AVIATION RISK ANALYSIS

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DATA SCIENTISTS

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BOEING

Boeing 757251

0% FATALITY RATING

CESSNA

Cessna 152

Best in Commercial

CESSNA

Cessna 172 - N

Best in Private

01

BUSINESS UNDERSTANDING

IDEAL AEROPLANE FEATURES

SAFETY IS OUR PRIORITY

We are looking for aircraft that have low fatalities and injuries to passengers in event of a crash

MARKET MATTERS

We prioritized makes and models that occurred more frequently in the dataset.

This allows for a larger sample size and more accurate predictions for each model.

It also provides a glimpse into the more popular models on the market

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DATA SOURCE

WE ARE LOOKING AT ACCIDENTS

WE DO NOT HAVE DATA ON THE TOTAL POPULATION

Our dataset does not include the total number of planes flown

This means we are examining how bad accidents are when they occur, not how likely an individual plane is to have an accident when flown.

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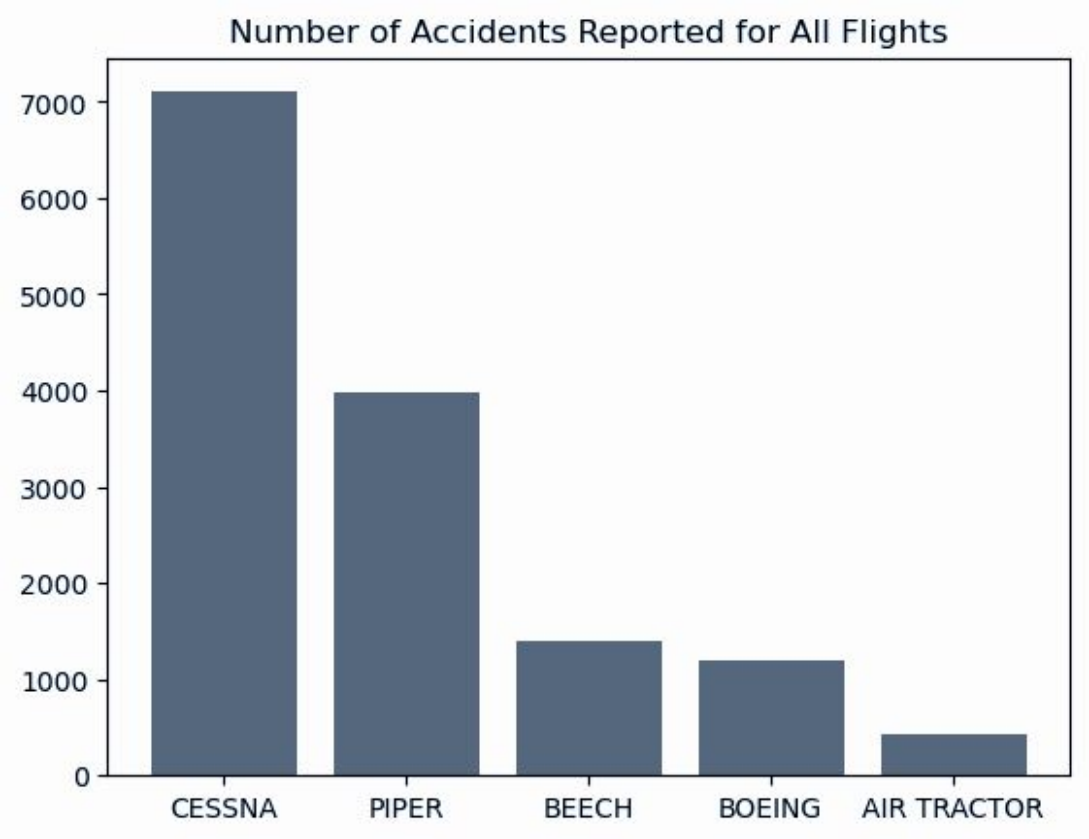
DATA UNDERSTANDING

