PHASE 1 PROJECT: AIRCRAFT ACCIDENTS ANALYSIS

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DSF-FT12

OVERVIEW

- We are entering the aviation industry by acquiring aircraft for commercial and private operations. This analysis focuses on identifying the safest aircraft to minimize operational risks.
- The primary challenge in selecting an aircraft is evaluating its historical safety performance to minimize the risk of accidents

BUSINESS UNDERSTANDING

Objective

- Minimize the risk of accidents through data-driven aircraft selection, ensuring operational safety and compliance with industry standards.

Stakeholders:

- Decision makers in the aviation industry.

DATA UNDERSTANDING

The dataset we are using is from Kaggle. It contains information from the National Transport Safety Board(NTSB), which includes data from 1962 and later about civil aviation accidents and selected incidents within the United States, its territories and possessions, as well as in international waters.

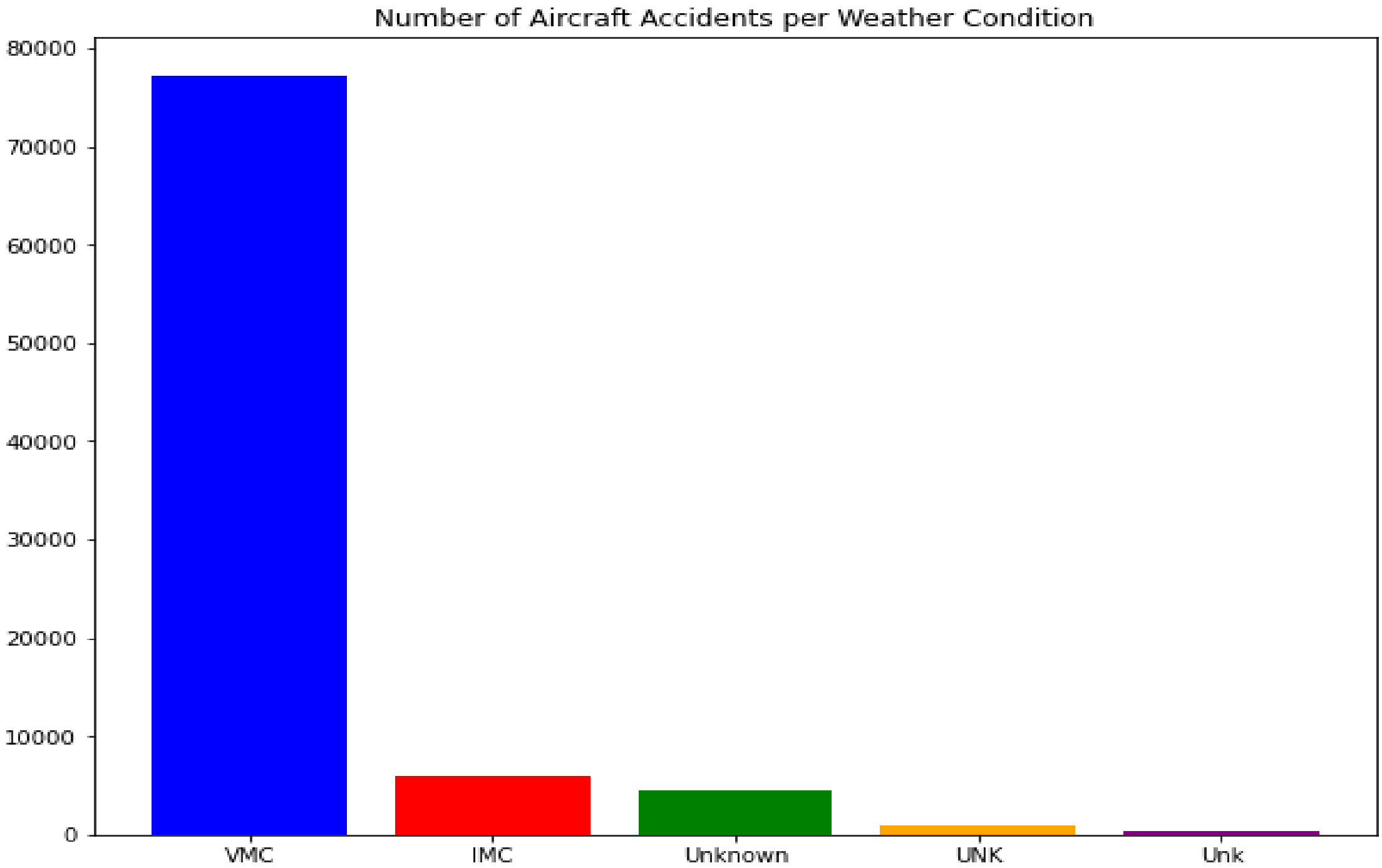
DATA UNDERSTANDING

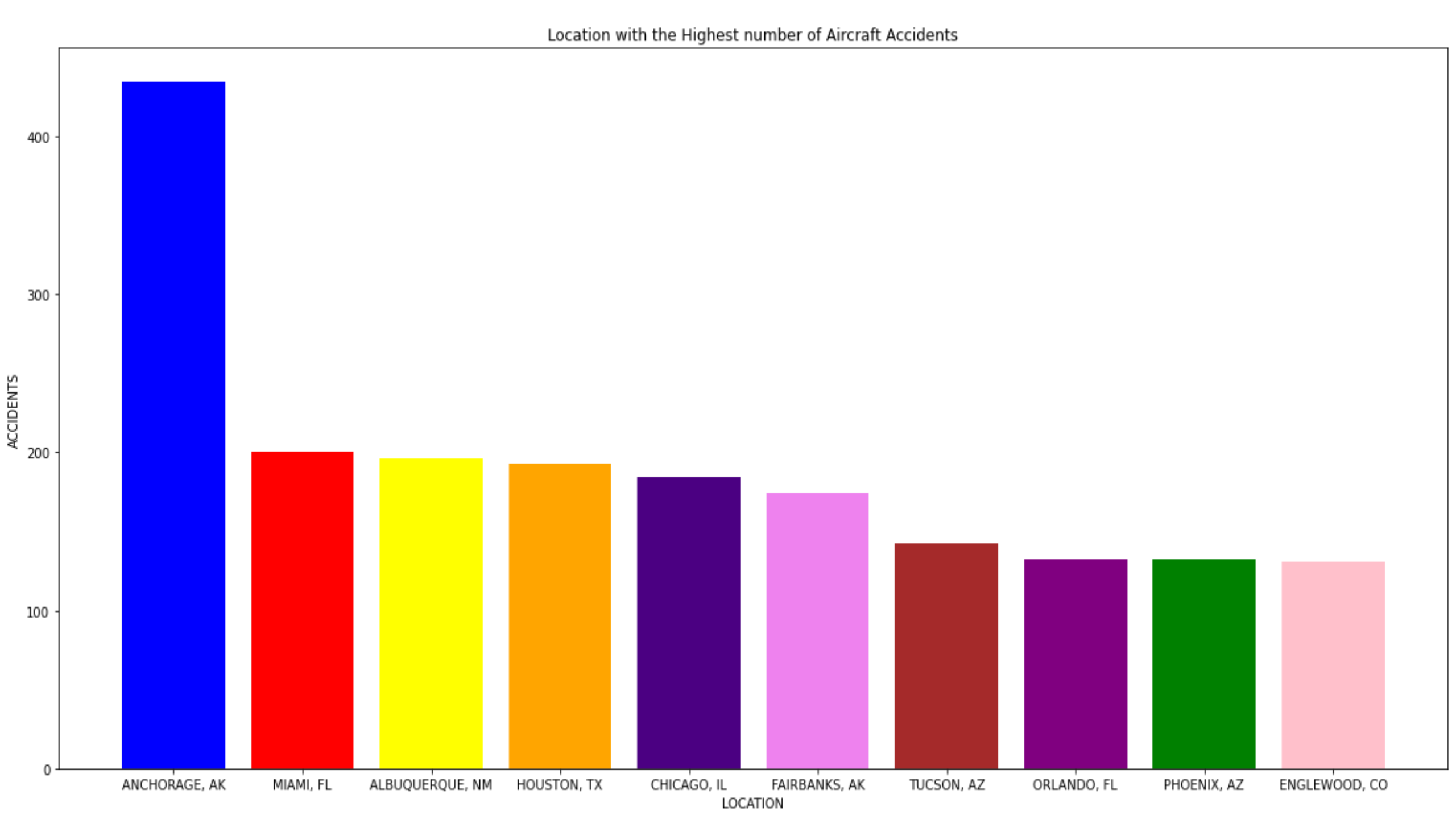
This dataset provides insights on various factors involved in aircraft accidents such as weather conditions, aircraft make and model and more.

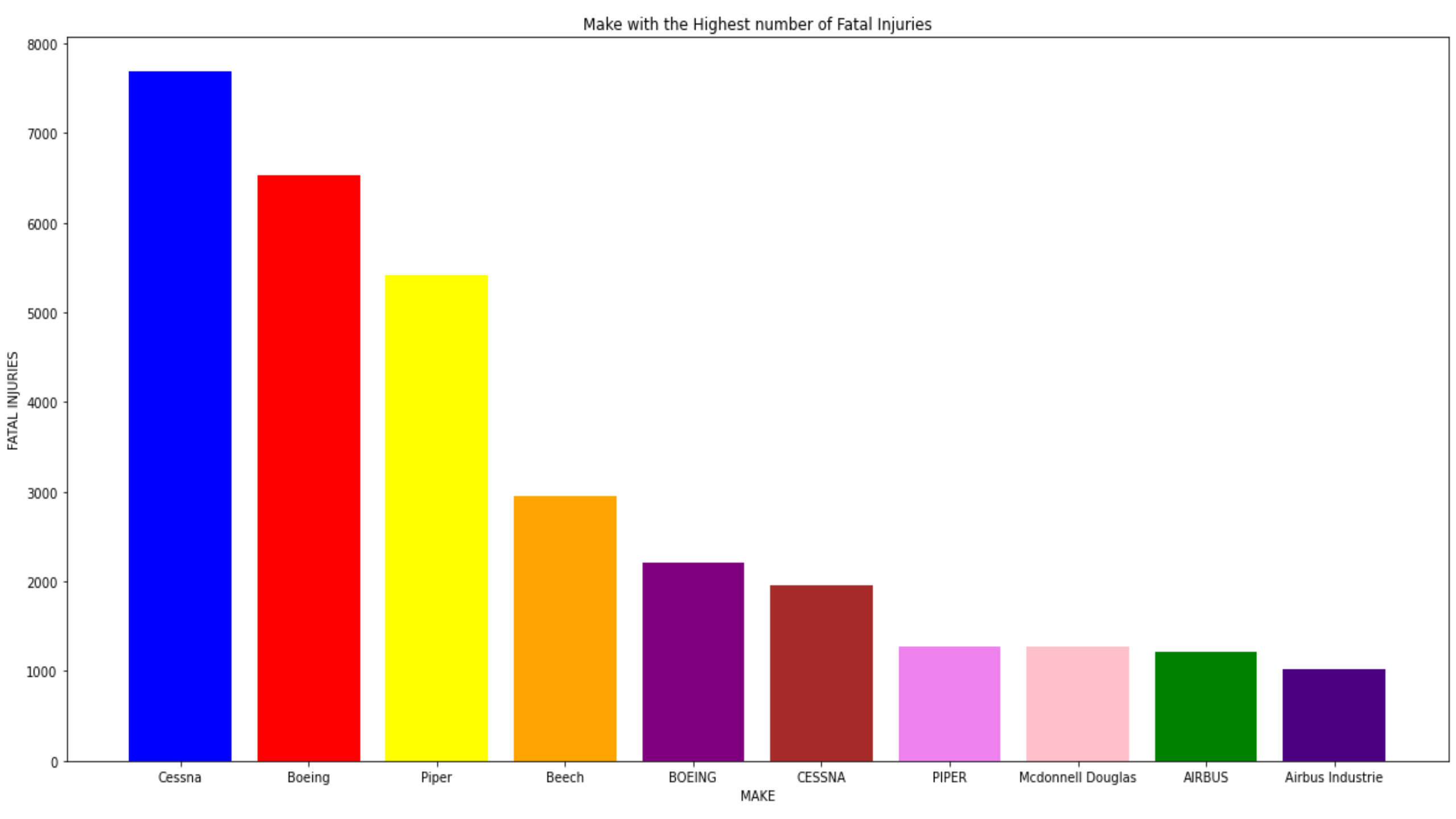
Source of data:

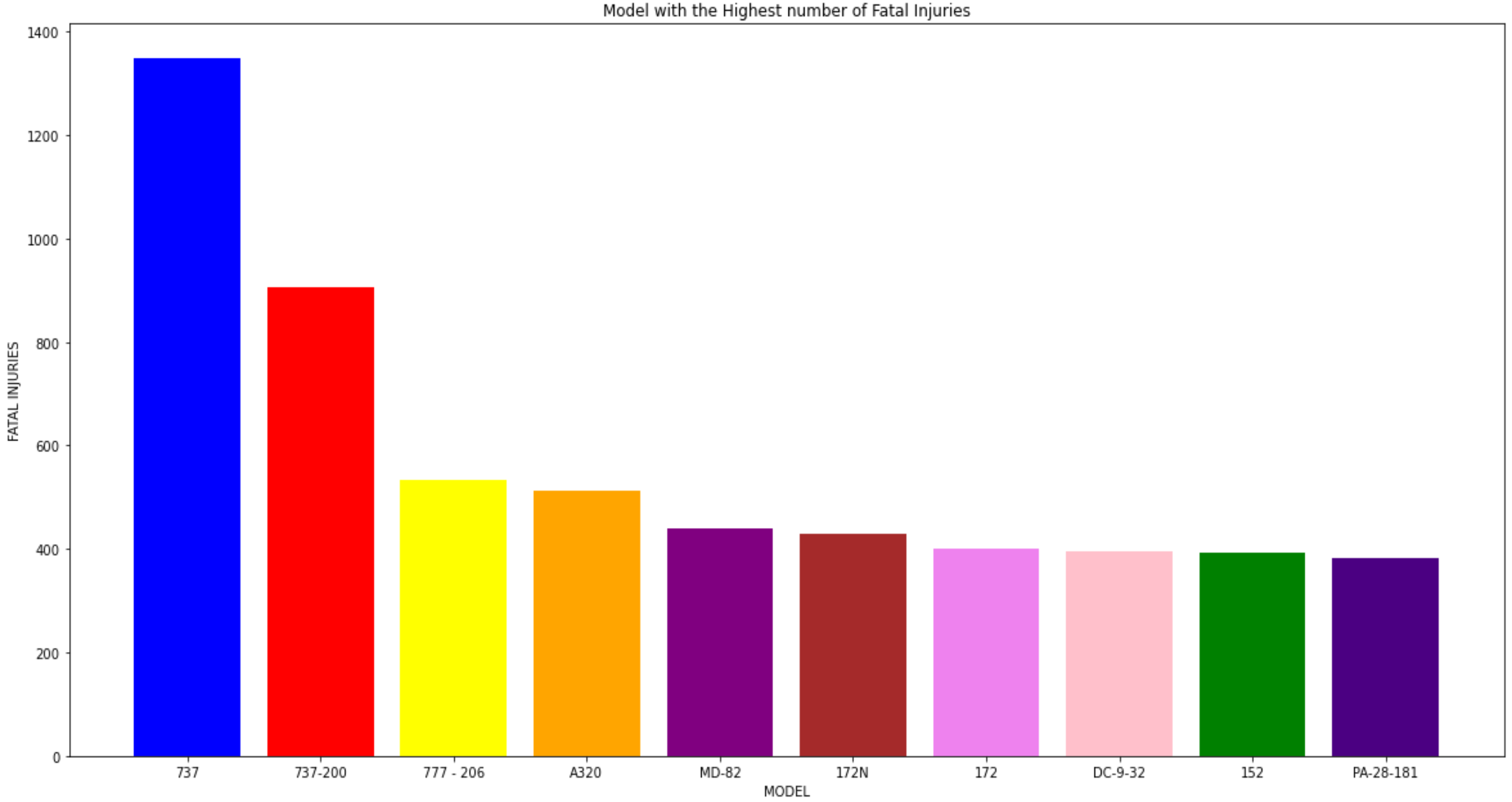
https://www.kaggle.com/datasets/khsamaha/aviation-accident-database-synopses

