Outreach about Community Composting at Select MTA Stations

Exploratory Data Analysis Project

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Introduction

- **Motivations**
    - Concern about climate change
    - Personal practice of composting at a community drop-off site in LA
- **Goal** – Increase awareness of and knowledge about community composting in NYC
- **Objective -** Identify a station in each borough at which to conduct outreach about community composting

Methodology

- **Data**
  - MTA turnstiles data from late April – July 2021
    - Metrics: station names, entries and exits
  - MTA station location data
    - Metrics: station names, latitudes and longitudes
  - Food scrap drop-off site location data
    - Metrics: food scrap drop-off site names, latitudes and longitudes
- **Tools**
  - Numpy, Pandas and SQLAlchemy for data manipulation
  - Matplotlib and Seaborn for plotting
  - Geopandas, Math and Shapely for distance calculations and geospatial analyses

Methodology (cont.)

Two criteria for selecting MTA Stations:

1. Moderate station traffic flow

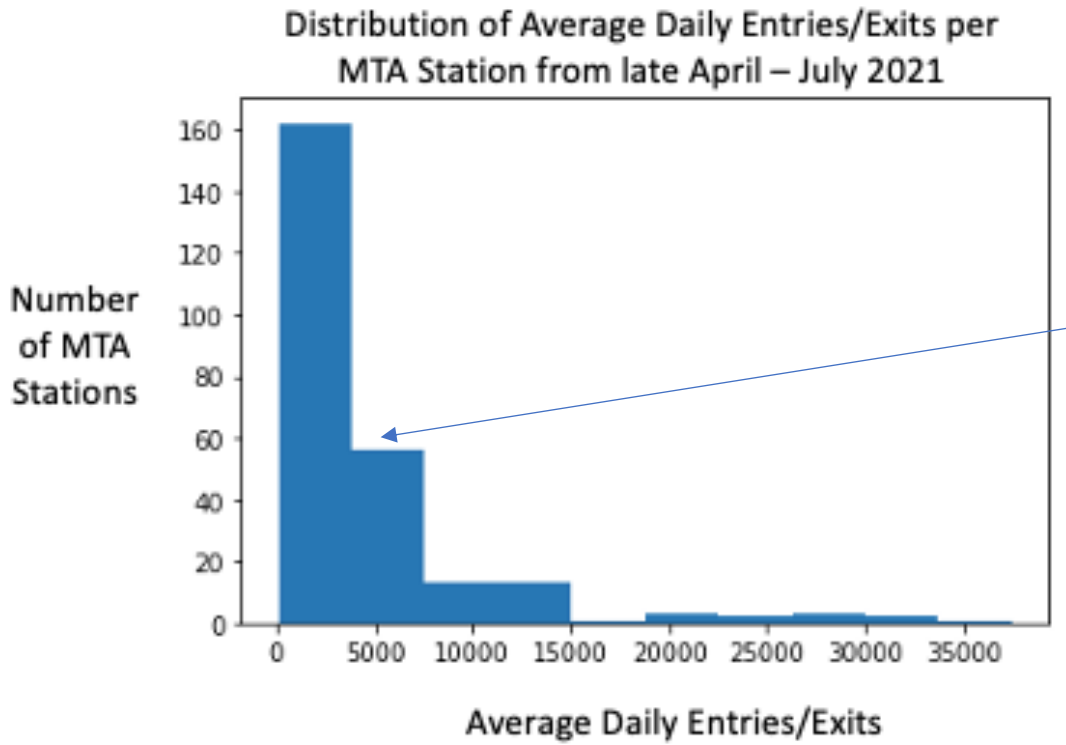
    - Too few entries/exits = not enough people to reach
    - Too many entries/exits = crowded station, travelers ignore what's going on around them

