

The background image shows the interior of an MTA turnstile. It features a blue-tinted overlay. In the center, there is a black rectangular device mounted on a stand, with a green light indicator. To its right, a tripod-mounted camera is visible. The turnstile structure includes metal railings and a glass door. A sign on the door reads "Do not lean on door". At the bottom center, a small logo for "SBCO" is visible.

DAVID WISMER

MTA TURNSTILE ANALYSIS

THE GOAL

▶ **Client**

- ▶ Metropolitan Transportation Authority

▶ **Key Deliverables**

- ▶ Interactive dashboards for customers and employees to explore trends
- ▶ Initial analysis of busiest, least busy, fastest growing, and fastest declining stations of 2021

▶ **Purpose**

- ▶ Facilitate resource management by providing improved access to data

THE METHODS AND TOOLS

▶ Data Ingestion and Storage

- ▶ Pandas
- ▶ SQLite

▶ Data Cleaning and Manipulation

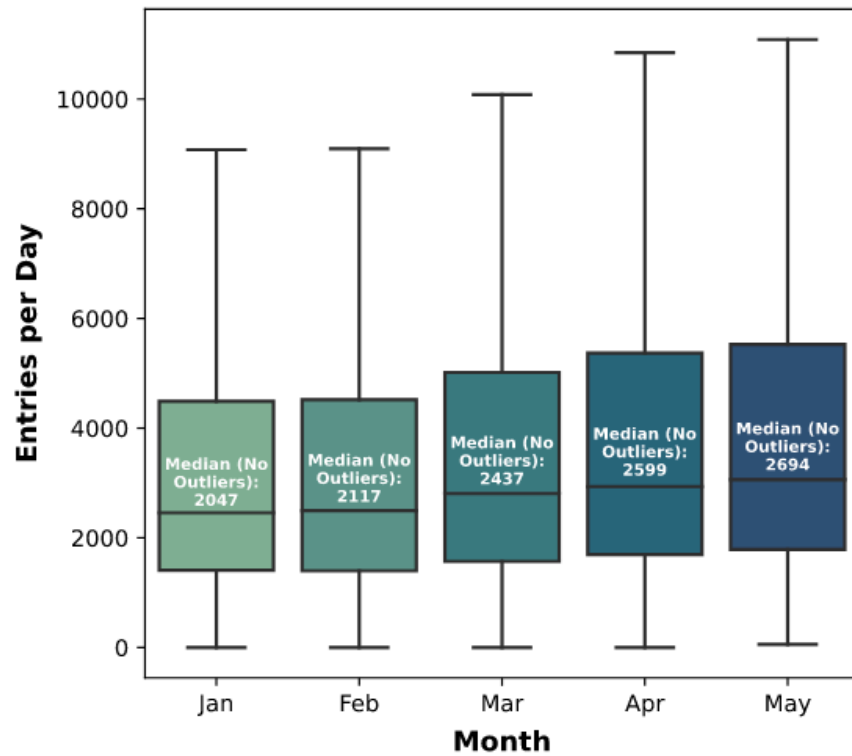
- ▶ Python Libraries: Pandas, Numpy, Itertools
- ▶ Reversed counters, counter resets, erroneous data, long gaps between audits
- ▶ Conversion to hourly data for analysis and presentation
- ▶ Removal of outliers

