AIRCRAFT RISKS

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What is the Presentation about?

OBJECTIVE

Identifying insights that would help to determine the best conditions to fly aircrafts along with the aircraft type with the lowest risks to start a new business endeavor.

DATA PRESENTATION AND ANALYSIS

We are working with a dataset 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.

NB.-The dataset was treated using Pandas library from Python language and the visuals were created using Power BI Desktop.

Statistics Descriptive

Total accident : 88397
Total victims registered : 540925
% Fatal injured : 9%
% Serious injured : 5%
%Minor injured : 4%
% Uninjured : 82%

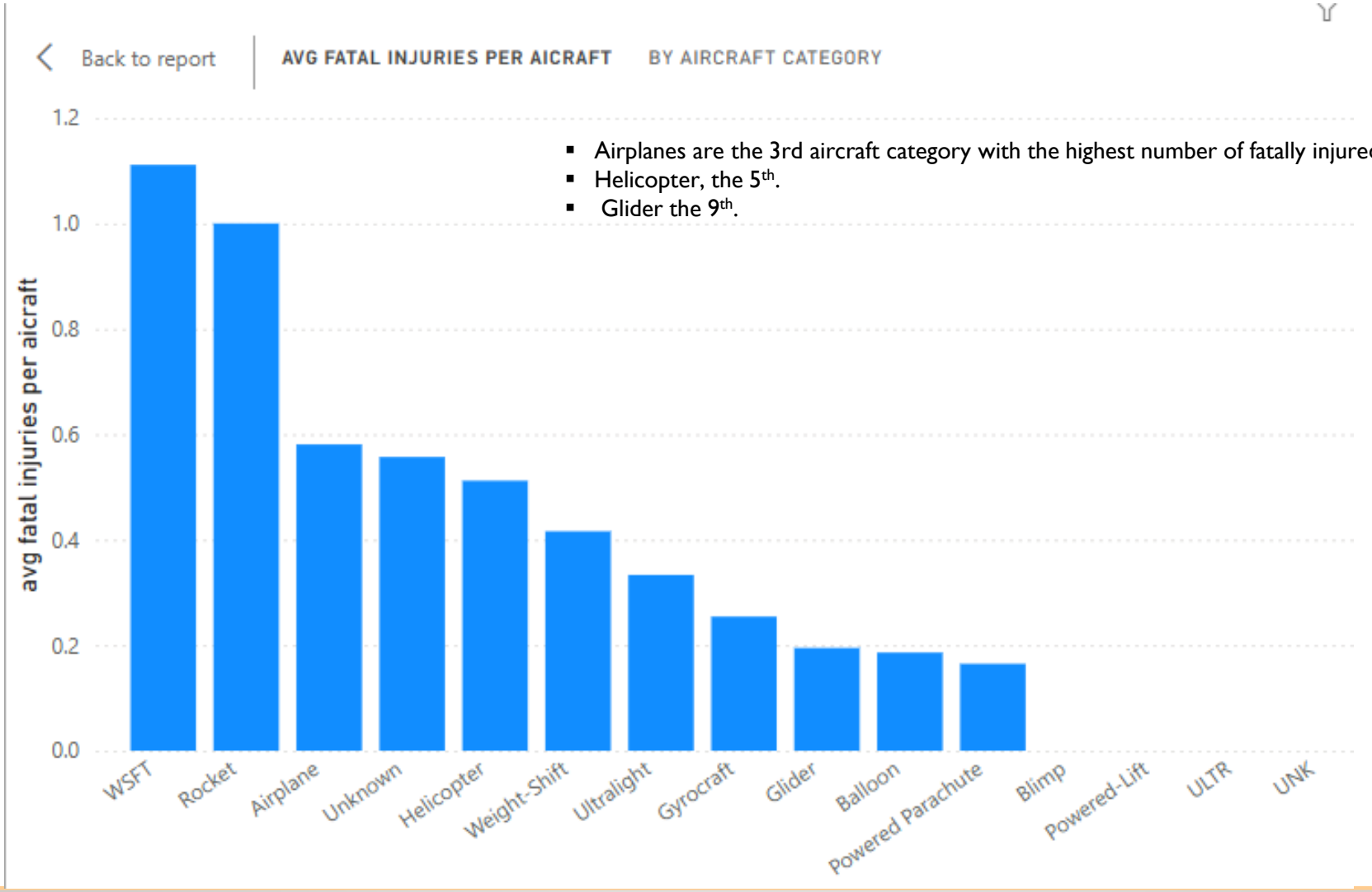
Top 3 of the remaining 36% that align with business objective:

- Airplane
- Helicopter
- Glider

64% of aircraft category is unknown, while using the remaining data, we have to be aware that the final result might be biased.

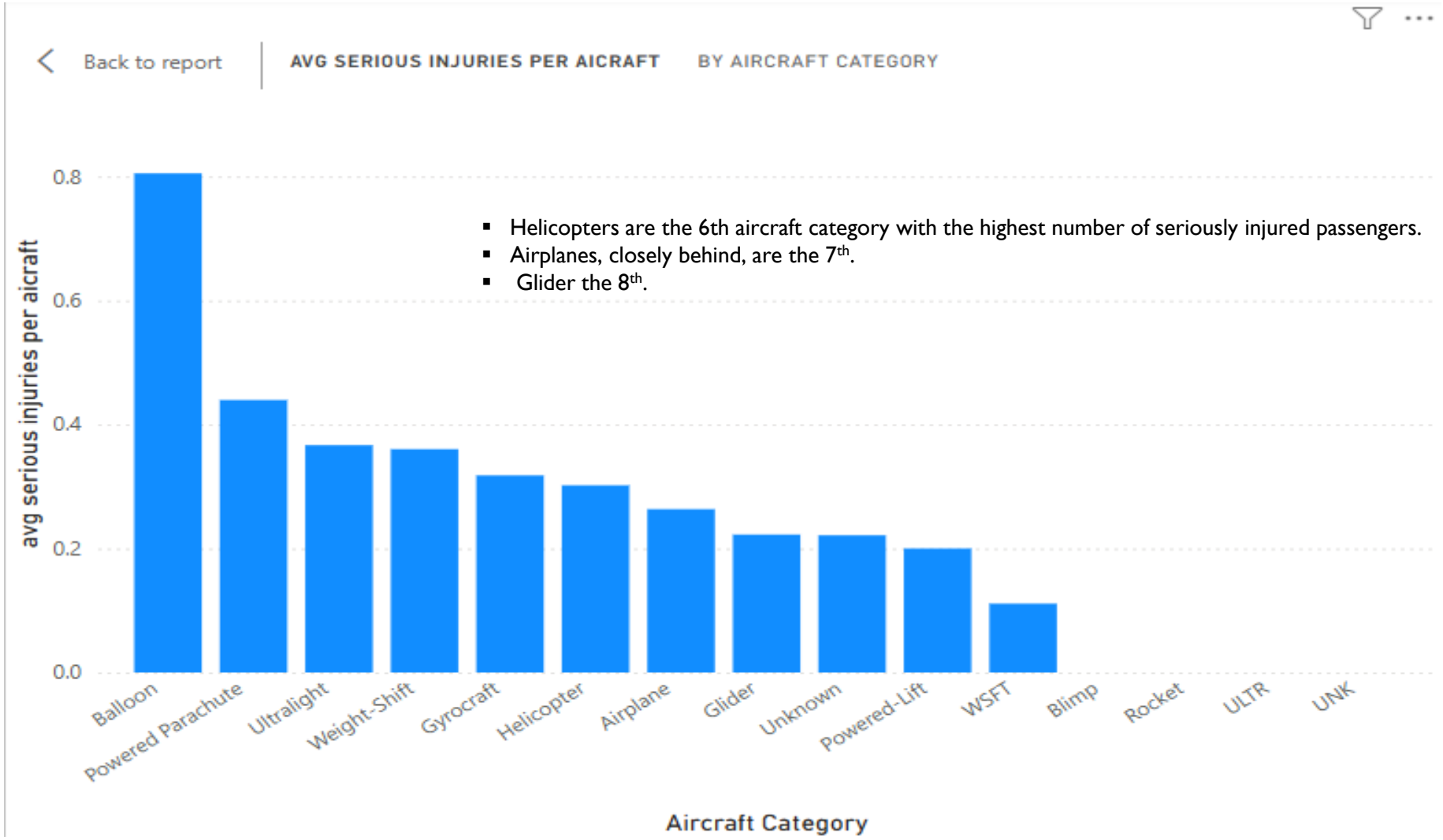
Aircraft Category	Total aircraft	aircraft percentage
Unknown	56,212	64%
Airplane	27,529	31%
Helicopter	3,425	4%
Glider	508	1%
Balloon	231	0%

Repartition of fatal injuries per aircraft by aircraft-category



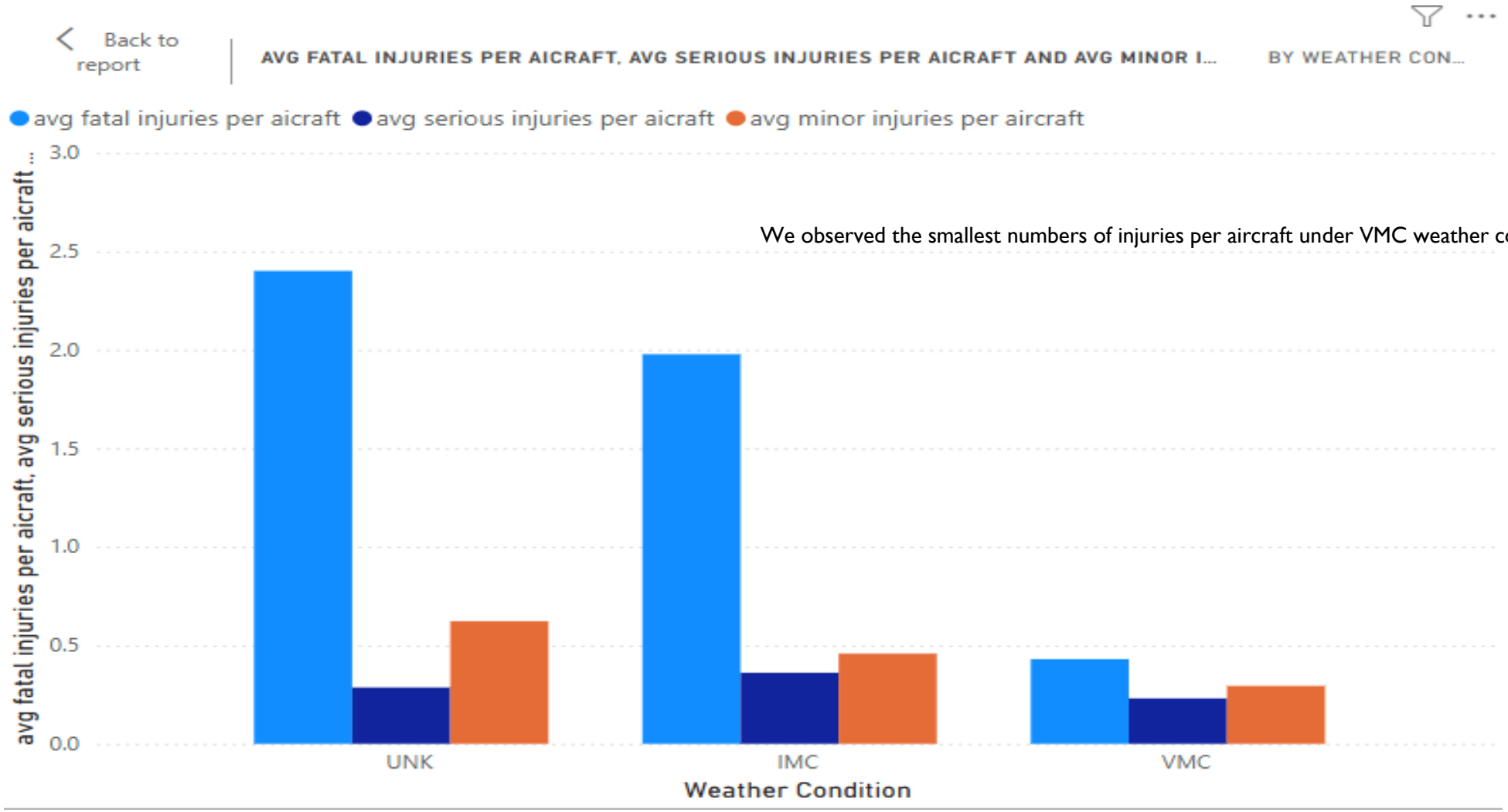
- Airplanes are the 3rd aircraft category with the highest number of fatally injured passengers by plane.
- Helicopter, the 5th.
- Glider the 9th.

Repartition of serious injuries per aircraft by aircraft-category



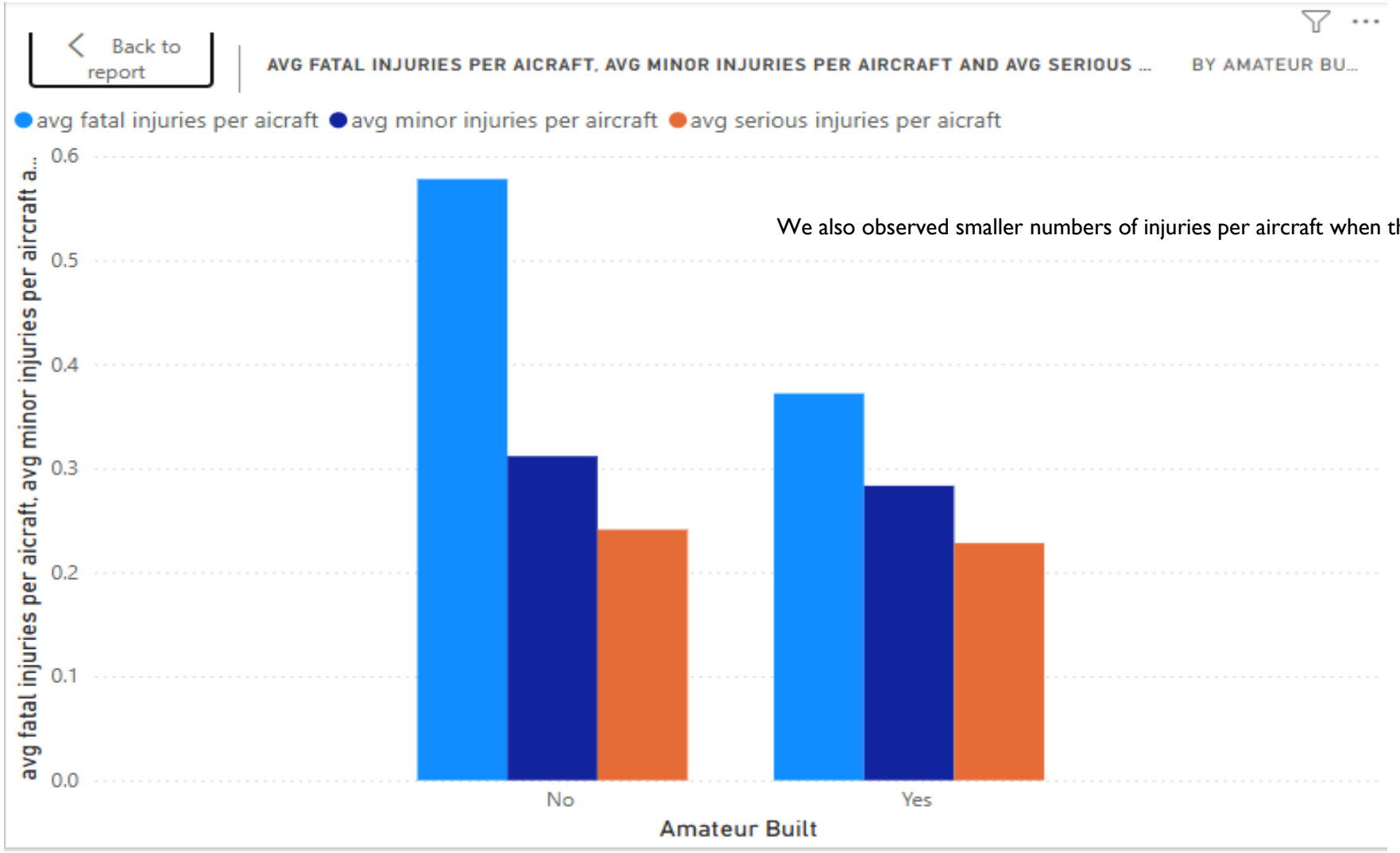
- Helicopters are the 6th aircraft category with the highest number of seriously injured passengers.
- Airplanes, closely behind, are the 7th.
- Glider the 8th.

Repartition of fatal, serious and minor injuries per aircraft by weather condition



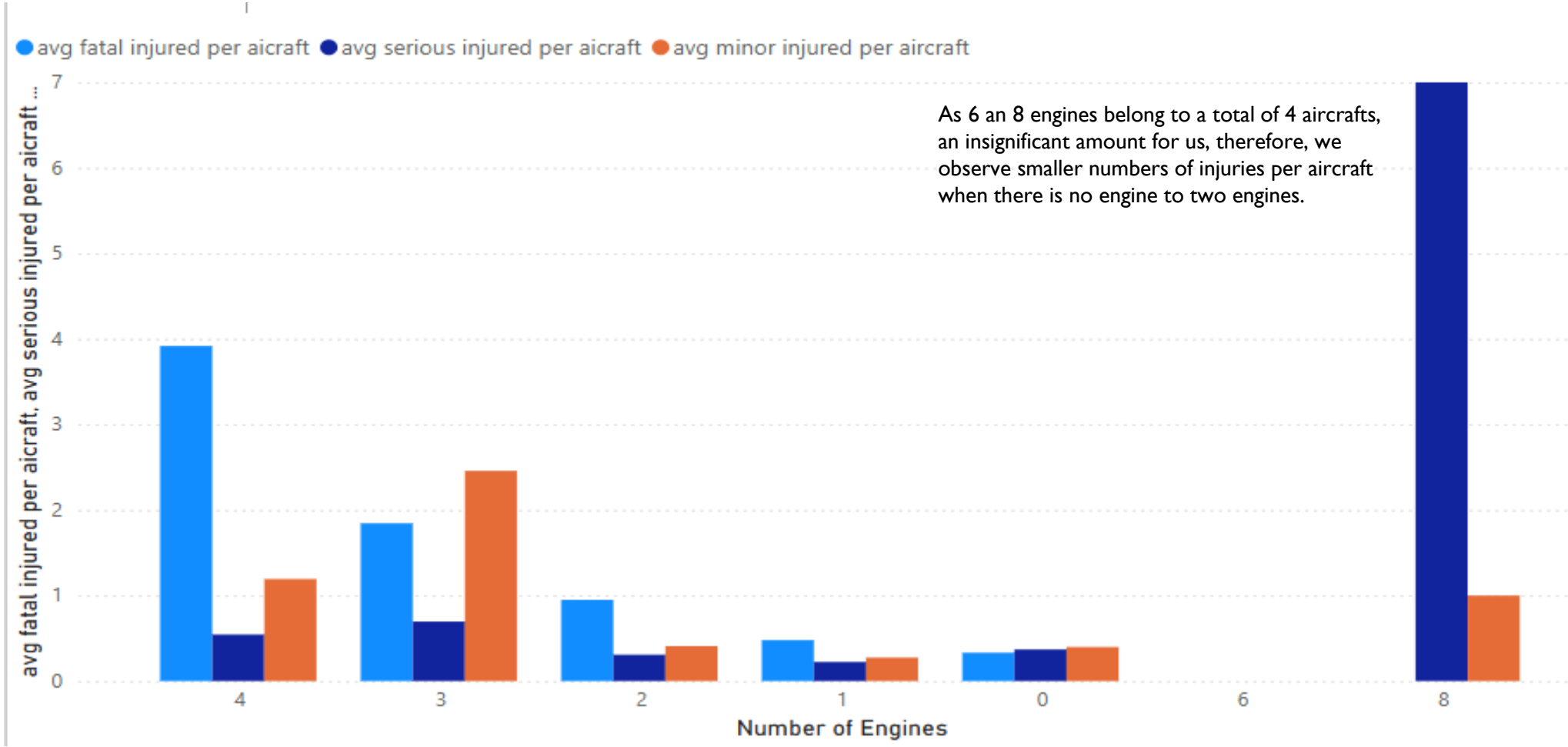
We observed the smallest numbers of injuries per aircraft under VMC weather condition.

