Horizon Enterprise Aircraft Assessment Insights

Presentation Overview

1. Overview
2. Business Understanding
3. Data Understanding
4. Data Analysis
5. Recommendations
6. Next Steps

Overview

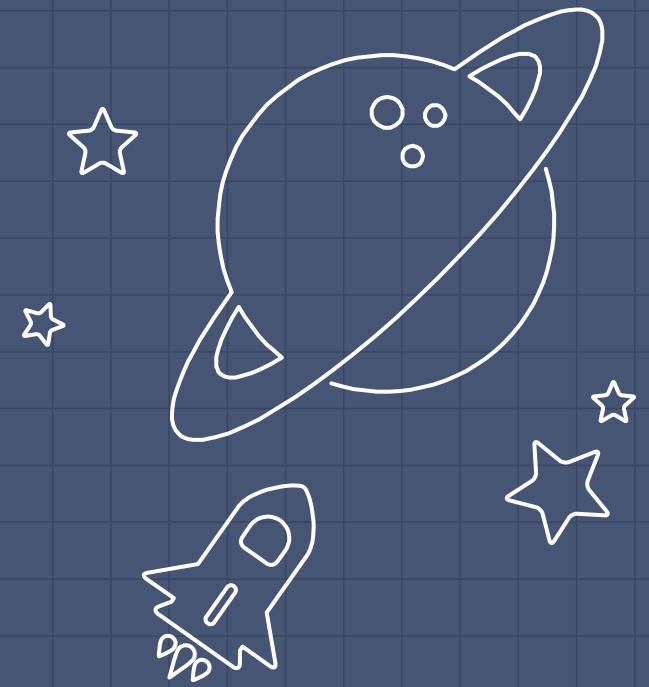
This project analyzes aviation accidents since 1962, focusing on civil aviation incidents in the U.S., its territories, and international waters.

The insights will help Horizon Enterprise identify safe, low-risk aircraft for Horizon Ventures, minimize operational risks, enhance reputation, and support safer fleet acquisitions for expansion into the aviation industry.

Business Understanding

Horizon Enterprises is seeking to expand into the Aviation and Aerospace Industry, specifically the Aircraft Operations and Fleet management as a means of diversifying their portfolio. The goal is to ensure business continuity, minimize financial risks, and optimize fleet performance.

Data Understanding



Avaition Datasets

Aviation Data

The NTSB aviation accident database contains information from 1962 and later about civil aviation accidents and selected incidents within the United States, its territories and possessions, and in international waters.

US State Codes

Contains the US State name and the abbreviation of them

Aviation Dataset Columns

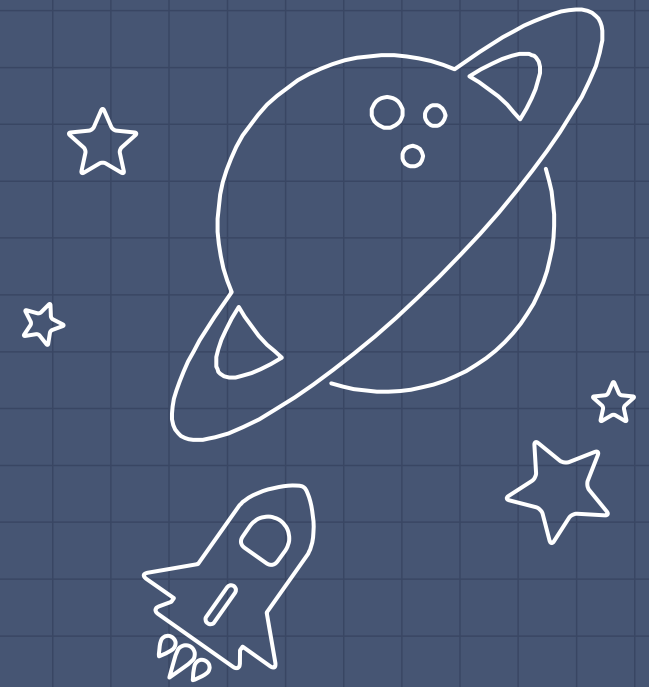
Categorical Data

Event Id
Investigation Type
Accident Number
Event Date
Location
Country
Latitude
Longitude
Airport Code
Airport Name
Injury Severity
Aircraft damage
Aircraft Category
Registration Number
Make
Model
Amateur Built
Engine Type
FAR Description
Schedule
Purpose of flight
Air carrier
Weather Condition
Broad phase of flight
Report Status
Publication Date

