



# Impact of COVID-19 on Worldwide Aviation

Team 24

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# Motivation



Drives economies (\$2.7 trillion of GDP)



Creates employment (65.5 million jobs)



Enables trade (delivering 35% of goods by value)



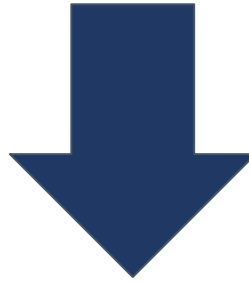
Facilitates healthcare and emergency aid

# Dataset and Cleaning

callsign	number	icao24	registration	typecode	origin	destination	firstseen	lastseen	day	latitude_1	longitude_1	altitude_1	latitude_2	longitude_2	altitude_2
HVN19	NaN	888152	NaN	NaN	YMLL	LFPG	2018-12-31 00:43:16+00:00	2019-01-01 04:56:29+00:00	2019-01-01 00:00:00+00:00	-37.659485	144.804421	304.8	48.995316	2.610802	-53.34
CCA839	NaN	780ad1	NaN	NaN	YMLL	LEBL	2018-12-31 00:53:08+00:00	2019-01-01 06:01:42+00:00	2019-01-01 00:00:00+00:00	-37.692123	144.841997	304.8	41.036124	2.063557	1112.52
CES219	NaN	780b7e	B-5936	A332	YSSY	EDDF	2018-12-31 01:05:29+00:00	2019-01-01 04:09:29+00:00	2019-01-01 00:00:00+00:00	-33.930908	151.171987	0.0	50.045563	8.588923	-15.24
AEA040	NaN	34444e	EC-LVL	A332	LEMD	LEMD	2018-12-31 01:07:21+00:00	2019-01-01 03:32:59+00:00	2019-01-01 00:00:00+00:00	40.534756	-3.575426	609.6	40.475728	-3.538347	411.48
CXA825	NaN	780d75	B-2760	B788	YSSY	LFPG	2018-12-31 01:18:29+00:00	2019-01-01 04:32:28+00:00	2019-01-01 00:00:00+00:00	-33.954254	151.178041	0.0	48.996091	2.625805	22.86

Original Dataset

Airline/Airport specific encodings



Clean Dataset

callsign	origin	destination	day	origin country	destination country	domestic	airline	origin cases	destination cases
KQA210	FAOR	VABB	2020-05-01	South Africa	United Kingdom	False	Kenya Airways	5951.0	183501.0
CSN327	YSSY	KLAX	2020-05-01	Australia	India	False	China Southern Airlines	6778.0	37257.0
SWR87	KJFK	LSZH	2020-05-01	United States	Switzerland	False	Swiss International Airlines	1115945.0	29705.0
CSN465	KLAX	EGSS	2020-05-01	United States	United Kingdom	False	China Southern Airlines	1115945.0	183501.0
AVA249	KLAX	SBGR	2020-05-01	United States	Brazil	False	Ava Airways	1115945.0	92202.0

- The data set was **~53M** rows, so cleaning unnecessary columns/data was a must.
- Standardized time across the different datasets.
- Combined ~5 datasets to get one dataset with most important information to begin analysis.

