# Airline Industry: Risk Assessment

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# Summary

Assessed accident risk when buying airplanes to start a commercial and private enterprise. We answer the following questions:

- What are the main risks of an accident?
- What airplanes makes are at high risk for accidents?
- Which make/model is the best option to start a company?
- What are extra factors we can consider?

# Outline

- Business Problem
- Data and Methods
- Results
- Conclusions

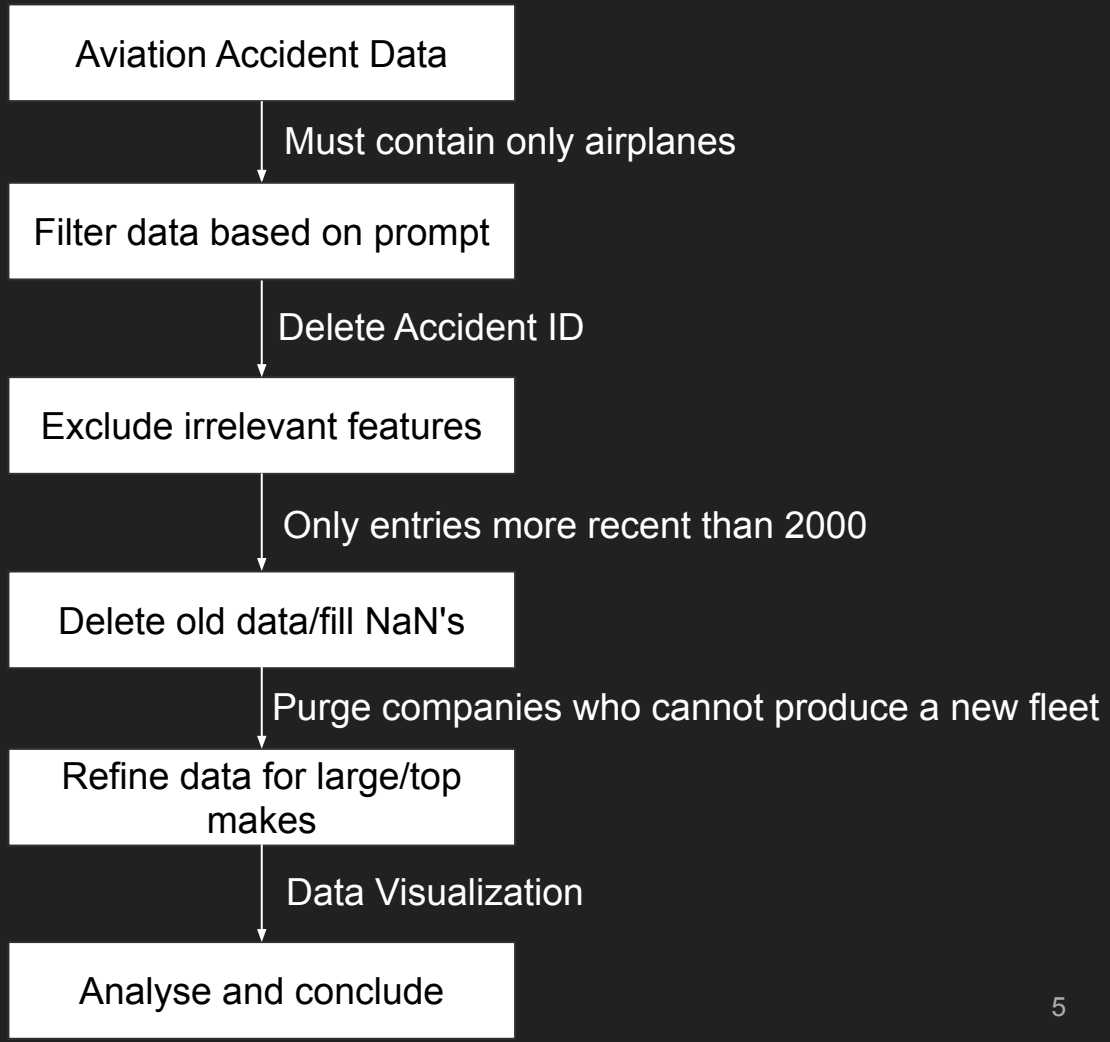
# Business problems

- Airlines are an industry of trust;
- Lots of options regarding fleet purchases;
- Accidents can lead to fatal business outcomes (See TWA).
    - High payouts for accidents (~$3,500,000 per victim)

| Case | Amount of victims | Settlement (In Millions of Dollars) | Average payout |
|---|---|---|---|
| American Airlines Flight 587 (2001) | 260 | $520 | $2,000,000 |
| Colgan Air Flight 3407 (2009) | 50 | $200 | $4,000,000 |
| Comair Flight 5191 (2006) | 50 | $295 | $5,900,000 |
| Alaska Airlines Flight 261 (2000) | 88 | $300 | $3,400,000 |
| TWA Flight 800 (1996) | 215 | $752 | $3,500,000 |
| SkyWest Airlines Flight 5569 (2007) | 13 | $26 | $2,000,000 |
| | | Total average | $3,466,667 |

