

The background features a dark blue gradient with a subtle pattern of white dots. Overlaid on the left side are several concentric circular patterns and a large, semi-circular scale resembling a compass rose. The scale has markings from 140 to 260 in increments of 10. There are also smaller circular elements with arrows indicating clockwise or counter-clockwise movement.

# AIRCRAFT ACCIDENT ANALYSIS

AN ANALYSIS INTO THE SAFEST AIRPLANES TO PURCHASE

# OVERVIEW

The company wants to diversify its portfolio by venturing into the aviation industry. I did an analysis on the safest aircraft to purchase using an aircraft accident dataset. This led me to three conclusions on the best types of aircraft to purchase for commercial and private use.

# BUSINESSS UNDERSTANDING

The business does not have any expertise with aviation hence does not know where to start to purchase good aircraft. This is an analysis on the various categories of aircraft and how they managed during accidents in order to give the business a clear understanding of the best aircraft for business use with less risk to business clients (air travelers)

# DATA UNDERSTANDING

The data consists of accidents in the United States over the past several decades with details on survival, kinds of injuries sustained by passengers and aircraft damage. It also gives context on the accident like weather conditions, whether it was an incident or accident and where the accident occurred either in international waters or inside an airport or on land.

By combining these variables together with the make and model of the aircraft, we can deduce the aircraft strength and risk.

This will help reach a conclusion on which make and model to buy, together with the kind of engines to look for in an aircraft.

# DATA ANALYSIS

The dataset used was quite disorganized hence first I had to tidy it up a bit in order to get clear insights from it.

- First off I dropped variables like schedule and airline operating the aircraft from the dataset since they are irrelevant.
- Next I removed duplicate values and extraneous values to further clean up
  - Extraneous values – data that is wrongly placed or only used as a placeholder
- Then I replaced null values with the appropriate replacement.
  - Null values – Empty cells in a dataset. Can be filled by using the context of the variable they are placed under.



- After cleaning up the dataset I did some simple visualizations to get an overall context of aviation accidents.
  - Most accidents are by plane. Before you panic be re-assured that this is only because airplane are widely used than other categories. In fact based on accidents and usage, airplanes are generally safer than other aircraft because they have less moving parts.
  - Hence you made the right decision to look for an airplane
  - Accidents have gradually reduced since 1990s due to advancements in technology. Of these few accidents I picked the best aircraft so be rest assured the recommendations are pretty low risk.

# RECOMMENDATIONS

The background is a deep blue gradient with a subtle pattern of white dots, resembling a starry sky. Overlaid on this are several faint, white geometric elements: concentric circles, arcs, and dashed lines. In the upper right, there is a large circular scale with degree markings from 0 to 210 and a small arrow pointing upwards. In the lower right, there are concentric circles with dashed lines and arrows indicating a clockwise direction. In the lower left, there is a dashed arc with an arrow pointing counter-clockwise. In the upper left, there is a small circle with a dashed line and an arrow pointing counter-clockwise.

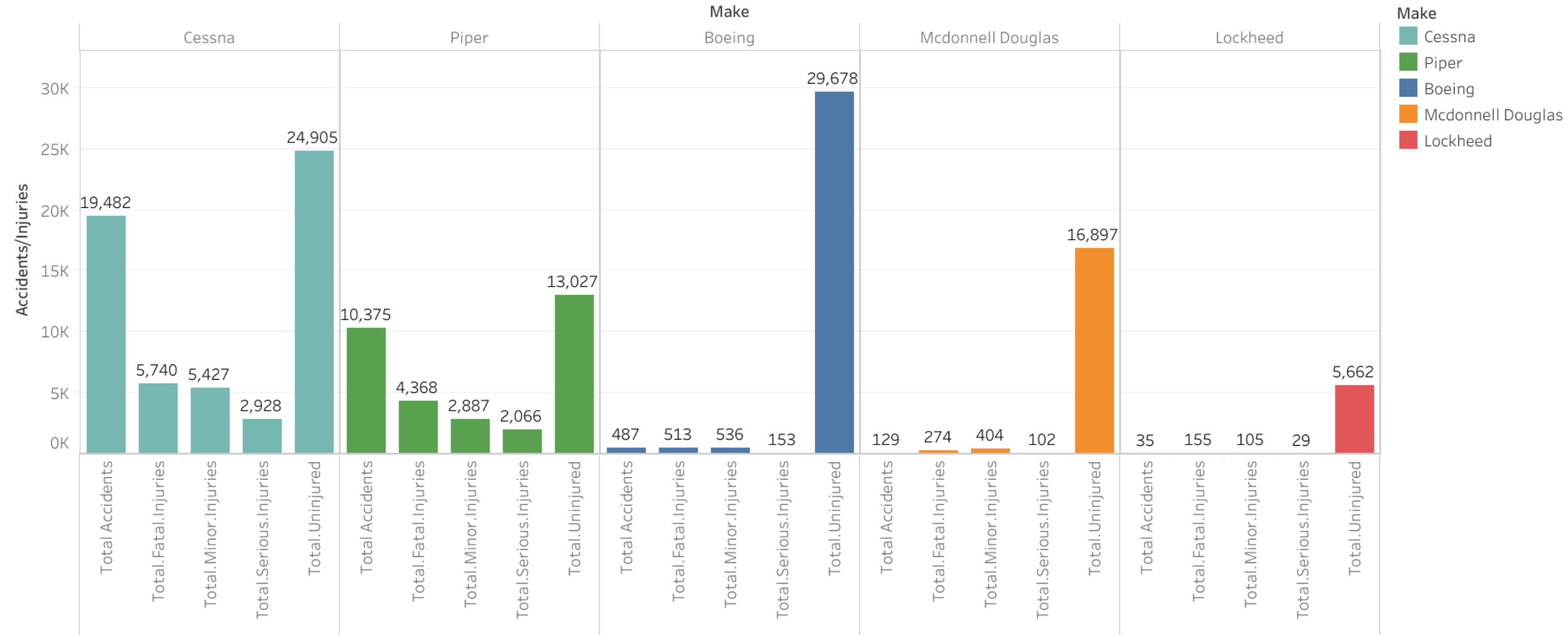
The background is a dark blue gradient with a subtle pattern of white stars and technical diagrams. On the right side, there is a large circular diagram with concentric circles and radial lines, resembling a radar or a clock face, with numbers 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, and 200. On the left side, there is a smaller circular diagram with concentric circles and radial lines, resembling a radar or a clock face, with numbers 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, and 200. The text is white and centered in the upper left quadrant.

