

# Dashboard Report

## Audience & Context

This dashboard was designed for a general audience, particularly travelers and individuals interested in aviation performance. Its purpose is to highlight long-term trends in airline delays, disruptions, and cancellations across major U.S. airports. Although flight delays are a common concern for passengers, the dashboard reveals that delays represent a relatively small portion of the total number of flights operating each day. By interacting with the visualizations, users can identify which airports experience higher disruption rates and gain a clearer sense of potential travel challenges. In creating this dashboard, I also revisited and refined the written report from Project 1. Since both projects draw from the same dataset, this was an opportunity to enhance the storytelling, clarity, and analytical depth of the original work.

## KPIs

The dashboard focuses on three primary key performance indicators (KPIs):

- **Delays**
- **Diversions**
- **Cancellations**

These indicators were selected because they offer the most direct insight into the passenger experience and overall airline reliability. Together, they provide a view of overall performance and help users compare operational outcomes across airports.

## Dashboard Structure

The dashboard incorporates several core visual components:

- **Interactive Map:** Shows airports included in the dataset along with their average delay counts. Users can explore patterns geographically and identify high-delay regions.

- **Line Chart:** Illustrates the most common causes of delays over time, helping users distinguish between external factors (e.g., weather) and operational issues (e.g., carrier or aircraft turnaround delays).
- **Bar Chart:** Compares delay frequencies across airports and airlines, highlighting performance differences and enabling quick side-by-side evaluation.

To maintain clarity and visual hierarchy, the three primary KPIs are placed at the top of the dashboard, ensuring they remain visible at all times. For the written report, I incorporated concise, attention-grabbing section titles to help readers quickly understand the purpose of each section.

## Data Cleaning & Preprocessing

Because the dataset was previously cleaned for an earlier project, only minimal preprocessing was required. For this dashboard:

- Null values were removed.
- Unnecessary columns, such as an unused ID field, were dropped.

These steps ensured a cleaner dataset, improved dashboard performance, and supported more accurate visual insights.

## Design Choices

The dashboard uses a blue-toned color palette to reflect an air-travel theme and create a calm, cohesive visual presentation. Hover interactivity was added to allow users to explore specific data points without cluttering the display. Charts were arranged to keep the layout balanced and easy to navigate, avoiding unnecessary visual noise. This design emphasizes quick comprehension and supports users in drawing meaningful conclusions. In the written report, I chose to focus more intentional attention on flight delays and their ripple effects throughout the aviation system. Delays often cause larger disruptions such as cancellations or diversions, and highlighting this relationship adds depth to both the analysis and the narrative.

## Reflection

Overall, the dashboard effectively communicates key insights about airline delays in a way that is visually clear and accessible. Designing within limited dashboard space required thoughtful organization. I added an additional visual ranking the top airlines by total flights and total delays, which strengthened the connection between this dashboard and the findings presented

in Project 1. Updating the written report allowed me to incorporate stronger storytelling and tie real-world events into the analysis. During the recent government shutdown, for example, we saw firsthand how staffing shortages can directly influence security and operational delays, reinforcing patterns observed in the data. As someone passionate about aviation, I enjoyed the opportunity to share insights and bring more awareness to ongoing challenges within the industry.

### **Code & Data Access**

The dataset, Power BI dashboard file, and updated project 1 report are available here:

[NinerNay/Project-3-ITCS-4122](#)