AVIATION ACCIDENTS ANALYSIS

The aviation industry has grown over the years solidifying its place as one of the fastest means of transport. Therefore, it is vital to analyze accidents and make them as safe as they are fast.

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Friday, 28th March 2025.

INTRODUCTION

I used data from the National Transportation Safety Board that includes aviation accident data from 1962 to 2023 about civil aviation accidents and selected incidents in the United States and international waters.

I was tasked to find out the lowest-risk aircraft models that an entry-level company can invest in as they plan to join the aviation industry. Over the years, aircraft accidents although rather rare, have proved to be very fatal upon occurrence. There was, therefore, a need to investigate what models of aircraft pose lower risk to invest in.

DATA CLEANING AND PREPARATION

I used Python to analyze the aviation dataset. The dataset did not have any duplicates.

As for missing values; there were columns where I had to drop due to having many missing values.

I also filled in missing values with either the mean or mode of the dataset depending on the values of the column.

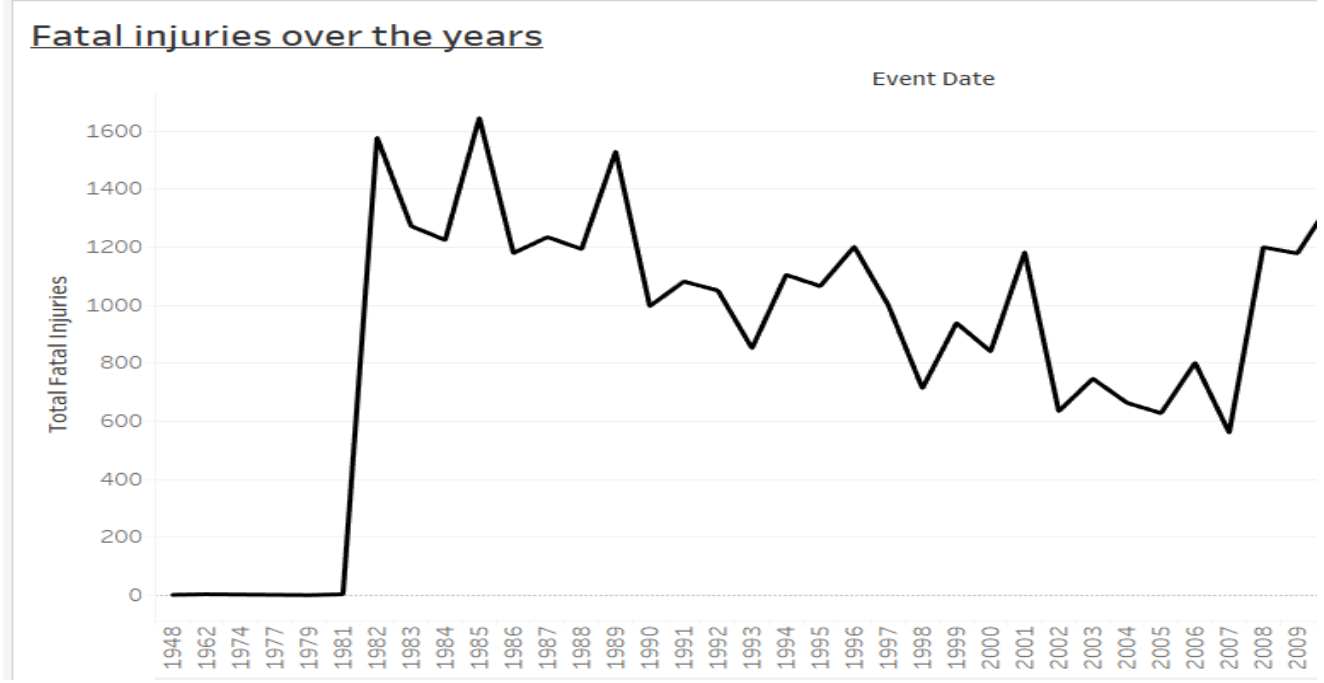
[2]:

	event_id	investigation_type	accident_number	event_date	location
0	20001218X45444	Accident	SEA87LA080	1948-10-24	MOOSE CREEK, ID
1	20001218X45447	Accident	LAX94LA336	1962-07-19	BRIDGEPORT, CA
2	20061025X01555	Accident	NYC07LA005	1974-08-30	Saltville, VA
3	20001218X45448	Accident	LAX96LA321	1977-06-19	EUREKA, CA
4	20041105X01764	Accident	CHI79FA064	1979-08-02	Canton, OH
...	...	...	...	...	...
88884	20221227106491	Accident	ERA23LA093	2022-12-26	Annapolis, MD
88885	20221227106494	Accident	ERA23LA095	2022-12-26	Hampton, NH
88886	20221227106497	Accident	WPR23LA075	2022-12-26	Payson, AZ
88887	20221227106498	Accident	WPR23LA076	2022-12-26	Morgan, UT
88888	20221230106513	Accident	ERA23LA097	2022-12-29	Athens, GA

