



# **The Battle of Neighborhoods: Capstone Project**

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# Introduction/ Business Problem

- **Locations:** Houston, TX and New York, NY.
- **Reasons:** [U.S. City Rankings](#).
- **Aim:** Review top businesses in these locations and recommend business types to potential investors.



# Data

- **API:** Foursquare to source JSON location data.
- **Location Points:** Geopy Python Library was used to generate the respective latitude and longitude.
- **Data Format:** The data was converted to a structured data in form of a Pandas data frame, which is what we'll be working with.





# Methodology

## Python Libraries Used:

- Numpy
- Pandas
- Requests
- Json
- Geopy
- Matplotlib
- Sklearn
- Folium

## Steps Implemented:

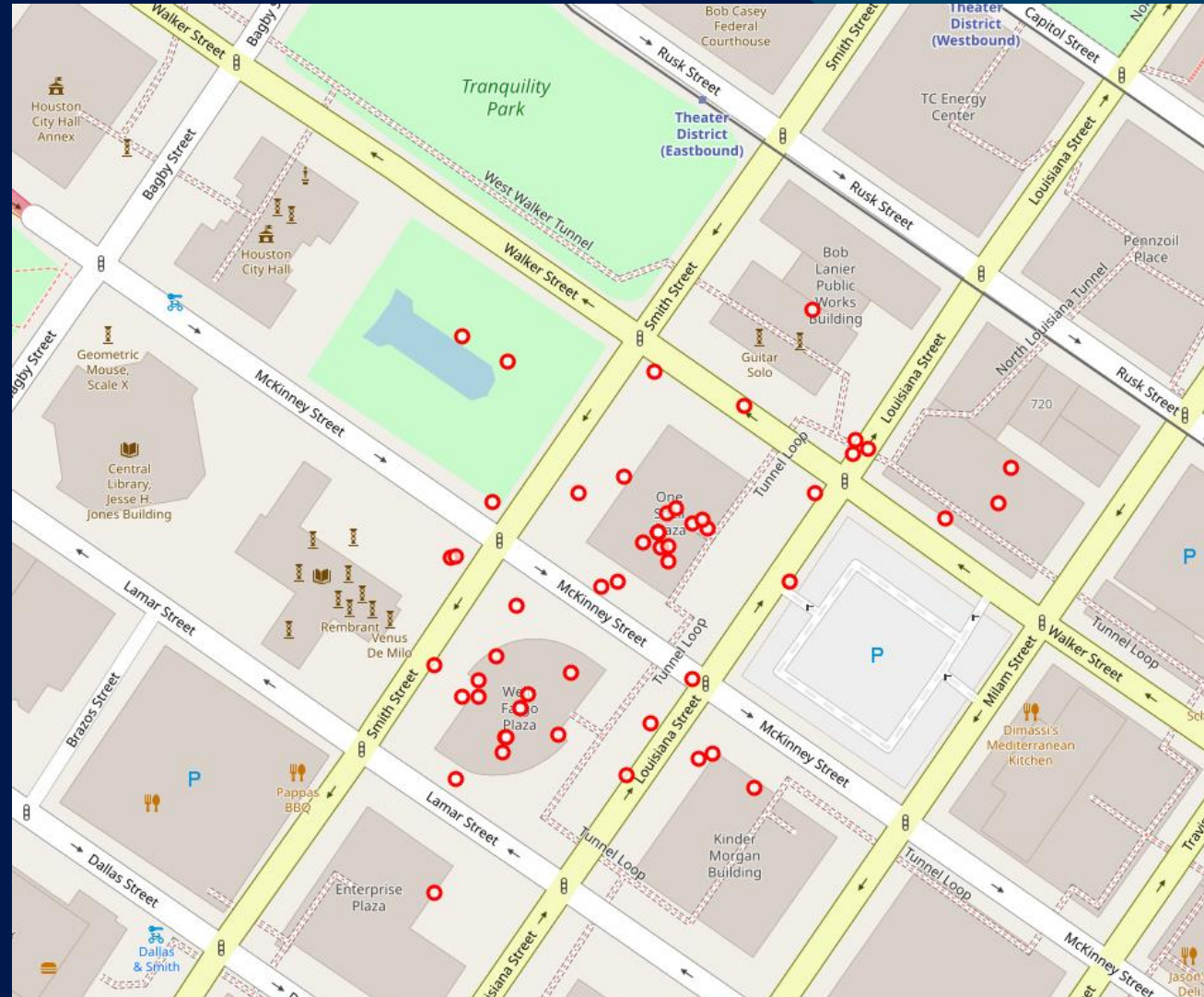
- API requirement specifications such as Client ID, Secret Key, etc.
- Location point generation.
- Data request from Foursquare.
- Data wrangling and formatting.
- Initial Data Mapping
- Clustering and Final Mapping.



