

Aircraft Safety Analysis Report

For Commercial and Private Aviation Operations

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September 2024

Overview

This report evaluates the safest aircraft models for commercial and private aviation, focusing on minimizing risks by selecting models with no fatal or serious injuries based on historical accident data from the National Transportation Safety Board for period 1962 to 2023

Business Problem

Your company is expanding into aviation for commercial and private operations.
The task is to assess aircraft risks and provide recommendations

Business Objective

Evaluate and identify the lowest-risk aircraft to support informed decision-making for commercial and private operation

Data Understanding

Source: Aviation dataset from the National Transportation Safety Board (1962-2023)

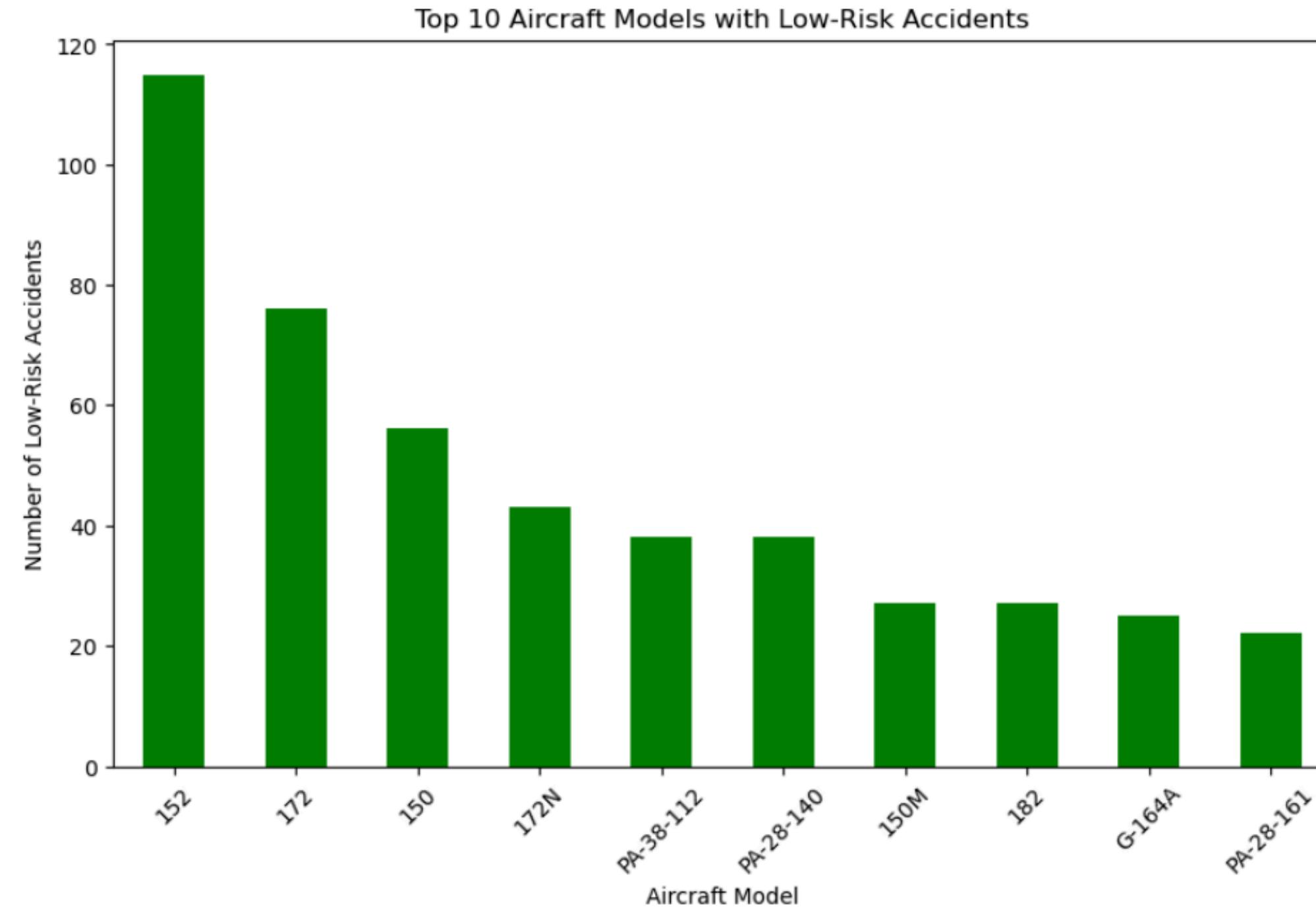
Key Columns used in the analysis: Aircraft model, fatal injuries, serious injuries, minor injuries, aircraft category, and flight phase.

