Overview

- **Project Name:** Aircraft Risk Analysis
- **Objective**: Identify low-risk aircraft manufacturers and models for safe business expansion into aviation.

Business Understanding

- **Stakeholder**: Head of Aviation Division
- **Problem**: Need to invest in low-risk aircraft but lack risk insights.
- **Key Questions**:
- - Which aircraft are most often involved in accidents?
- - What are the risk levels associated with different manufacturers?
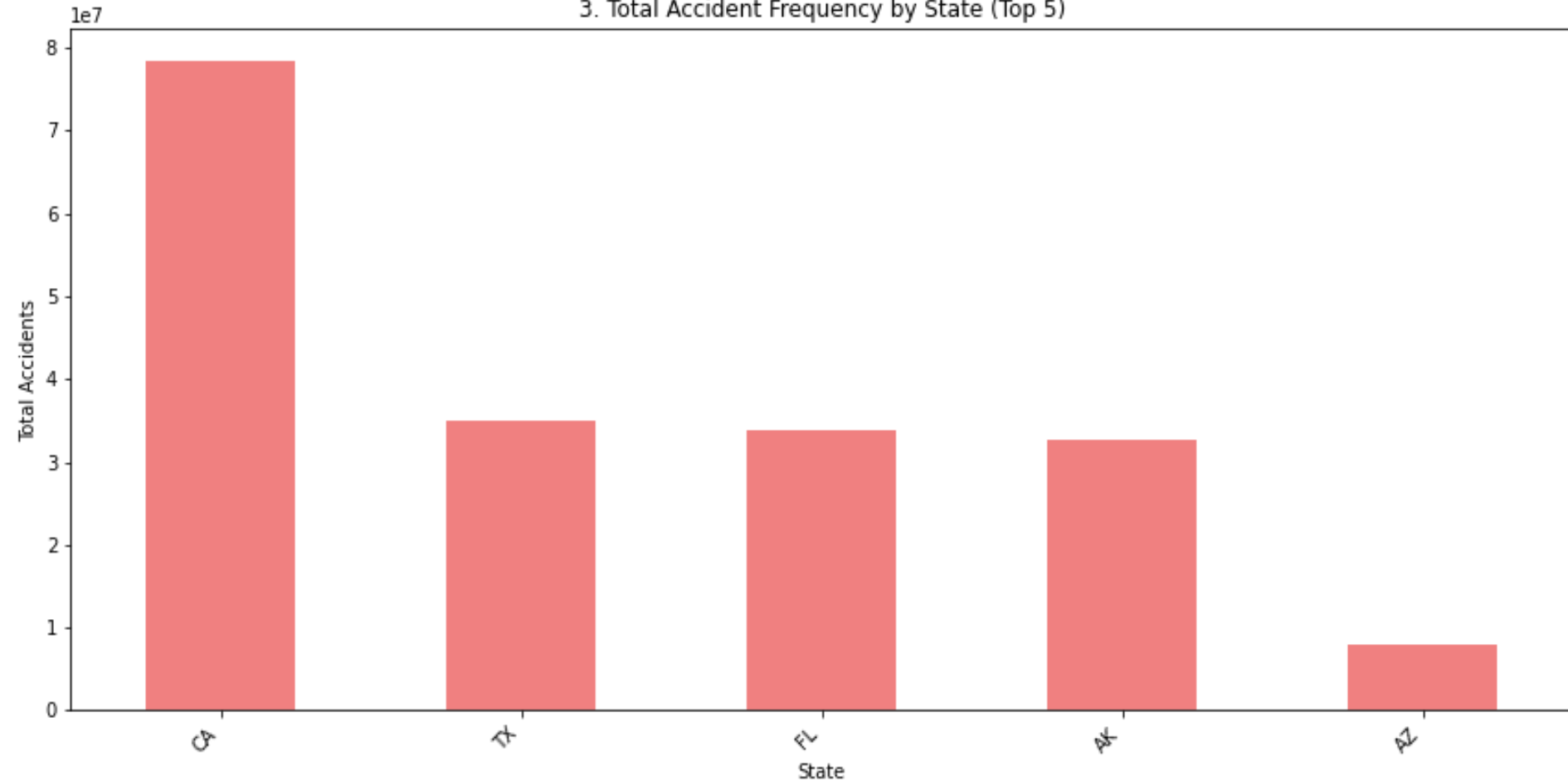- - How can we minimize investment risks?

