By Sarah Joshua

RISK ANALYSIS ON AVIATION BUSINESS

PRESENTATION

Overview

This is a risk analysis on data regarding aeroplane accidents.

The goal is to determine which aircraft might bring the lowest risk to the company
We shall also look at other factors that may have caused the accidents.

Business Understanding

The company wants to expand into other industries, and Aviation is their top business pick.

Aviation, like every other business, also has risks and one of the risks that the risks that the aviation business faces is a risk for accidents.

Business Understanding Cont.

We’ll also be looking at other causes of aviation accidents like weather conditions.

Then we shall look at the various types of aircrafts and see which one is likely to bring the lowest risk based on aviation accidents.

Data Understanding

We’ll be using a file named Aviation_data.csv to do the analysis

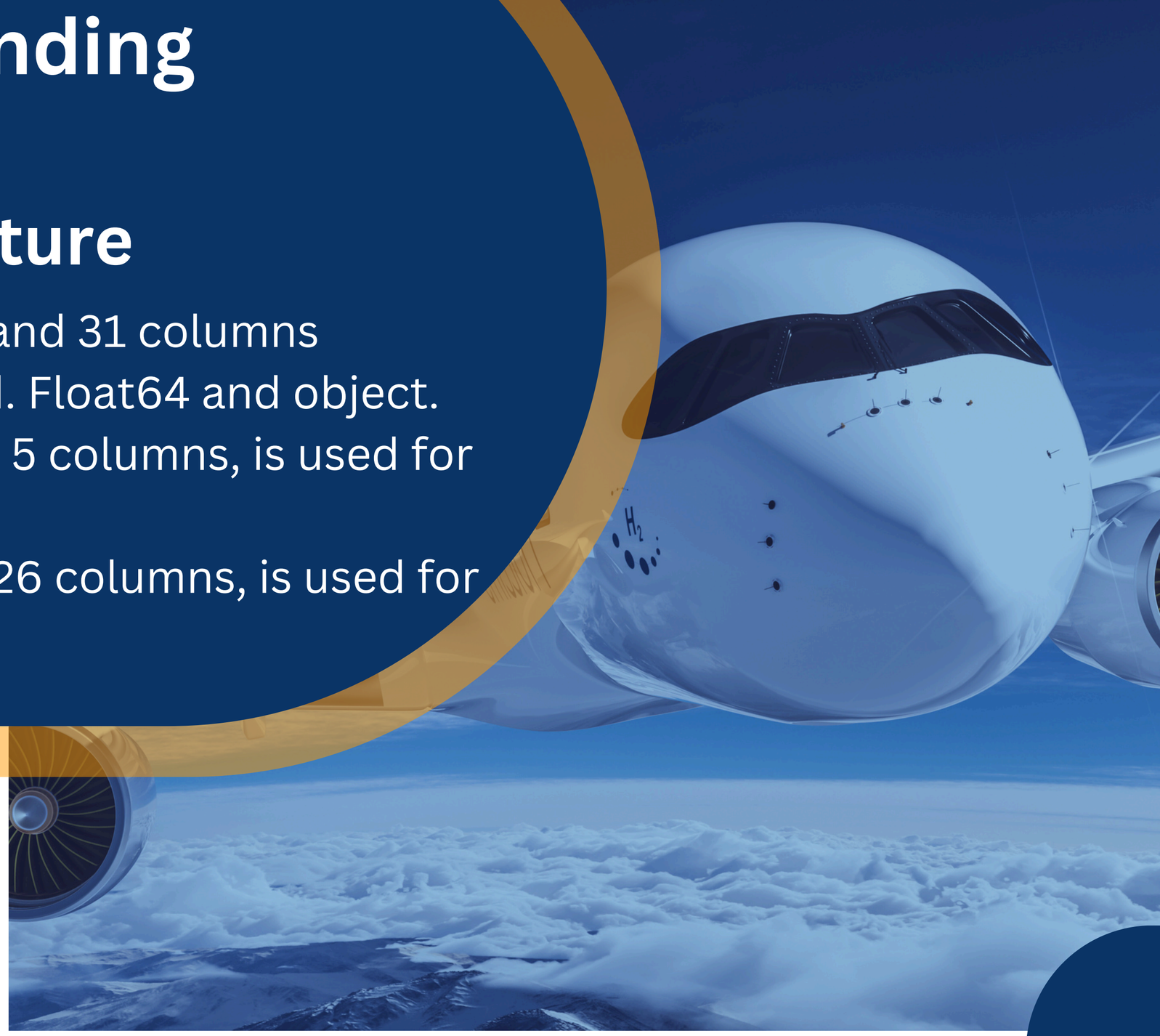
Source of data

This data appears to be from an aviation accident and incident reporting database, which typically captures information from agencies like the National Transportation Safety Board (NTSB) or similar organizations

Data Understanding Cont.

