



AIRCRAFT SAFETY ANALYSIS

PROJECT PHASE 1

Overview of the Aviation Data

- ▶ **Overview of the Aviation Data**
- ▶ The purpose of this presentation is to provide an overview of analysis and recommendation of aircraft safety and precautions.
- ▶ I will start by discussing business understanding followed by data overview then the followed by data analysis and end with key findings. □
- ▶ My project aim is to find variables that make an airplane the safest and provide business recommendations based on these findings. This data comes from Kaggle
- ▶ <https://www.kaggle.com/datasets/khsamaha/aviation-accident-database-synopses>

Business Understanding

- ▶ My project entails information that has previously been collected by different data scientists.
- ▶ Problem statement: identifying the least risky aircraft for the company new venture and also ensuring a competitive and prices.
- ▶ ☐ Key stakeholders: stake holders will be of wide range both internally and externally
- ▶ ☐ Resources: Industry reports, financial budget, aircraft safety data, and expert consultations.
- ▶ ☐ Risks: Potential for financial losses and safety incidents related to accidents.

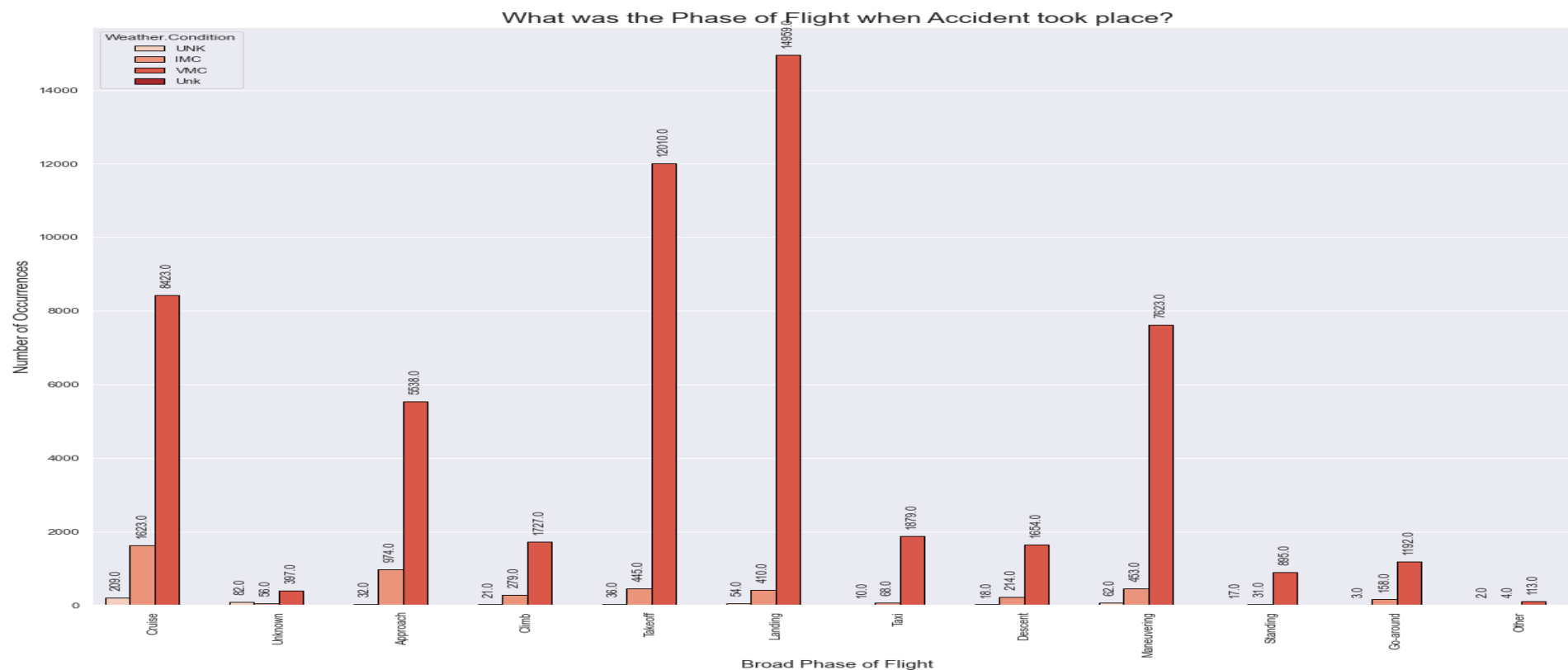
Data Understanding

- ▶ My project entails information that has previously been collected by different data scientists. The data is stored in ****Kaggle**** and is stored in a ****csv format****. When I read the data to my notebook using pandas library, I get a dataframe with 90348 rows and 31 columns. From a brief look at the dataframe, we realize that the information we are dealing with is from investigation of aircraft accidents. I have both categorical and continuous data , with the former making the most part of our data.

