AVIATION SAFETY DATA ANALYSIS

ANALYZING AVIATION INCIDENTS TO DRIVE SAFER AND SMARTER AIRLINE DECISIONS

OVERVIEW

- • Project Scope: Analyze aviation incident data from 2008–2023
- • Objective: Identify trends, detect safety issues, and suggest operational improvements
- • Tools: Python, Pandas, Tableau, Matplotlib

BUSINESS UNDERSTANDING

- • Airlines face increasing safety and financial pressures.
- • Key Decisions:
- - Reduce crash rates
- - Improve aircraft maintenance strategy
- - Enhance pilot training
- • Business Value: Fewer accidents, lower costs, better reputation.

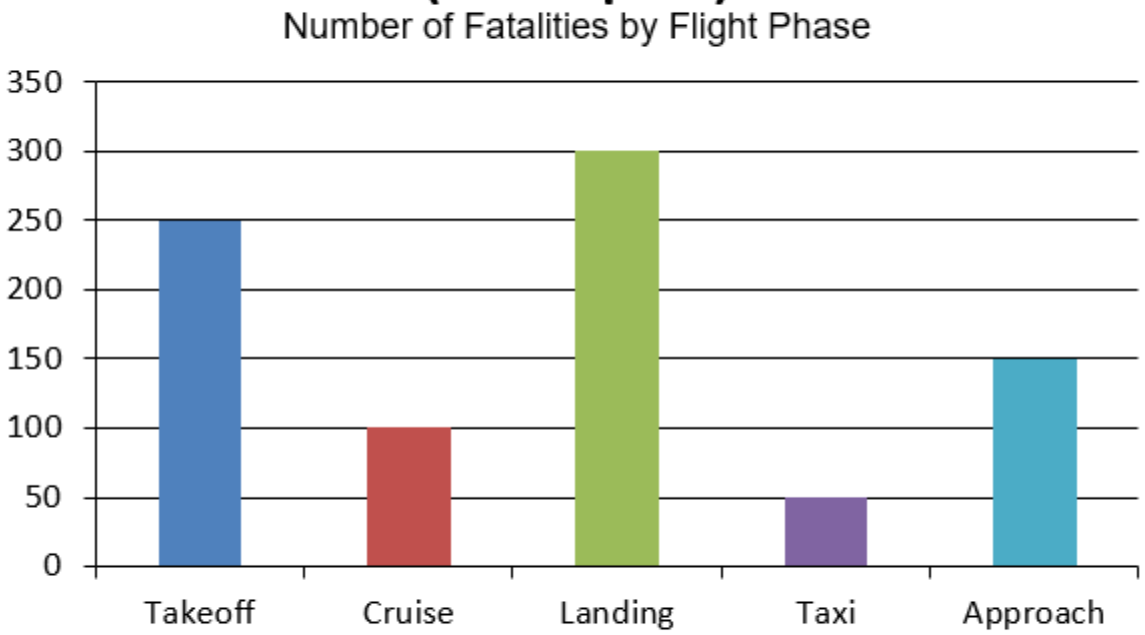
DATA UNDERSTANDING

- • Dataset: Public incident records from aviation safety database
- • Key Features:
- - Date, Location, Operator, Phase of Flight, Weather, Fatalities
- • Challenges:
- - Missing data in weather, aircraft type
- - Inconsistent entries for aircraft damage

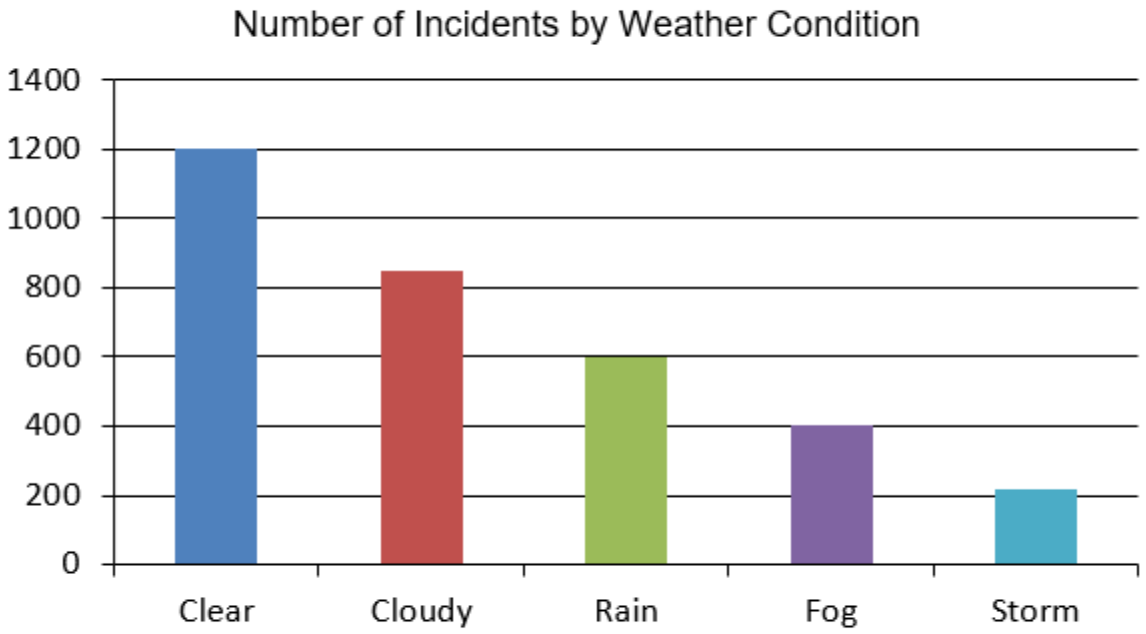
DATA ANALYSIS

- • Crashes peak during landing and takeoff
- • Human error & bad weather are major contributors
- • High fatality incidents often linked with complete aircraft destruction
- • Most common aircraft types appear in frequent incident records