Data structure

The DataFrame has 88889 rows and 31 columns
There are two types of data used. Float64 and object.
Float64, which has been used on 5 columns, is used for numerical data
Object, which has been used on 26 columns, is used for categorical data.



Data Understanding Cont.

There were also missing data and outliers within the data, that we had to clean and check out before analysing the data further.
We named the data cleaned_data

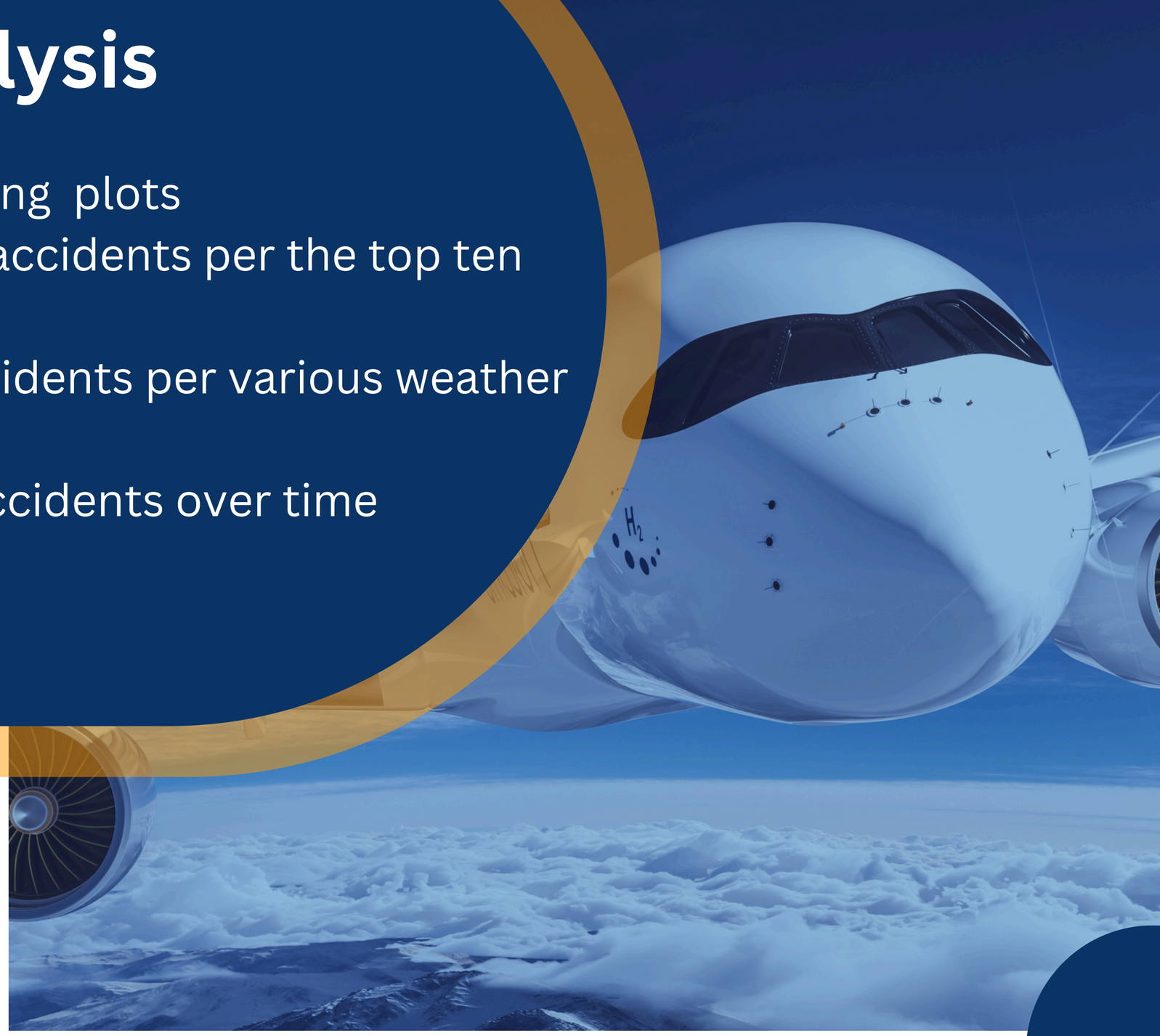
Data Analysis

We are going to plot the following plots

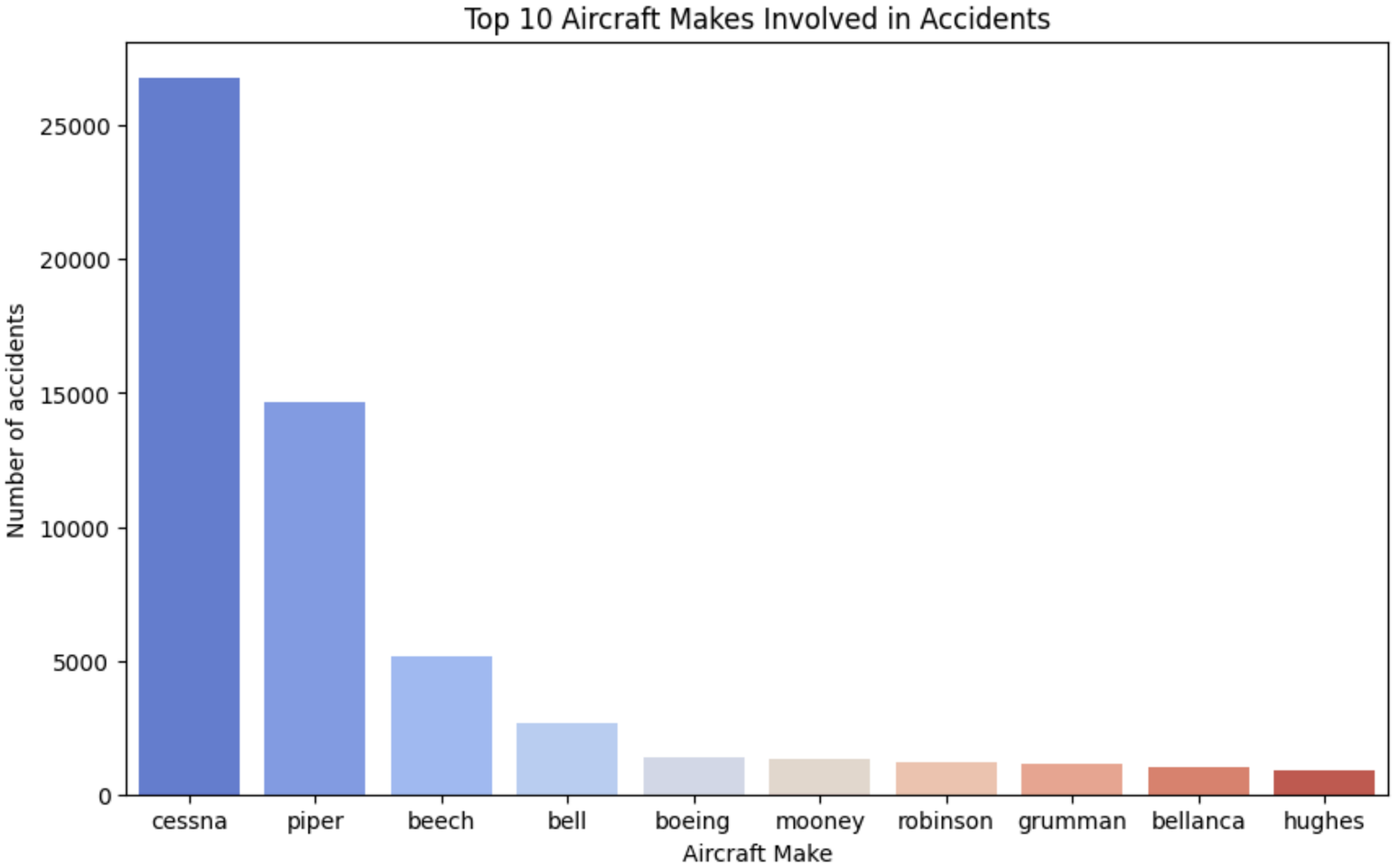
1A histogram of the number of accidents per the top ten aircrafts