Data Analysis

Data Size: Our data had 88,889 records and 31 columns (post-cleaning: 15 relevant columns).

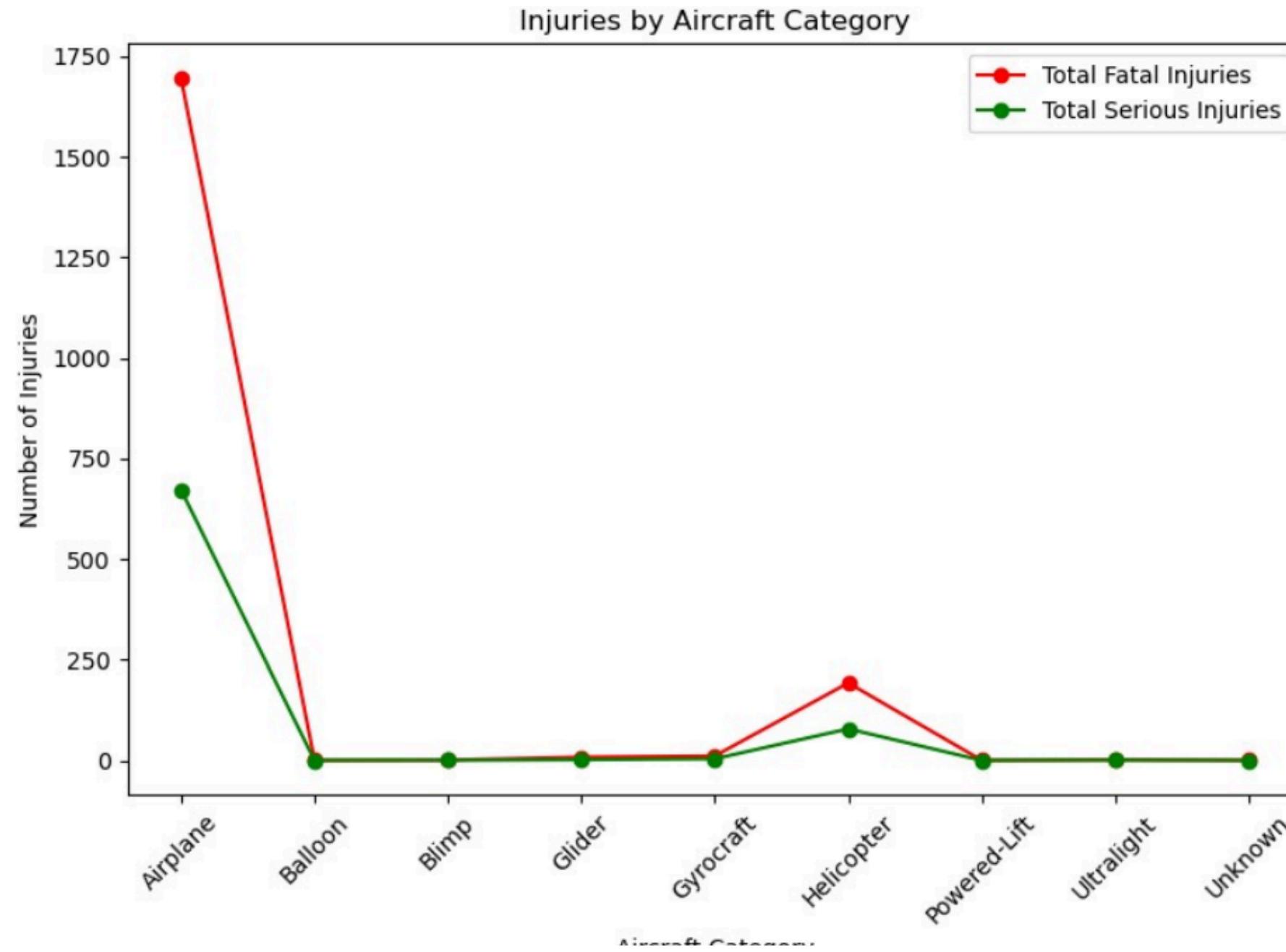
Data Preparation: Removed irrelevant columns and filled missing data using statistical methods (mean)

Data Visualization : Graph 1: Top 10 Aircraft Models with Low-Risk Accidents



Aircraft models like "152," "172," and "150" showed the highest involvement in low-risk accidents

