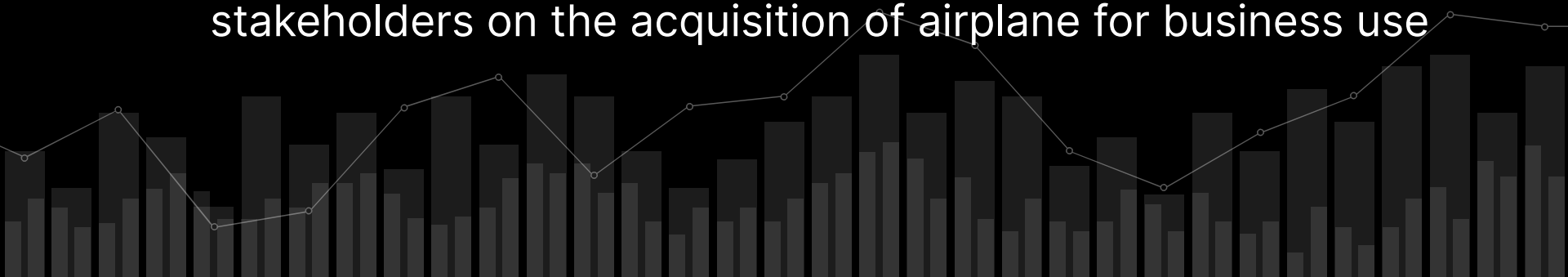
INTRODUCTION

- Who are we?
  - We are TransOrgo! A new subsidiary of the Geisinger Permanente hospital network
- What is our mission?
  - Cross-country aerial transportation of organs and other time-sensitive biological material for emergency procedures

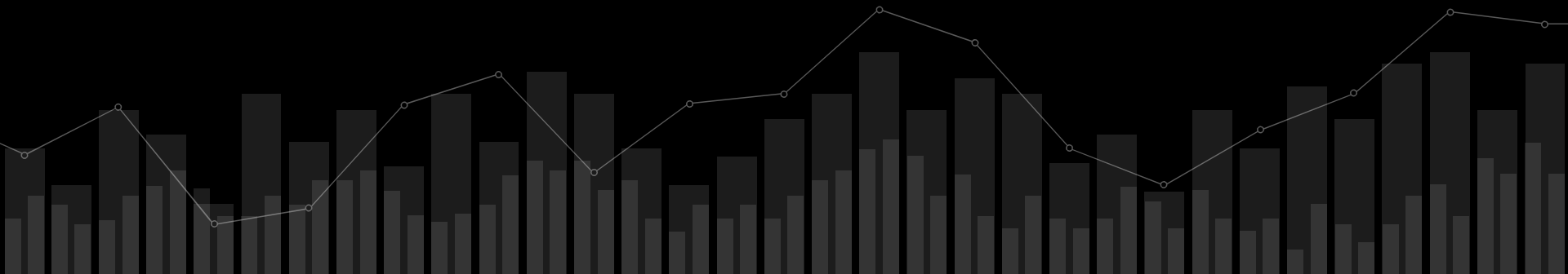
Airplane Acquisition: Risk Assessment

- As a new company, the data science team has been tasked to assess the risk of purchasing and operating airplanes
- This presentation involves three recommendations to the stakeholders on the acquisition of airplane for business use



The Data

- To assess these risks, we will use a dataset from the National Transportation Safety Board
- Civil Aviation and accidents in the U.S. and International waters from 1962 - 2023



ANALYSIS

- Clean the data
  - Remove unnecessary columns
  - Filter by
    - Airplanes
    - Non-Amateur Built
- Proportional Analysis
  - Test if any variables within the data had a significantly greater chance of “Fatal” or “Serious” incidents
  - “Serious” and “Fatal” incidents were emphasized because they would cause the greatest financial stress to the company

Recommendation #1:

