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UNIVERSITY OF GEORGIA
Franklin College of Arts and Sciences

Large language models are effective for summarizing student feedback

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Slides

Student feedback is useful but can be time-consuming to understand

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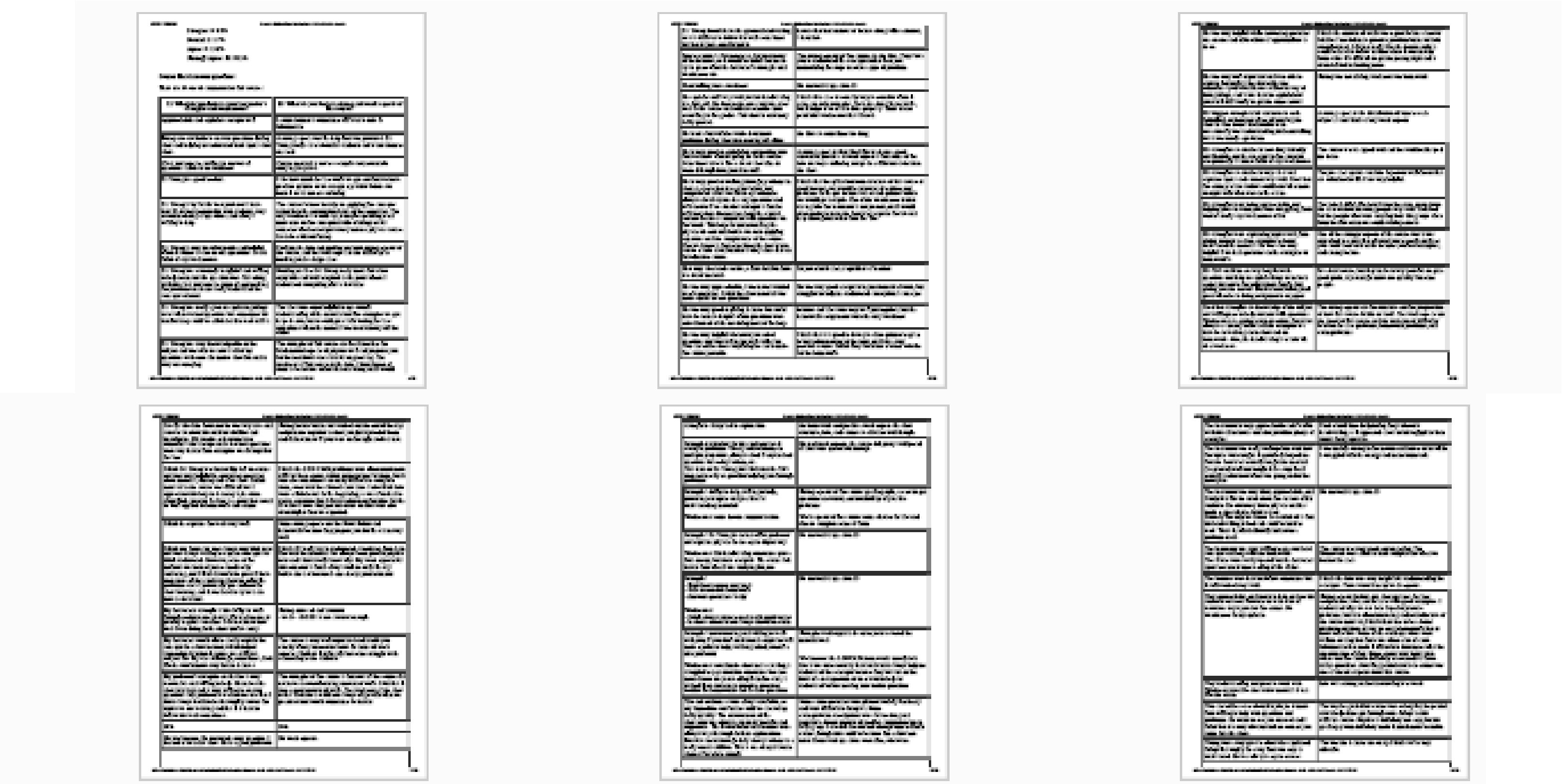
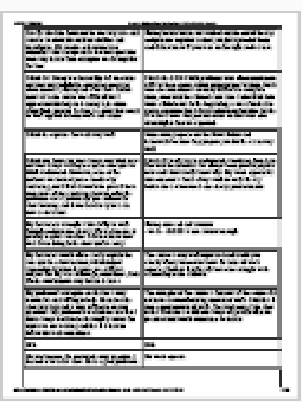
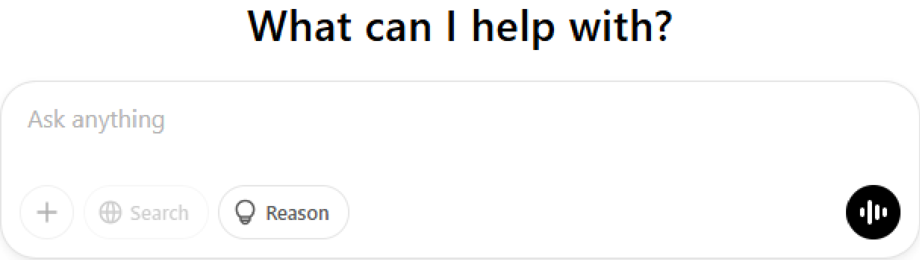


Chatbots can summarize text and could be a useful tool to quickly understanding student feedback





Pu et al 2023; Parker et al 2024

What’s the problem then?