85015 rows × 31 columns

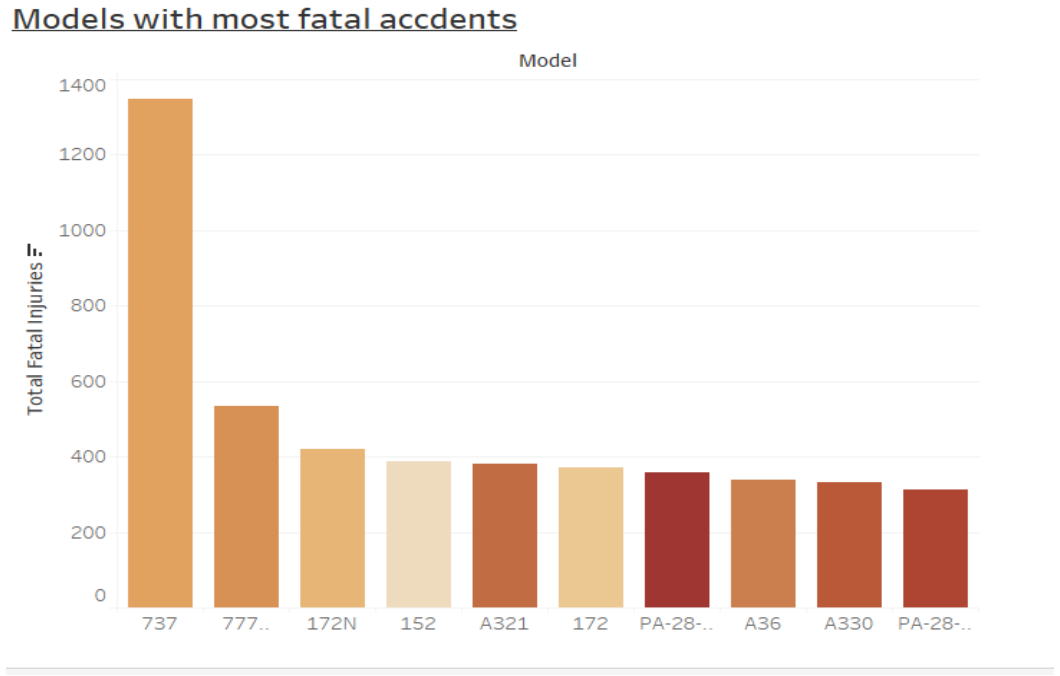
Exploratory analysis

- Aviation accidents, although rare, have proven to be fatal upon occurrence.
- Efforts are being made to reduce accidents over the years



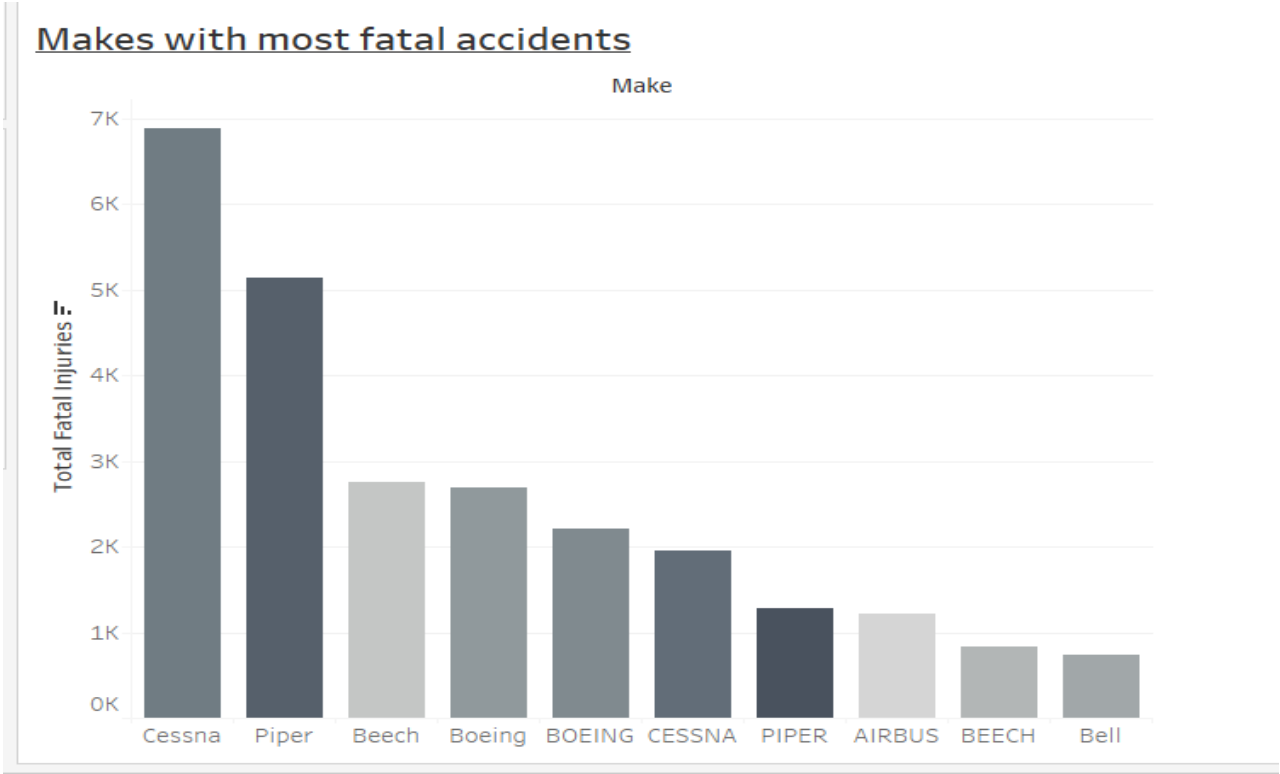
Risk Analysis

- Some aircraft models are prone to fatal accidents and should be avoided.
- Other models have up to 0% fatality rates and are safer to invest in



Further Risk Analysis

- The make of an aircraft can significantly impact its safety, as different manufacturers have varying fatality rates.



Conclusions and Reccomendations

- CESSNA, piper, beech and Boeing are the riskiest makes of aircrafts.
- 737 model has the highest fatality rates and should be avoided
- TUPOLEV, viking air limited and Aviocar CASA also have higher fatality rates
- Most of the other makes and models have lower fatality rates with most of them having up to 0% fatality rates. And are safer to invest in