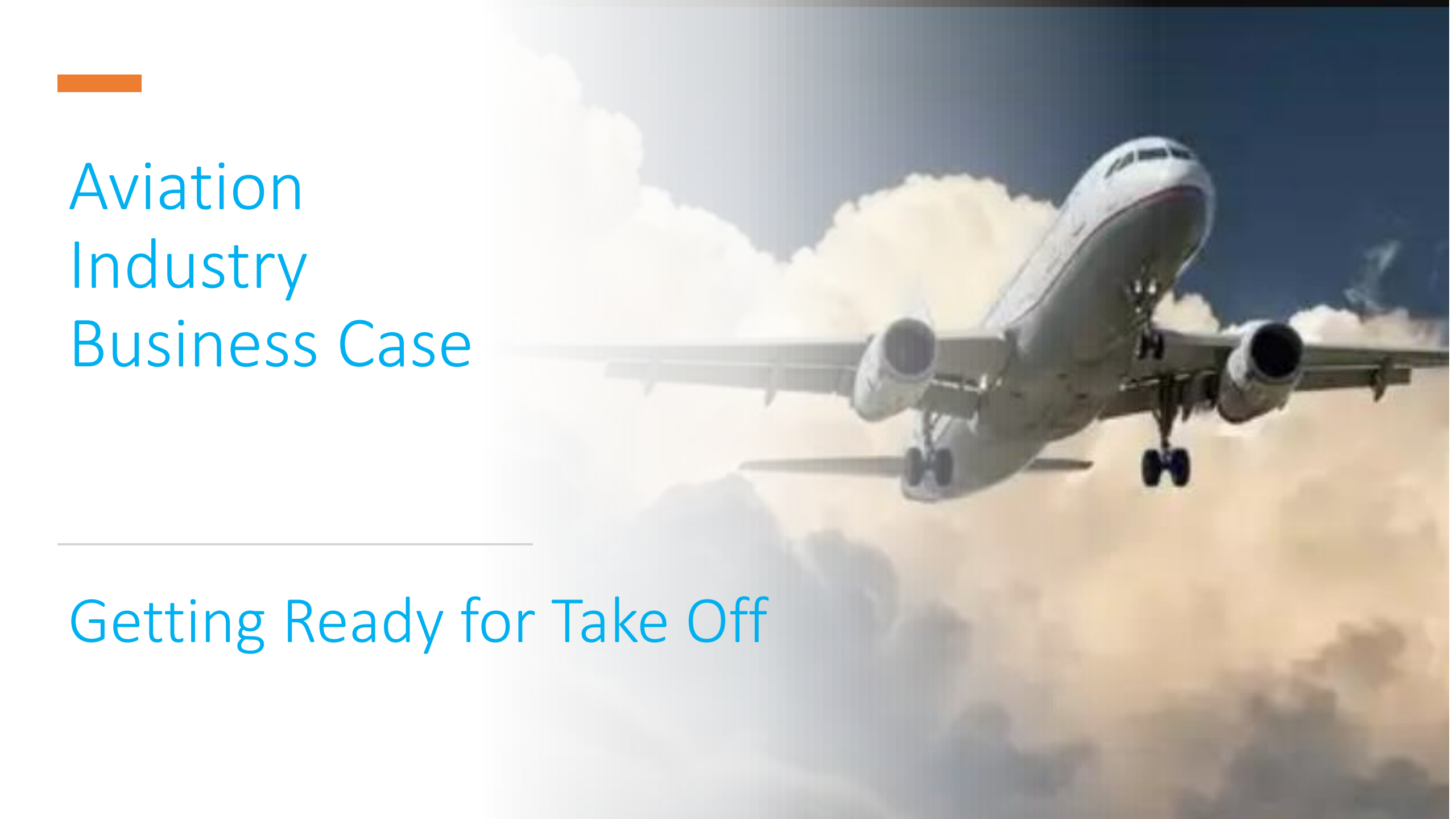
Aviation Industry Business Case

Getting Ready for Take Off



Introduction

Our company is exploring diversification of its portfolio by venturing into the aviation industry. Specifically, the company has a key focus on procuring aircrafts for both commercial and private enterprises. This is a promising and fast-growing industry with vast opportunities. On the flip side, it requires large capital outlay to venture into the industry. In addition, safety is a key priority and therefore a need to manage risks properly from the onset.

Objectives

This project aims at:

- ❖Accessing and analyzing aviation accidents data in the United States.
- ❖Identify the low-risk aircrafts based on the historical data.
- ❖Generate other actionable insights to guide the investment.

Deliverables

- Extraction of relevant aviation accidents data from reliable sources
- Accurate analysis of data to get insights
- Clear identification of low-risk aircraft for private and commercial businesses
- Presenting clear and actionability of insights

Data content & Source

The aviation accidents data contains information about aircraft accidents in USA, its territories and international waters.

It is contained in 2 CSV files downloaded from Kaggle.com

(URL: https://www.kaggle.com/datasets/khsamaha/aviation-accident-database-synopses?select=AviationData.csv)

This is high quality data that would require a lot of resources to clean and get it ready for analysis.

