



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

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DePaul University  
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# Introduction

# Data

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- 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

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# Variables and Data Pre-Processing

# Variables/Attributes

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| Categorical  | Numeric             | Geographical | Ordinal |
|--------------|---------------------|--------------|---------|
| Airport Name | Percent of Baseline | Centroid     | Date    |
| City         | Centroid            | Geography    |         |
| State        | Geography           |              |         |
| ISO_3166_2   |                     |              |         |
| Country      |                     |              |         |

## 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

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Start of Week (As Date)

Date

Month Name (Factor)

Centroid

Latitude

Longitude

ISO\_3166\_2

State/Province Abbreviation

# Limitations

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- 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.

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# Audience and Message

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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.

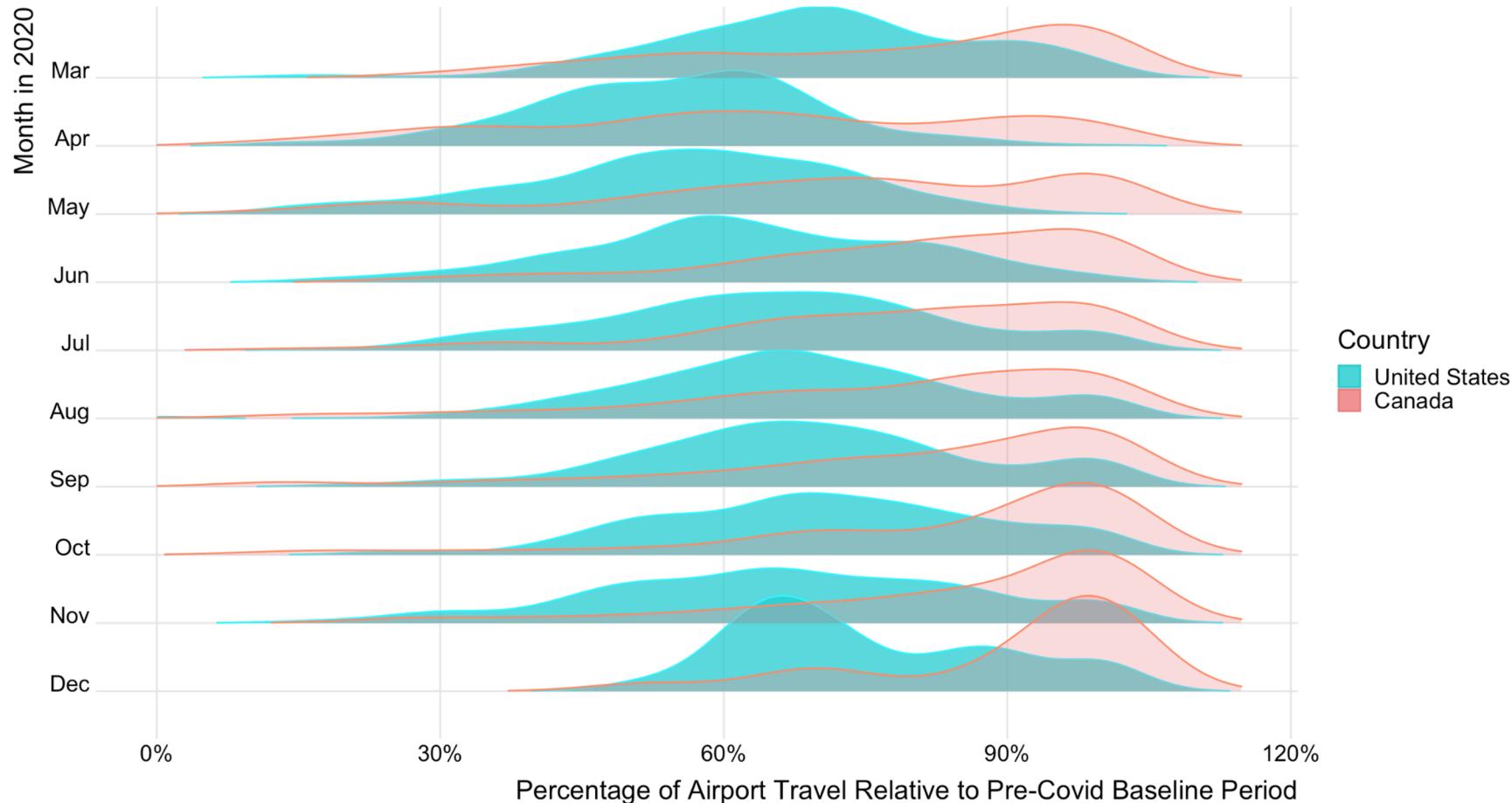
Support should be ongoing as the data shows that key impacts are ongoing with each wave of the pandemic.