# Data Understanding

Almost 90k data for aviation accidents starting from 1948.



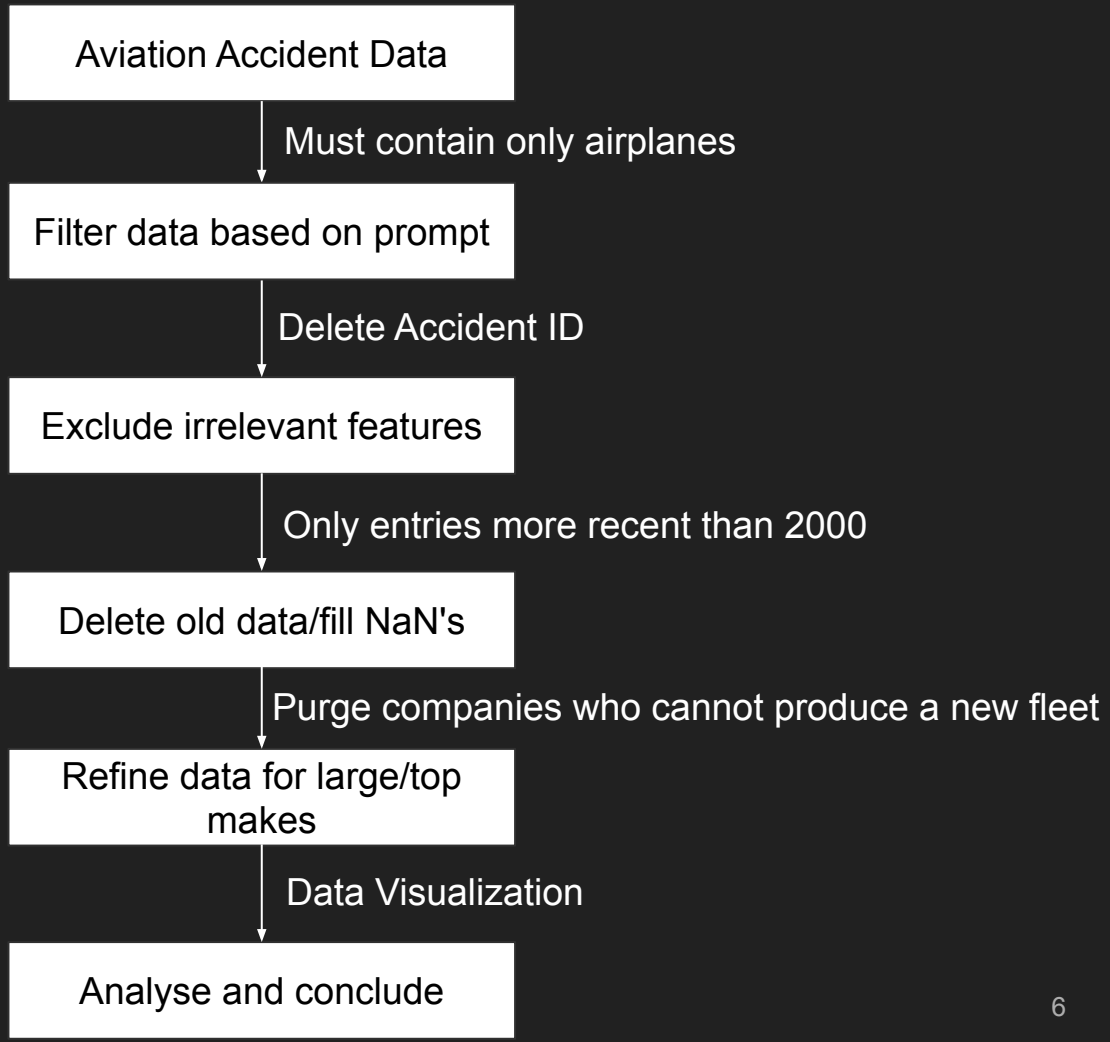
# Data Understanding

Almost 90k data for aviation accidents starting from 1948.

