



Impact of COVID-19 on Airport Travel in the United States and Canada

Team: 4TRAVEL
DePaul University
DSC 465 | Winter 2022
March 7, 2022



Introduction

Data



- Curated by Terence Shin with data from Geotab Inc.
- Dataset publicly available through Kaggle
- Variable of greatest interest: *Percent of Baseline*
- Data shows airport traffic as a percentage across four different countries
- Dataset contains entries for the dates of March 16th to December 2nd, 2020
- Baseline period used to create the metric is from February 1, 2020 to March 15, 2020
- Instances: 7,247
- Variables: 11

Variables and Data Pre-Processing

Variables/Attributes



Categorical
Airport Name
City
State
ISO_3166_2
Country

Numeric
Percent of Baseline
Centroid
Geography

Geographical
Centroid
Geography

Ordinal
Date

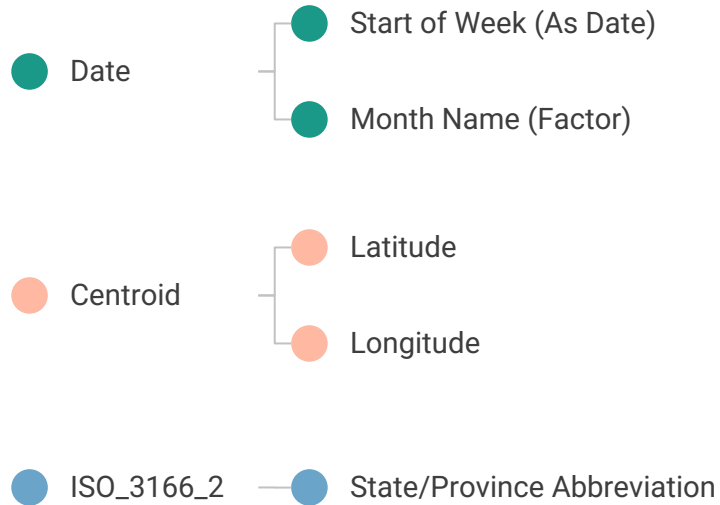
Key Attributes:

Percent of Baseline: Proportion of trips on the record date compared to the average number of trips on the same day of the week in the baseline period.

Centroid: Geography point representing the centroid of the airport polygon.

Date: Date formatted in YYYY-MM-DD, representing each day, at each airport between March 15, 2020 through December 1, 2020

Variable Transformations



Limitations



- The main numeric variable with air travel information is pre-aggregated.
- Raw data for flights and trips in 2020 are not available with the dataset.
- Data is unavailable for the period before March 16, 2020.
- The dataset only contains data for the first year of the COVID-19 pandemic from March 16, 2020 to December 2, 2020.

Audience and Message

Audience and Message



We are representing the Airport Councils International (ACI), which represents local, regional, state governing bodies that operate airports in the United States and Canada.

Audience:

The Federal Aviation Association (FAA), the largest transportation agency in the United States and affiliated government officials.

Story:

Federal support may be granted to the aviation industry due to COVID-19 and the FAA needs data to determine why support should be granted and if granted, how the support should be allocated.

Message:

The data shows that the COVID-19 had a greater impact on air travel in United States than in Canada during the first year of the pandemic.