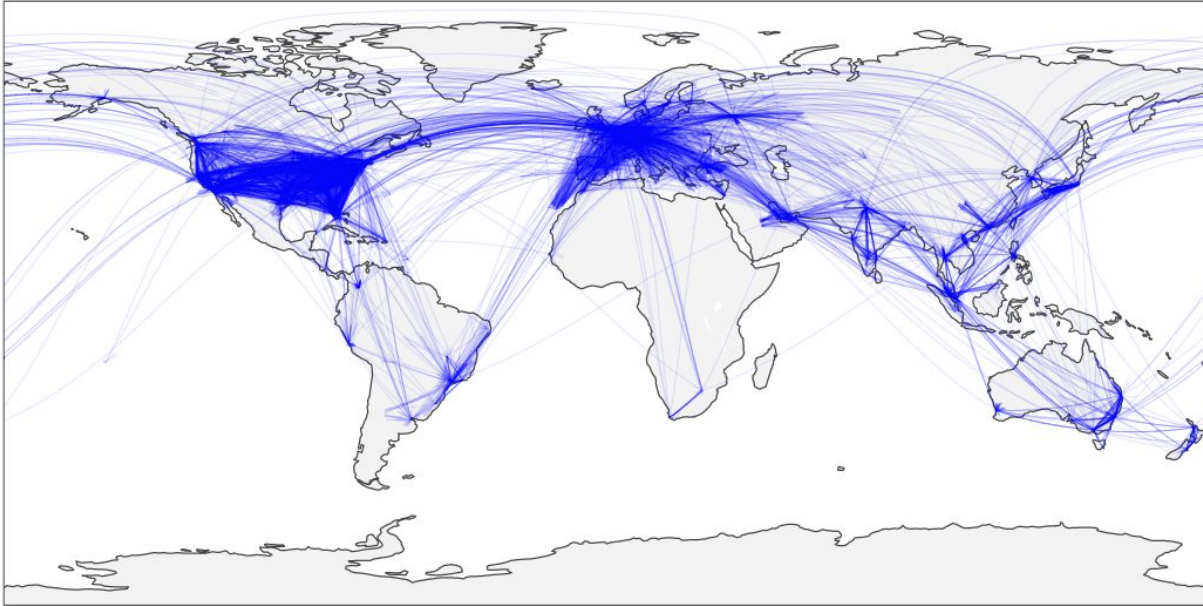


# Analysis Based on Geography

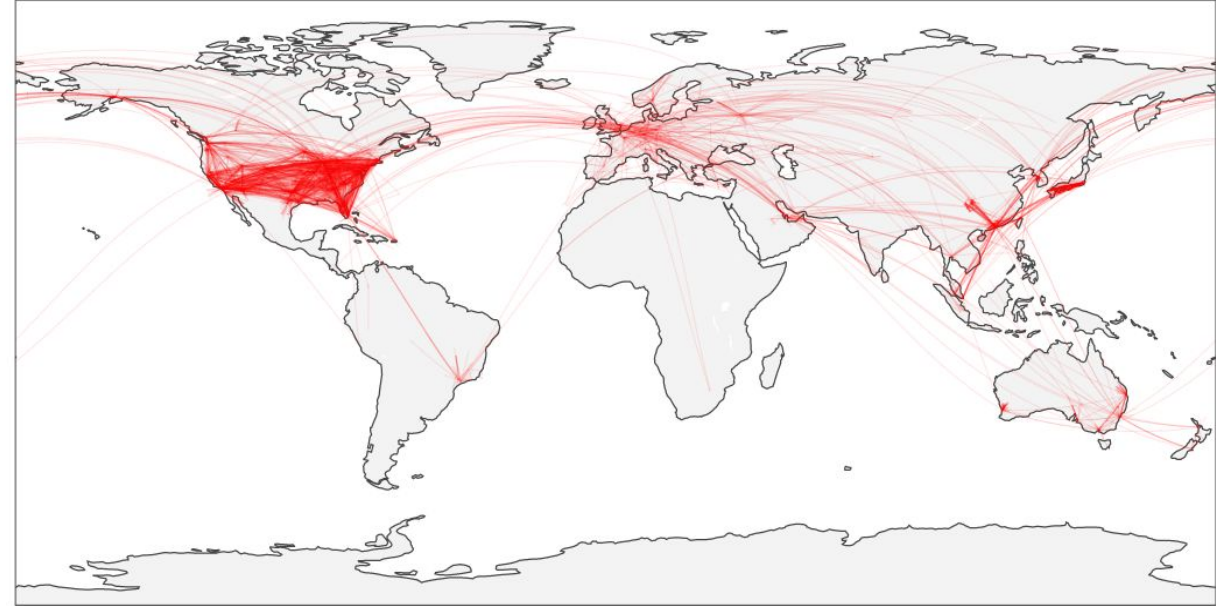


# Typical Day – Before and After the Pandemic

Flight Density (25<sup>th</sup> Feb 2020)

