

ASSESSING POTENTIAL RISKS OF AIRCRAFT FOR FLEET ACQUISITION

A Data Science Approach Using Aviation Accident Data

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COURSE: DATA SCIENCE

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INTRODUCTION

PROBLEM STATEMENT

- It is our company's wish to expand to new industries to diversify its portfolio. The company is interested in purchasing and operating airplanes for commercial and private enterprises.

OBJECTIVE

- Analyze aviation accident data to assess potential risks of different aircraft models.
- Inform safer, data-driven fleet acquisition decisions.



DATA DESCRIPTION

Data Source

- **Dataset:** Aviation Accident Database Synopses
- **Source:** [Kaggle - Aviation Accident Database Synopses](#)

Dataset Details:

- 90,000+ aviation accident reports (1962 - 2023)
- **Key columns:** Aircraft Make/Model, Injury columns(fatal, major or minor), Year

Data Preparation

Steps:

- Selected relevant fields like Aircraft Make/Model
- Cleaned missing or inconsistent data.
- Categorical encoding for non-numeric features (e.g., Make, Model).
- Change data type of some columns

KEY FEATURES EXTRACTED

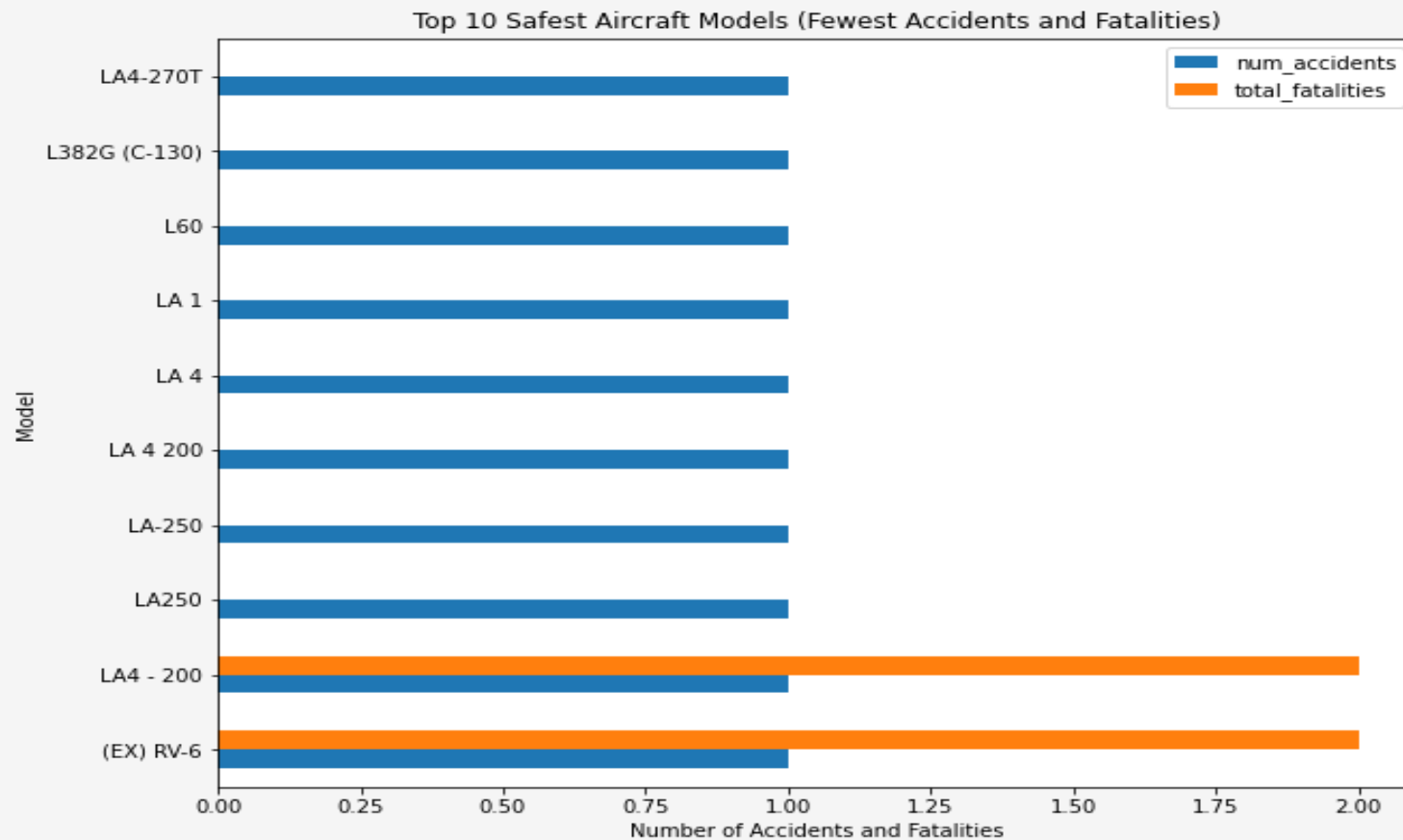
- Aircraft Make & Model
- Injury Severity (None, Minor, Serious, Fatal)
- Event date.
- Broad Phase of Flight (Takeoff, Cruise, Landing)
- Number of accidents

