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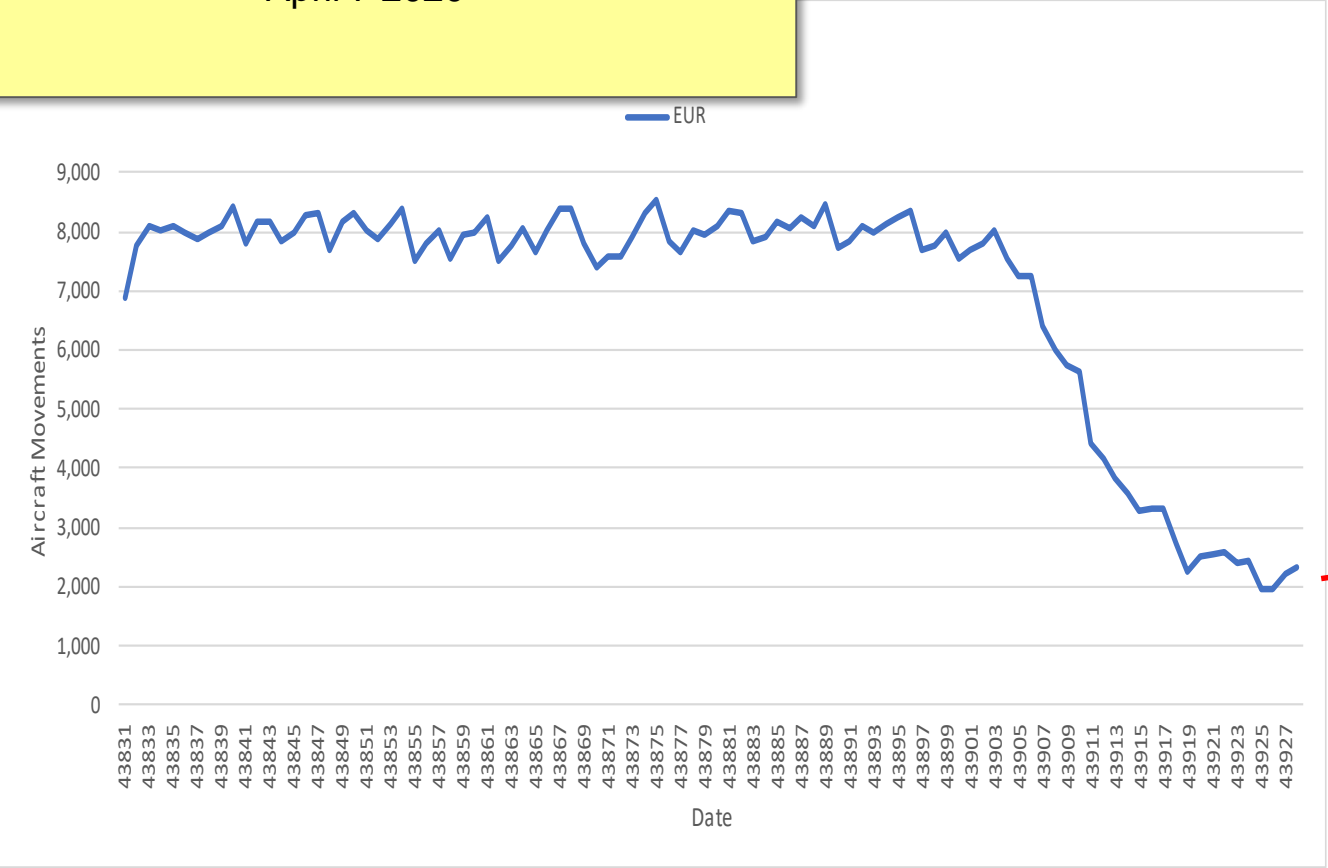
# Recovery