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# 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



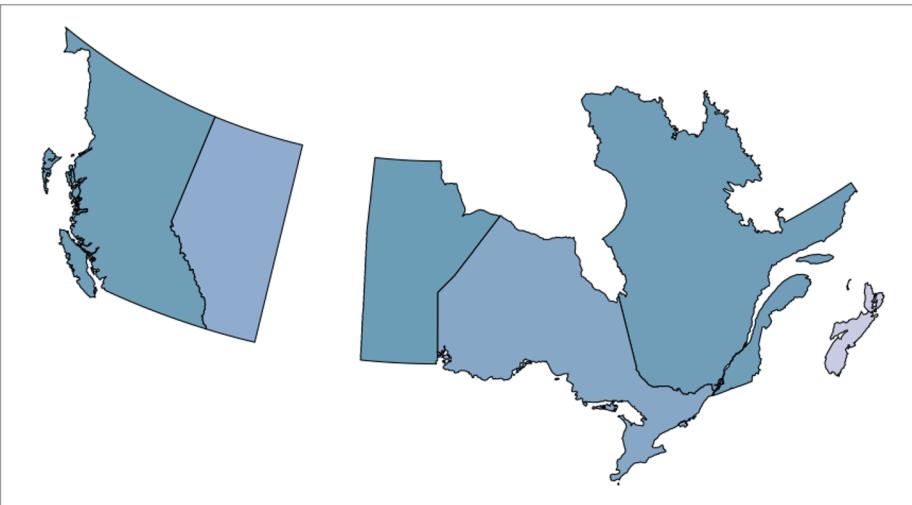
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# Distribution of Airport Travel by States in the U.S. and Provinces in Canada

# Comparison of Airport Travel by State/Province

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

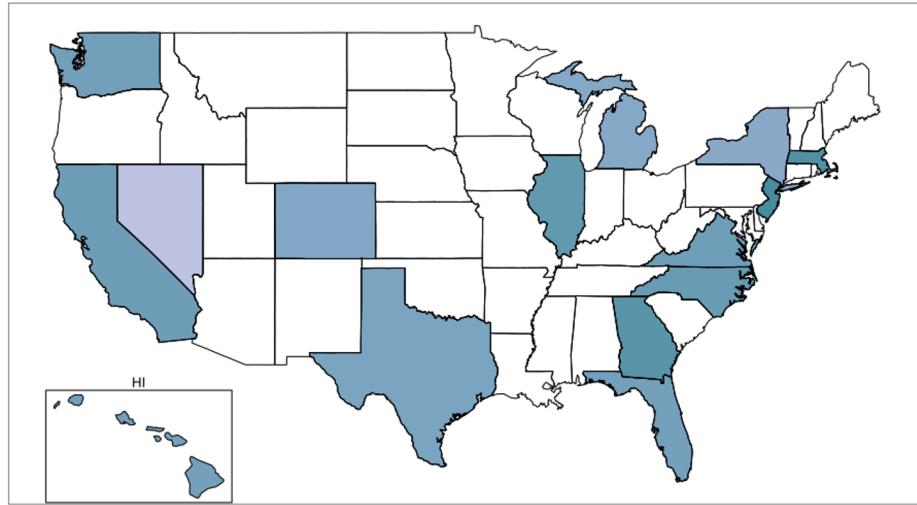
Average Percent of Baseline at: 2020-03-16