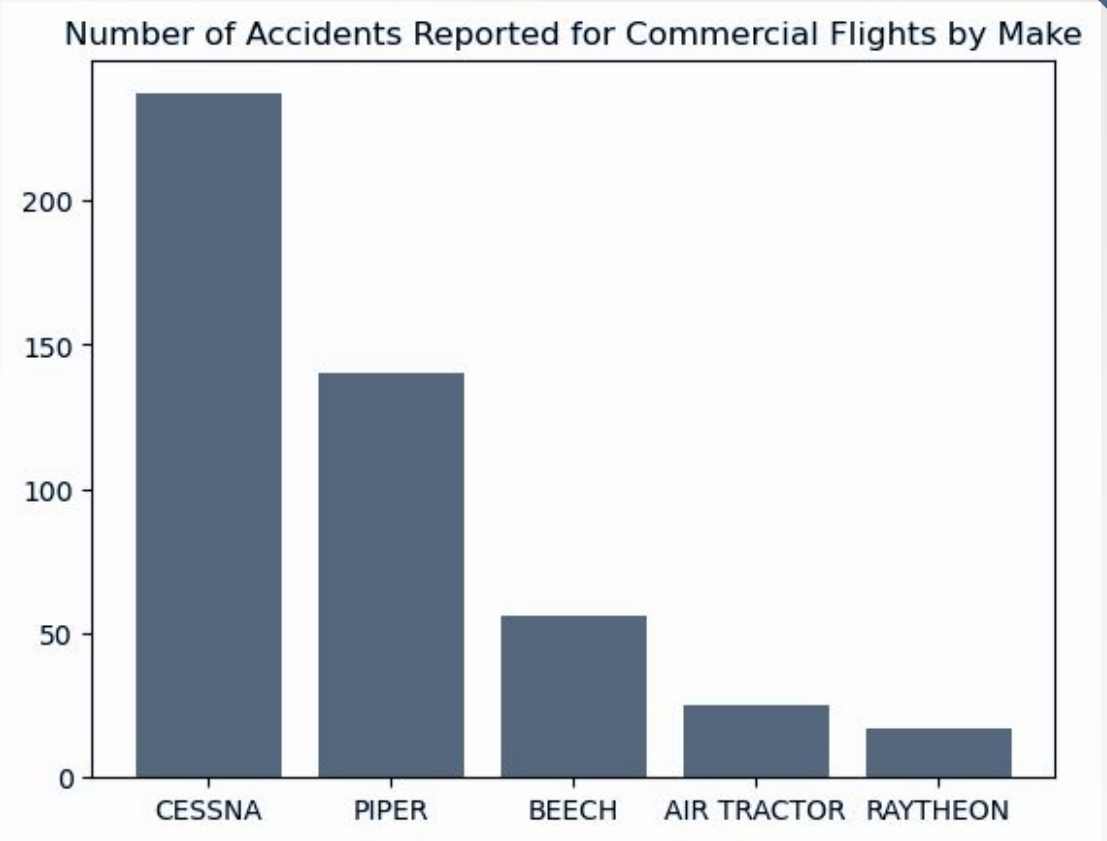
TOP MAKES

We examined the **overall number of planes** involved in accidents



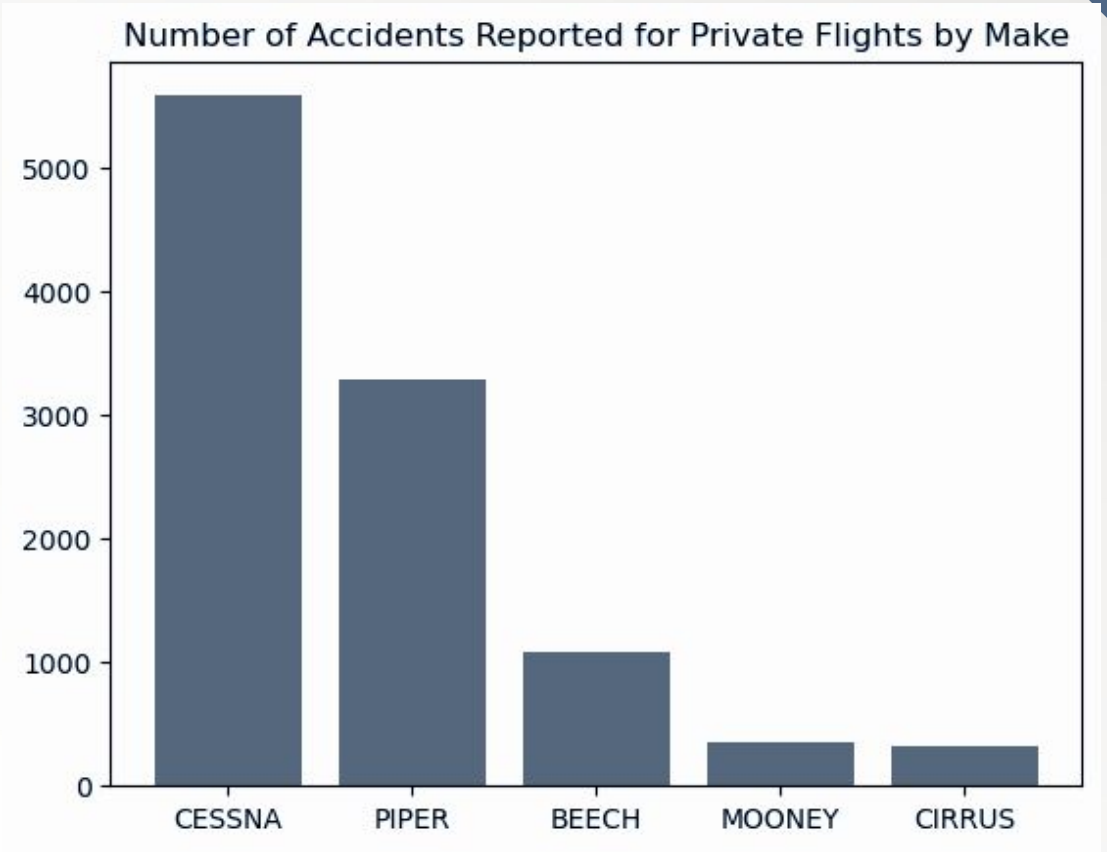
COMMERCIAL

...then examined the top brands being used for **Commercial Purposes.**



PERSONAL

...and those being used for
Private Enterprises.



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DATA ANALYSIS

DETERMINING BRAND SAFETY

We used to following formulas to determine the ratio of injuries and casualties per accident:

$$\text{Probability of } \textbf{Fatal} \text{ Crash} = \frac{\text{Total Reported } \textbf{Fatal} \text{ Injuries}}{\text{Reported Occupancy}} \times 100$$

$$\text{Probability of Crash to cause } \textbf{Injury} = \frac{\text{Total Reported } \textbf{Non-Fatal} \text{ Injuries}}{\text{Reported Occupancy}} \times 100$$

TOP MAKES – OVERALL

With our top makes established, we examined how they ranked in our safety metrics.

OVERALL

Makes	Total Accidents	Reported Occupancy	Fatality Ratio	Injury Ratio
AIR TRACTOR	431	1.03	19.74	23.71
BEECH	1,407	2.39	26.38	19.44
BOEING	1,200	72.69	4.14	7.18
CESSNA	7,103	2.00	14.90	19.27
PIPER	3,985	1.91	18.03	19.90