1. Close proximity to food scrap drop-off sites

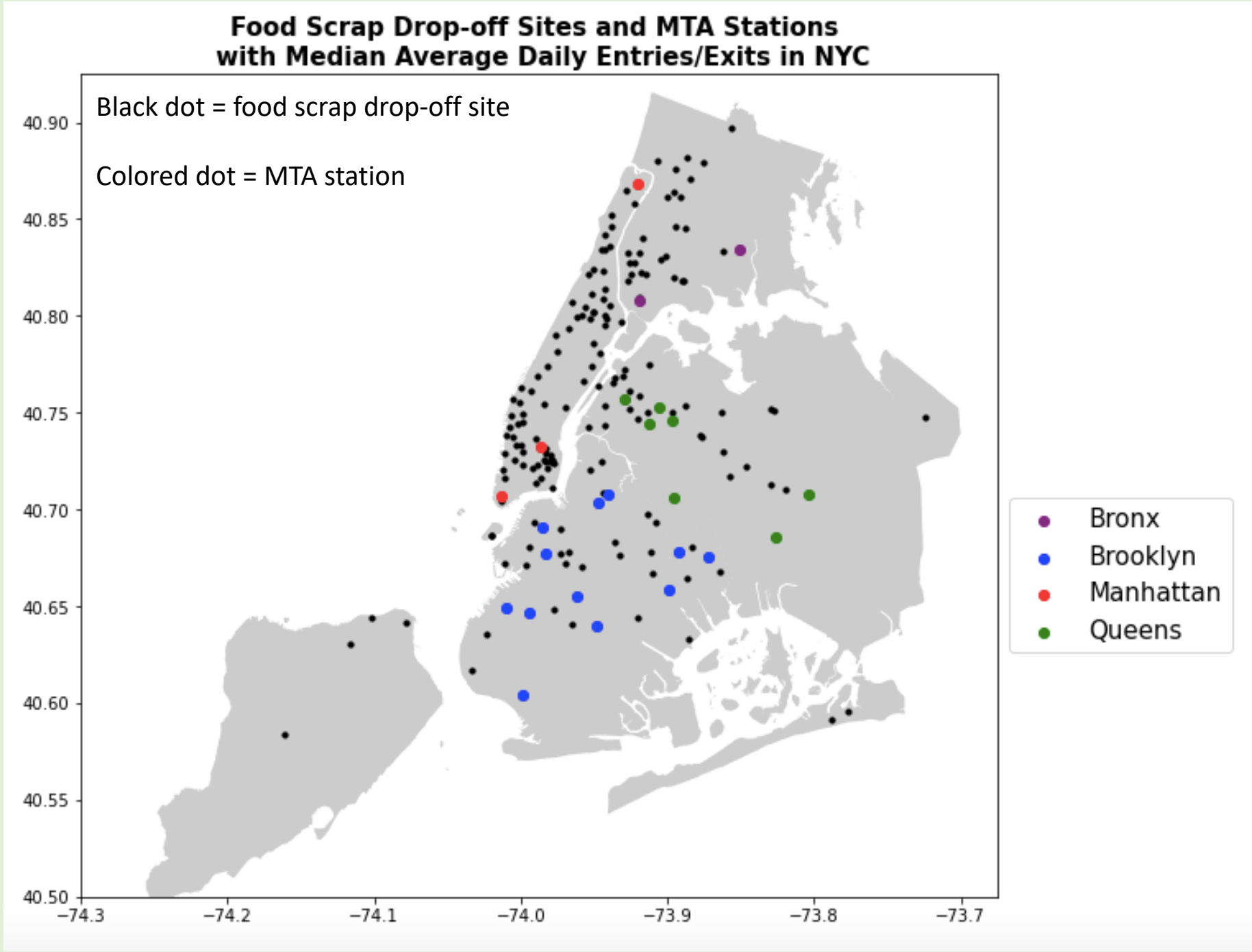
    - If drop-off sites are near stations, where people are already going, people may be more likely to respond positively to the outreach and start taking food scraps to the drop-off sites