Data Analysis

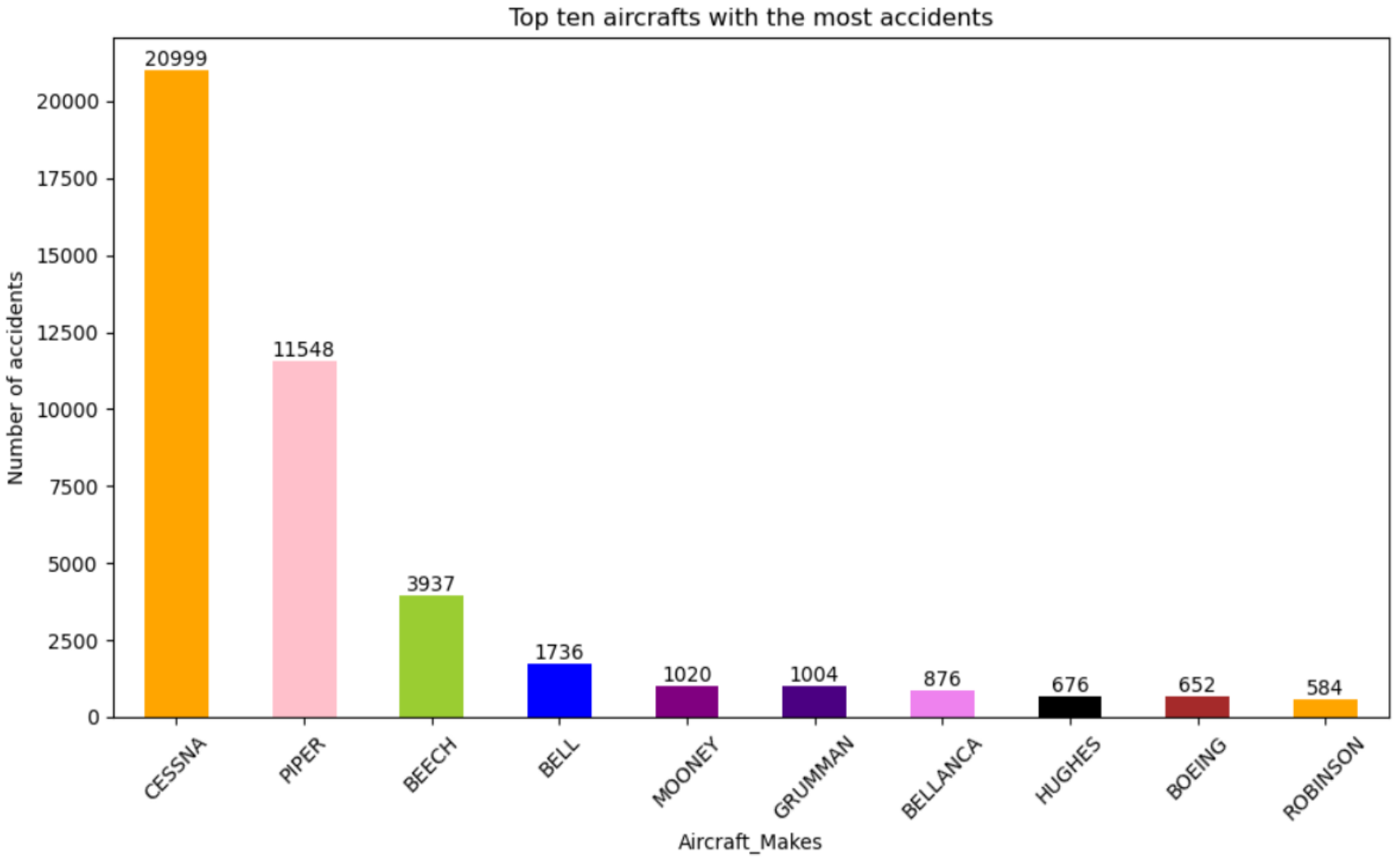
The data is analyzed using python libraries including:

- Pandas: Data manipulation and analysis
- Matplotlib: Data visualization
- Seaborn: Statistical plotting