Exploratory Data Analysis

- Findings:
 - Most incidents occur during landing and takeoff.
 - There are aircraft makes/models with high number of accidents but less fatality.
- Visuals:
 - Bar chart: Accidents per Make or Model.
 - Pie chart: Distribution of Accidents per Phase of flight
 - Line Graph: Accidents over the Years

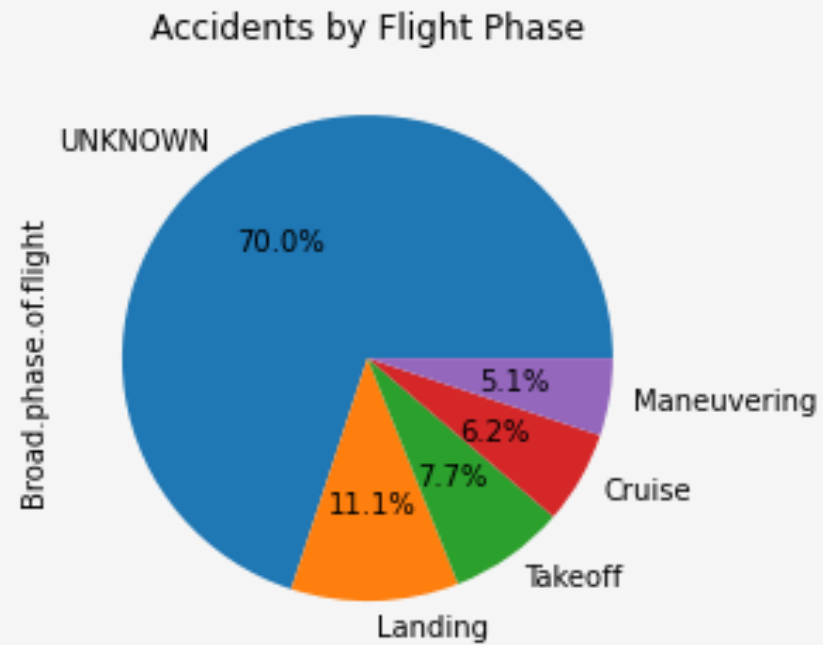
Analysis

➤ Bar chart showing the safest aircrafts



Analysis

- Pie chart for Phase of flight against number of Accidents



Business Recommendations

- Safer Models: LA250, LA-250, LA 4 200, LA4, LA1, L60, L382G(C-130) and LA4-270T.
- Safer makes: Montana, Mooney Aircraft corp, Monte clark, Monte Gomery, Moody, Moody Siple and Mooney Aircraft
- Training Required: Majorly on Take-off and Landing.

Q & A

- QUESTIONS?