Numerical Data

Number of Engines
Total Fatal Injuries
Total Serious Injuries
Total Minor Injuries
Total Uninjured

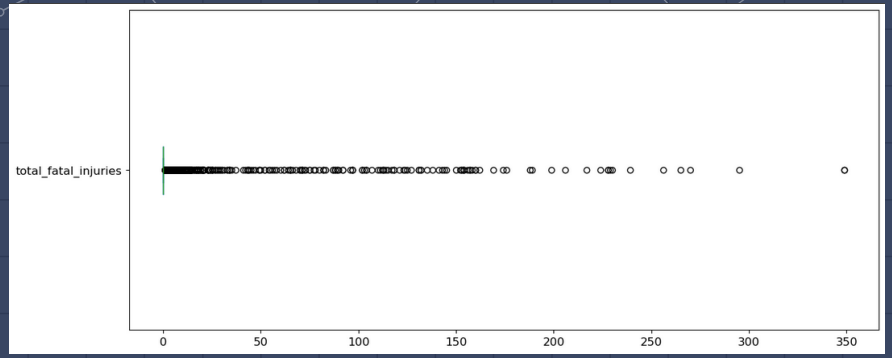
Data Analysis

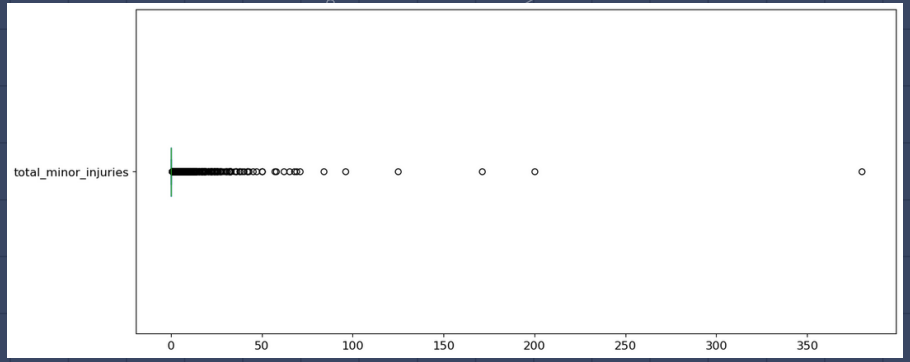


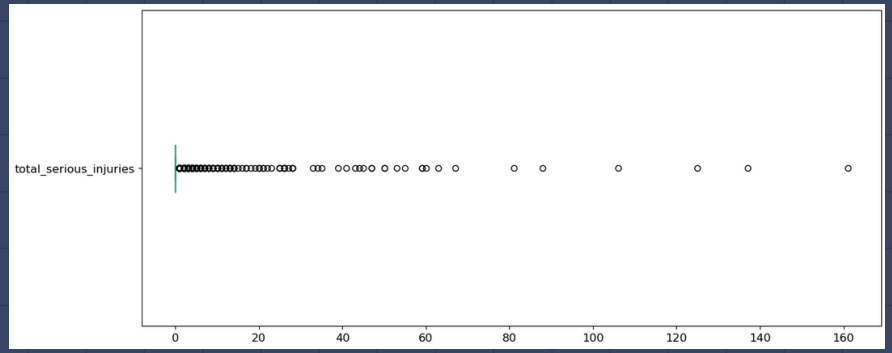
KEY STEPS

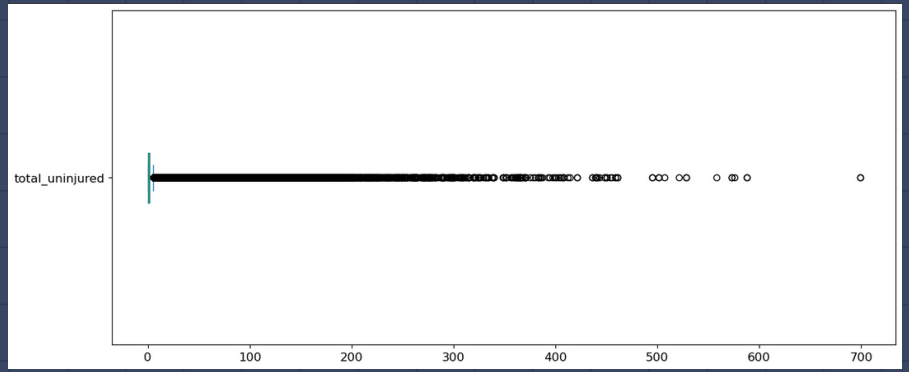

Data Prepration and Cleaning
1
Merging Datasets
2
Feature Selection and Engineering
3
Visualize Data
4
Analyse Data
5
Generate Insights And Recommendations
6

