Aviation Safety Insights: Guiding Smart Investment Decisions

Using data to support safe and informed entry into the aviation industry

Presented by:

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Project Overview: Using Data to Guide Safer Aviation Investments

- This presentation walks you through how we used real aviation safety data to understand risks.
- We cleaned and analyzed the data to uncover meaningful patterns.
- Based on these insights, we make clear business recommendations to support strategic decision-making.

Why Safety Data Matters in Aviation Business Decisions

- Our company is expanding into aviation and needs to select safe, reliable aircraft.
- Safety outcomes like injury and fatality rates vary greatly by aircraft type, build, and purpose.
- The goal is to use data to reduce risk and guide aircraft purchasing and operational decisions.

Understanding the Aviation Dataset

- We used real-world aviation incident data containing over 80,000 records.

- Key columns analyzed:

i. Aircraft Make, Category, Damage Level

ii. Injury Severity, Total Onboard, Fatalities

iii. Purpose of Flight (e.g., Business, Instructional)

- Many entries had missing or inconsistent data, especially in critical fields like build type and purpose.

How We Cleaned and Prepared the Data for Analysis

- I filled missing values thoughtfully:

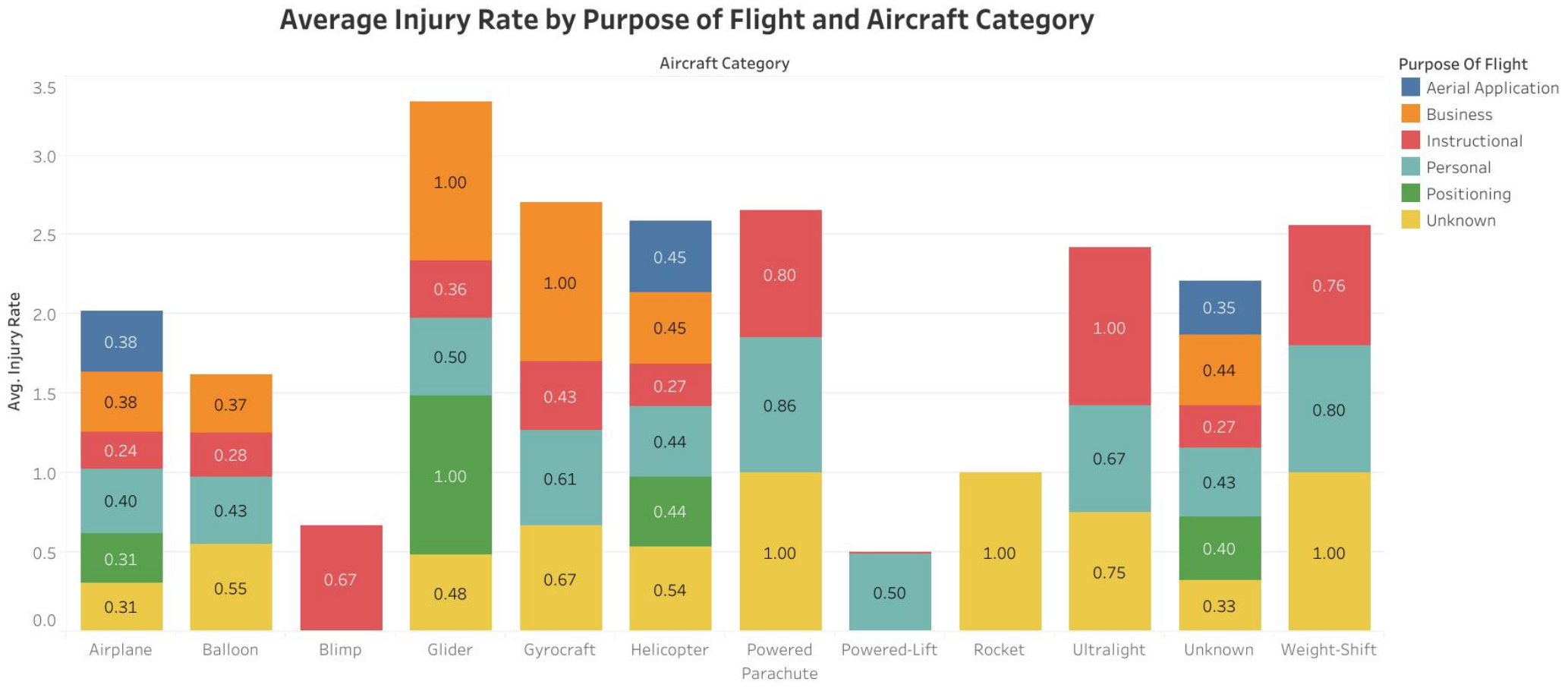
i. Used "Unknown" for categorical gaps

ii. Used median for numeric gaps

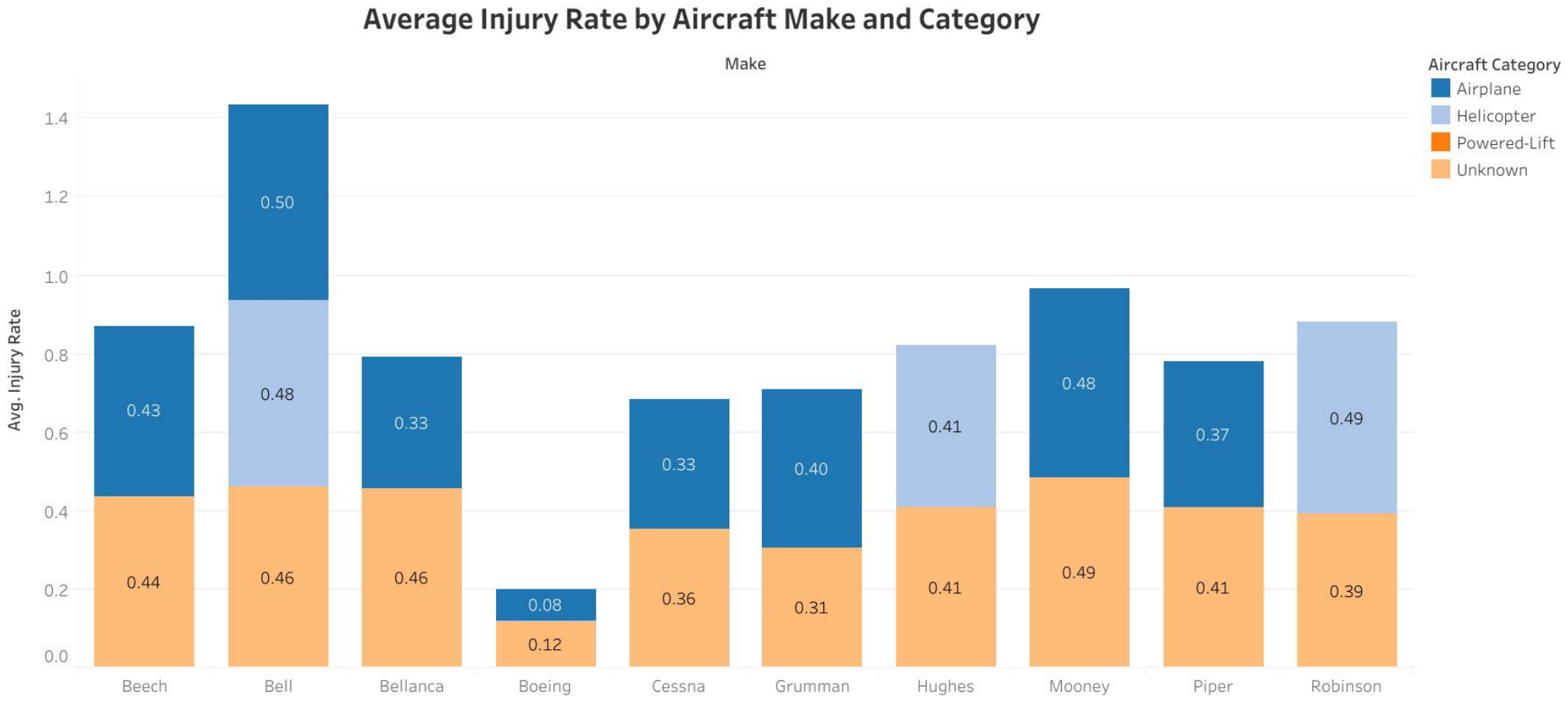
iii. Standardized inconsistent entries (e.g., capitalizations, typos)