AIRCRAFT MAKE: BOEING  
LOCKHEED  
MCDONNELL DOUGLAS

These aircraft makes have the safest accidents on among aircraft makes as shown in the next figure



## Accidents by Aircraft Make



# AIRCRAFT MODELS:

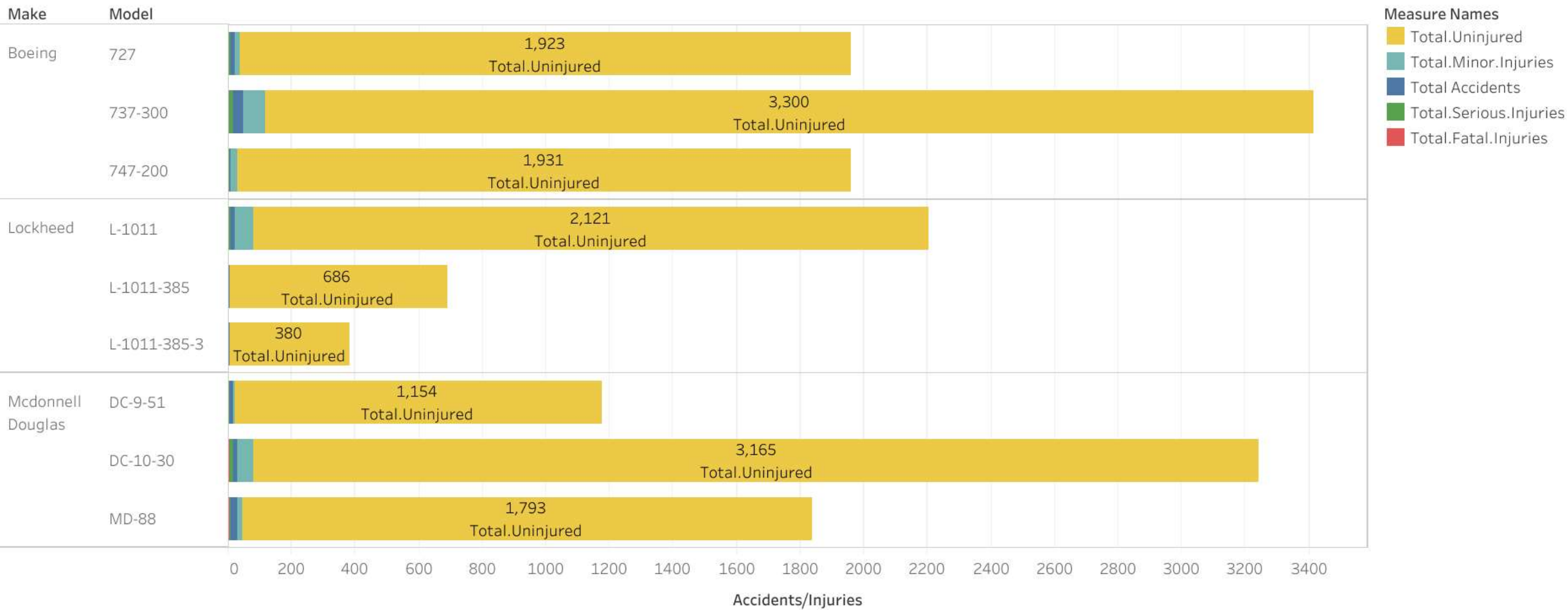
BOEING 747-200, 737-300 AND 727

LOCKHEED L-1011, L-1011-385-3, L-1011-385

MCDONNELL MD-88, DC-10-30 AND DC-9-51

- These models are the least risky among the models of the safe aircraft makes.
- This is demonstrated in the next figure.

