Aviation Incident Analysis

An Exploratory Data Analysis of Aircraft Safety Data

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Overview

• DATASET INCLUDES 90,348 AVIATION INCIDENT RECORDS FROM 1962-2023.

• FIELDS COVER INJURIES, AIRCRAFT SPECIFICATIONS, FLIGHT PHASES, AND WEATHER.

• OBJECTIVE: EXTRACT INSIGHTS TO ENHANCE AVIATION SAFETY & HELP DECIDE AIRCRAFT TO PURCHASE.

Business Understanding

Support aviation safety efforts with data-driven insights.

Identify patterns in flight phase, weather, and aircraft type.

Help stakeholders identify risks involved with aircraft.

Data Understanding

- TOTAL RECORDS: 90,348 | 19 COLUMNS

- INJURY DATA: FATAL, SERIOUS, MINOR, UNINJURED

- AIRCRAFT DETAILS: MAKE, MODEL, ENGINES, ENGINE TYPE

- FLIGHT CONDITIONS: WEATHER, FLIGHT PURPOSE, PHASE

- TIME PERIOD: 1962 TO PRESENT

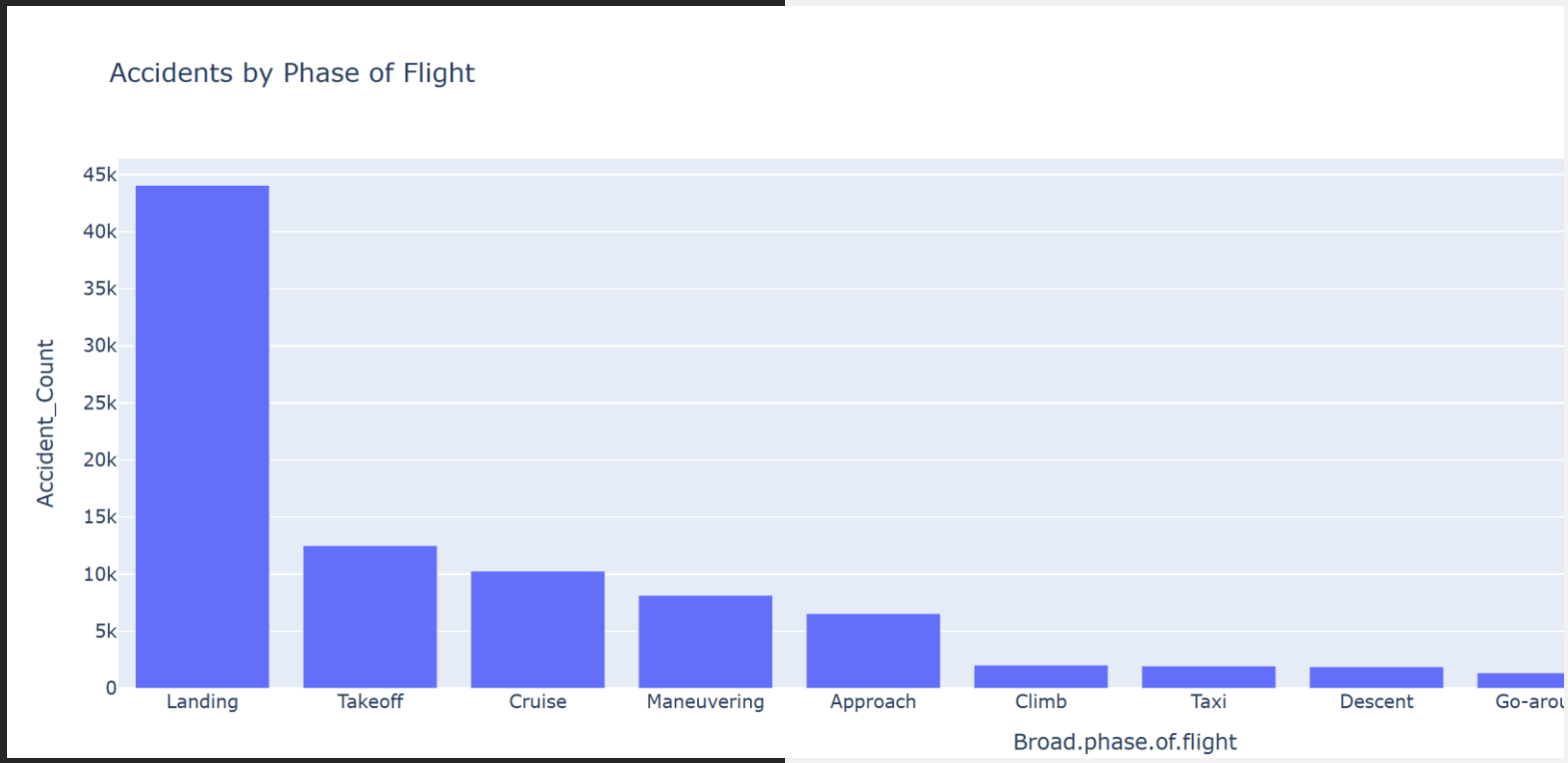
Data Analysis

MOST INCIDENTS OCCURRED IN THE ‘LANDING' AND ‘TAKEOFF' PHASES.

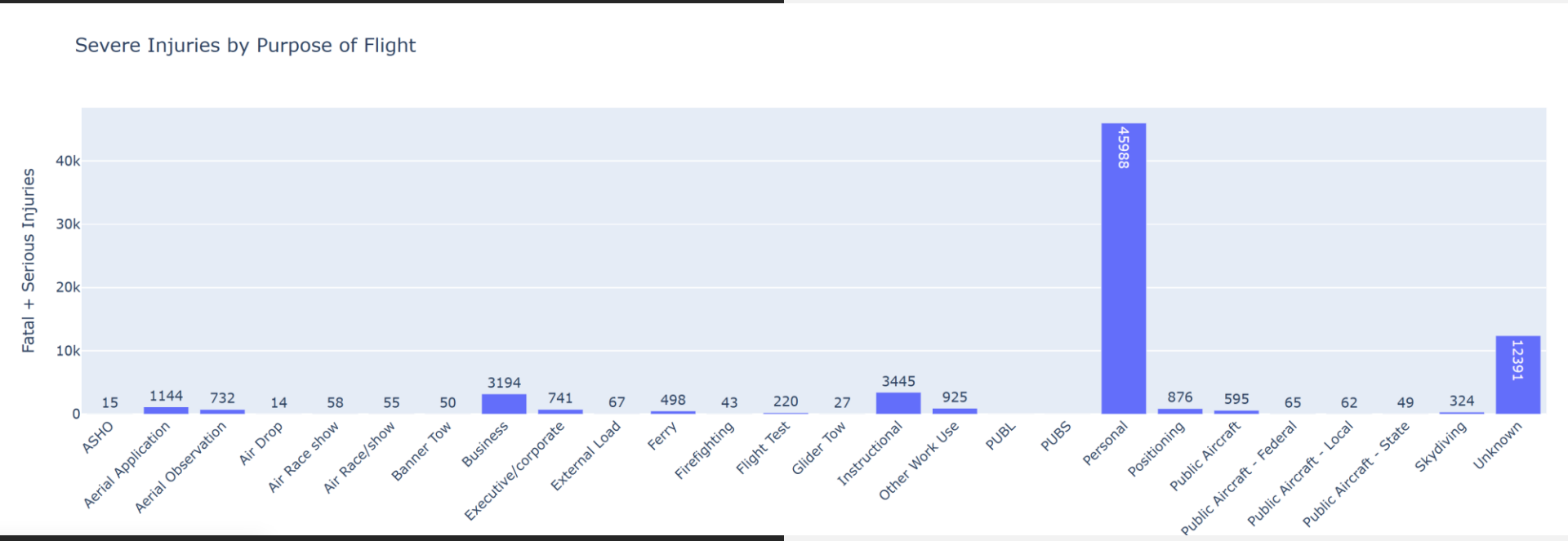
'PERSONAL' FLIGHTS SHOW HIGHEST FATALITY COUNT.

MAJORITY OF ACCIDENTS INVOLVED SINGLE-ENGINE, RECIPROCATING AIRCRAFT.

IMC WEATHER LINKED TO HIGHER INJURY SEVERITY.