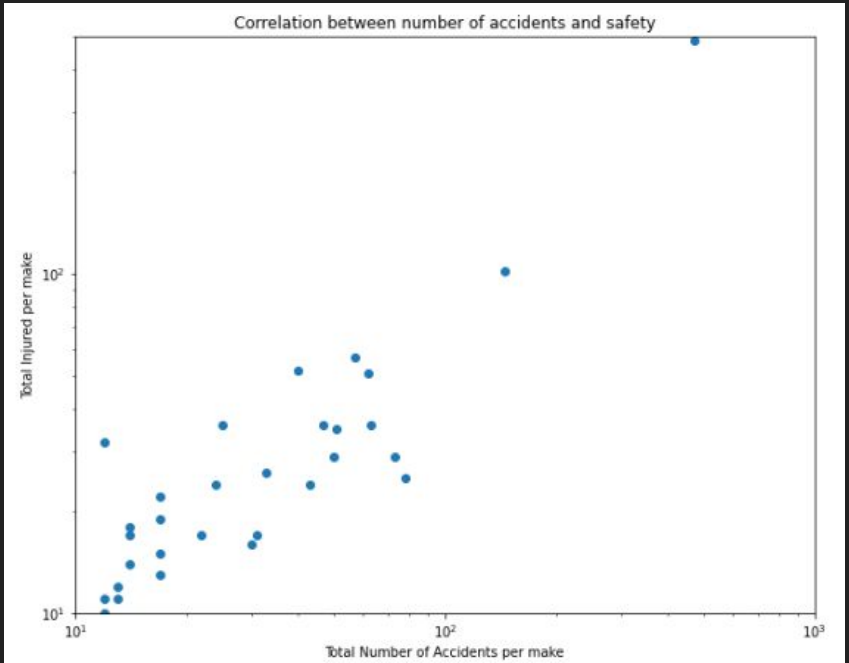
## Fun (?) Fact!

Out of 17303 accident data points at some point of filtering:

- 8792 (51%) blamed (in part) the pilot;
- 2685 (17%) blamed (in part) the engine malfunctioning.

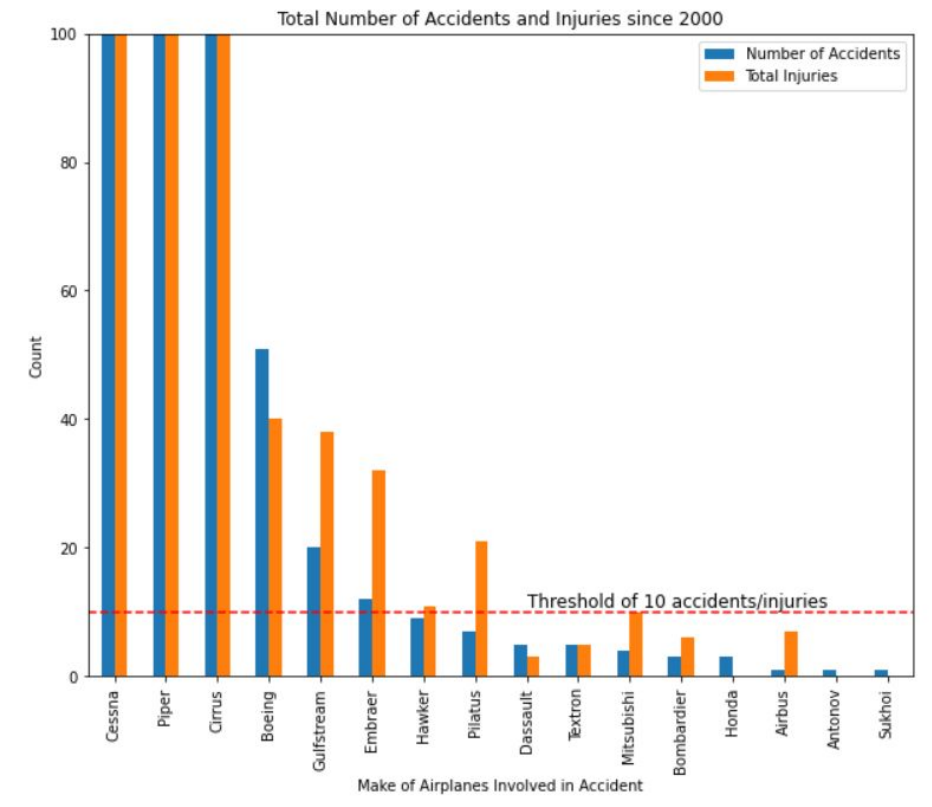


# Results




- The total number of accidents and total number of injured people are highly correlated (R=0.99);
- A lower number of accidents involving one maker's plane means less people might get injured in the future.

