AIRCRAFT RISK ANALYSIS

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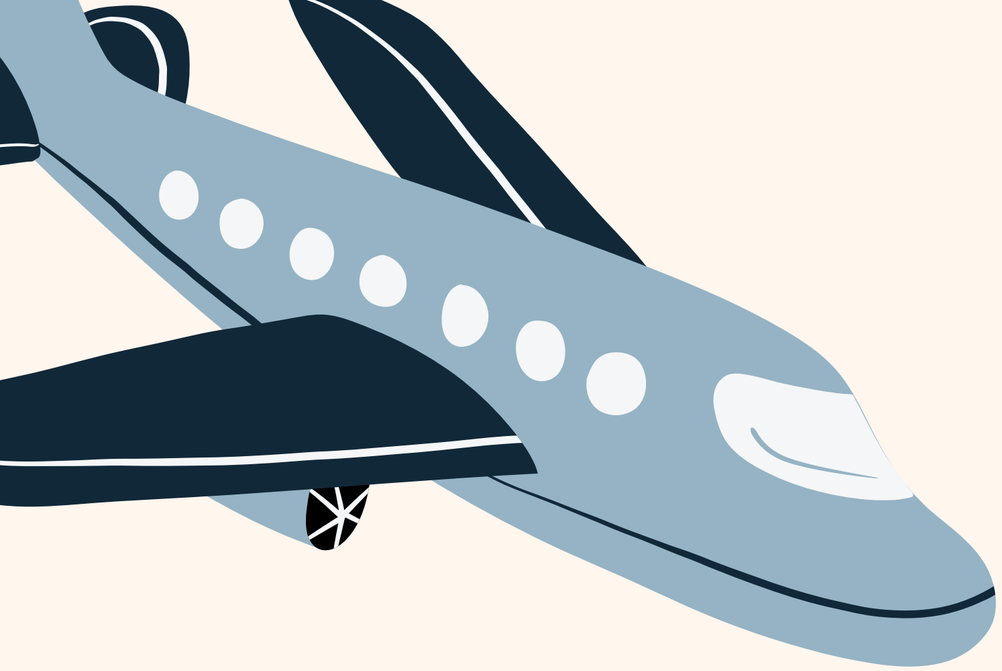

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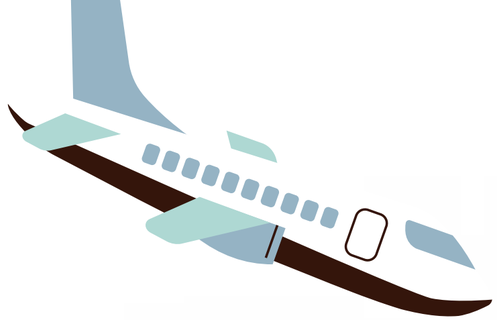
Business Understanding

The company is expanding into the aviation industry and needs the head of the new aviation division to understand:

1. What are the trends in aviation accidents?
2. What are the potential risks of aircraft?
3. What extent of injuries and damage types are caused by accidents?
4. Which aircraft types are the lowest risk profile to purchase for commercial and private enterprises?