**COVID-19**

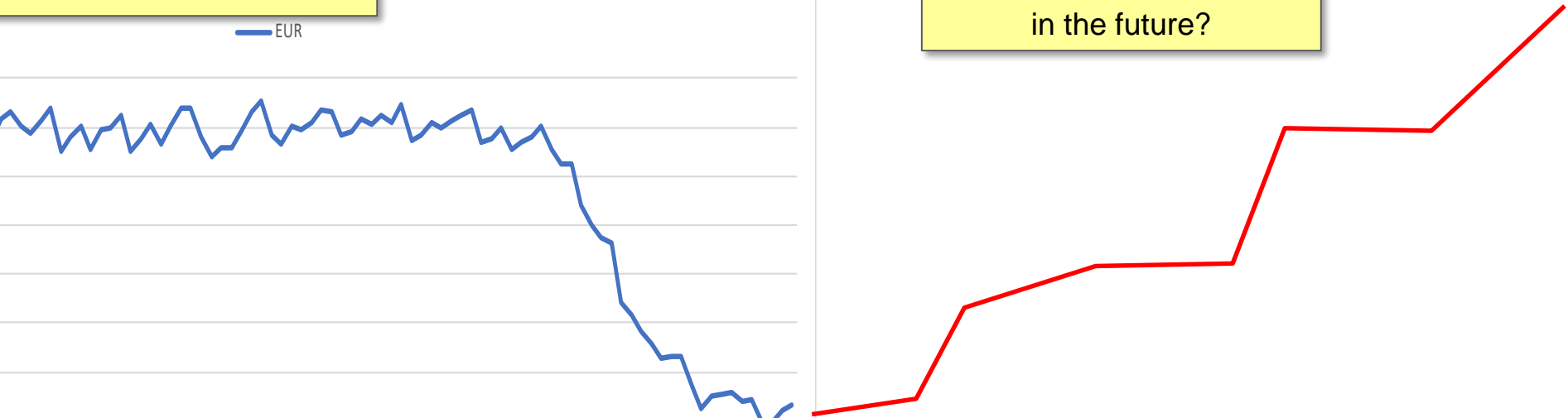
**Air Traffic Demand Prediction during  
recovery**

# We know what happened – what now?

For example, here is European traffic, Jan 1 – April 7 2020



Forecast model: what does this pattern look like in the future?



# Demand Prediction Modelling

**Objective:** Anticipate Traffic Demand during recovery

**Data Input:**

- AIREON records of flight departures worldwide
- OAG traffic compositions pre-COVID-19

