

# Aircraft Risk Analysis



Data-Driven  
Recommendations for  
Aircraft Acquisition for  
Pearly Airlines

# | Introduction

- This presentation aims to precisely elaborate which aircraft models present the lowest risk as Pearsly enters the aviation industry. My research established the risk levels by deriving data from the "AviationData.csv" dataset that entails civil aviation accidents and selected incidents.

01

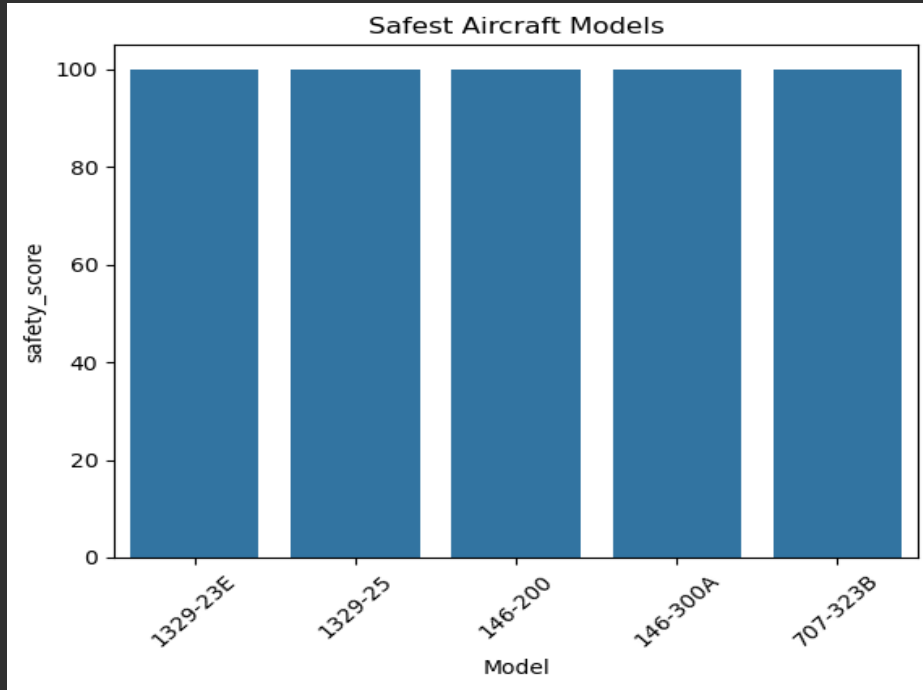
# Business Problem



## | Enter aviation operations with minimal risk

- The primary challenge faced by organizations looking to enter aviation operations is to minimize the associated risks. This includes understanding and mitigating potential operational, financial, and safety-related hazards that could impact the launch and sustainability of aviation services.

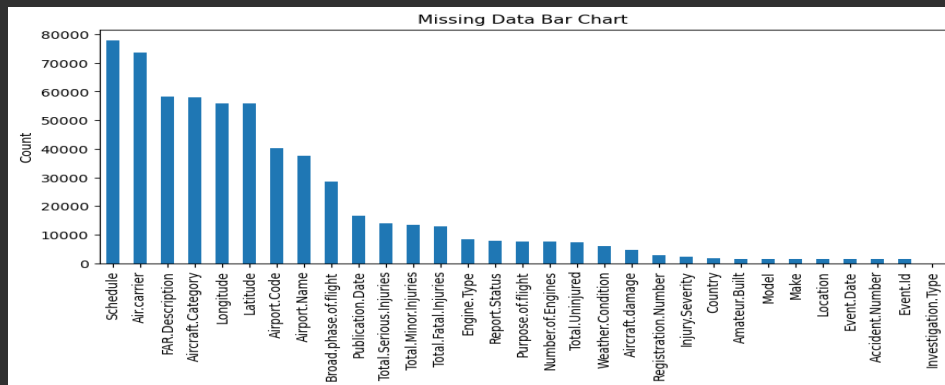
# Identify safest aircraft models



- Choosing the most suitable aircraft is vital for achieving a balance between safety and efficiency. This entails analyzing various models to determine which offers the highest safety rating while also considering operational costs and maintenance requirements.