# Results

|   | businessType     | Count |
|---|------------------|-------|
| 0 | Offices          | 12    |
| 1 | Bus Lines        | 6     |
| 2 | Buildings        | 5     |
| 3 | Banks            | 2     |
| 4 | Bus Stations     | 2     |
| 5 | Coffee Shops     | 2     |
| 6 | Parks            | 2     |
| 7 | Conference Rooms | 2     |
| 8 | Gyms             | 2     |
| 9 | Food Trucks      | 2     |

Top 10 Businesses in Houston, TX



Initial Mapping of Business Locations in Houston, TX

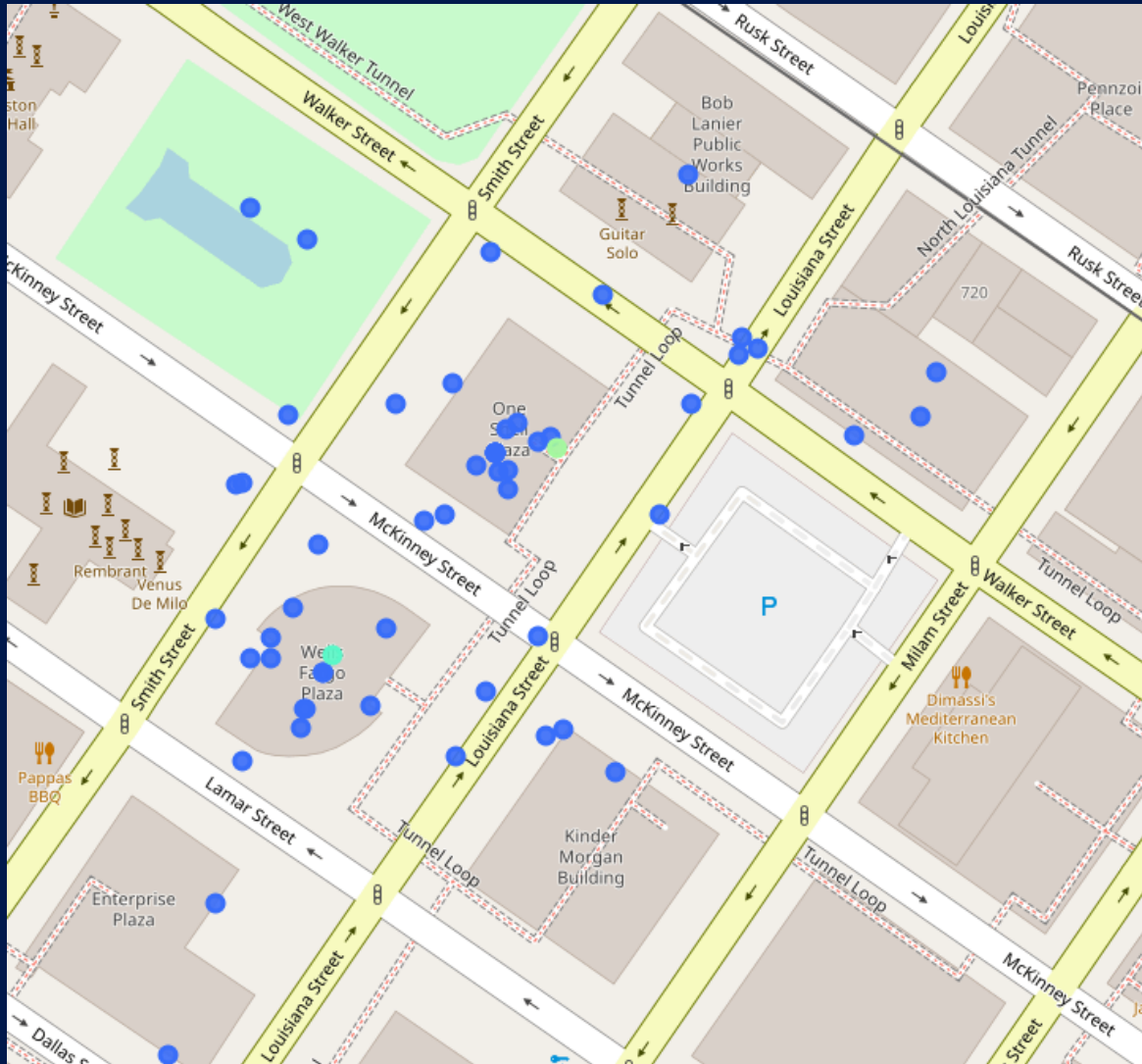
# Results



|    | id                       | name                                 | address                   | city    | state | country | latitude  | longitude  | postalCode | type                  | plural                 | Cluster Labels |
|----|--------------------------|--------------------------------------|---------------------------|---------|-------|---------|-----------|------------|------------|-----------------------|------------------------|----------------|
| 0  | 4cbf112b00d837047b8a415c | Baker Botts LLP                      | 910 Louisiana St          | Houston | TX    | US      | 29.759671 | -95.367728 | 77002      | Conference Room       | Conference Rooms       | 2              |
| 1  | 5b3b978a56ca62001c94580e | Nrg Energy, Inc.                     | 910 Louisiana St          | Houston | TX    | US      | 29.759544 | -95.367348 | 77002      | Office                | Offices                | 2              |
| 2  | 4b993b14f964a520d76b35e3 | One Shell Plaza                      | 910 Louisiana St          | Houston | TX    | US      | 29.759283 | -95.367858 | 77002      | Office                | Offices                | 2              |
| 3  | 527096a111d2393d1fc331aa | The Houston Club                     | 920 Louisiana St          | Houston | TX    | US      | 29.759112 | -95.367565 | 77002      | Restaurant            | Restaurants            | 2              |
| 4  | 4b73281af964a520d09e2de3 | The Houston Club                     | 910 Louisiana St Ste 4900 | Houston | TX    | US      | 29.759041 | -95.367777 | 77002      | Office                | Offices                | 2              |
| 5  | 4e3def4f62e19d6109763188 | Hermann Square                       | 900 Smith St              | Houston | TX    | US      | 29.759800 | -95.368543 | 77002      | Park                  | Parks                  | 2              |