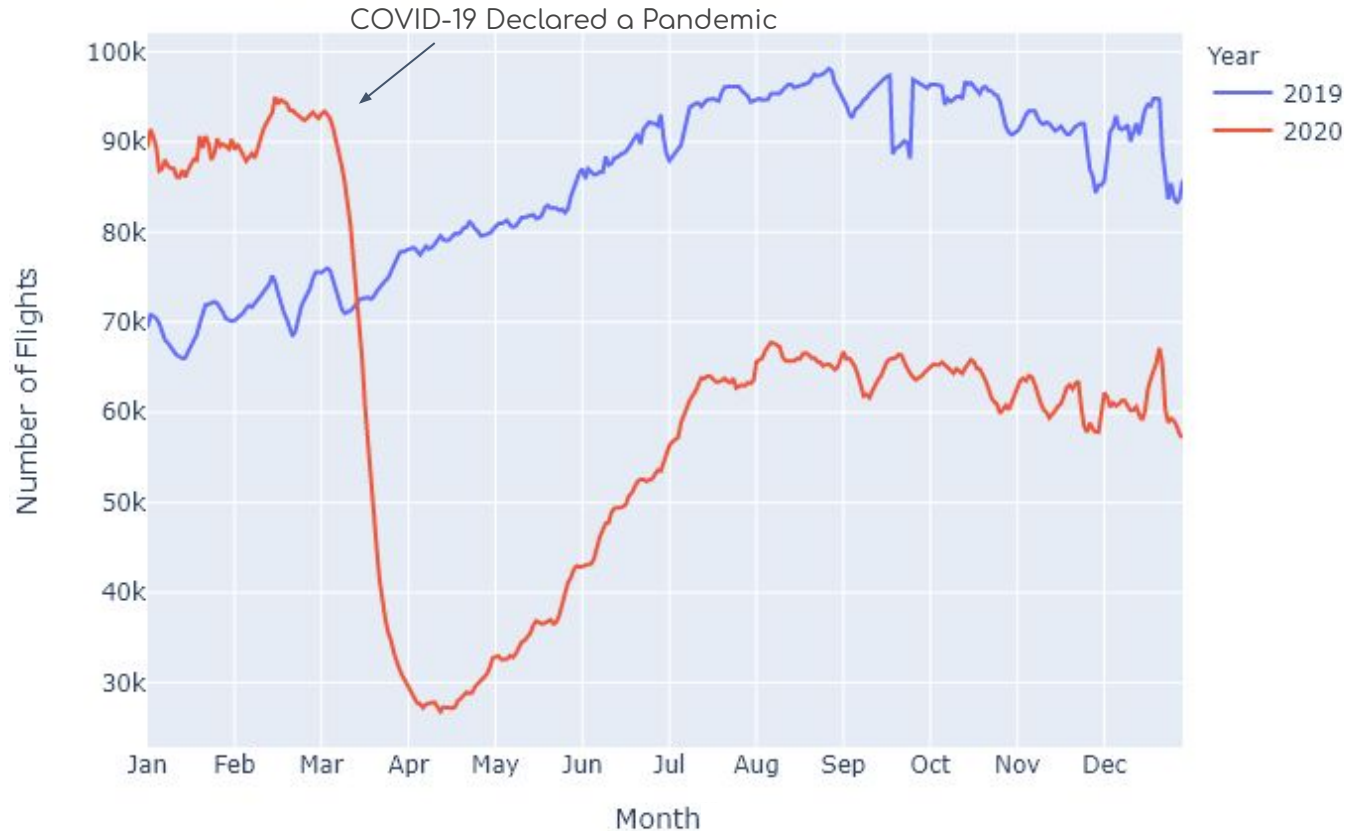


Flight Density (4<sup>th</sup> April 2020)



# The Impact of COVID-19 – Global Travel

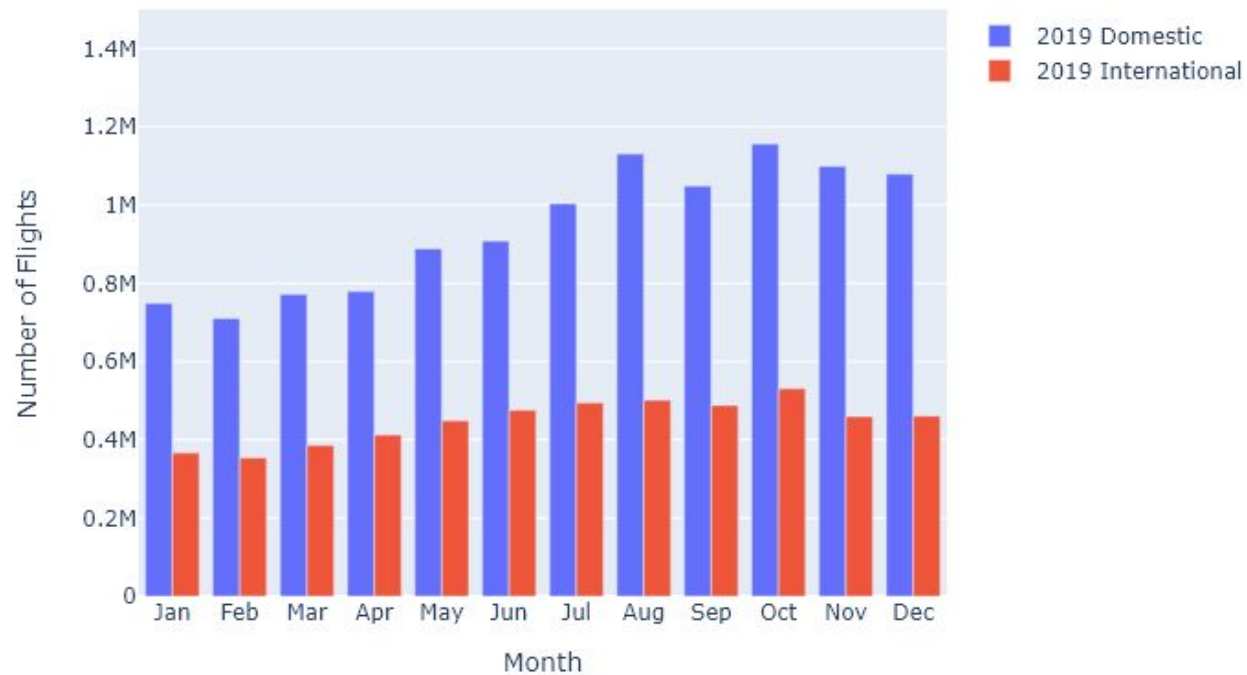
Weekly Rolling Average of Daily Global Flights 2019 vs. 2020



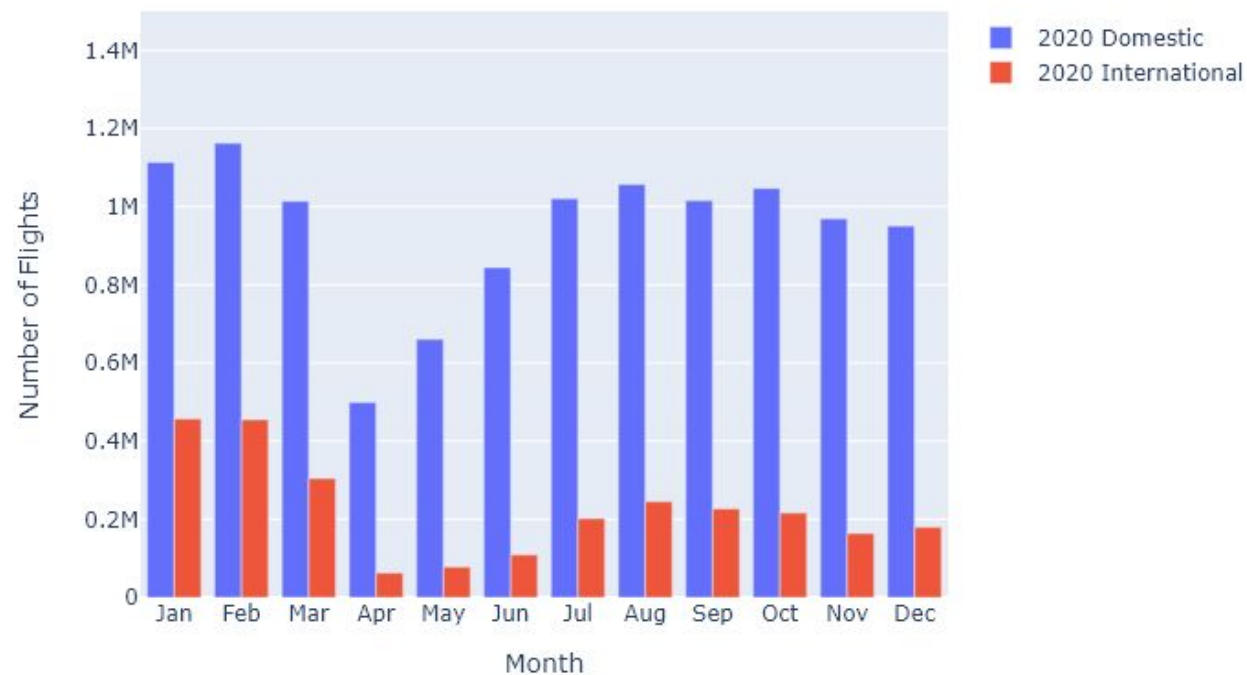
- The World Health Organization (WHO) on March 11, 2020, declares the COVID-19 outbreak a global pandemic.
- Global flights are reduced by nearly 70% and recovery is slow.
- Days that saw the heaviest air traffic in 2020 post COVID-19, were still experienced less flights than almost any day in 2019.