**Methodology (Past):**

Reviewed worldwide scheduled flight data since early January

- Jan 5 – April 18
- 229 countries and territories

Traffic aggregated by week and by country pair

Looked for patterns of traffic decomposed into

- Domestic vs. international

# Developing Demand Prediction Analysis

## Methodology (Future):

Recovery analysis consists largely of traffic decomposition

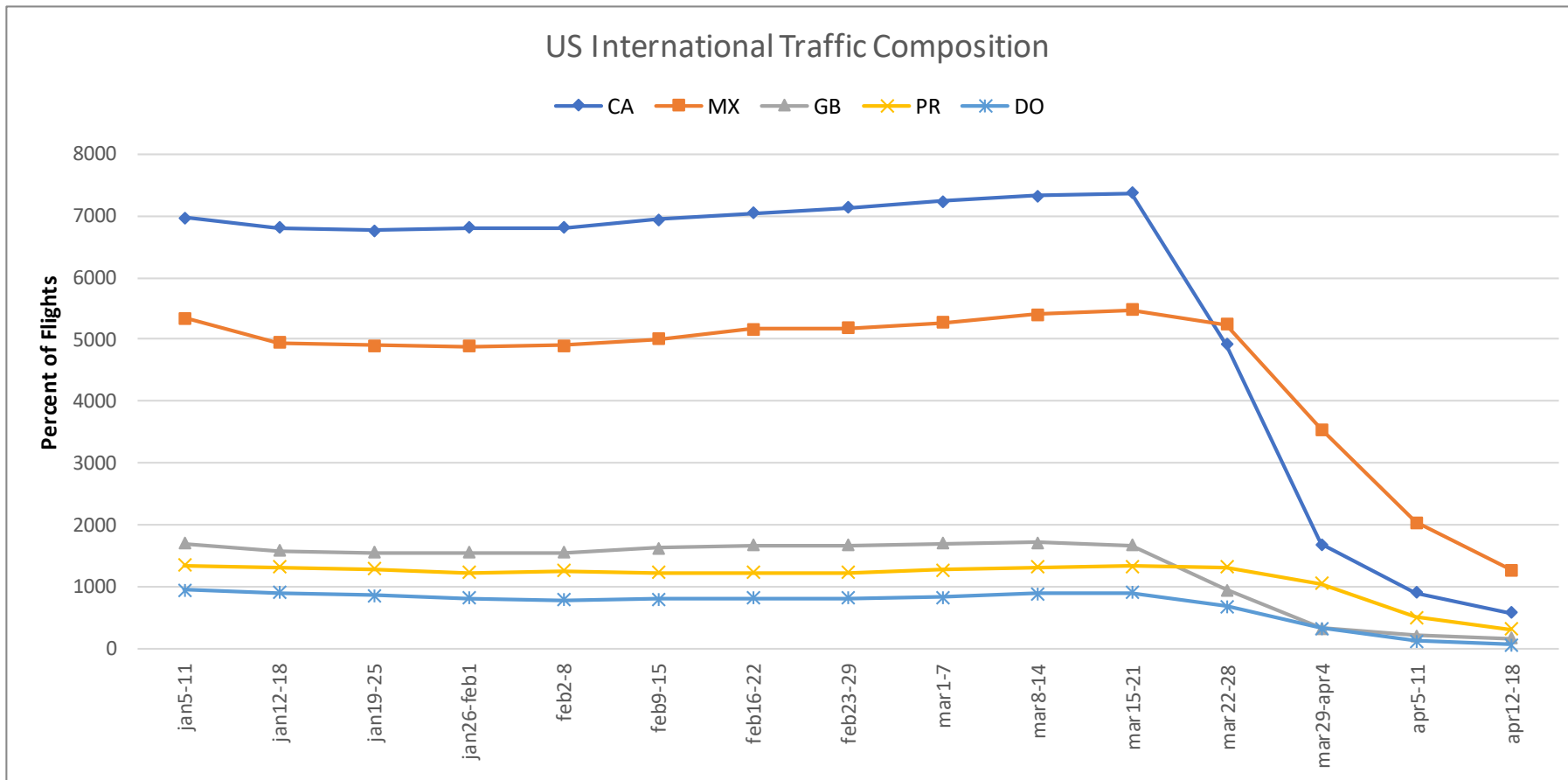
- Timing of when traffic will return is uncertain, but we determined the dependency of that timing on traffic in other countries
- If we know the percentage of traffic coming from and going to a country and country lifts restrictions we can start to anticipate demand
- E.g., In the USA majority of US traffic is domestic. Canada and Mexico are the 2 countries that contribute the most external traffic – when they open US can expect increase in demand