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- Unstructured text

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- Sample size

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- Unstructured text
- Sample size
- Hallucinations

Xu et al 2025

Determine how well LLMs can extract key insights from student feedback

Data

- Student responses to two questions on end-of-course feedback survey
  1. *What do you feel are your instructor's strengths and weaknesses?*
  2. *What do you feel are the strong and weak aspects of the course?*
- 9 courses taught by 3 unique instructors

Methodology

- 5 instructors read each set of anonymized student feedback and create a summary
- Same feedback files shared with 4 AI tools
  - LLMs have inherent randomness so did 5 trials with each model

Methodology

- Prompt: “For responses to open-ended questions, the goal is to focus on the useful information and identify trends or themes that appear. Note the frequency of themes, areas of agreement and disagreement among students, and suggestions students have for changes you might make. Please ignore the comments that are nonspecific. For the remaining comments, please sort them into three categories: positive, actionable suggestions, and nonactionable suggestions before identifying trends or themes”

https://ctl.uga.edu/teaching-resources/feedback-and-evaluation-of-teaching/interpreting-responding-to-student-evaluations-of-teaching/

Analysis

- Majority voting (3 of 5) to be included in final summary for each tool and 3 of 5 instructors

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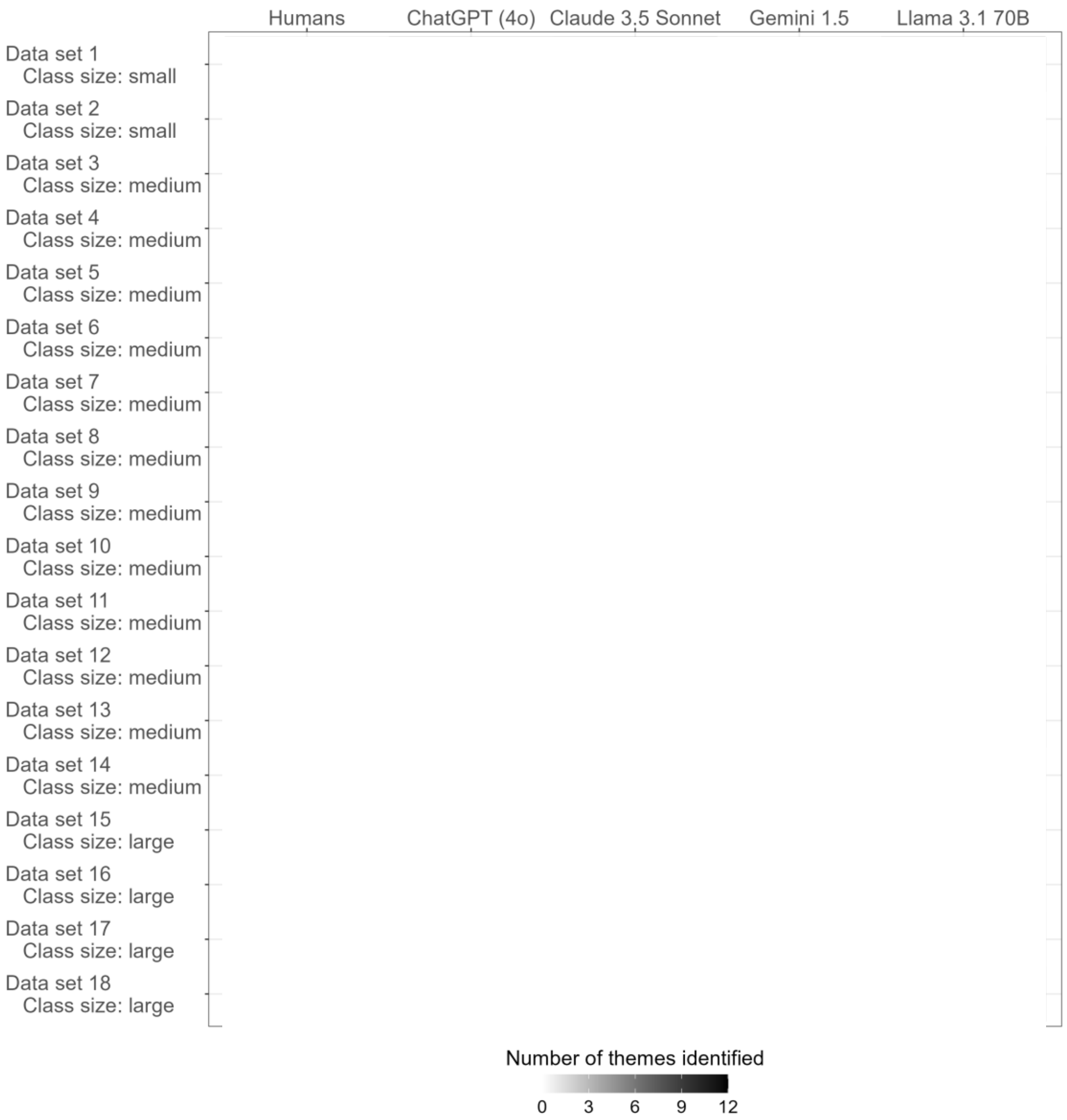
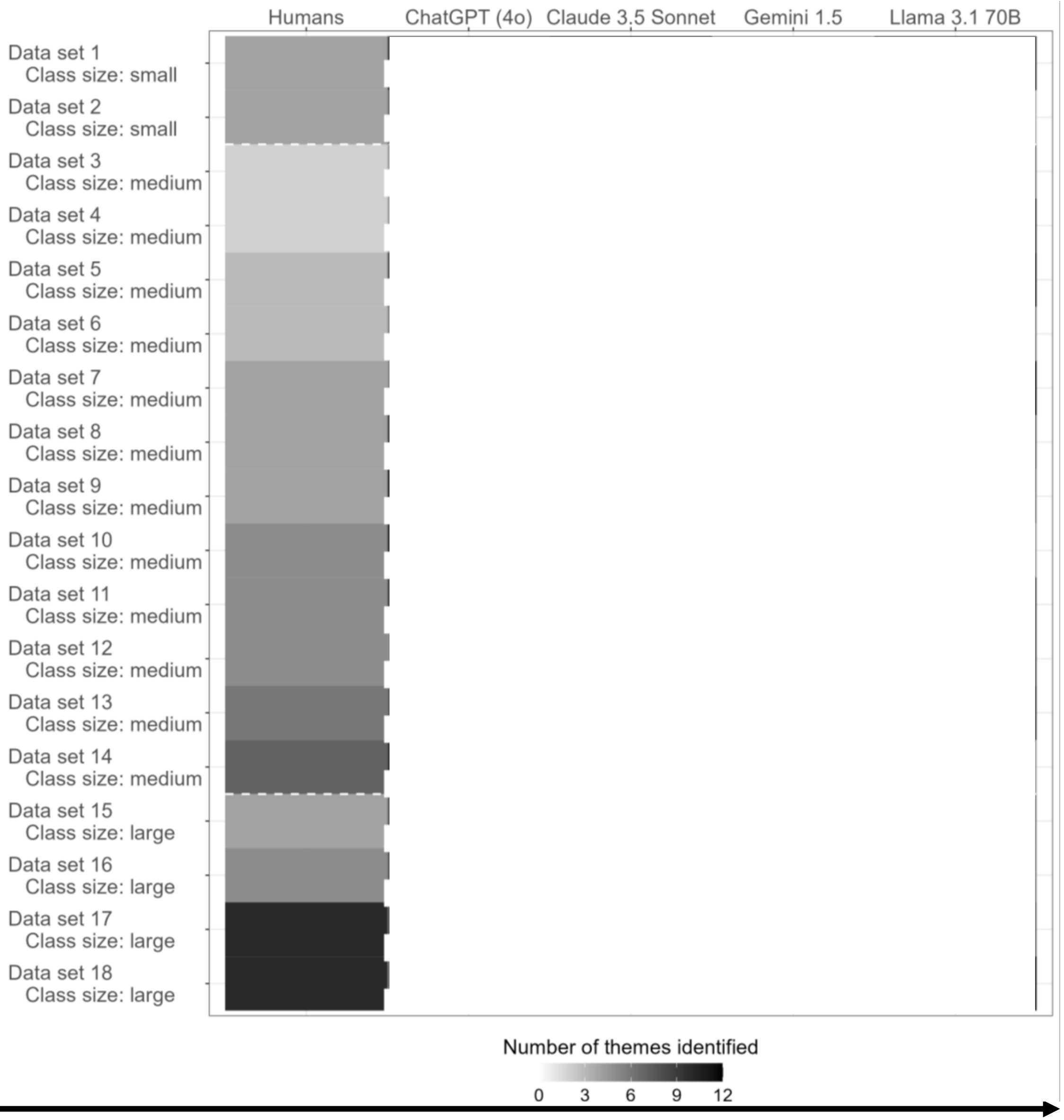
- Take instructor summary as “true” summary and compare LLM summaries with human summaries

