Expectation formation in Large Language Models

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Shedding light into ChatGPT's behavior

1. Does ChatGPT answer the IAS on inflation perceptions and expectations like the UK public would do?

2. If not, which parts of the prompt drive the difference?

Exploiting the timing of ChatGPT's training period

- **Quasi-experimental design:**
  GPT-3.5 trained on data until Sep 2021

- Adapt the Shapley value framework to evaluate
  sensitivity to different parts of the prompt

Comment 1:
Information provision experiment vs. survey data

Problem:

Need to provide some additional information to create variation.

But:

HH are usually not perfectly informed about current levels of food & energy inflation.

Alternative:

Condition on HH's own inflation perception (and the survey date).

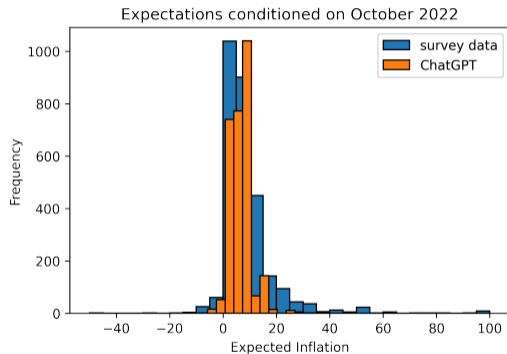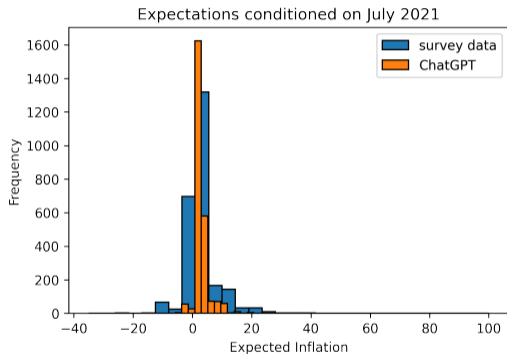# Providing inflation perceptions and the survey date

System: You are pretending to be the person described given your best guess as to their personal, social and economic situation.

User: You are [gender], aged [age], live in Germany, your income is in the [income] quintile of the German population. You attained [education]. You perceive the current annual inflation in Germany to be [perception]%.
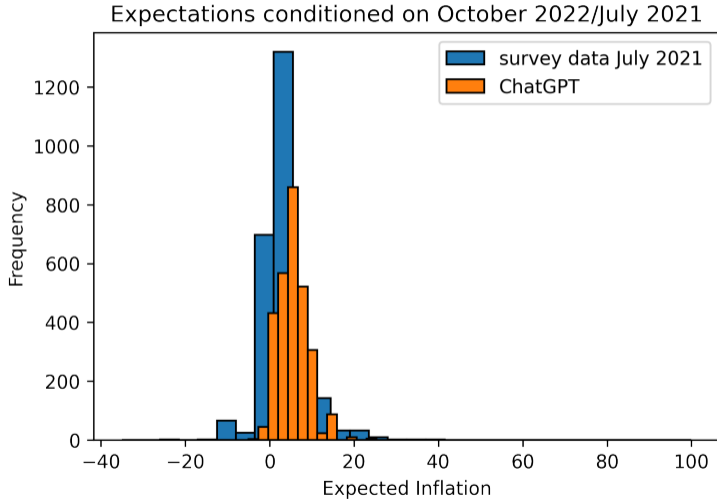
It is October 2022. / July 2021.

How much higher (lower) do you think prices in general will be 12 months from now in Germany? Please give your best guess of the change in percentage terms. Provide a number up to one decimal place, no explanation.
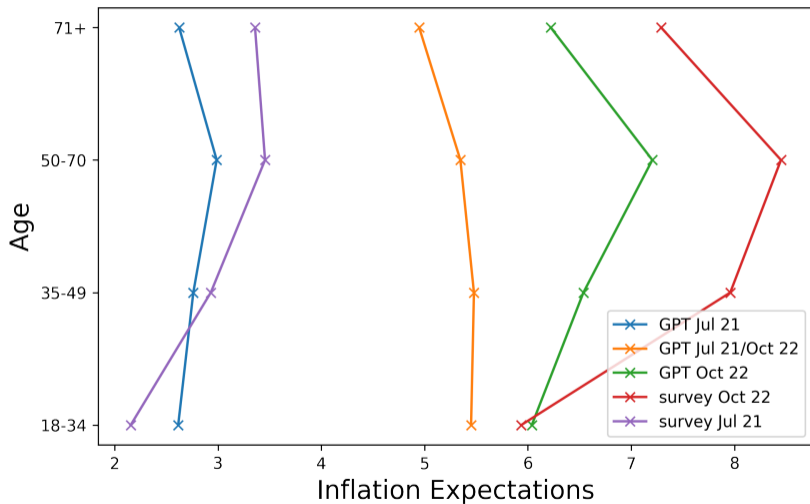
ChatGPT matches distribution of actual survey

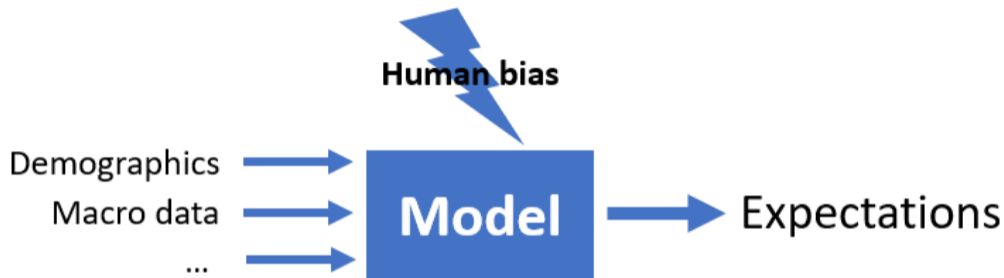# Changing the date shifts the distribution

Expectations conditioned on October 2022/July 2021

ChatGPT matches age heterogeneity

Comment 2: Potential extension

For example:
Hou, C. (2021). Learning and Subjective Expectation Formation: A Recurrent Neural Network Approach.*Available at SSRN 3728129.*

Further small comments:

- How much randomness is there in this kind of responses? Did you try running it multiple times with the same prompts?

- Different households have different consumption baskets, so one could provide household group-specific food inflation rates to match their information sets more closely.