Data Understanding

- **Dataset Source**: NTSB
- **Period Covered**: 1962-2023
- **Data Includes**:
- - Accident dates, locations, aircraft types, injuries
- - Manufacturer names and event descriptions
- **Challenges with Data**:
- - Missing values
- - Inconsistent naming

Data Analysis

- **Severity Levels Defined**:
- - High: Fatal injuries > 0
- - Medium: Aircraft Having Substantial Damage
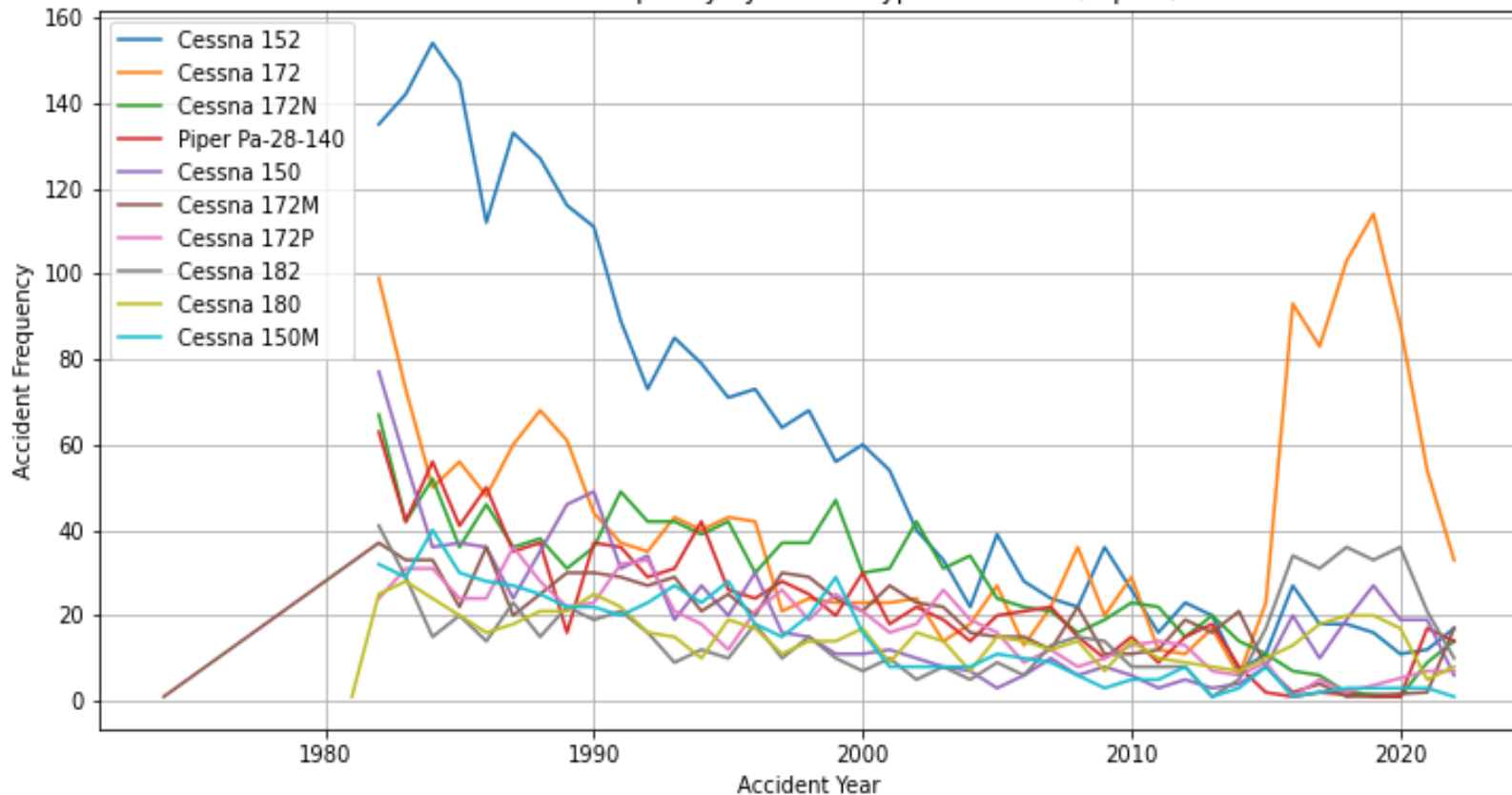- - Low: No fatality or damage to Aircraft
- Insights:

Accidents by Geographic Region in United States

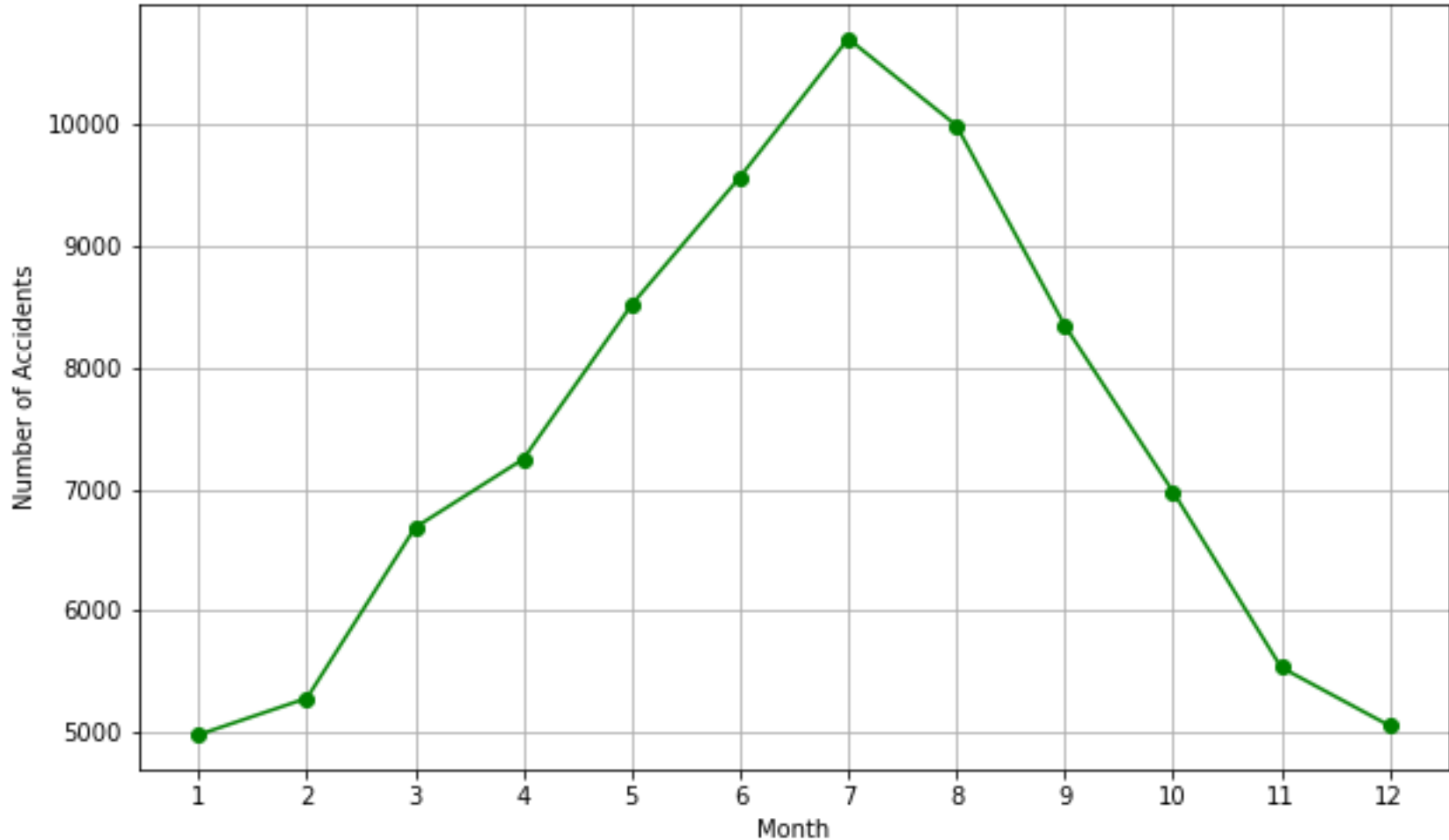3. Total Accident Frequency by State (Top 5)

