

AVIATION EXPLORATORY ANALYSIS

Tai Bui

AGENDA

Business Understanding

Data Understanding

Data Cleaning

Data Analysis and Methodology

Recommendations

Q&A

BUSINESS UNDERSTANDING

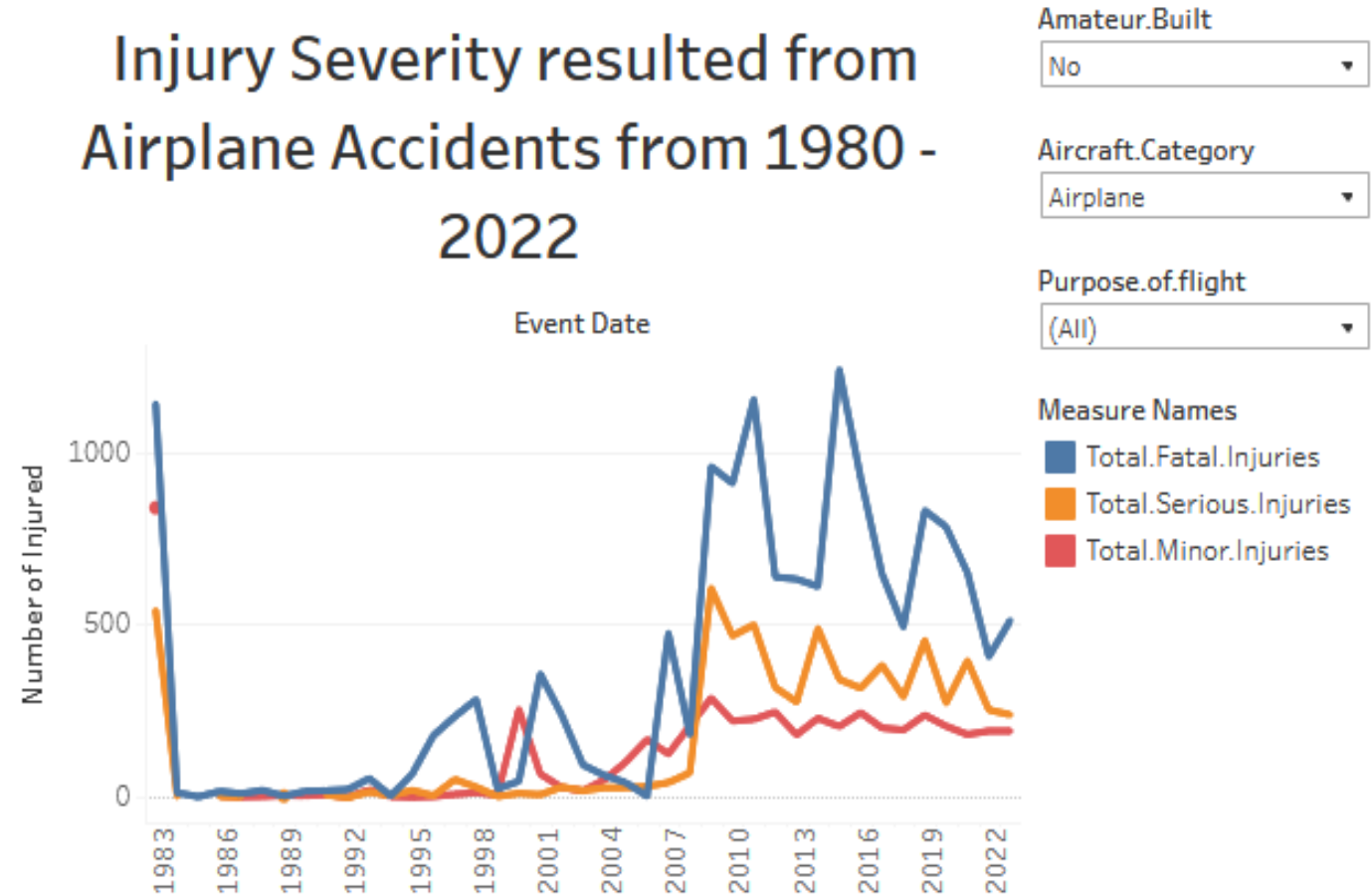
- Support the company's strategic investment in operating airplanes using National Transportation Safety Board data
- Provide meaningful recommendations to major stakeholders of the investments.

