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Exploratory Data Analysis Module
DSML Flex Oct 2021 Cohort
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Title:
Recommendations for Starbucks Spring Breakfast Menu Prototype Outreach Model

Abstract:
We make outreach recommendations for a Starbucks Spring Breakfast Menu Prototype. Three Starbucks in lower Manhattan around City Hall (291 Broadway, 120 Church St., 38 Park Row) are ideal locations for subway-user-focused outreach. Springtime MTA turnstile data (April 2016-2019) indicate two subway stops with complimentary geographic line coverage (City Hall and Brooklyn Bridge) have peak exits during weekday mornings. High morning traffic volume relative to station size inspires an outreach model that includes a rider alert (e.g. poster) below ground and street-side giveaway (free 8-oz drip, 5$ QR code valid at focus Starbucks) enticing eager customers to stores.

Design:
This project starts with design goals from Starbucks: 1) prototype preparation and serving processes of new Spring breakfast product, 2) gather customer feedback, 3) limit prototype to a few stores. We chose to focus outreach on lower Manhattan based on the density of Starbucks. We chose MTA stations as a nexus of traffic on which to focus our outreach. We analyze 4-hourly MTA turnstile data to optimize the outreach effort to choose stations, develop an outreach model, and set the timing of outreach. We further use street view pictures of each location to help develop outreach model.

Data:
The data used here are:
Google Map of Lower Manhattan – including Starbucks and MTA stop locations.
Google Map of street view images of focus MTA stations – City Hall and Brooklyn Bridge
MTA turnstile data – http://web.mta.info/developers/turnstile.html (all April 2016-2019)
NOTE: these data were downloaded using get_mta.py provided by Metis.

Algorithm:
The MTA data shown below were composited into 4-hourly bins, further composited by day of week (i.e. weekday and weekend). Variability is indicated by one standard deviation around each 4-hourly mean.

Tools:
The tools used in this analysis were:
Ubuntu 20.04 – operating system
DB Browser for SQLite3 – used for initial data scans and process development
Python – numpy, pandas, matplotlib were used for all compositing, counting, and visualizations

Communication: