

# **PROPOSAL FOR THE NEW AVIATION DIVISION – MAUREEN INC. LTD**

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# Introduction

- Aviation industry is made up of for general aviation, commercial aviation, and military activities.
- 4.6% of Kenya's yearly GDP is contributed by the aviation sector (KNBS, 2022).
- In 2017, Kenya handled over 4.6 million passenger travels, resulting in a \$3.2 billion gross value addition to the country's GDP from the tourism and aviation sector translating into 410,000 jobs.
- Internationally, the commercial aviation sector experienced 30 accidents in 2023 as compared to 42 accidents in 2022. According to a 2022 security audit conducted by the International Civil Aviation Organisation (ICAO), Kenya has the second-best aviation safety standards in Africa, scoring 91.77%.

# **Business Understanding**

Maureen Inc. is diversifying its holdings and considers entry into the aviation industry. Its specific interest is in the general and commercial services. The company plans to procure aircrafts for the new venture. To help in decision making, the company would like insights on the aircrafts that would have the lowest risk for the aviation division.

# Problem Statement, Metric of Success & Methodology

## Problem Statement

Identify the least risky planes (aircrafts) for Maureen Inc. to launch its new venture

## Metrics of Success

Identification of :

- a) Low risk aircrafts models
- b) Factors affecting aircraft safety.

## Methodology

The first three phases of CRISP – DM:

- i. Domain knowledge (Business Understanding),
- ii. Data Understanding
- iii. Data Preparation.

# Analysis and Findings



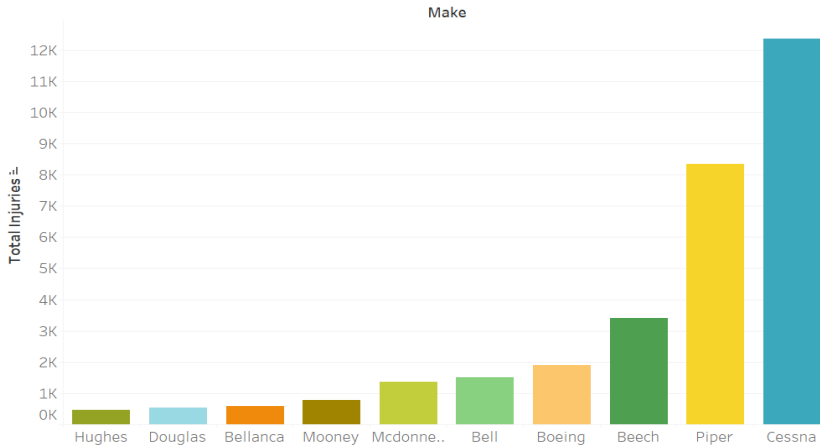
# Summary Statistics

## Business Case Summary

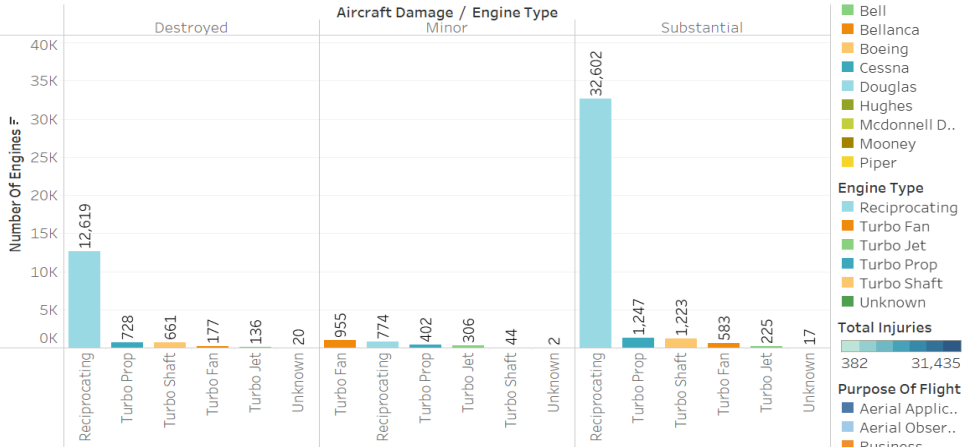
			Amateur Built / Engine Type											
			No						Yes					
	Aircraft Da..	Weath..	Reciprocating	Turbo Fan	Turbo Jet	Turbo Prop	Turbo Shaft	Unknown	Reciprocating	Turbo Fan	Turbo Jet	Turbo Prop	Turbo Shaft	Unknown
Total	Destroyed	IMC	3,704	401	73	453	183		68					0
Fatal		UNK	538		12	24	24	1	35					
Injuries		VMC	7,687	1,273	138	663	506	53	1,147		2	4	17	12
	Minor	IMC	0	0	0	1								
		UNK	0	0		0	0	1						
		VMC	54	2	2	8	3	1	2		0	0		0
	Substantial	IMC	173	10	0	5	5	0	6					
		UNK	24	0	0	0	0	0	3					
		VMC	939	34	2	20	48	20	201	0	7	1	0	5
Total	Destroyed	IMC	4,559	840	100	578	250		75					2
Injuries		UNK	599		17	24	32	1	38					
		VMC	12,699	1,632	163	971	1,062	107	1,668		2	5	23	24
	Minor	IMC	7	99	6	4								
		UNK	0	26		1	0	1						
		VMC	127	744	56	37	10	27	12		0	0		1
	Substantial	IMC	817	158	66	84	68	5	10					
		UNK	77	0	0	0	3	1	5					
		VMC	11,540	495	48	264	780	235	1,403	0	7	4	11	21

# Total Injuries against various aircraft parameters

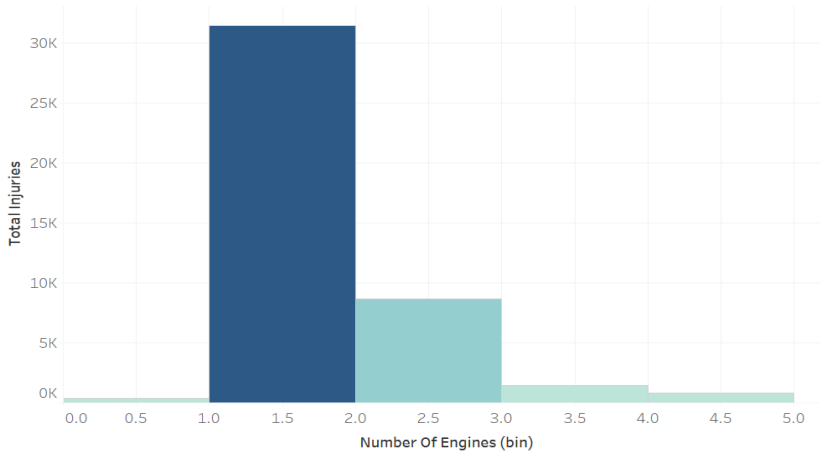
Comparison of Injuries per Aircraft Make