# Results

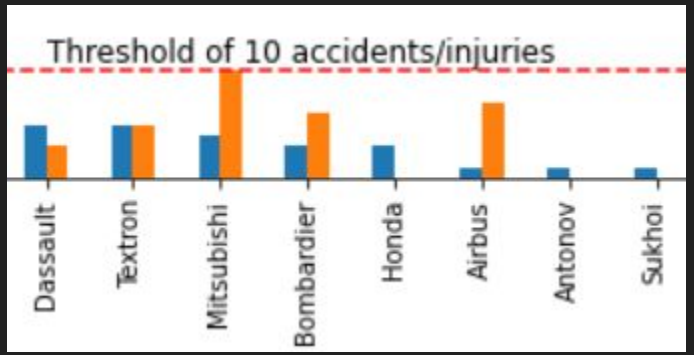



- Top makers have highly correlated number of injuries and accidents (filtered) too;

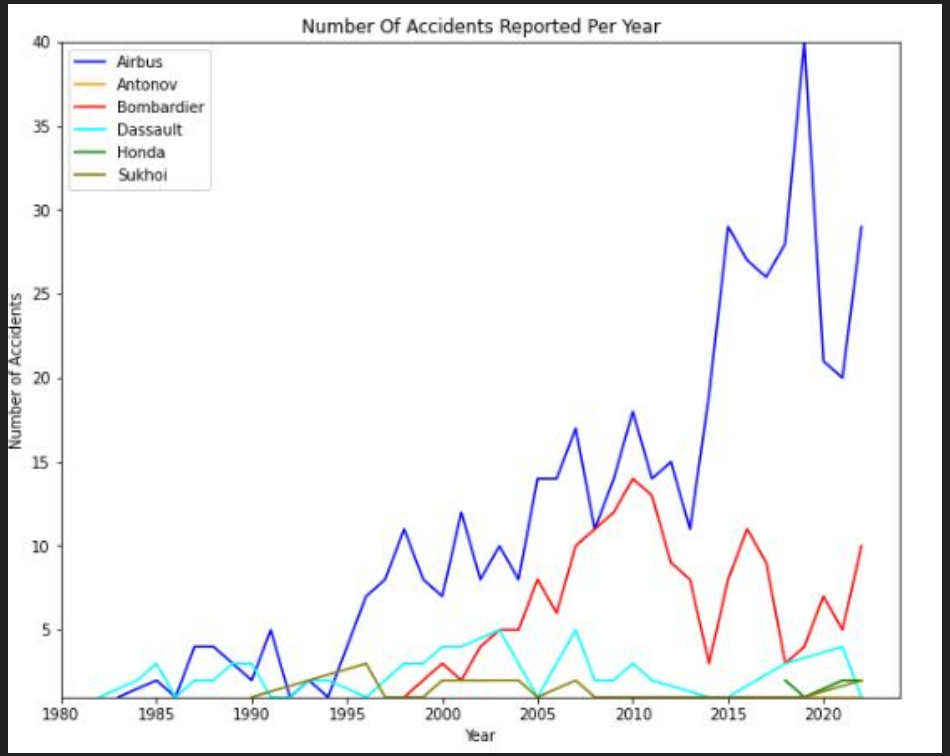
- We set a threshold to restrict even further the number of makers in order to make a decision.

# Results

- Most top manufacturers have many accidents and injuries with an increase over time;
- 7 of 16 top makers are below 10 accidents since 2000;
- Of those 7, Textron is also a manufacturer for companies with a high risk of accident (Beechcraft and Cessna) so we exclude it.



# Results




- Number of all accidents (not filtered) per maker has sharply increased since 2000's;
- We still can find companies with a very small amount of them.

# Conclusions

- Commercial fleet: Airbus **A320**
- Private fleet: Bombardier **CL-600-2b16**
- Track Hc-420 by Honda Aircraft Company for future purchases

Next Steps

- Assess long term maintenance cost
- Look at higher risk airports
- Include weather analysis

# Contacts

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Thank you!

Questions!