Data Understanding

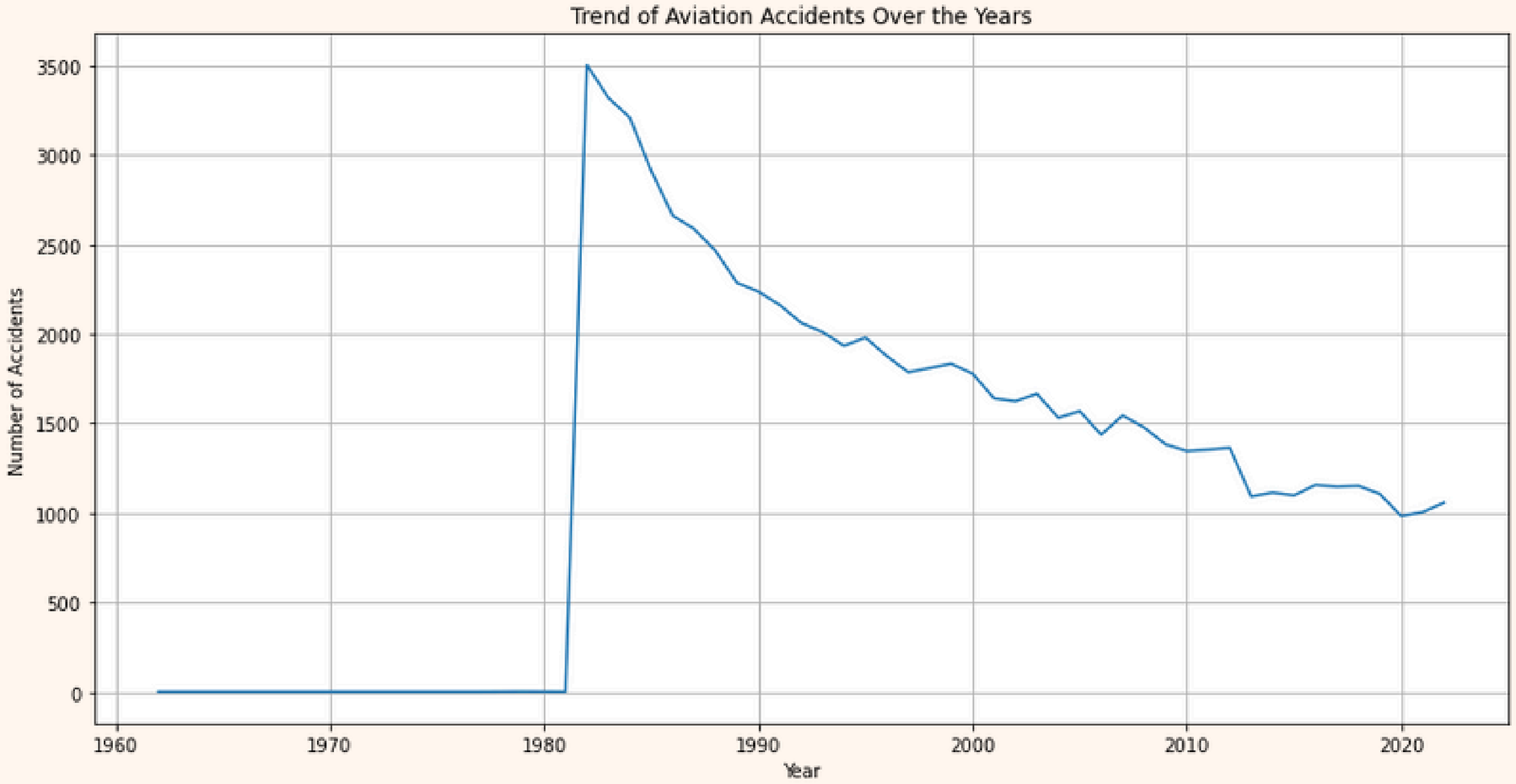


The dataset :

- Is sourced from the National Transportation Safety Board.
- Contains aviation accident data from 1962 to 2023.
- Includes various details such as aircraft type, injury severity, damage type, flight purpose, and location.

