**DSCI 5360 Section(s) 002 and MSCI 6900**

Data visualization for Analytics

FINAL PROJECT\_GROUP\_2

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Project title: Aircraft delay detection analysis.

**Introduction:**  
We're examining the problem of flight delays in our Tableau data visualization project. Airline  
companies, airports, and passengers are all impacted by these delays. They lead to dissatisfied  
consumers and increased expenditure. To address this, we're utilizing a dataset from the United States Bureau of Transportation Statistics. It provides thorough information on why planes are delayed in the United States.  
The dataset covers various reasons for delays, like airline-specific issues, bad weather, system  
constraints, security matters, and late-arriving planes. Our objective is to evaluate the data and identify trends. We want to assist airlines and airports to make sound decisions based on facts. We can develop methods to mitigate the impact of delays by identifying the root causes. Finally, we want to improve the overall flying experience for everyone.

**Analysis:**

The dashboards reveals significant differences in flight delay performance across U.S. airlines. Among all, Southwest Airlines stands out with the highest average carrier delay, totalling 3,161 over the year, while Allegiant Air (G4) shows the lowest at 411. This also suggests variations in operational efficiency, fleet management, and other factors between carriers. Arrival diversions, when flights are redirected to airports other than their planned destinations, also vary widely. In January 2023, SkyWest Airlines (OO) had the most with 162 diversions, while Hawaiian Airlines (HA) had only 9. These rankings indicate operational difficulties or external factors affecting airline performance. Analyzing flight cancellations shows that Southwest, American (AA), and Envoy Air (MQ) lead the pack, with Southwest averaging around 20 cancellations per period, the highest among all carriers. This points to potential challenges in scheduling, maintenance, or other operational aspects for these airlines. Airport operations significantly impact flight delays. Atlanta Airport (ATL) experiences the highest arrival delays, suggesting bottlenecks that need to be addressed. Seasonal patterns also emerge, with winter months like December, January, and February seeing the most weather-related delays, particularly at Denver Airport (DEN). Denver (DEN) specifically saw the highest number of weather delays in January 2023, totalling 31,875. Correlating arrival delays with total arriving flight volume provides insights into airport efficiency. This analysis can help identifying airports that manage high traffic well and those that need to enhance operations to minimize delays, ultimately improving the passenger experience. In summary, the data highlights substantial differences in delay performance across U.S. airlines and airports, driven by a range of operational, environmental, and infrastructure factors. This analysis can inform strategic decisions to enhance efficiency and mitigate the impact of flight disruptions.

**Multiple Visualizations, Dashboard, Story:**

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A screenshot of a flight statistics

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A screenshot of a weather forecast

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Business Implications:

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Conclusion

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