

# **Subject Matter Expert Evaluation of Multi-Flight Common Route Advisories**

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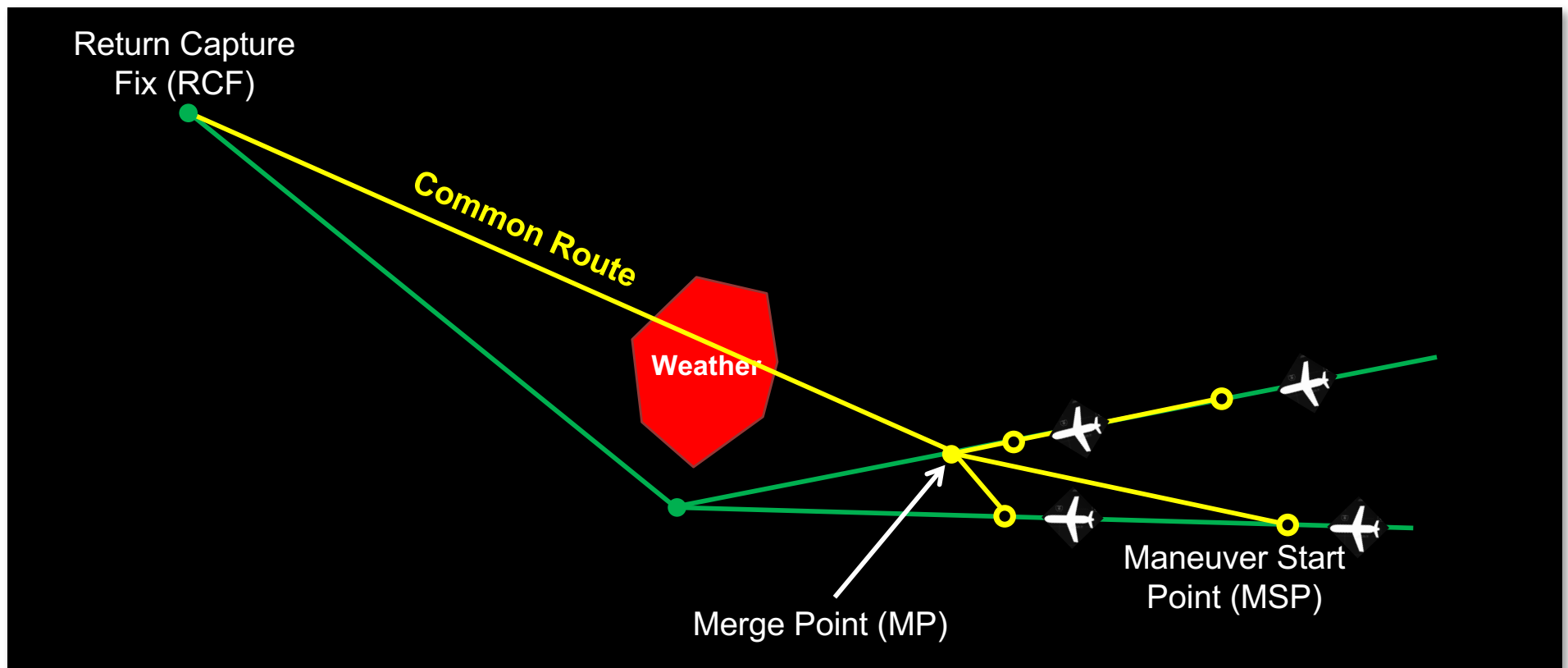
# Outline

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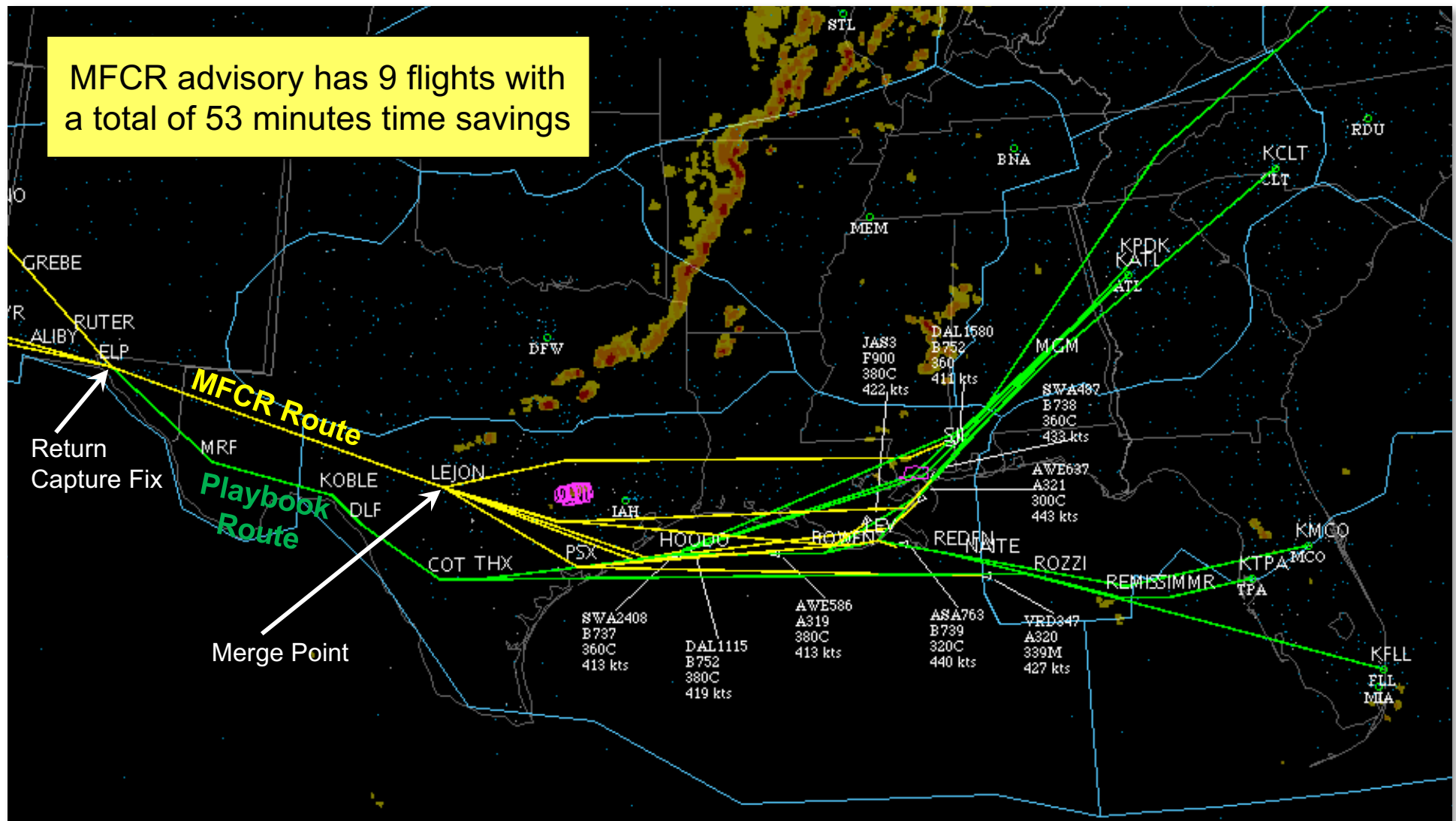
- Background on Multi-Flight Common Routes (MFCR)
- Subject Matter Expert evaluation of MFCR
- Key results
- Conclusions

# Background

Multi-Flight Common Routes (MFCR) identifies opportunities for delay recovery by refreshing outdated routes



# Example MFCR Advisory



# MFCR Features

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- MFCR merges multiple flights to a common route, creating a new flow for increased operational acceptability
- Each route segment is clear of weather
- Each flight has time savings of at least 3 minutes
- Total flight time savings for group is at least 10 minutes
- MFCR provides graphical functionality for review and modification prior to implementation of advisory

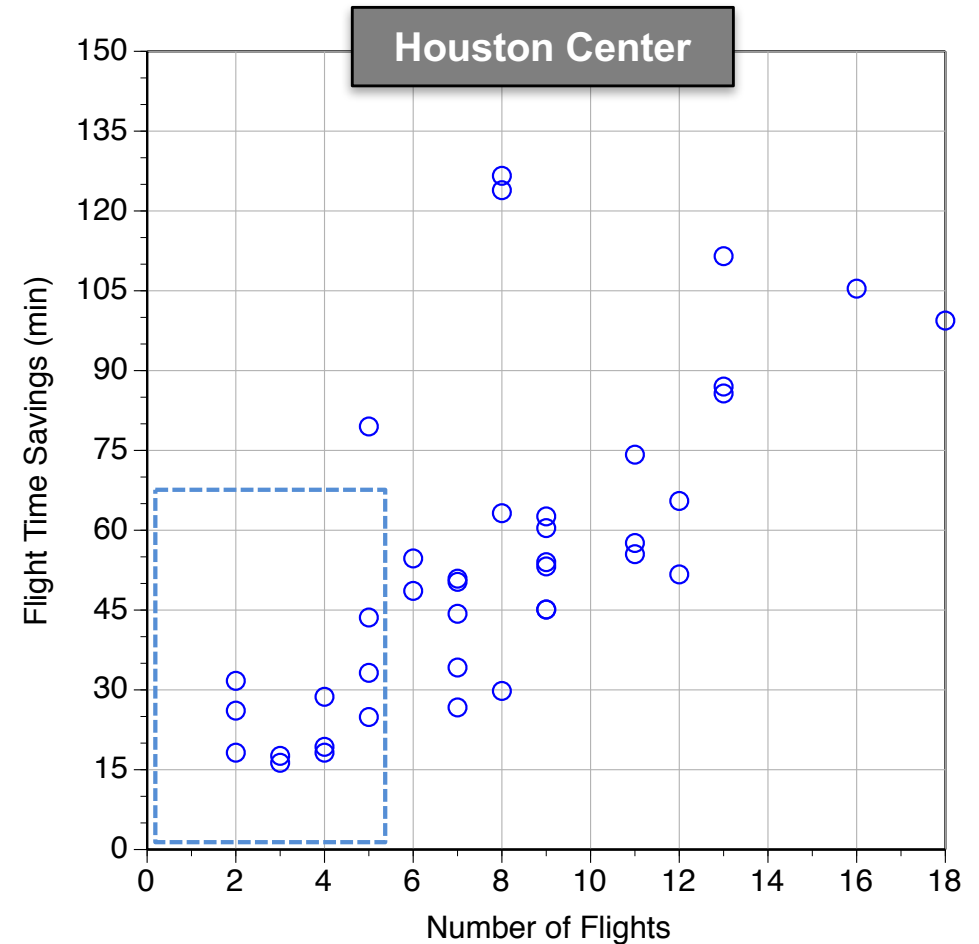
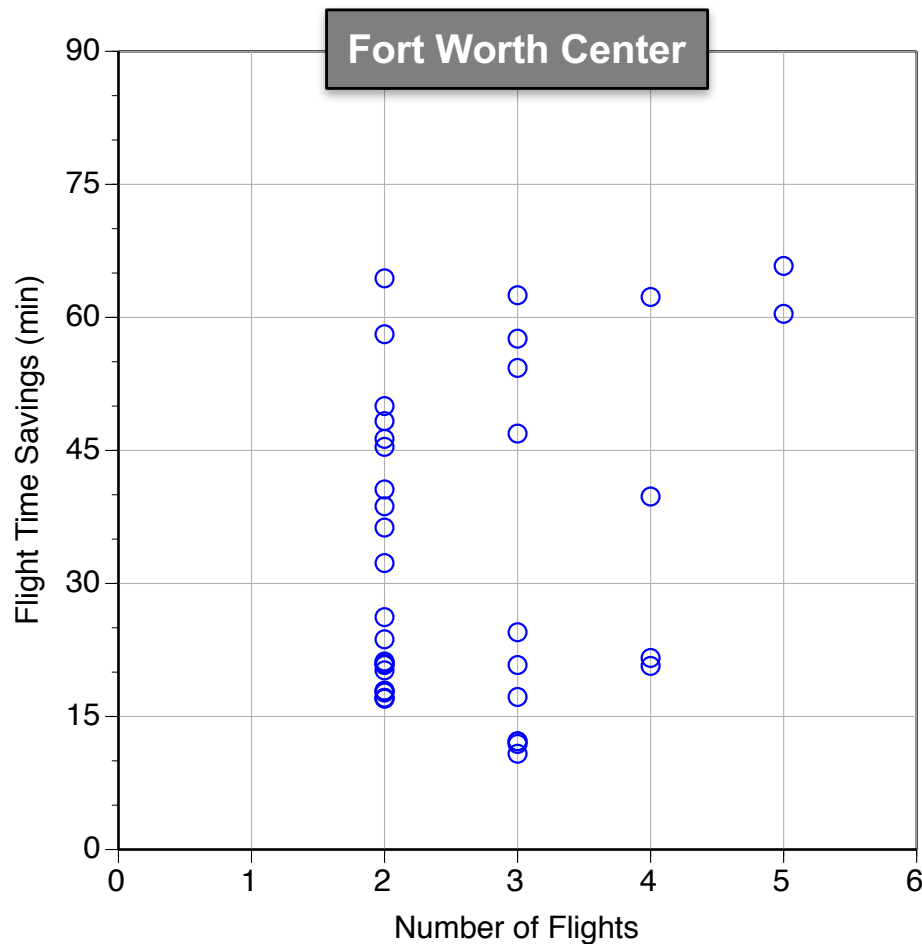
# Overview of Evaluation