2. A histogram of number of accidents per various weather types

3. A line graph of the trend of accidents over time



Number of Accidents per top 10 Aircrafts



Analysis on Top 10 Aircrafts

Key Observations:

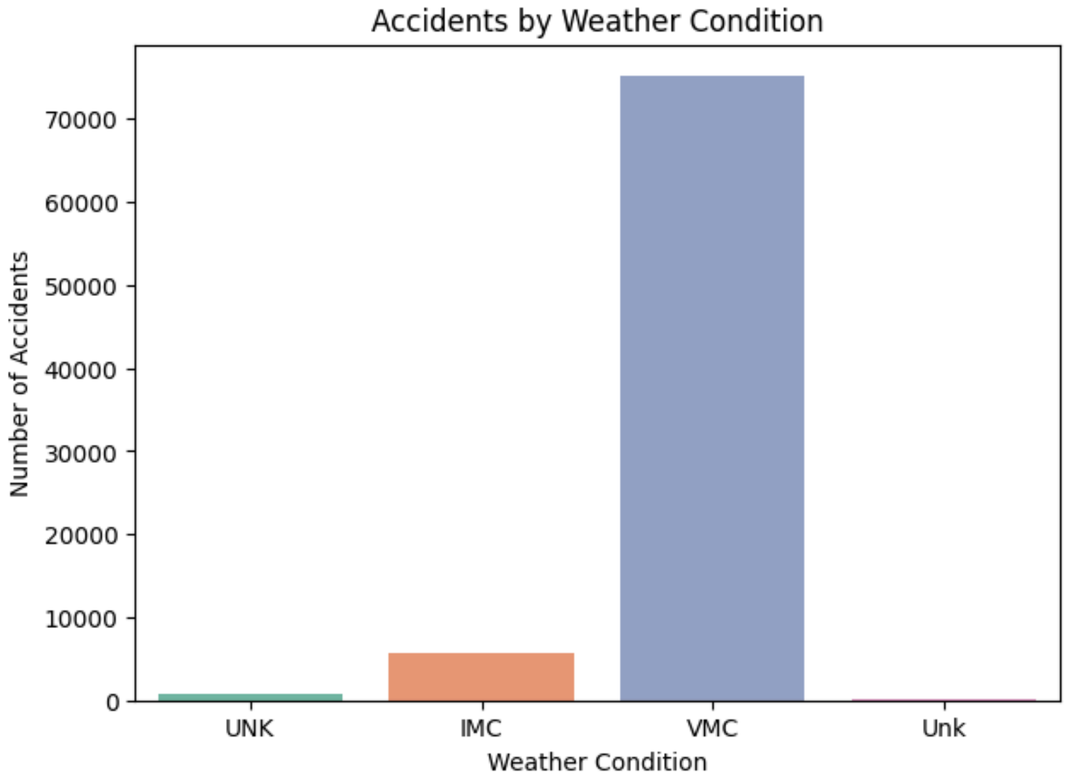
Cessna Dominates:
Cessna is by far the most frequently involved aircraft make, with a significantly higher number of accidents compared to the others.

Piper and Beech Follow:
Piper and Beech also have notably high accident counts, ranking second and third respectively.

Analysis on Top 10 Aircrafts

Bell and Boeing:
Bell and Boeing appear to be involved in a moderate number of accidents.
Robinson, Grumman, Bellanca, Mooney, and Hughes:
These aircraft makes have relatively lower accident counts, forming the lower end of the top 10 list.

