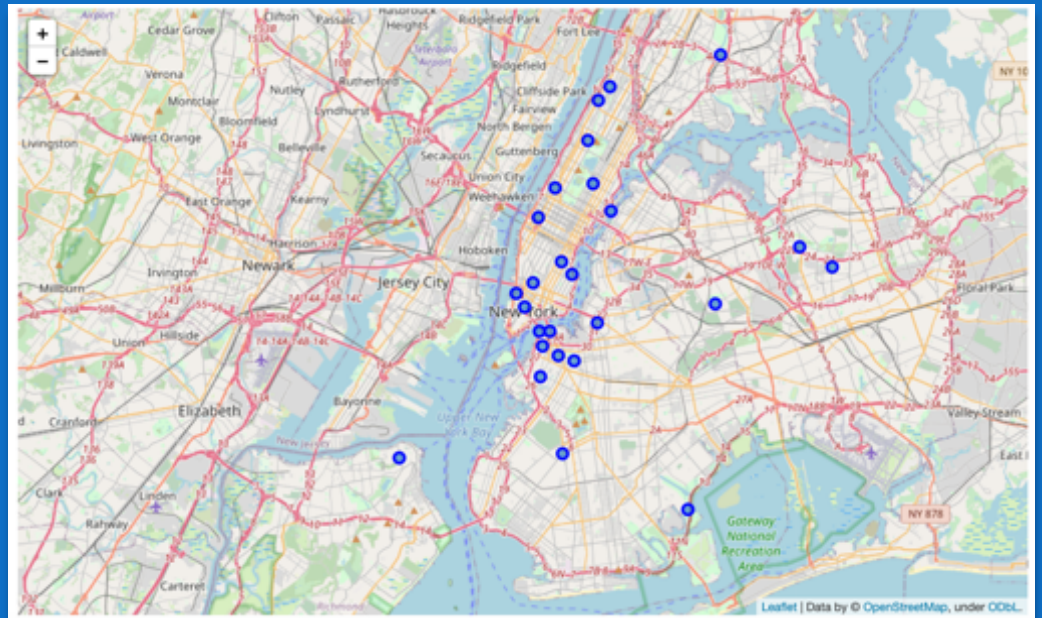
Determining the Cluster Containing the Best Neighborhoods from the Results

- Neighborhoods in Cluster 3 were determined to be the best for families in NYC
- Included parks and playgrounds as well as either schools or pharmacies as the most frequent venues

Cluster Labels		Neighborhood	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	Borough	Latitude	Longitude
19	3	Bergen Beach	Playground	Park	School	Recreation Center	Pharmacy	Kids Store	Daycare	Baby Store	Brooklyn	40.615150	-73.898556
25	3	Brooklyn Heights	Park	Pharmacy	Playground	School	Recreation Center	Kids Store	Daycare	Baby Store	Brooklyn	40.695864	-73.993782
31	3	Carroll Gardens	Playground	Park	School	Recreation Center	Pharmacy	Kids Store	Daycare	Baby Store	Brooklyn	40.680540	-73.994654
39	3	Civic Center	Park	Playground	Baby Store	School	Recreation Center	Pharmacy	Kids Store	Daycare	Manhattan	40.715229	-74.005415
43	3	Clinton	Playground	Park	School	Recreation Center	Pharmacy	Kids Store	Daycare	Baby Store	Manhattan	40.759101	-73.996119

*Not all are listed

Map of the Best Neighborhoods for Families in NYC



Discussion of the Project

- Observations
 - Some neighborhoods dropped if they did not feature any of the prioritized venue types
 - Most neighborhoods had multiple venue categories with no occurrences
- Recommendations and Future Analysis
 - Perform another analysis with a larger search radius to capture more (but still nearby) venues
 - Include more kinds of data (like crime data) to investigate more neighborhood criteria

Conclusion

- Study investigated finding the best neighborhoods for families in NYC
- Used Foursquare API to explore nearby venue types in each neighborhood
- Neighborhoods were clustered based on the frequency of family-oriented venues
- Important for families living in the city and real estate companies helping to find places for families to live