| 6  | 4baa6bd3f964a52089683ae3 | Wells Fargo Plaza                    | 1000 Louisiana St         | Houston | TX    | US      | 29.758619 | -95.368399 | 77002      | Office                | Offices                | 2              |
| 7  | 4ae4e065f964a5200d9f21e3 | Hobby Center for the Performing Arts | 800 Bagby St              | Houston | TX    | US      | 29.761526 | -95.369376 | 77002      | Performing Arts Venue | Performing Arts Venues | 2              |
| 8  | 58f648e7588e3646b4ca9a0c | Tacos A Go Go                        | 910 Louisiana St          | Houston | TX    | US      | 29.759125 | -95.367525 | 77002      | Taco Place            | Taco Places            | 2              |
| 9  | 4ba8be39f964a5207ceb39e3 | Murphy's Deli                        | 910 Louisiana St          | Houston | TX    | US      | 29.759079 | -95.367714 | 77002      | Deli / Bodega         | Delis / Bodegas        | 2              |
| 10 | 527aca1c11d26f356c4b3840 | One Shell Wellness Center            | 910 Louisiana St          | Houston | TX    | US      | 29.759079 | -95.367714 | 77002      | Gym                   | Gyms                   | 2              |
| 11 | 4ec086b3c2ee23891e64d0f9 | Goldman Sachs                        | 1000 Louisiana St Ste 550 | Houston | TX    | US      | 29.758429 | -95.368294 | 77002      | Bank                  | Banks                  | 2              |
| 12 | 5e28dbbfd7f28c0008e17db6 | Adair Downtown                       | 1000 Louisiana St         | Houston | TX    | US      | 29.758268 | -95.368372 | 77002      | Café                  | Cafés                  | 2              |
| 13 | 548f6037498e6422689c3775 | PwC, LLP                             | 1000 Louisiana St         | Houston | TX    | US      | 29.758559 | -95.368084 | 77002      | Office                | Offices                | 2              |
| 14 | 583491fb409f5673e5c8440f | 5411 Empanadas                       | 811 Louisiana St          | Houston | TX    | US      | 29.758986 | -95.368590 | 77002      | Building              | Buildings              | 2              |
| 15 | 4bd894b751170f4790bb33e4 | Paradise Gifts                       | 777 Walker St             | Houston | TX    | US      | 29.759079 | -95.367714 | 77002      | Thai Restaurant       | Thai Restaurants       | 2              |
| 16 | 4b7b0054f964a5204f4b2fe3 | Thai Spice Cafe                      | 777 Walker St M 130       | Houston | TX    | US      | 29.757305 | -95.368824 | 77002      | Office                | Offices                | 2              |