Accidents Per Weather conditions

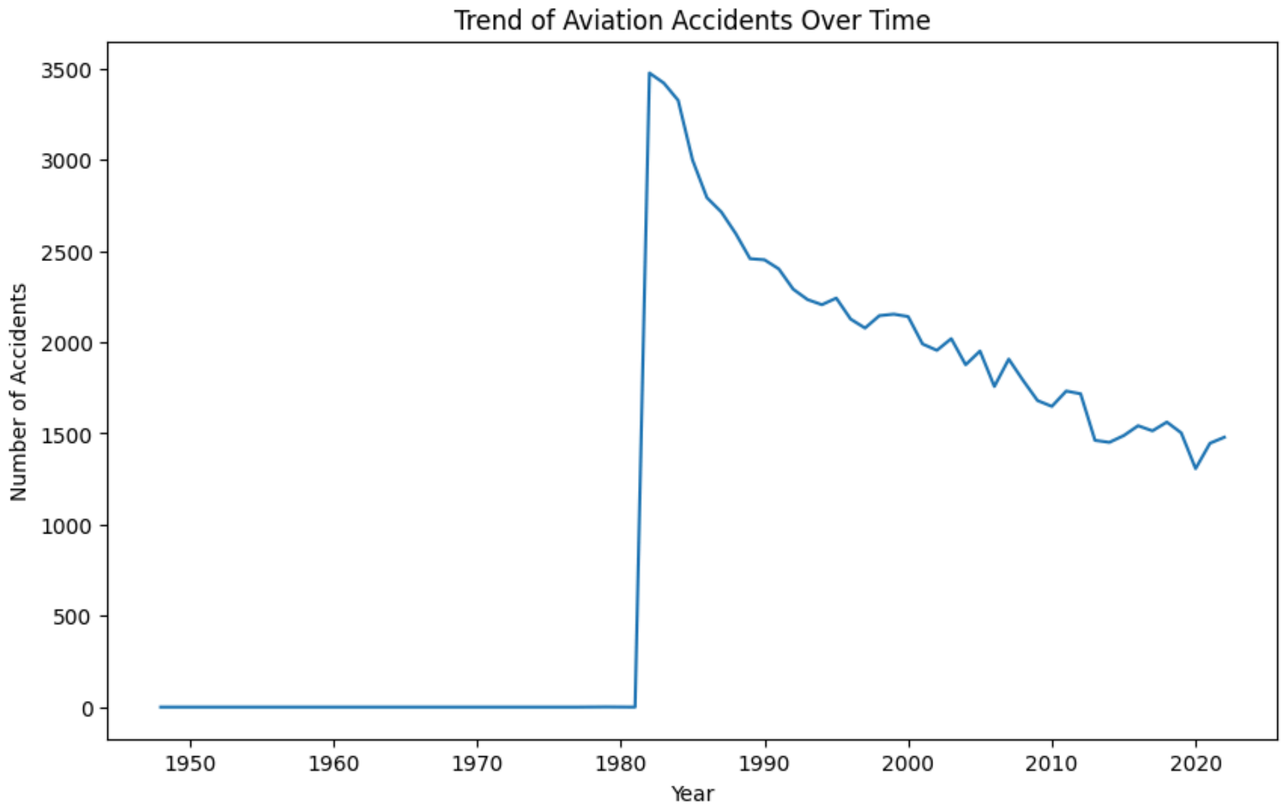


Analysis based on Number of accidents per weather conditions

The "VMC" (Visual Meteorological Conditions) category has the highest number of accidents by a significant margin, indicating that the majority of accidents occur in clear weather conditions.

IMC and UNK:
The "IMC" (Instrument Meteorological Conditions) and "UNK" (Unknown) categories have considerably lower accident counts, suggesting that while weather can be a contributing factor, it's not the primary cause in most cases.

Trend of Accidents over time



Analysis on Trends of accidents over time

Significant Decrease:
There's a clear downward trend in the number of aviation accidents over time, suggesting that safety measures and advancements in technology have been effective in reducing the occurrence of accidents.

Sharp Drop in the 1970s:
The most dramatic decrease appears to have occurred in the 1970s, possibly due to advancements in aircraft design, safety regulations, and pilot training.

Relatively Stable Recent Years:
While there was a slight upward trend in the late 2000s, the overall number of accidents has remained relatively stable in recent years.

Analysis on Trends of accidents over time cont.

