Data Analysis for commercial forecast

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BACKGROUND CONTEXT

The COVID-19 pandemic has significantly impacted the aviation industry. As a result, data from recent years has not been utilized for market forecasting, as it is not representative of normal conditions.

While the industry appears to be recovering from this crisis, is this truly the case?

MY ROLE IN THE GMF TEAM

As an apprentice within the Global Market Forecast team, I have been tasked to address the question. The Airbus GMF team conducts a 20-year forecast for traffic growth and aircraft demand.

With my tutor, we aim to establish a framework for analyzing the market evolution over recent years based on predefined indicators.

METHODS

To visualize our data, we create a bar chart in the form of a waterfall that compare the ASK of two selected years.
The Available Seat Kilometers is a quantifier of traffic evolution.

Evolution of the ASK every 10 years between 1999 & 2023, scale e+11

RTE_MINUS
SER_MINUS
CAPA_MINUS
FREQ_MINUS
FREQ_PLUS
CAPA_PLUS
SER_PLUS
RTE_PLUS
ASK
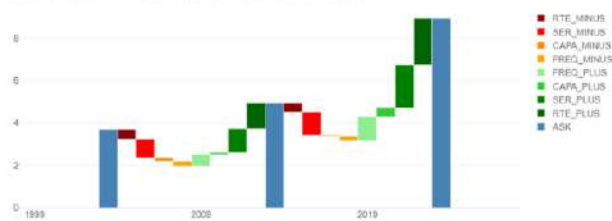
Example of a waterfall bar chart

We classify then the ASK's variation into 8 groups :
- RTE_MINUS & RTE_PLUS : the ROUTE (RTE) is an airport pair regardless of the airline.
- SER_MINUS & SER_PLUS : the SERVICE (SER) is an airport pair considering an airline.
- FREQ_MINUS & FREQ_PLUS : the FREQUENCY (FREQ) is the passage frequence on a route.
- CAPA_MINUS & CAPA_PLUS : the CAPACITY (CAPA) is the number of seats per frequency.

The suffixes MINUS and PLUS indicate a decrease or increase of this indicator.

RESULTS

We are now utilizing our visualization to compare the year 2019 to 2023. When comparing from one year to another, we observe the significant impact of COVID, which halved global flights. Subsequently, we see a nearly equal level in 2023 comparing to 2019.
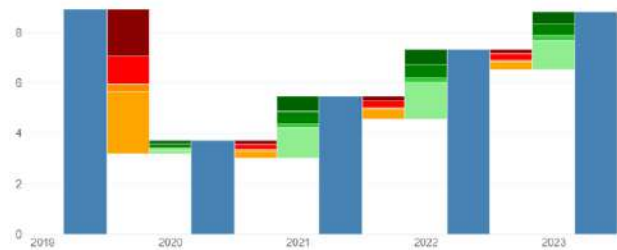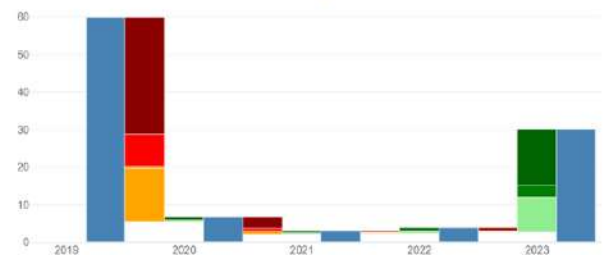

Global waterfall bar chart between 2019 & 2023 every year
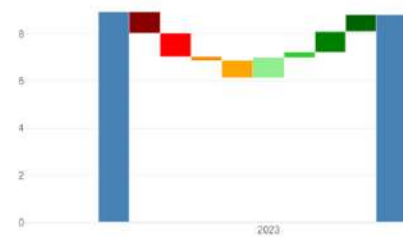
Global waterfall bar chart between 2019 & 2023, 4 years window

When examining a 4-year window, we notice that we do not have the same initial market. Indeed, some routes that closed have never reopened, and certain airlines that operated in 2019 are no longer in operation.

For now, we have looked at the global level. However, it is important to examine at a sub-level to see if there are any disparities. If we examine certain regions of the world individually, the levels of ASK have not returned to the same as in 2019. As we can observe in the graph for China below.

China waterfall bar chart between 2019 & 2023 every year

CONCLUSION & OTHERS APPLICATIONS

We may assume that we have returned to a 'normal' level on a global scale, even if the market dynamics have shifted. However, at the regional level, this is not the case. It becomes crucial to consider at which granularity we want to conduct our forecast and to consider the disparity of this framework.

Moreover, the visualization tool we have created can be used to identify growth or decline drivers, or to present results to specific airlines. The application is highly versatile.