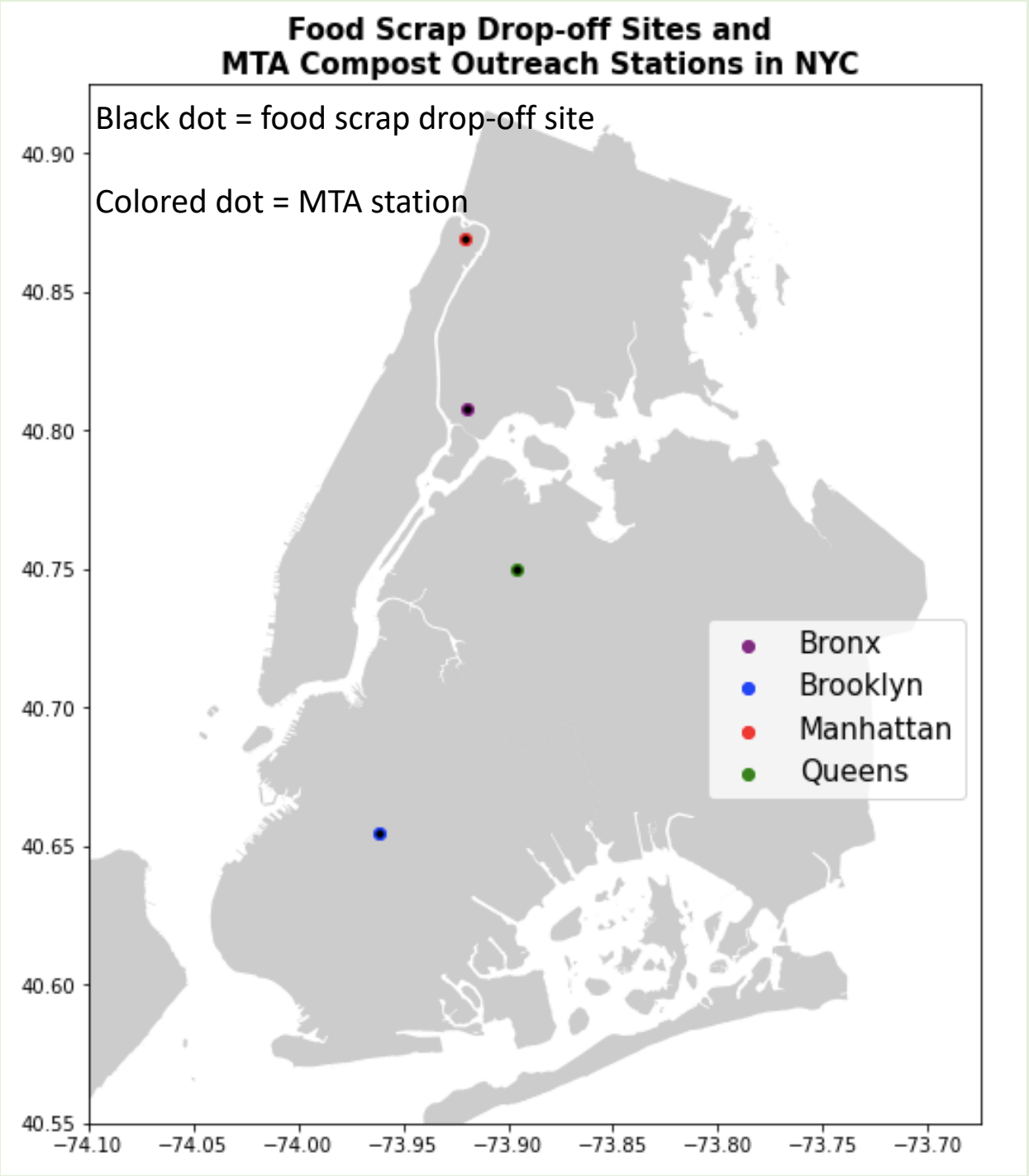
Moderate (cont.)