Results: themes identified by group



Results: Themes identified by model



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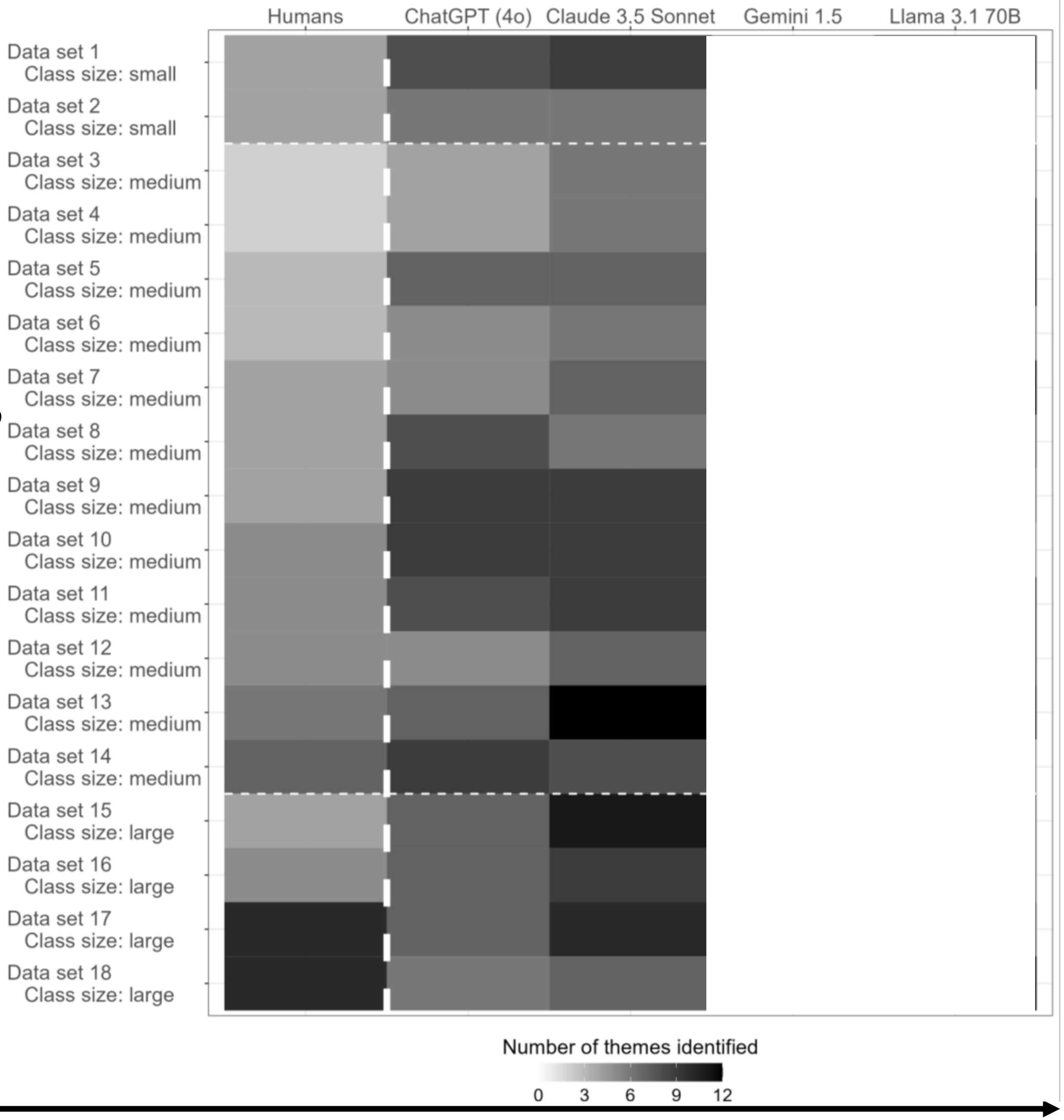
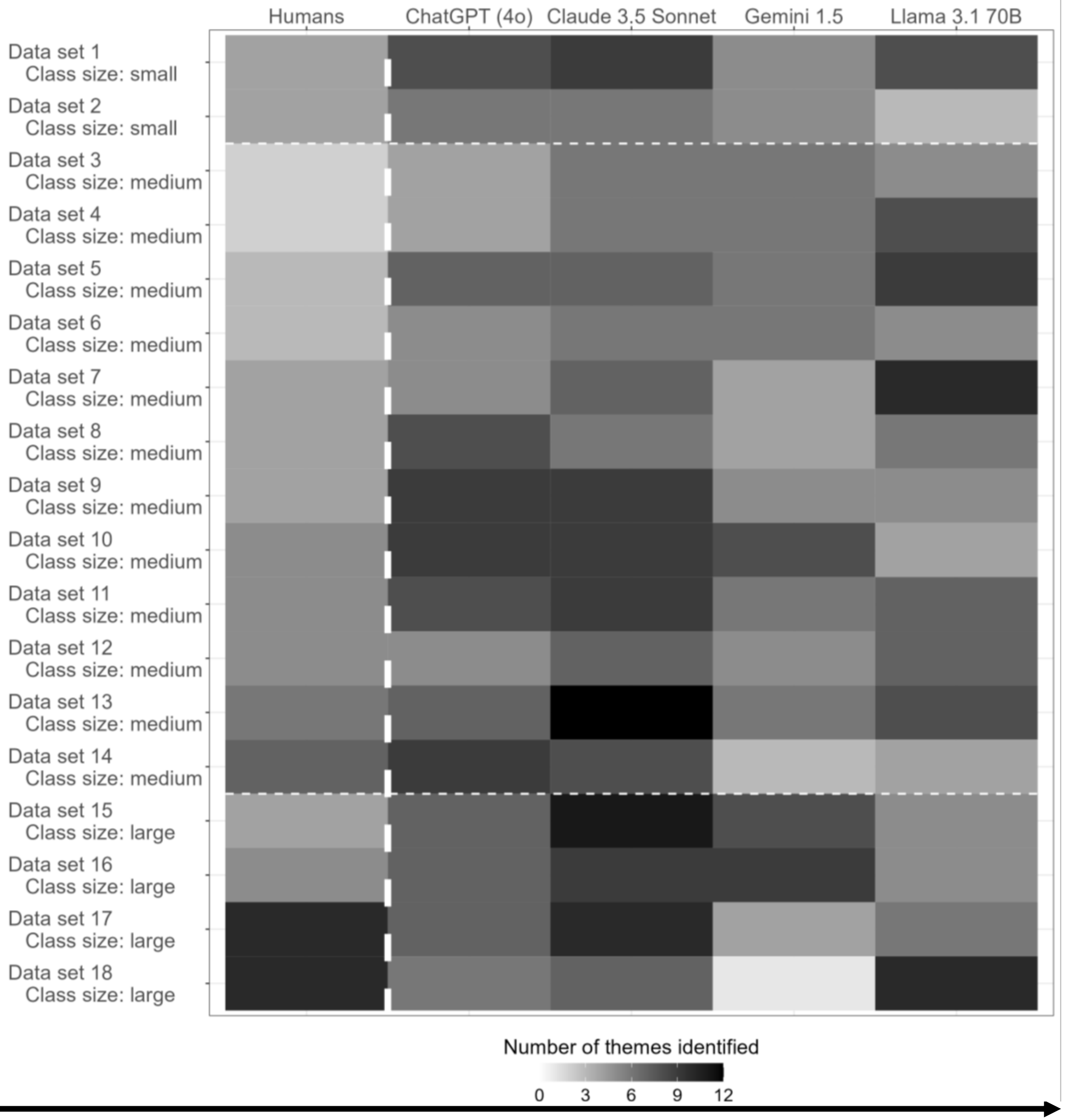
Results: ChatGPT and Claude identify more themes than instructors do