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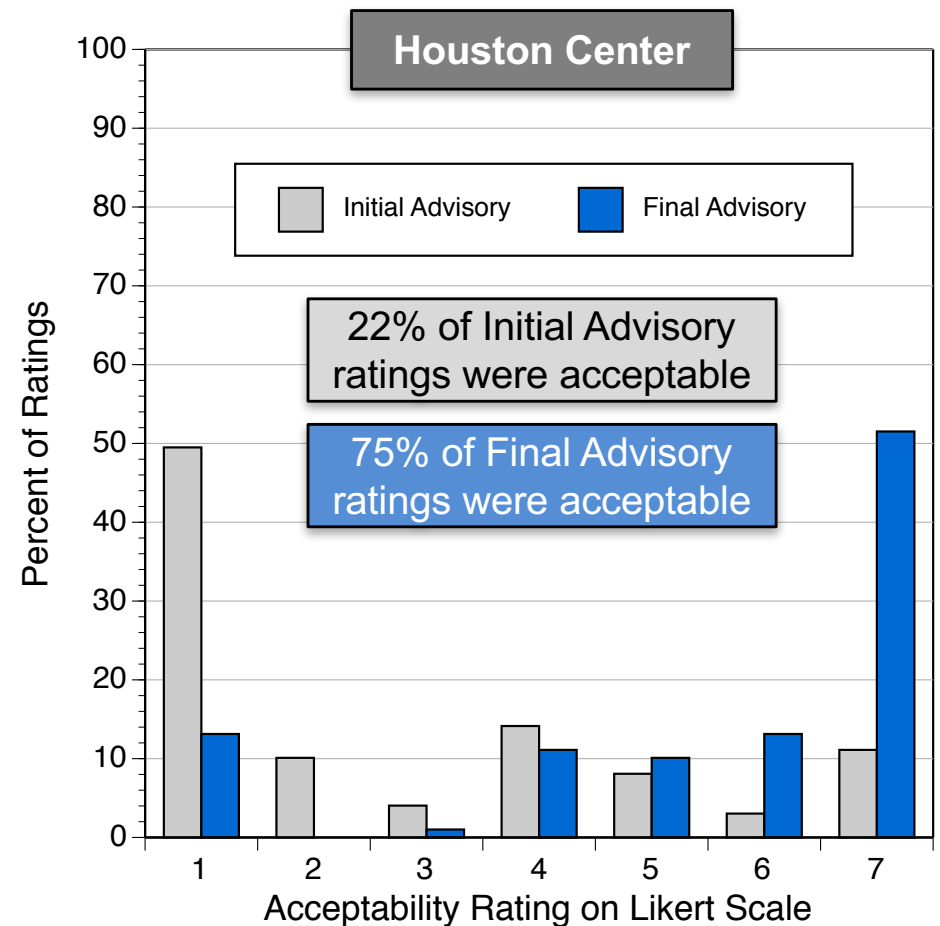
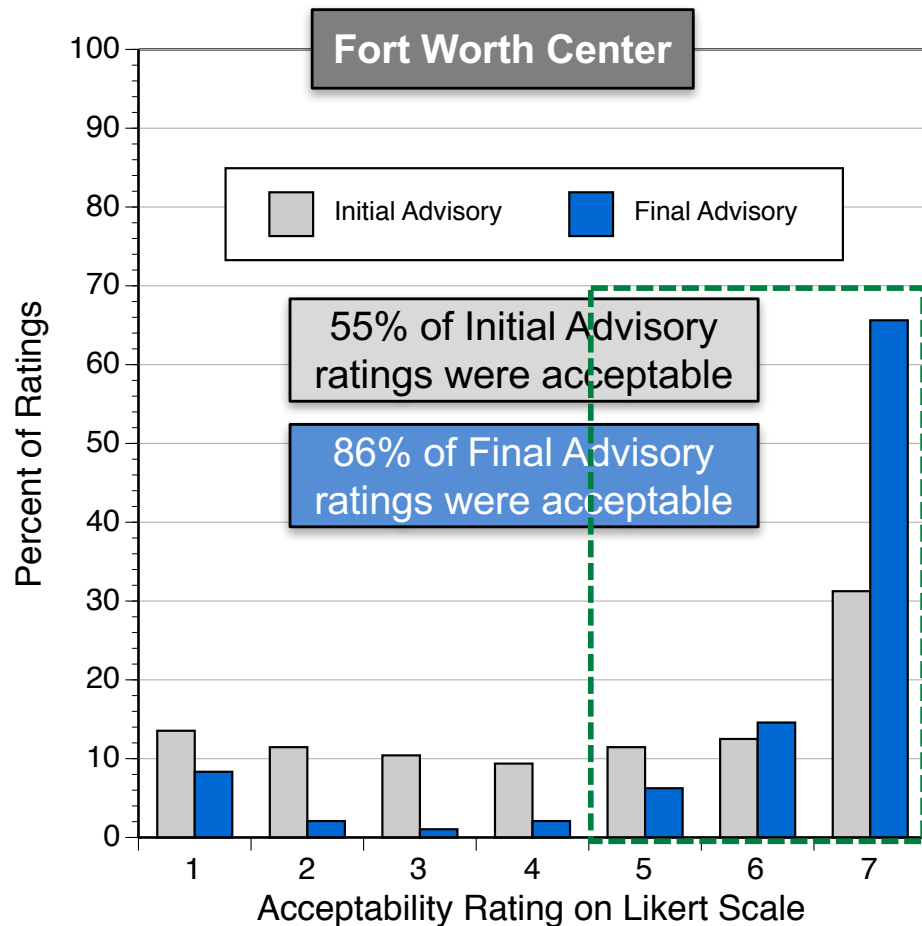
- Laboratory evaluation, conducted 1 – 4 Nov 2016
- Five subject matter experts (SMEs) evaluated scenarios in Fort Worth Center (ZFW) & Houston Center (ZHU) airspace
  - SMEs were recently retired traffic managers
  - Each SME evaluated 40 scenarios
  - Each scenario featured a static MFCR advisory
- Obtained SME feedback on:
  - Operational acceptability of MFCR re-route advisories
  - Workload and situational awareness
  - User interface
  - Viability of overall MFCR concept of operations