# Breakdown of Air Traffic Decline

Domestic vs International Flights in 2019

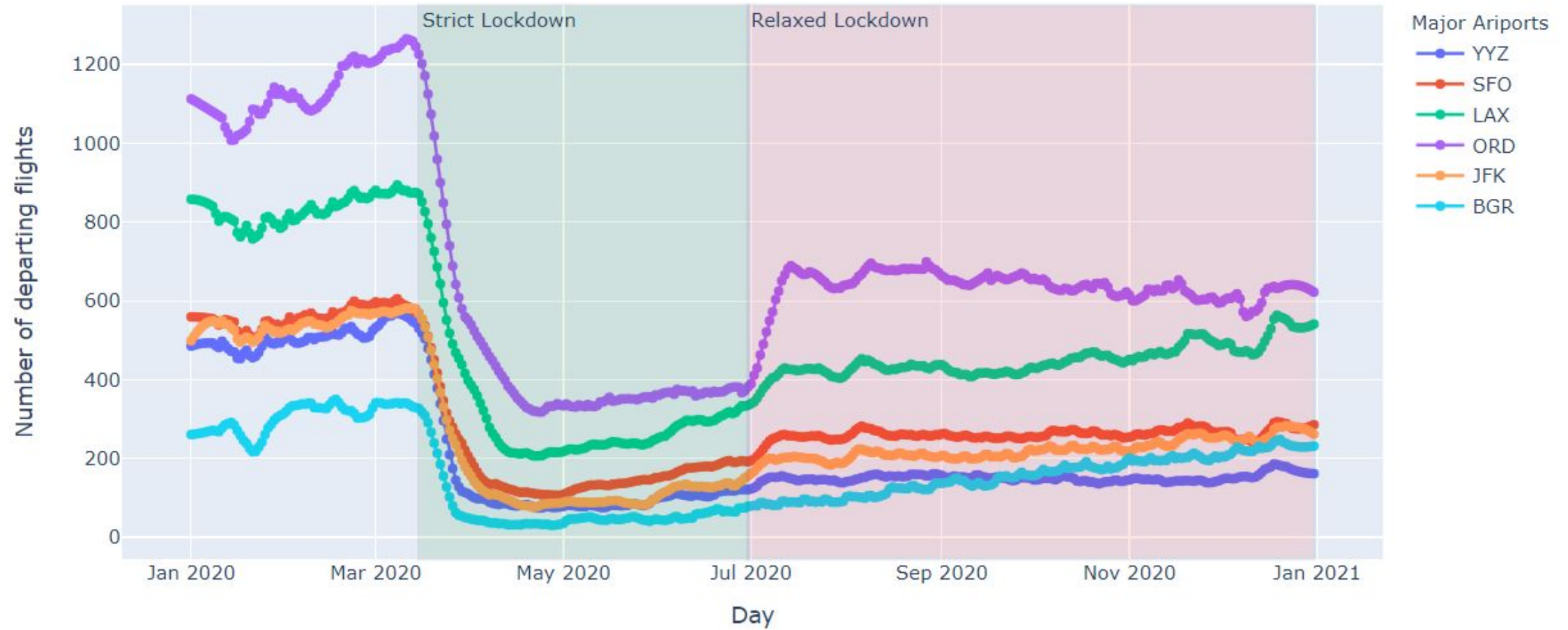


Domestic vs International Flights in 2020



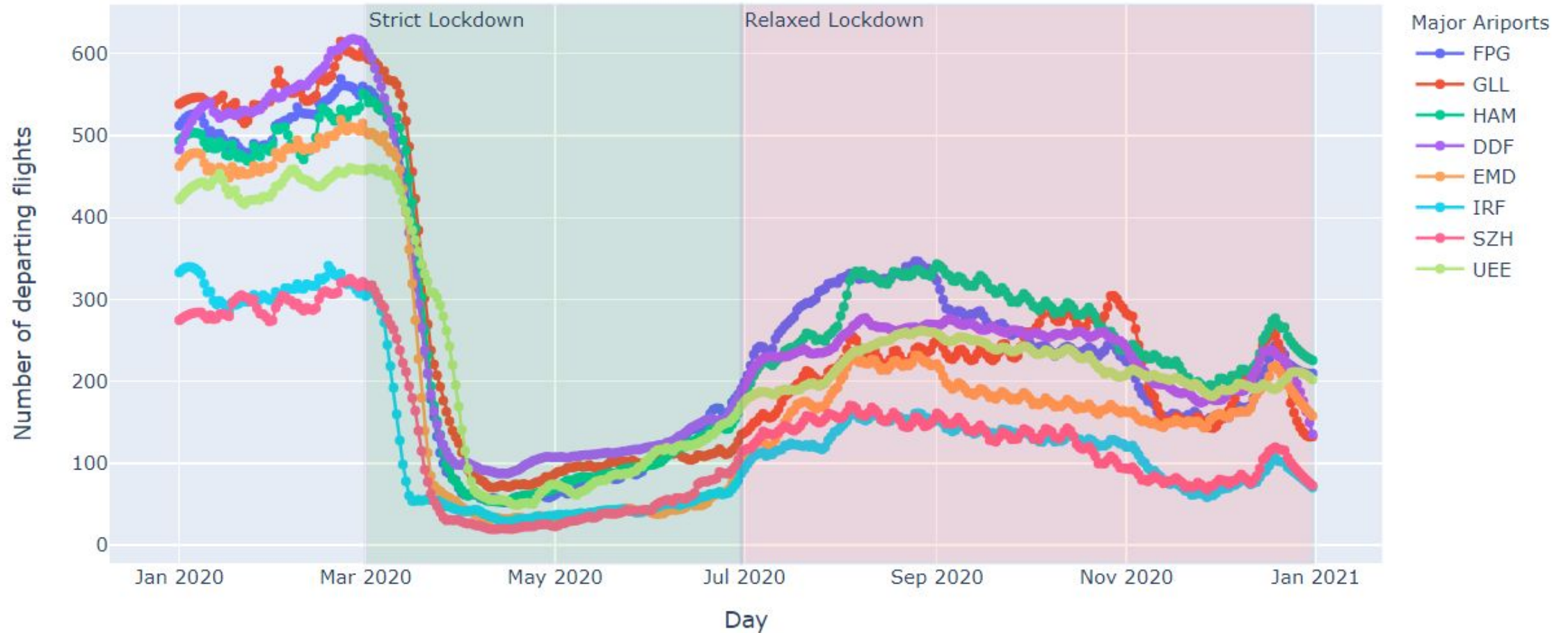


# Region Wise Analysis – North America