## Outcomes:

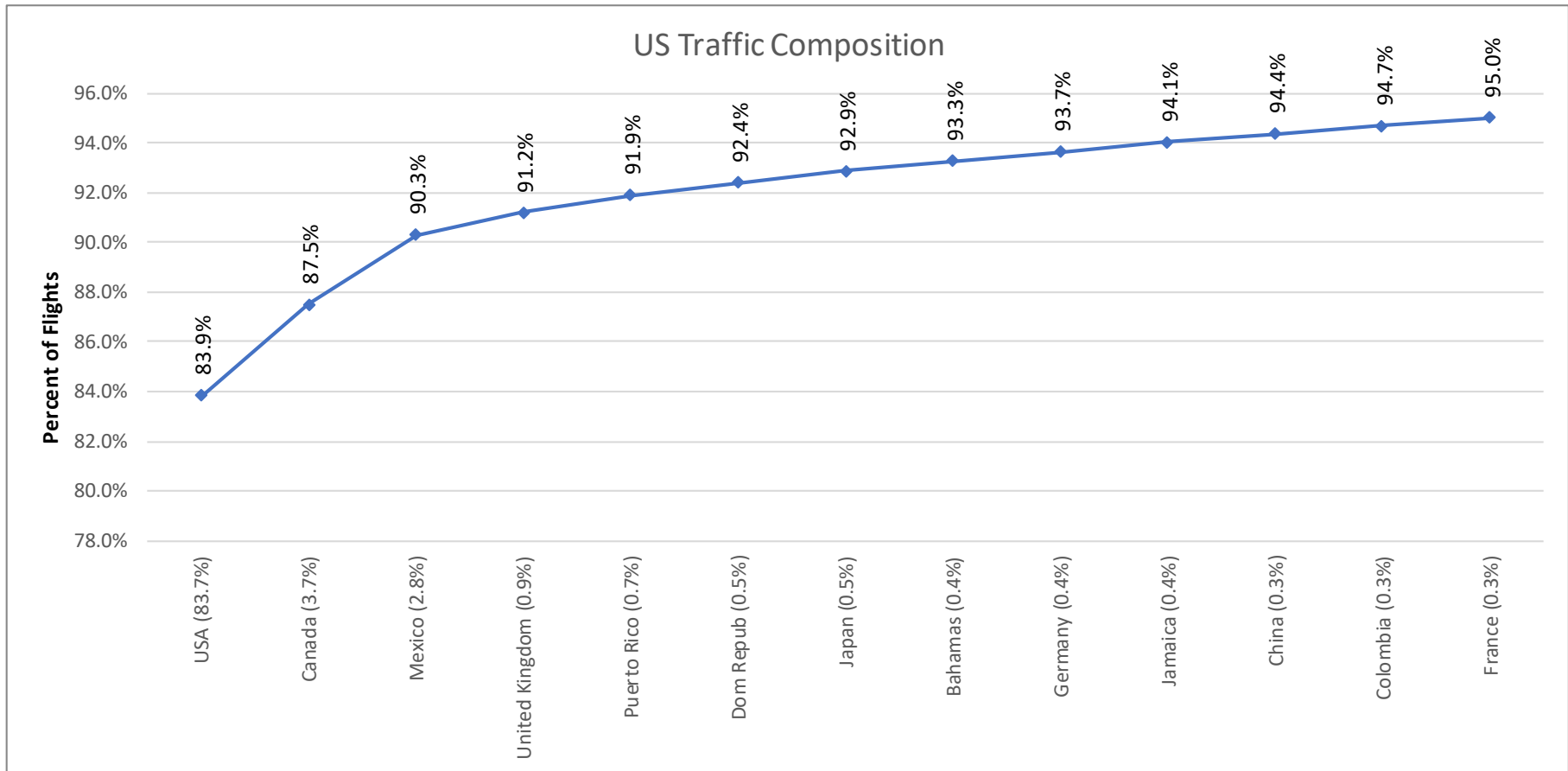
- Merge anticipated demand with capacity data
- Model demand-capacity imbalances
- Prepare resources for the demand
- Balance demand and capacity