Percentage of Airport Traffic Relative to Baseline  
40 60 80 100

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

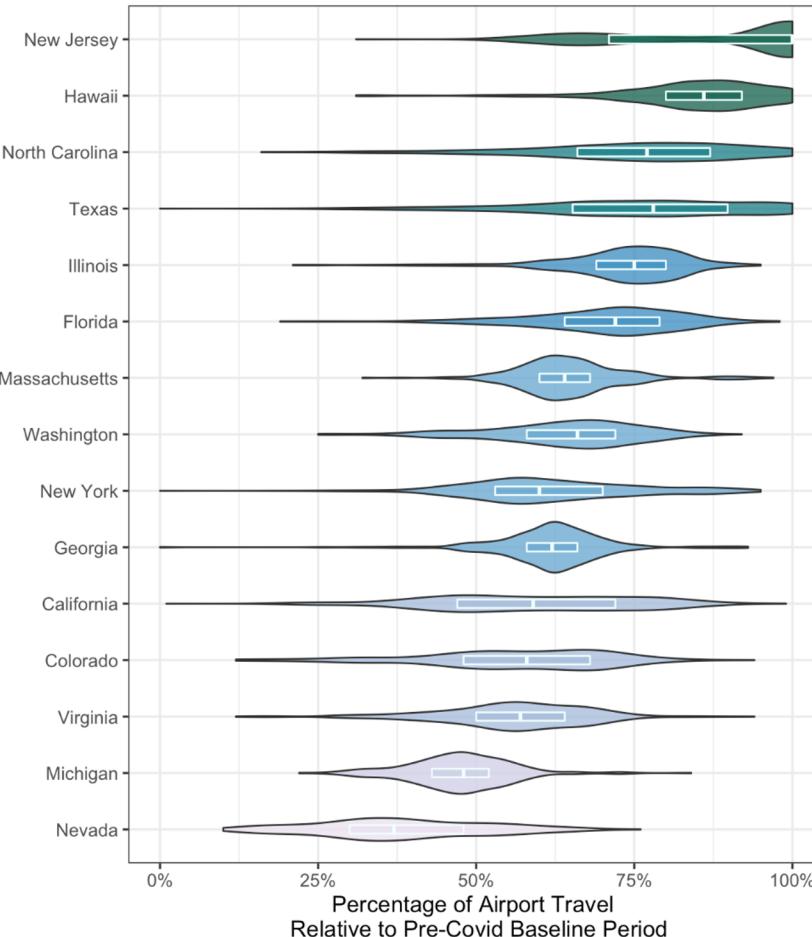
Average Percent of Baseline at: 2020-03-16



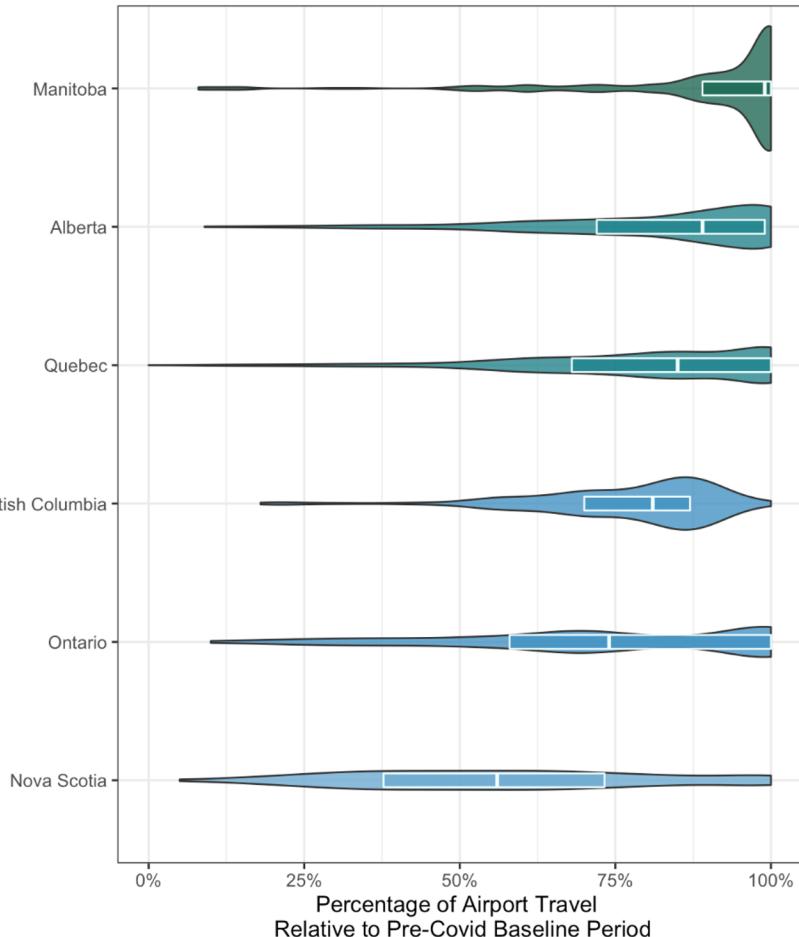
Percentage of Airport Traffic Relative to Baseline  
40 60 80 100