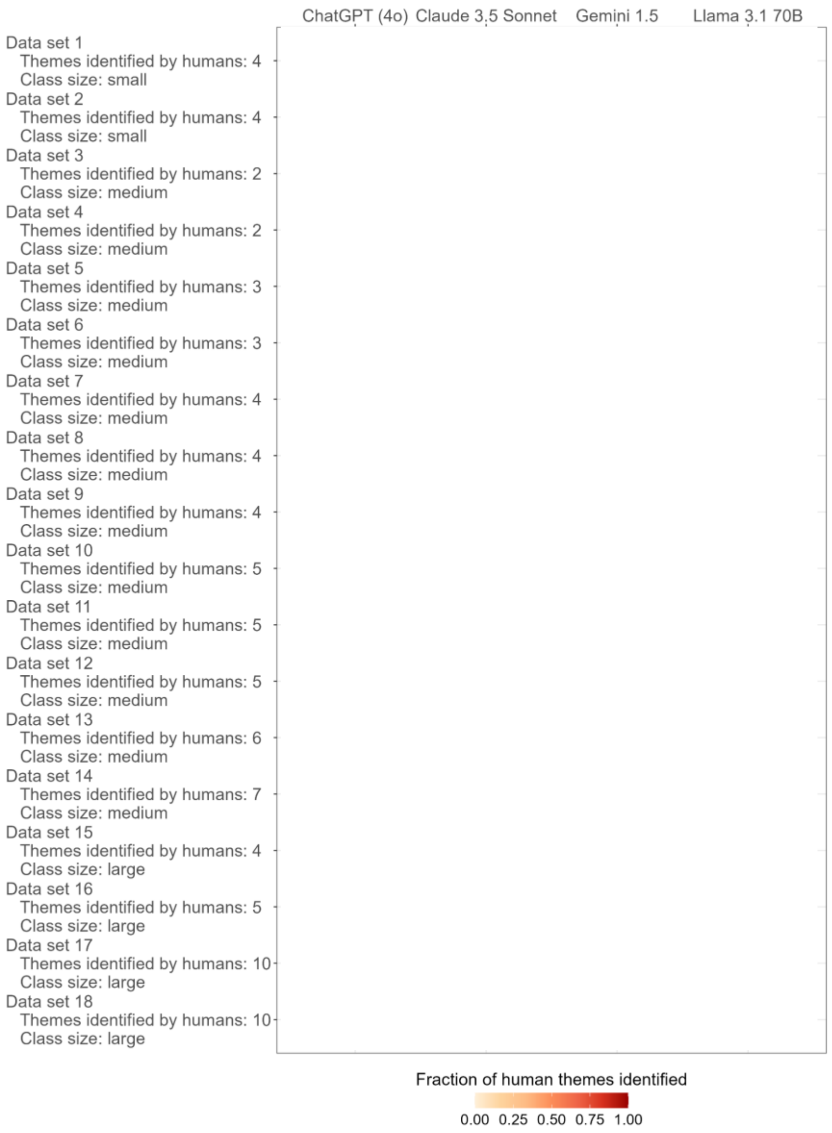


Results: Gemini and Llama have mixed results

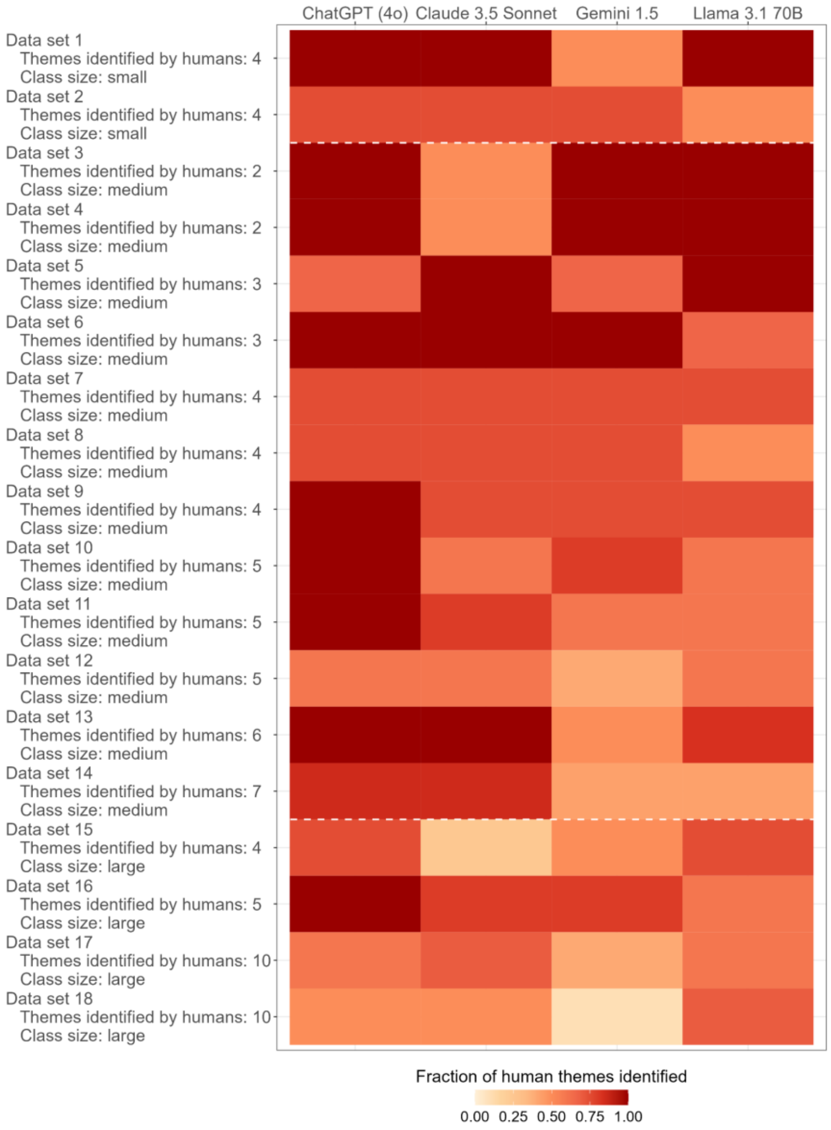


