Aircrafts with the lowest risk of fatalities

Presentation Outline

Overview

Business Understanding

Data Understanding

Data Analysis

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Next Steps

Thank You

Project overview

Project goal

- To determine aircrafts with the lowest risk of accidents and fatalities, by analyzing historical data, to help the company make an informed decision on aircraft purchase

Audience

- Business persons in the aviation Industry

Dataset

- Aviation accident data from 1962 to 2023 about civil aviation accidents and selected incidents in the United States and international waters.

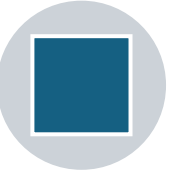- Data is compiled by the National Transportation Safety Board

Business Understanding

- My company is interested in purchasing and operating airplanes for commercial and private enterprises

- They do not have any information about the potential risks of aircrafts

- The managers need more information to determine which aircrafts are the lowest risk for the company

Data Understanding

Imported relevant libraries: pandas(pd), numpy(np), seaborn(sns), matplotlib.pyplot (plt)

Data Preparation: standardized naming of columns, removed duplicates, dropping missing values and created another DataFrame: df_cleaned

Selected to work with ten variables: 'make', 'model', 'aircraft category', 'injury_sererity', 'total_fatal_injuries' and 'total_serious_injuries', 'number_of_engines', 'report_status

df_aviation_data = pd.read_csv('Data/Aviation_Data.csv', index_col=0)`

df_aviation_data.info():

Index = 90348 entries: columns = 30

df_cleaned = df_aviation_data.dropna(subset=['make', 'model', 'aircraft_category', 'injury_severity', 'total_fatal_injuries', 'total_serious_injuries', 'number_of_engines', 'aircraft_damage', 'weather_condition', 'broad_phase_of_flight'])`
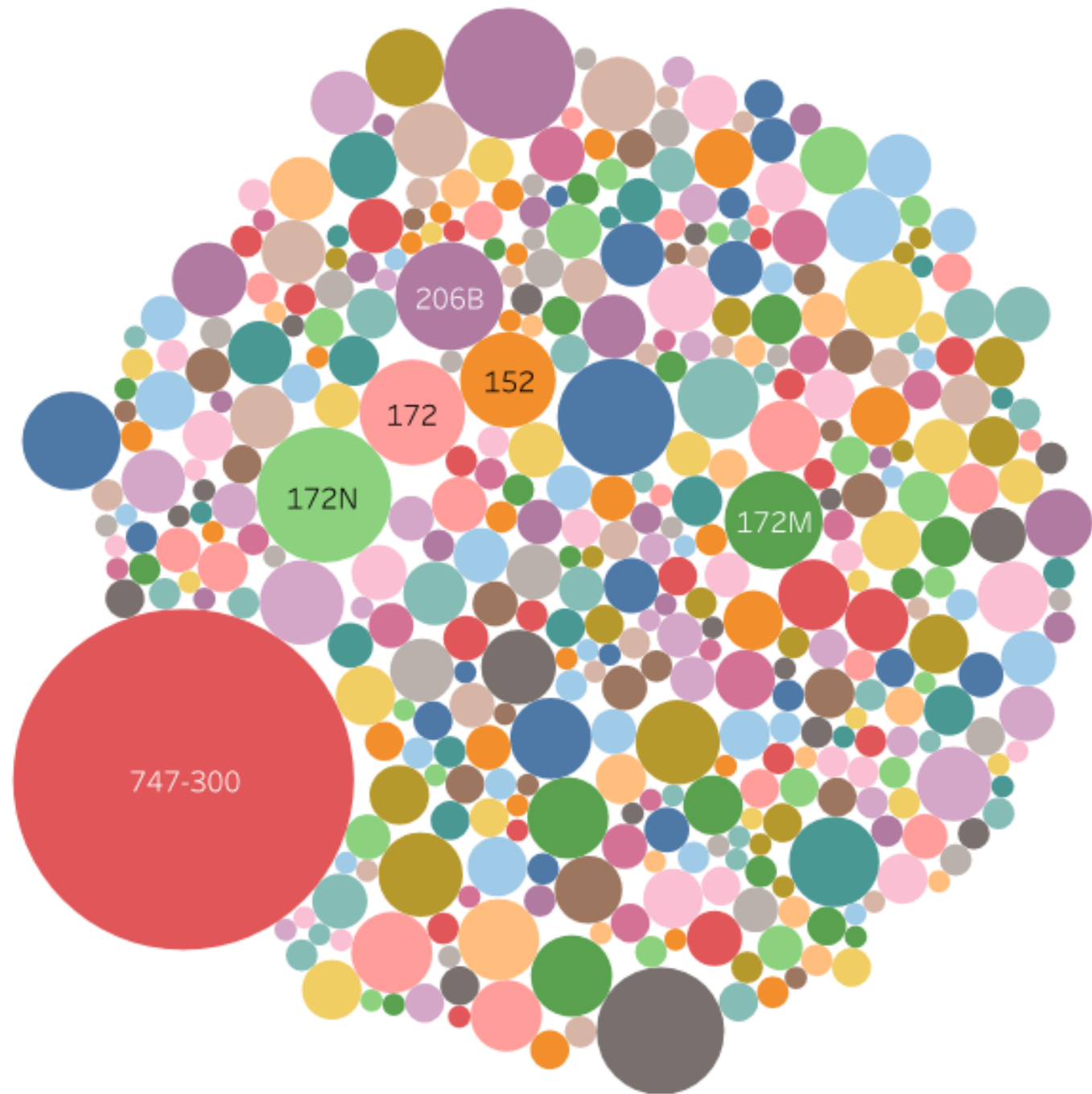
df_cleaned. info()

