KENNETH NYANGWESO
DSF PHASE 1 PROJECT

ANALYSIS ON AVIATION ACCIDENTS

PROJECT OVERVIEW

This project outlines the analysis based on a dataset provided by the National Safety and Transport Board that relayed data on aviation accidents over the past decades (1962-2022).

BUSINESS UNDERSTANDING

Over the past decades, the rates of aviation accidents have been influenced by various factors, such as aircraft make and model. Understanding how these factors correlate provides actionable insights into improving aviation safety, identifying design flaws, and implementing better operational protocols. This analysis can guide manufacturers and stakeholders to make data-driven decisions for risk regulation and enhance safety.

OBJECTIVES

Main objective:

- ✓ To analyze and interpret accident trends over the past decades

Specific objectives:

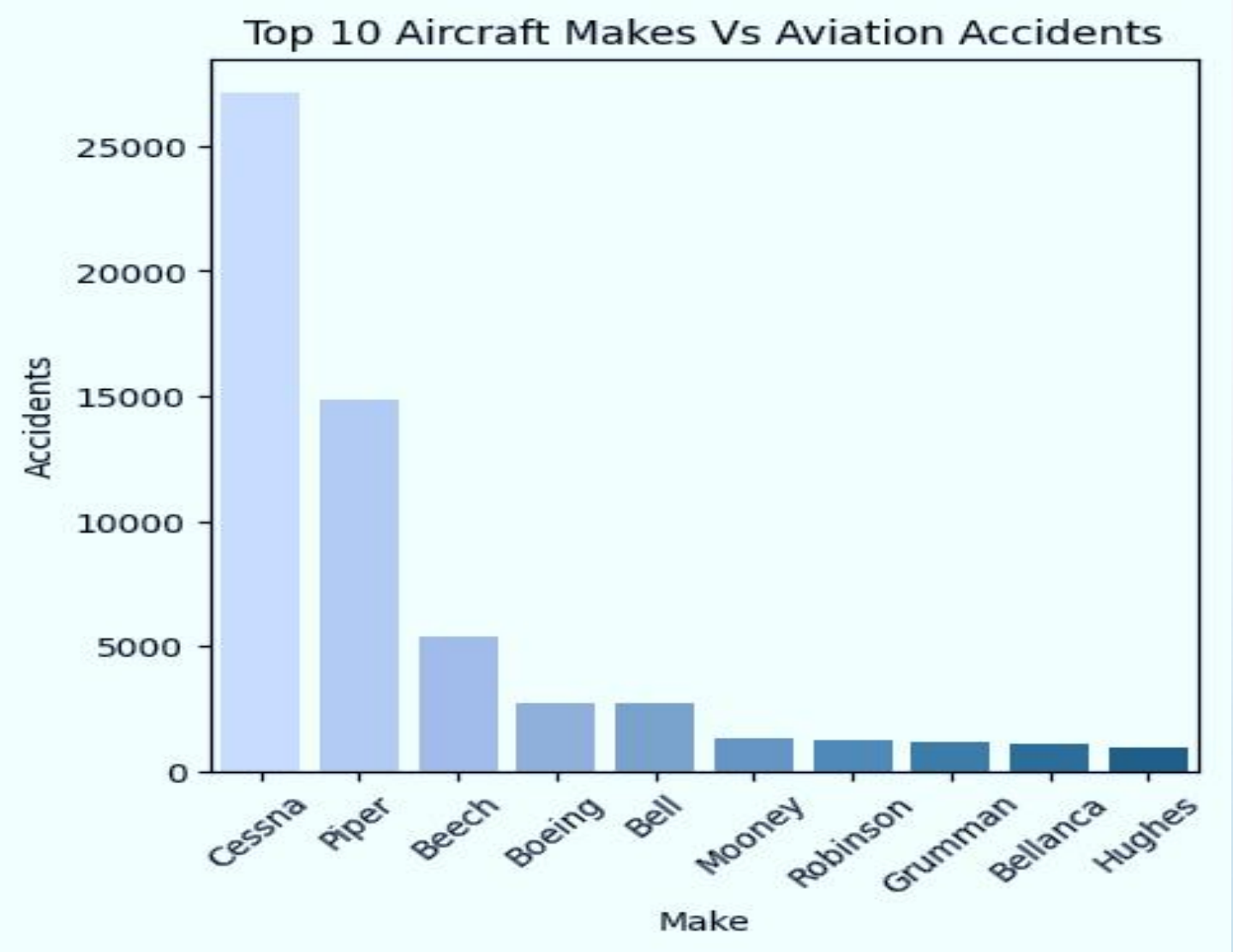
- ✓ Identify factors that have led to aviation accidents based on aircraft parameters such as make, model, their correlation, and aircraft category
- ✓ Identify factors that have led to aviation accidents region-wise based on countries and accidents recorded in various regions
- ✓ How various makes have made an impact on various based on injuries recorded from each make
- ✓ Identify the trends yearly over the past decades based on aviation accidents