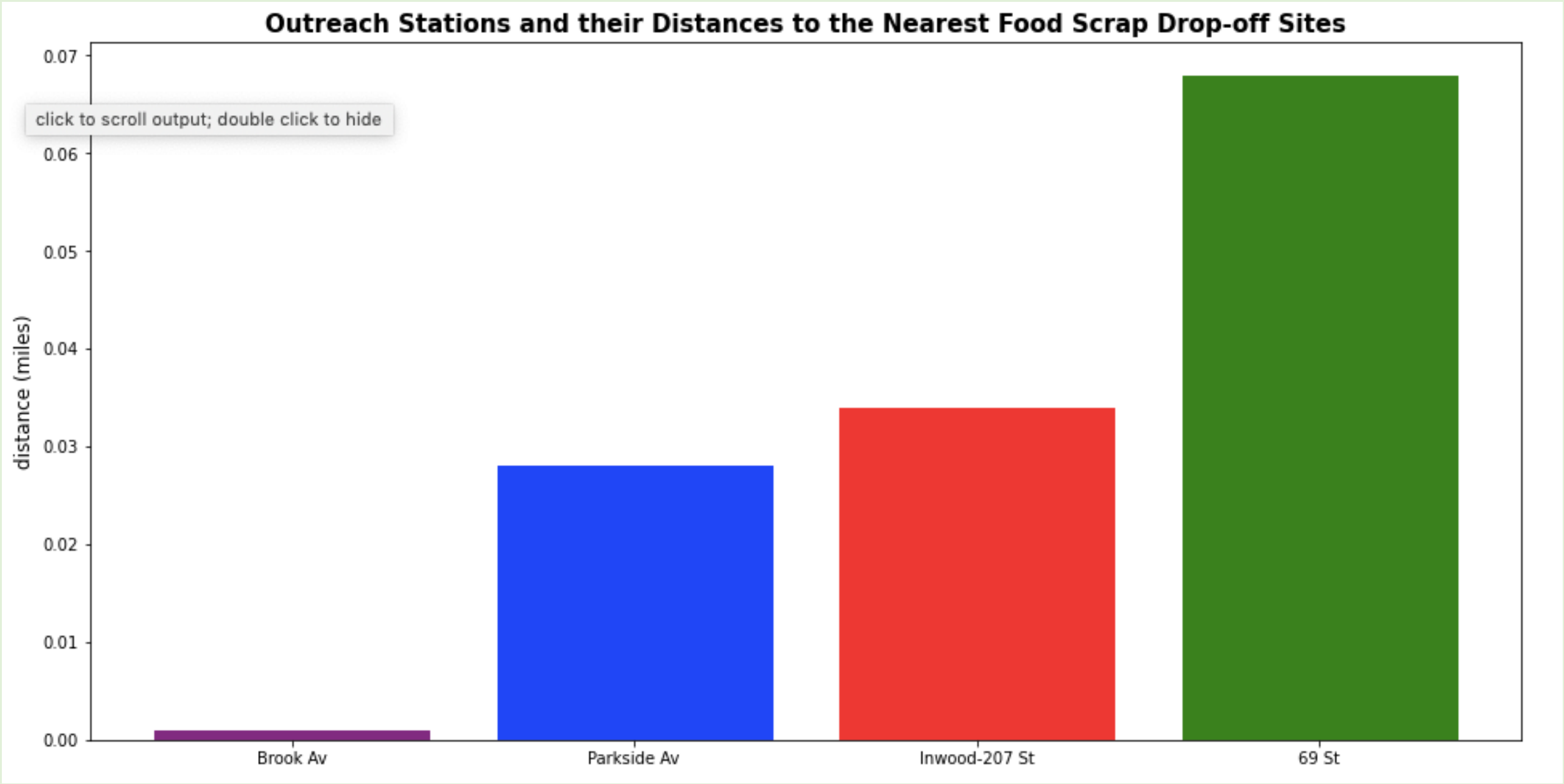
How to determine *moderate* traffic flow?



- *Moderate* = approximately **median** number of average daily entries/exits per station
- Median number of average daily entries/exits = approximately 2689 daily entries/exits per station
- Potential stations = between 2500 – 3000 daily entries/exits per station


Food Scrap Drop-off Sites and MTA Stations
with Median Average Daily Entries/Exits in NYC
Black dot = food scrap drop-off site
Colored dot = MTA station
40.90
40.85
40.80
40.75
40.70
40.65
40.60
40.55
40.50
−74.3
−74.2
−74.1
−74.0
−73.9
−73.8
−73.7
Bronx
Brooklyn
Manhattan
Queens


Food Scrap Drop-off Sites and
MTA Compost Outreach Stations in NYC
Black dot = food scrap drop-off site
Colored dot = MTA station
40.90
40.85
40.80
40.75
40.70
40.65
40.60
40.55
−74.10
−74.05
−74.00
−73.95
−73.90
−73.85
−73.80
−73.75
−73.70
Bronx
Brooklyn
Manhattan
Queens


Outreach Stations and their Distances to the Nearest Food Scrap Drop-off Sites
click to scroll output; double click to hide
distance (miles)
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
Brook Av
Parkside Av
Inwood-207 St
69 St

Results

- The four stations that met my selection criteria for conducting outreach about composting were:
    - Brooks Av station in the Bronx
    - Parkside Av station in Brooklyn
    - Inwood-207 St station in Manhattan
    - 69 St station in Queens
- Staten Island did not have a station that met the first criterion for selection (i.e., moderate station traffic flow)
    - Once I merged the cleaned MTA turnstiles and station location datasets, there was only one Staten Island station and its average daily entries/exits was 140

Conclusions

- Most food scrap drop-off sites are located in Manhattan
    - It has almost 3x as many as Brooklyn, the Bronx, and Queens
    - Staten Island has the fewest
- There are some stations and food scrap drop-off sites that are very close to one another

Future Work

- Explore other selection criteria
    - Food scrap drop-off sites where volume of food scraps collected is low
    - Locations where residential compost pickup service is not currently offered
- Explore where new food scrap drop-off sites in boroughs other than Manhattan could be established