**So what will drive demand?**

# United States

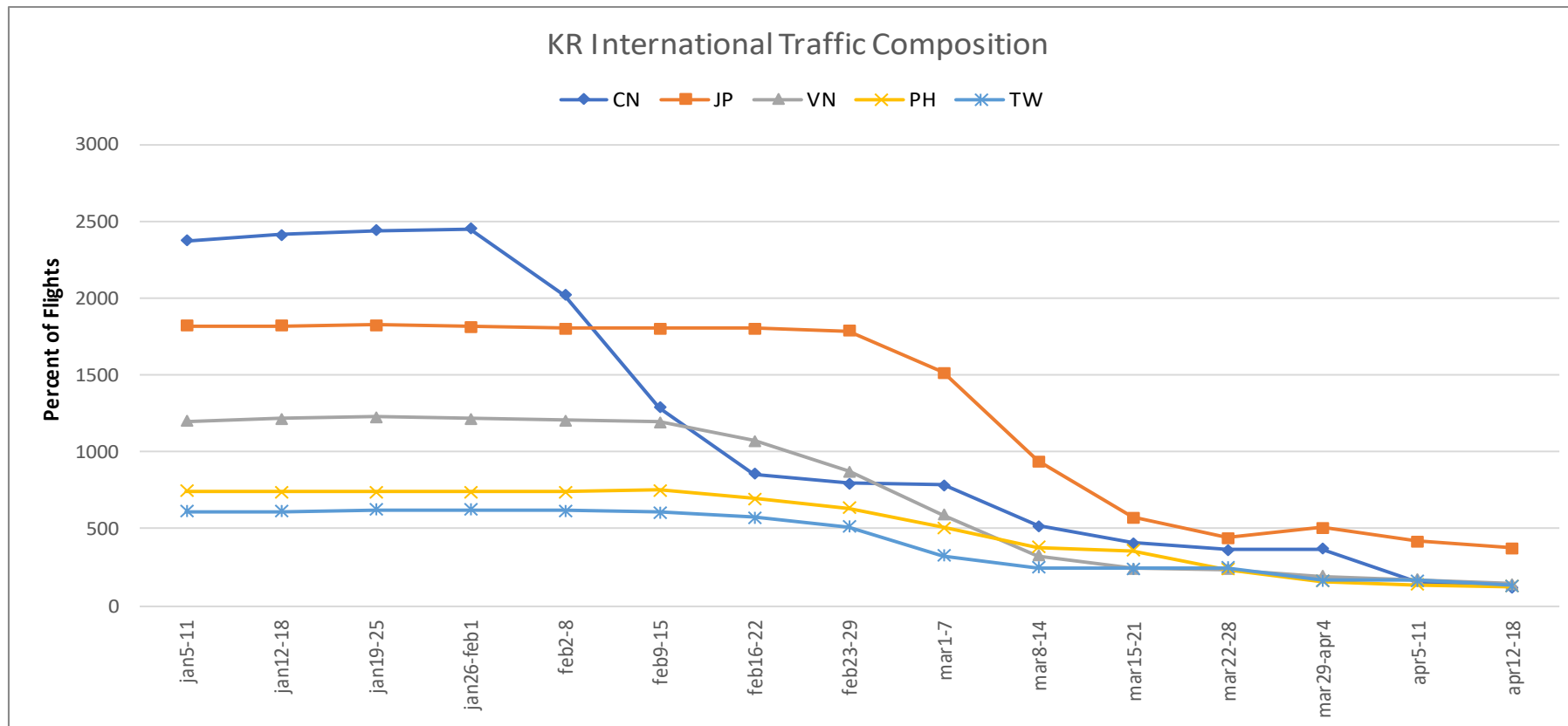


- Shows drop in international traffic was very uniform (mid-March), with Puerto Rico being a bit more gradual, and Mexico slightly later (March 22)