MY ANALYSIS

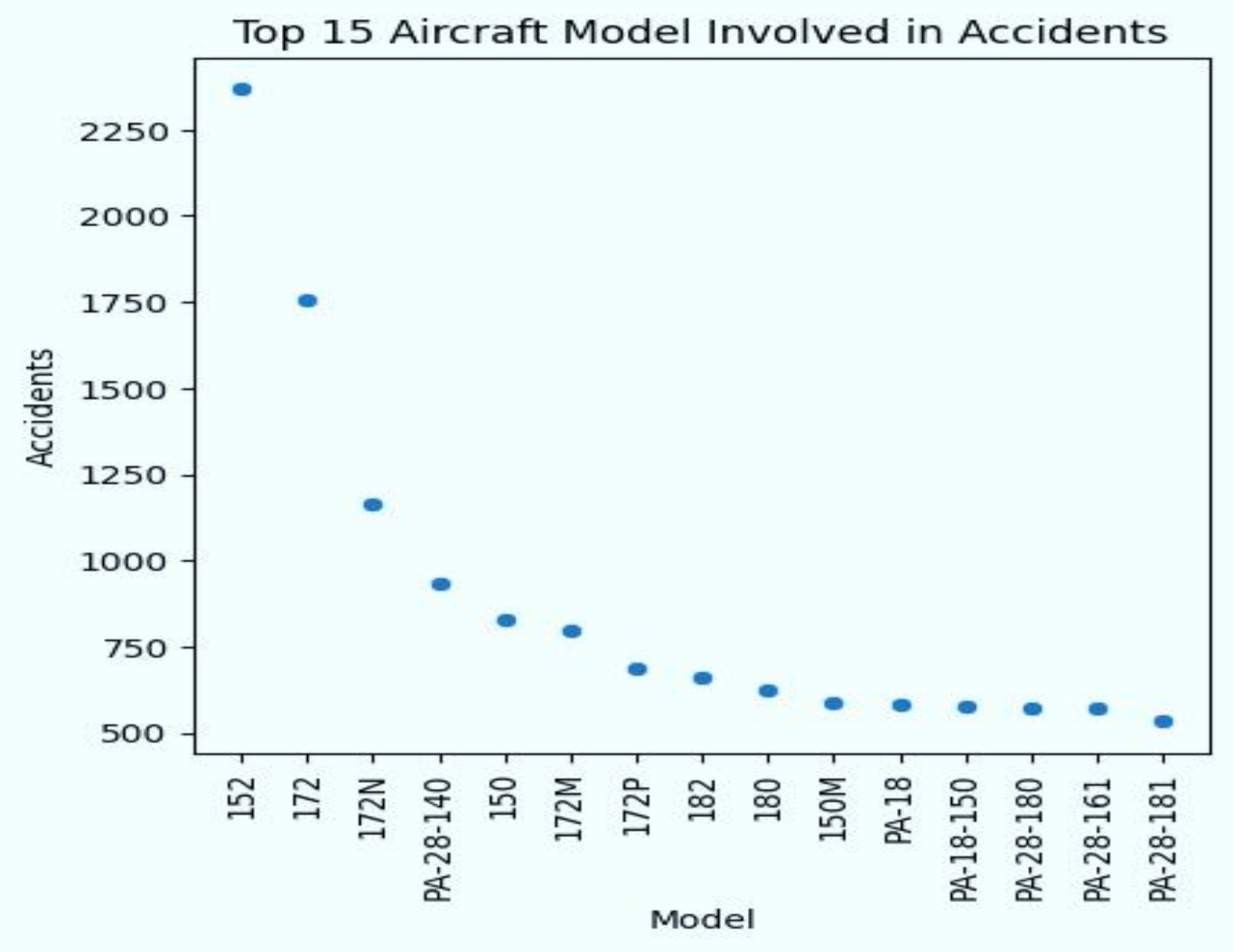
This analysis will be based on the top key factors that influence aviation accidents these parameters are:

- Top 10 aircraft makes with the most aviation accidents
- Top 15 aircraft models with the most aviation accidents
- Top 5 aircraft categories with the most aviation accidents
- Top 5 main Broad phase of flight with the most accidents
- Top 5 countries with the most aviation accidents
- Top 5 makes with total number of injuries recorded
- Top 3 aircraft makes and models and how their correlation have impacted aviation accidents
- The trend of aviation accidents over the past decades

