RISK EVALUATION FOR AVIATION DIVISION EXPANSION

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Summary

This analysis uses past aviation accident data to recommend the safest airplanes and helicopters for the new aviation division, focusing on safety for commercial and private operations.

Scope:

- Analyzed over 88,000 aircraft accident records.
- Focused on airplanes and helicopters.
- Measured risk through fatality rates and aircraft usage patterns.

Outline

- Business Problem
- Analysis & Results
- Recommendations
- Conclusion
- Next Steps

Business Problem

Challenge:

- Selecting aircraft that meet business goals without compromising safety.
- Understanding which makes/models minimize operational risk and liability.

Why It Matters:

- Safety performance influences insurance costs, fleet downtime, public trust, and pilot recruitment.

Analysis & Results

To identify low-risk aircraft—both airplanes and helicopters—using a calculated risk score based on injury rate, fatality rate, and damage severity.

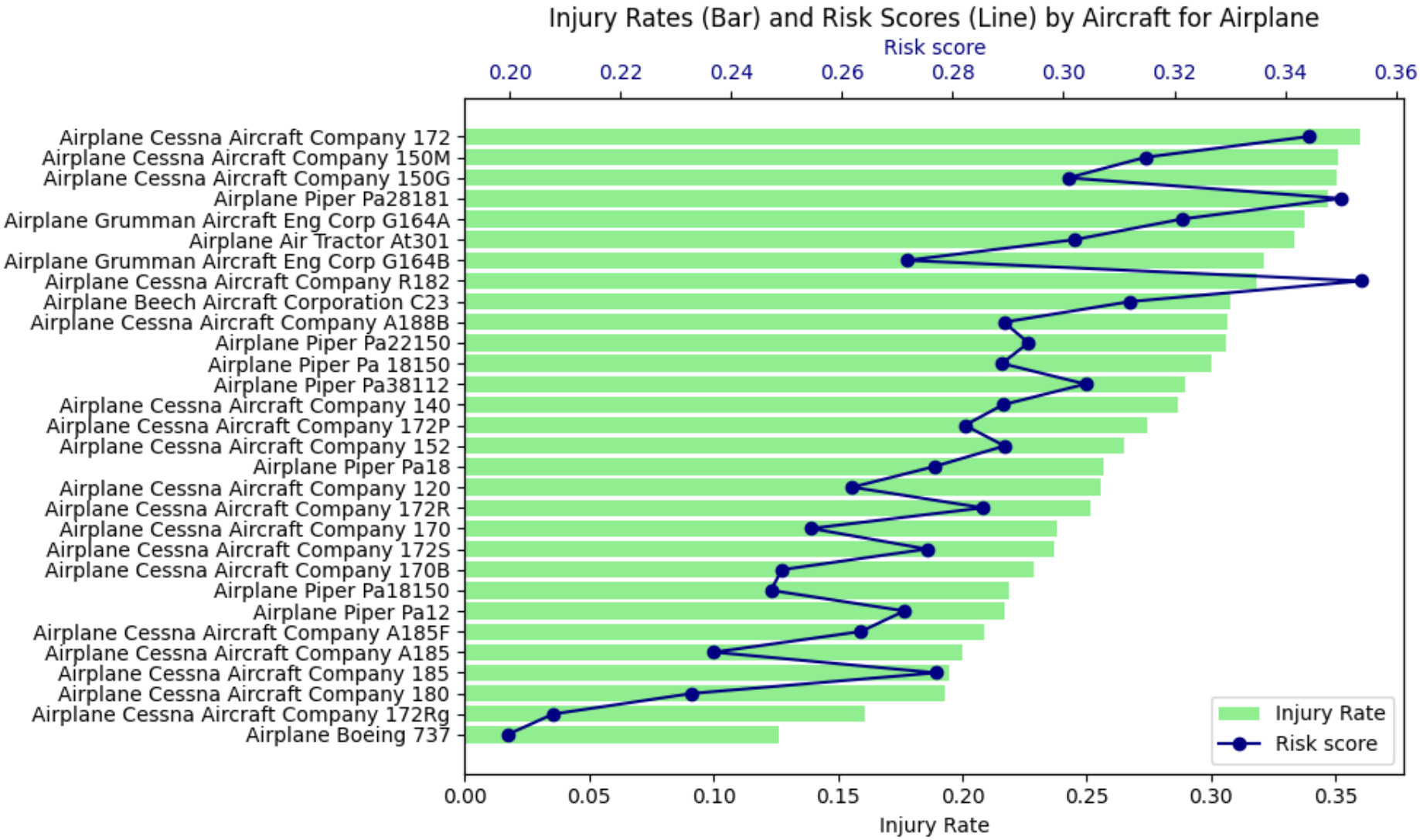
Approach:

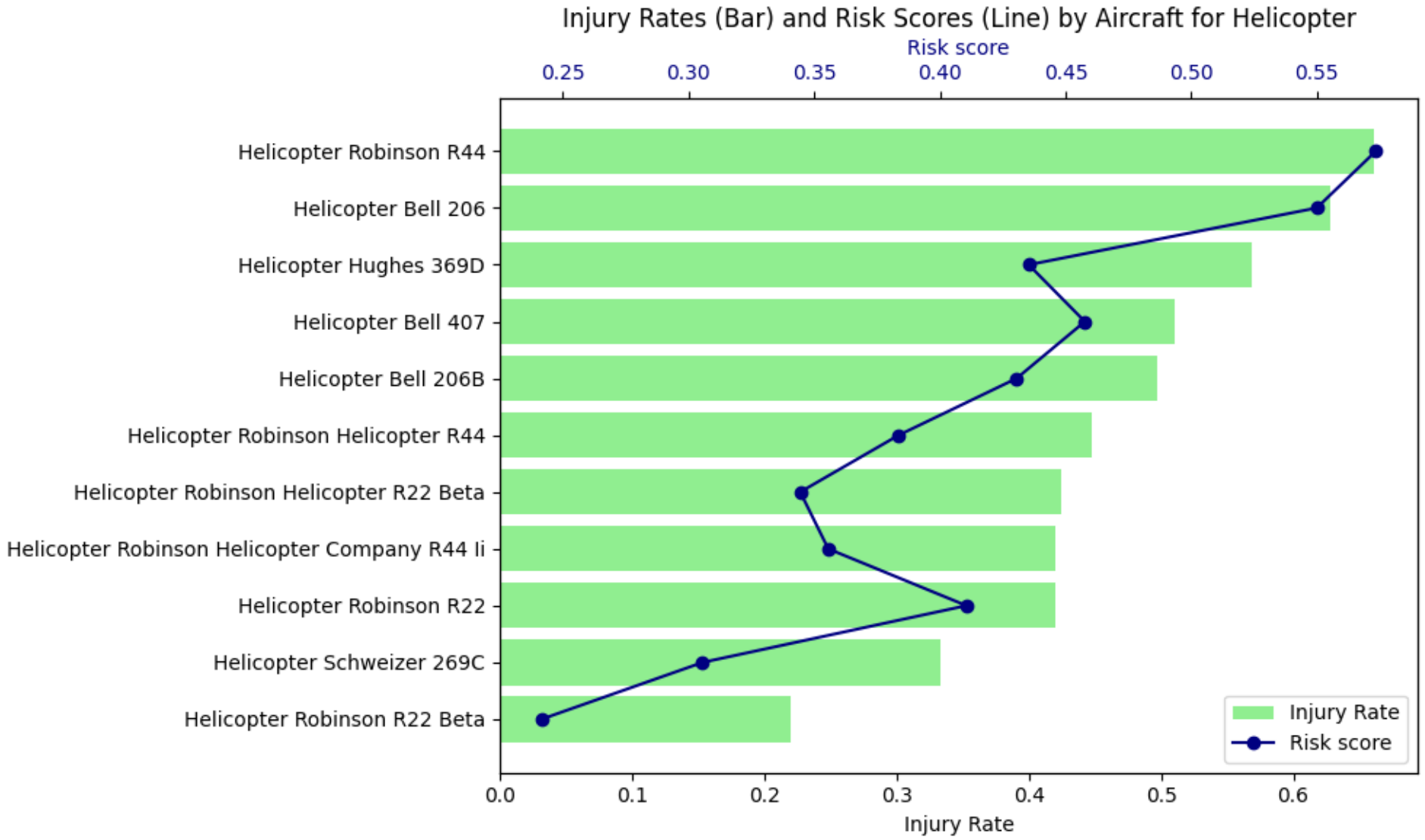
- Calculated a composite risk score per aircraft type.
- Compared airplanes vs. helicopters on key safety indicators.
- Focused on top 30 lowest-risk aircraft by injury rate.