How do the LLMs do in comparison to the instructors?

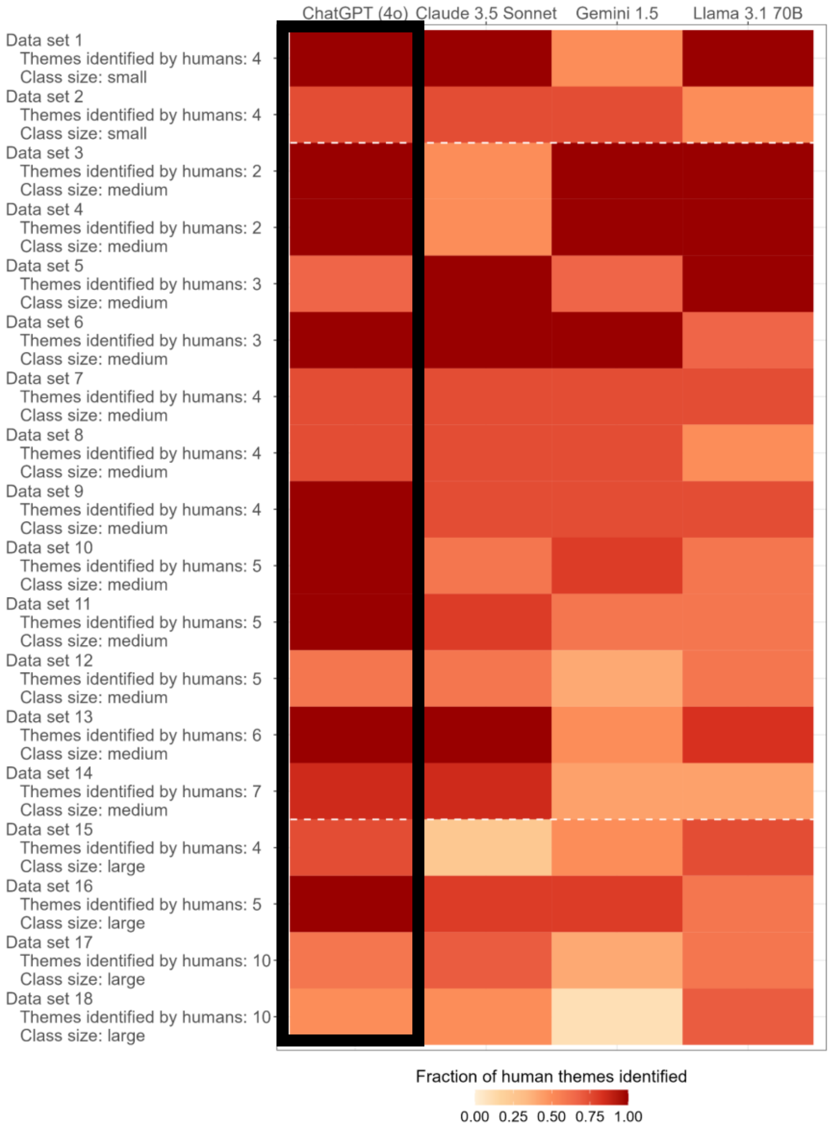
Results:


ChatGPT (4o)
Claude 3.5 Sonnet
Gemini 1.5
Llama 3.1 70B
Data set 1
Themes identified by humans: 4
Class size: small
Data set 2
Themes identified by humans: 4
Class size: small
Data set 3
Themes identified by humans: 2
Class size: medium
Data set 4
Themes identified by humans: 2
Class size: medium
Data set 5
Themes identified by humans: 3
Class size: medium
Data set 6
Themes identified by humans: 3
Class size: medium
Data set 7
Themes identified by humans: 4
Class size: medium
Data set 8
Themes identified by humans: 4
Class size: medium
Data set 9
Themes identified by humans: 4
Class size: medium
Data set 10
Themes identified by humans: 5
Class size: medium
Data set 11
Themes identified by humans: 5
Class size: medium
Data set 12
Themes identified by humans: 5
Class size: medium
Data set 13
Themes identified by humans: 6
Class size: medium
Data set 14
Themes identified by humans: 7
Class size: medium
Data set 15
Themes identified by humans: 4
Class size: large
Data set 16
Themes identified by humans: 5
Class size: large
Data set 17
Themes identified by humans: 10
Class size: large
Data set 18
Themes identified by humans: 10
Class size: large
Fraction of human themes identified
0.00
0.25
0.50
0.75
1.00

Results: All models are generally better at finding the same themes as humans when humans find fewer themes



