Phase 1 Project

Title: Choosing the safest Aircraft for a New Aviation Business.

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Project Overview

- Analyzing aviation accident data from 1962-2023.
- To help the company make data-driven decisions and provide actionable insights for the new aviation division.

Objectives

- To identify low-risk aircraft suitable for the business.
- Analyze the impact of weather condition on Aircraft damage.
- Provide data-driven recommendations for Aircraft selection.
- Understand Geographical Risk Distribution.
- Assess the relationship between type of engine and Aircraft incidents.

Business problem;

- The company does not know anything about the potential risks of aircrafts making it difficult to make informed purchasing decisions to determine which aircrafts are the safest options.

Solutions

- Prioritize low risk aircraft models for purchase.
- Focus on geographically safe regions to carry out aircraft operations.

Data Analysis

To meet our objectives and solutions we used the following ways:

- Data source: National Transportation Safety Board Aviation accident data from 1962-2023.

Tools and Methods used:

- Python and pandas library to load data.
- Data cleaning procedures.
- .group by() methods to summarize my data.
- Visualization tools(matplotlib, seaborn)

Data Understanding

- Data description: the dataset includes accident reports about civil aviation accidents and selected incidents in the United States and other international waters.

- Key variables analyzed in my data included: Make, Model, Fatalities, Weather condition, Aircraft damage and Purpose of flight.

Analysis approach.

- Data cleaning

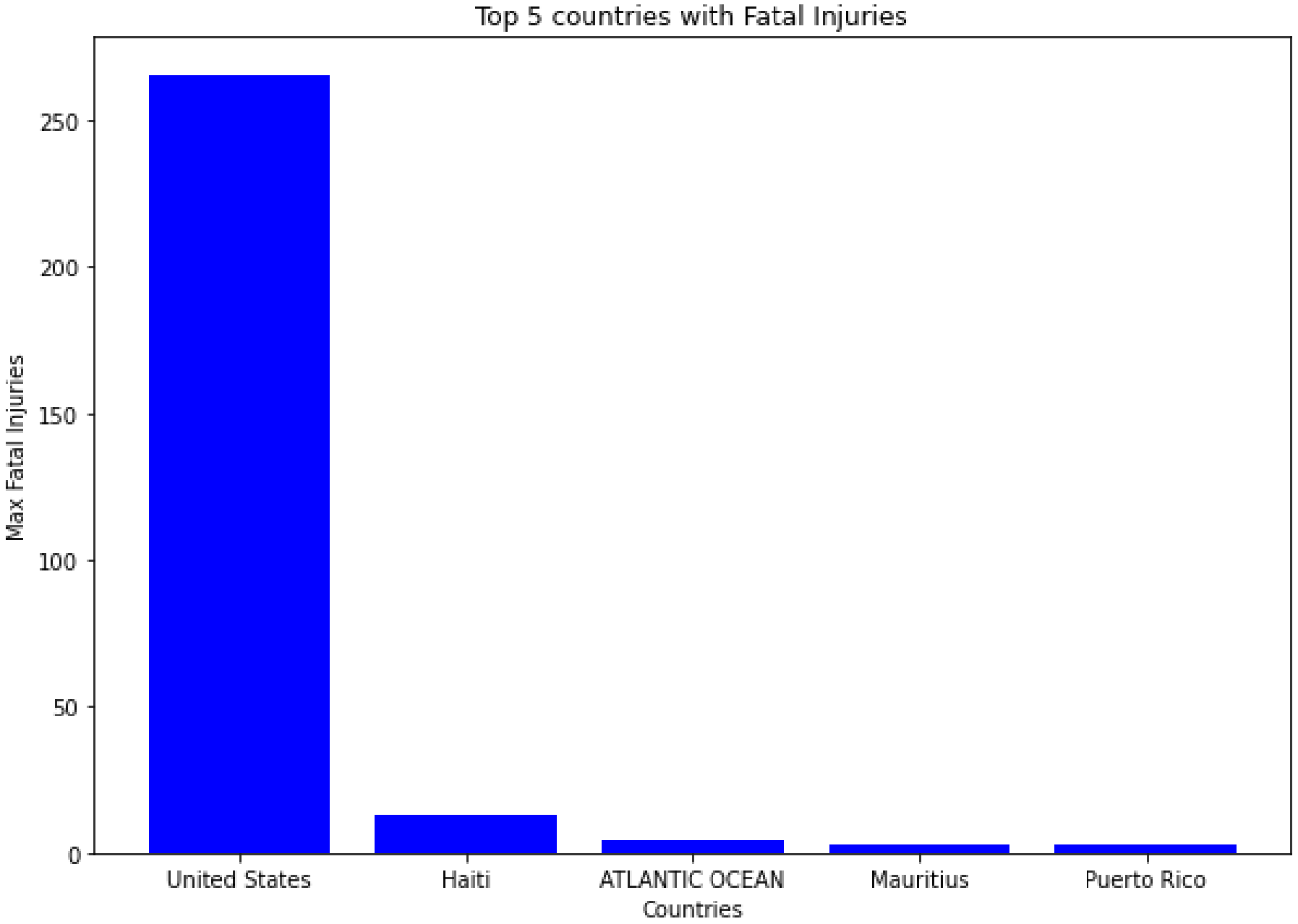
-I used various imputation techniques to replace missing data in both numerical and categorical columns that had fewer missing values.

