

Subway Use and Covid Rates

Background

Case

- The NYC Health Department wishes to validate the effectiveness of Covid related guidance in regards to Subway usage.

Methodolgy

- Data used included [MTA Turnstile Data](#) and [Daily Covid 19 Data for NYC](#). SQLAlchemy and Pandas were used for importing the datasets.
- Subway entries, exits, and line density* were calculated for station and day between January 2020 and April 2022. Subway data was then merged with Covid data.
- Correlations were calculated for subway and covid metrics. Visualizations comparing subway usage and covid rates were developed using Matplotlib and Plotly.

Results

Conclusions

- Subway use drastically declined as the pandemic startd and NYC went into lockdown. Generally, subway use has consitently been rising since May 2020.
- Subway use was indeed negatively related to Covid Rates. As Covid spiked people used the subway less.
- There is a strong seasonality componenent wihtin subway use between Weekdays and Weekends. Weekend subway use is more strongly related with Covid Rates than Weekdays.

Tables

Correlations Between Subway Use and Covid 19 Rates

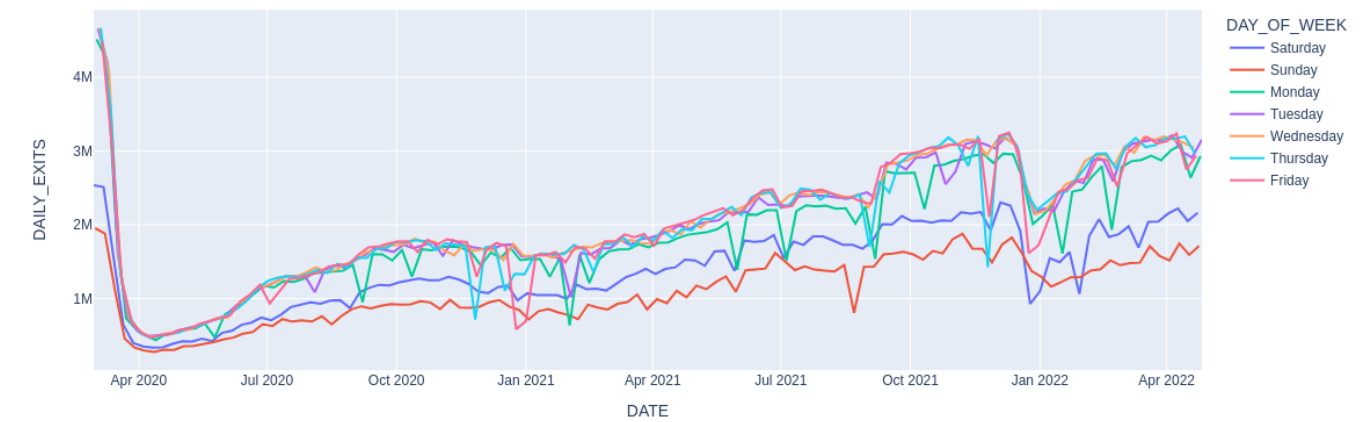
	Cases	Hosp*	Deaths	Weekly Cases	All* Weekly Cases	Weekly Hosp*	Weekly Deaths	All* Weekly Deaths
Entries	0.019	-0.287	-0.392	-0.055	-0.049	-0.332	-0.399	-0.388
Exits	0.052	-0.305	-0.414	-0.013	-0.006	-0.342	-0.418	-0.409
Density	0.035	-0.299	-0.408	-0.037	-0.03	-0.341	-0.414	-0.404

► Full Correlation Table

		Cases	Hosp [*]	Deaths	Weekly Cases	All [*] Weekly Cases	Weekly Hosp [*]	Weekly Deaths	All [*] Weekly Deaths
Daily	Entries	0.019	-0.287	-0.392	-0.055	-0.049	-0.332	-0.399	-0.388
	Exits	0.052	-0.305	-0.414	-0.013	-0.006	-0.342	-0.418	-0.409
	Density	0.035	-0.299	-0.408	-0.037	-0.03	-0.341	-0.414	-0.404
Weekdays	Entries	-0.028	-0.357	-0.458	-0.056	-0.048	-0.382	-0.463	-0.451
	Exits	0.017	-0.361	-0.463	-0.007	0.001	-0.378	-0.466	-0.456
	Density	-0.009	-0.37	-0.474	-0.034	-0.027	-0.391	-0.478	-0.467
Weekends	Entries	-0.088	-0.382	-0.481	-0.11	-0.101	-0.421	-0.488	-0.473
	Exits	-0.036	-0.368	-0.468	-0.046	-0.037	-0.397	-0.472	-0.459
	Density	-0.067	-0.39	-0.492	-0.082	-0.073	-0.424	-0.497	-0.483

Visualizations

Day of Week and Subway Use



Weekly Hospitalizations and Subway Use

Subway Use and Rates of Covid Hospitalization