TOP MAKES – COMMERCIAL

With our top makes established, we examined how they ranked in our safety metrics.

COMMERCIAL

Makes	Total Accidents	Reported Occupancy	Total Injured	Fatality Ratio	Injury Ratio
AIR TRACTOR	25	1.03	0.24	19.74	23.71
BEECH	56	2.39	0.42	26.38	19.44
CESSNA	237	2.00	0.39	14.90	19.27
PIPER	140	1.91	0.37	18.03	19.90
RAYTHEON	17	3.57	0.47	27.44	15.91

TOP MAKES – PRIVATE

With our top makes established, we examined how they ranked in our safety metrics.

PRIVATE

Makes	Total Accidents	Reported Occupancy	Total Injured	Fatality Ratio	Injury Ratio
BEECH	1,085	2.39	0.42	26.38	19.44
CESSNA	5,586	2.00	0.39	14.90	19.27
CIRRUS	317	2.04	0.42	29.01	20.31
MOONEY	355	1.76	0.45	24.15	25.32
PIPER	3,282	1.91	0.37	18.03	19.90

TOP MAKES - CONCLUSION

Boeing performed best overall
- Did not appear in the breakdowns
- It appeared in both categories frequently, so it did not show up in the niche market
- However, this makes it an **excellent pick** for a company looking to work in both

Cessna performed best in the breakdowns, and second best overall.

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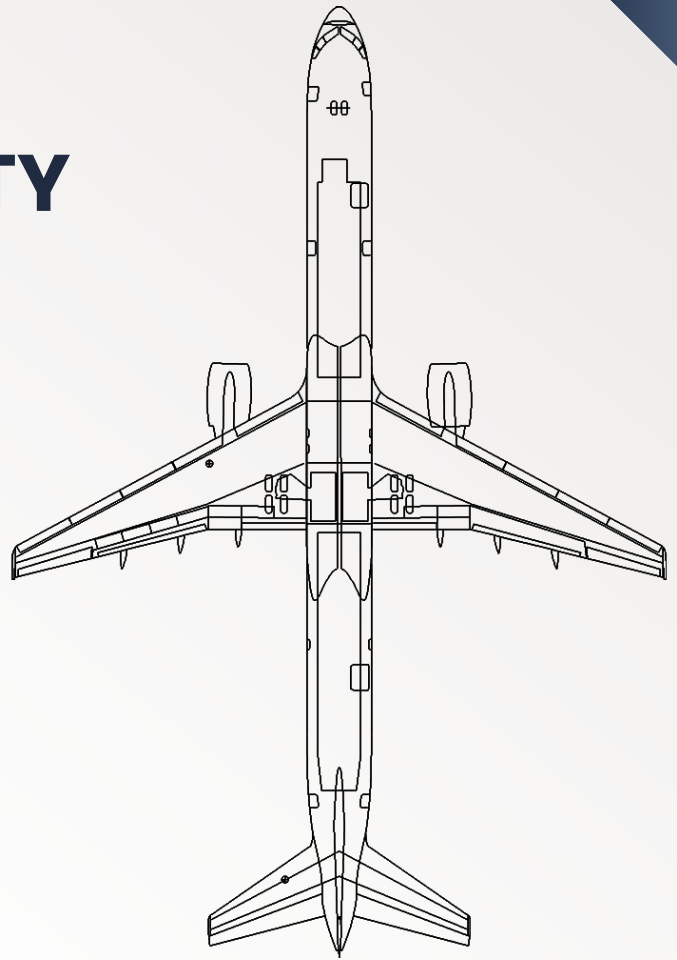
RECOMMENDATIONS

