**Flight Delay Analysis**

This analysis explores flight delay patterns using a dataset of 2,201 flight records. The goal is to understand the distribution and key factors contributing to delays, using exploratory data analysis, visualizations, and descriptive statistics.

Dataset contains 13 variables including schedtime, carrier, deptime, delay, etc. There were No Missing Values in flight Delay Dataset.

Carrier DH operated the highest number of flights (551) and also had the highest number of delays (137).

RU had a significant number of delays (94), while OH and UA had relatively low flight counts and delays.

Histograms were generated for variables like schedtime, carrier, origin, dayweek, etc. These give a sense of flight distribution by category and numeric spread.

Scatter Plot Differentiates on-time vs delayed flights using color. Useful for identifying patterns (e.g., flights scheduled later in the day being more delayed).

Box Plot Shows spread and central tendency of departure times across the month. Helps detect which days might have consistently late departures.

Pie Chart shows Visual summary of on-time vs delayed flights. It clearly shows majority flights are on time.

**Recommendations**

**Investigate Carrier DH**  
High flight volume and delay count suggests the need for operational efficiency checks.

**Optimize Scheduling**  
Analyze flights during specific hours (especially peak departure times) for potential rescheduling.

**Routine Monitoring**  
While weather had little impact here, ongoing monitoring is essential for real-time delay prediction.

**Operational Adjustments by Time Slot**  
Use the dephour analysis to reallocate staff or adjust flight plans in hours with high delay rates.

The analysis provides a foundational understanding of delay patterns and suggests actionable steps to reduce delay occurrences. Carriers and airport operations teams can leverage this data to make informed decisions on scheduling, staffing, and carrier partnerships.