# MFCR Advisory Parameters

Houston Center advisories generally featured more flights than Fort Worth Center advisories



# Acceptability Ratings



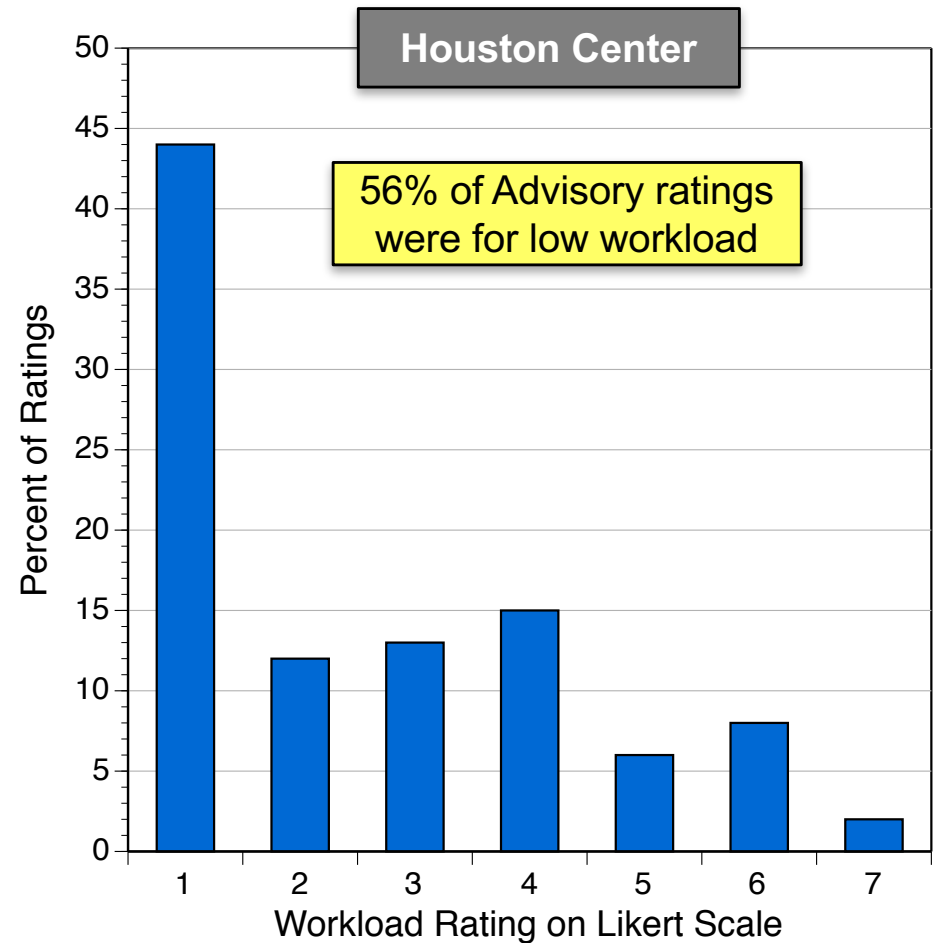
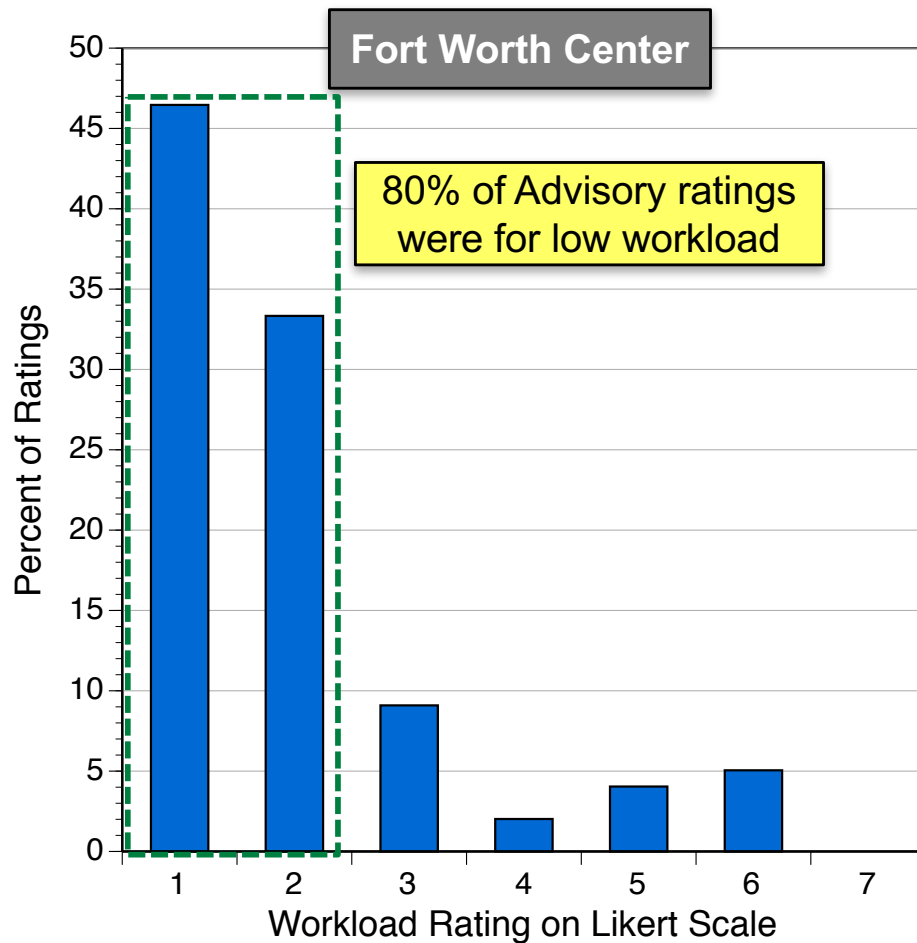