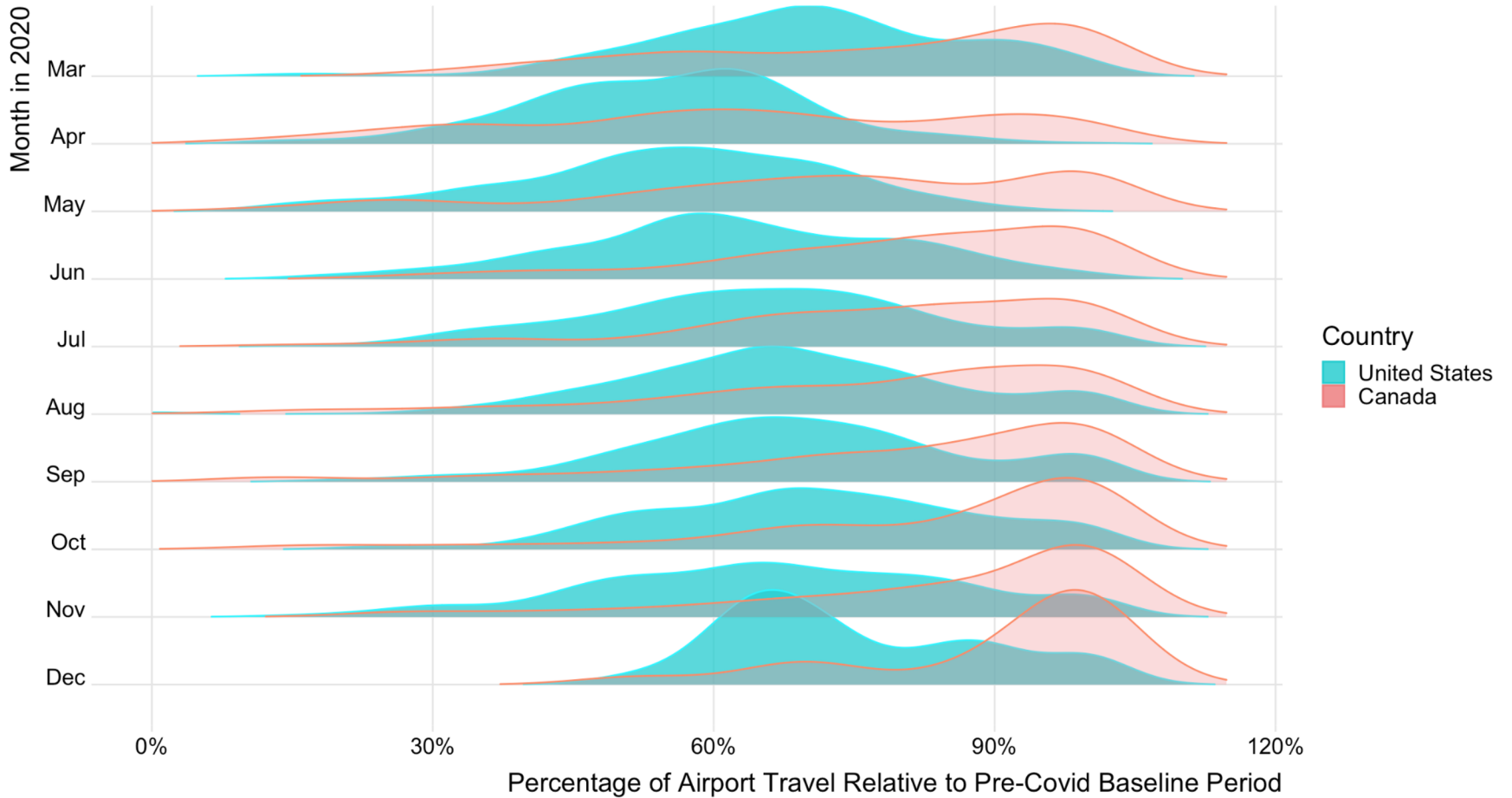
The impacts follow the waves of COVID-19 and federal support is needed and should be allocated based on states and cities that were most impacted.

Support should be ongoing as the data shows that key impacts are ongoing with each wave of the pandemic.