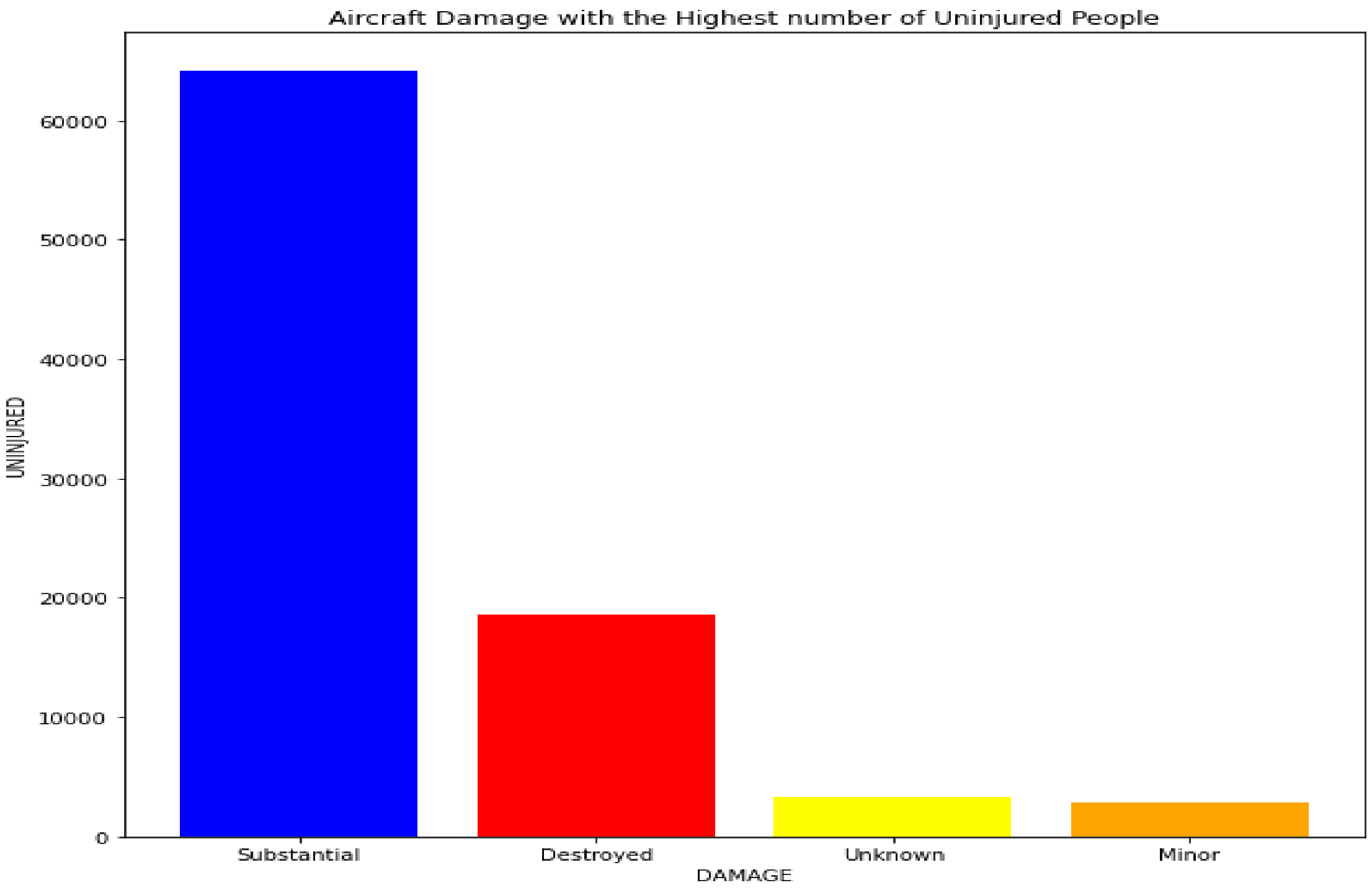
DATA VISUALIZATION


Number of Aircraft Accidents per Weather Condition
80000
70000
60000
50000
40000
30000
20000
10000
0
VMC
IMC
Unknown
UNK
Unk


Location with the Highest number of Aircraft Accidents
ACCIDENTS
0
100
200
300
400
ANCHORAGE, AK
MIAMI, FL
ALBUQUERQUE, NM
HOUSTON, TX
CHICAGO, IL
FAIRBANKS, AK
TUCSON, AZ
ORLANDO, FL
PHOENIX, AZ
ENGLEWOOD, CO
LOCATION


Make with the Highest number of Fatal Injuries
FATAL INJURIES
8000
7000
6000
5000
4000
3000
2000
1000
0
Cessna
Boeing
Piper
Beech
BOEING
CESSNA
PIPER
Mcdonnell Douglas
AIRBUS
Airbus Industrie
MAKE


Model with the Highest number of Fatal Injuries
FATAL INJURIES
1400
1200
1000
800
600
400
200
0
737
737-200
777 - 206
A320
MD-82
172N
172
DC-9-32
152
PA-28-181
MODEL