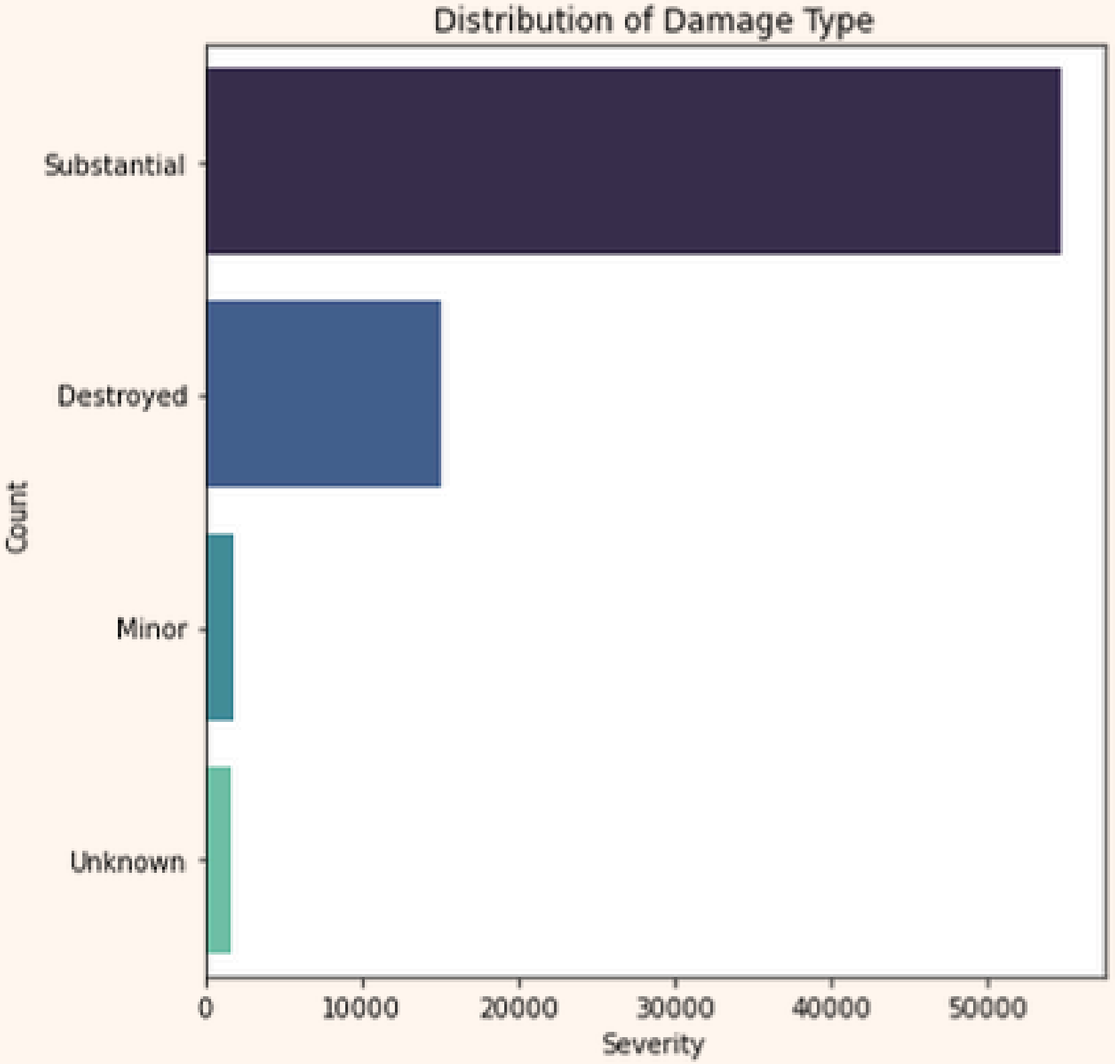
Most columns contain missing values and inconsistent data types necessitating thorough cleaning and preprocessing.