Comparison of Airport Travel Levels between United States and Canada in 2020

Level of Airport Travel in the United States and Canada in 2020 during COVID-19

Distribution of all Airports

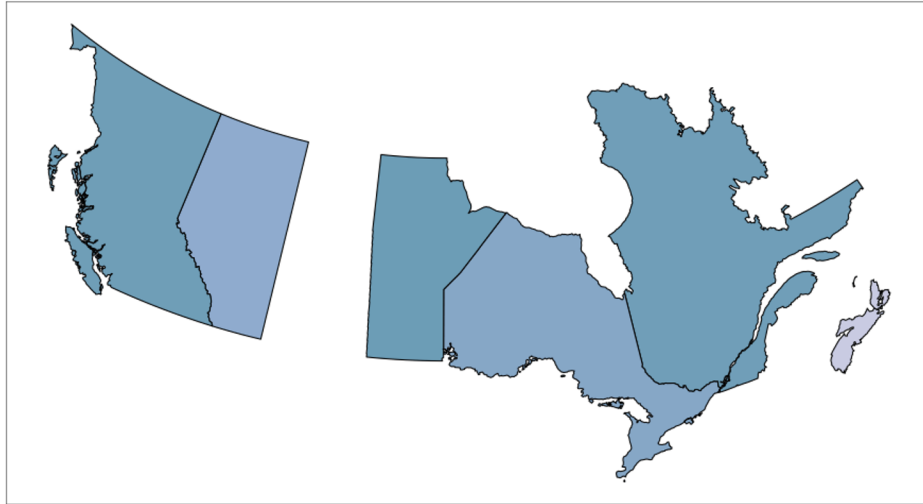


Distribution of Airport Travel by States in the U.S. and Provinces in Canada

Comparison of Airport Travel by State/Province

Airport Travel by Province in Canada in 2020 during COVID-19

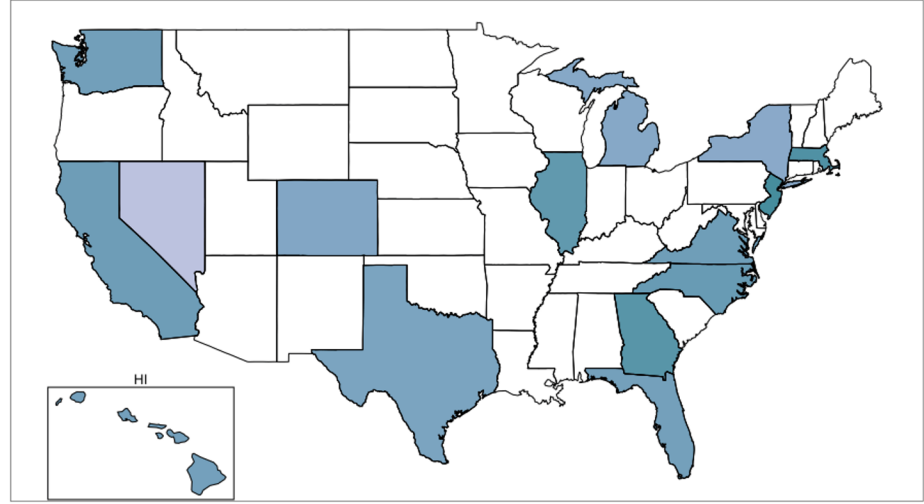
Average Percent of Baseline at: 2020-03-16



Percentage of Airport Traffic Relative to Baseline
40 60 80 100

Airport Travel by State in the United States in 2020 during COVID-19

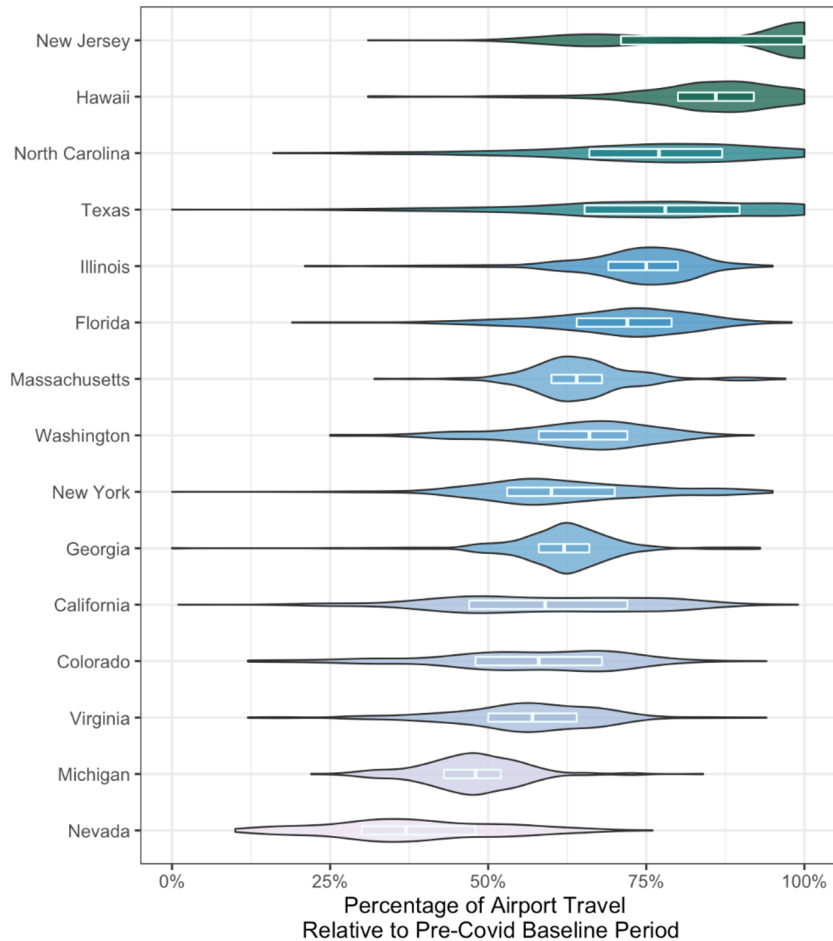
Average Percent of Baseline at: 2020-03-16