Aircraft Damage with the Highest number of Uninjured People
UNINJURED
60000
50000
40000
30000
20000
10000
0
Substantial
Destroyed
Unknown
Minor
DAMAGE

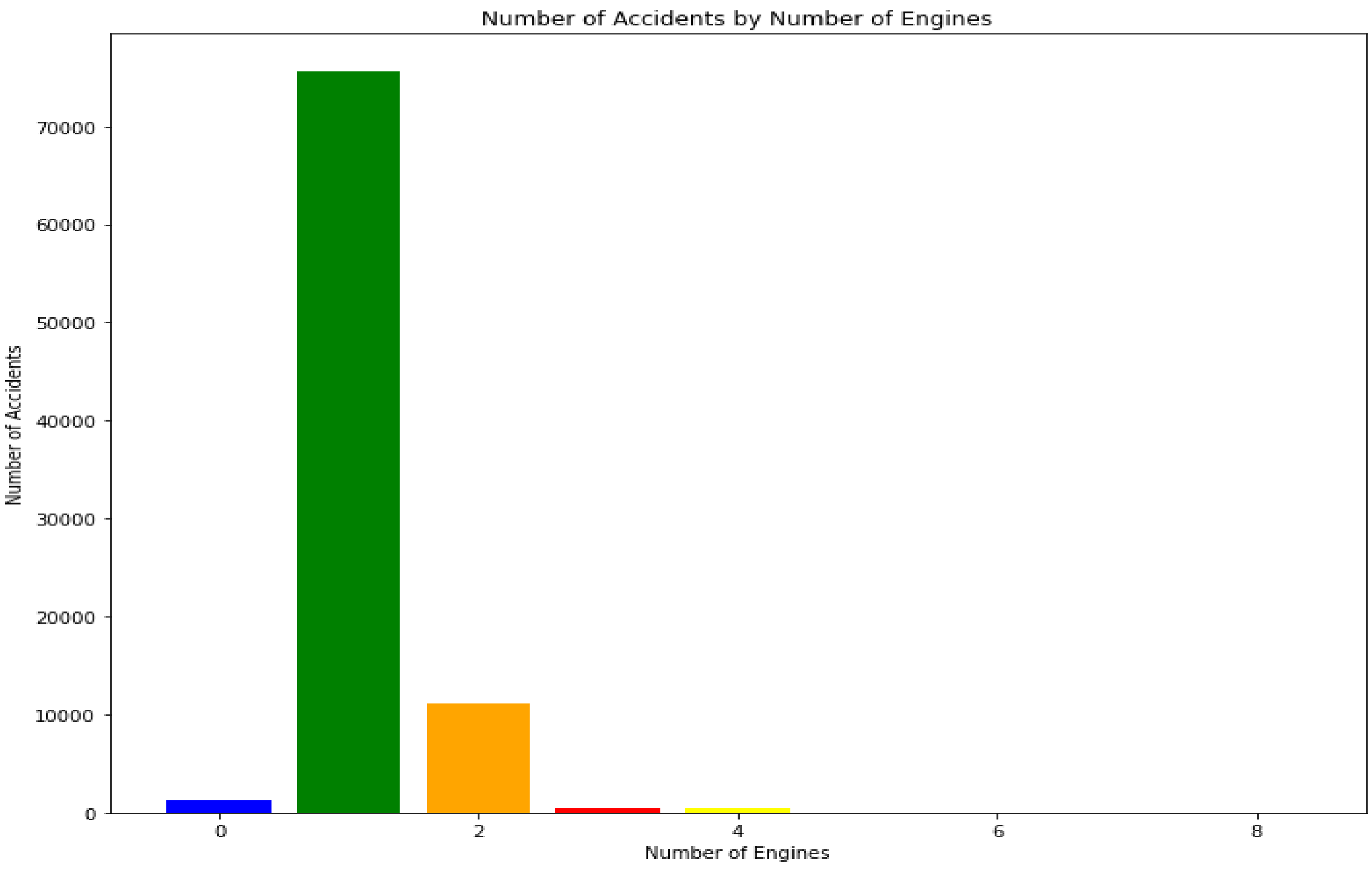
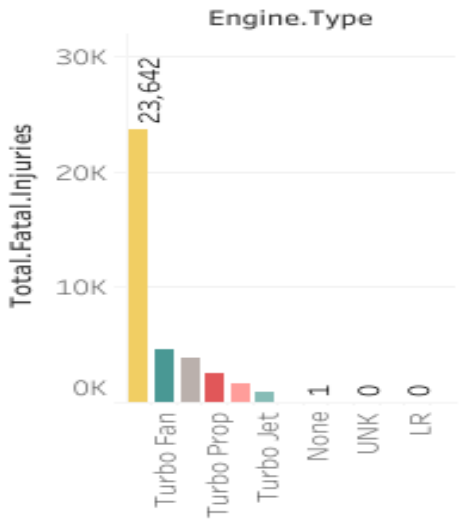
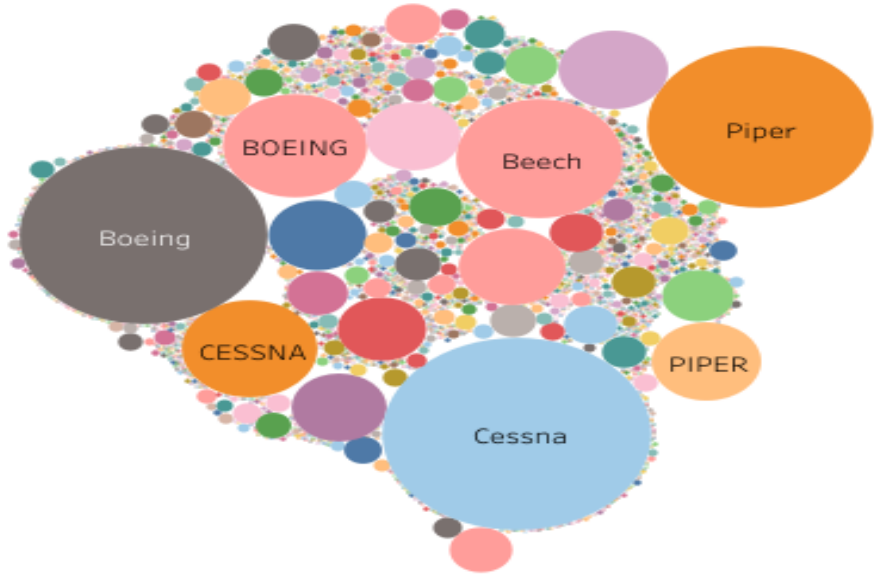