Data Analysis

- ▶ The next step after understanding the data is to determine what is required thus entering the market with comprehensive and relevant knowledge.
- ▶ ☐ I deleted columns that had a lot of missing data and others that I found out they are of no any use in our analysis.
- ▶ ☐ I also filled missing values in categorical values with bfiil and ffill and that of numerical values with median since its less sensitive to outliers as compared to mean.

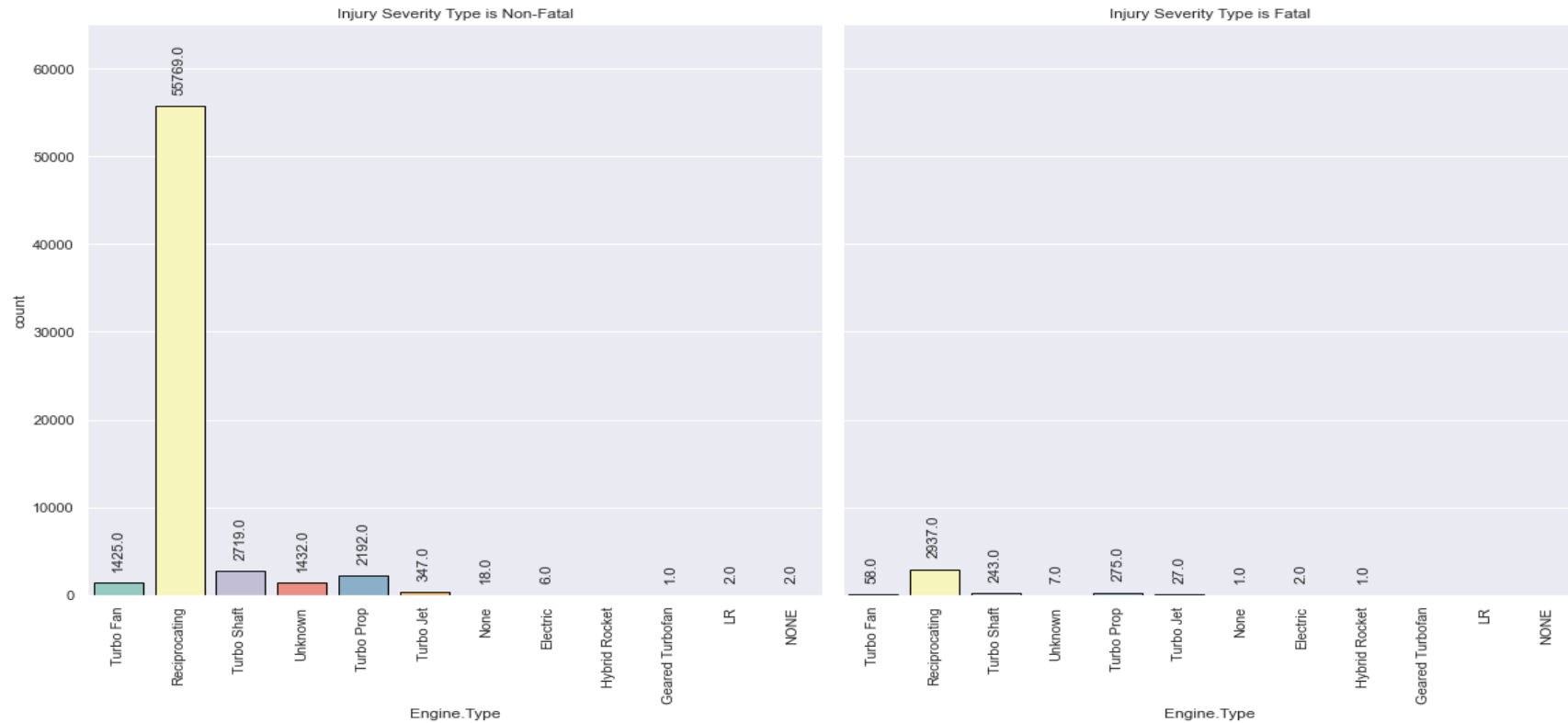
This plot illustrates that most of the accidents took place when aircraft was either Landing or Taking off. 14,902 accidents took place when the aircraft was Landing and the weather conditions were clear for flight. About 15,385 accidents took place during take off with clear weather conditions.



