AIRCRAFT RISK ASSESSMENT PROJECT

OVERVIEW OF THE PROJECT

The Aircraft Risk Analysis project focuses on evaluating aviation incidents to identify risk patterns and contributing factors to aircraft-related injuries and damages .By leveraging historical data from aviation databases, the project investigates how variables like aircraft make, weather conditions ,damage severity, flight purpose impact safety outcomes.

OBJECTIVE

To analyze aircraft data and determine which aircraft present the lowest risk for purchase ,helping the company expand safety into the aviation sector.

Business Understanding

The company is entering the aviation industry and plans to acquire airplanes for commercial and private use. Since the leadership lacks experience in aviation risk ,this project will guide them in identifying the safest aircraft options.

BUSINESS UNDERSTANDING

-Most accidents occur in clear weather (VMC):

> Despite better visibility, more accidents happen in VMC. This may be because most flight occur in such conditions , increasing exposure.

-Lower accidents in IMC but possibly higher risk per flight :

> IMC has fewer accidents, but those may involve more severe risks due to poor visibility and complex navigation .

-Implications for aviation stakeholders :

#Training:Enhance pilot training for both VMC and IMC, focusing on human error in VMC.

#Operations:Don’t assume a clear weather is low risk –implement safety checks and procedures regardless of conditions .

#Insurance & Risk management :Use this data to evaluate risk more accurately when underwriting aircraft operations.