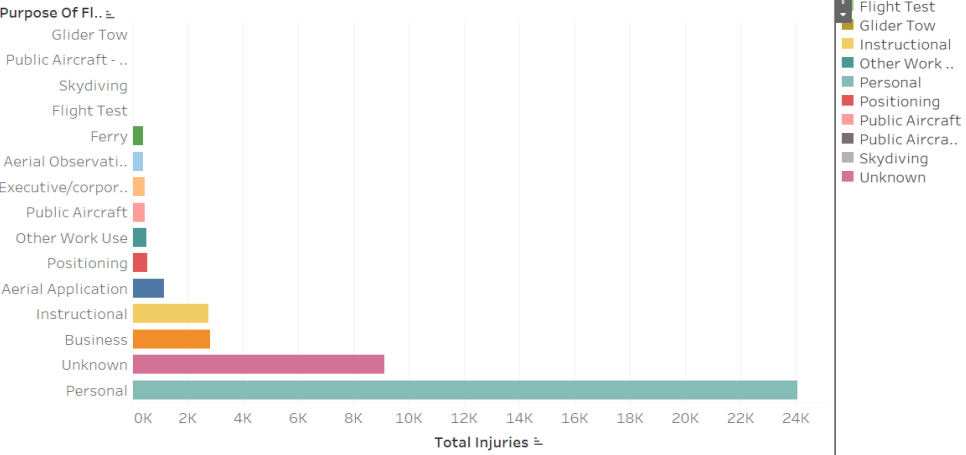
Engine Type and Damage Severity



Comparison of Number of Engines and Total Injuries

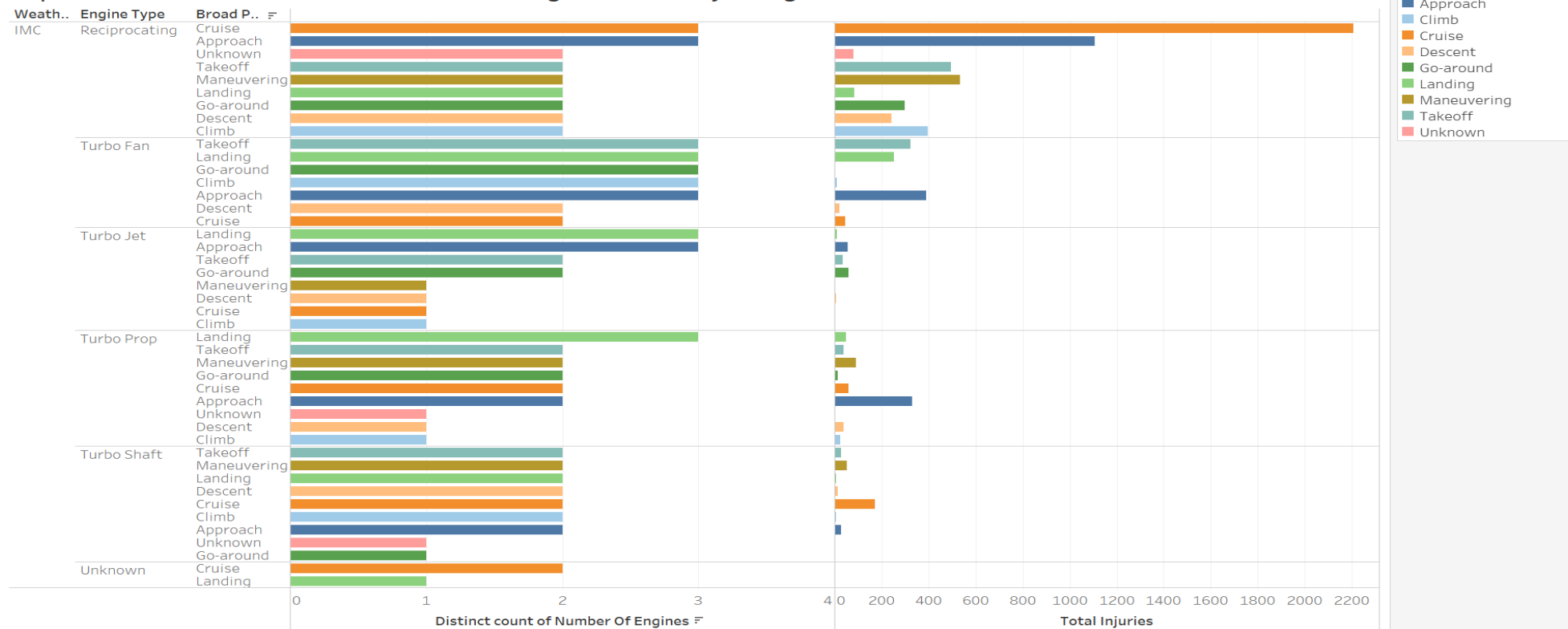


Accidents against Purpose of Flight



# Weather Conditions and Performance

Impact of weather condition and number of engines on safety of flights





# Analysis and findings

- A majority of the aircrafts involved in accidents were not amateur built.
- Most accidents were reported during landing with VMC weather conditions. As the number of engines increases, the number of accidents reduces. This can be attributed to the availability of a redundancy/emergency engine in case of one engine failure

# Recommendations



- i. The company should focus on provision of safe aviation transport in the personal (general aviation) niche. Data analysis indicate flights for personal use experienced most accidents and incidences. This is an area with potential growth.
- ii. Aircrafts to be procured should have turbo jet or turbo fan engines with at least 3 engines. Aircrafts mounted with reciprocating engines are worst performing in terms of aviation safety. The aircrafts to be procured should have advanced and more sophisticate weather monitoring instrumentations to be used during IMC ( Instrumentation Monitoring Condition) conditions.
- iii. A greater percentage of the recorded accidents occurred during VMC (Visual Monitoring Condition) weather conditions. It is therefore recommended that Maureen Inc develops Standard Operating Procedures that are safety stringent during VMC conditions.
- iv. Considering the commercial nature of the company, it is recommended that the organizations procures professionally built aircrafts as opposed to amateur built despite the statistics indiation most accidents occured on professionally built aircrafts.

**Thank you**