Fatal Airplane Accidents around the world from 1948 to 2022



DATA UNDERSTANDING

- Accident aviation data with 31 columns and 90348 data points
- Data fields: accident locations, date, injuries, contributing factors, etc.



DATA CLEANING

- Using Pandas to reduce/split fields, clean Nan, type converted, etc.

#	Column	Non-Null Count	Dtype
0	Event.Id	88889 non-null	object
1	Investigation.Type	90348 non-null	object
2	Event.Date	88889 non-null	object
3	Location	88837 non-null	object
4	Country	88663 non-null	object
5	Injury.Severity	87889 non-null	object
6	Aircraft.damage	85695 non-null	object
7	Aircraft.Category	32287 non-null	object
8	Make	88826 non-null	object
9	Model	88797 non-null	object
10	Amateur.Built	88787 non-null	object
11	Number.of.Engines	82805 non-null	float64
12	Engine.Type	81812 non-null	object
13	Purpose.of.flight	82697 non-null	object
14	Air.carrier	16648 non-null	object
15	Total.Fatal.Injuries	77488 non-null	float64
16	Total.Serious.Injuries	76379 non-null	float64
17	Total.Minor.Injuries	76956 non-null	float64
18	Total.Uninjured	82977 non-null	float64
19	Weather.Condition	84397 non-null	object
20	Broad.phase.of.flight	61724 non-null	object
21	Report.Status	82508 non-null	object



#	Column	Non-Null Count	Dtype
0	Event.Id	88889 non-null	object
1	Investigation.Type	88889 non-null	object
2	Event.Date	88889 non-null	datetime64[ns]
3	Country	88889 non-null	object
4	Aircraft.damage	88889 non-null	object
5	Aircraft.Category	88889 non-null	object
6	Make	88889 non-null	object
7	Model	88889 non-null	object
8	Amateur.Built	88889 non-null	object
9	Number.of.Engines	88889 non-null	float64
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16	Total.Uninjured	88889 non-null	float64
17	Weather.Condition	88889 non-null	object
18	Broad.phase.of.flight	88889 non-null	object
19	Report.Status	88889 non-null	object
20	City	88889 non-null	object
21	State	88889 non-null	object
22	Injury Severity	88889 non-null	object
23	Event Year	88889 non-null	int32

DATA ANALYSIS AND METHODOLOGY

- Filter by airplanes, non-amateur built, and accidents occurred after 2000
- Use the ratio of fatality/serious accidents over all the accidents to determine level of safety

Make	Fatal/Serious Cases	Total Cases	Fatal/Serious Ratio
Airbus	33	243	0.14
Boeing	196	1309	0.15
McDonnell Douglas	22	113	0.19