Key Findings:

- Airplanes with consistently low injury and risk scores:
  - Boeing 737
  - Cessna 172RG
- Helicopters with lowest scores:
  - Robinson R22 Beta
  - Schweizer 269C

These aircraft demonstrate strong safety performance and should be prioritized in acquisition considerations.


Injury Rates (Bar) and Risk Scores (Line) by Aircraft for Airplane
Risk score
0.20
0.22
0.24
0.26
0.28
0.30
0.32
0.34
0.36
Airplane Cessna Aircraft Company 172
Airplane Cessna Aircraft Company 150M
Airplane Cessna Aircraft Company 150G
Airplane Piper Pa28181
Airplane Grumman Aircraft Eng Corp G164A
Airplane Air Tractor At301
Airplane Grumman Aircraft Eng Corp G164B
Airplane Cessna Aircraft Company R182
Airplane Beech Aircraft Corporation C23
Airplane Cessna Aircraft Company A188B
Airplane Piper Pa22150
Airplane Piper Pa 18150
Airplane Piper Pa38112
Airplane Cessna Aircraft Company 140
Airplane Cessna Aircraft Company 172P
Airplane Cessna Aircraft Company 152
Airplane Piper Pa18
Airplane Cessna Aircraft Company 120
Airplane Cessna Aircraft Company 172R
Airplane Cessna Aircraft Company 170
Airplane Cessna Aircraft Company 172S
Airplane Cessna Aircraft Company 170B
Airplane Piper Pa18150
Airplane Piper Pa12
Airplane Cessna Aircraft Company A185F
Airplane Cessna Aircraft Company A185
Airplane Cessna Aircraft Company 185
Airplane Cessna Aircraft Company 180
Airplane Cessna Aircraft Company 172Rg
Airplane Boeing 737
Injury Rate
Risk score
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
Injury Rate


Injury Rates (Bar) and Risk Scores (Line) by Aircraft for Helicopter
Risk score
0.25
0.30
0.35
0.40
0.45
0.50
0.55
Helicopter Robinson R44
Helicopter Bell 206
Helicopter Hughes 369D
Helicopter Bell 407
Helicopter Bell 206B
Helicopter Robinson Helicopter R44
Helicopter Robinson Helicopter R22 Beta
Helicopter Robinson Helicopter Company R44 Ii
Helicopter Robinson R22
Helicopter Schweizer 269C
Helicopter Robinson R22 Beta
Injury Rate
Risk score
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Injury Rate

Recommendations

Based on the safety analysis, it is recommended that the aviation division prioritize acquiring **Boeing 737** aircraft for commercial operations and **Robinson R22 Beta** helicopters for light-duty roles. Both models exhibit the lowest injury rates and risk scores in their categories, indicating strong safety performance. Begin with a small, well-trained fleet to ensure safe, controlled deployment.

Conclusion

This analysis provided data-driven insights into aircraft safety profiles, enabling more informed acquisition decisions.
Notably, aircraft such as the Boeing 737 demonstrate high operational safety, with a significant number of incidents resulting in no or minor injuries.

Key Findings:

1. Procure newer 737s and R22 Betas from reliable suppliers.
2. Develop comprehensive training for pilots and crews.
3. Analyze demand for commercial routes (737) and niche services (R22 Beta).
4. Implement a safety tracking system for ongoing risk assessment.

Thank You !

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