

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

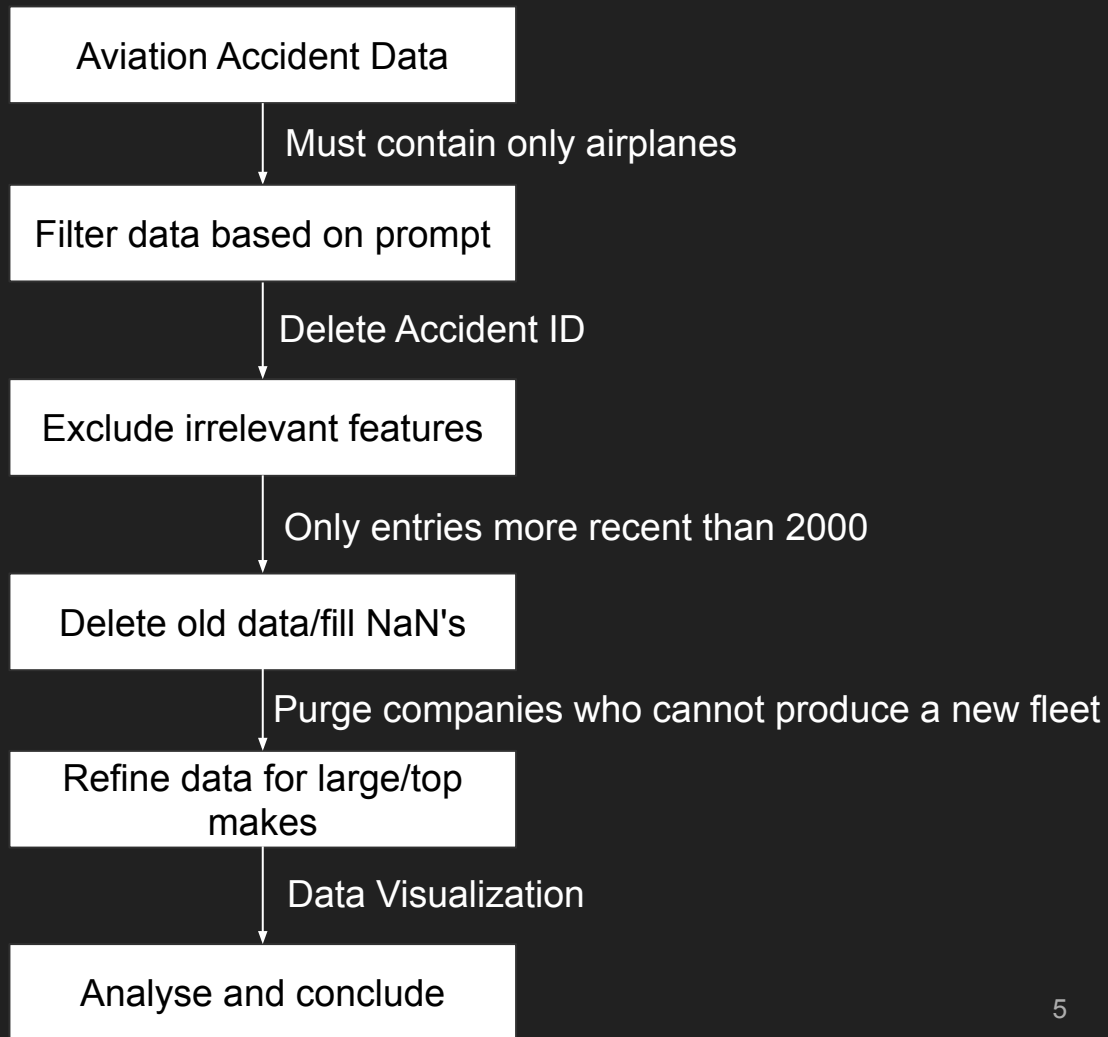
- Airlines are an industry of trust;
- Lots of options regarding fleet purchases;
- Accidents can lead to fatal business outcomes (See TWA).
 - High payouts for accidents (~\$3,500,000 per victim)



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.