Data Analysis



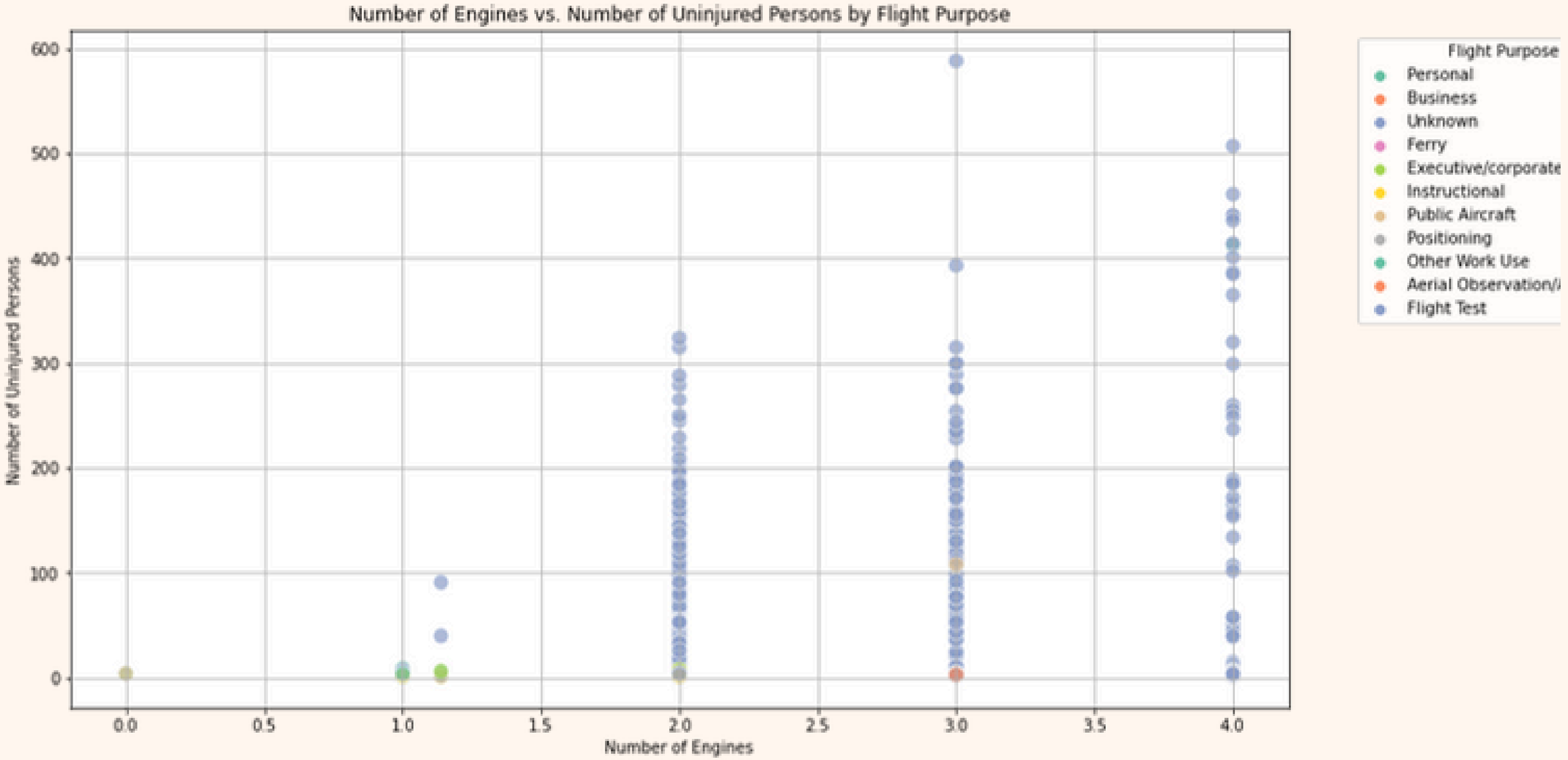
- Peak around the early 1980s, followed by a general decline.

Indicates improvements in aviation safety over time.