Data Visualization

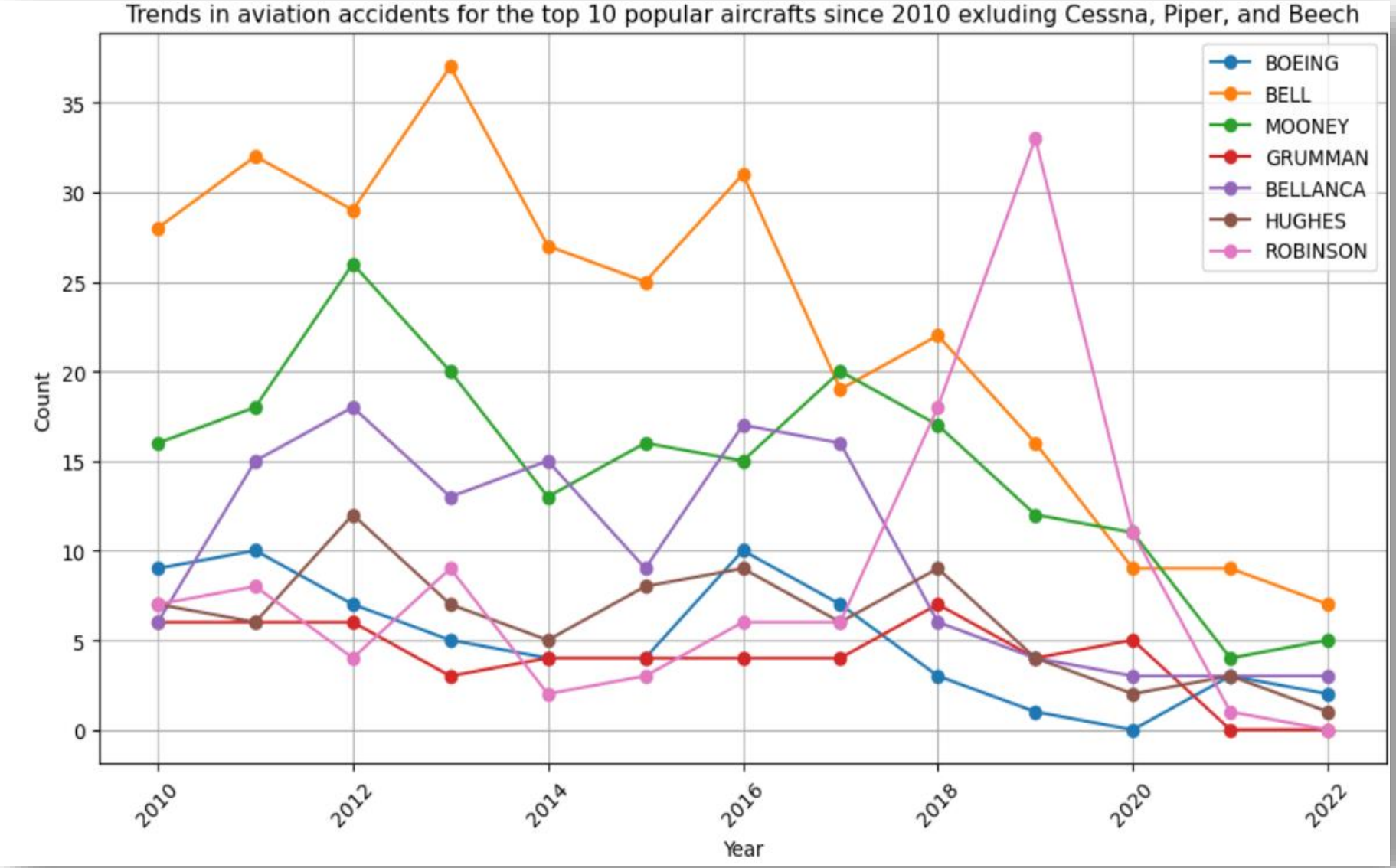
Hereunder are the graphical presentation of our findings:

We assume that the aircrafts with most accidents data are the most flown in the USA



Key Take Aways:

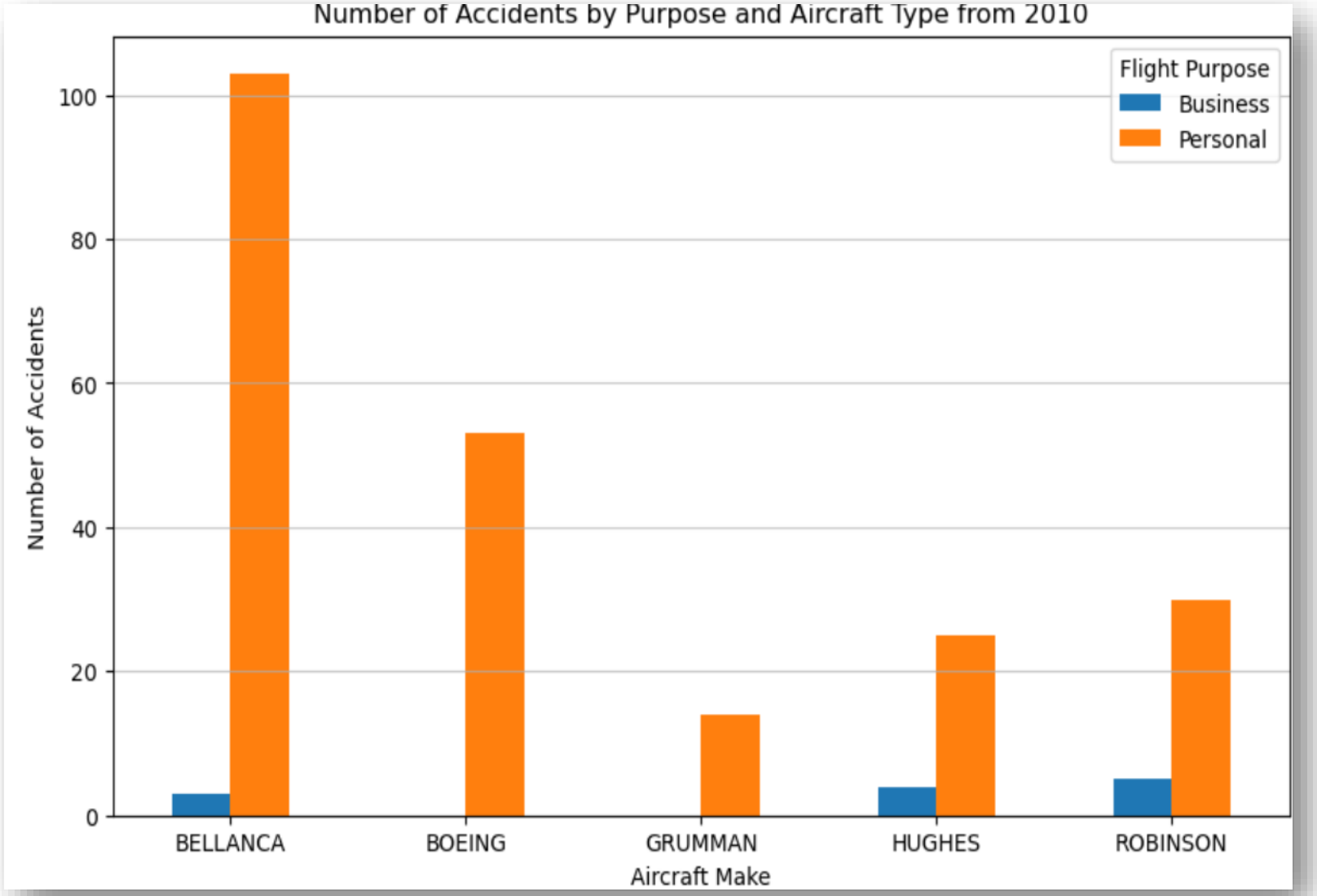
- *Top 10 flown aircrafts in the USA:Cessna,Piper,Beech,Bell,Mooney,Grumman,Bellanca,Hughes,Boeing,Robinson*
- *Top 3 aircrafts with the most accidents include Cessna, Piper, Beech*
- *Top 3 aircrafts with the least accidents include Robinson, Boeing, Hughes*