Final Houston, TX dataframe with Cluster Labels based on Postal Code

# Results



Final Clustered Mapping of Business Locations in New York, NY



# Results

|   | businessType        | Count |
|---|---------------------|-------|
| 0 | Offices             | 4     |
| 1 | Plazas              | 3     |
| 2 | Mexican Restaurants | 2     |
| 3 | Bus Stops           | 2     |
| 4 | Bus Stations        | 2     |
| 5 | City Halls          | 2     |
| 6 | Parks               | 2     |
| 7 | Lawyers             | 2     |
| 8 | Perfume Shops       | 1     |
| 9 | Buildings           | 1     |

Top 10 Businesses in New York, NY



Initial Mapping of Business Locations in New York, NY



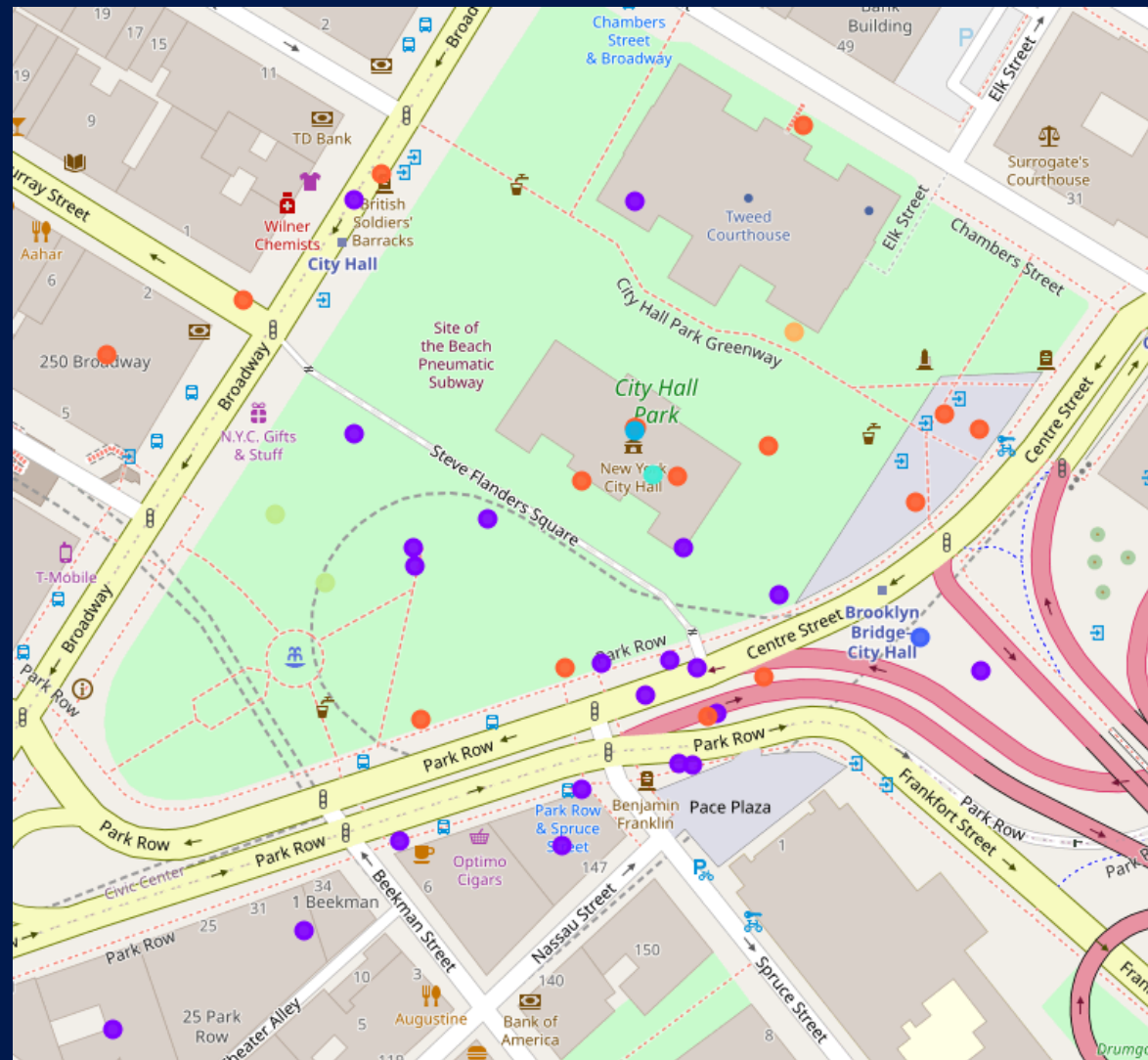
# Results



|    | id                       | name                                    | address                          | city     | state | country | latitude  | longitude  | postalCode | type                                     | plural                                      | Cluster Labels |
|----|--------------------------|---|----------------------------------|----------|-------|---------|-----------|------------|------------|--|---|----------------|
| 0  | 4a676321f964a52051c91fe3 | New York City Hall                      | 260 E Broadway                   | New York | NY    | US      | 40.712659 | -74.005880 | 10002      | City Hall                                | City Halls                                  | 4              |
| 1  | 3fd66200f964a520d8f11ee3 | City Hall Park                          | 17 Park Row                      | New York | NY    | US      | 40.712415 | -74.006724 | 10038      | Park                                     | Parks                                       | 1              |
| 2  | 4b57b0dff964a520293c28e3 | MTA Subway - City Hall (R/W)            | Warren St.                       | New York | NY    | US      | 40.713394 | -74.006934 | 10038      | Metro Station                            | Metro Stations                              | 1              |