OVERALL BEST FOR SAFETY

BOEING 757251

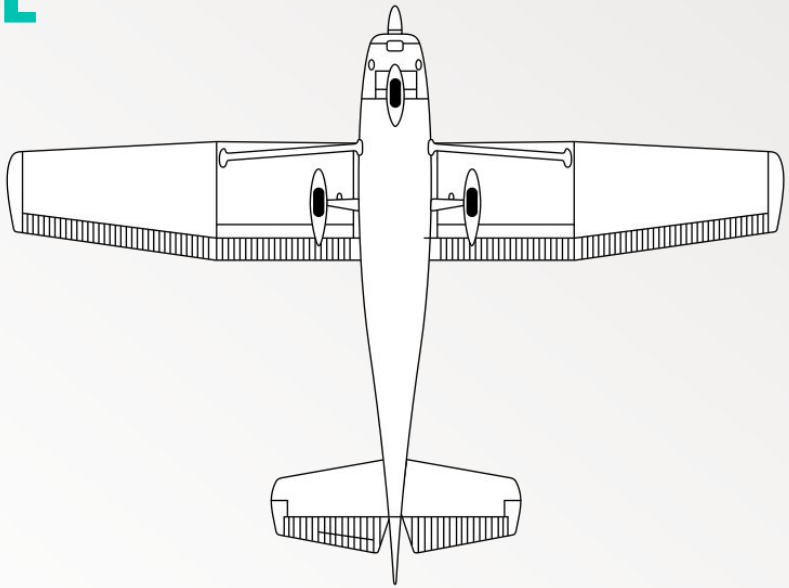
The 757251 had a **0% fatality** rate and a **1.3% injury rate**



BEST FOR COMMERCIAL

CESSNA 152

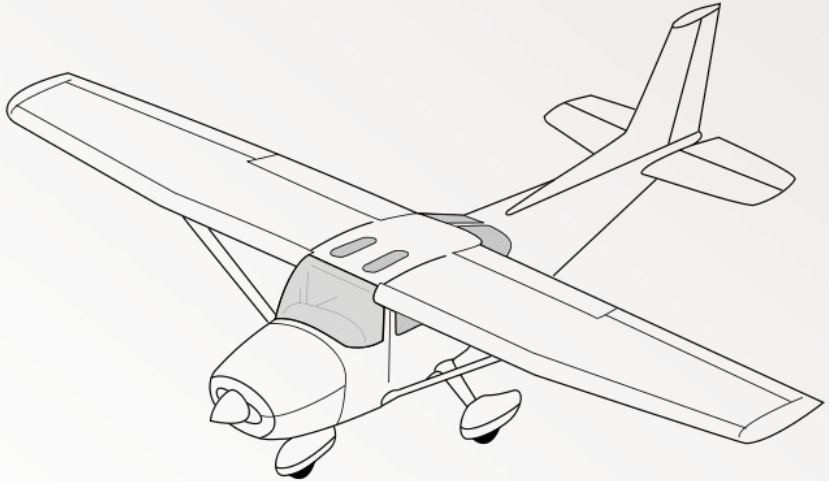
The 152 had a **9.6% fatality** rate
and a **15.4% injury rate**



BEST FOR PRIVATE

CESSNA 172-N

The 152 had a **11.3% fatality** rate
and a **19.7% injury rate**



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FURTHER RESEARCH

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Market Analysis of All Planes being Flown

Analysis of the Ideal Airplane Size for your Company

Any Questions?

Repo Available Here: https://github.com/mcumiskey/Aviation-Risk-Analysis

Interactive Dashboard: https://public.tableau.com/views/Aviation_Project_17242489618110/Dashboard1?:language=en-US&publish=yes&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link

Presented by Miles Cumiskey and Joey Barilla