

# Aircraft Safety Risk Analysis

May 31, 2024



# Summary

Analysis of a national aviation accident database assessing risk of injury for a variety of airplane models

- Assesses risk based on fatal and non-fatal injury rates of aircraft models
- Recommendation of three safest aircraft models, based on historical injury rates, for each of three passenger capacity classes (small, medium, large)

# Outline

- Business Problem
- Data Analysis
- Results
- Conclusions



# Business Problem

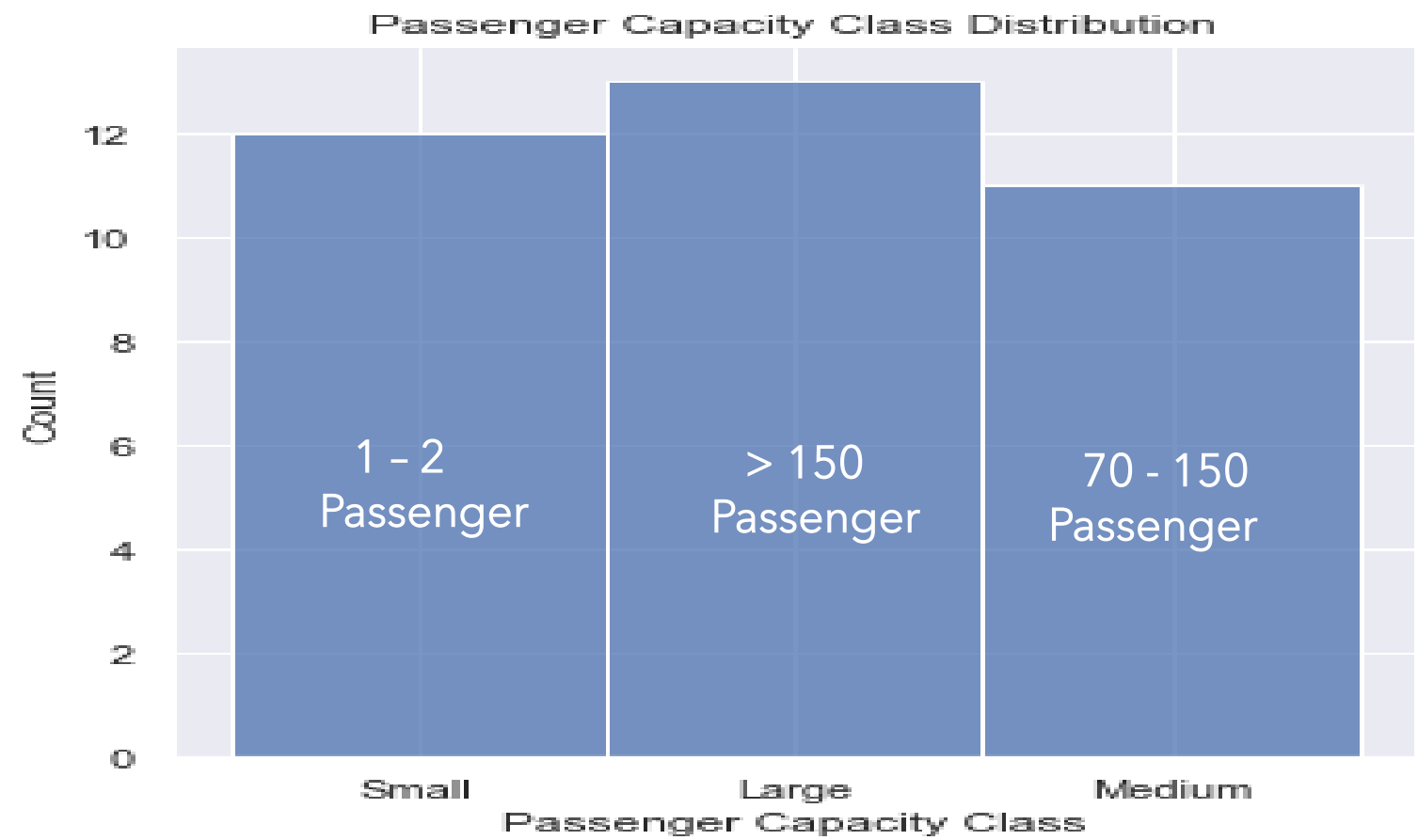
- The company is interested in purchasing and operating airplanes for commercial and private enterprises and needs recommendation from a safety perspective.
- This assessment will make and aircraft model recommendations based on historical injury outcomes; prioritizing minimizing fatal then non-fatal injury rates