DATA UNDERSTANDING

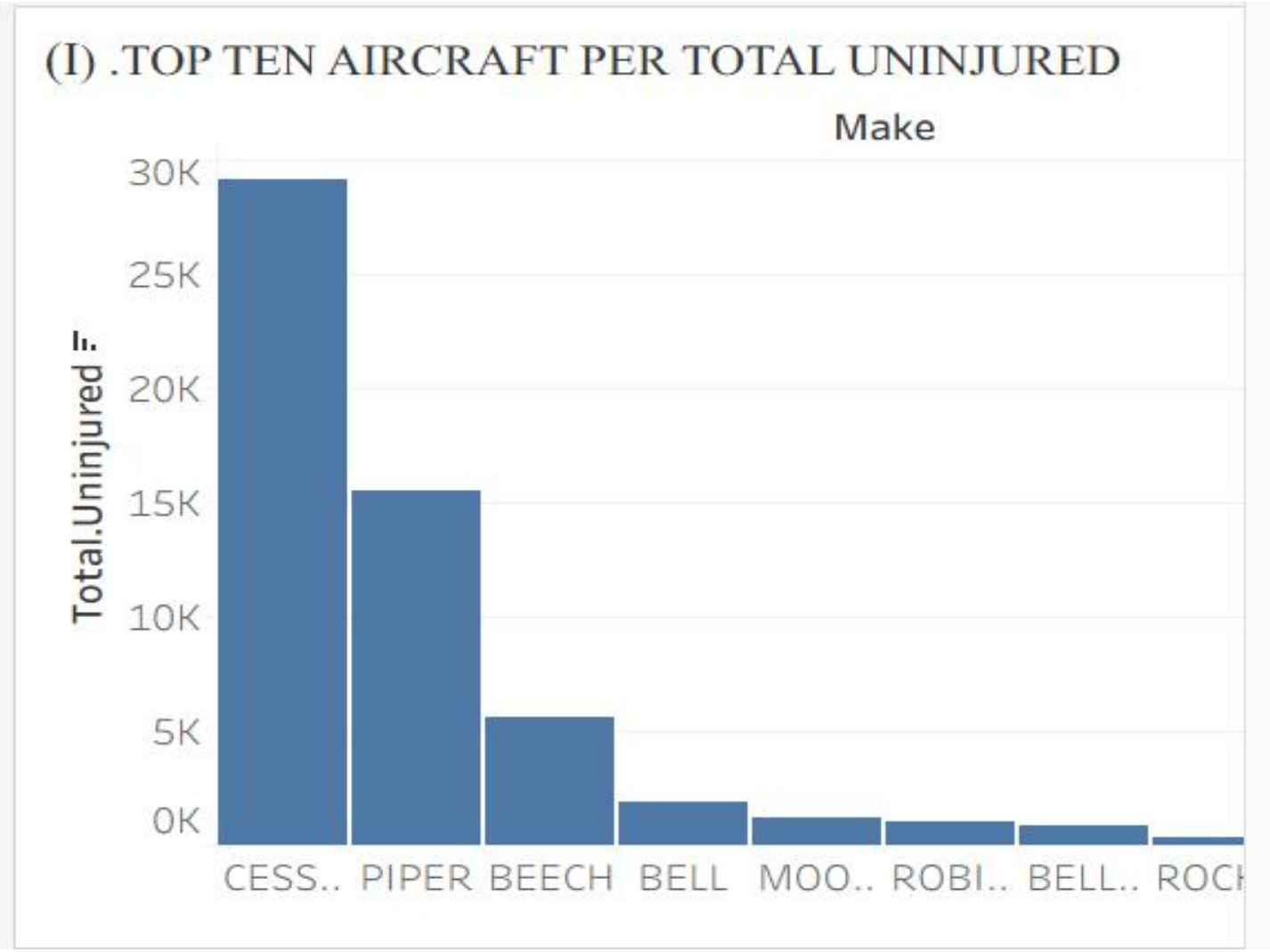
1.Overall Downward Trend

-Total aircraft accident have significantly decline from 1920 to 2020.This indicates improvements in aviation safety, regulations , technology and training.

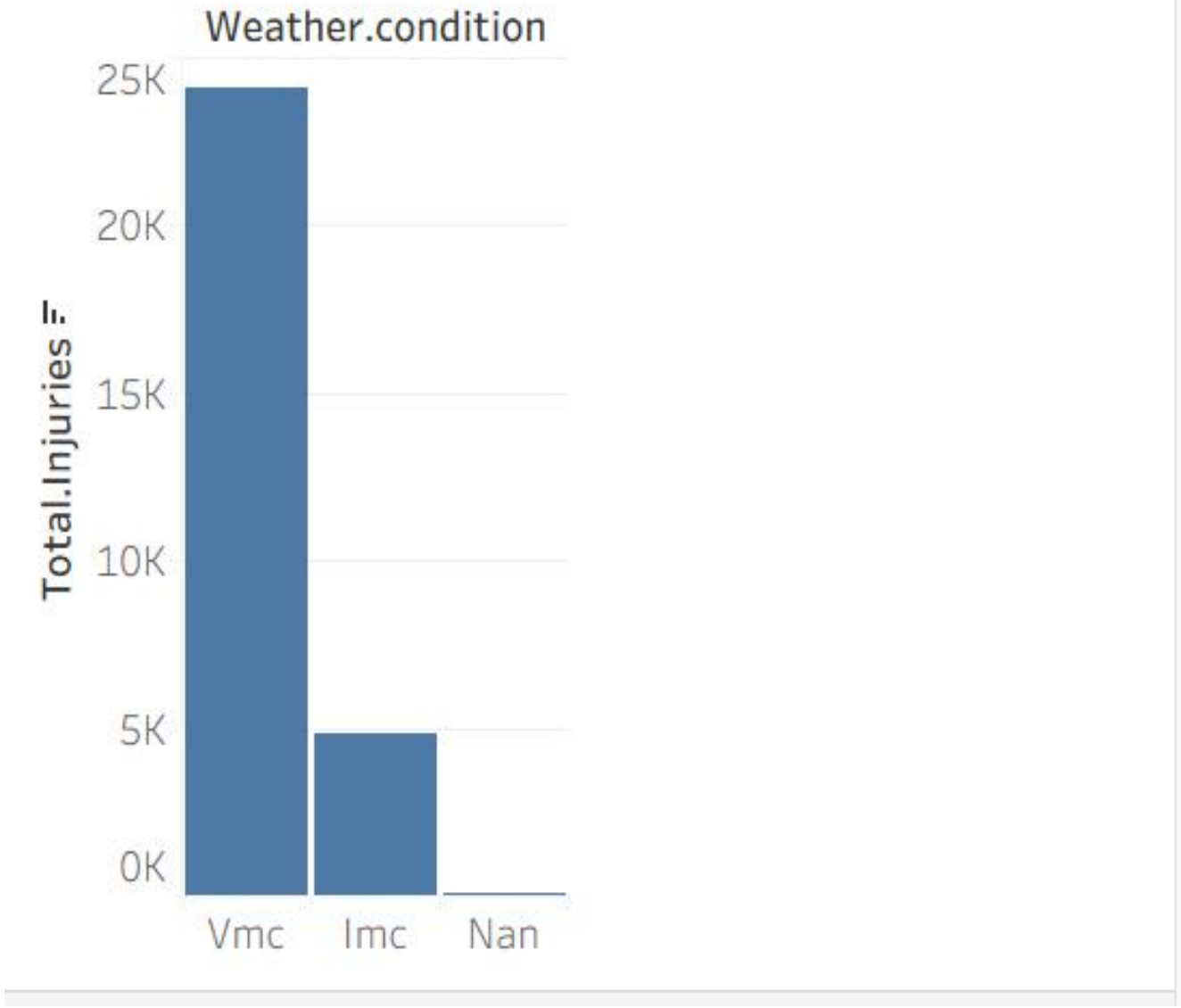
2.Higest incidents by category

-Personal flight consistently have the highest number of accidents.This could be due to less regulated environment or inexperienced pilots.