▶ Presentation Tools

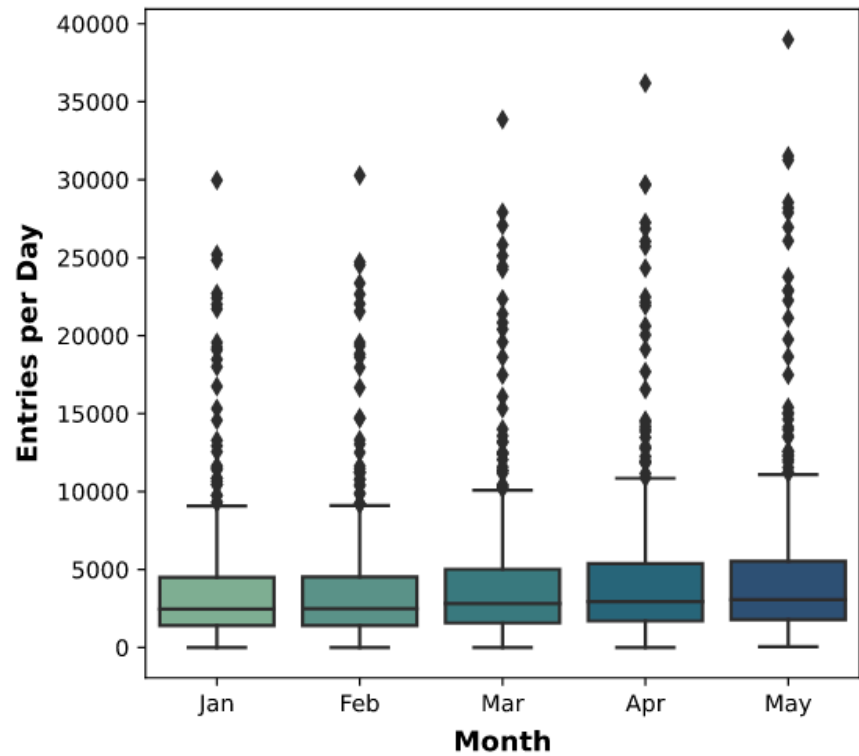
- ▶ Python Libraries: Matplotlib, Seaborn
- ▶ Tableau Public

THE RESULTS

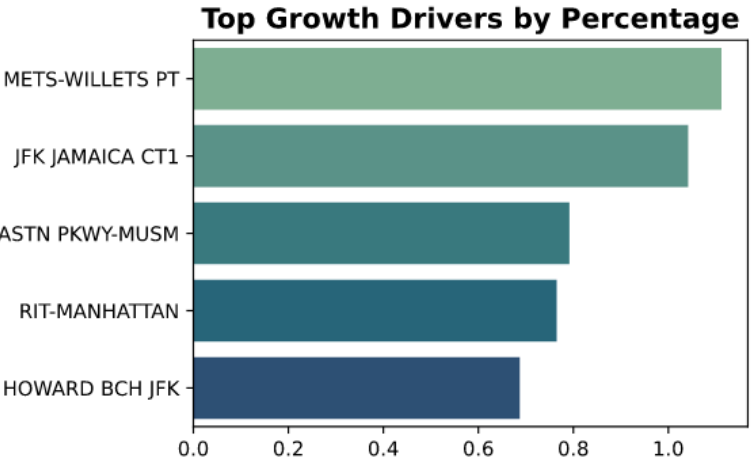
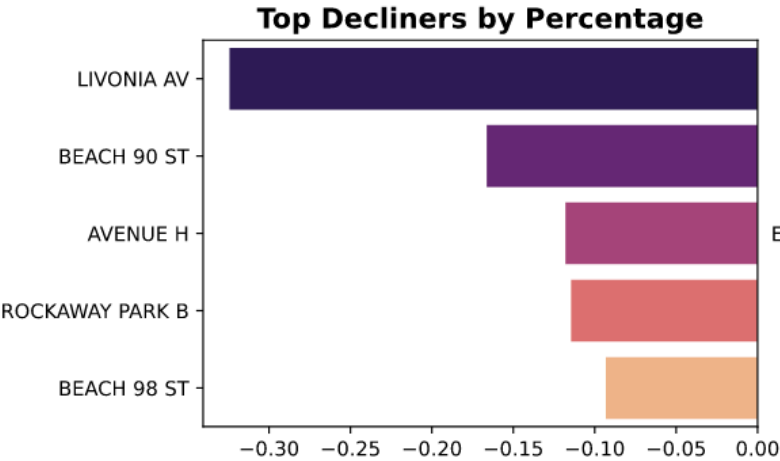
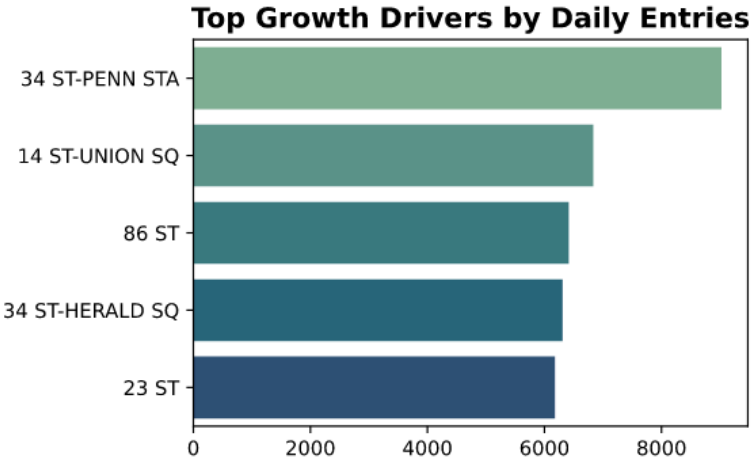
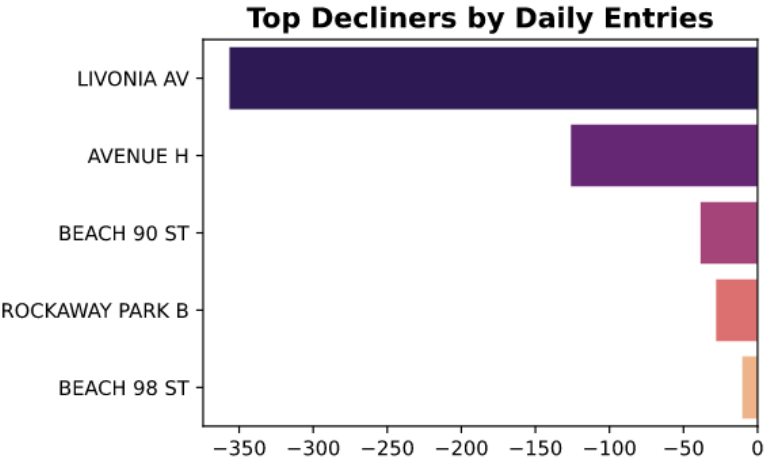
**Average Daily Entries Per Station
(No Outliers)**