| 3  | 4cd03c8ba03a9eb0cc58b103 | Pace NYC Center for Academic Excellence | 1 Pace Plz                       | New York | NY    | US      | 40.711887 | -74.005789 | 10038      | Park                                     | Parks                                       | 1              |
| 4  | 4cd03c85a03a9eb0c158b103 | Barns & Noble at Pace University        | 41 Park Row                      | New York | NY    | US      | 40.713389 | -74.005944 | 10038      | Dessert Shop                             | Dessert Shops                               | 1              |
| 5  | 5476b736498ec574d6261fb1 | Music NY                                | 40 Ann St Fl 1                   | New York | NY    | US      | 40.710328 | -74.007388 | 10038      | Plaza                                    | Plazas                                      | 1              |
| 6  | 4e727ee5e4cda03368ae650d | The Magic Costume Shop                  | 41 Park Row                      | New York | NY    | US      | 40.712463 | -74.006728 | 10038      | Arts & Crafts Store                      | Arts & Crafts Stores                        | 1              |
| 7  | 4bde139e6c1b9521fc4ead0f | Printing House Square                   | Avenue of the Finest at Park Row | New York | NY    | US      | 40.712134 | -74.004722 | 10038      | Bus Station                              | Bus Stations                                | 1              |
| 8  | 4c9bdf87c096dcb6190bcd1  | MTA - M22 Park Row & Spruce Street      | Park Row                         | New York | NY    | US      | 40.712068 | -74.005909 | 10038      | Beer Store                               | Beer Stores                                 | 1              |
| 9  | 4cd03c87a03a9eb0c658b103 | Pace NYC Dyson                          | 41 Park Row                      | New York | NY    | US      | 40.712767 | -74.006937 | 10038      | Residential Building (Apartment / Condo) | Residential Buildings (Apartments / Condos) | 1              |
| 10 | 4e8cc9579adf8e728c47c270 | M103 bus stop                           | 33 Park Row                      | New York | NY    | US      | 40.711437 | -74.007113 | 10038      | Monument / Landmark                      | Monuments / Landmarks                       | 1              |