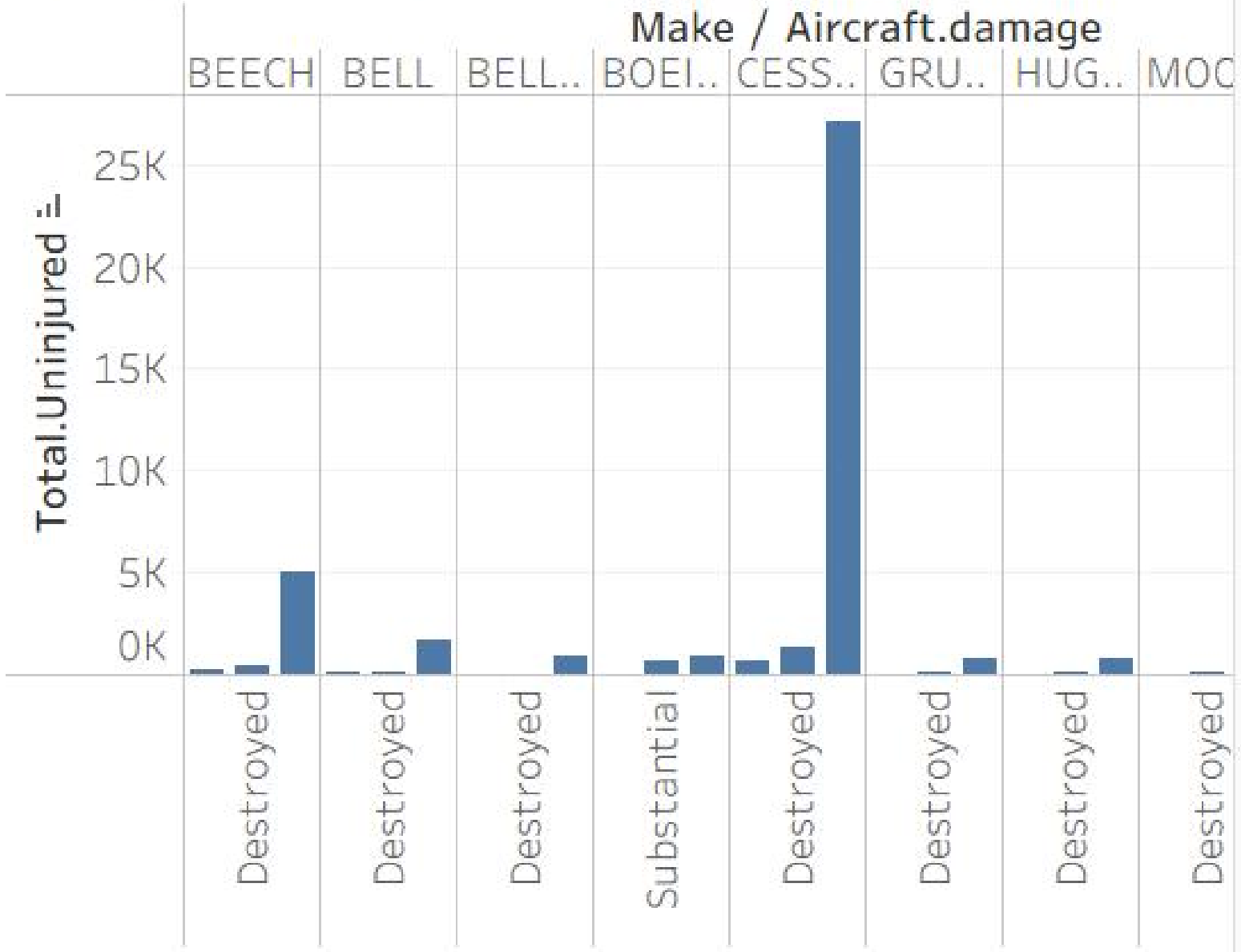
FINDINGS ON DATA ANALYSIS ON GRAPH

- 

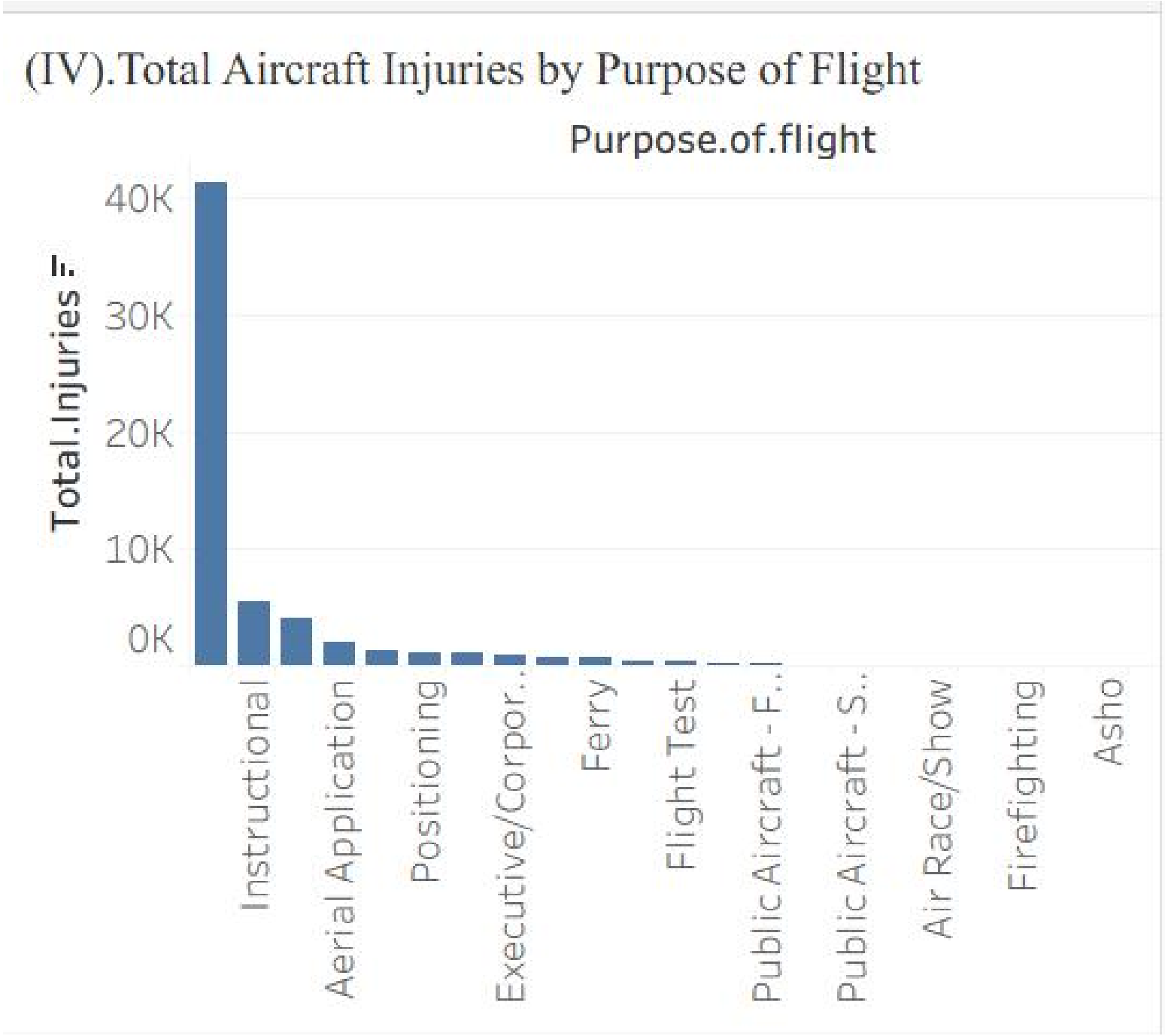
(II).Total Injuries by Weather condition



(III).Aircraft Damage Severity Across Top Makers



(IV).Total Aircraft Injuries by Purpose of Flight



FINDING ANALYSIS

- 1.In graph (I) high uninjured counts don’t mean fewer accidents but rather more survivable events or greater usage . CESSNA’s high count be due to its popularity in private aviation and training and it may reflect good safety features.
- 2.In graph (II) Good weather doesn’t eliminate risk ;high volume of flight in VMC could explain higher injuries.
- 3.In graph (III) Cessna aircraft dominate in crash incidents where passengers were uninjured suggesting they may have better safety features or more frequent use which increase exposure.
- 4.In graph (IV)Training (instructional)flights should be a focus area for safety improvements .better pilot training protocols and instructor oversight could reduce accident-related injuries.-