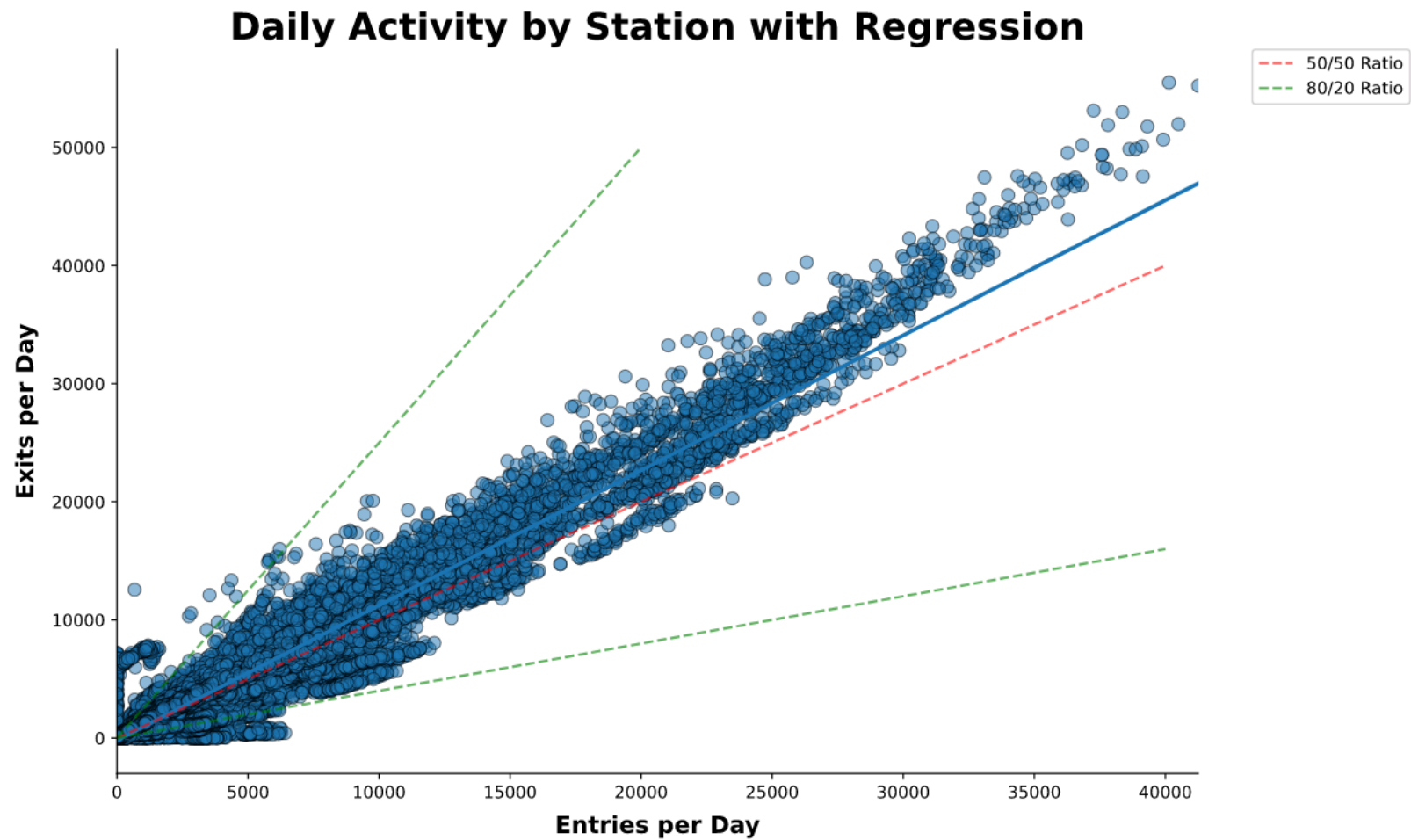
**Average Daily Entries Per Station
(Outliers Included)**