- Created new metrics, like Injury Rate, Total Onboard, for clearer analysis

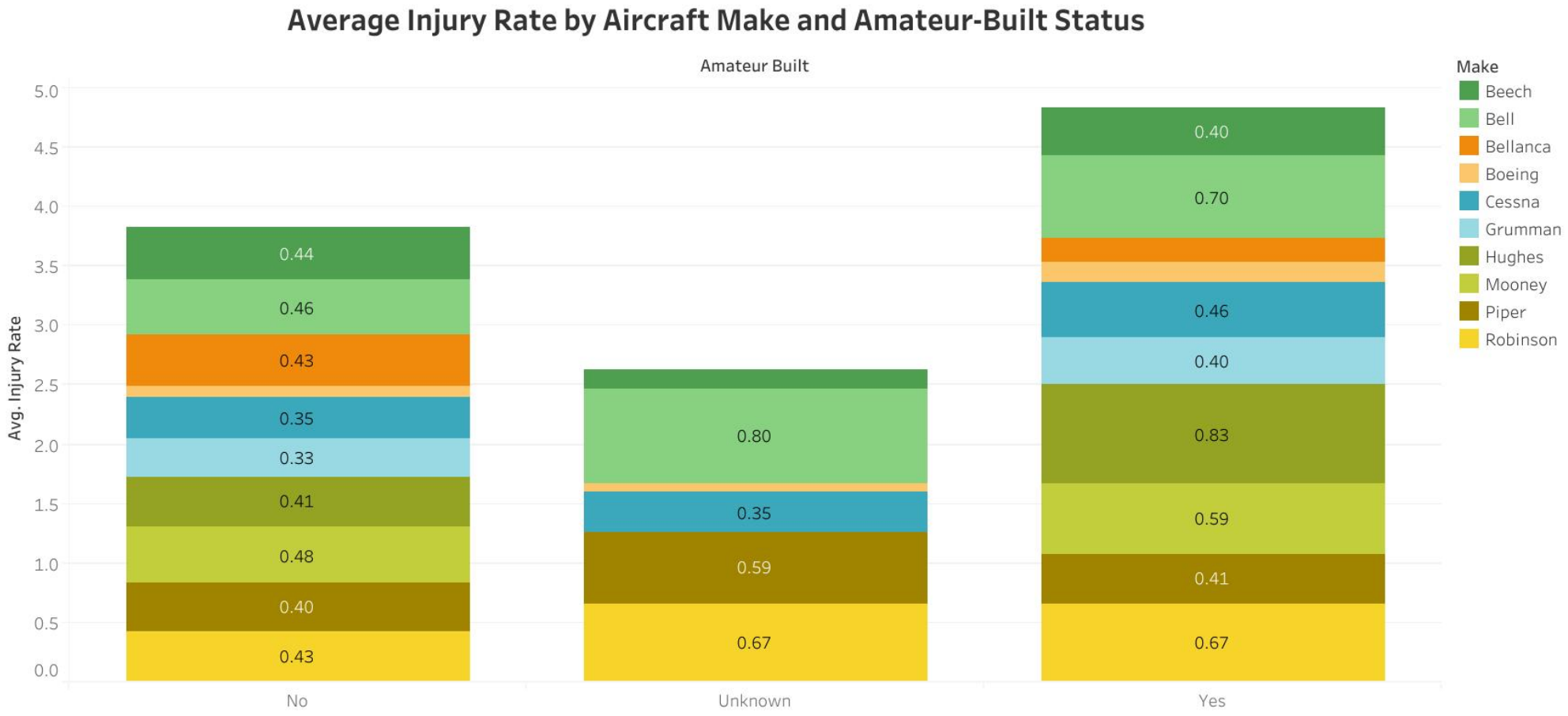
Some of the Data Visualizations that were analyzed:



The Second Visualization:



The Third Visualization:



What the Data Tells Us About Aircraft Safety

- From the first visualization, we can say that Instructional and personal flight purposes, especially with helicopters, have the highest injury rates

- From the second one, Professionally-built airplanes, especially from Boeing and Bellanca, have the lowest injury rates

- From the third visualization we can say that Amateur-built aircraft tend to show higher risk

Actionable Recommendations Based on Safety Insights

1. Invest in professionally-built airplanes from trusted manufacturers (e.g., Boeing, Bellanca)

2. Avoid or carefully vet amateur-built aircraft before purchase

3. Limit use of helicopters and other high-risk aircraft categories

4. Use injury rate as a key decision metric when choosing aircraft

5. Standardize and improve how flight data is recorded across the fleet

Strategic Next Steps for the Business

- Review current fleet or planned acquisitions in light of these insights
- Apply these findings to vendor selection, insurance planning, and safety protocols
- Improve data tracking systems to eliminate “Unknown” entries moving forward
- Set injury rate thresholds for aircraft approval

Thank You – Questions and Contact Information

- Let’s open the floor for questions!

- If you'd like to follow up:

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