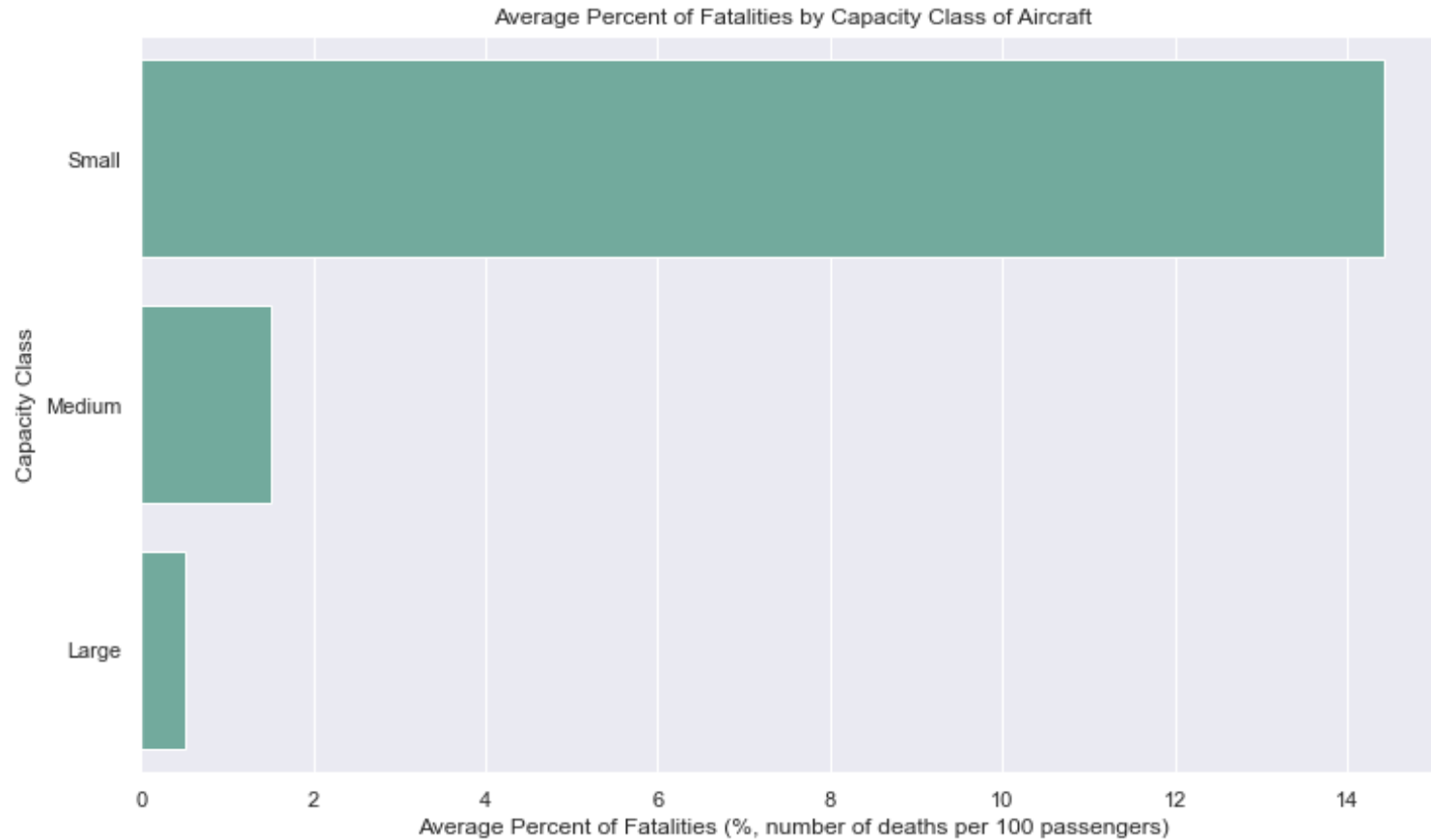
# Data Analysis

- Data Source : National Transportation Safety Board (NTSB) aviation accident/incident database
- Performed on 68,000 records of individual crash events spanning the U.S. from years 1982 to 2022
- Assessment based on aircraft make, model, passenger capacity, injury rates (fatal and non-fatal)
- Only aircraft models that had a history of at least 1000 total passengers involved in accidents were considered, narrowing the field to 36 different models