Key Take Aways:

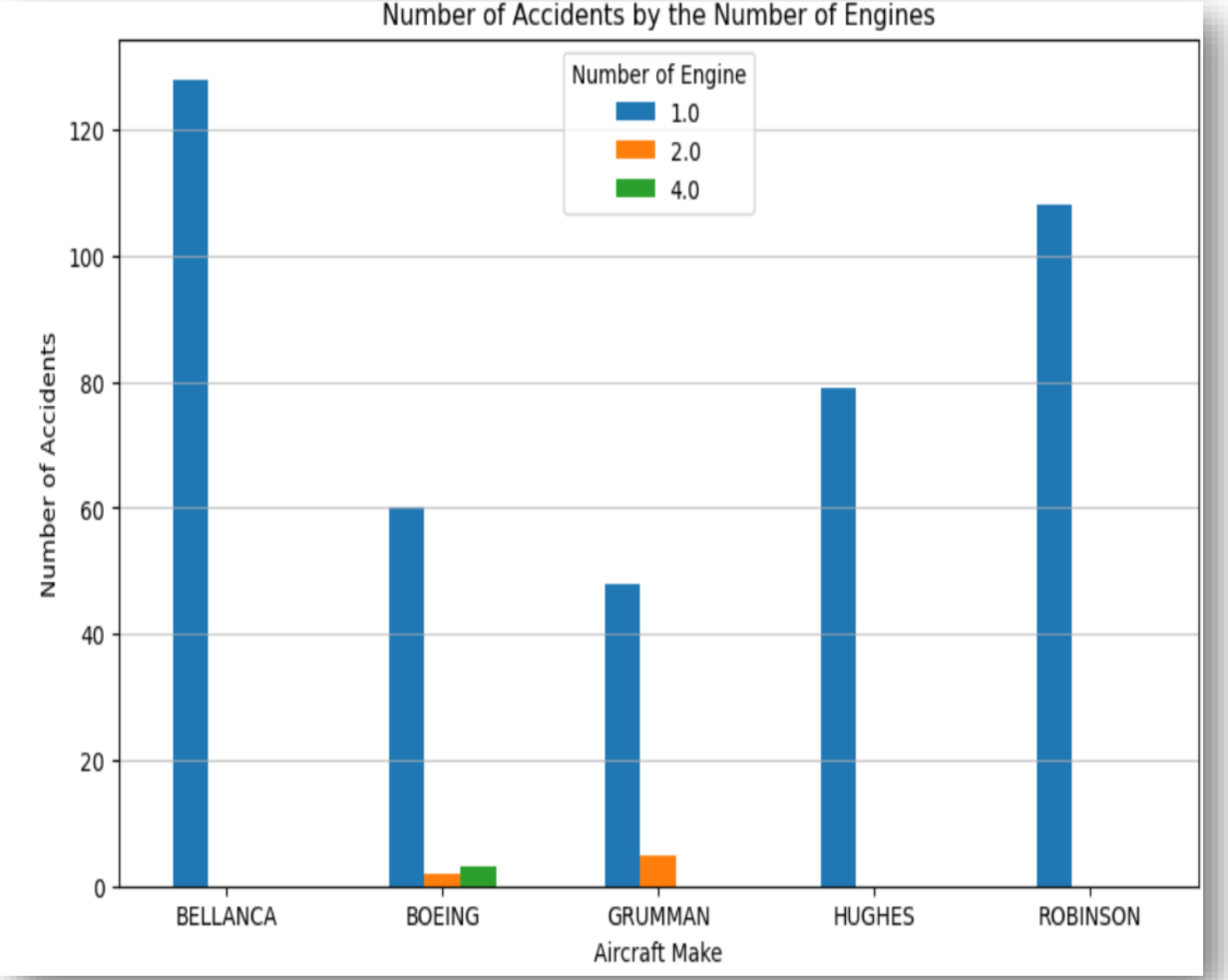
Top 5 safest aircrafts

1. *Robinson*
2. *Grumman*
3. *Hughes*
4. *Boeing*
5. *Bellanca*



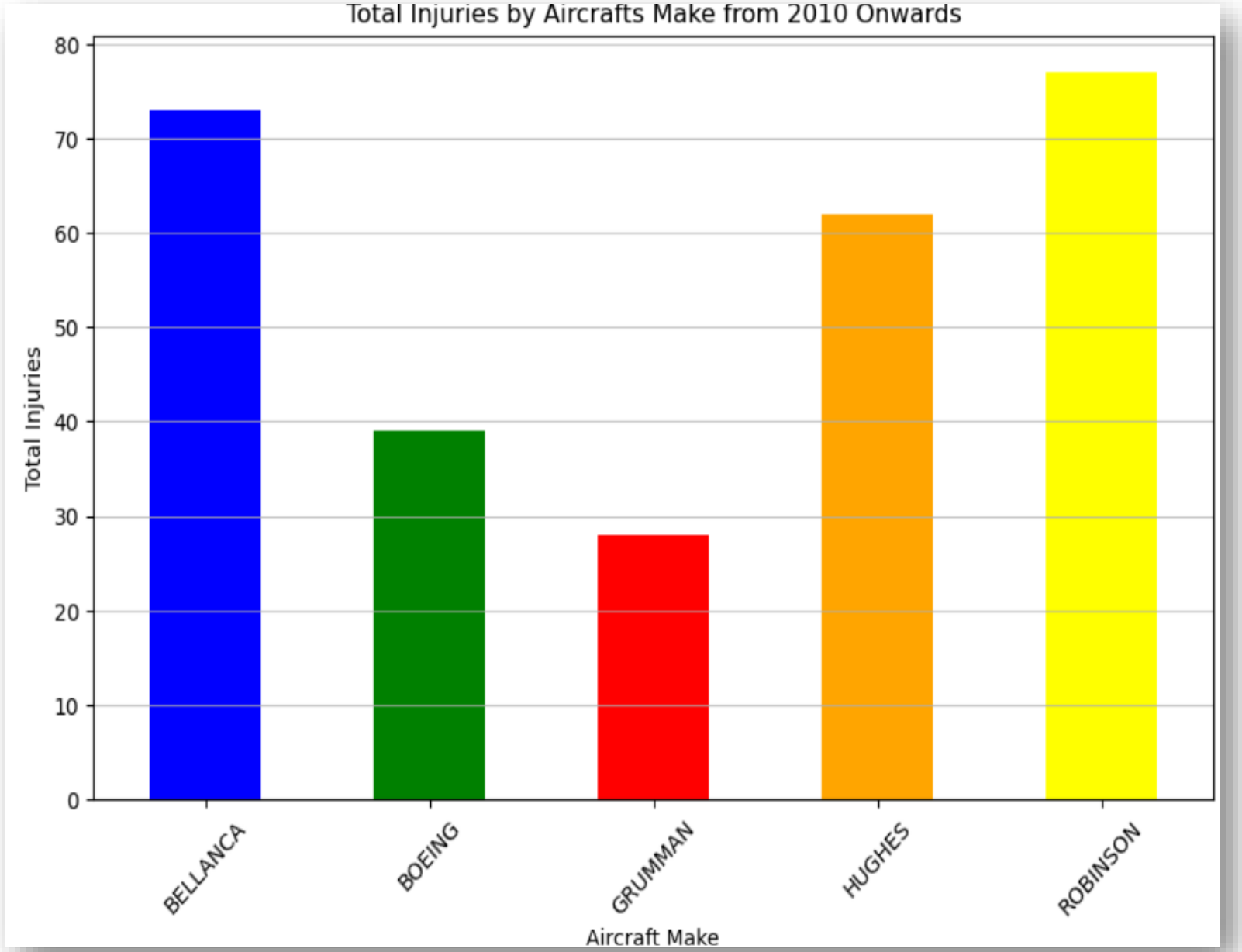
Key Take Aways

1. *Boeing and Grumman Aircrafts are the safest for the business flights because they did not have any accidents from 2010*
2. Grumman are the safest for the personal flights



