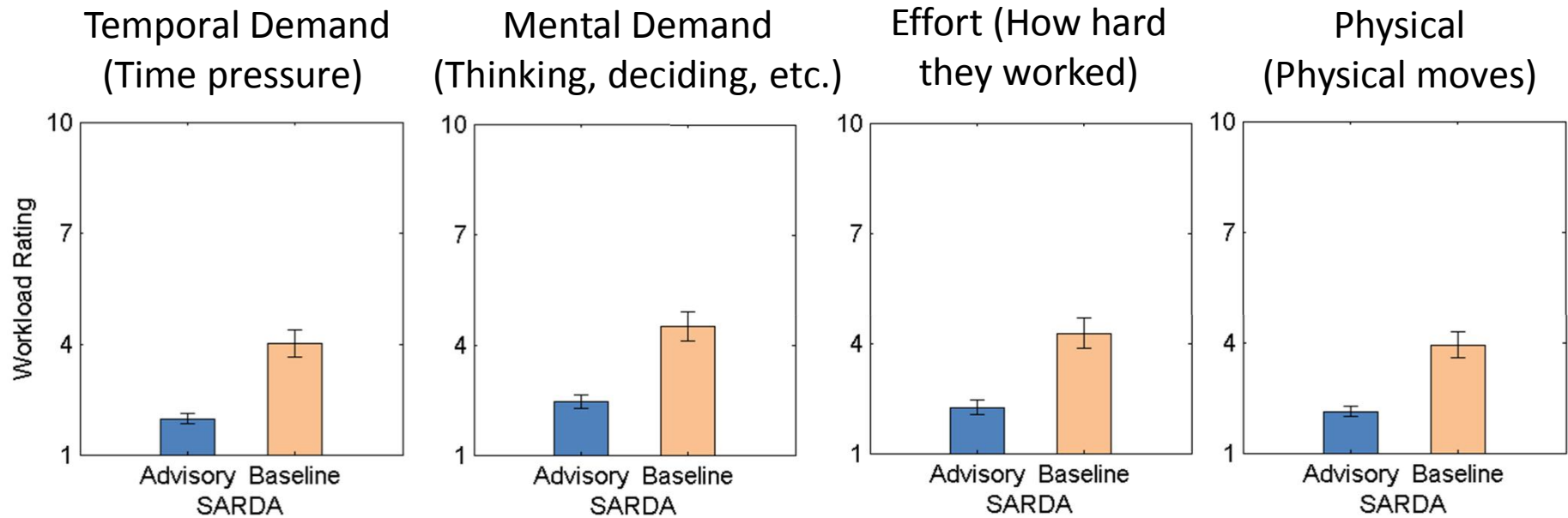


# Subjective Measures Recorded

- Post-session questionnaire
  - NASA Task Load Index (TLX) workload ratings
  - Situation awareness
- Post-study questionnaire
  - Advisory usability, advisory usefulness, controller trust
  - User interface usability
  - Comments
- Real-time workload measures
  - Controller's self assessment of their WL level
  - Observer's estimate of the controller WL level
- Debrief interviews

# TLX Workload Ratings

- Controllers' subjective workload ratings were lower in advisory runs than in baseline runs ( $p < 0.05$ ).



The graphs show means with standard errors

**Preliminary results. Do not distribute.**

# Post Study Questionnaire

- Administered using Samsung Tablet at the end of each week after all 16 data collection runs were completed.
- There were 6 controller participants
- Forty questions regarding
  - Local advisories
  - Ground advisories
  - EFS, map, RADAR displays
- Responses on a 7 point Likert scale.

# Local Advisory

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- All 6 subjects reported that it was easy to use the Local advisories.
  - Additionally, 5 subjects reported that they thought controllers in the field would find the advisories easy to use.
- 3 subjects reported that, given the choice, they would prefer to have use of the Local advisories rather than not have use of the Local advisories.



# Ground Advisory

- 4 subjects reported that the Ground advisories helped rather than interfered with the management of traffic.

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- 4 subjects reported that the Ground advisories helped rather than interfered with the management of traffic.
  - 3 subjects reported that the Ground advisories helped with the management of traffic with a TMI restriction.
  - 4 subjects reported that the Ground advisories helped or helped very much when traffic level increased.

# Ground Advisory

- 4 subjects reported that the Ground advisories helped rather than interfered with the management of traffic.
  - 3 subjects reported that the Ground advisories helped with the management of traffic with a TMI restriction.
  - 4 subjects reported that the Ground advisories helped or helped very much when traffic level increased.
- All 6 subjects reported that it was easy to use Ground advisories.
  - 5 subjects reported that they thought controllers in the field would find it easy to use the Ground advisories.

# Ground Advisory

- 4 subjects reported that the Ground advisories helped rather than interfered with the management of traffic.
  - 3 subjects reported that the Ground advisories helped with the management of traffic with a TMI restriction.
  - 4 subjects reported that the Ground advisories helped or helped very much when traffic level increased.
- All 6 subjects reported that it was easy to use Ground advisories.
  - 5 subjects reported that they thought controllers in the field would find it easy to use the Ground advisories.
- 4 subjects reported that, given the choice, they would prefer to have use of the Ground advisories rather than not have use of the Ground advisories.

# EFS

- 4 subjects reported that it was easy to understand the information on the EFS
- 3 subjects reported that it was easy to manage the flight strips on the EFS
- 3 subjects reported that the EFS helped with the management of traffic

# Some Preliminary Conclusions

- Preliminary results of human factors data analyses indicate that the controller participants were not subject to increased workload while using the Local and Ground Advisories to manage traffic in the SARDA HITL experiment.

# Some Preliminary Conclusions

- Preliminary results of human factors data analyses indicate that the controller participants were not subject to increased workload while using the Local and Ground Advisories to manage traffic in the SARDA HITL experiment.
- Additionally, it appears that controller subjective workload ratings were lower using the advisory tool.
- Controller comments suggest acceptance of the tool.