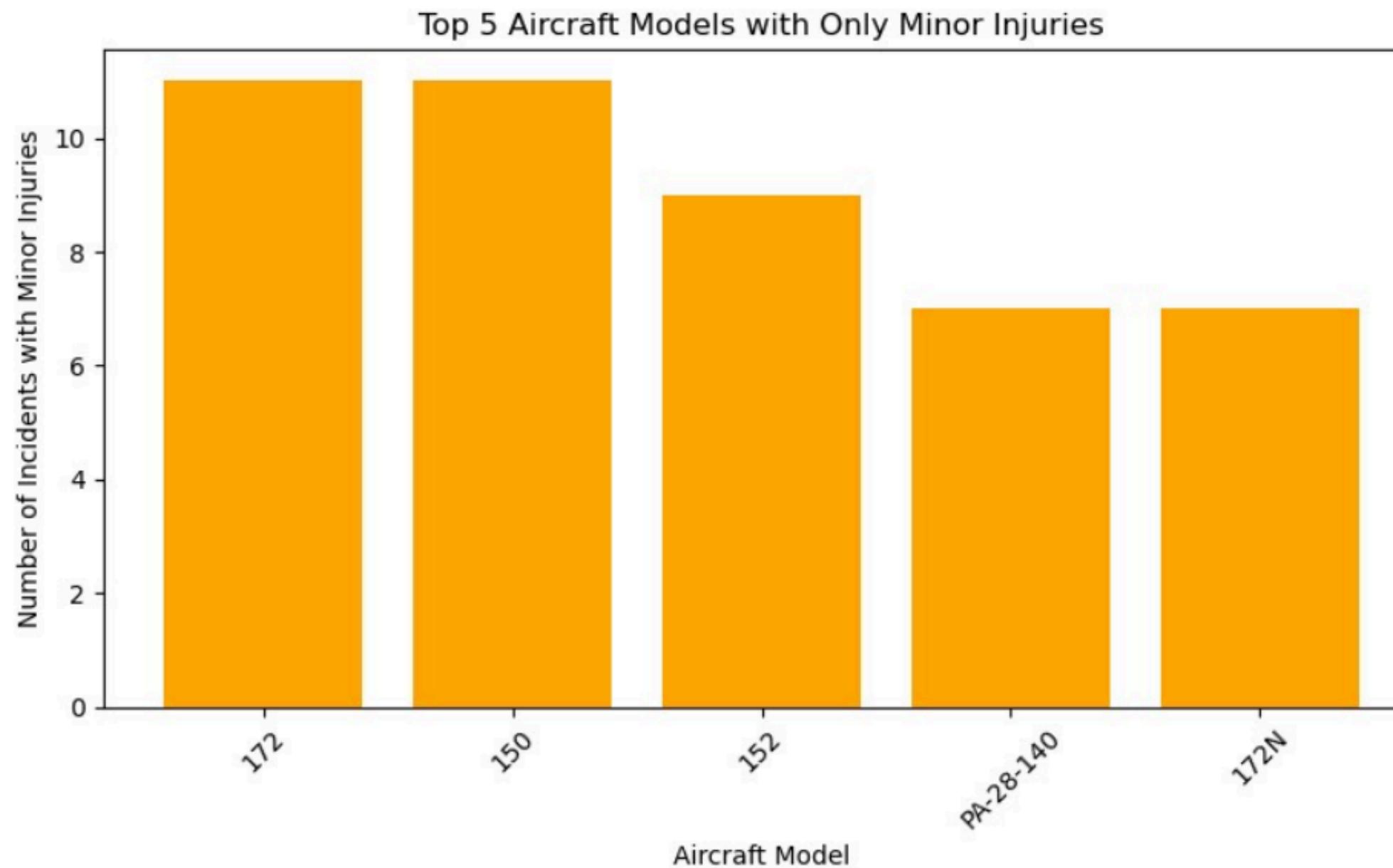
Data Visualization : Graph 2 : Injuries by Aircraft Category



Low-Risk Categories: Blimps, gliders, gyrocraft, powered-lift, ultralights, and balloons have very low instances of fatal or serious injuries.

High-Risk Categories: Airplanes and helicopters have significantly higher risks, especially for fatal injuries

Data Visualization : Graph 3: Models with Only Minor Injuries



Aircraft models like "172" and "150" frequently encountered only minor injuries, indicating their reliability for safe operations.

Recommended Aircraft for Purchase

Models "152," "172," and "150" stand out as the top choices for acquisition based on their strong safety performance. These aircraft consistently demonstrated:

Justification for recommendation

1	Low Fatality Rates: All three models were involved in accidents that resulted in zero fatalities, making them ideal for both commercial and private operations where safety is paramount
2	Minimal Serious Injuries: These models were associated with very few serious injuries, further supporting their reputation for safety in a wide range of flight conditions
3	High Operational Reliability: Given their history of involvement in low-risk incidents, these models have proven themselves as reliable options for reducing the risk of severe accidents during operations

Connect.

I invite any questions you may have regarding our approach and findings.

Please do not hesitate to contact me for further information or clarification.

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Thank You!