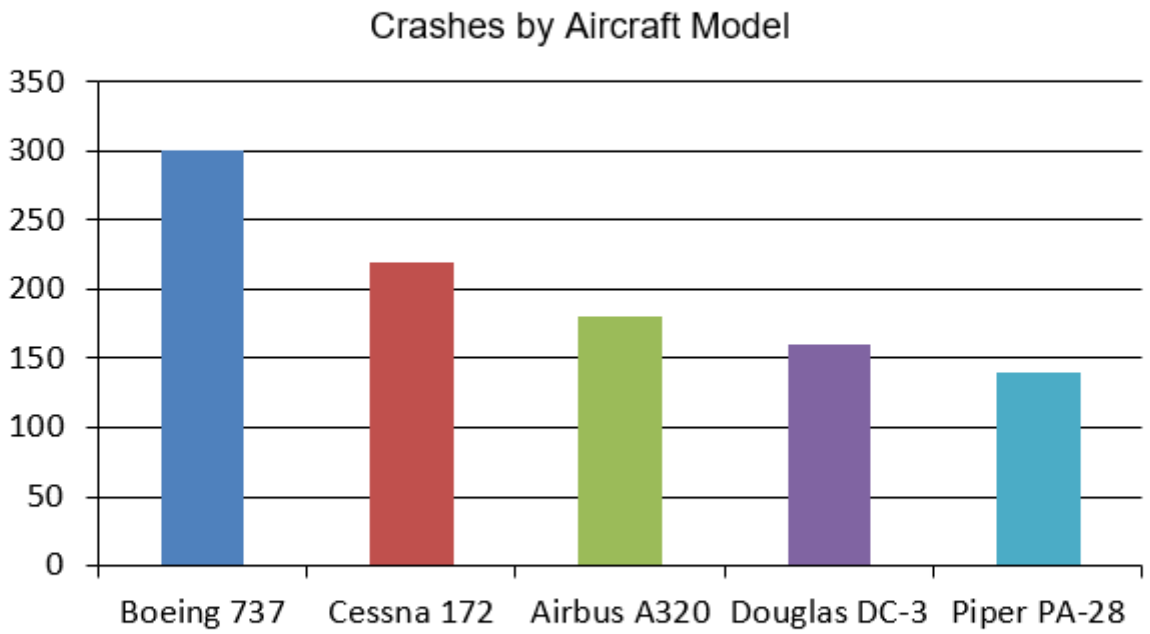
Fatalities by Phase of Flight (Sample)



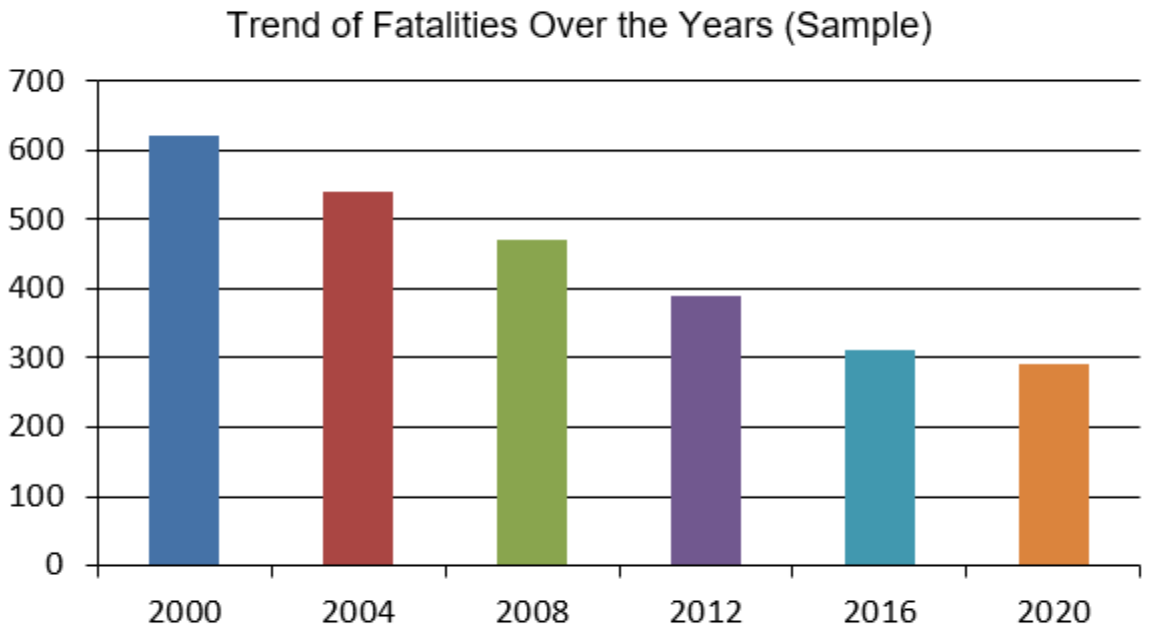
Incidents by Weather Condition



Most Affected Aircraft Types



Annual Fatalities Trend



RECOMMENDATIONS

- 1. Prioritize phase-specific pilot training
- 2. Invest in better weather data collection systems
- 3. Focus maintenance on high-risk aircraft models
- 4. Improve reporting of crash factors for better analysis

NEXT STEPS

- • Integrate more datasets (e.g. weather radar, maintenance logs)
- • Collaborate with airline safety units
- • Deploy Tableau dashboards to operations teams
- • Scale analysis to global aviation reports

THANK YOU!

- Questions?

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