

Data Science Flex 1 Project Presentation

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Business Context.

- **Broad Task:** *Identify aircrafts with the lowest safety risks for commercial and private aviation enterprises.*
- **Break it down into subtasks:**
 - Source historic aviation accidents data.
 - Establish the safety risk measures in context of the data available.
 - Identify aircrafts with lowest safety risks for commercial and private aviation.

Safety Data.

- *Data Source:*

We'll be using the National Transportation Safety Board's Aviation Accidents Dataset.

- *Safety Risks:*

We'll use average number fatalities and serious injuries as safety rank.

- *Possible aviation enterprises:*

We'll use flight purposes information to identify the most popular aviation enterprises.

Data Processing Steps.

1. Identifying Informative Columns :

Identified key columns for the analysis.

2. Dealing with Missing/Incomplete Information:

Filled in missing information in key columns based on other columns.

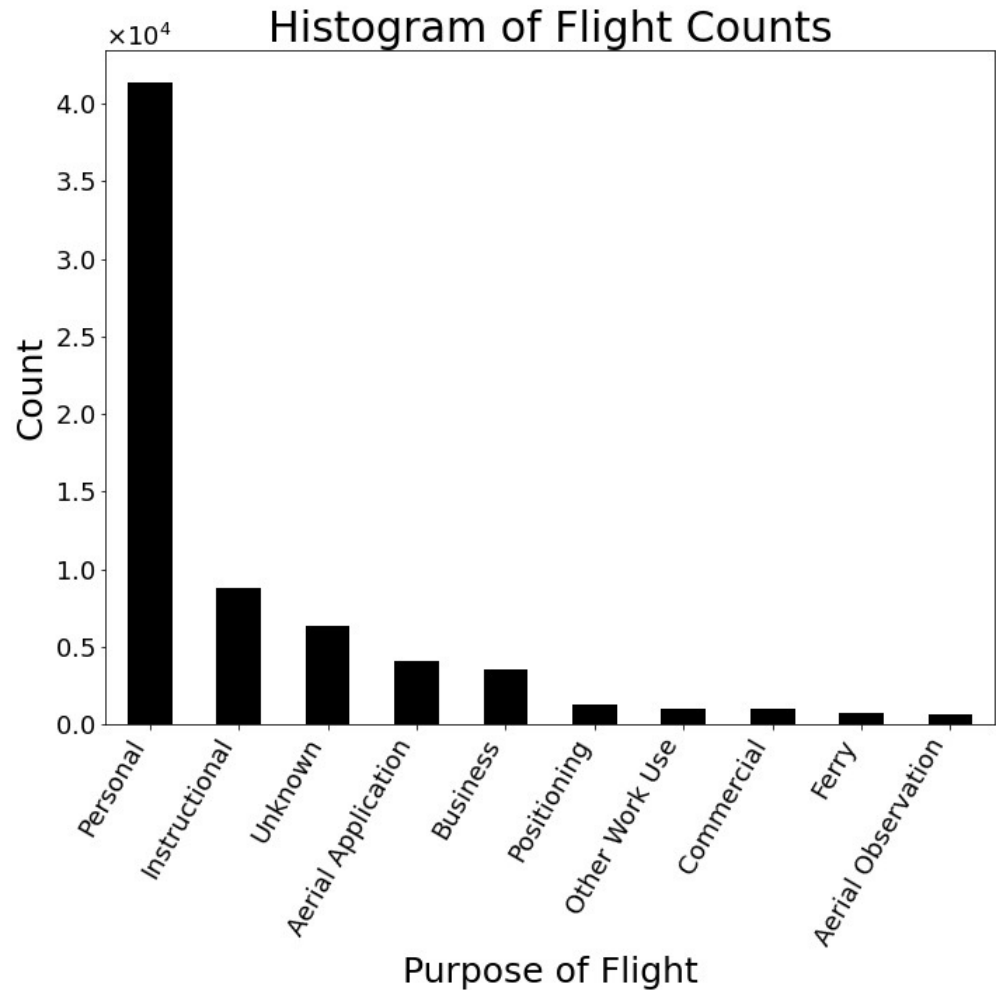
Removed duplicate entries for Makes and Models.