Filling Missing Values



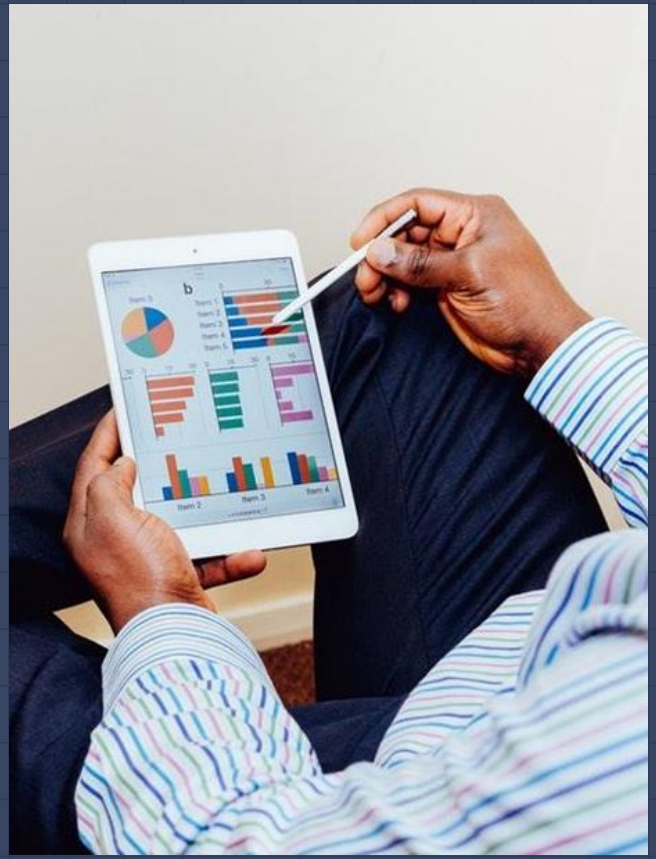




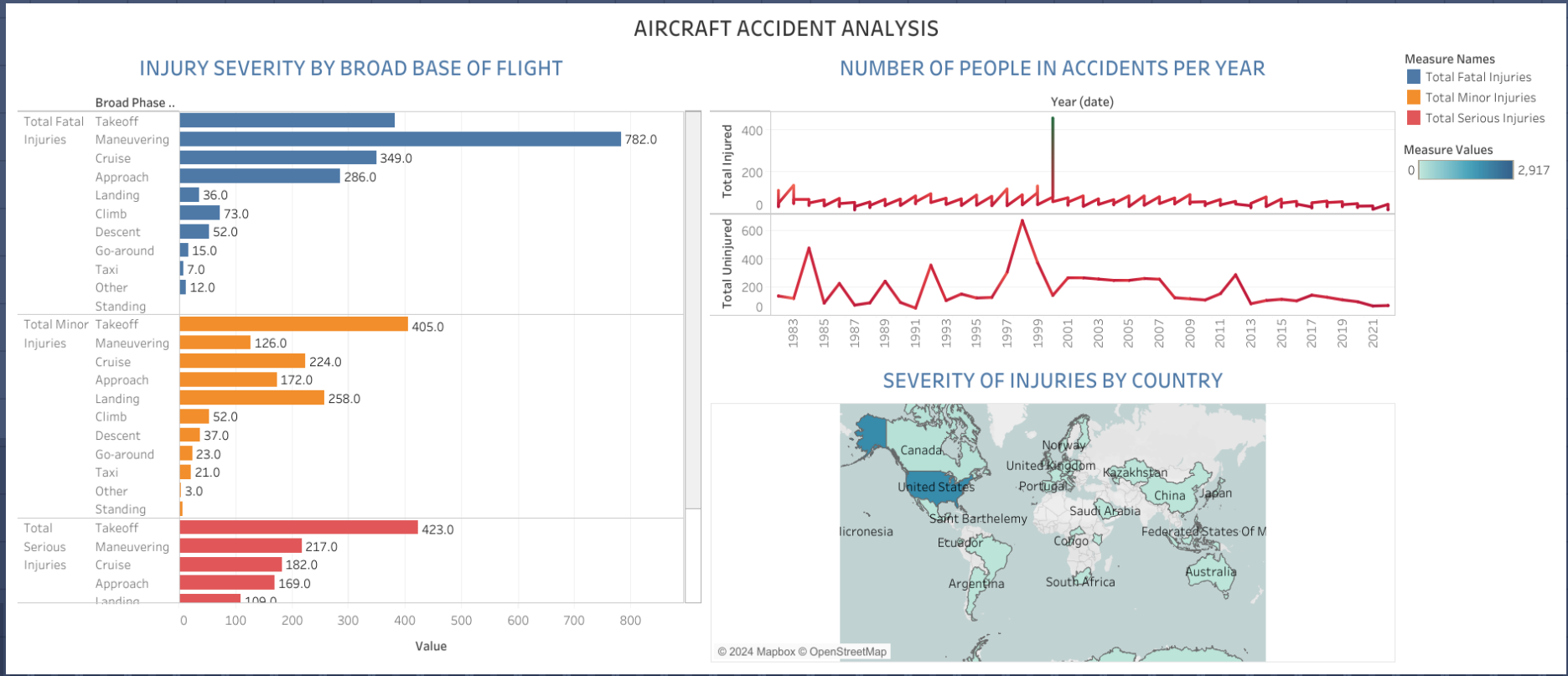


Selected Variables

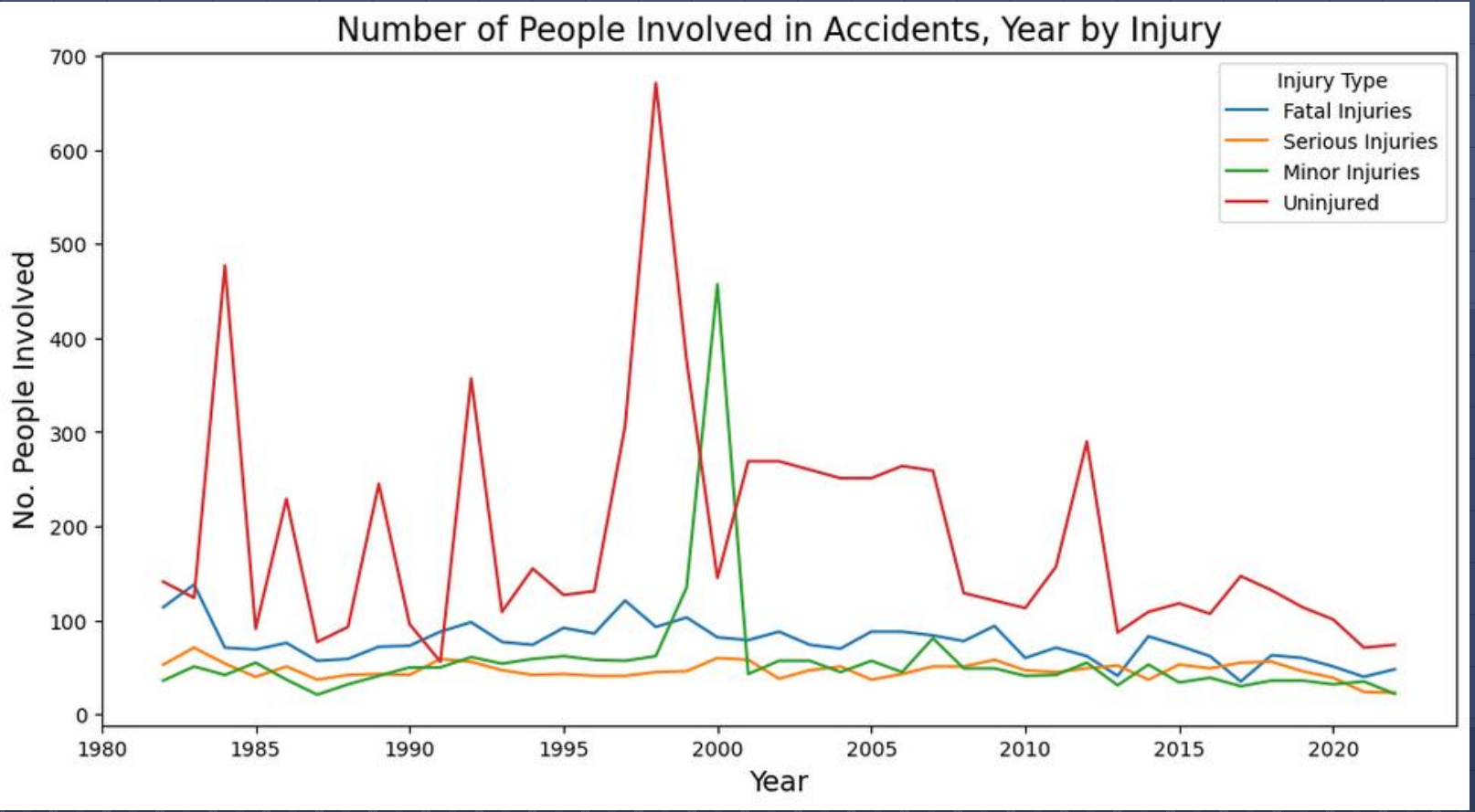
Event id
Investigation type
Event date
location
country
Injury severity
Aircraft damage
Aircraft category
Make
Model
Amateur built
Number of engines
Engine type
Purpose of flight
Total fatal injuries
Total serious injuries
Total minor injuries
Total uninjured
Weather condition
Broad phase of flight