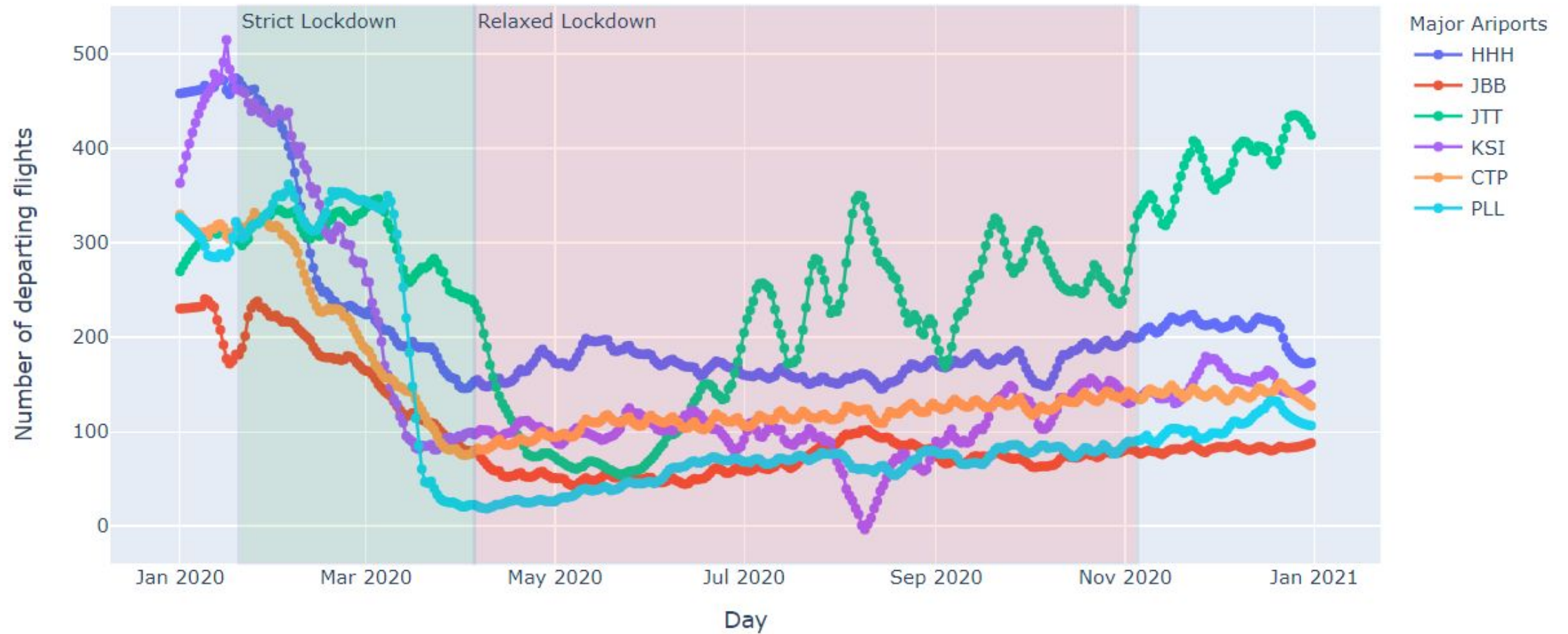




# Region Wise Analysis – Europe



# Region Wise Analysis – East Asia



# Region Wise Analysis – Asia/Australia



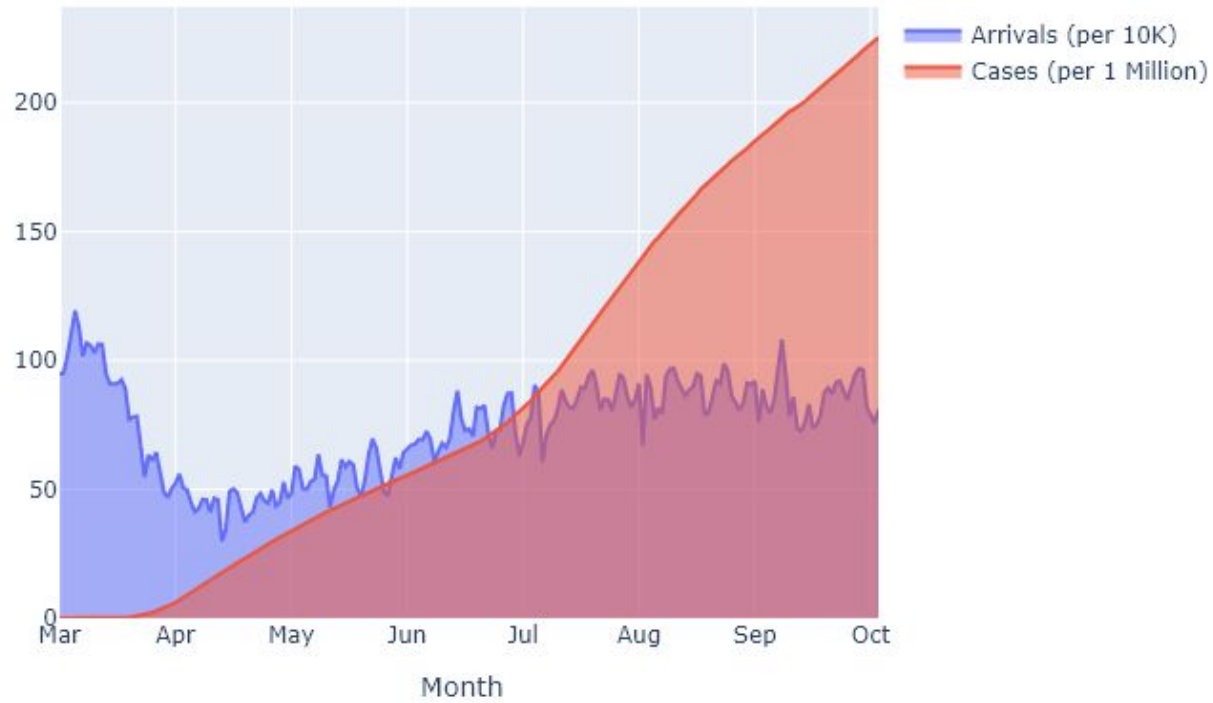
# Is Air Traffic Correlated With the Spread of COVID-19?



