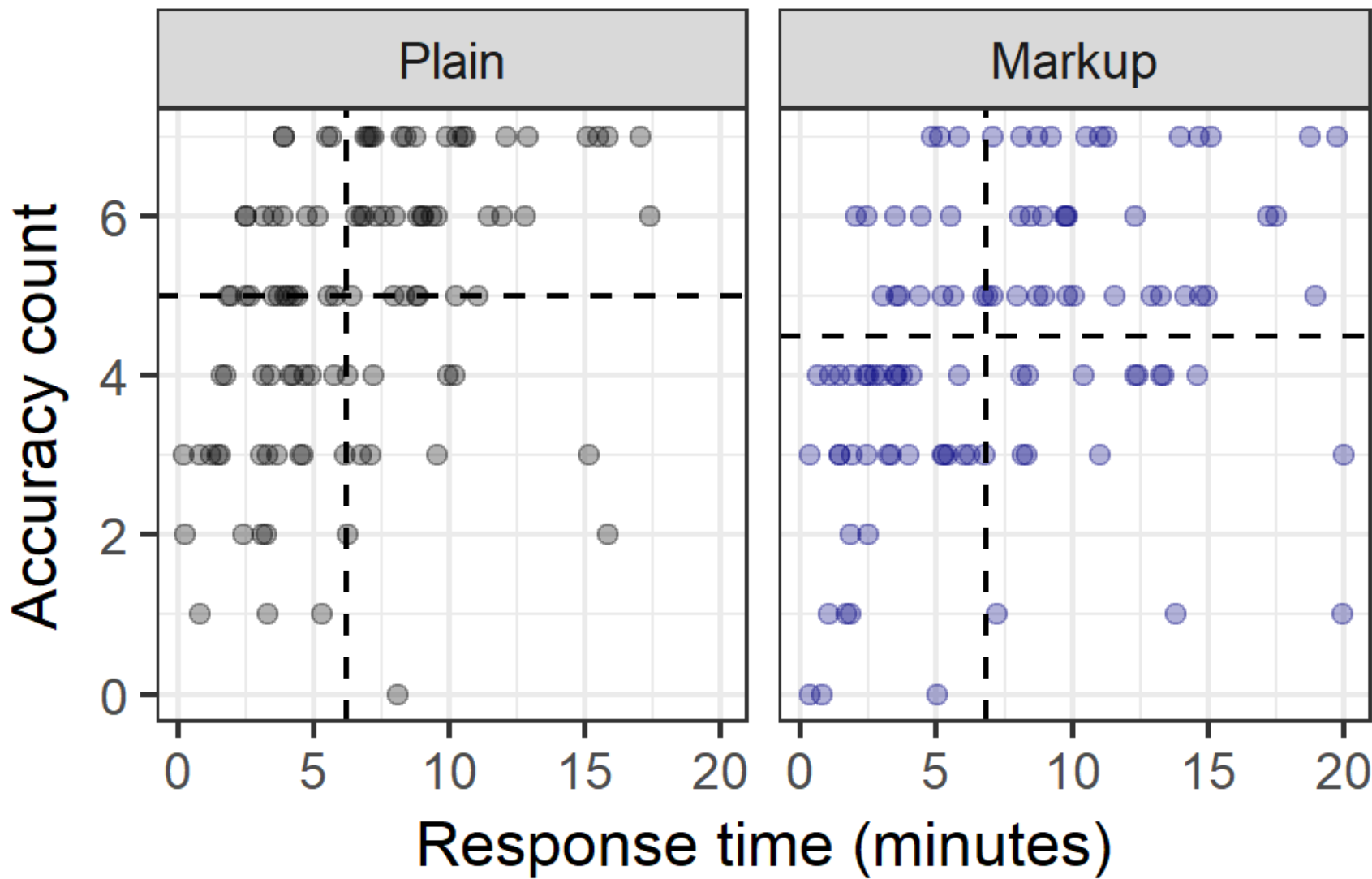# Evaluating Improvement in Situation Awareness and Decision-Making Through Automation