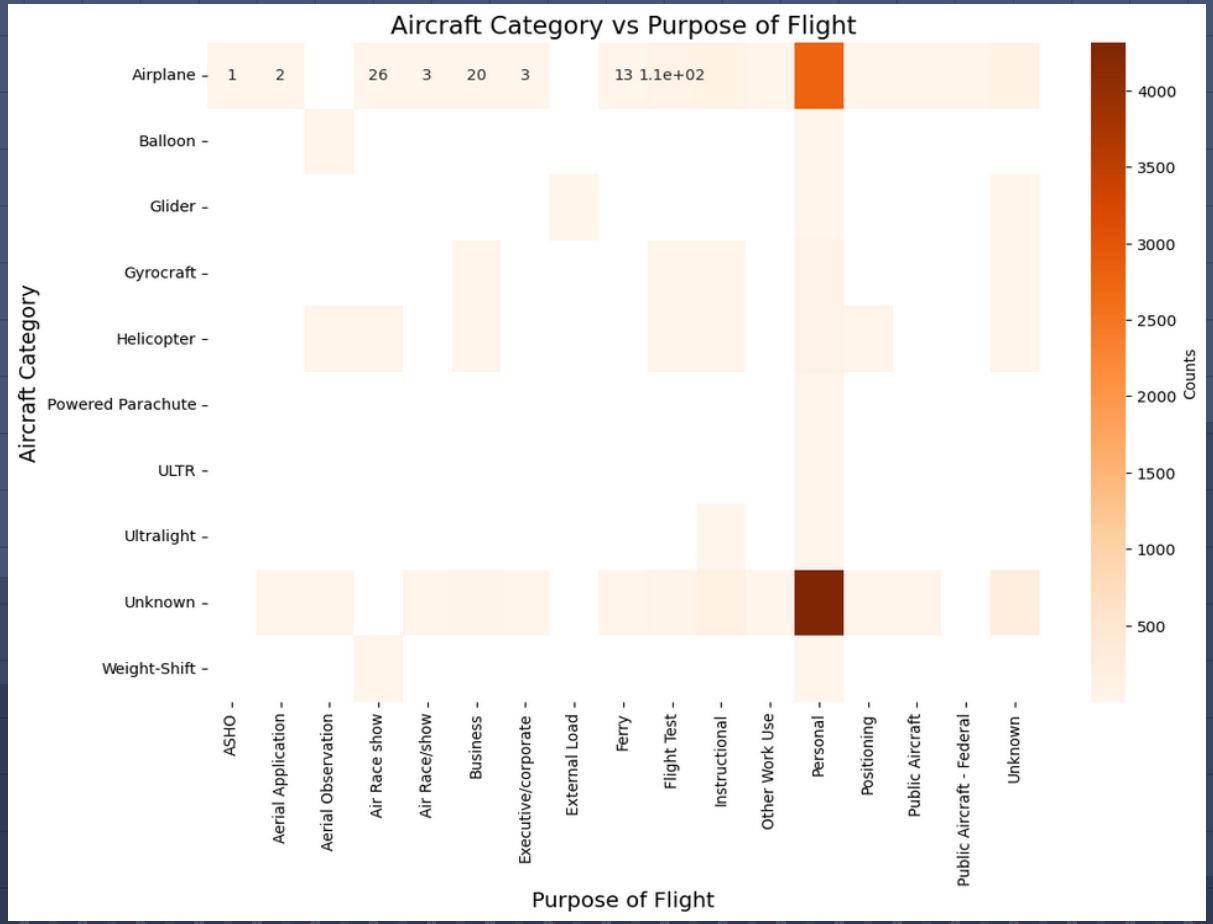
Aircraft Accident Analysis