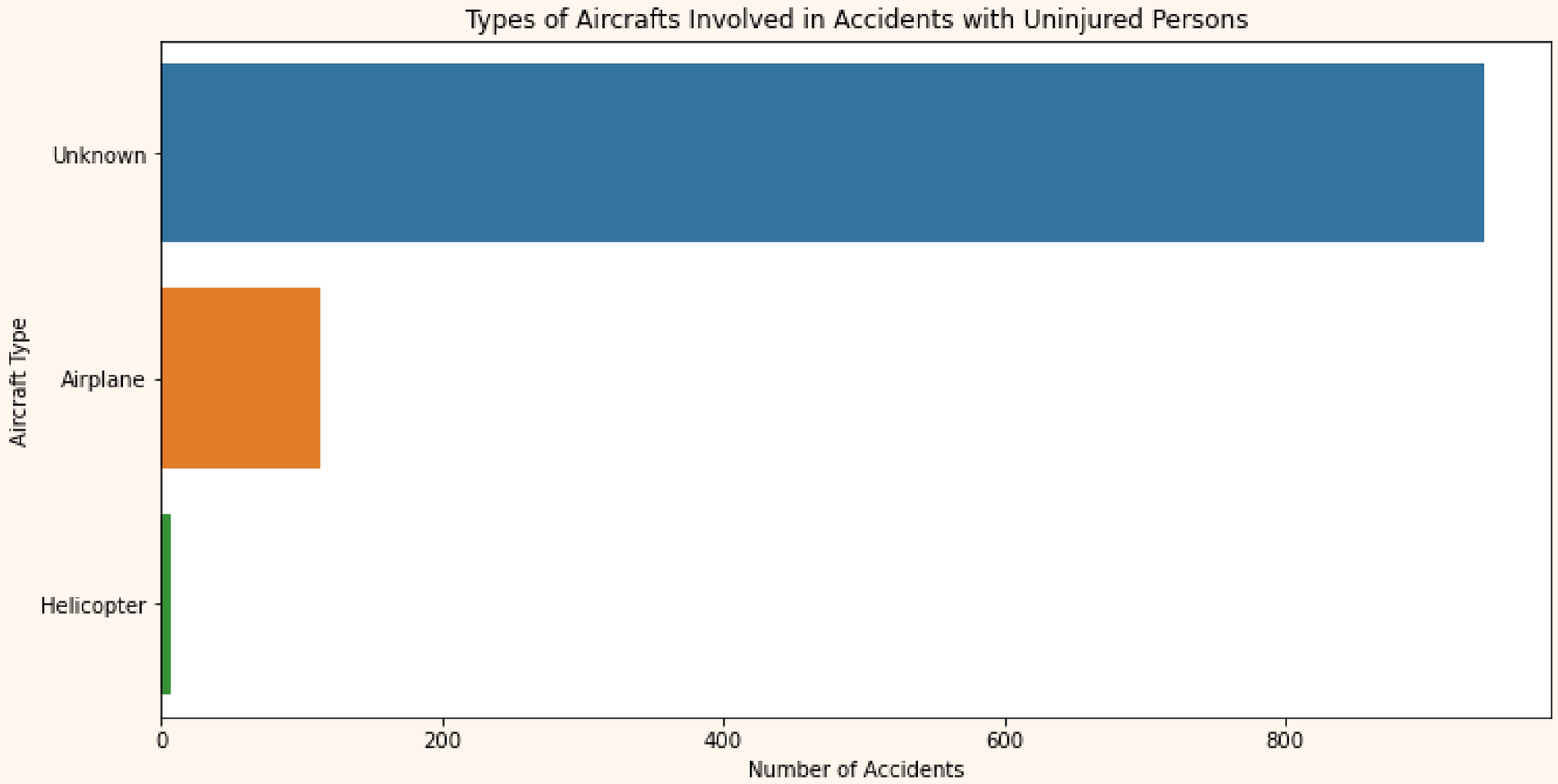
Majority of accidents result in severe fatal injuries.