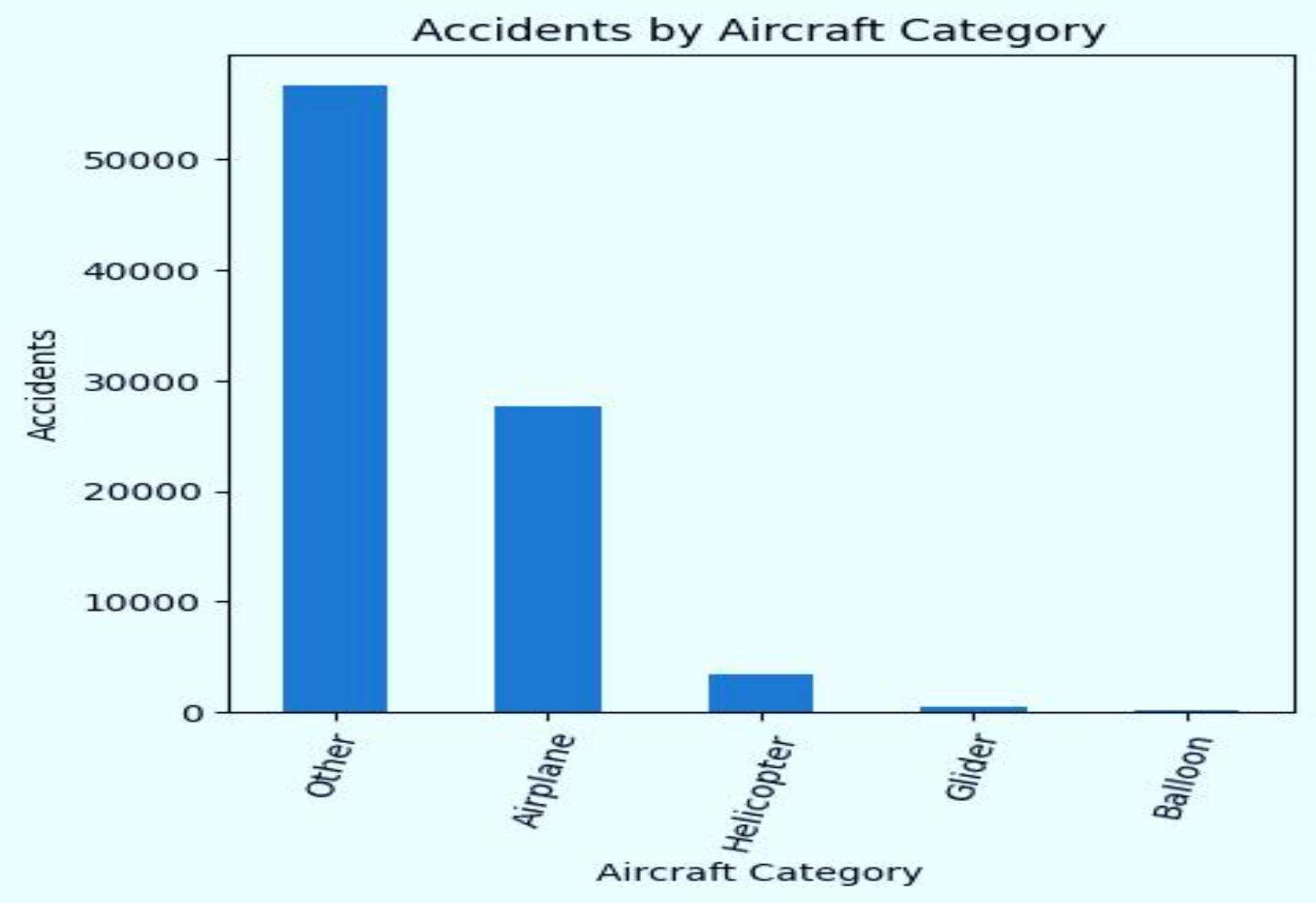
AIRCRAFT MAKE VS ACCIDENTS



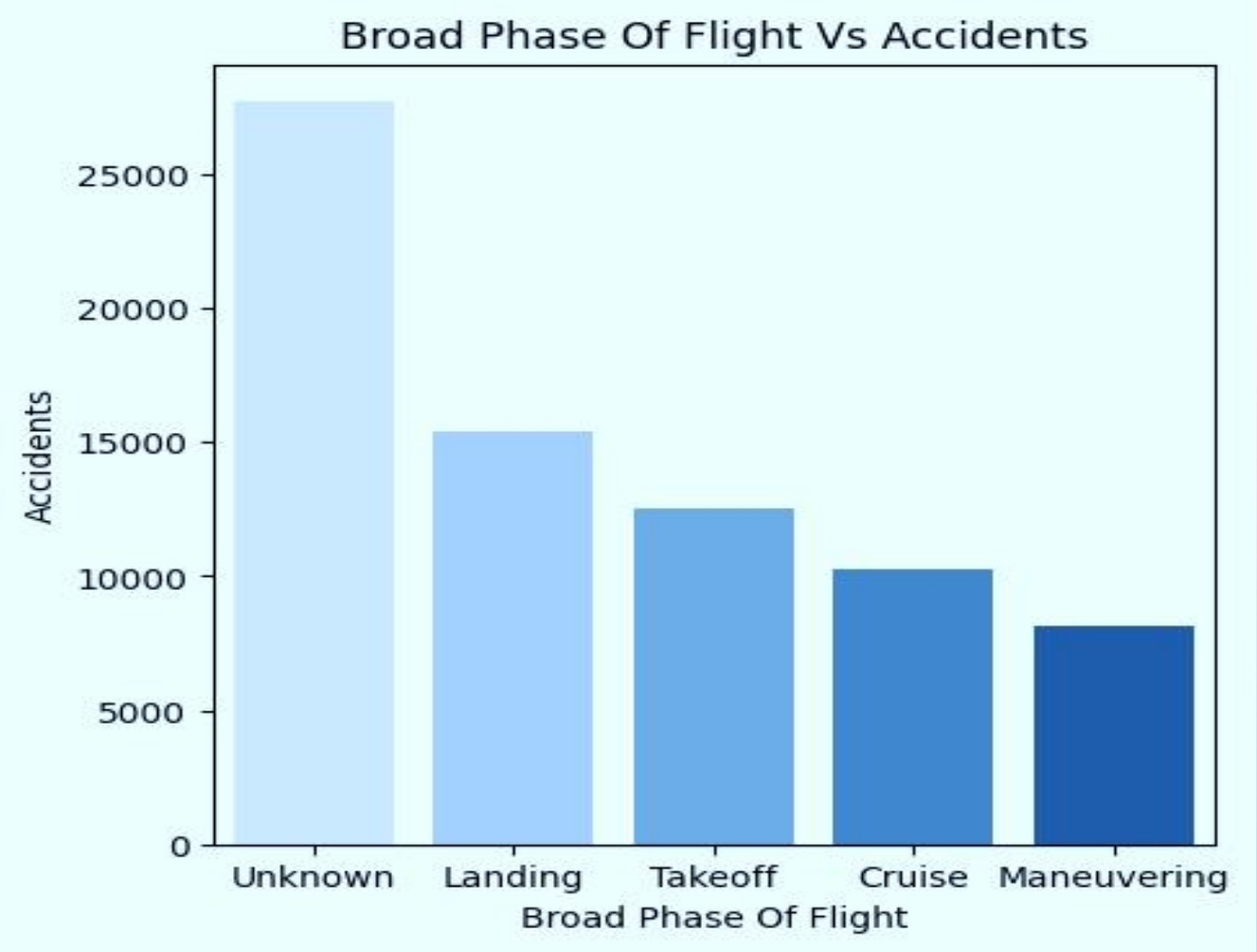
AIRCRAFT MODEL VS ACCIDENTS



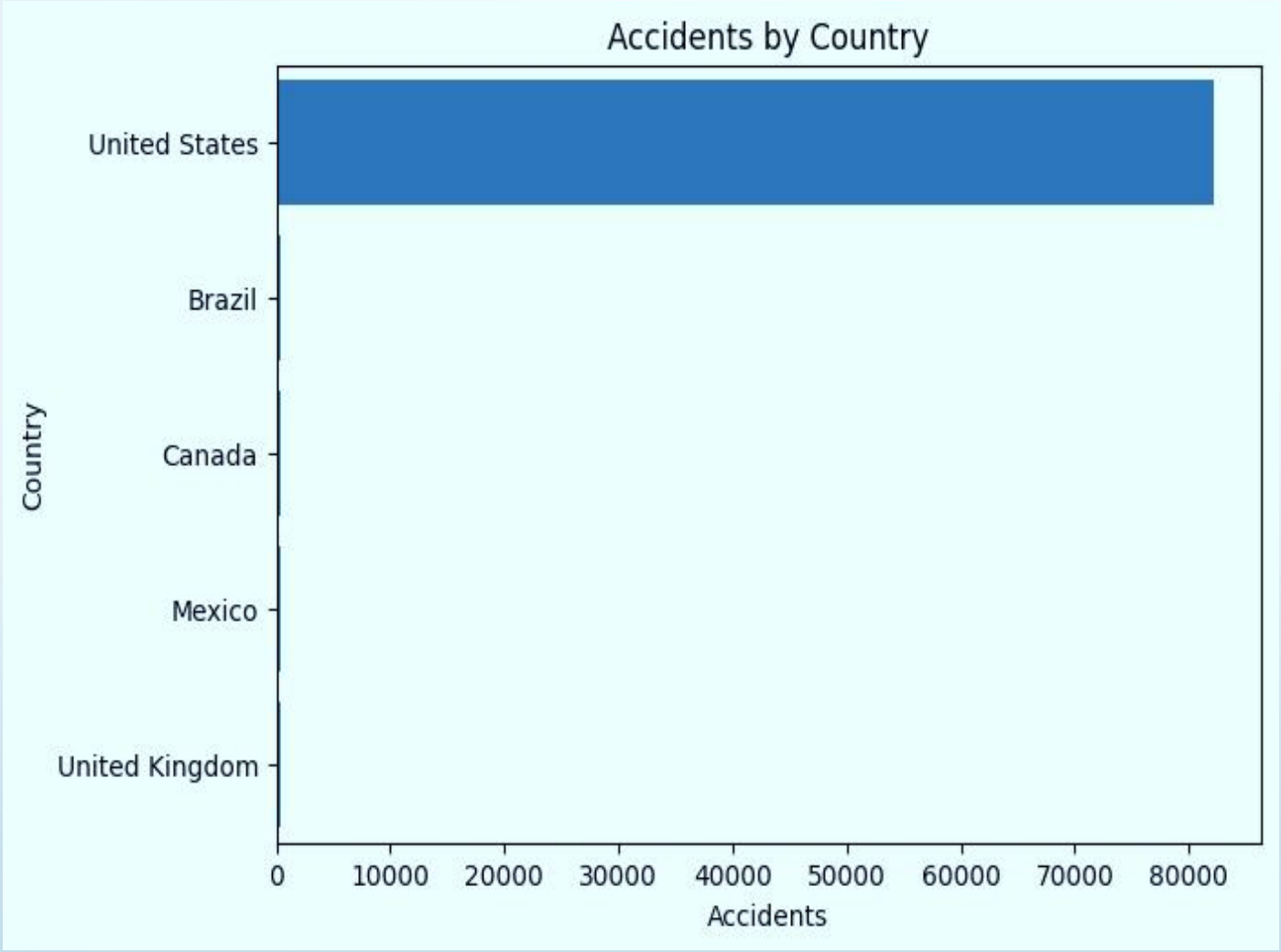
AIRCRAFT CATEGORY VS ACCIDENTS



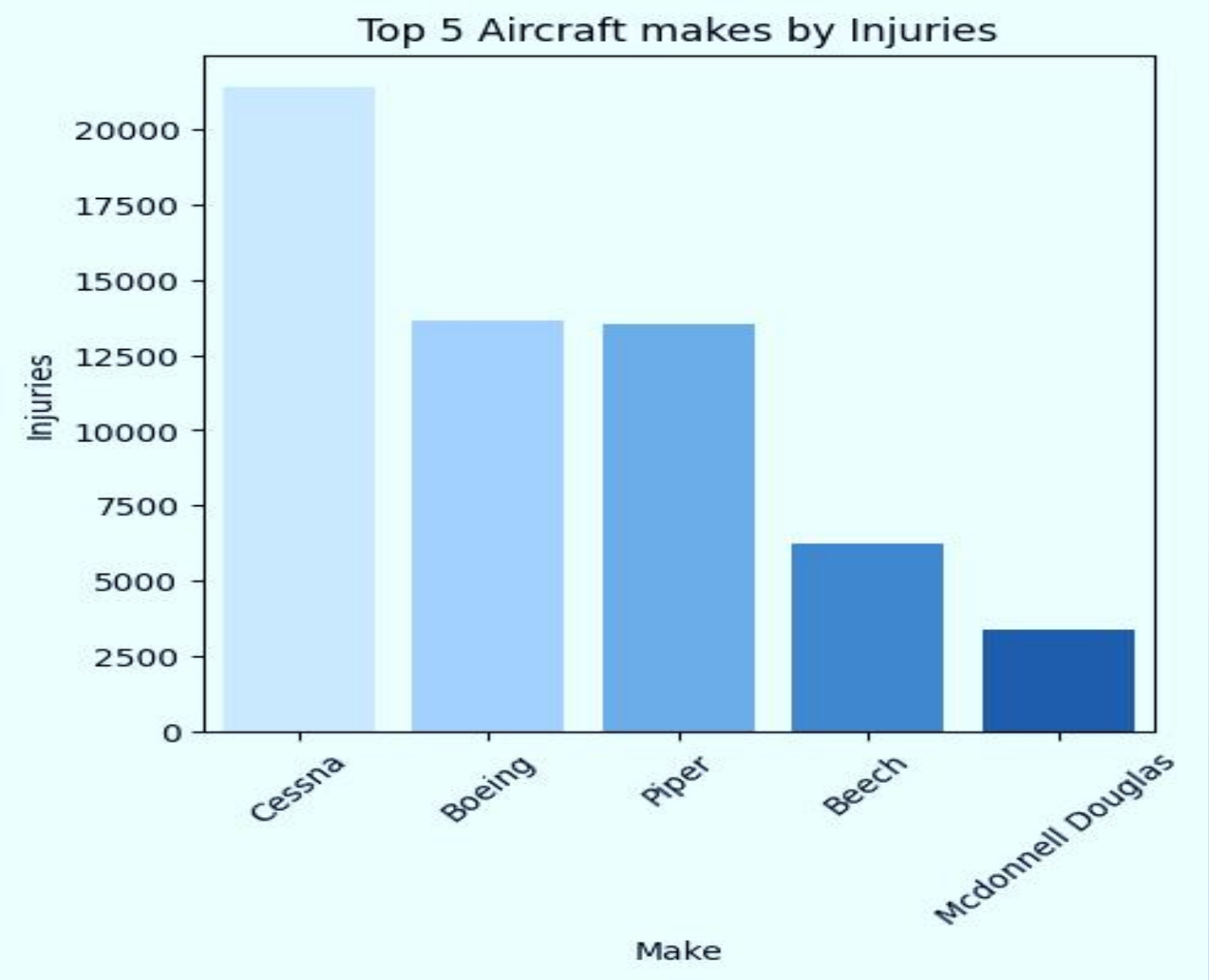
BROAD PHASE OF FLIGHT VS ACCIDENTS



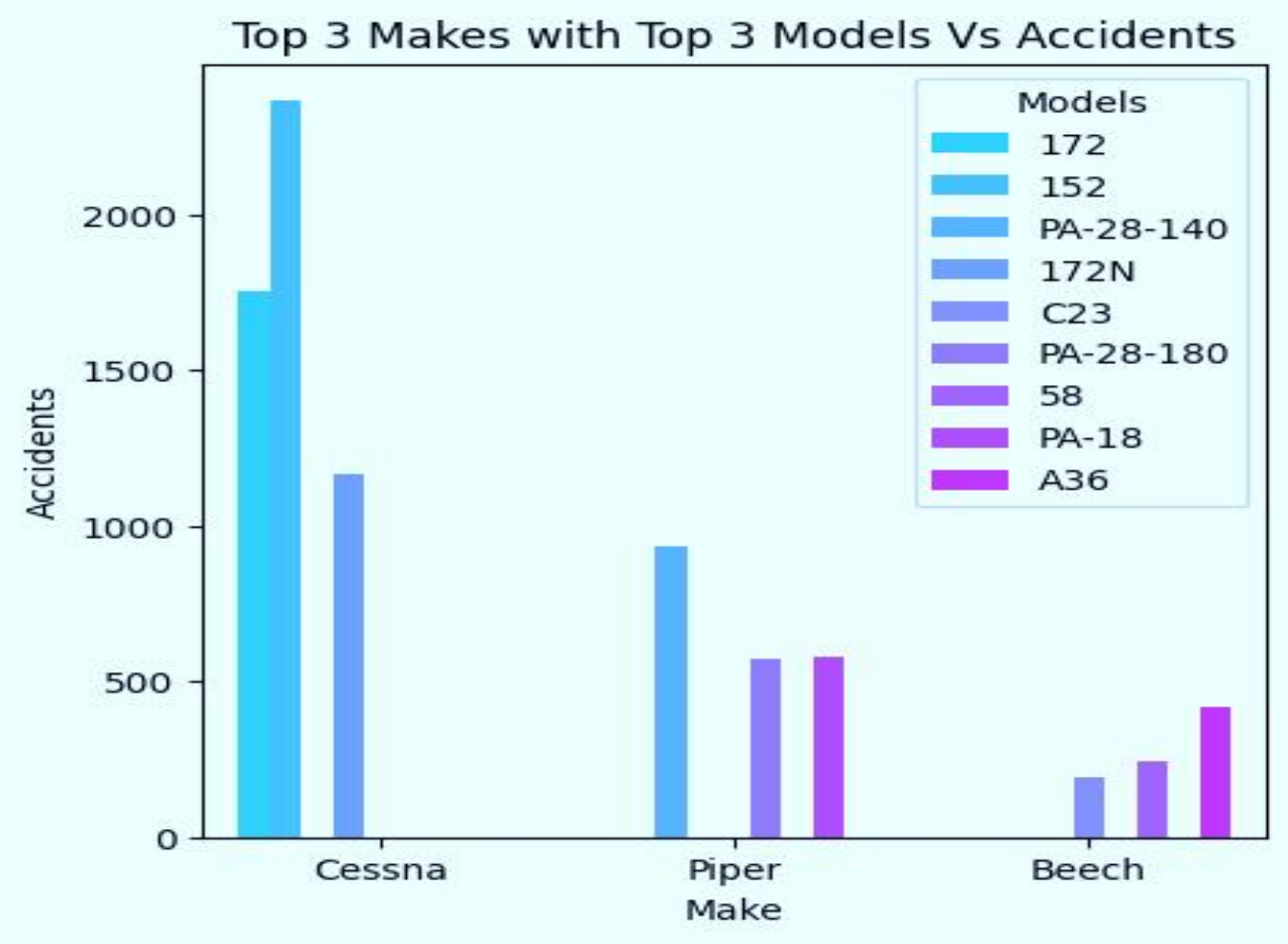
COUNTRIES VS ACCIDENTS



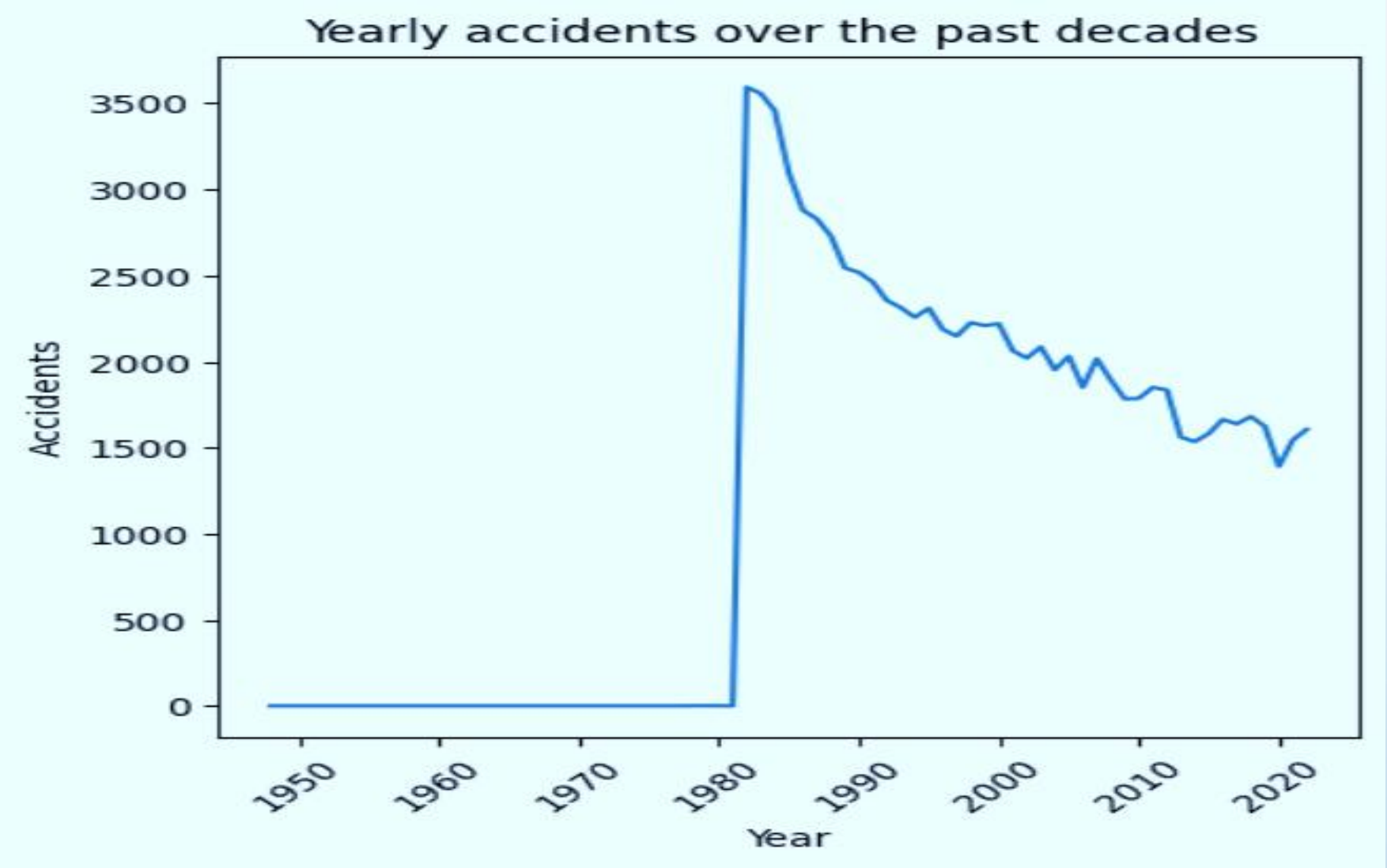
MAKE VS INJURIES



MAKES AND MODELS VS ACCIDENTS



YEARLY ACCIDENTS



FINDINGS

After doing a keen analysis and coming up with an interpretable analysis I was able to provide findings based on grouping certain factors.

FINDING BASED ON MAKE, MODEL AND CATEGORY OF THE AIRCRAFTS

From my analysis, it is evident that the Cessna and Piper have the most number of accidents with each having a record exceeding 10,000. I went further with my analysis by checking how this can be influenced by the