3. Identifying Relevant Timeframe:

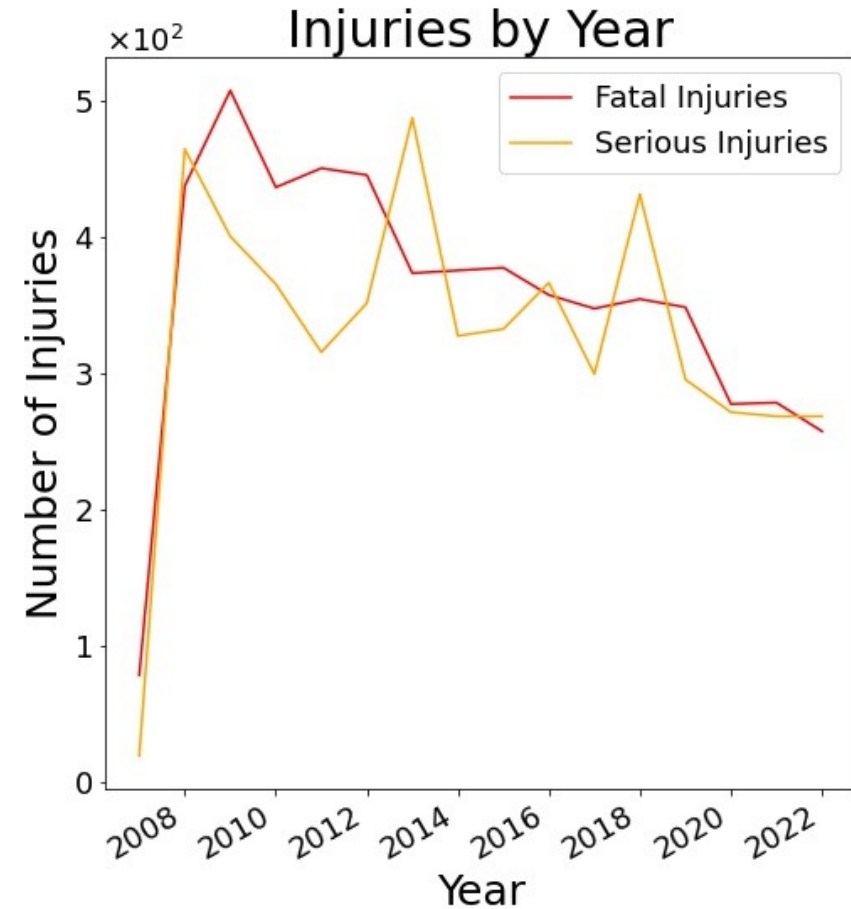
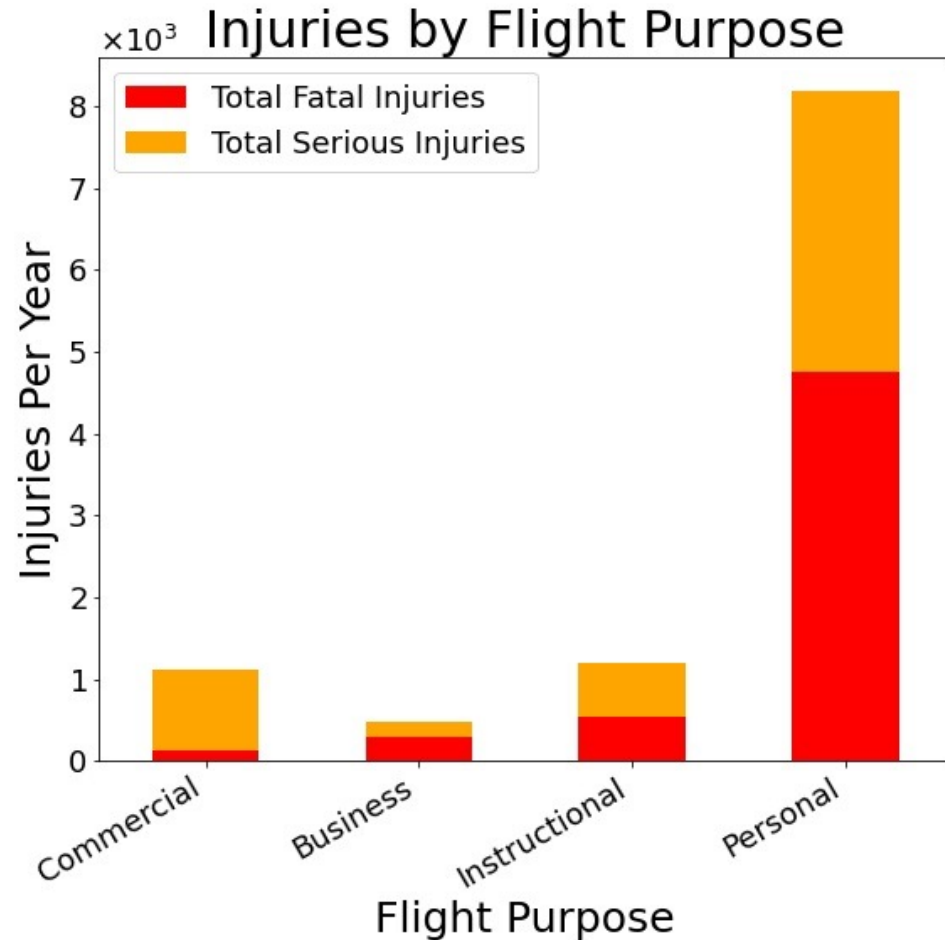
Identified the most informative and relevant timeframe for the analysis.