# Results - Capacity Classes

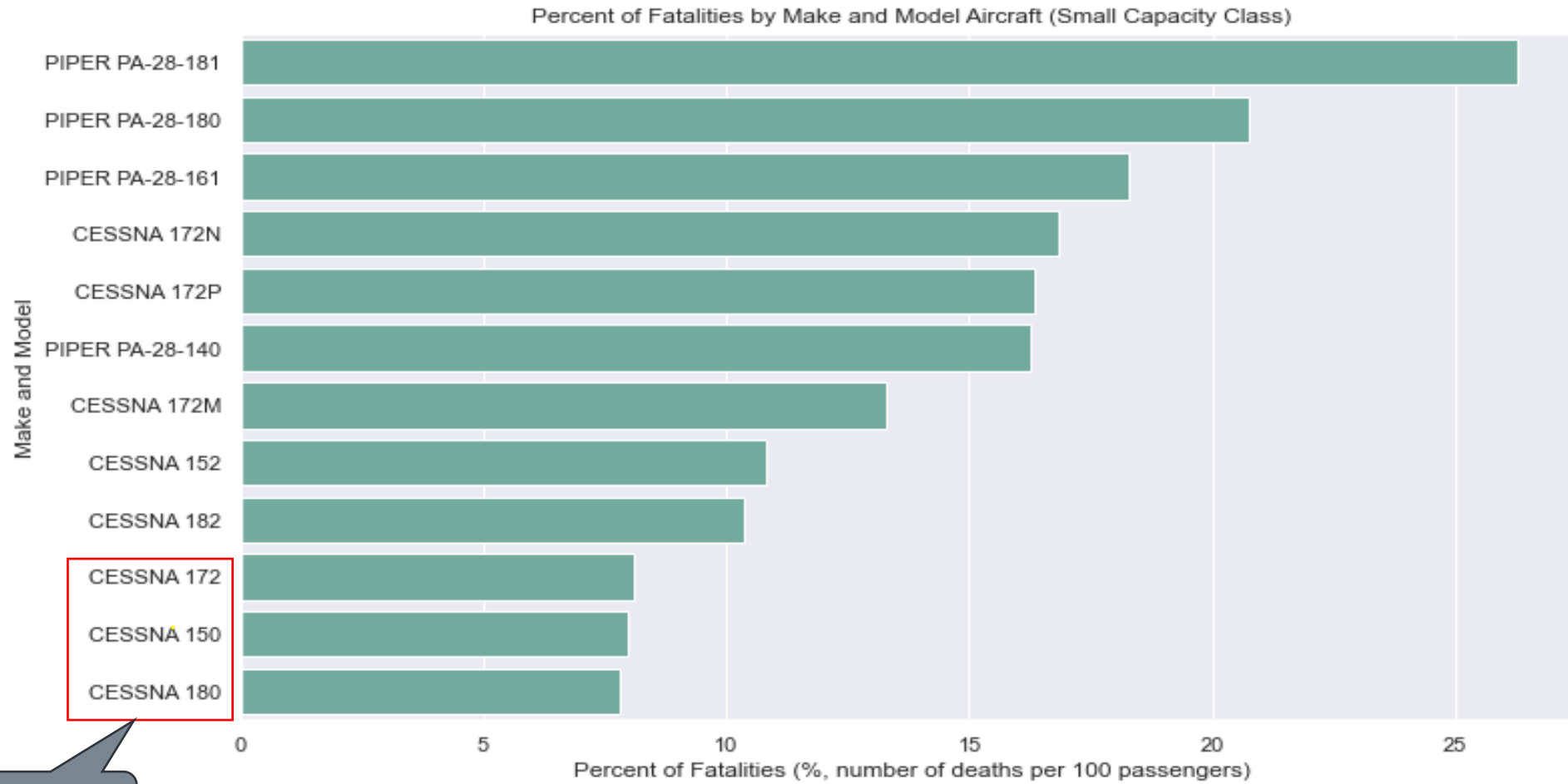


# Results - Fatality Rates by Class



- Smaller aircraft have a much higher potential for fatality than the larger counterparts