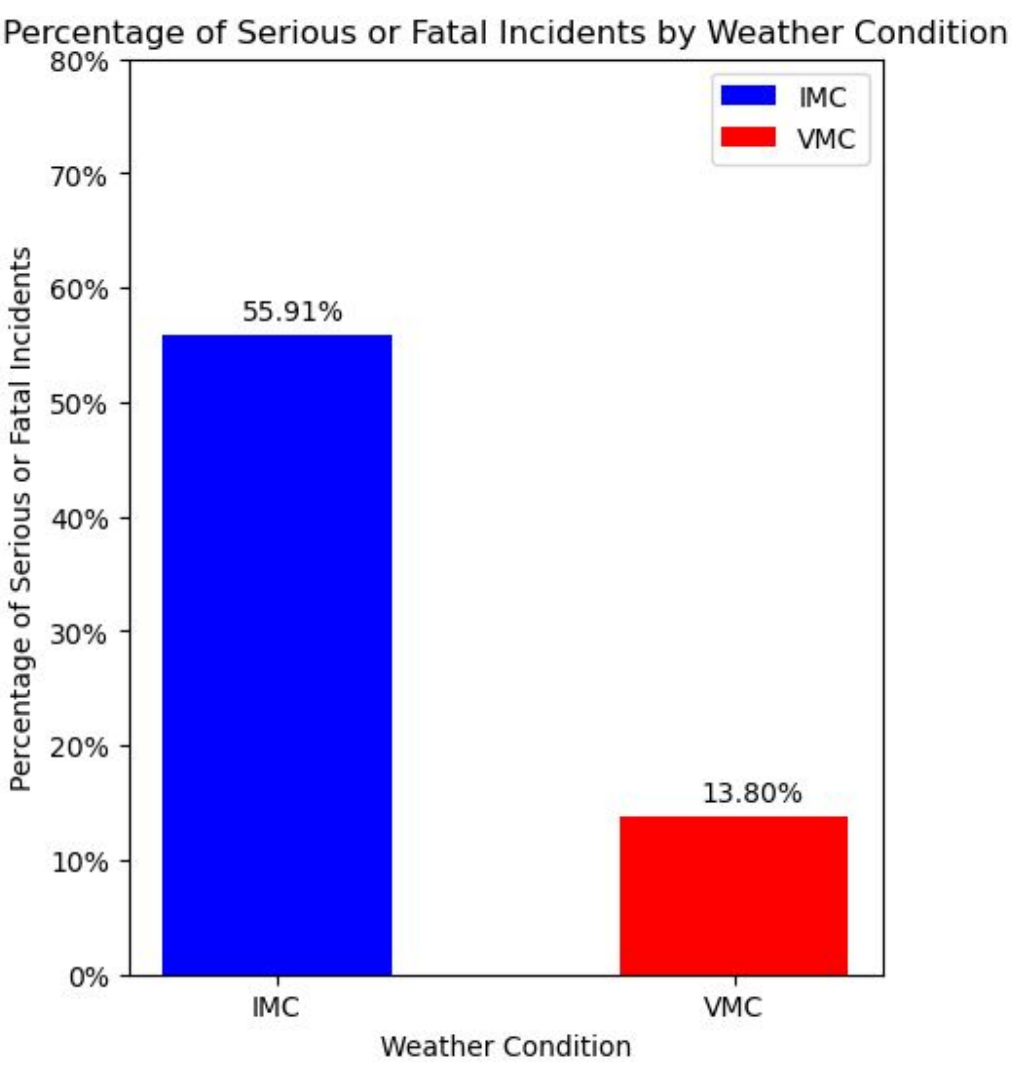
Raise Prices during IMC Weather Conditions

Recommendation #1: Raise Prices during IMC Weather Conditions

- What is IMC?
  - The weather condition data has two categories: IMC and VMC
    - **IMC**: Low visibility weather conditions, pilots must only rely on their instrument panels to fly
    - **VMC**: High visibility weather conditions, pilots can see well enough to use their vision, as well as use their instrument panels