Top 10 Flight Categories.

1. Personal.
2. Instructional.
3. Business.
4. Commercial.



Exploratory Analysis: Flying Got Safer.

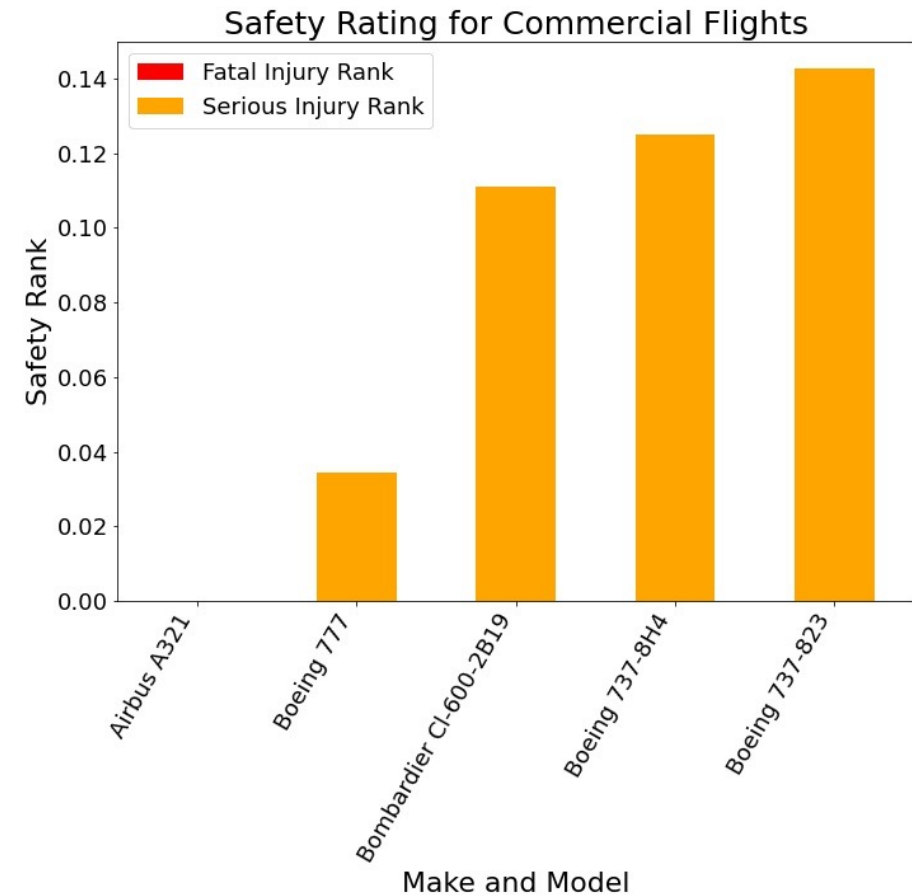


Computing Safety Rankings.

- Identify most common aircrafts for each flying category
- Compute averages for injuries.
- Order by the averages.

Safest Commercial Aircraft.

