

Aircraft Risk Analysis: Which Aircraft Should You Invest In?

Data-Driven Decision-Making in
Aviation

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Overview

Purpose:

- Use data analysis to determine which aircraft types present the least investment risk based on accident and fatality records.

Dataset:

- 88,859 records of aircraft accidents/incidents from Kaggle.

Business Understanding

Key Business Questions:

- Which aircraft category is the safest to invest in?
- Does the number of engines impact risk?
- What is the destruction and fatality rate by category?

Goal:

- Recommend aircraft types with the lowest destruction and death rates.

Data Understanding

Initial Dataset:

- 31 columns, 88,859 rows
- Cleaned down to 10,355 rows

Key fields:

- Aircraft Category
- Damage Type
- Number of Engines
- Fatal Injuries
- Event Date

Accident Distribution by Category

Insight:

- Airplanes: 81.14% of accidents
- Helicopters: 14.28%
- Gliders: very few (safe zone)
- (Visualization 1: Bar chart of accident counts by category)

Destruction Rate by Aircraft Type

Insight:

- Helicopter destruction rate: 10.68%
- Glider destruction rate: 3.57%
- (Visualization 2: Pie chart of destruction rates)
- Yes: Gliders experience fewer severe outcomes.

Death Rate per Aircraft Type

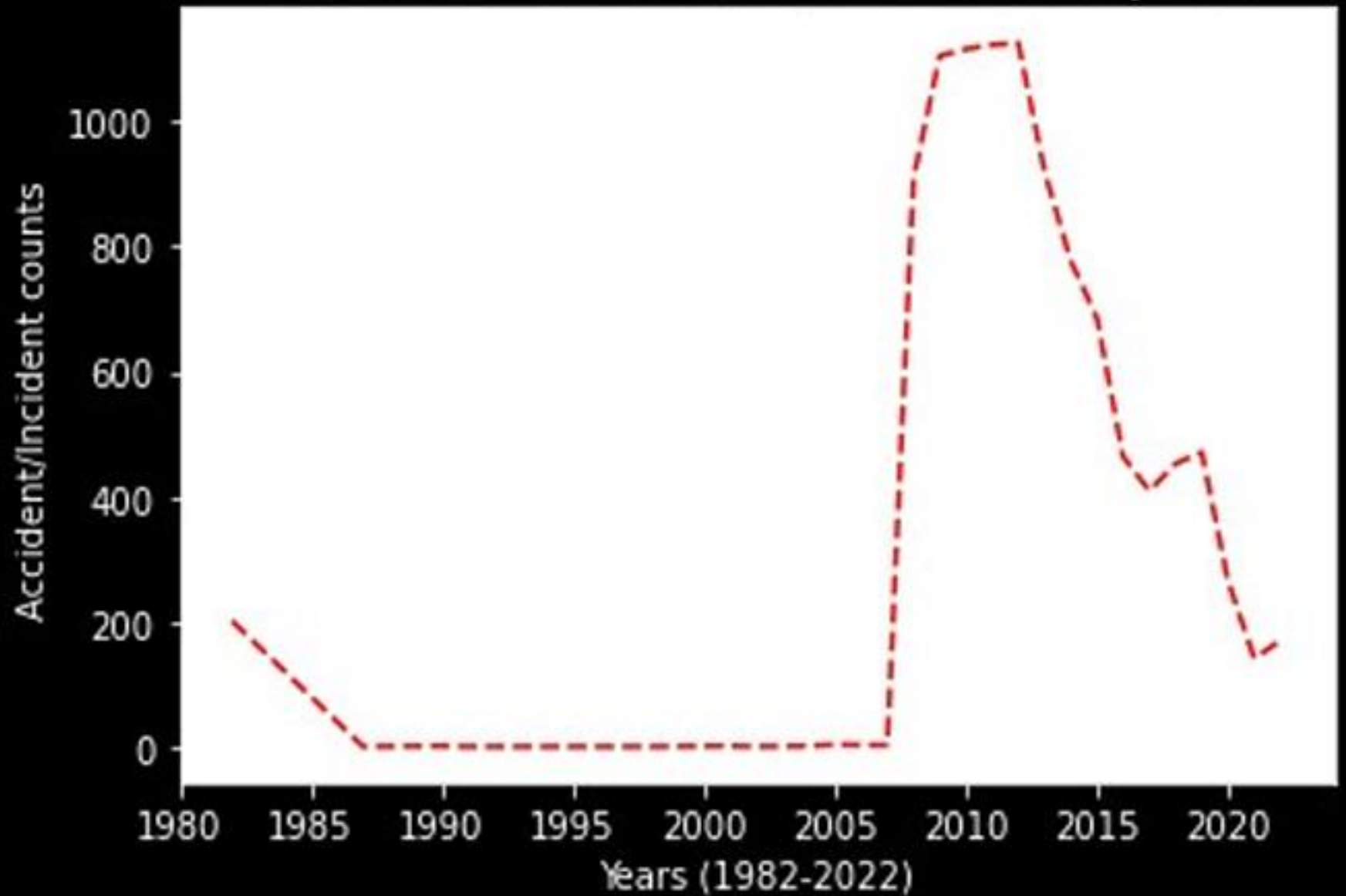
Insight:

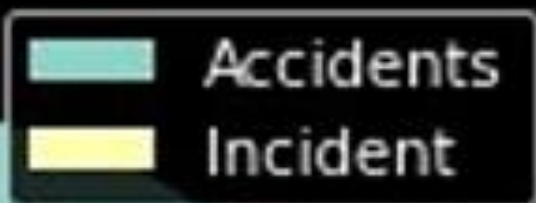
- Gliders: 14.28% death rate
 - Airplanes: 37.34%
 - Helicopters: 39%
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- Yes: Gliders are safest in terms of human cost.