THE RESULTS



USE CASE – FARE DODGING



USE CASE – FARE DODGING

Net Flow by Station

Station	
34 ST-PENN STA	-1,371,276
GRD CNTRL-42 ST	-936,755
34 ST-HERALD SQ	-920,501
14 ST-UNION SQ	-840,945
NEWARK HW BMEBE	-793,751
86 ST	-780,203
125 ST	-766,533
NEWARK HM HE	-701,860
FULTON ST	-630,623
TIMES SQ-42 ST	-594,917
1 AV	-557,086
42 ST-PORT AUTH	-536,588
BEDFORD AV	-531,190
B'WAY-LAFAYETTE	-514,725
W 4 ST-WASH SQ	-489,563
28 ST	-461,543
72 ST	-442,109

Selected Measure



Measure Selector

Net Flow

Date

12/27/2020 5/14/2021

Weekday

(All)

Time

(All)

Station

(All)

Average Hourly Activity by Day and Hour

Time	Weekday						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
00:00	-127	-77	-82	-100	-101	-88	-130
01:00	-119	-77	-73	-87	-84	-76	-116
02:00	-114	-74	-61	-69	-72	-70	-110
03:00	-118	-70	-61	-50	-47	-65	-145
04:00	-157	-37	-12	-4	-21	-72	-222
05:00	-176	88	163	177	153	62	-243
06:00	-205	217	303	308	278	139	-285
07:00	-338	79	156	143	108	-58	-505
08:00	-465	-152	-107	-114	-136	-300	-643
09:00	-491	-346	-348	-366	-393	-516	-708
10:00	-527	-552	-581	-595	-616	-713	-759
11:00	-591	-626	-696	-723	-752	-823	-799
12:00	-627	-728	-812	-841	-892	-970	-810
13:00	-644	-864	-1,002	-1,053	-1,099	-1,148	-833
14:00	-635	-1,066	-1,225	-1,274	-1,324	-1,333	-843
15:00	-521	-1,059	-1,249	-1,362	-1,377	-1,412	-755
16:00	-373	-950	-1,147	-1,215	-1,289	-1,329	-686
17:00	-303	-821	-1,003	-1,051	-1,118	-1,182	-623
18:00	-207	-590	-748	-799	-871	-951	-559
19:00	-96	-344	-440	-443	-522	-611	-387
20:00	-21	-126	-193	-231	-235	-349	-292
21:00	-24	-62	-97	-131	-134	-253	-252
22:00	-50	-22	-53	-78	-79	-203	-218
23:00	-66	-59	-81	-109	-84	-177	-184

Avg. Selected Measure

-1,412 308

Measure Selector

Net Flow

Date

12/27/2020 5/14/2021

Weekday

(All)

Time

(All)

Station

34 ST-PENN STA

► [Tableau Dashboards Link](#)

THE FUTURE

- ▶ **Standardization of Data Pipeline**

- ▶ Automated collection at consistent intervals
- ▶ Real-time reporting of turnstile activity

- ▶ **Targeted Studies**

- ▶ Fare dodging analysis by station
- ▶ Staffing planning by station and time of day
- ▶ Examination of outliers (holidays, events)

- ▶ **Implement Strategies and Test**

- ▶ Provide trip planner tools to the public and measure impact
- ▶ Revisit trending after implementing resource management changes