model. From my analysis, the models that record the most accidents are the 152, 172, and 172N models with more than 1000 aviation accidents. These key models are widely used by the Cessna and Piper companies hence contributing to these aviation accidents.

It is also evident that most aircraft categories with the most accidents are the unspecified ones. We can assume that these air the single engine planes category which are widely used by the Cessna and Piper makes.

FINDINGS BASED ON BROAD PHASE OF FLIGHT

From my analysis the phase of flight where accidents occur is unknown/unspecified. With reference from my previous based on aircraft make and aircraft category my research has given insights that most of these aircrafts are light-weighted aircrafts and have trouble during the climb phase due errors such a bank-angle which was unspecified in my analysis. Hence we can assume that the most recorded accident is during the climb phase since most aircraft makes with most accidents are quite sensitive when it comes to this phase of flight.

Also from my analysis the landing, take-off and cruise phases have recorded accidents exceeding 10000. This may be brought about by factors such as pilot error, Air Traffic Control Errors(ATC) , maintenance and many others.

FINDINGS BASED ON COUNTRY

From my analysis it is evident that the United States of America has recorded the highest number of accidents with a whooping 80,000. This can brought about by factors such incompetent engineers, busy airports or even poor weather conditions in this certain region.

FINDING BASED ON INJURIES

It is evident that from my analysis the Cessna, Boeing and the Piper lead the pack. We can ask ourselves why is Boeing at the top yet it recorded least number of accidents? This can be brought about by