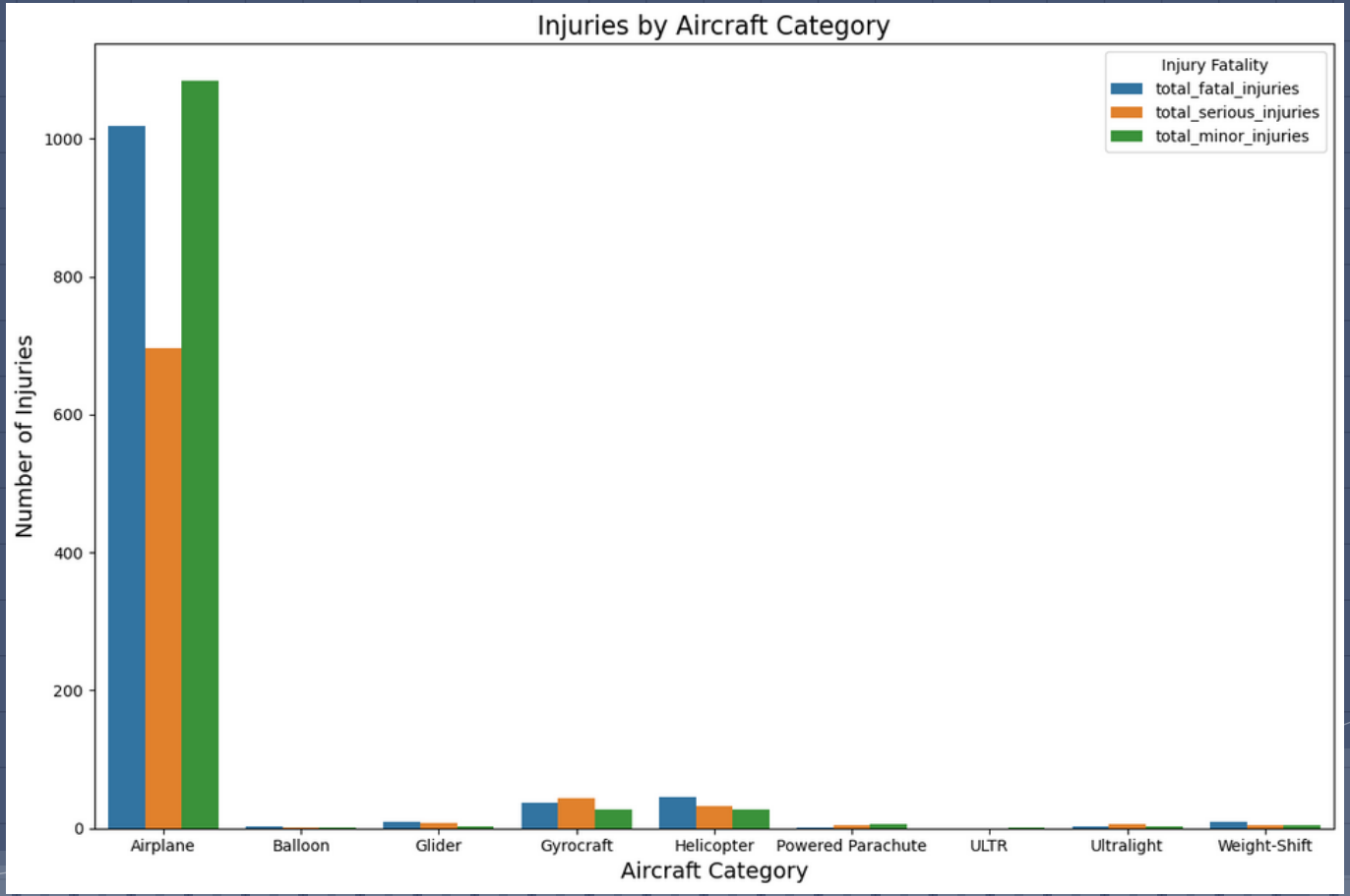
People Involved in Accidents, Year by Injury