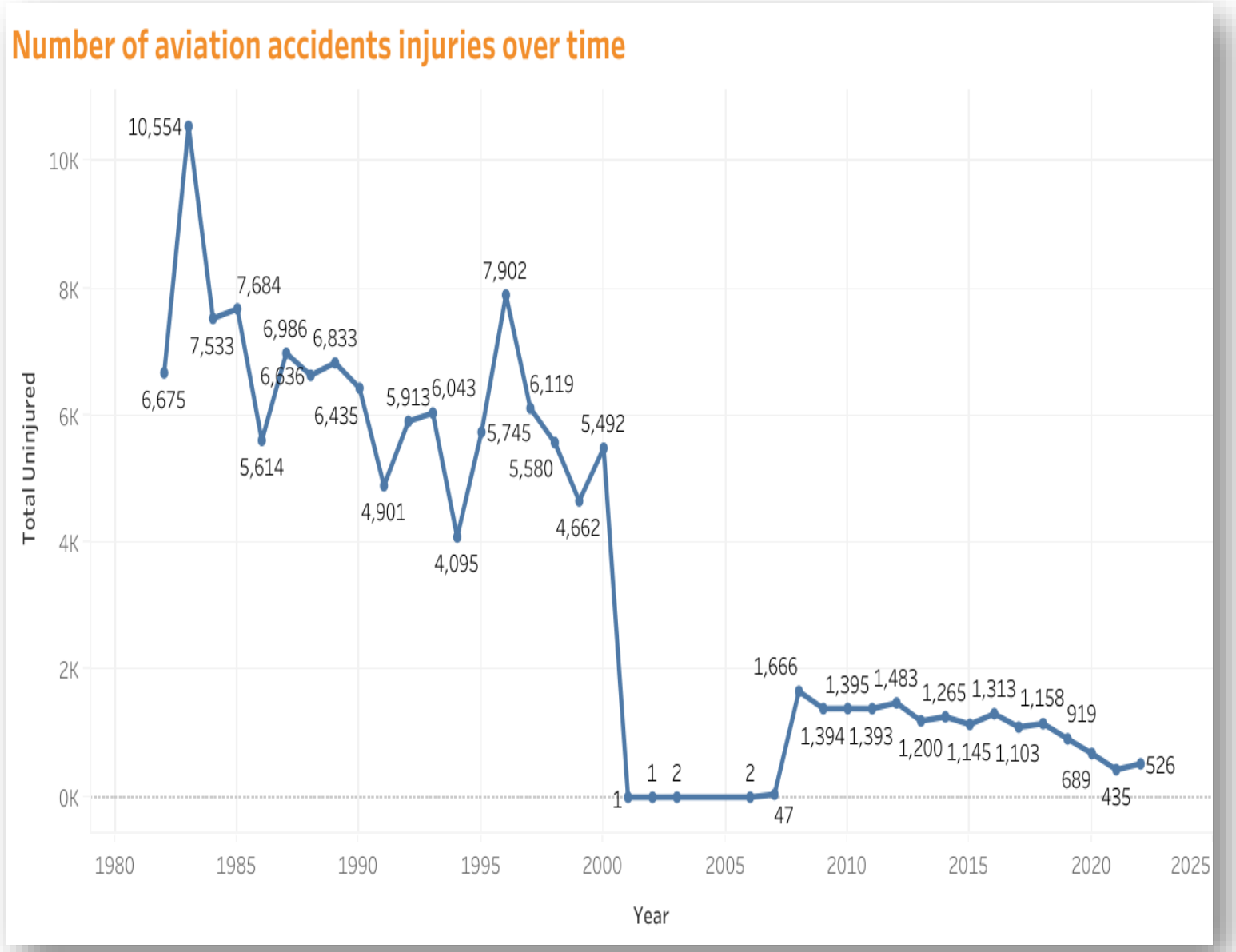
Key Take Away:

- *The number of accidents reduces as the number of engines in an aircraft increases*



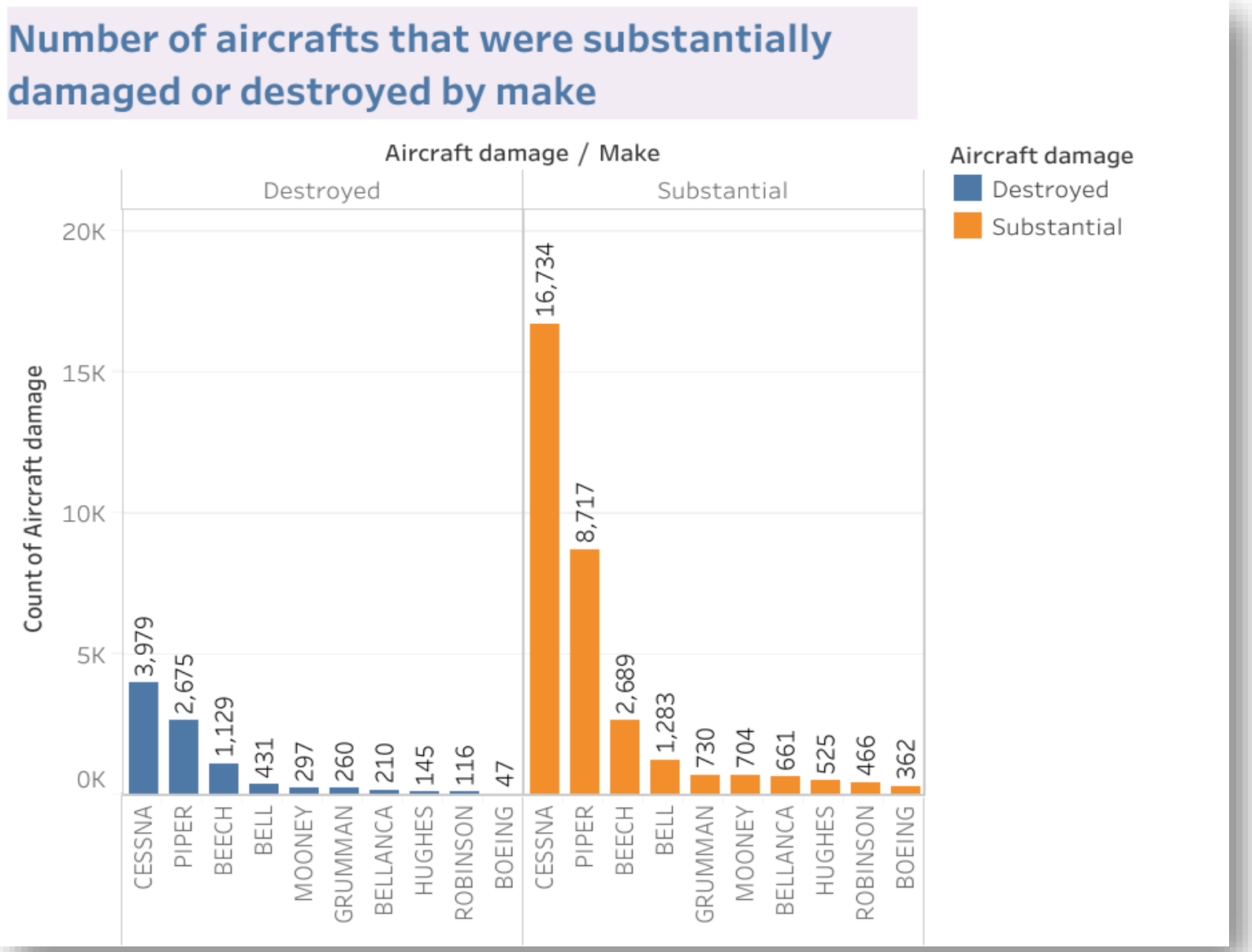
Key take away:

- *Boeing and Grumman have the lowest number of injuries since 2010 meaning they are the top 2 safest aircrafts.*



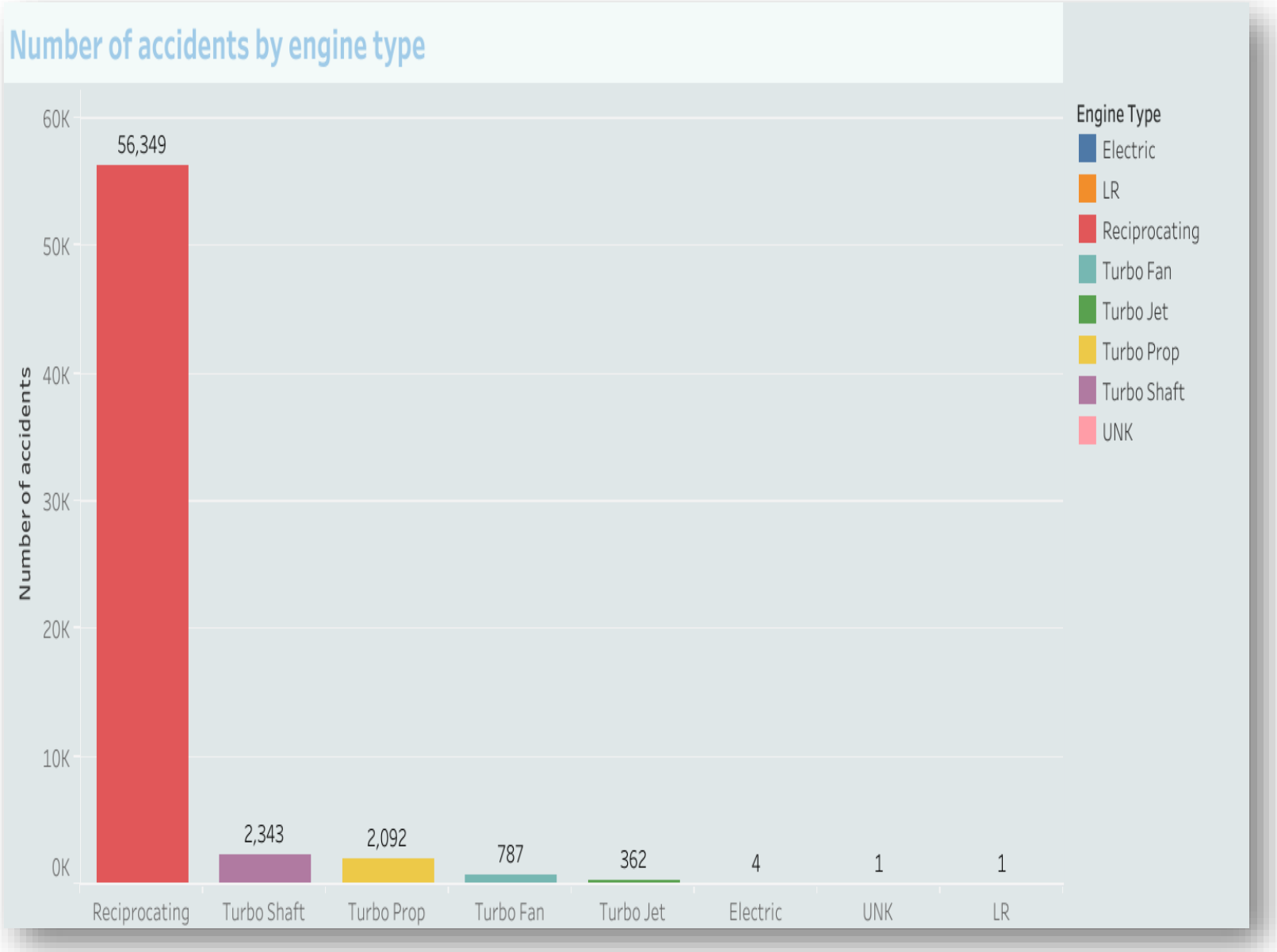
Key Take Away:

The number of aviation accidents have steadily reduced over time probably due to improvement in technology, training and regulations.