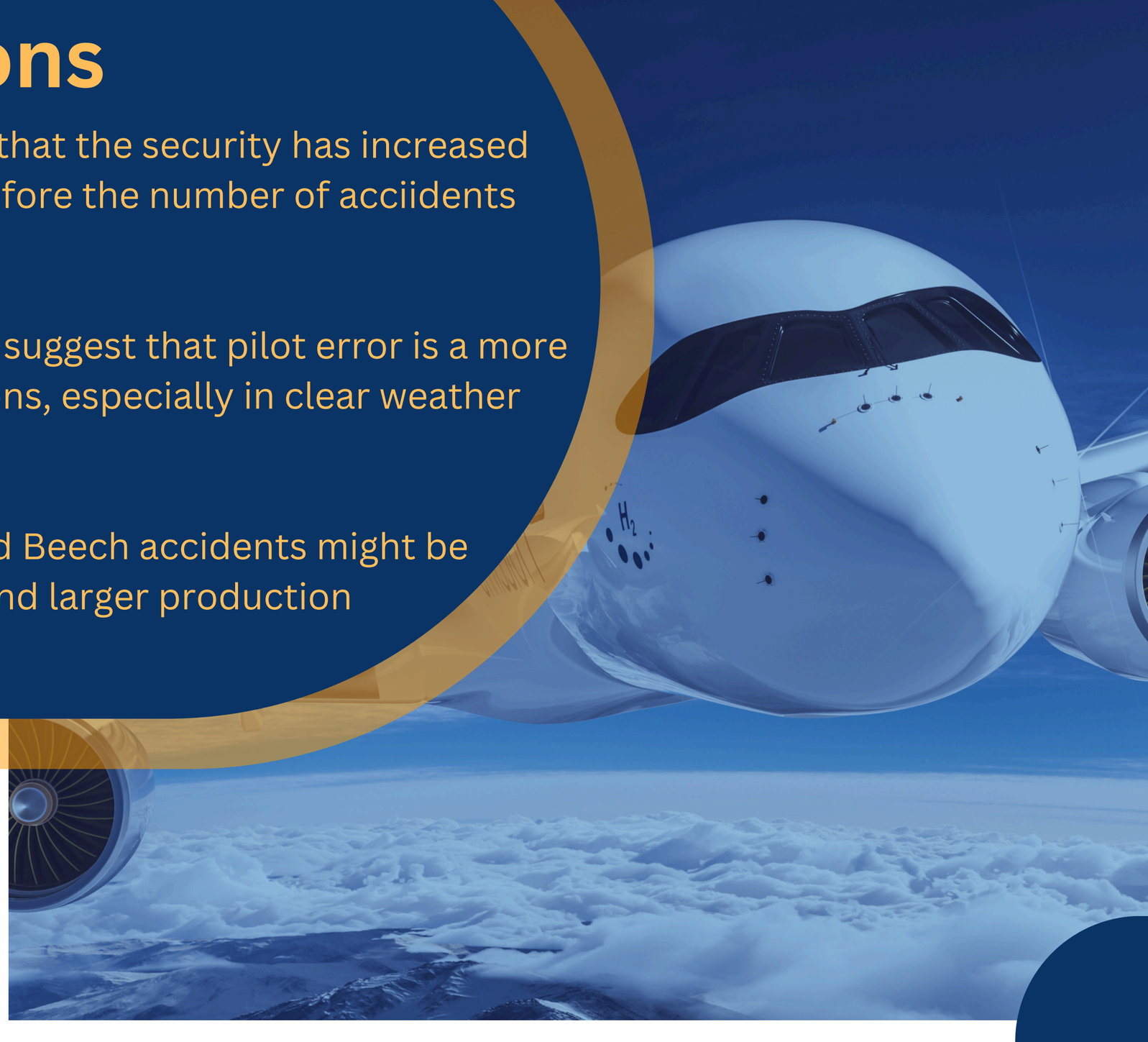
Relatively Stable Recent Years:
While there was a slight upward trend in the late 2000s, the overall number of accidents has remained relatively stable in recent years.

Recommendations

The trend in accidents overtime shows that the security has increased and technology has advanced and therefore the number of acciidents overtime has reduced.

The dominance of VMC accidents might suggest that pilot error is a more significant factor than weather conditions, especially in clear weather when visibility is high.

The high frequency of Cessna, Piper, and Beech accidents might be partially attributed to their popularity and larger production volumes.



Next Steps

It is safe to say, acording to the analysis, the number of accidents have reduced over time.

I would advice that while venturing into the aviation business, use not so popular aircrafts and ensure the pilots are well trained and skilled.

I will now take questions and cLarifications, if there is any.

THANK YOU!