Risk Trends Over Time

6. Accident Frequency by Aircraft Type Over Time (Top 10)
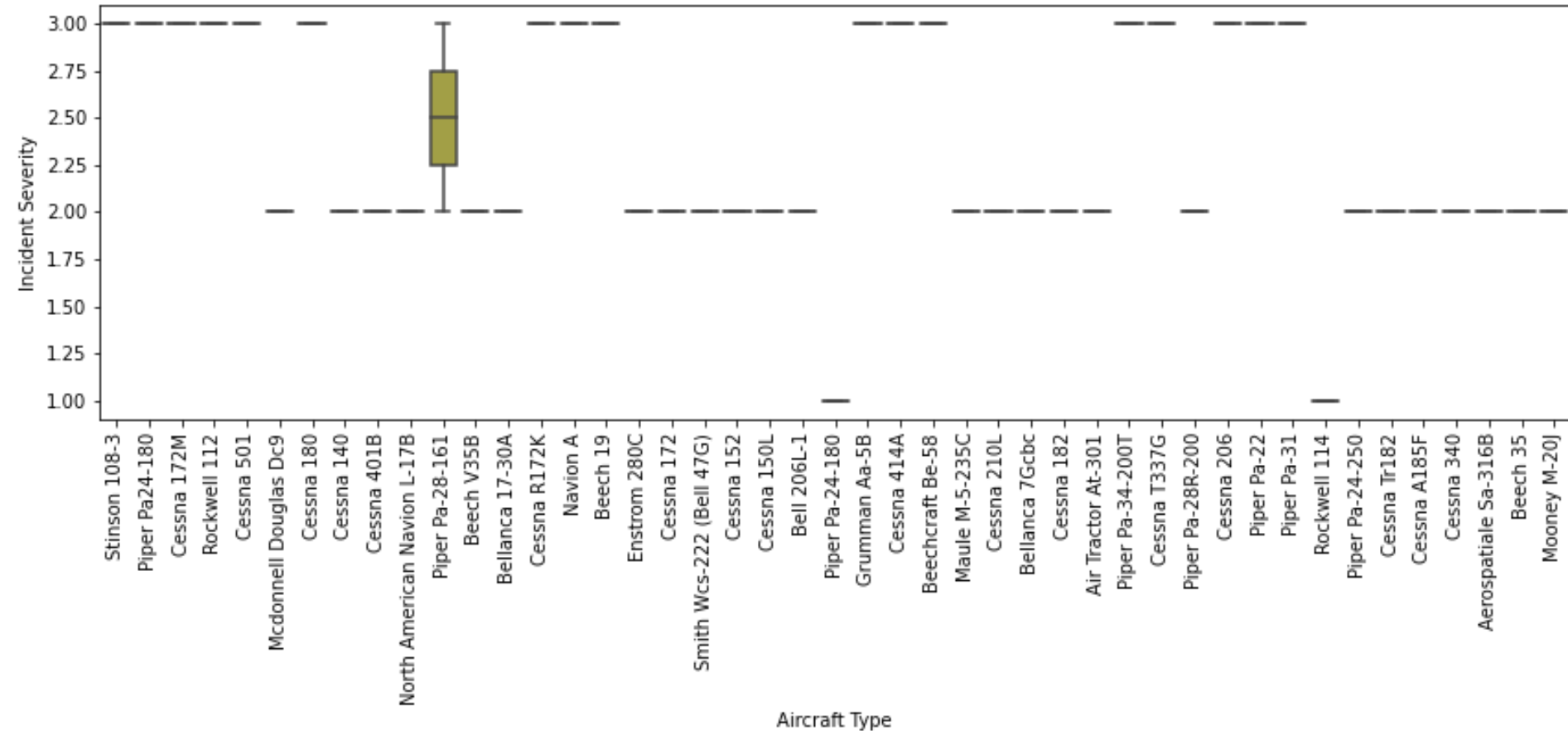
Seasonal Patterns in Aviation Accidents

7. Number of Accidents by Month

Injury distributions across models

4. Incident Severity for Different Aircraft Types

Recommendations

- 1. Prioritize Aircraft with Established Safety Records.

- 2. Implement Regional Risk Assessments.

- 3. Develop a Comprehensive Aircraft Evaluation Framework.

Next Steps

- - **Gather more comprehensive data** for geographic location, flight hours, aircraft age, distance flown to refine the risk assessment.

- - **Refine Feature Engineering:** Consider factors like weather conditions, pilot experience and other variables that might correlate with accident severity.

- Conduct technical inspections before purchases; Aircraft Age, Maintenance Records.

Next Step Cont..

- -**Refine Location Data:** The analysis revealed a significant number of missing or inaccurate location data points. Improving the quality of location data would enhance the reliability of regional accident frequency analysis.

Thank You

- Presented by: Ragot Raphael

- LinkedIn Profile:
  https://www.linkedin.com/in/ragot-raphael-649a4a5b/

- Any Questions that might require further clarification?