Data Analysis



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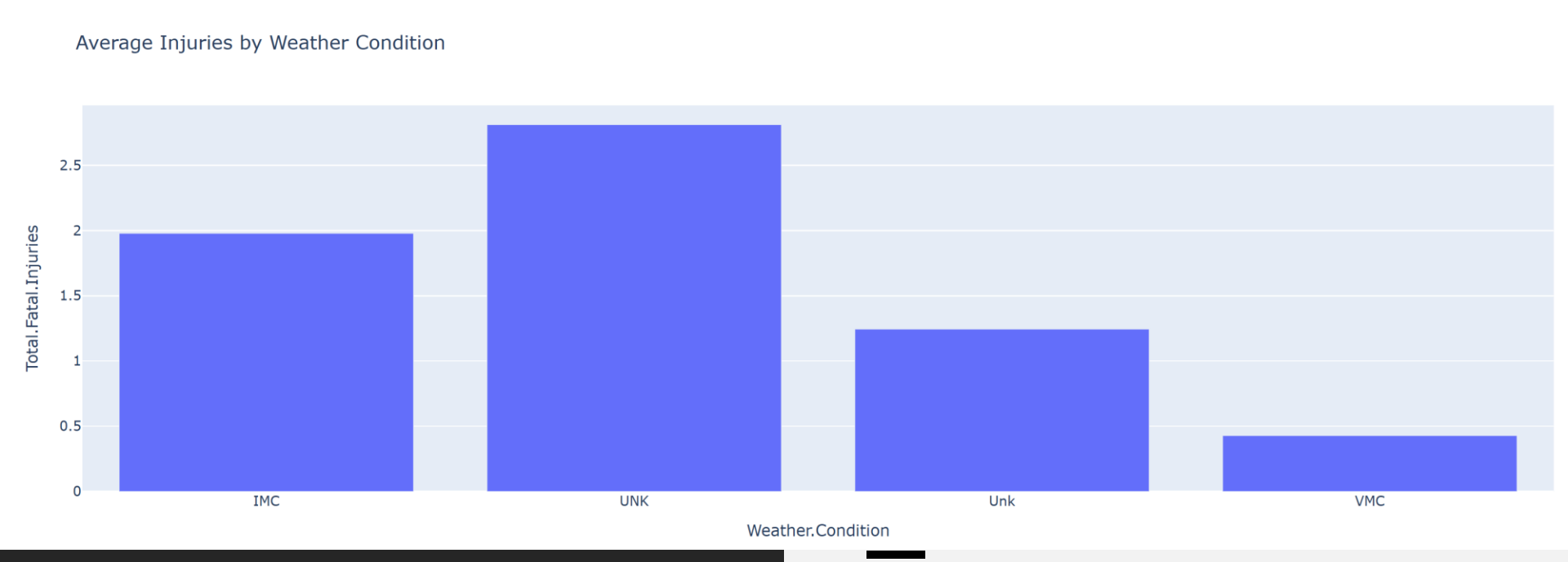

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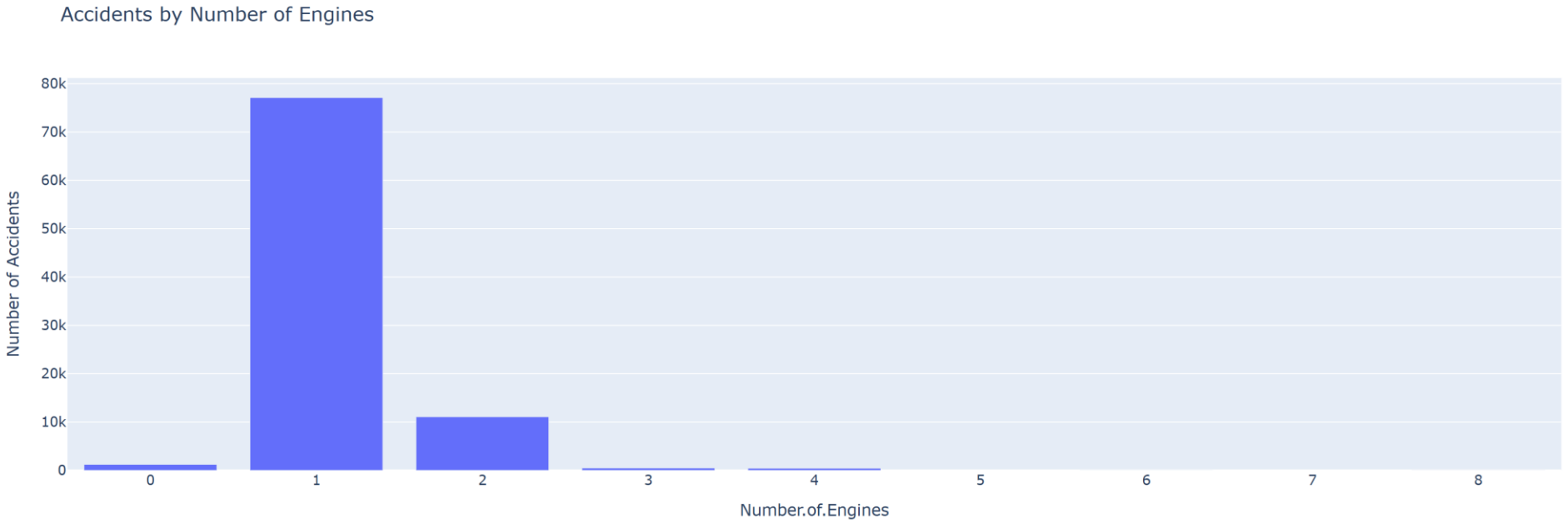