# Purpose of Checking for Missing Values in This Dataset

- *Data Quality Assessment*
- *Analysis Planning*
- *Bias Identification*
- *Data Cleaning Decisions*
- *Feature Selection*



```
# Handling the missing data
num_cols = ['Number.of.Engines', 'Latitude', 'Longitude']

for col in num_cols:
    # Ensure numeric type
    if df[col].dtype == 'object':
        df[col] = pd.to_numeric(df[col], errors='coerce')

    # Skip if still non-numeric after conversion
    if not pd.api.types.is_numeric_dtype(df[col]):
        print(f"Skipping {col} - could not convert to numeric")
        continue

    # Impute if needed
    if df[col].isnull().any():
        median_val = df[col].median
        df[col].fillna(median_val, inplace=True)
        print(f"Imputed {col} with median: {median_val}")
```

✓ 0.0s

Imputed Number.of.Engines with median: 1.0  
Imputed Latitude with median: 38.1673615  
Imputed Longitude with median: -95.4786115

Python

## | Assess cost-effectiveness

- Analyzing the cost-effectiveness of aircraft models involves evaluating both initial purchase costs and long-term operational expenditures. This includes maintenance, fuel efficiency, and potential resale value. Understanding the total cost of ownership can inform better investment decisions.

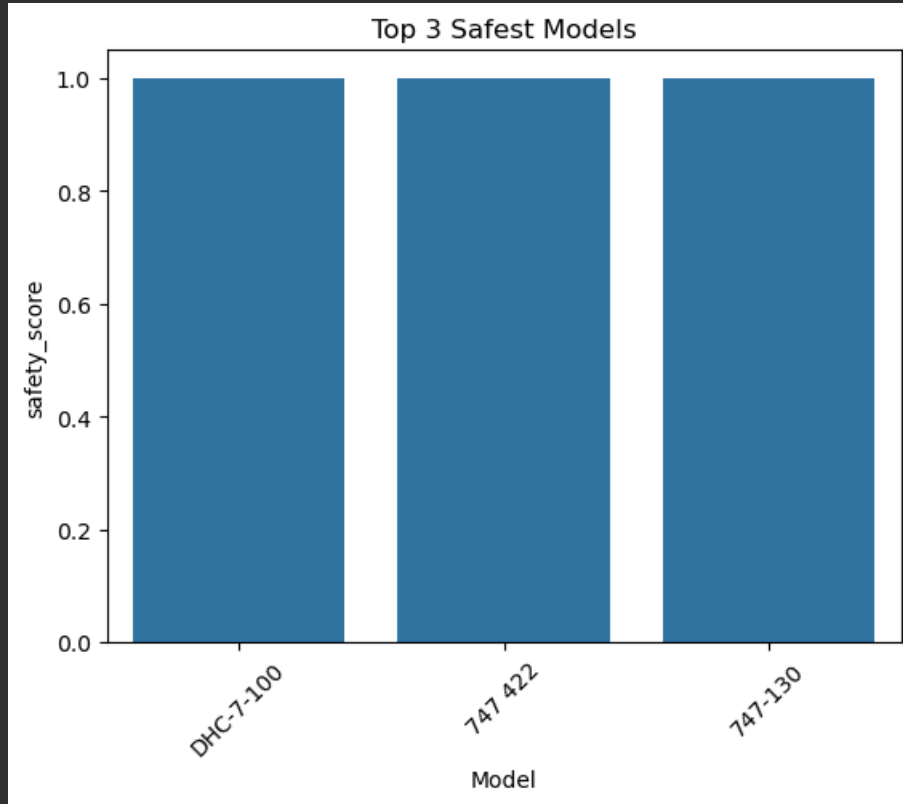
02

# Recommendations





## Prioritize Model DHC-7-100



- Acquisition Priority: The DHC-7-100 emerges as the safest choice based on my scoring.
- DHC-7-100

Likely strengths: Proven reliability in regional operations

## | Implement Pilot Phase

- Implementing a pilot phase allows for practical evaluation of Model DHC-7-100 in real-world scenarios. This phase should include training personnel, testing operational procedures, and collecting data to refine the overall strategy for full-scale deployment.

## | Mitigate associated risks

- To mitigate risks, it is essential to establish comprehensive safety protocols, conduct regular maintenance checks, and provide ongoing training for personnel. Additionally, adopting modern technology for monitoring and reporting can enhance operational safety.
- Finally, validating the findings by cross-checking with manufacturer safety reports will also enhance operational safety.

# | Conclusions



- In conclusion, entering aviation operations requires a careful approach to minimize risks. Prioritizing the acquisition of Model DHC-7-100 , implementing a structured pilot phase, and establishing robust risk mitigation strategies will help achieve a successful and sustainable aviation operation.

# Thank You

Do you have any questions?

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