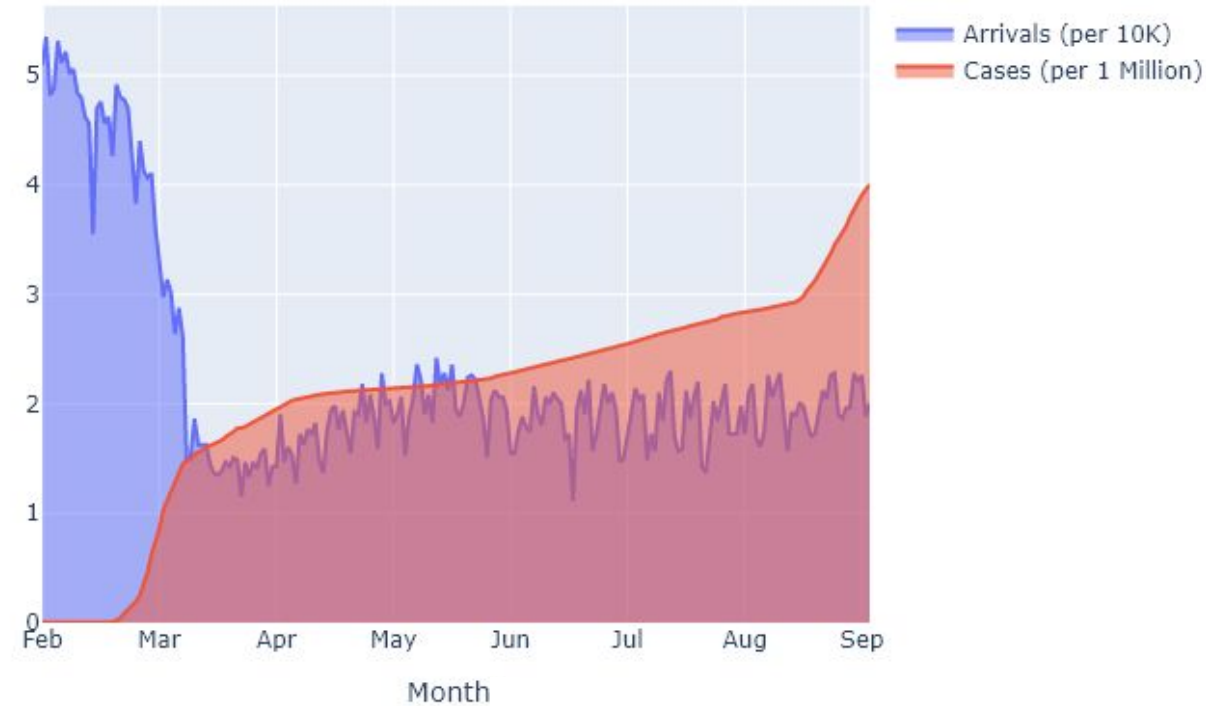


# United States vs. South Korea – Case Study

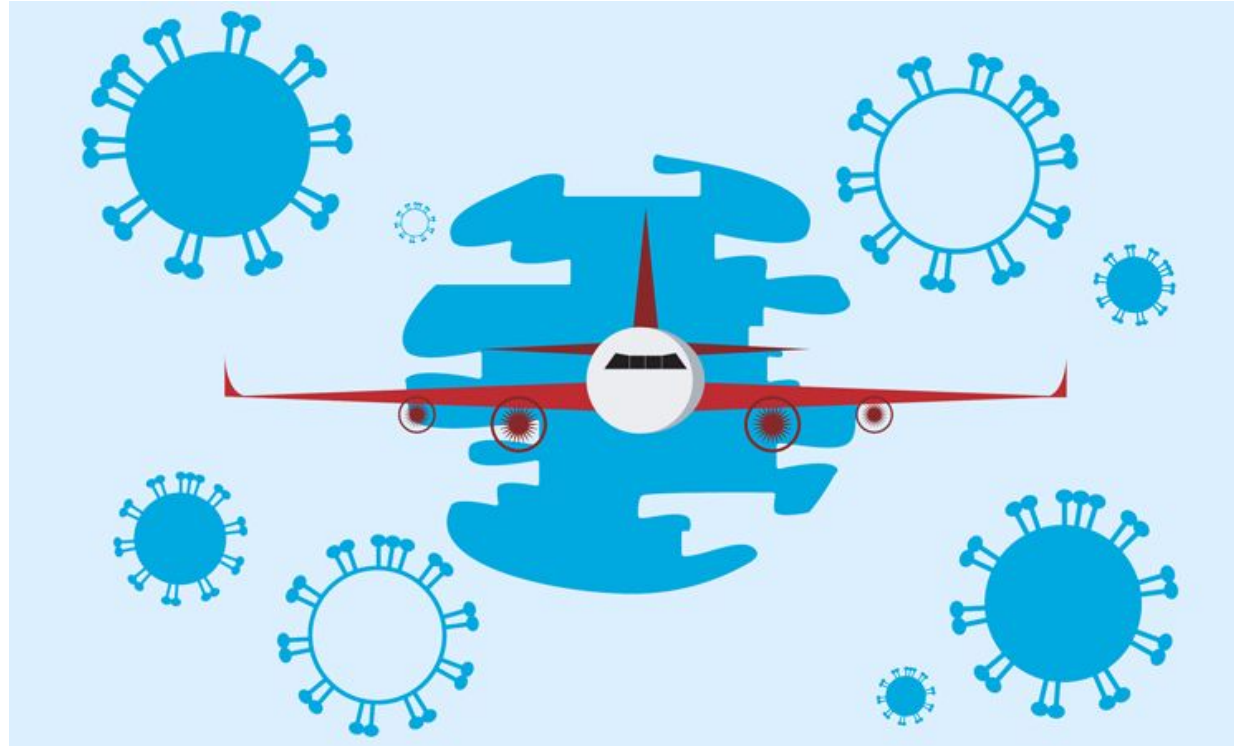
Covid-19 Cases vs. Arrival Flights for United States