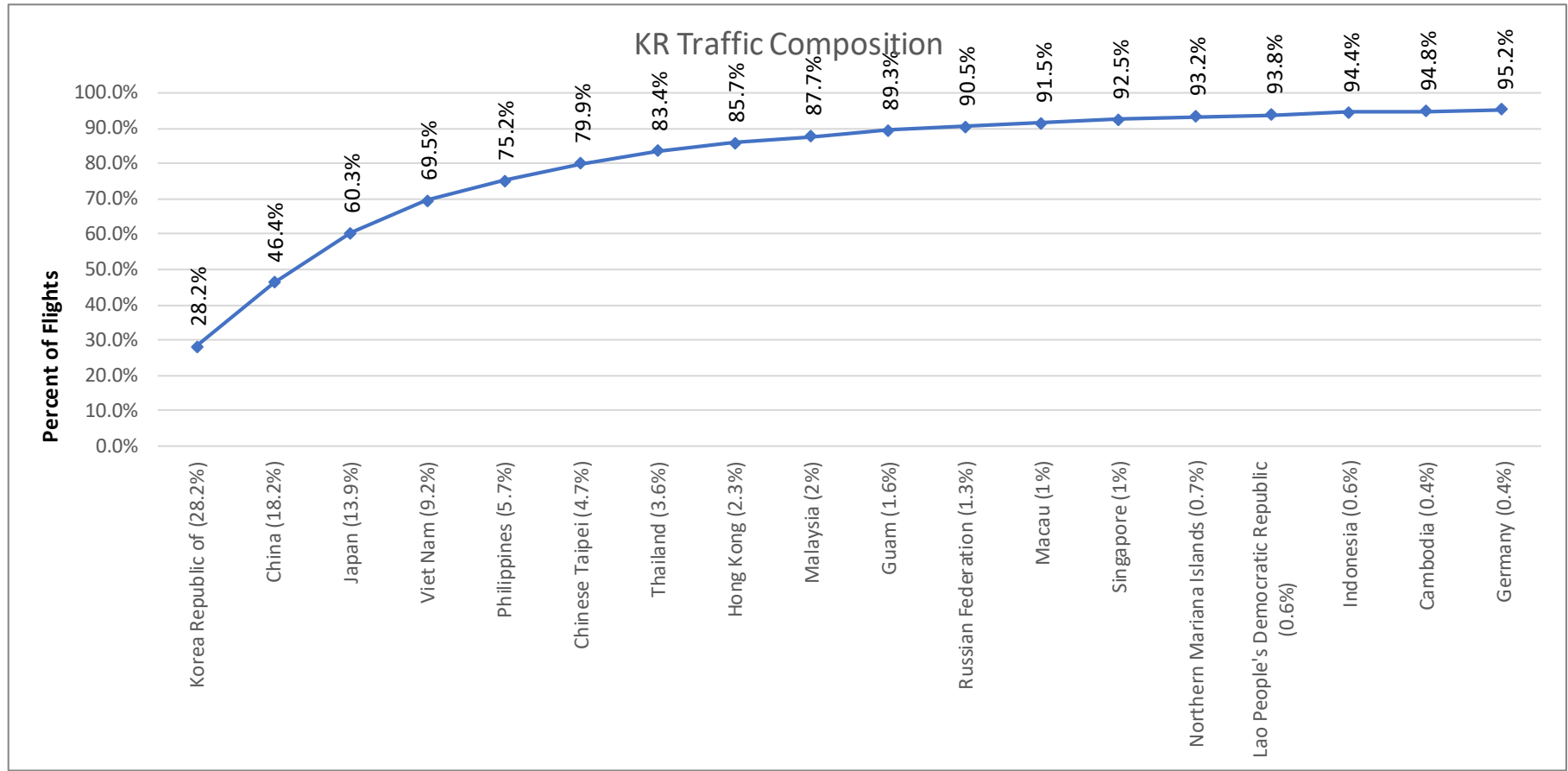


- US traffic is 83.7% domestic
- Adding Canada (3.7%) and Mexico (2.8%), we reach 90.3% of the traffic. Canadian/Mexican policies will likely be similar (in timing) to US policies. After Canada and Mexico, Each other country provides less than 1% of the traffic, so the order in which traffic resumes from/to other countries is not so critical, from overall traffic standpoint. (Of course, it matters greatly in terms of airline revenue)
- **Recovery for the US will be determined largely by timing of the return of domestic traffic**