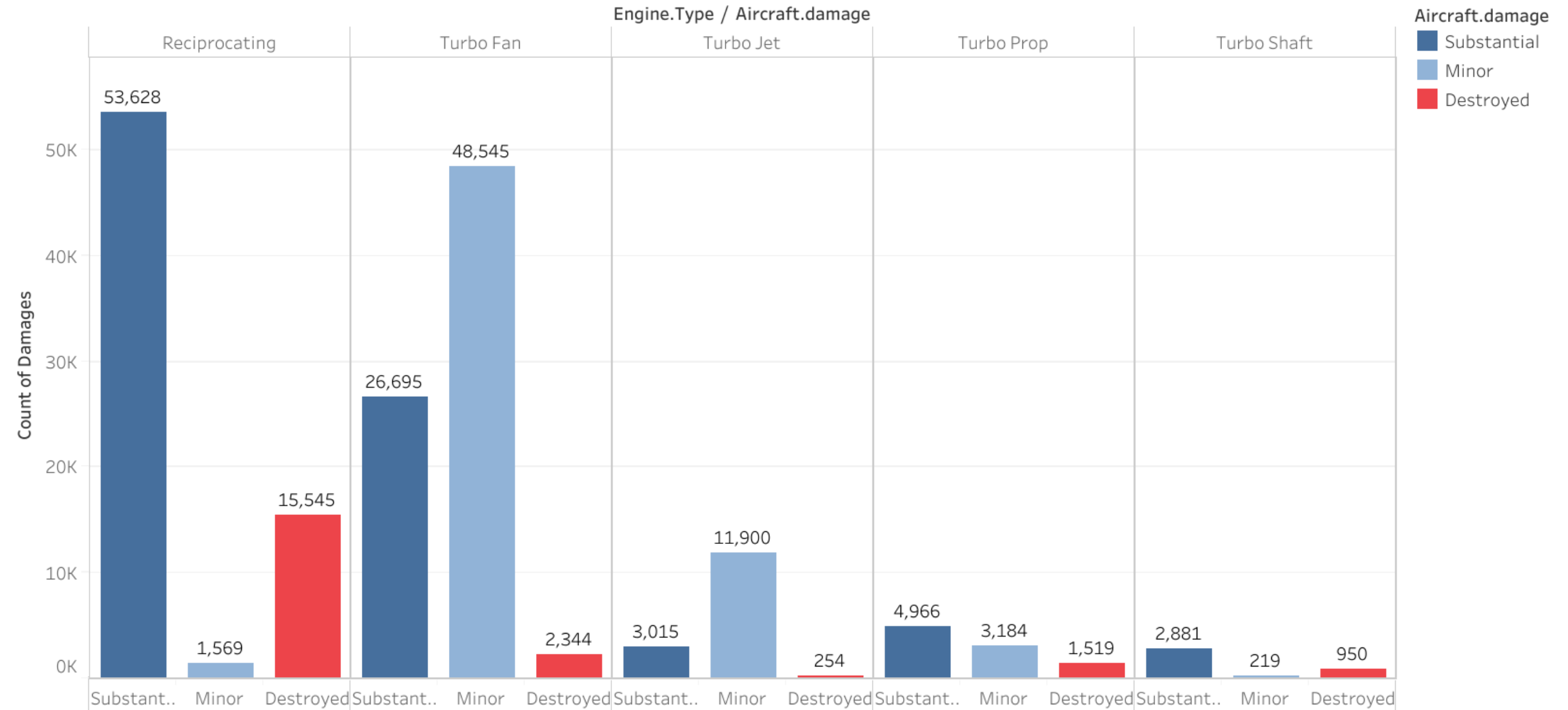
## Accidents by Aircraft Model



# ENGINE: TURBO FAN TURBO JET

- These two engines cause the least damage to aircraft by containing their explosions during accidents.

# Aircraft Damage by Engine Type





- To recap, I have made three recommendations based on the make, model and engine type of aircraft to give 11 options to purchase from.

- They are: Boeing 747-200, 737-300 and 727

Lockheed I-1011, I-1011-385-3, I-1011-385

Mcdonnell md-88, dc-10-30 and dc-9-51

# NEXT STEPS

- From these safety recommendations now you can to evaluate the 11 options based on other variables like purchasing price, maintenance cost, passenger count among many other business-related considerations.

# THANK YOU

- Any questions?

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