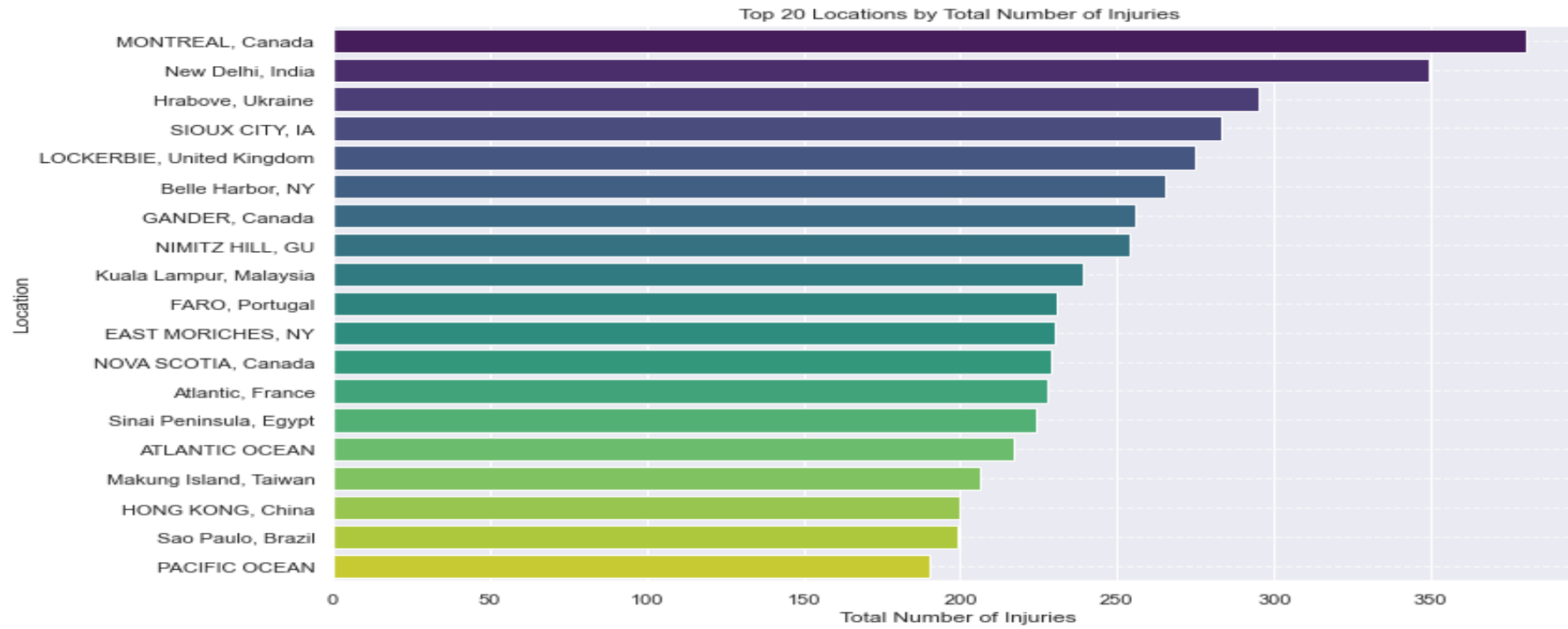
Post analysis of above below plots, it can said that most of the Fatal or Non-Fatal

accident occurred for Engine Type 'Reciprocating'. For Fatal, count is 13,068 whereas for Non-Fatal, count is around 54,310.

What was the Engine Type of Fatal or Non-Fatal accidents?



from the MONTREAL,canada has about 370 total number of injuries
while San Francisco ,CA has the less total number of injuries 180



Recommendations

- ▶ **Cessna Aircraft:**
Cessna models are involved in the highest number of accidents compared to other aircraft makes. For this reason, they should be given the least priority when considering purchases.
- ▶ **Aircrafts with Three Engines:**
Aircrafts with three engines should be prioritized for purchase, as they demonstrate better safety during accidents. They tend to report more minor injuries, suggesting higher overall safety compared to other aircraft types.
- ▶ **Weather Conditions:**
Most fatal accidents occur during unknown (UNK) weather conditions. Therefore, the company must carefully assess weather conditions before flights to enhance safety.

Thank You

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