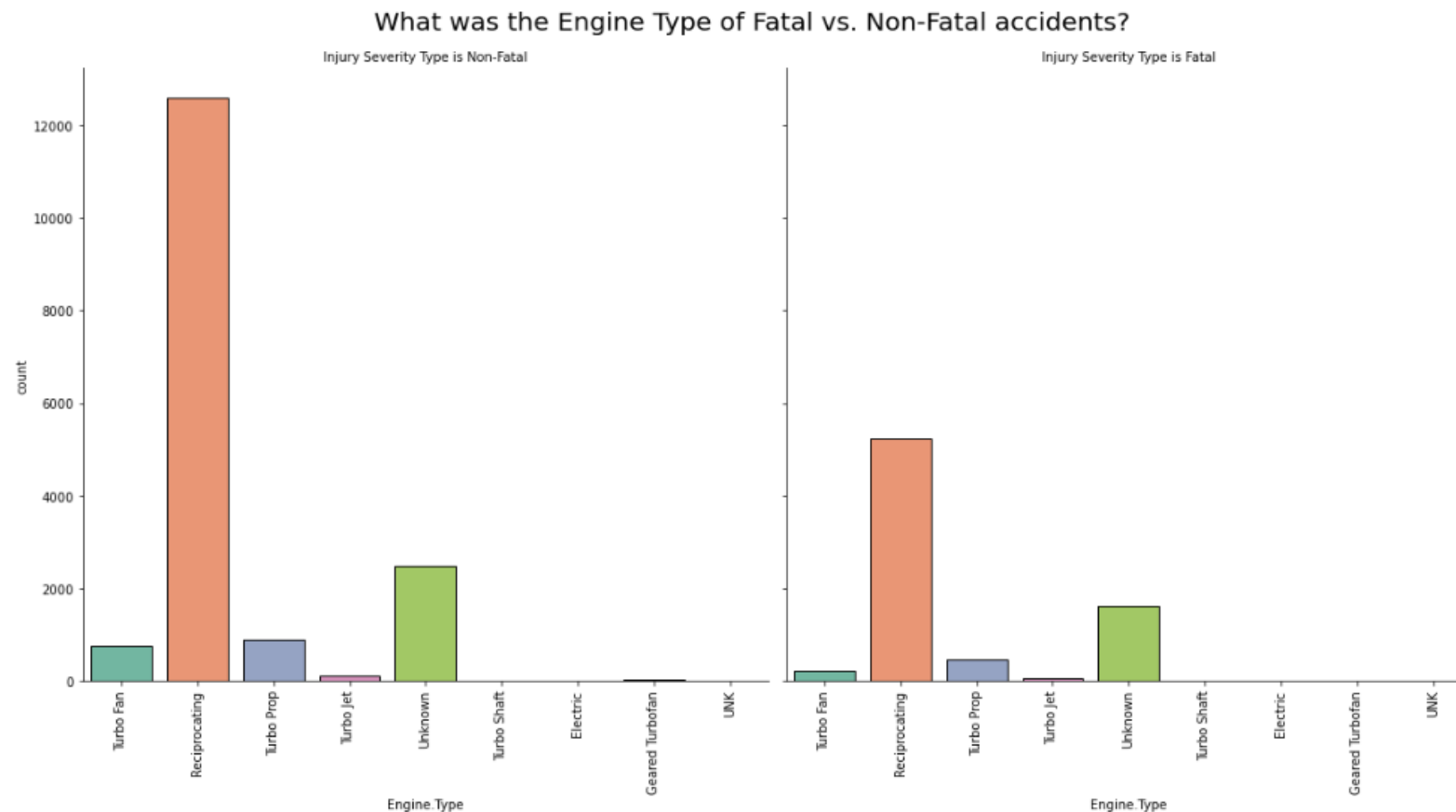
RECOMMENDATION

- Prioritize investing in the three aircraft makers including Boeing, Airbus and McDonnell Douglas.

Boeing 737-291 Turbo Fan	Boeing 727-223 Turbo Fan	Boeing 707-323C Turbo Fan	Boeing 727-225 Turbo Fan	BOEING 737	BOEING 737-300 Turbo Fan	BOEING 737-832 Turbo Jet
Boeing A75N1 Reciprocating	Boeing 727-231 Turbo Fan	Boeing A75	Boeing B737-2H4 Turbo Jet	BOEING 757-236 Turbo Fan		BOEING
	Boeing 737-201 Turbo Fan			BOEING 777		
	Boeing 727-200 Turbo Fan	Boeing 737-222 Turbo Jet	Boeing E75 Reciprocating		Mcdonnell Douglas DC-10-30F Turbo Fan	
Boeing 75A Reciprocating		Boeing PT-17 Reciprocating		Mcdonnell Douglas DC-9-51 Turbo Fan		