| 11 | 5b333fe00d2be70039fd6232 | Friedman, James & Buchsbaum LLP         | 132 Nassau St                    | New York | NY    | US      | 40.710869 | -74.006442 | 10038      | Food Truck                               | Food Trucks                                 | 1              |
| 12 | 4cd03c85a03a9eb0c058b103 | Pace NYC Schaeberle Theatre             | 41 Park Row                      | New York | NY    | US      | 40.712463 | -74.005772 | 10038      | Bookstore                                | Bookstores                                  | 1              |
| 13 | 4c96791758d4b60c10643b29 | The Pace Press                          | 41 Park Row Ste 902              | New York | NY    | US      | 40.712540 | -74.006466 | 10038      | Bus Line                                 | Bus Lines                                   | 1              |
| 14 | 5ae8ee326f0aa2002c530890 | Pace Study                              | 41 Park Row                      | New York | NY    | US      | 40.711816 | -74.006133 | 10038      | Bus Stop                                 | Bus Stops                                   | 1              |
| 15 | 4d7a47a07451236ae7c5defe | IDM Lab                                 | 1 Pace Plz                       | New York | NY    | US      | 40.712338 | -74.005433 | 10038      | Government Building                      | Government Buildings                        | 1              |
| 16 | 4cd03c83a03a9eb0be58b103 | Pace NYC Career Services                | 41 Park Row                      | New York | NY    | US      | 40.711665 | -74.006200 | 10038      | Hardware Store                           | Hardware Stores                             | 1              |

Final New York, NY dataframe with Cluster Labels based on Postal Code

# Results



Final Clustered Mapping of Business Locations in New York, NY



# Discussion/Conclusion

Steps mentioned in the methodology were all implemented and the Business Suggestions are;

- Office buildings or Office-related buildings.
- Restaurants.





# Thank You.



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