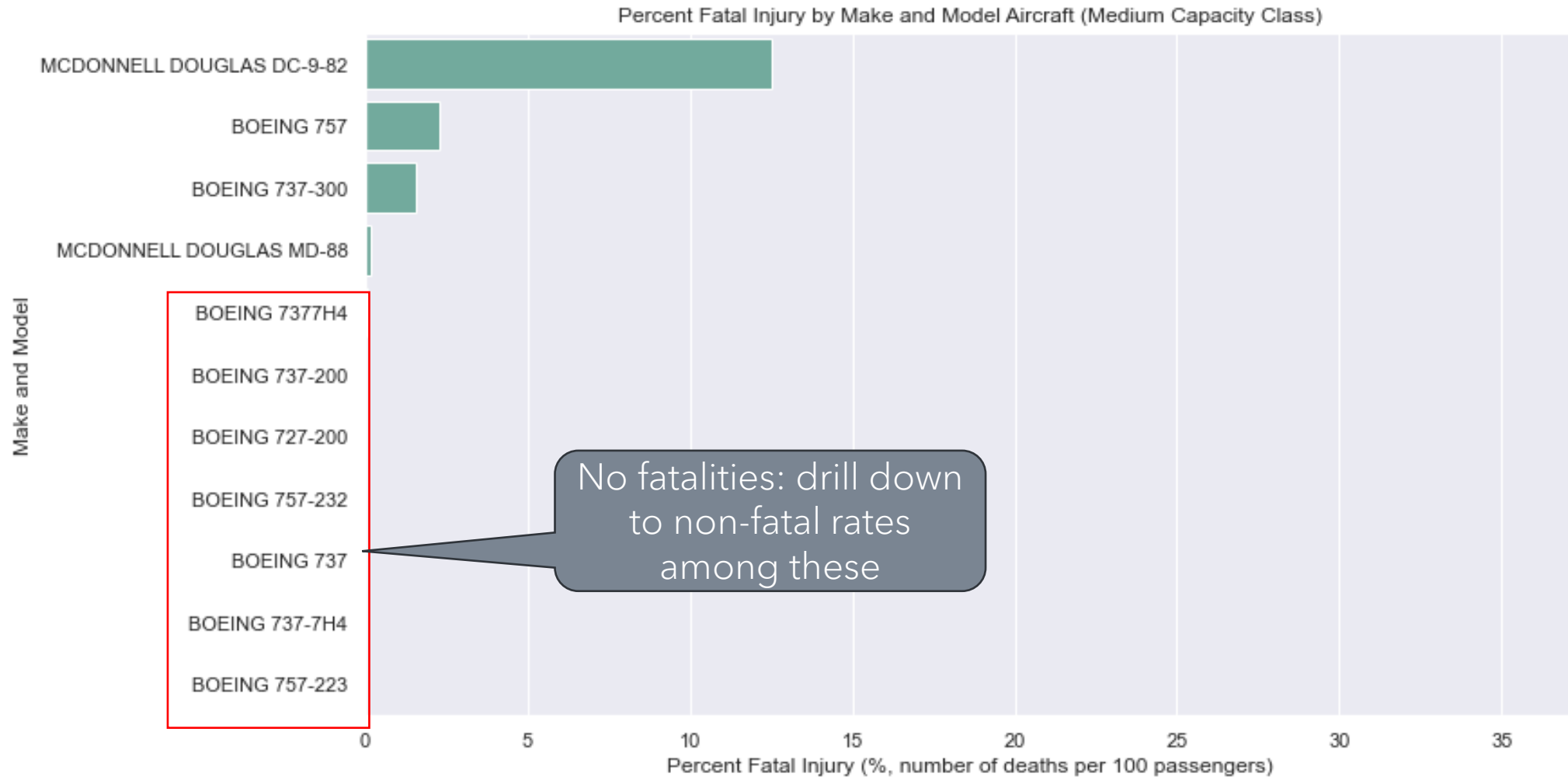
# Results - Fatality Rates for Small Class Models