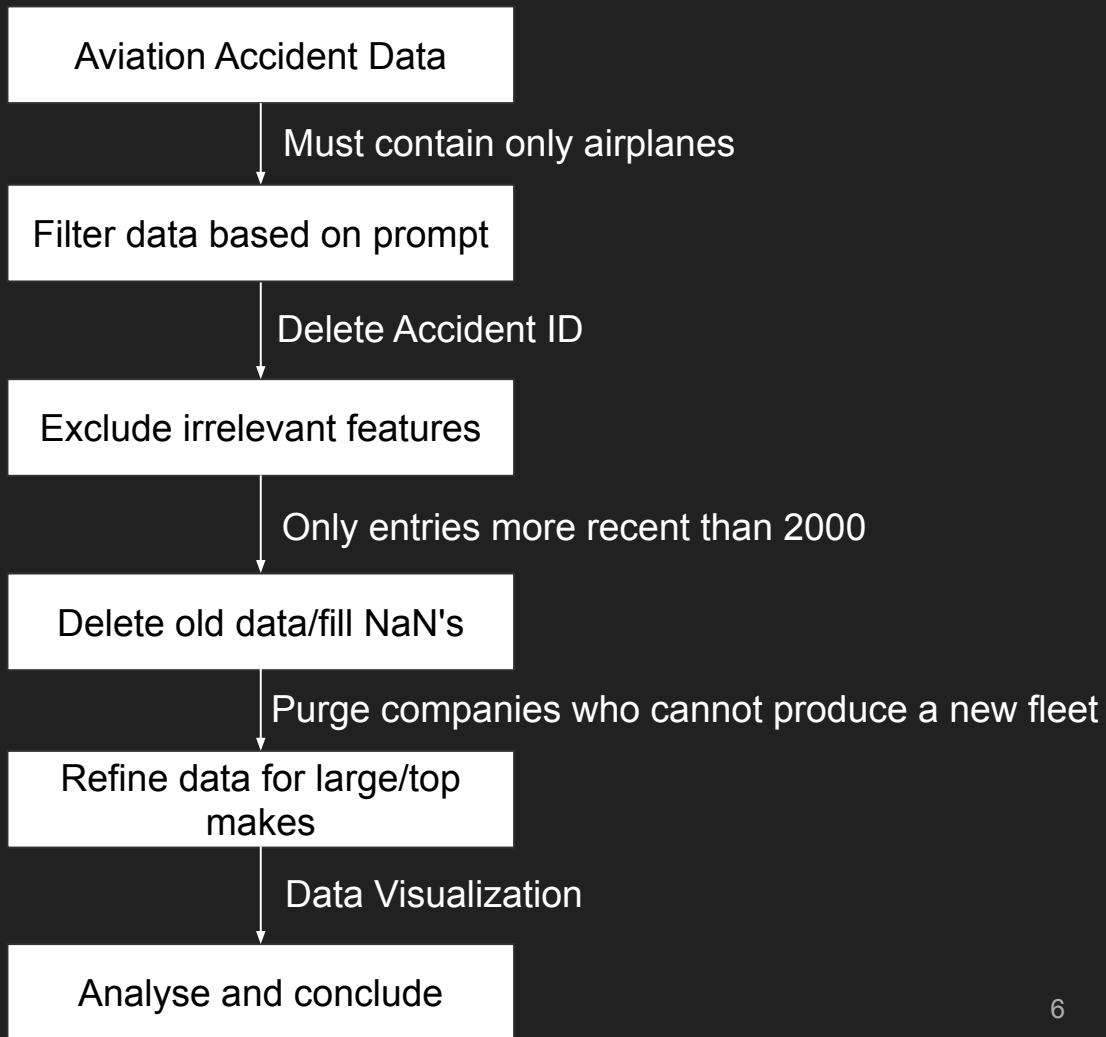
Data Understanding

Almost 90k data for aviation accidents starting from 1948.