Recommendations

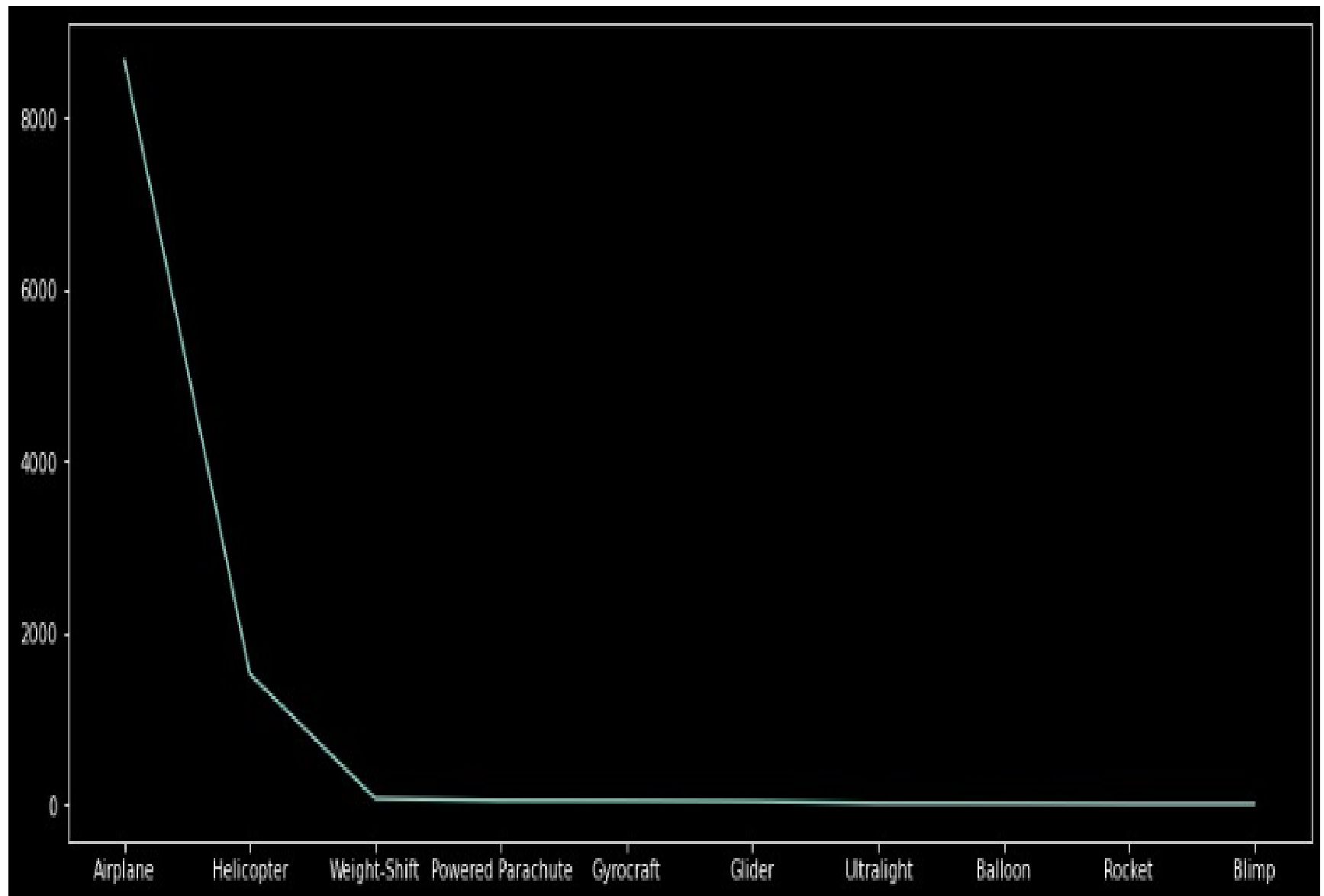
- 1. Yes: Invest in Gliders: Lowest destruction and death rates.
- 2. No: Avoid 1-engine Gliders: High risk within category.
- 3. Note: Consider Gyrocraft as a backup option

Evolution of Accidents/Incidents over the years





Accidents By Aircraft



Next Steps

- Collect more recent accident data (post-2022)
- Build predictive models for future aircraft risk
- Investigate manufacturer-specific safety performance

Thank You & Questions

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Any questions?