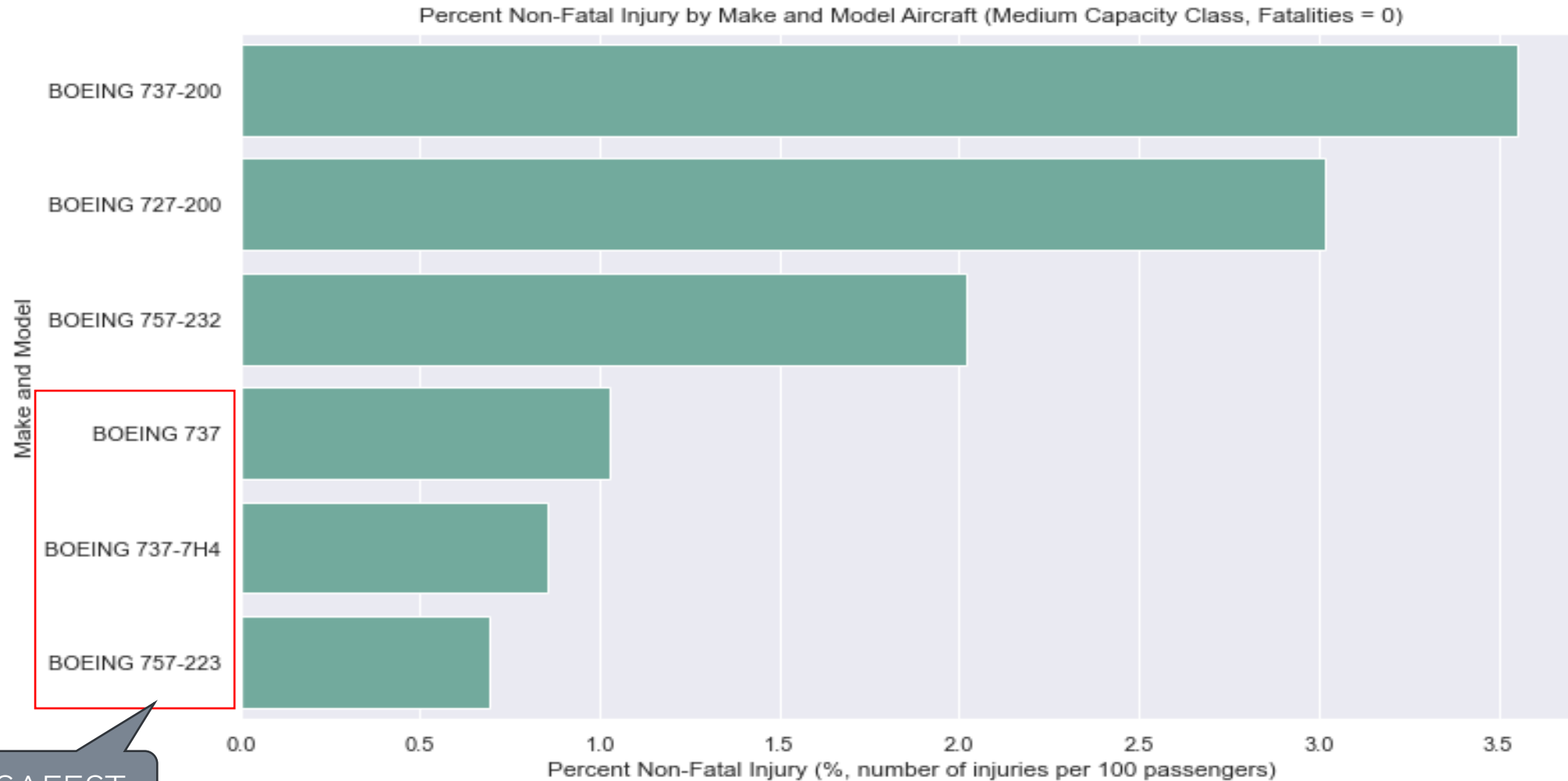
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