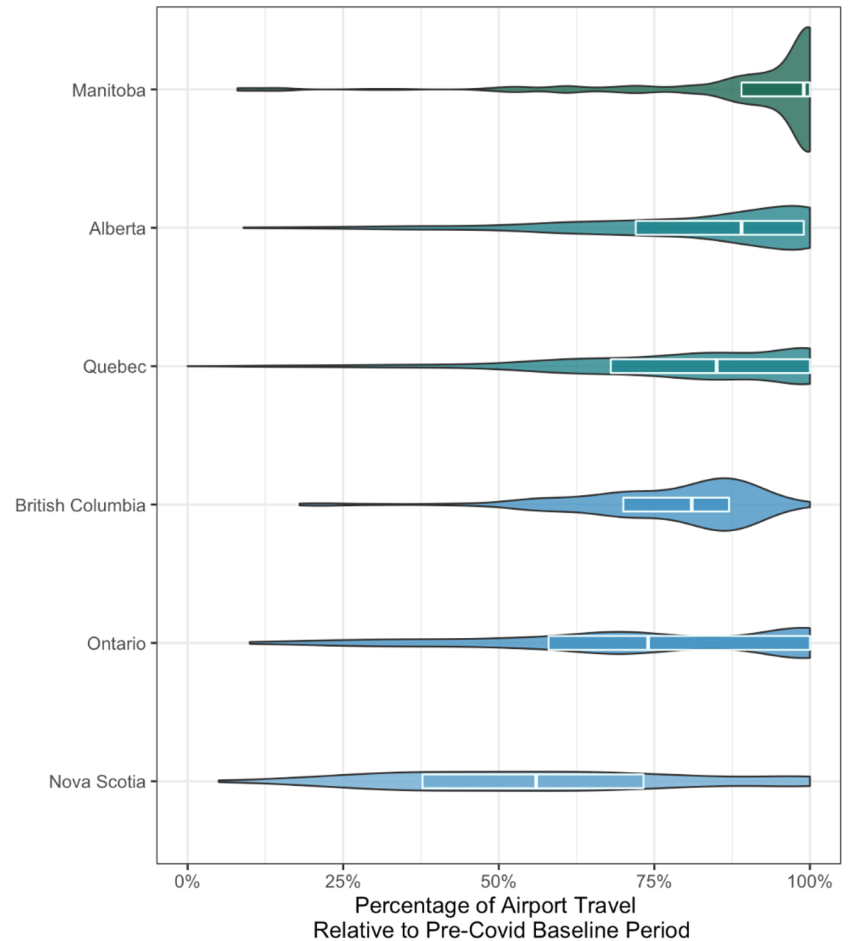
Percentage of Airport Traffic Relative to Baseline
40 60 80 100

Impact of COVID-19 on Airport Travel by State/Province in the United States and Canada in 2020