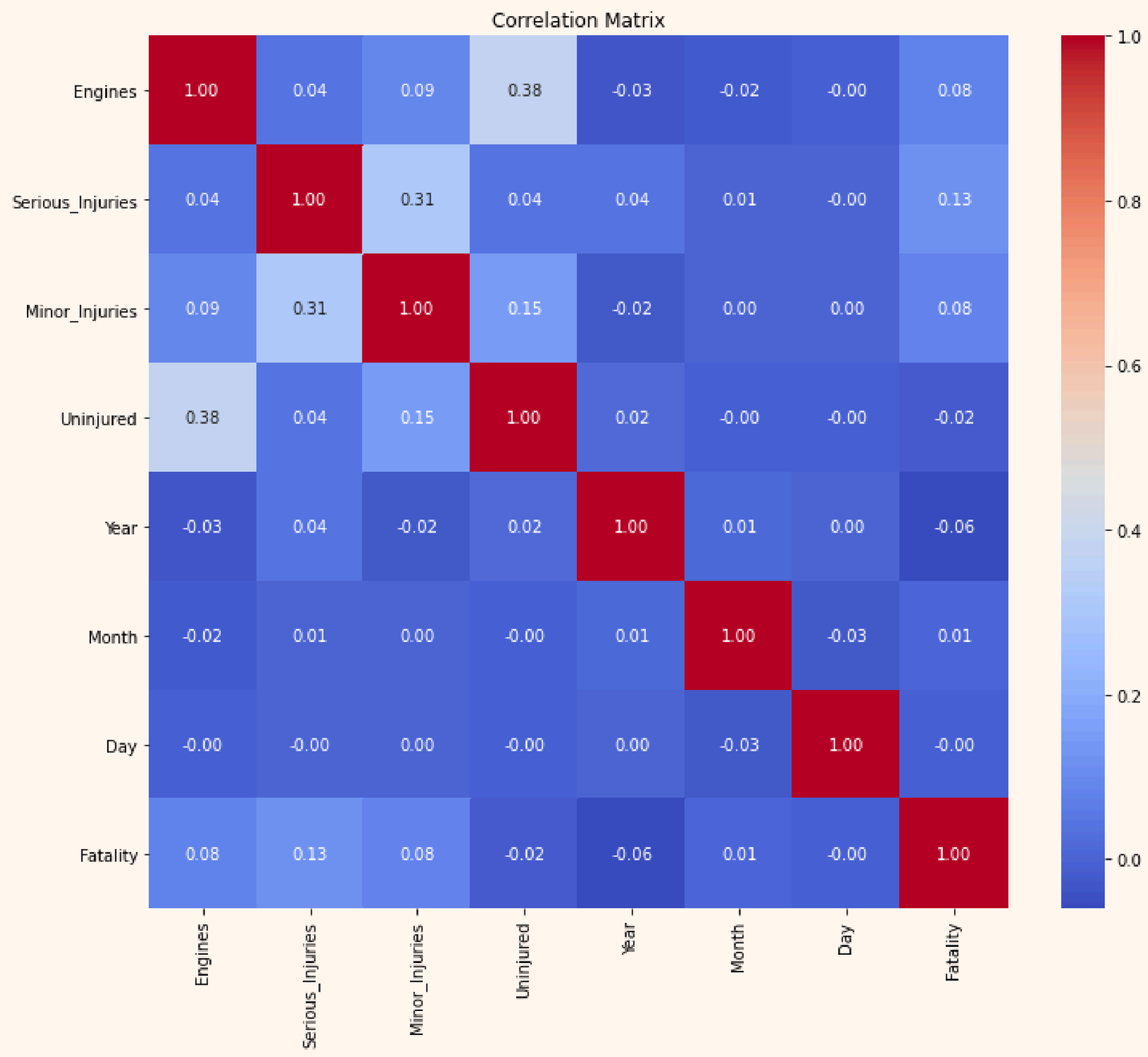
Substantial damage is the most prevalent type.



Single-engine aircraft used for private ventures or training present higher risks since they contain few counts of uninjured persons.

Airplanes and Helicopters are the most common aircraft types with records of uninjured persons.





- No strong correlation between the variables.
- The factors contribute independently to the outcomes of aviation accidents.

Don't Forget

It's important to consider multiple variables in risk assessment and decision-making.

Conclusion

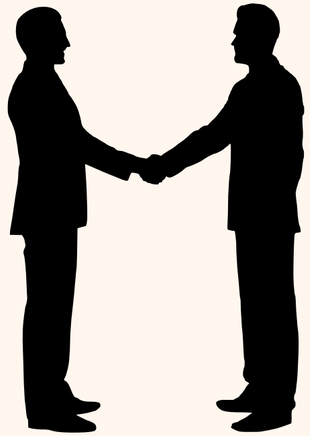
The analysis reveals several key insights:

1. A declining trend in aviation accidents over the years suggests improvements in safety practices.
2. Aircraft accidents often result in fatal injuries and substantial damage.
3. Airplanes and helicopters are the most common types involved in accidents with highest count of uninjured persons.
4. Aircrafts with fewer engines tend to have higher involvement in high risk accidents.
5. There is no strong correlation observed between different variables in aviation accidents.

Recommendation

Aircraft Type:

1. Airplane: Considering the prevalence of airplane accidents with uninjured persons, airplane exhibit the lowest risks.
2. Helicopter.



Flight Purposes (Top Models):

1. Personal: Cessna 210L.
2. Business: Cessna S550.
3. Ferry: CESSNA PA-31-310
4. Executive/corporate: Airplane, PIPER PA-31-350
5. Instructional: Airplane, PIPER PA-44-180
6. Public Aircraft: BEECH BE-200
7. Positioning: CESSNA 402C
8. Other Work Use: CESSNA MU2B
9. Aerial Observation/Application: AIR TRACTOR AT-401
10. Flight Test: PIPER PA-28-236

Next steps:

Thorough safety evaluations and continuous monitoring of safety metrics are essential to mitigate risks and ensure the success and safety of aviation operations.

THANK YOU

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