Repartition of fatal, serious and minor injuries per aircraft by amateur built condition



We also observed smaller numbers of injuries per aircraft when they are amateur built.

Repartition of fatal, serious and minor injuries per aircraft by number of engine



Repartition of total aircraft and injuries by Makers

Make	aircraft percentage	avg fatal injured per aicraft	avg serious injured per aicraft	avg minor injured per aircraft
Cessna	31%	0.35	0.18	0.25
Piper	17%	0.45	0.21	0.25
Beech	6%	0.70	0.20	0.25
Boeing	3%	3.14	0.80	1.02
Bell	3%	0.49	0.32	0.41

- ✓ If we consider the top 5 aircraft makers from the dataset, 31% of the aircrafts were made by Cessna and they registered the lowest rates of injuries by aircraft.

Analysis summary

- ✓ 64% of aircraft category is unknown, our aircraft category analysis is based on the 36% remaining.
- ✓ Among the aircraft type that align with business objective, Airplanes, Helicopter, and Glider can be chosen with Glider, the first choice with less injuries number per aircraft, Helicopter the second and Airplanes the third.
- ✓ Aircraft should fly under Visual Meteorological Conditions (VMC) in order to minimize the injuries number per aircraft, if accidents occur.
- ✓ We count less injuries per aircraft for the amateur-built ones.
- ✓ We count less fatal and serious injuries per aircraft for the ones that dispose of 0 to 2 engines.
- ✓ We count less injuries per aircraft for the ones created by Cessna.

Recommendations

64% of aircraft category is unknown. In order to minimize the number of injuries if accidents occur, it would be best if :

- ✓ Aircrafts fly under VMC weather condition.
- ✓ Aircrafts are amateur-built ones.
- ✓ Aircrafts are created by Cessna.

Final Recommendation

To end our analysis, we know that:

- We count less fatal and serious injuries per aircraft for the ones that dispose of 0 to 2 engines (Gliders and Helicopters usually have no more than 2).

- Also, Gliders and Helicopters are the less at risk aircraft type, with less serious and fatal injuries than airplanes.

We then recommend Glider if we target 1 to 2 people per flight and Helicopter for more.

NB.- The final aircraft recommendation do not reflect a certain reality as 64% of the aircraft category in the dataset is unknown, further analysis need to be done for more concrete results.

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THANK YOU!