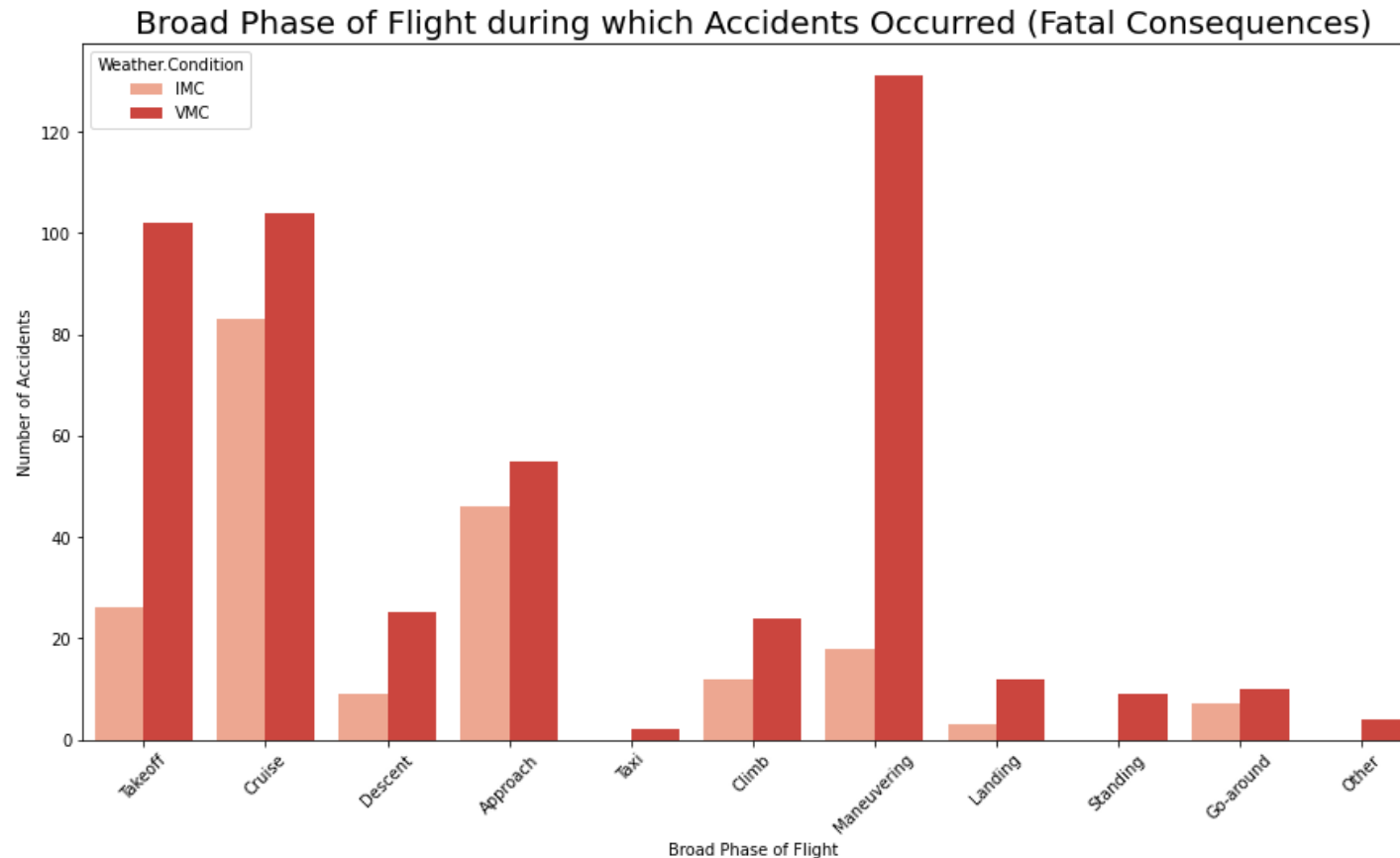
RECOMMENDATION

- Prioritize investing in reciprocating (one or two engines) and turbo fan (2 engines) for the company aircraft's fleet.



RECOMMENDATION

- offer more trainings for our pilots regarding these four phases of flights including take-off, landing, cruise and maneuvering





Q&A

Tai Bui

<https://www.linkedin.com/in/tai-bui-ngoc>