Results: ChatGPT is generally best at finding the same themes as humans



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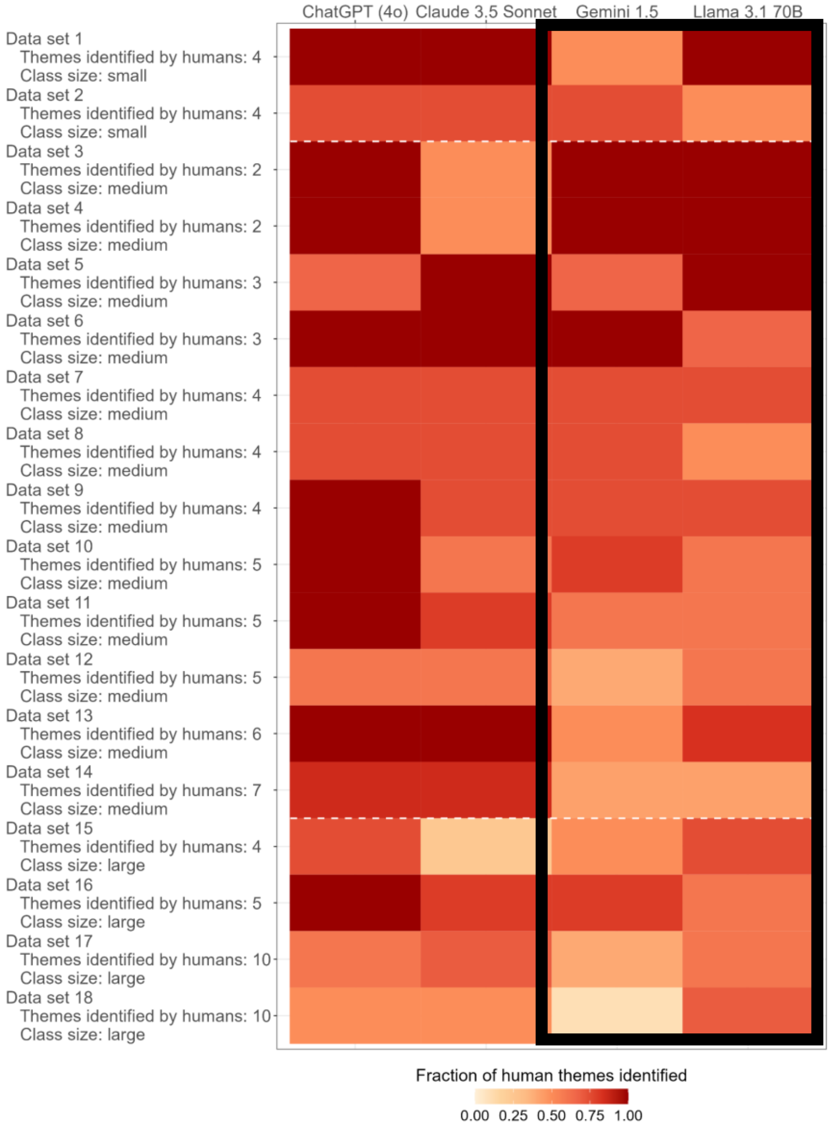
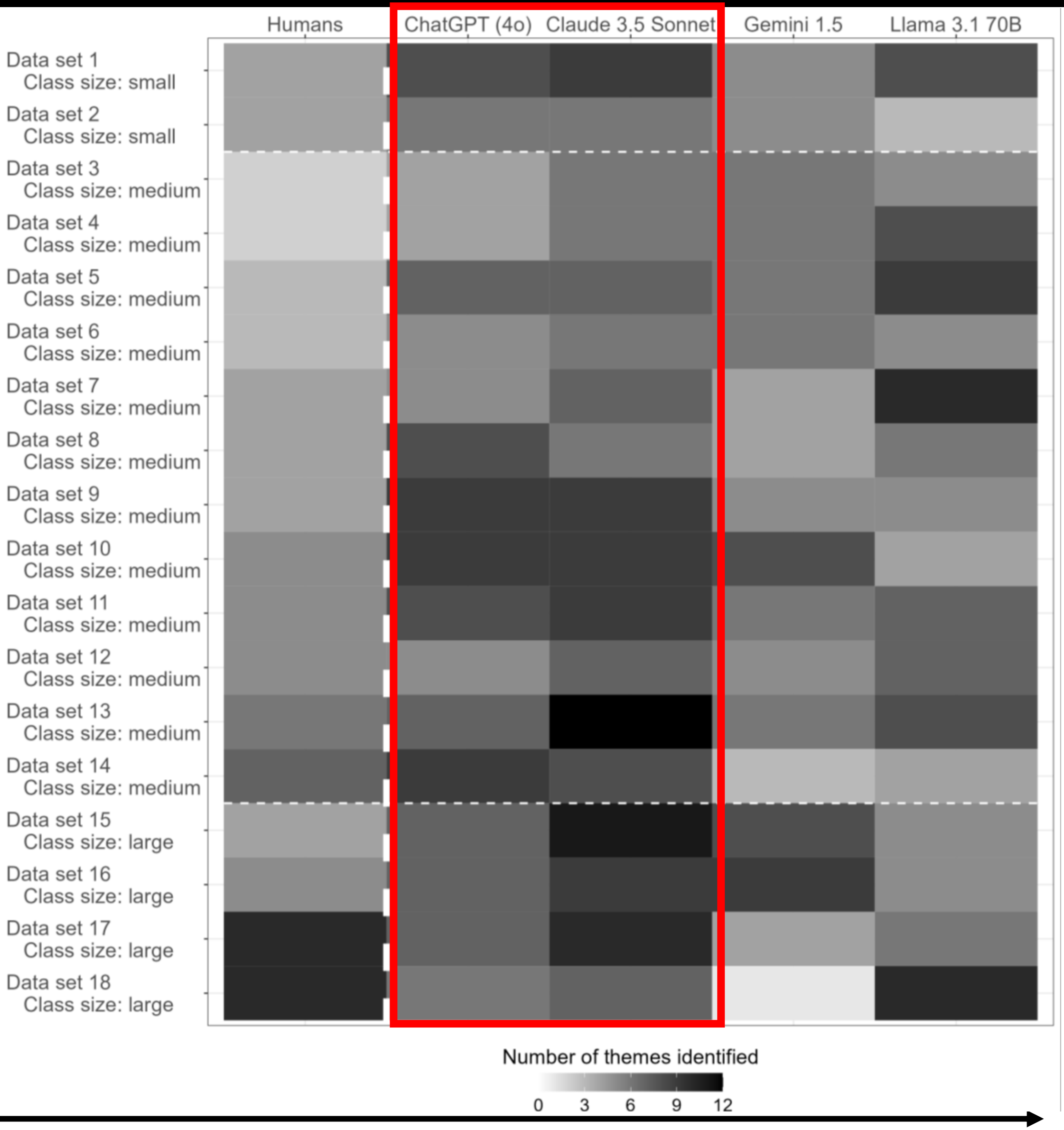
Results: Gemini and Llama were generally the worst at finding the human-identified themes



What about the themes not identified by humans?



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Are the extra themes hallucinations?

- Analysis still in progress

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- Probably not
    - Likely result of only 1 or 2 instructors identifying theme

Takeaways

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Questions?

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