# Comments on Acceptability

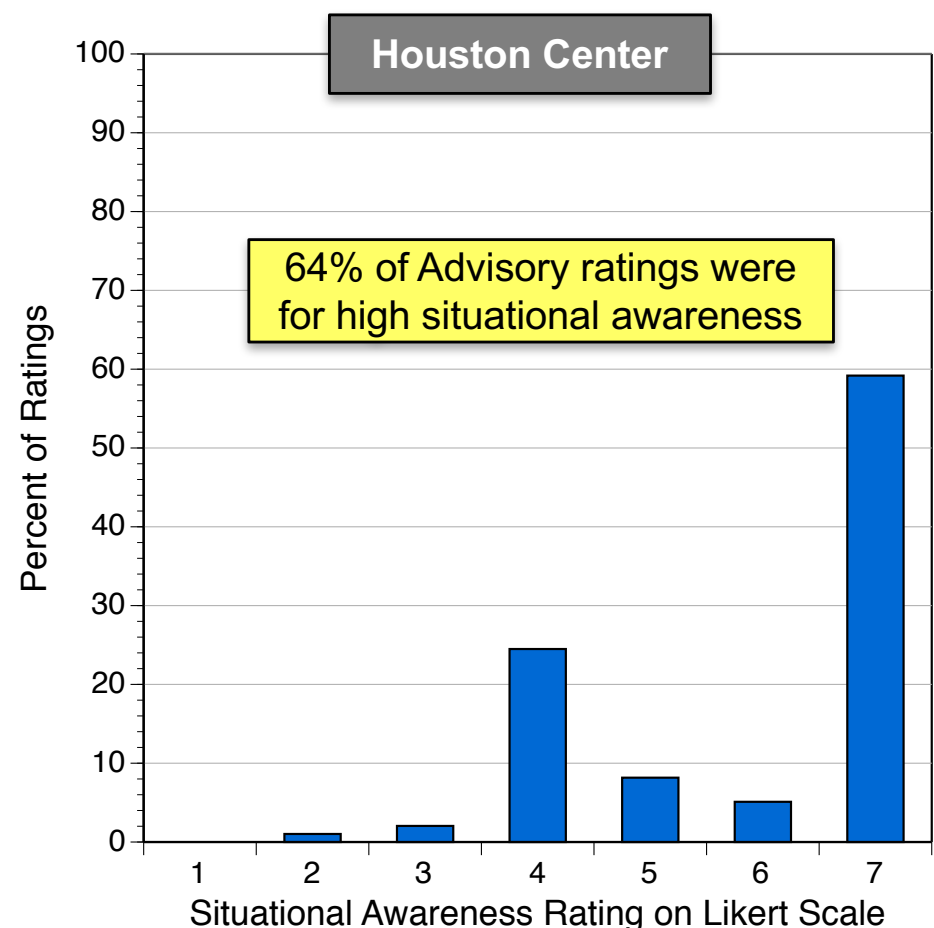
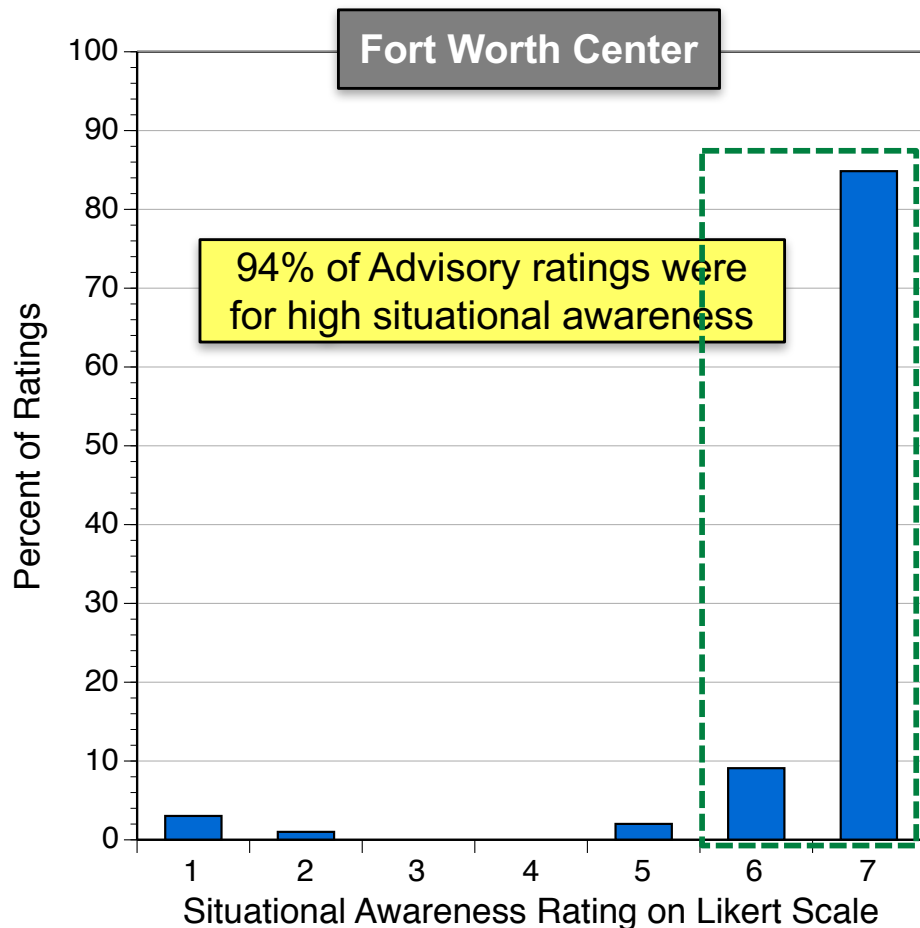
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- Most advisories that were initially rated as low acceptability were rated as high acceptability after SME modification
- Modifications often corrected undesirable sector traversal
  - Route runs close to sector (or Center) boundary
  - Route cuts across corner of sector(s)
  - Route crosses arrival/departure flows
  - Route crosses congested sector(s)
  - Route does not conform with standard flow patterns
- User interface provides functionality to quickly/easily make route modifications with feedback on performance measures

# Workload Ratings



# Situational Awareness Ratings



# Conclusions

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- MFCR received favorable evaluation from SMEs
- Good acceptability of final/modified MFCR advisories:  
86% for ZFW and 75% for ZHU
- Low workload to evaluate and modify MFCR advisories:  
80% for ZFW and 56% for ZHU
- MFCR user interface provides good situational awareness:  
94% for ZFW and 64% for ZHU
- MFCR is a good example of human-automation teaming

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# Questions?

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