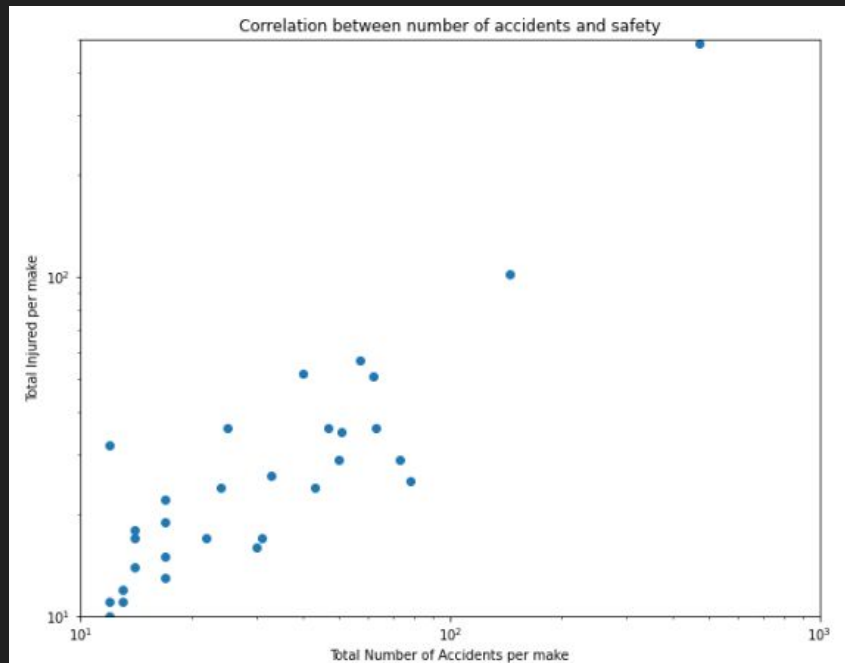
Fun (?) Fact!

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

- 8511 (49%) blamed (in part) the pilot;
- 14438 (83%) blamed (in part) the engine malfunctioning.