Distribution in the U.S. by State



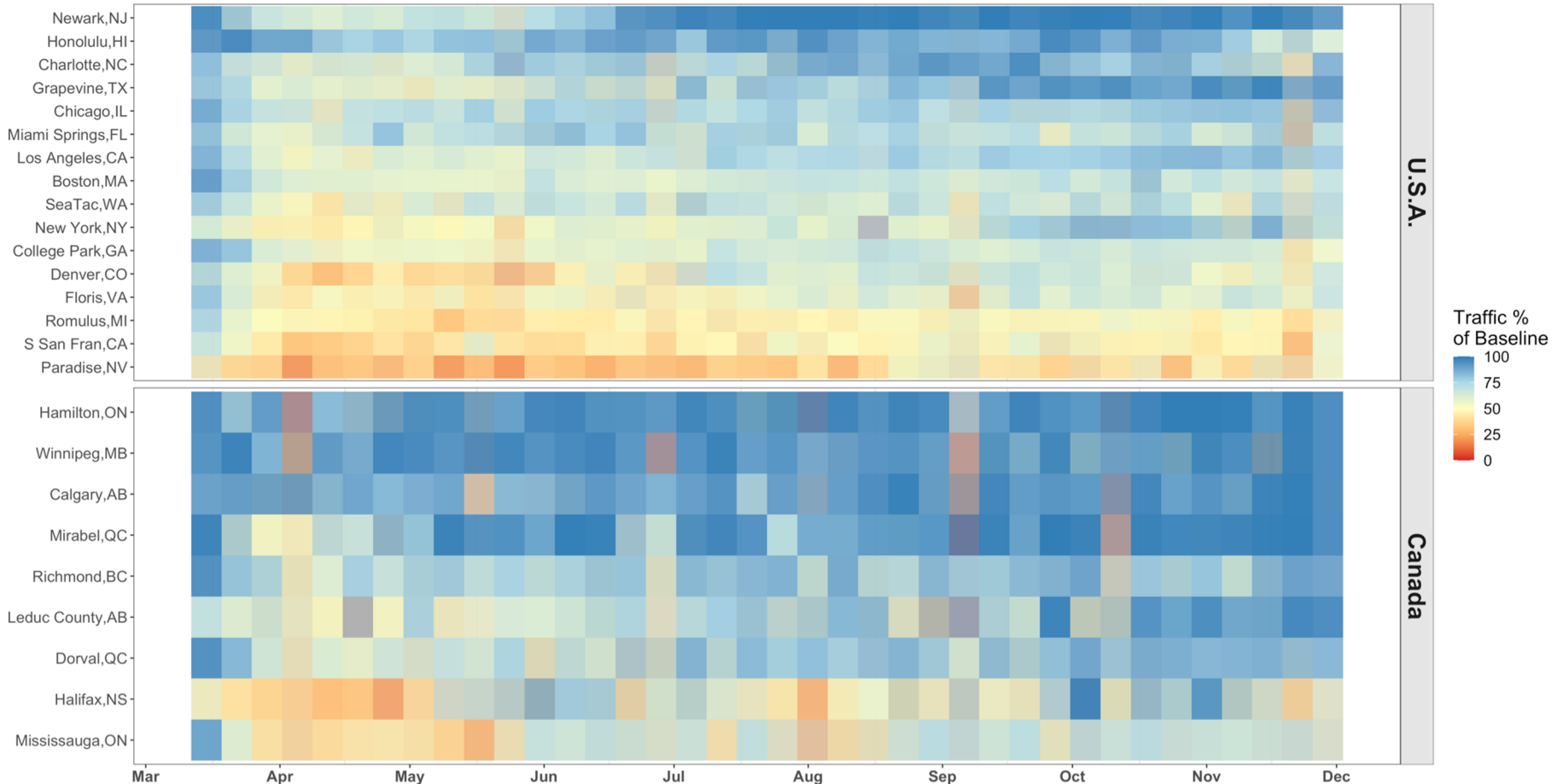
Distribution in Canada by Province



Comparing Airport Traffic Impacts, by City

COVID-19 Impacts on Airport Travel by City in the United States and Canada

Comparing average airport traffic relative to baseline traffic by city, by week



Dates covered: 2020-03-16 to 2020-12-02, summarized by week

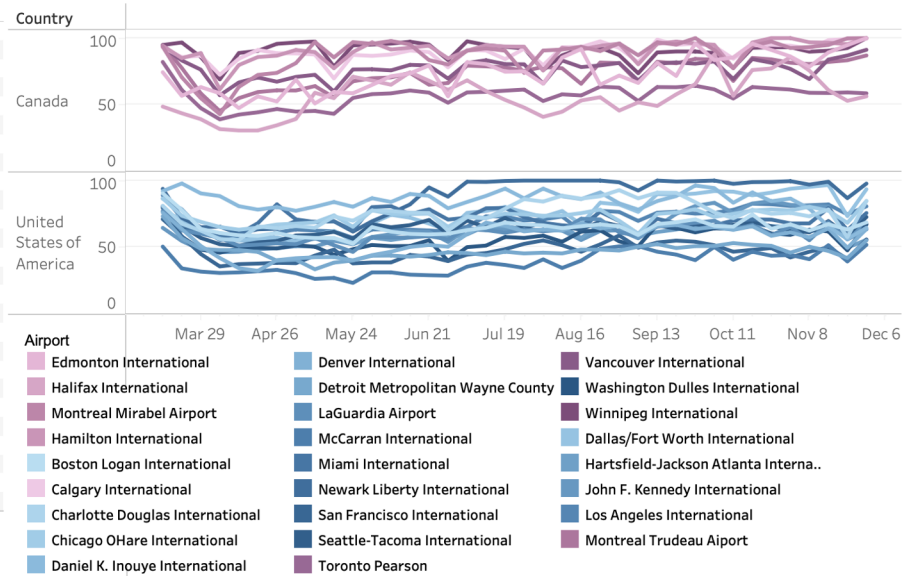
Major Impacts to Air Travel at Specific Intervals in 2020 by Airport