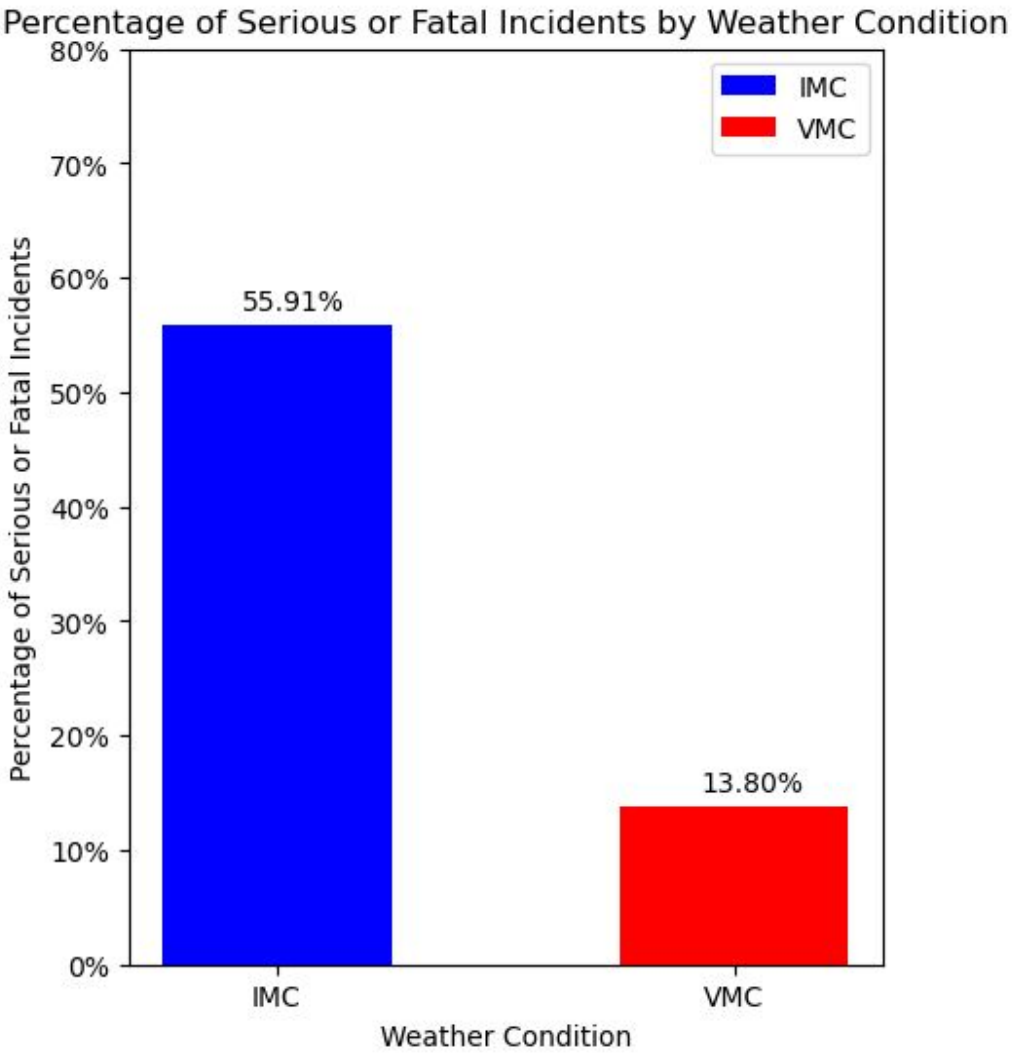
Recommendation #1: Raise Prices during IMC Weather Conditions

- Why raise prices during IMC Weather Conditions?
  - **55.91%** of “IMC” weather condition incidents were “Serious” or “Fatal”
  - **13.8%** of incidents classified under “VMC” weather conditions were “Serious” or “Fatal



Recommendation #1: Raise Prices during IMC Weather Conditions

- Why raise prices during IMC Weather Conditions?
    - To manage financial exposure prices must be raised during “IMC” weather conditions to justify the increased risk of flying



Recommendation #2:

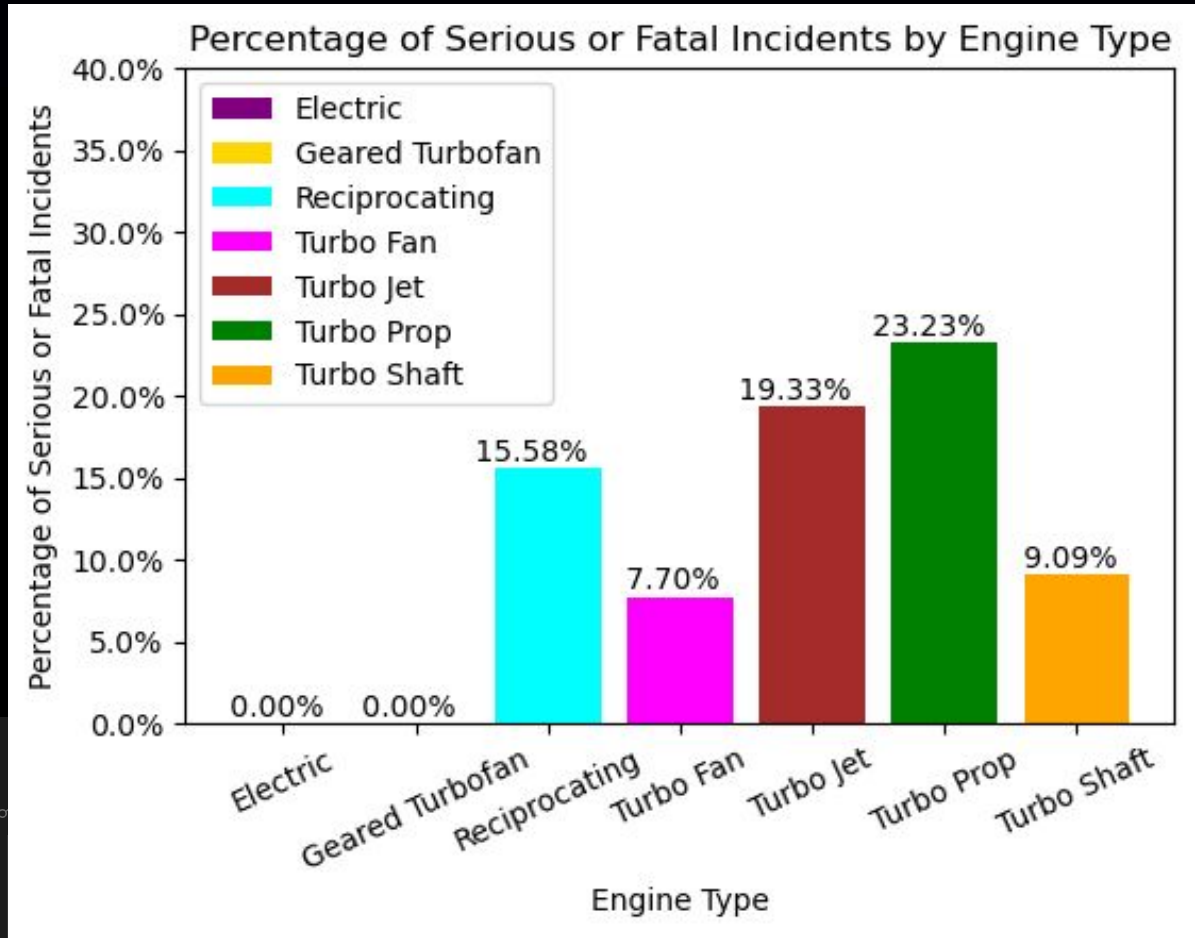
Use Airplanes with Turbo Fan Engines

Recommendation #2: Use Airplanes with Turbo Fan Engines

- Our data contains 7 types of engines:
  - **Reciprocating**
  - **Turbo Fan**
  - **Geared Turbofan**
  - **Electric**
  - **-Turbo Prop**
  - **-Turbo Jet**
  - **-Turbo Shaft**

Recommendation #2: Use Airplanes with Turbo Fan Engines

- Why Turbo Fan:
  - Only **7.7%** of Turbo Fan Engine incidents were serious or fatal
  - Electric, Geared Turbofan, and Turbo Shaft did not contain enough data to be reliable



Recommendation #3:

Use Multi-engine Turbo Fan Airplanes

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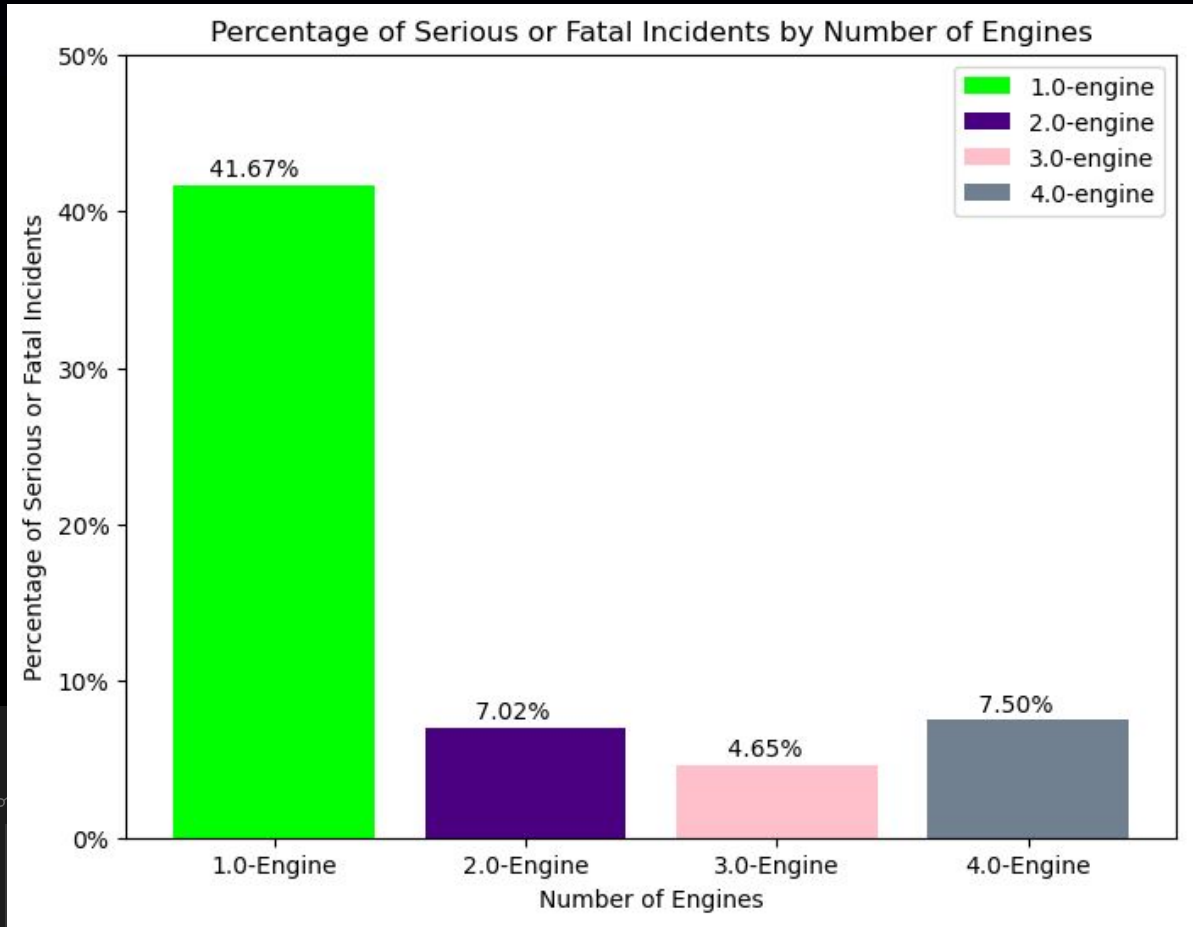
- Our data consists of single and multi engine airplanes:
    - One-engine
    - Two-engine
    - Three-engine
    - Four-engine