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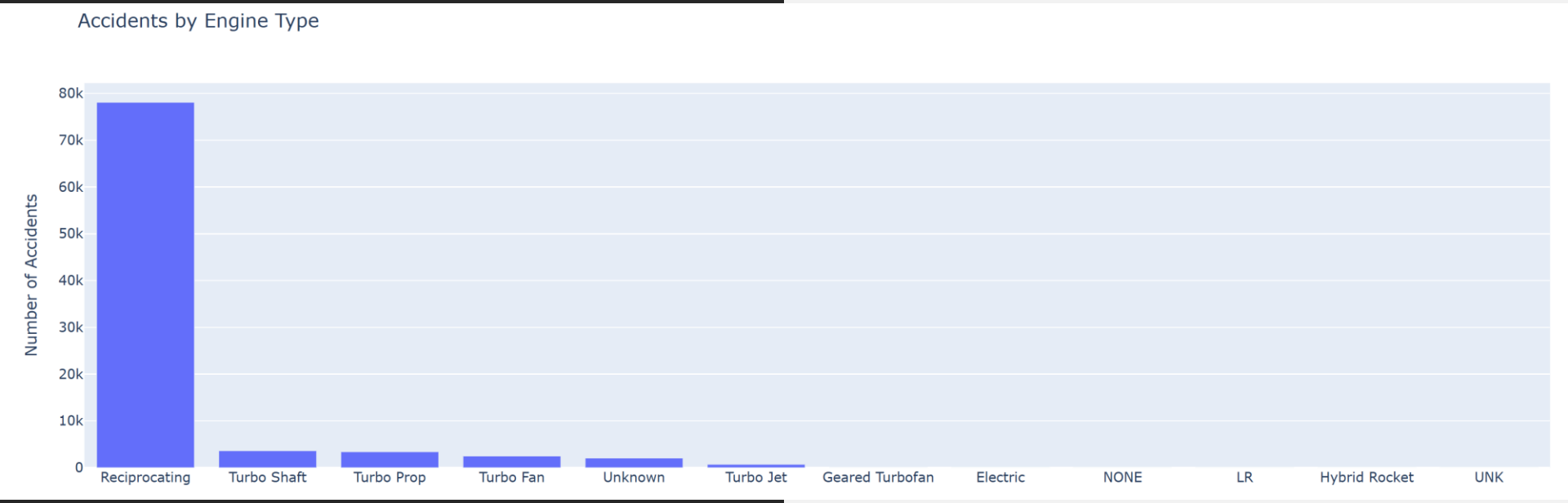

Data Analysis

Recommendations

- Favor Multi-Engine, Turboprop or Jet Aircraft Over Single-Engine Reciprocating .
- Avoid Aircraft with High Fatality & Destruction History .
- Aircraft Commonly Used for Instructional or Business Flights.
- Choose Aircraft Designed for Stability in IMC.

Next Steps

Integrate geographic coordinates for spatial analysis.

Link with maintenance and pilot training records.

Develop predictive models for incident risk forecasting.

Customize dashboards for aviation authorities and airline operators.

Thank You

Questions?

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