# South Korea

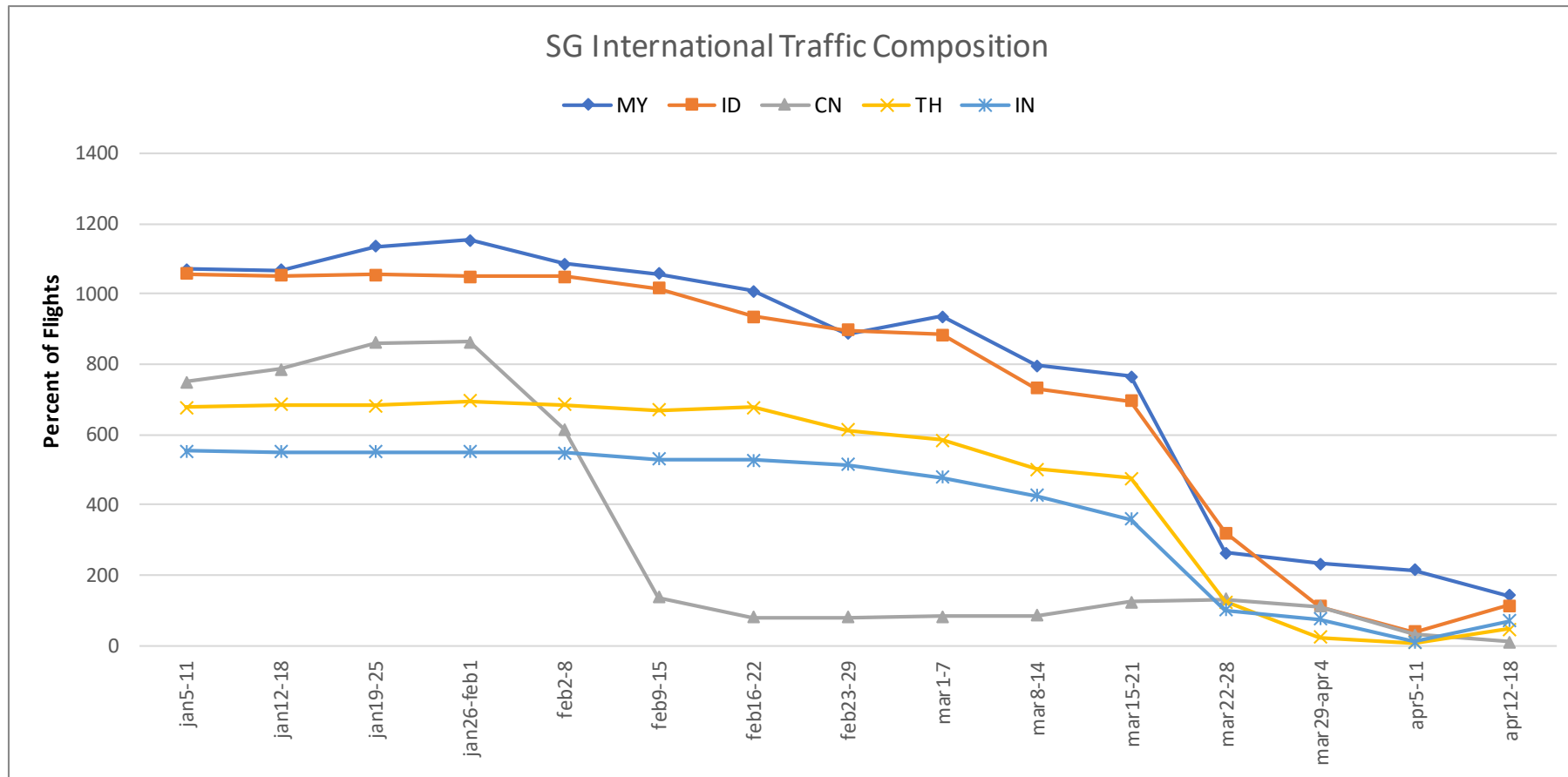


- Shows that the Korean drop in traffic was driven by three slightly different patterns:
  - China two-tiered drop (late Jan, then early March)
  - Japan one-tiered drop
  - Vietnam, Philippines, Taiwan one-tiered drop mid Feb

