

Airline Delay and Cancellation

Have you ever wondered what causes airline flights to be canceled or delayed? If so, you've come to the right place. This project focuses on analyzing flight delays and cancellations using a dataset from Kaggle, specifically from US domestic flights spanning from 2009 to 2018. Due to using the free version of Power BI, my analysis in this project is limited to the year 2018.

During the preprocessing phase, I have added a conditional column for the Carrier Name to provide clear information on the abbreviation of each airline. Additionally, I have included a column for the Day of the Week to further analyse patterns and trends. Here is a list of the corresponding airline abbreviations and their full names:

UA: United Airlines
AS: Alaska Airlines
9E: Endeavor Air
B6: JetBlue Airways
EV: ExpressJet
F9: Frontier Airlines
G4: Allegiant Air
HA: Hawaiian Airlines
MQ: Envoy Air
NK: Spirit Airlines
OH: PSA Airlines
OO: SkyWest Airlines
VX: Virgin America
WN: Southwest Airlines
YV: Mesa Airline
YX: Republic Airways
AA: American Airlines
DL: Delta Airlines

It's important to note the following:

- DEP_DELAY represents the actual departure time, while ARR_DELAY represents the actual arrival time, both measured in minutes. Negative values indicate no delay, while positive values indicate a delayed flight.
- It's crucial to understand that cancelled flights are distinct from delayed flights, as a cancelled flight did not take place.

Based on the analysis conducted, several key findings have emerged:

1. Number of Flights: The dataset comprises a total of 7.08 million flights.
2. Airline with Most Flights: Southwest Airlines stands out with the highest number of flights compared to other airlines.
3. Peak Travel Season: The months of July and August witness the highest volume of air travel, indicating that these months are popular for vacations and trips.

4. **Busiest Day of the Week:** Monday records the highest number of flights, suggesting that it is a popular day for business and leisure travel.
5. **Delay Causes:** The most common reason for flight delays is the "Late Aircraft Delay" category, which accounts for the majority of delays.
6. **Highest Average Departure Delay:** DVL Airport (Airport in Devils Lake, North Dakota) has the highest average departure delay among all airports in the dataset. Additionally, August experiences the highest average departure delays.
7. **Southwest Airlines and Flight Cancellations:** Southwest Airlines reports the highest number of cancelled flights, indicating a potential area for further investigation. Moreover, March is the month with the highest number of flight cancellations.

These insights provide valuable information about flight patterns, delays, and cancellations, enabling airlines and passengers to make more informed decisions. For instance, if you prefer a less crowded day, Sunday is an ideal choice as it typically experiences lower levels of activity compared to other days of the week. Hope this dashboard helps you to facilitate decision-making during your travels.