## 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

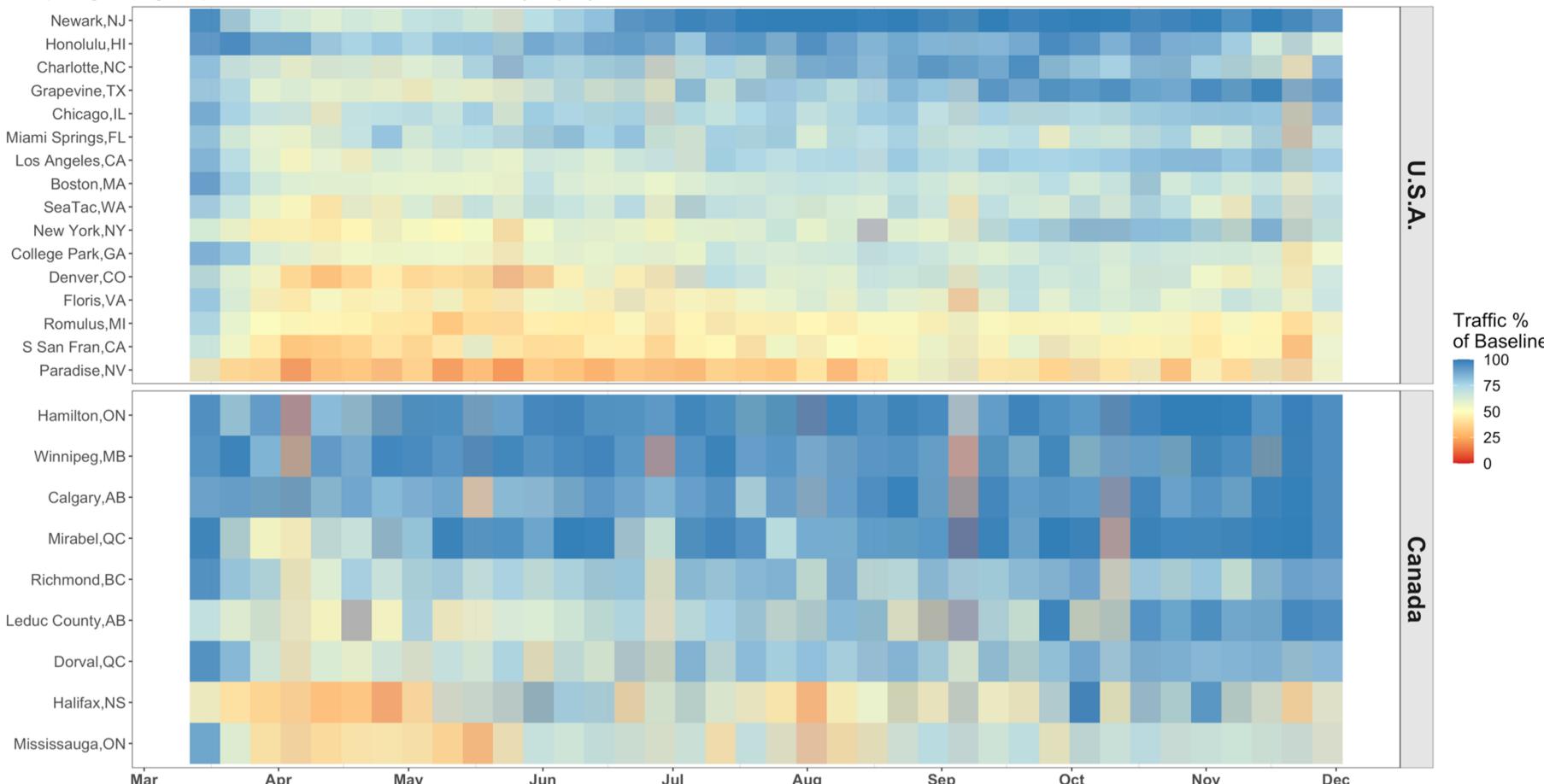


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# Comparing Airport Traffic Impacts, by City

# 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

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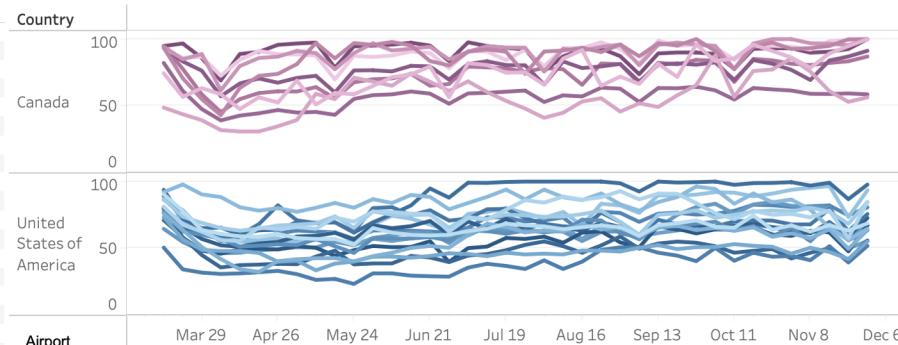
# **Major Impacts to Air Travel at Specific Intervals in 2020 by Airport**

## 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 OHare 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                              |

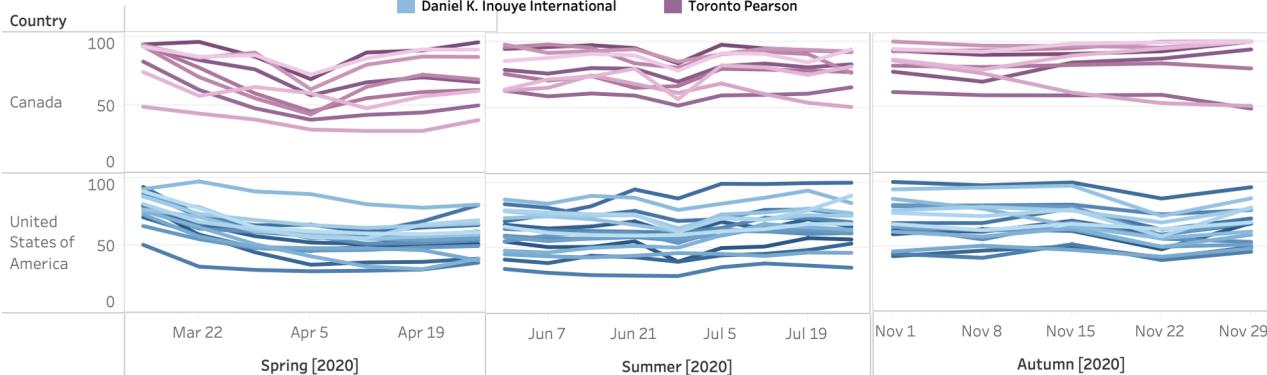
Impact by Average Percentage of Trips Relative to Pre-Covid Baseline Period by Week



Airport Mar 29 Apr 26 May 24 Jun 21 Jul 19 Aug 16 Sep 13 Oct 11 Nov 8 Dec 6



Key Periods of Impact



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# Key Takeaways & Discussion

# Key Takeaways

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- 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

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- 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.