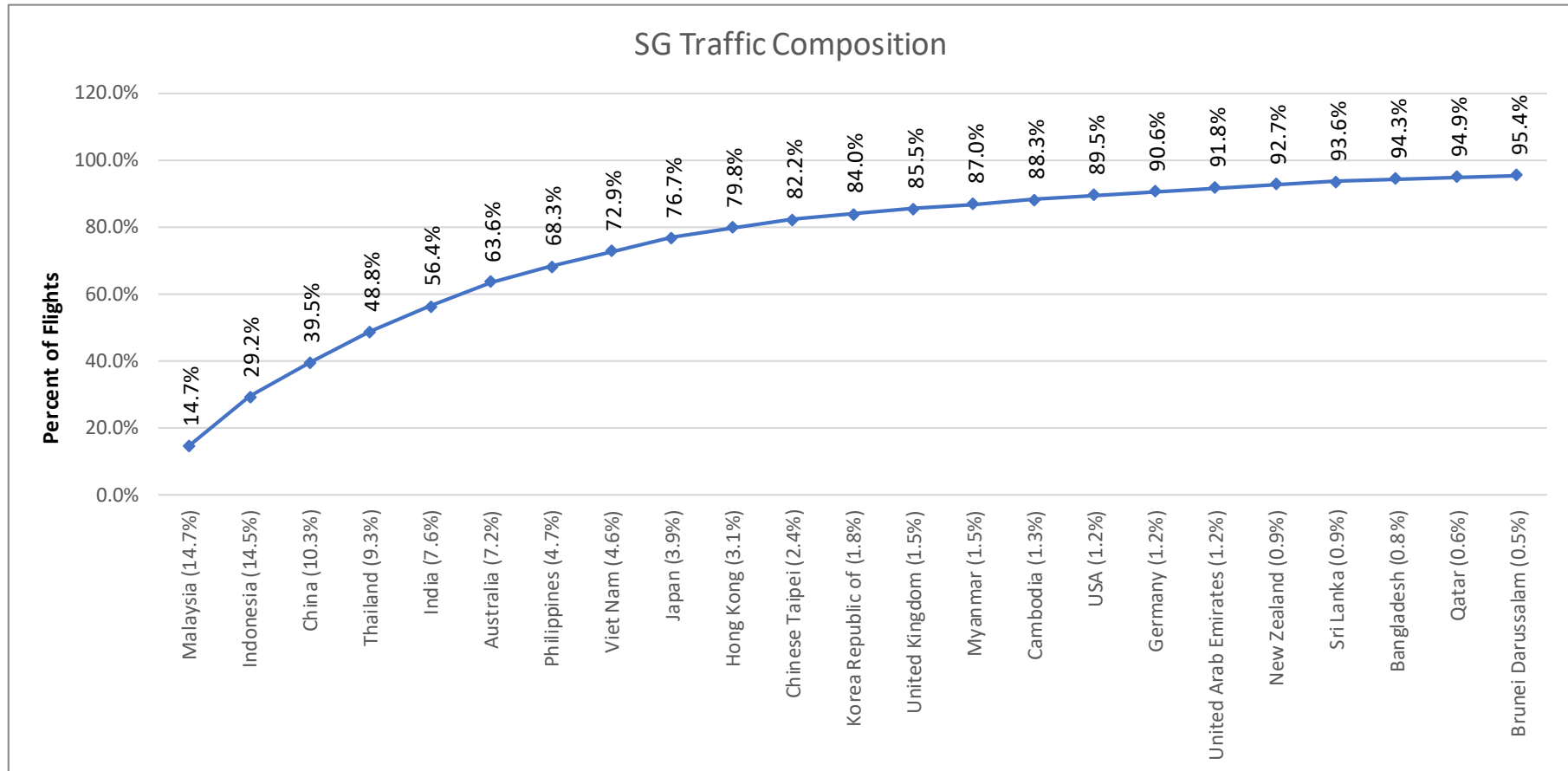


- For South Korea, domestic traffic is 28.2% of overall traffic
- China (18.2%) and Japan (13.9%) are the next biggest contributors, which brings total traffic to 60.3%
- After that, each of the other countries contributes no more than 10%
- **So, recovery will be determined by domestic traffic, China, and Japan, with a slow gradual climb after that**

# Singapore



- Shows that the two-step drop in traffic (first around Jan 26, then around mid-March) was driven by similar pattern in China, Malaysia, Indonesia, and Thailand.



- Singapore has no domestic traffic, so recovery completely depends on international traffic
- The biggest contributors are Malaysia (14.7%), Indonesia (14.5%), and China (10.3%), totaling 39.5% of traffic.
- Singapore can expect a gradual recovery, with each other country contributing less than 10%. Contributing countries tended to drop off more gradually, so they may well recover gradually.

# Conclusion

This analysis can assist ANSPs with their COVID-19 recovery plans by:

- Anticipating the demand
- Merge anticipated demand with capacity data
- Model demand-capacity imbalances
- Prepare resources for the demand
- Balance demand and capacity

This analysis can be done for any:

- Continent
- Region
- As individual countries

**Add complexities to the modeling as we learn more (COVID-19 Infections and restriction relaxations)**

**Model will improve as more data becomes available during the recovery**



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