Aircraft	Avg Fatal	Avg Serious
Airbus A321	0	0
Boeing 777	0	0.03
Bombardier Cl-600-2B19	0	0.1
Boeing 737-8H4	0	0.12
Boeing 737-823	0	0.14



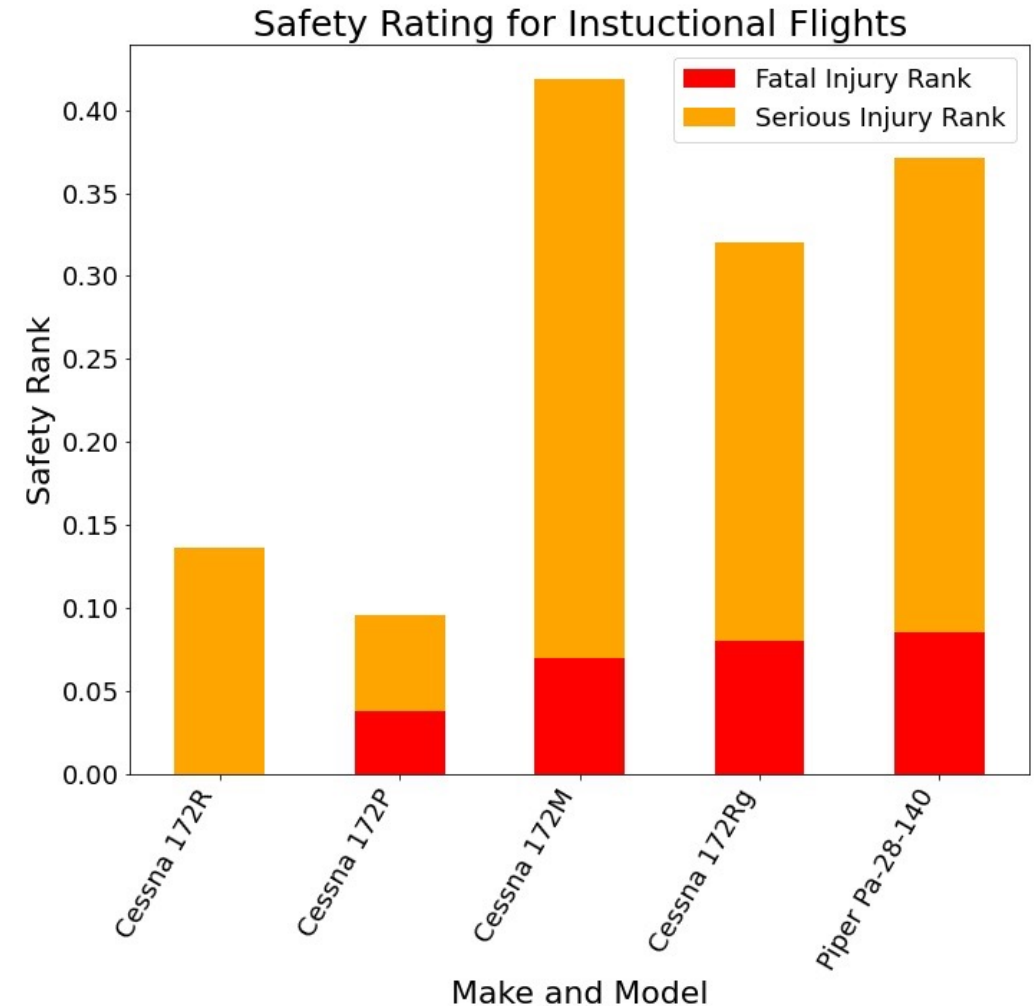
Safest Business Aircrafts.

Aircraft	Avg Fatal	Avg Serious
Cessna 208B	0	0
Piper Pa 46-350P	0	0
Piper Pa 18-150	0	0
Robinson R22	0	0
Cessna U206G	0	0.25



Safest Instructional Aircrafts.

Aircraft	Avg Fatal	Avg Serious
Cessna 172 R	0	0.14
Cessna 172 P	0.04	0.06
Cessna 172 M	0.07	0.35
Cessna 172 Rg	0.08	0.24
Piper Pa-28-140	0.085	0.29



Top Recommendations from Safety Perspective.

Commercial	Business	Instructional
Airbus A321*	Cessna 208B*	Cessna 172 R
Boeing 777	Piper Pa 46-350P*	<i>Cessna 172 P**</i>
Bombardier CRJ-900	Piper Pa 18-150*	<i>Cessna 172 M**</i>
Boeing 737-8H4	Robinson R22*	<i>Cessna 172 Rg**</i>
Boeing 737-823	Cessna U206G	<i>Piper Pa-28-140**</i>

*** Have no fatalities/serious injuries**

***Have non-zero fatalities*

Future Work.

- Align safety metrics with the IATA.
- Analyze accident description and exclude fatal accidents related to human error.
- Research aircraft Make and Model to further compact the dataset.

References.

- [Fatality Rates on IATA.](#)
- [NTSB Aviation Accidents.](#)

Contact Information.

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