Major Impacts to Airport Travel at Specific Intervals in 2020 between U.S. and Canadian Airports

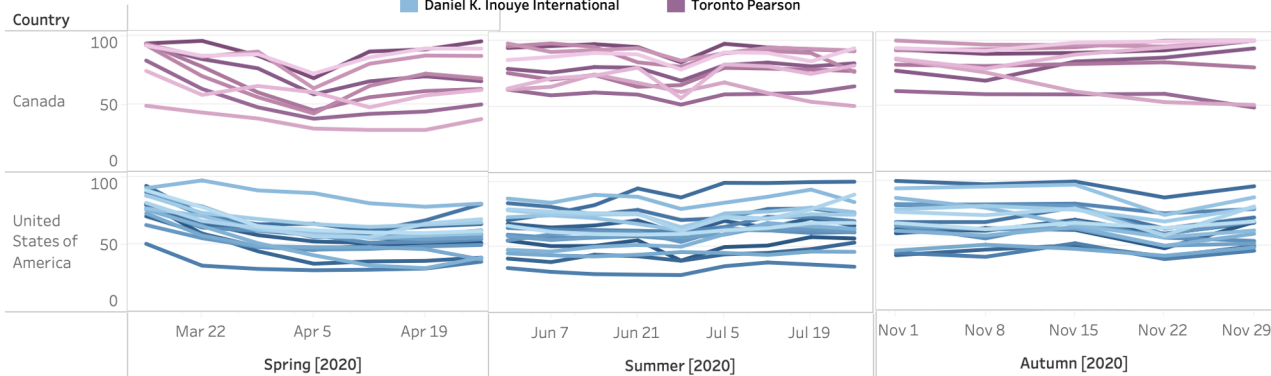
Yearly Average Percentage of Trips

Airport	Yearly Average Percentage of Trips
Hamilton International	90.43
Winnipeg International	90.16
Calgary International	89.51
Newark Liberty International	87.41
Montreal Mirabel Airport	87.34
Daniel K. Inouye International	84.63
Vancouver International	76.89
Charlotte Douglas International	75.38
Dallas/Fort Worth International	75.29
Edmonton International	74.31
Montreal Trudeau Airport	73.30
Chicago O'Hare International	73.08
Miami International	70.48
Los Angeles International	70.24
Boston Logan International	64.70
Seattle-Tacoma International	63.98
John F. Kennedy International	63.07
Hartsfield-Jackson Atlanta International	61.71
LaGuardia Airport	60.87
Halifax International	57.15
Toronto Pearson	56.83
Denver International	56.10
Washington Dulles International	55.94
Detroit Metropolitan Wayne County	47.43
San Francisco International	47.25
McCarran International	38.22

Impact by Average Percentage of Trips Relative to Pre-Covid Baseline Period by Week



Key Periods of Impact





Key Takeaways & Discussion

Key Takeaways



- COVID-19 had greater impact on airport travel in the U.S. than Canada.
- States and cities in the United States were impacted in various levels.
- Airport travel improved and returned to pre-covid levels in Canada by the end of the year, but not in the U.S.
- The U.S. had three major impacts to airport travel occurring in the Spring, Summer, and Autumn.

Discussion and Future Analysis



- Future analysis can focus on flights or airport closure data.
- Analysis could have different results if data had information for all airports.
- Different angle on analysis could be done with United States only to compare between West Coast and East Coast.
- Future analysis to include data for 2021 to show impacts of COVID-19 long-term.