Background: Automated Information Extraction is designed to facilitate situation awareness by providing human decision makers with relevant information, but the real challenge is designing the output for optimal human understanding. This project compares the comprehension of text documents with / without automated markups and explores the existence of an optimal markup solution.
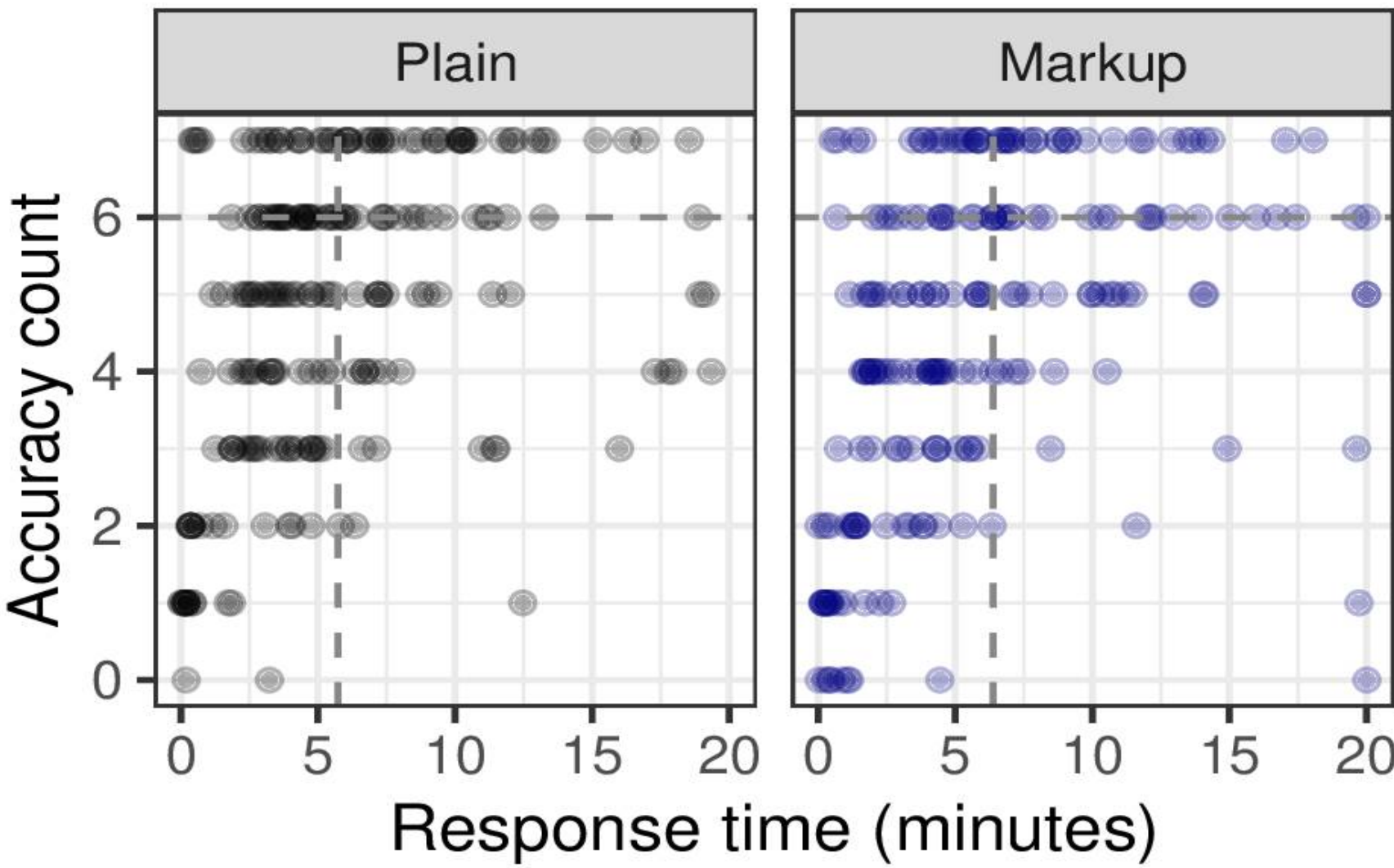
Experiment I (*automated markup*)

Experiment II (*ideal markup*)

Discussion

- Automated markup led to worse performance on all measured factors. Adding "ideal" markup to plain text did not significantly improve / hinder performance. Is subjective preference reason enough to use?

- Strategies uncovered:
  - process of elimination
  - focus on 'easier' question
  - Popular strategies for plain text:
    - taking notes
    - Ctrl/Cmd+F

- Direction of results suggests that further changes that may lead to improved performance and SA:
  - Task-relevant wrt to mission value
  - Computational plausibility
  - Low-level features (e.g., color)
  - Density (how much markup is helpful)

Results

More accurate <u>without</u> markup	**Accuracy**	No Significant Change
Faster <u>without</u> markup	**Response time**	No Significant Change
Lower workload <u>without</u> markup	**Workload**	No Significant Change
Preferred <u>without</u> markup	**Preference**	Preferred <u>with</u> markup
NA	**Trust in automation**	No significant change in trust rating
NA	**Strategies**	See Discussion

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