factors such large impact maybe during a plane crash due to massive aircraft weight or mid air-collision (example is the 1996 mid-air collision when a Boeing 747-168B collided with an Ilyushin airline leading 200 total fatalities) or even due large fuel capacities that cause massive fires during impact.

FINDINGS OVER THE PAST DECADES

From my analysis it is evident that there was a rapid increase of aviation accidents as of early 1980s. However as time progress we can see a rapid decrease in aviation accidents. This may be brought about by factors such as technological advancements such as the autopilot, adequate aviation personel trainings such as ATC training and regular aircraft maintenance and inspections.

RECOMMENDATIONS

From my analysis the following are my recommendations:

- ✓ I would recommendation on the purchase of aircraft make with less aviation accidents such as the Robinson, Bellanca and Hughes
- ✓ Secondly, advise companies to reduce the use and manufacture of makes with most aviation accidents
- ✓ I would also recommend on regular aircraft maintenance and inspection on aircraft with most aviation accidents as some of these accidents may be brought by poor maintenance
- ✓ I would recommend that aircraft companies research more on how to reduce accidents during certain phase of flights such as takeoff and landing. This research may be based on improvement in technological advancement such terrain warning signals
- ✓ Finally I would also recommend that civil aviation companies carry out frequent trainings on aircraft personnel such as the Air Traffic Controllers, aircraft pilots and flight engineers.

CONCLUSION

From my analysis it is evident that some of the top factors that contribute to aviation accidents are the aircraft makes, aircraft models, aircraft categories, and even regions. From my recommendations above we can view how these accidents can be reduced based on each factor.

It is also evident that aviation accidents have reduced over the past decades these may be brought about by factors such as technological advancements and adequate personnel trainings.

When doing the analysis I encountered difficulties with dealing with unspecified data that were very crucial for my analysis hence I would urge the investigation department to be keen on these crucial areas as they give more insight during analysis.

In summary based on my analysis, finding and recommendations that led to the success of this analysis we can see strategies that have been used to reduce these aviation accidents.

QUESTIONS

ANY QUESTIONS ??

MY INFO:

For any additional kindly reach out on my LinkedIn below is my LinkedIn link:

www.linkedin.com/in/kenneth-nyangweso