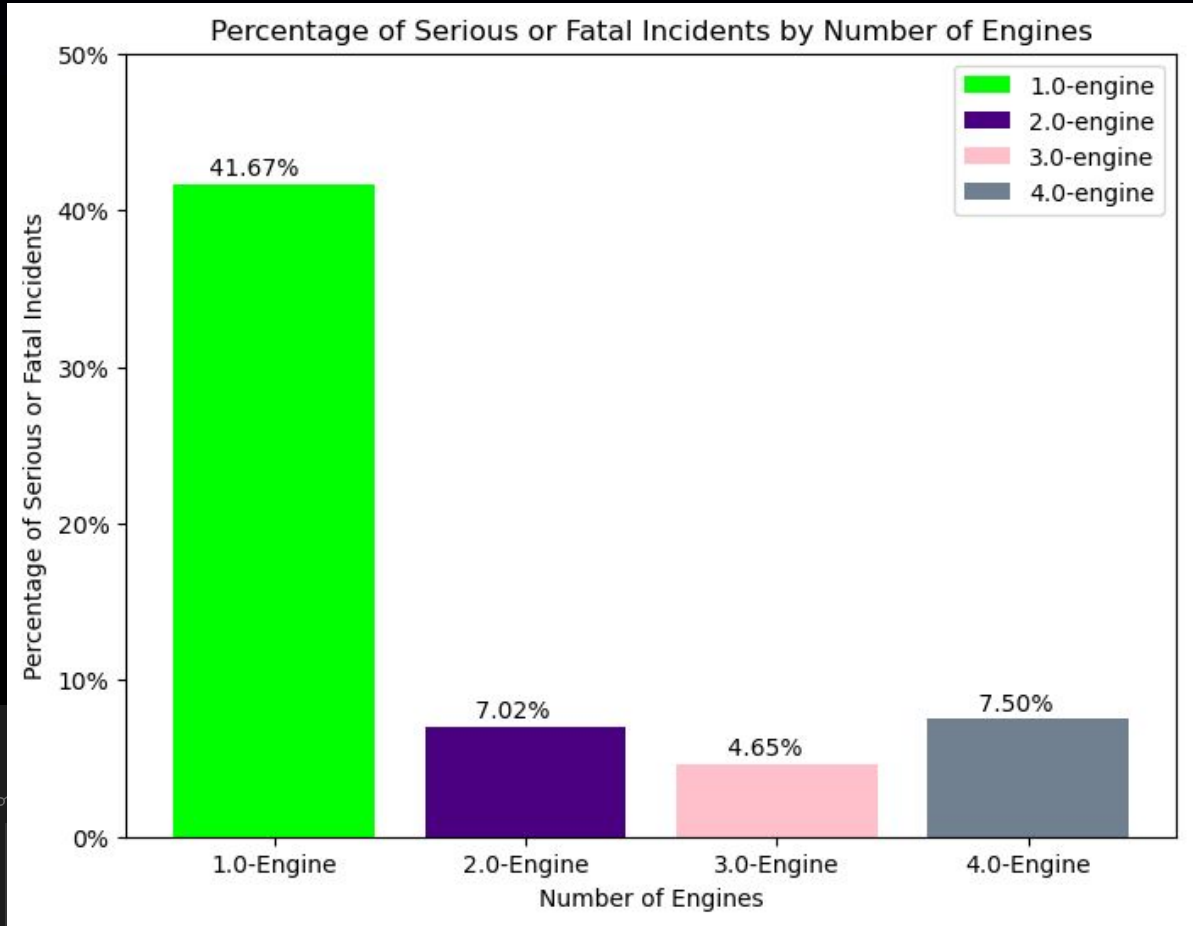
Recommendation #2: Use Multi-engine Turbo Fan Airplanes

- Why Multi-engine:
  - **41.67%** of single-engine Turbo Fan airplane incidents were serious or fatal



Recommendation #2: Use Multi-engine Turbo Fan Airplanes

- Why Multi-engine:
  - Two, Three, and Four-engine Turbo Fan airplanes were statistically close in severity and all much safer than single-engine



Airplanes

- Cessna Citation X (Model 750)
  - **Buy Price:** $3,897,500
  - **Operating Costs/Year:** $2,711,301
- Gulfstream G150
  - **Buy Price:** $5,398,333
  - **Operating Costs/Year:** $1,802,666

Airplanes

- Beechcraft 390
  - **Buy Price:** $2,489,000
  - **Operating Costs/Year:** $1,258,155

- Hawker 400
  - **Buy Price:** $4,500,000
  - **Operating Costs/Year:** $2,534,698

Airplanes

- Learjet 60
  - **Buy Price:** $1,976,667
  - **Operating Costs/Year:** $1, 895, 570

Thank you!

Questions?