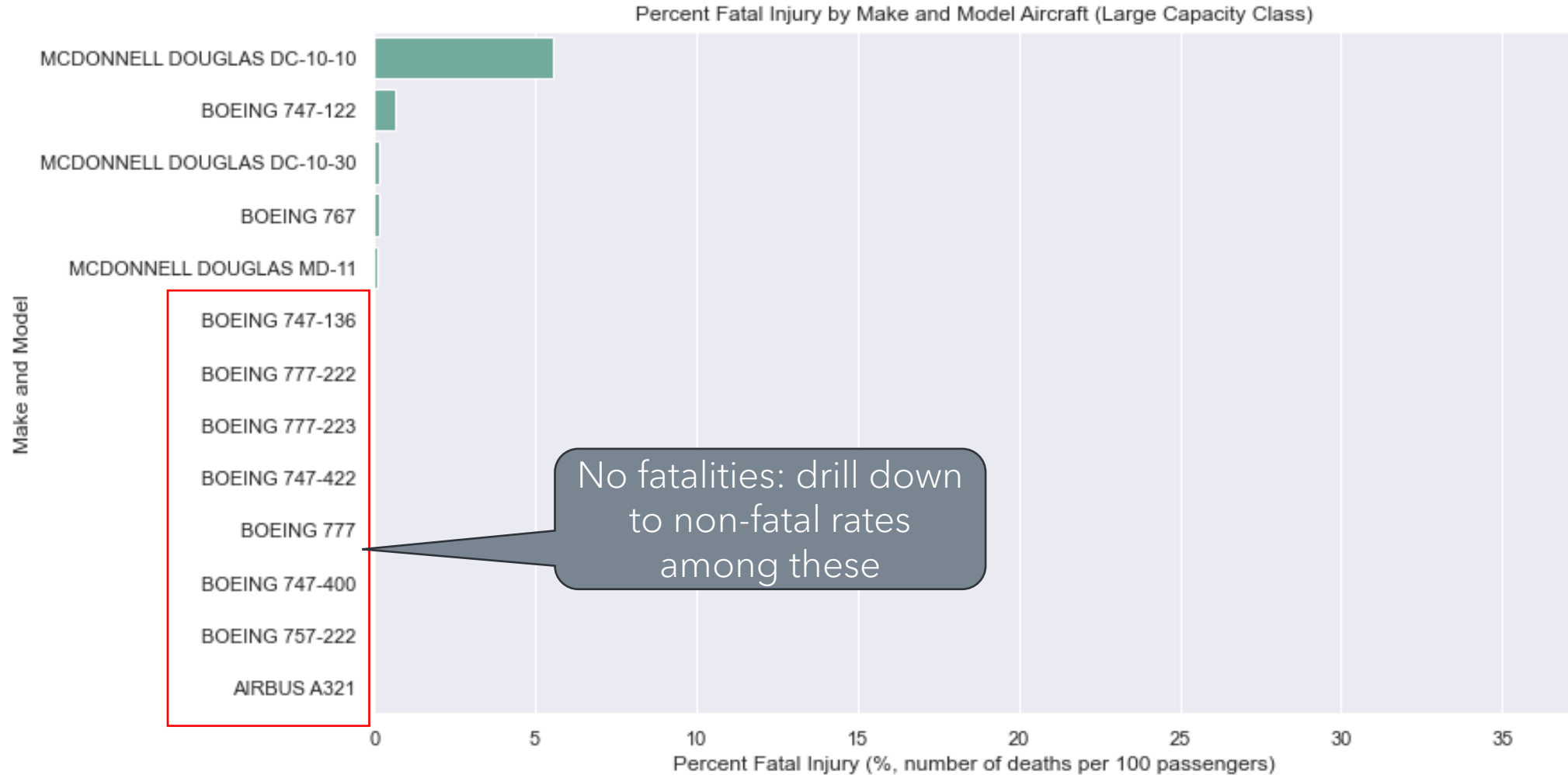
# Results - Fatality Rates for Medium Class Models