Index = 3630 entries

Data Analysis

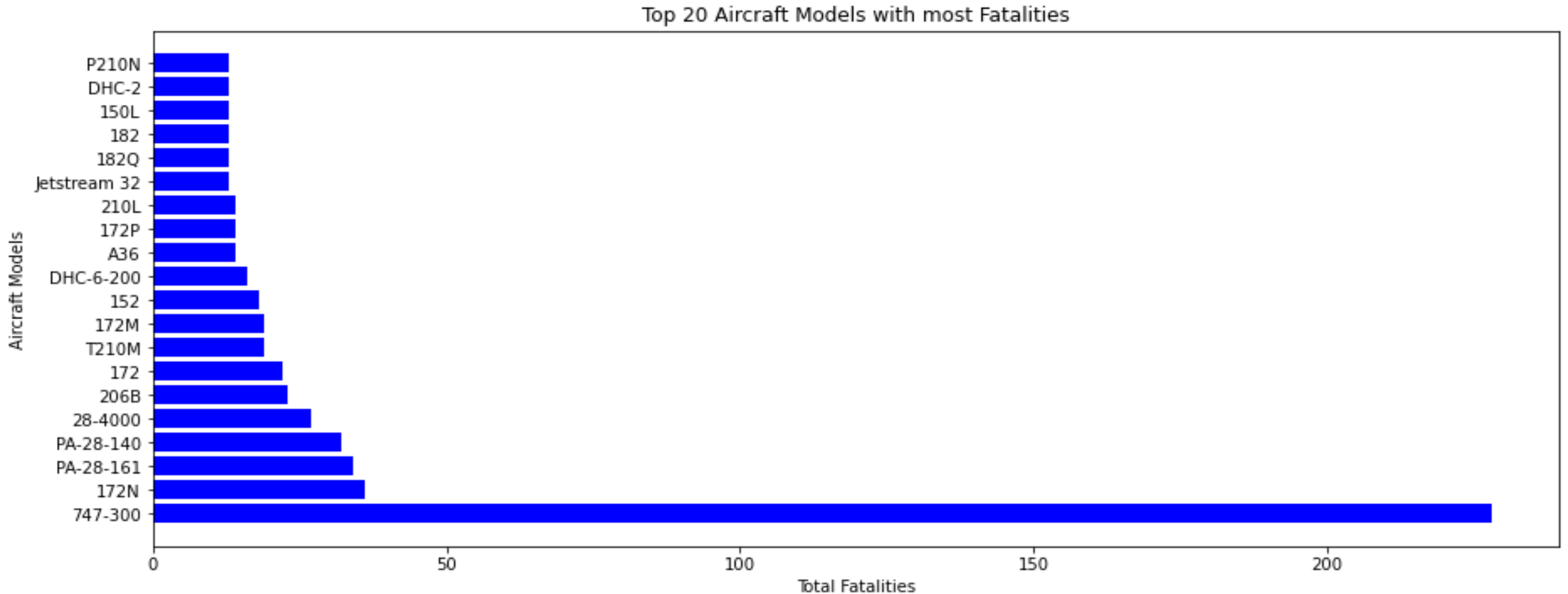| Min No of Engines = 1.1		Max No. of engines = 4		Max fatalities = 228