-To handle missing values I also used fillna(), dropna() to remove missing values in specific columns and drop() method to remove unnecessary columns and rows with missing data.

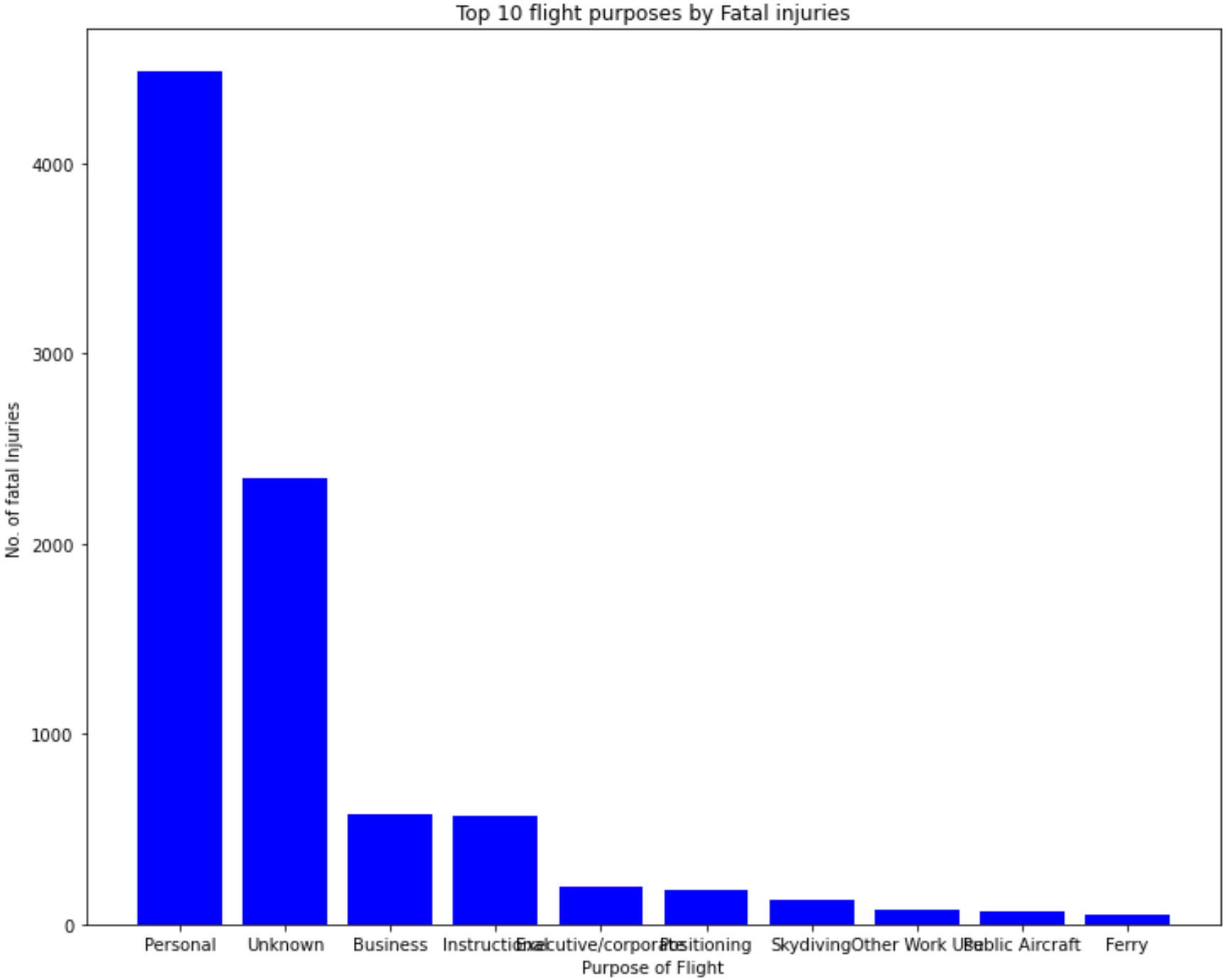
- Visualization

In my jupyter notebook I created bar graphs using Matplotlib to show:

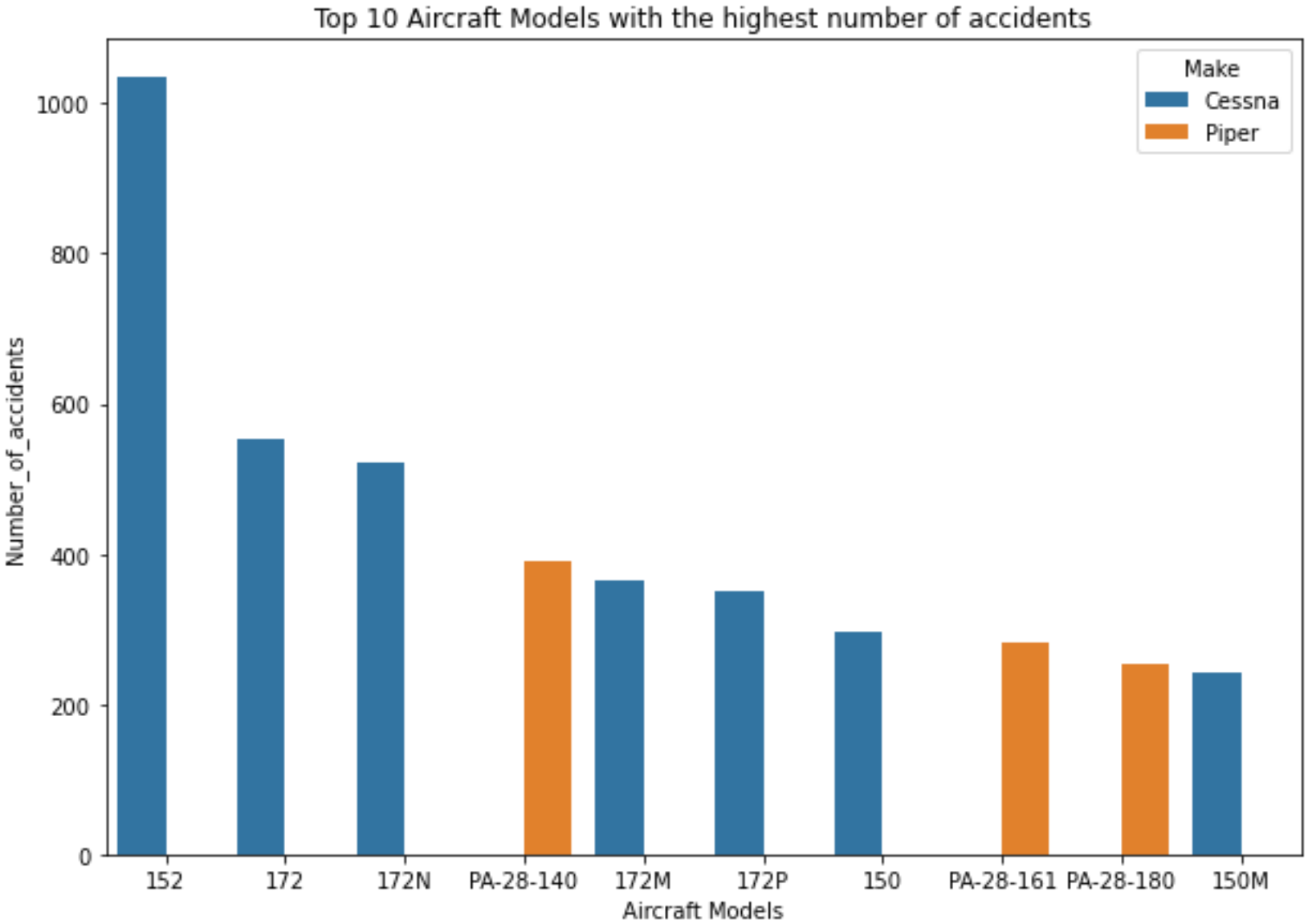
1. Top 5 countries with fatal injuries
2. Fatal injuries by purpose of flight
3. Number of Aircraft damages in various weather conditions.
4. I also used Seaborn to visualize; Top 10 Aircraft models with the highest number of accidents.



From this chart, we can conclude that United States had the highest number of Fatal injuries caused.



From this chart, we conclude that people who travelled for personal reasons were the most affected and recorded the highest number of fatalities.



From this I was able to conclude that the Aircraft model Cessna-152 recorded the highest number of accidents.

Most Cessna models caused accidents unlike other aircraft models that are not represented here.

Conclusion

- From my analysis I came up with the following findings;

1. The aircraft model Cessna-152 was at a high risk of causing more incidents.
2. Cessna-152 recorded the highest number of incidents caused as well as fatalities. It happened to be the most used aircraft because of the incidents caused.
3. United States happened to be the country that had the highest number of incidents.
4. People who travelled for personal reasons recorded the highest number of fatalities.

THANK YOU!

- I’m happy to answer any questions you might have.

End of presentation.