Covid-19 Cases vs. Arrival Flights for South Korea



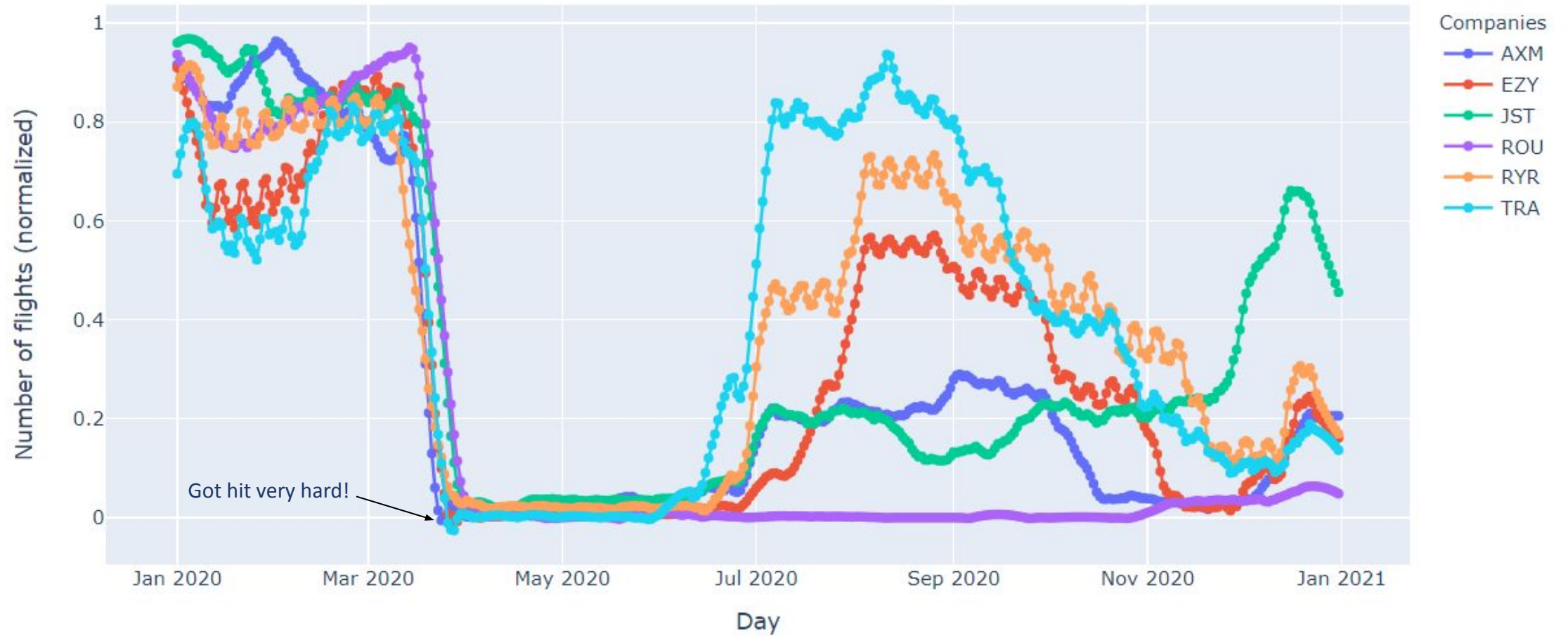
# Analysis Based on Airline Companies



# Premium Airline Companies



# Small Airline Companies





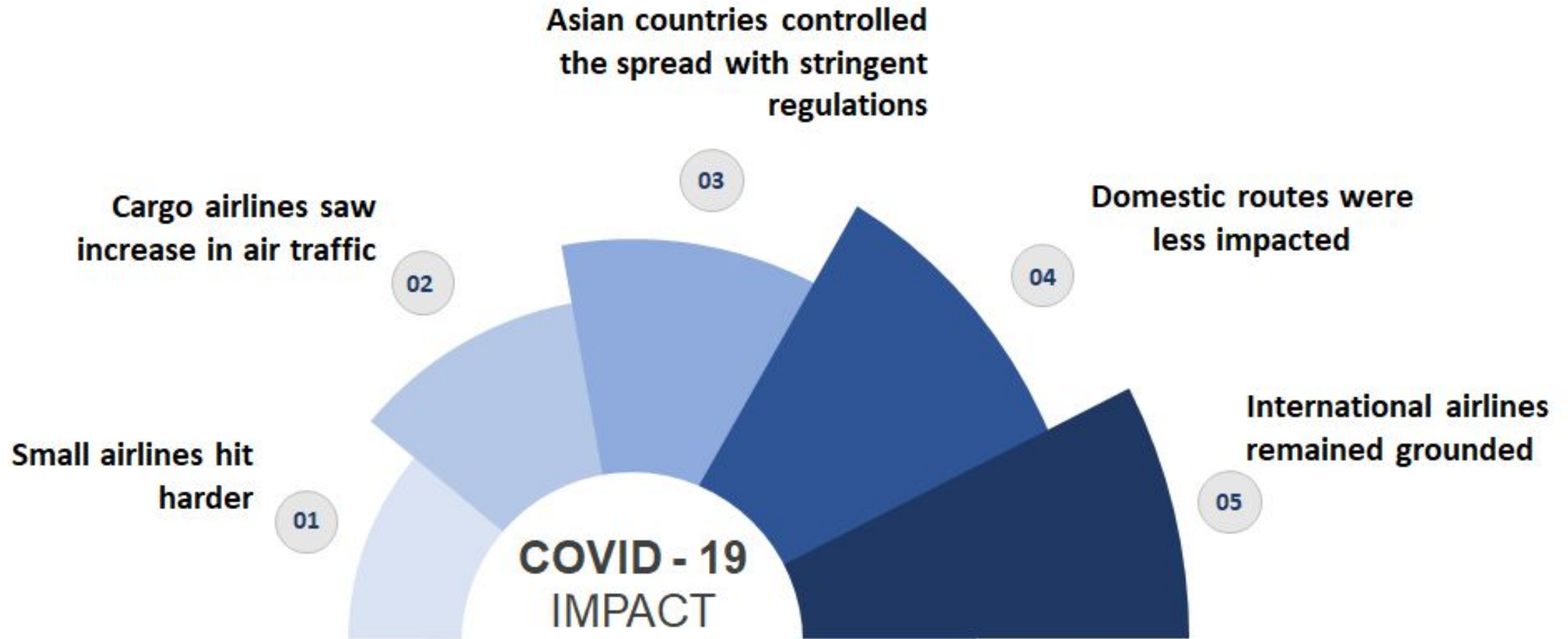
# Cargo Airline Companies



# Comparative Analysis – 2019 vs 2020



# Conclusions



**THANK  
YOU**