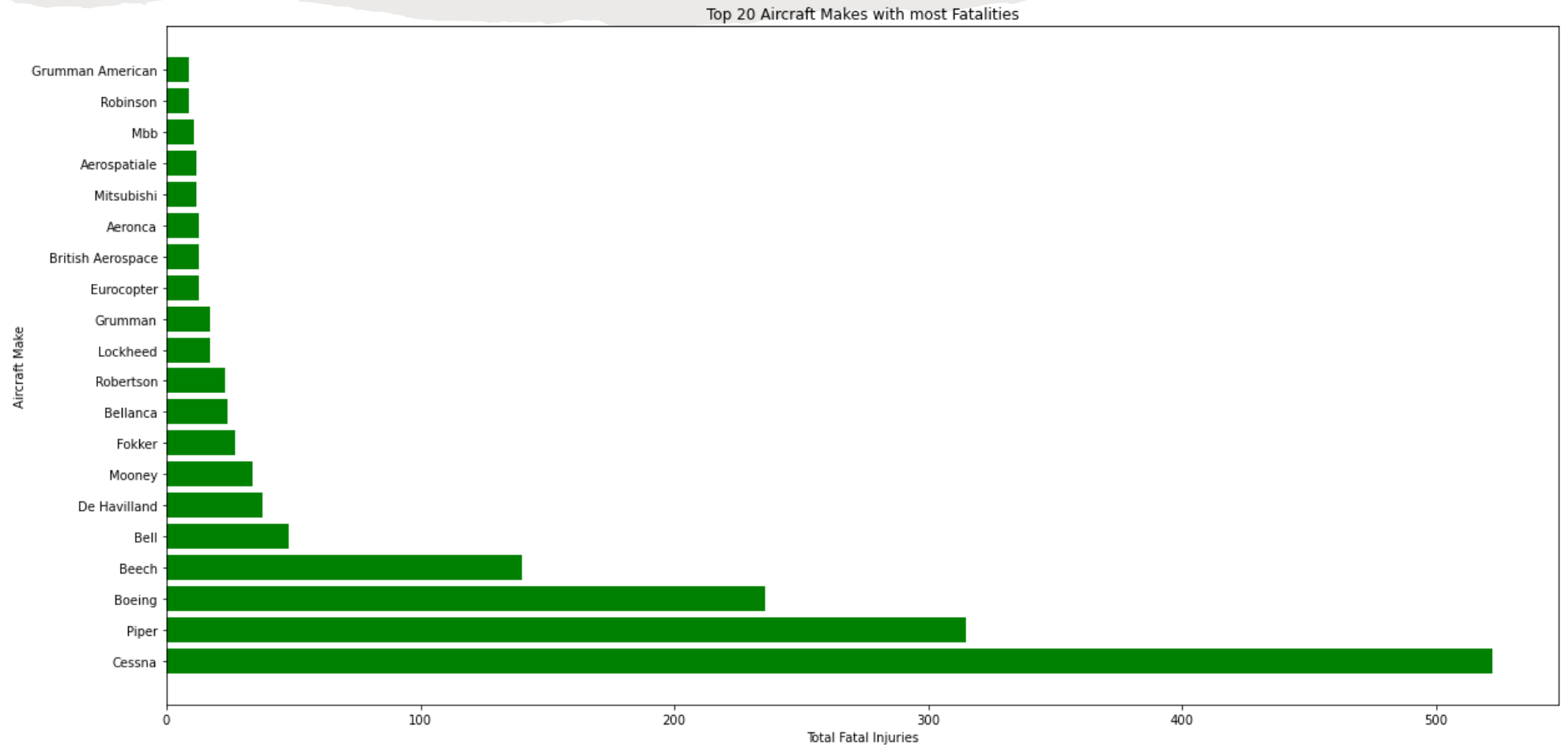|	No_engines	Total_fatal_injuries	Total_serious_injuries	Total_minor_injuries	Total_uninjured
count	3630	3630	3630	3598	3593
mean	1.1	0.5	0.2	0.3	2.1
std	0.4	4.0	0.8	1.1	13.0
min	0	0	0	0	0
25%	1	0	0	0	0
50%	1	0	0	0	1
75%	1	0	0	0	2
max	4	228	26	33	393

Total fatalities vs Aircraft model

Top 20 aircraft models with the most fatalities

Top 20 Aircraft Models with most Fatalities

Top 20 Aircraft Makes with most fatalities

Top 20 Aircraft Makes with most Fatalities

Recommendations

- The aircraft with the greatest number of fatalities is the model 747-300. This could be due to its high capacity of over 500 passengers

- Makes such as Adams, Aeronca Champion and eatherly have not reported any fatal injuries.

- Consider purchasing Aircrafts that have the least no incidents or the least no of fatalities

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Next steps

- Re look at the data again and remove inconsistencies

- Focus on aircrafts that had zero or no incidences at all

Key Questions

- What type of aircrafts have reported the most, least or no total fatal injuries over the last 60 years?

- How is the profitability of the different models of aircraft in terms of purchase price, and maintenance costs?

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Thank you