Aviation Performance Metrics (APM) provides tourists or passengers, airport authorities and airline companies with a platform for being better aware of the aviation industry through some common benchmarks. It answers when, where and why the delays, as well as cancellations happen the most. Moreover, it bridges the gap between humans and machines by interactions such as hovering, zooming, brushing, panning and many others.

Our time-variant data (downloaded from the Bureau of Transportation Statistics of the United States) covers all 50 states, Puerto Rico, U.S. Virgin Islands, and U.S. Pacific Trust Territories and Possessions, ranging from January 2015 to December 2019. To interpret it thoroughly, we present it from diverse angles at different levels of granularity.

First, let's get down to the *Time Series*. It pops up the following line chart as shown in Fig. 1. It allows selecting and hovering over lines for the exact values. While sometimes the percentages of cancellation and delay on certain days like Mar 14, 2017 (Fig. 2) are approximate, mostly, the differences between them are evidently large. And in general, they are negatively correlated as we expected.

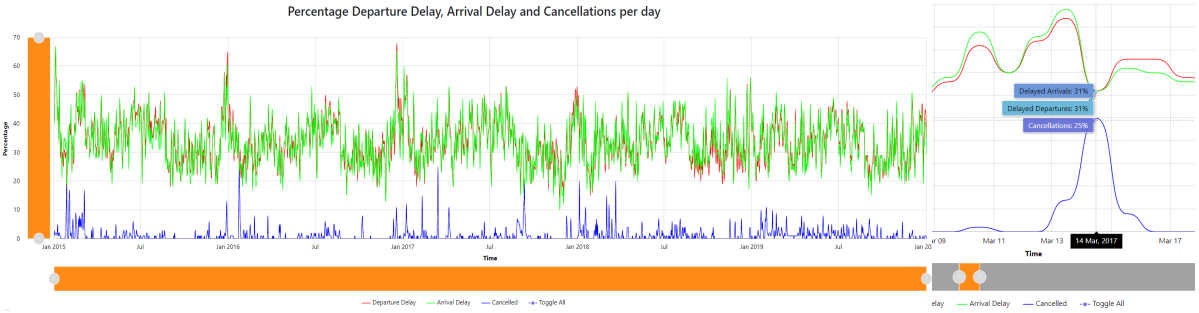

Fig. 1 A temporal view of percentages of delay and cancellation at a macro level

Fig.2 An anomaly

Now, let's have a look at the *Map* module. As is shown in Fig. 3, the darker the dot is, the poorer its punctuality is. And the size indicates the scale, measured by the number of destinations that are visible after clicking on an airport (Fig. 4). Besides, regardless of the size, *Flight Route Mode* offers discernible paths in a darker environment (Fig. 5), which is appropriate for specialists to recognize its traffic pattern of the network. Fig. 6 displays inter airport delays between major airports, making it possible for the analysis of each direction of a specified flight path.

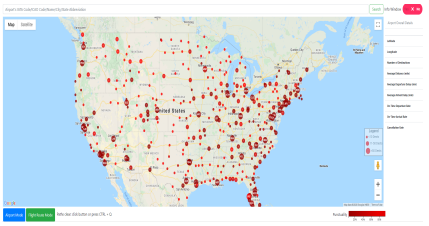

Fig. 3 Airport distribution & performance

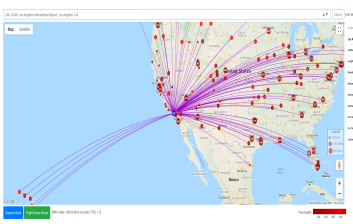

Fig. 4 Connectivity of LAX

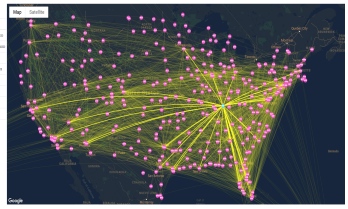

Fig. 5 Interconnectivity between airports

To fetch the results of delays or cancellations of specific airlines, it offers filtering which plays a key role to get their insights. Simply add/remove airlines, months, years, and delay types to narrow down the search (Fig. 7). There are other modules in our project which (due to lack of space) were not included in the summary.

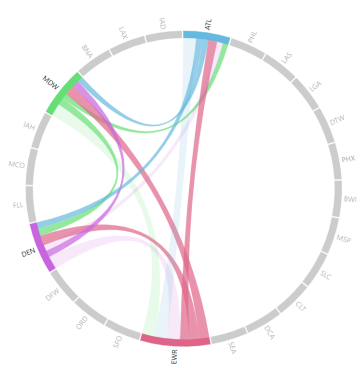

Fig. 6 Inter airport delays

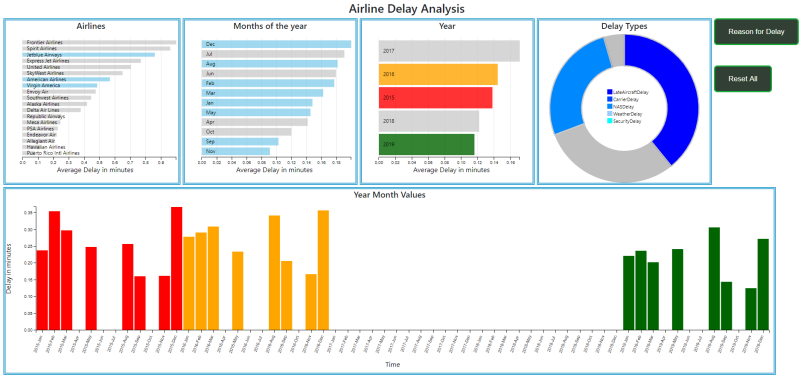

Fig. 7 Airline analysis at a micro level

From the course of the project, we learnt quite a lot of related techniques, and this will hopefully help us in our future endeavors.