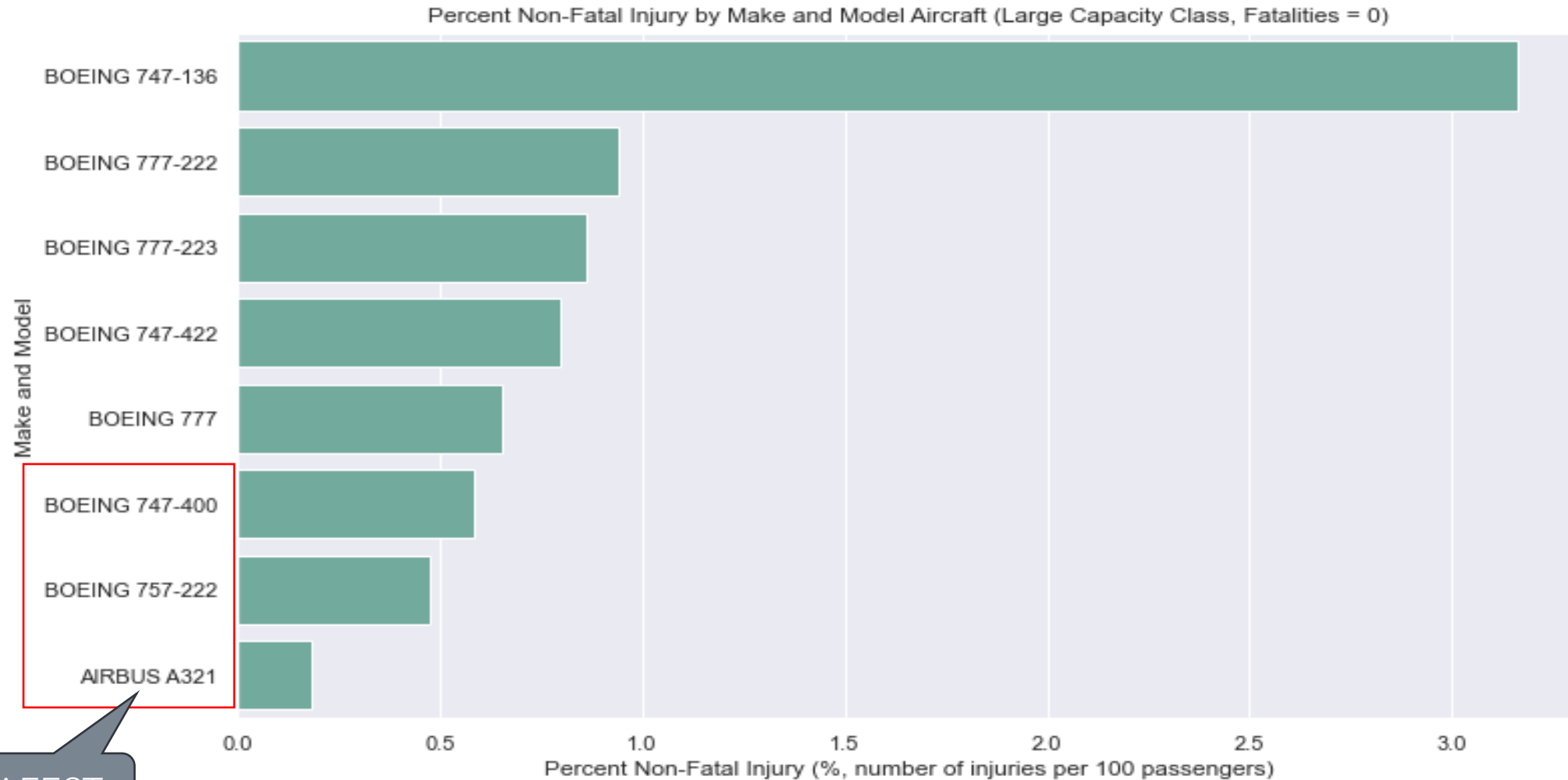
# Results - Non-Fatal Injury Rates for Medium Class



# Results - Fatality Rates for Large Class Models



# Results - Non-Fatal Injury Rates for Large Class



# Conclusions

- We do not recommend the use of Small Class planes because their fatality rate is much higher.
  - If necessary, safest aircraft are Cessna models 150, 172, 180
- For Medium Class, we recommend the following models:
  - Boeing 737, 737-7H4, 757-223
- For Large Class, we recommend the following models:
  - Boeing 757-222, 747-400
  - Airbus A321

## Next Steps:

- Analyze geographic location effects for recommended models to optimize safety
- Acquire non-accident flight record data to analyze the volume of safe flights by model and potential markets
- Return on Investment (ROI) analysis based on MSRP data, purchase availability and loan rates for safe model recommendations

# Thank You

Please direct any questions you may have to Dale Deford and James Warsing

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