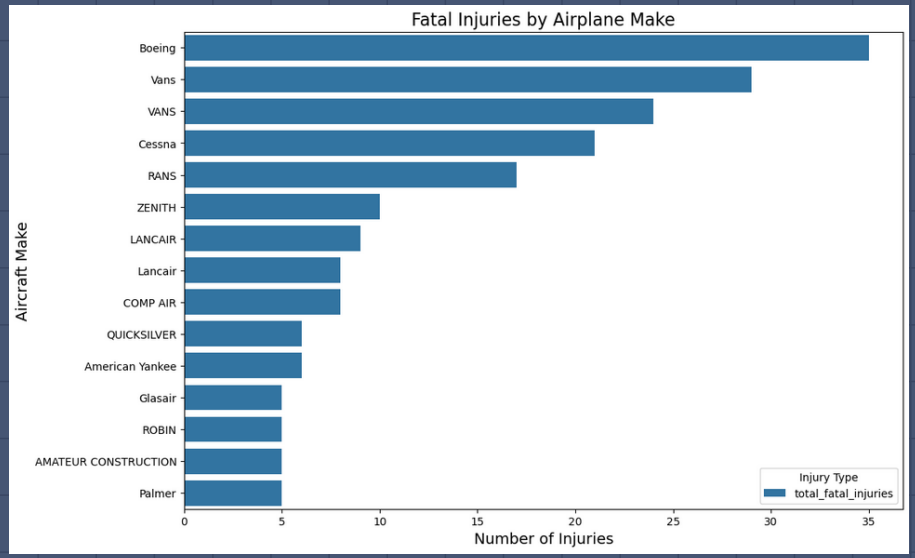
Aircraft Category vs Flight Purpose

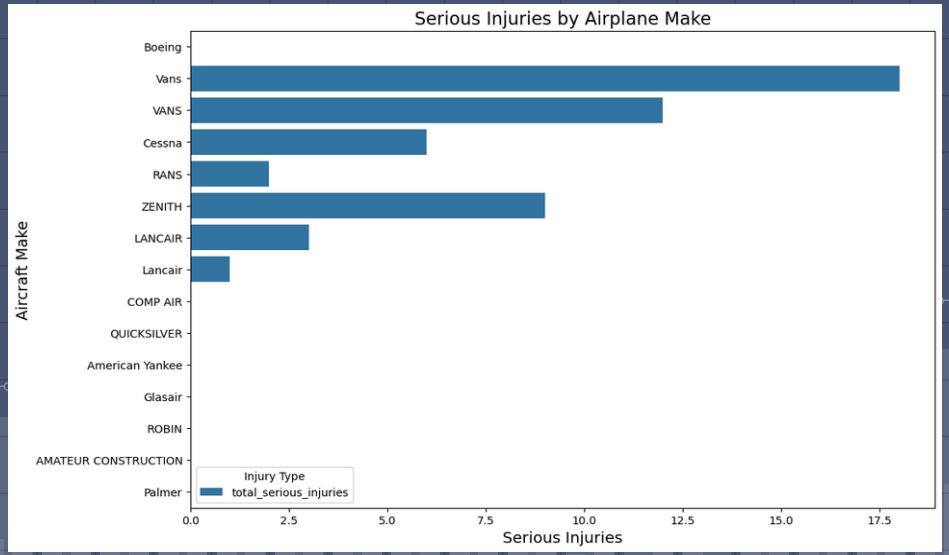


Injuries By Aircraft Category

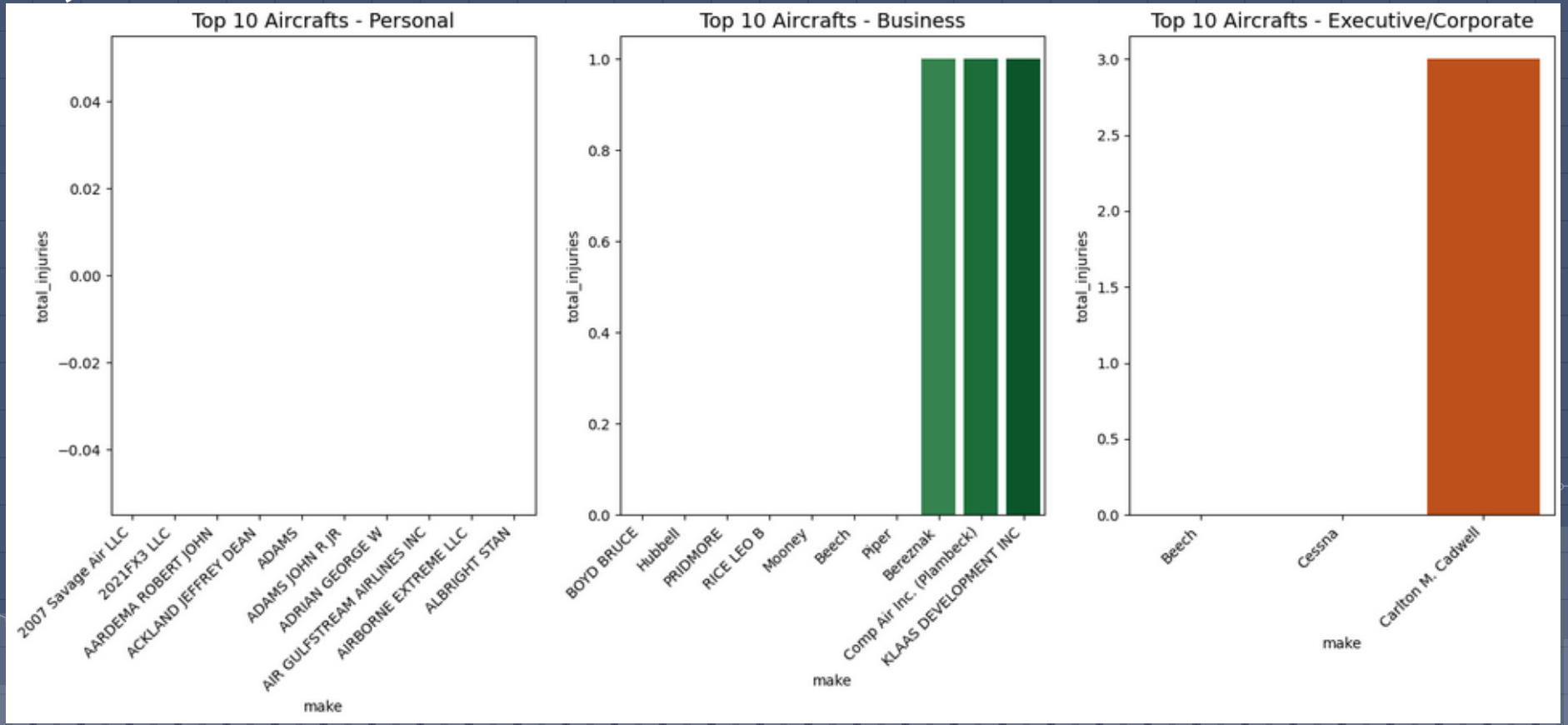


Injuries by Airplane Make





Aircraft makes & purpose of flight against with least injuries.



Recommendations & Next Steps.

Recommendations

Horizon Enterprise should prioritize airplanes, as they dominate the dataset in frequency and relevance.

1. For Executive/Corporate flights, the Beech 18 and Cessna stand out with the lowest accident rates and high frequency.
2. For Business flights, the safest and most common makes include BOYD BRUCE, Hubbell, PRIDMORE, RICE LEO B, Mooney, Beech, Piper, Bereznak, Comp Air Inc. (Plambeck), and KLAAS DEVELOPMENT INC.
3. For Personal flights, the least injury-prone and widely used makes are 2007 Savage Air LLC, 2021FX3 LLC, 5 RIVERS LLC, 781569 INC, AARDEMA ROBERT JOHN, ABBETT GERRY, ABBEY VICTOR, ACKLAND JEFFREY DEAN, ACRO, and ADAMS.

Next Steps

More data could enable to make more informed choices especially with regards to

1. Total Cost of Purchasing and Operating the Aircraft
2. Number of Passengers it Carries: Additional data on the seating capacity and passenger demand

THANKS!

Any questions?

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