Number of Accidents by Number of Engines
Number of Accidents
70000
60000
50000
40000
30000
20000
10000
0
0
2
4
6
8
Number of Engines

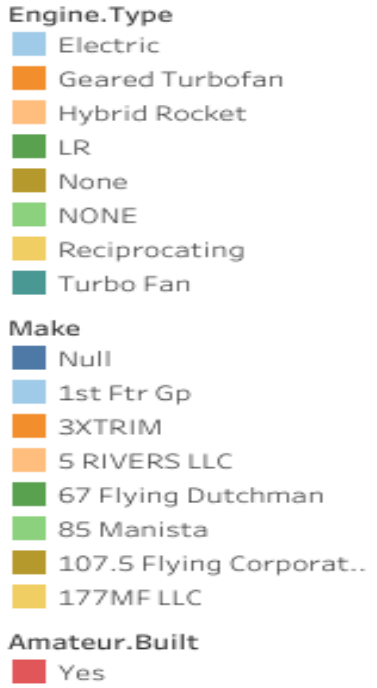
TABLEAU DATA VISUALIZATION

Fatalities by Engine Type

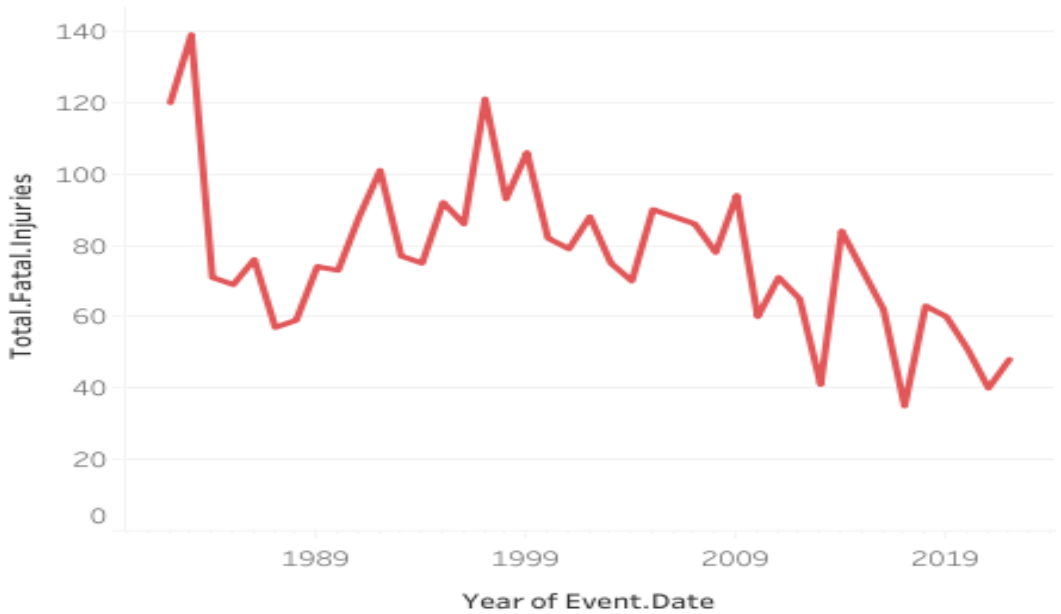


Sum of Total Fatal Injuries per Make

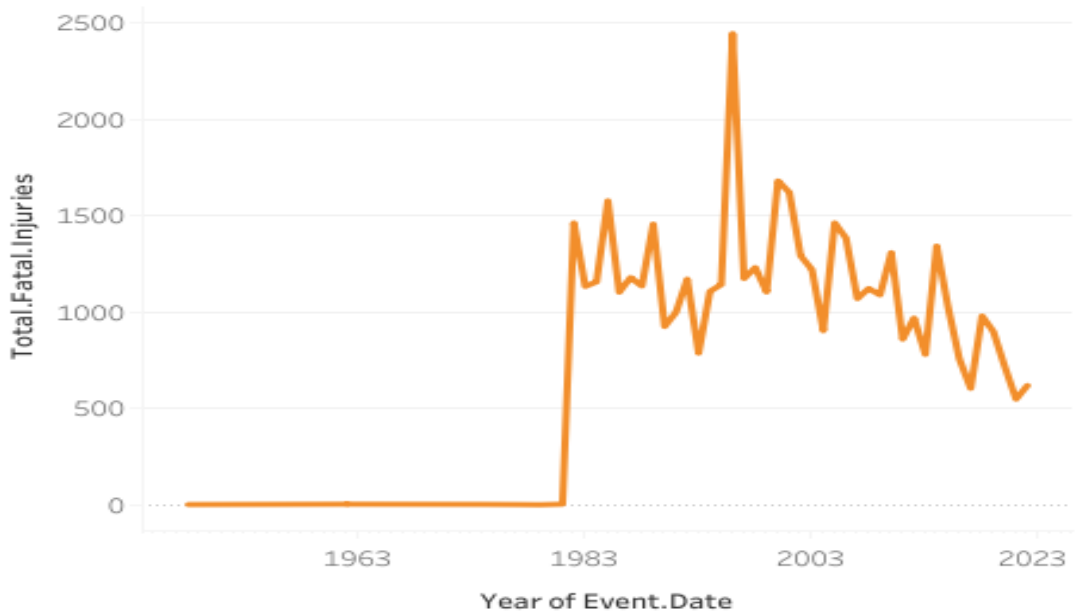




Amateur Built Fatalities



Not Amateur Built Fatalities



CONCLUSION

1. **Weather Condition**: The weather conditions with the most accidents is VMC followed by IMC
2. **Location**: We can note that most accidents occur in Anchorage, Miami and Houston as compared to the other regions.
3. **Aircraft make and model**: We can conclude that most fatal injuries were caused by Cessna and model 172N.

CONCLUSION CONTD.

4. **Aircraft damage**: We can see that substanial damage has the highest number of uninjured people.

5. **Number of engines**: The aircrafts with 4 or less engines had the most accidents

RECOMMENDATIONS

1. Its notable that the weather conditionS more prone to accidents are VMC. Ensure the aircraft is equipped to handle all conditions for added safety.
2. Avoid high risk locations such as Anchorage, Miami and Houston and consider low risk routes.
3. Consider aircrafts with more than 4 engines if possible.
4. Avoid aircraft makes and models with high accident rates such as Cessna and Piper and 172N and 152.