Key Take Away:

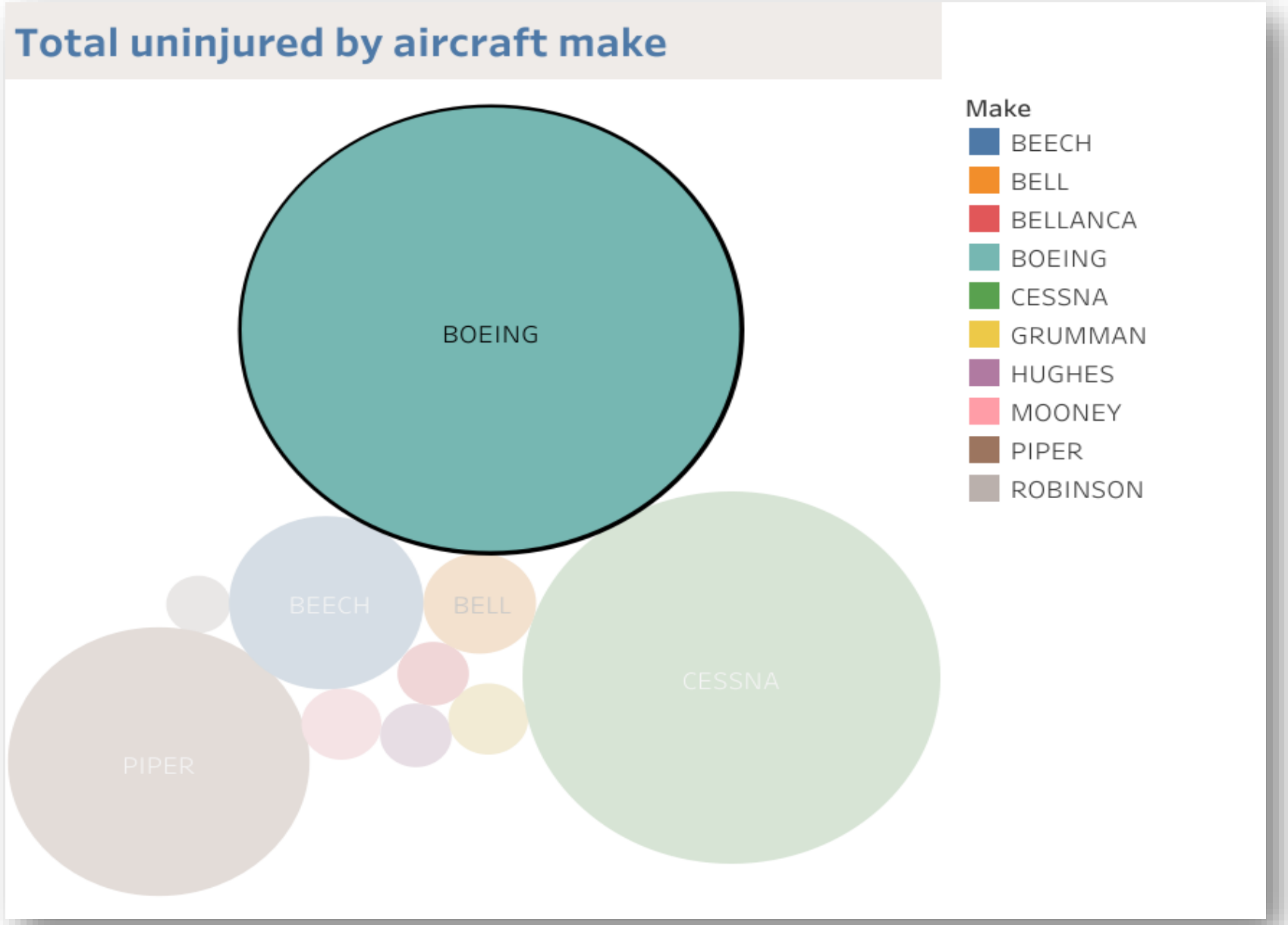
- *Boeing has the lowed number of either destroyed or substantially damaged aircrafts meaning they are the safest.*



Key Take Aways:

Aircrafts with the following engine types are the safest:

- LR
- UNK
- Electric



Key Take Away:

- *Boeing has the least number of uninjured passengers in case of an accident.*

CONCLUSION

- Top 3 highest risk aircrafts with the most accidents include Cessna, Piper, and Beech.
- Top 3 low risk aircrafts with the least accidents include Robinson, Boeing, Hughes.
- Aviation accidents have been reducing over time probably due to improvement in technology, training and regulations.
- Aircrafts with more than one engine are less likely to be involved in accidents.
- Boeing and Grumman Aircrafts are the safest for the business flights because they did not have any accidents from 2010.
- Grumman are the safest for the personal flights as they had the lowest number of accidents since 2010.
- Boeing and Grumman have the lowest number of injuries since 2010 meaning they are the top 2 safest aircrafts.
- Boeing has the least number of uninjured passengers in case of an accident.
- Aircrafts with the following engine types are the safest LR, UNK and Electric.

Recommendations

From the analysis we recommend the following:

- It would be prudent to acquire the latest models of Boeing for business flights because they have the lowest risk.
- It would be prudent to acquire the latest models of Grumman for personal flights because they have the lowest risk.
- Acquiring an aircraft with more than one engine significantly reduce the risk of accidents.
- Aircrafts with the following engine types are the safest:

I. LR

II. UNK

III. Electric

Next Steps

- Further analysis on non-accident data is needed to affirm the finding obtained from accidents' data. Airline traffic data would go a long way towards supporting the business case.
- There is a need to consider the cost of the aircrafts to make an informed decision.

Appreciation

We would like to thank Kaggle for allowing us access to their website to extract the aviation accidents data which made these business case possible.

Questions?

We would love to hear your take on this! Please feel free to get in touch.

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