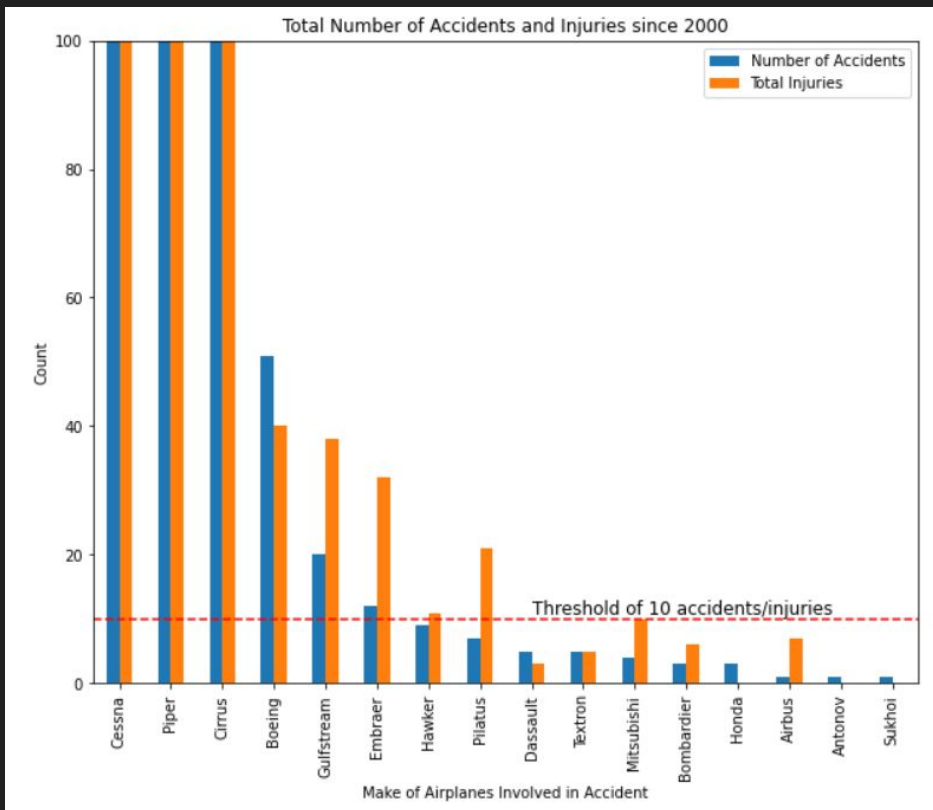


Results



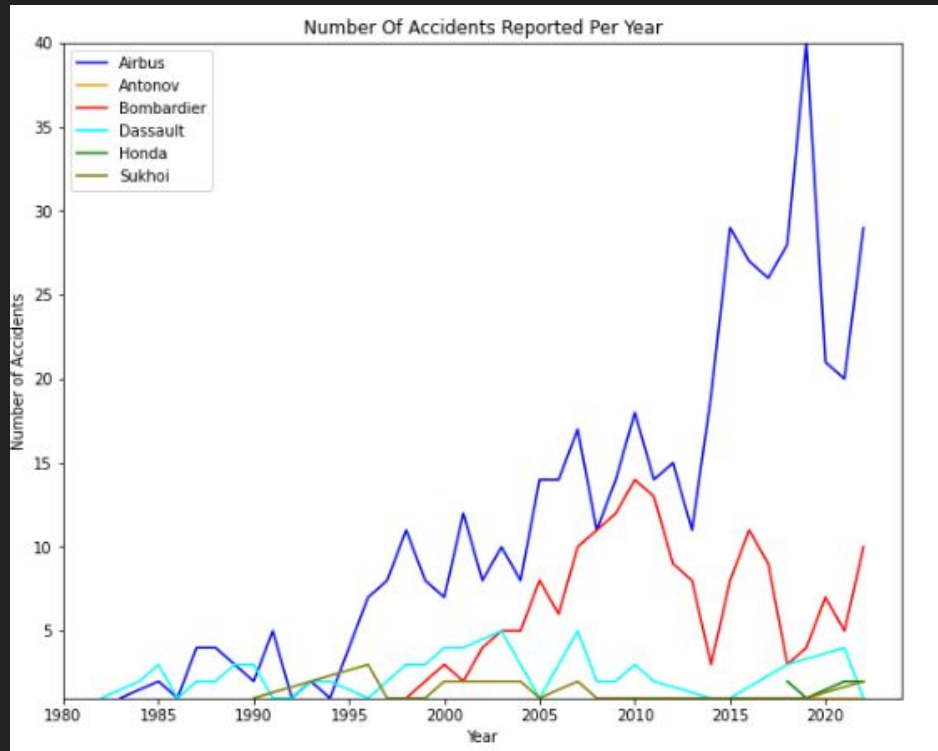
- The total number of accidents and total number of injured people are highly correlated ($R=0.99$);
- A lower number of accidents involving one maker's plane means less people might get injured in the future.

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.

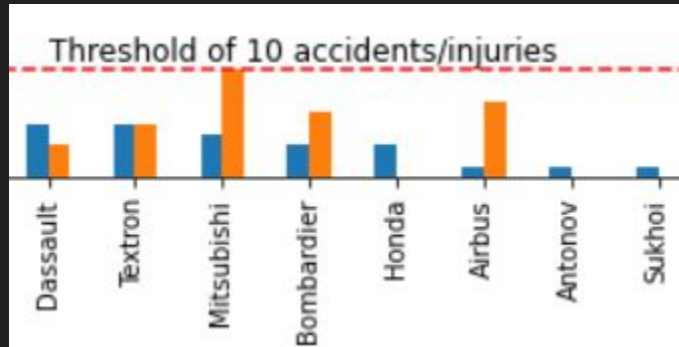
Results



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

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.



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!