Analysis plan

Coordination and Leadership: the impact of Artificial Intelligence

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Hypotheses

1. **H0**: Leadership with AI's message does not worsen coordination with respect to leadership with human message.
   H1: Leadership with AI's message leads to a lower Pareto-ranked equilibrium.

2. **H0**: Followers do not differentiate between AI and Human message.
   H1: Followers show algorithm aversion, choosing a lower effort level when the message is AI-generated, with respect to when it's human-written.

3. **H0**: Subjects' beliefs about others' actions do not change based on whether the message is AI-generated or human-written.
   H1: Leaders and/or followers update their beliefs when the message is AI-generated, expecting lower effort levels chosen by their teammates than when the message is human-written.

Analysis Plan

Hypothesis testing:

1. **Hypothesis 1**: Leadership with AI's message leads to a lower Pareto-ranked equilibrium.

    - **Outcome variable**: Coordination (take value equal to 1 if the Minimum Effort in the group is 3, 0 otherwise).
    - **Test**: Chi-square test with 33 observations per treatment (AI message and Human message), 1 per group.
    - **Regression**: Logit of Coordination on Treatment dummy, with and without control on text quality and covariates. Probit and LPM as robustness checks.

2. **Hypothesis 2**: Followers show algorithm aversion, choosing a lower effort level when the message is AI-generated, with respect to when it's human-written.

    - **Outcome variable**: Individual Effort Level (discrete variable, takes values from 0 to 3); Can be aggregated at the group level to obtain Average Effort Level.
    - **Test**: Wilcoxon-Mann-Whitney test with 132 observations per treatment (AI message and Human message); we exclude leaders' observations. Same with 33 observations per treatment for Average Effort Level.
    - **Regression**: Ordered logit of Individual Effort Level on Treatment dummy, with and without control on text quality of the human message, followers' charateristics and beliefs, clustered standard errors at the group level. ordered probit and OLS as robustness checks.

3. **Hypothesis 3**: Leaders and/or followers update their beliefs when the message is AI-generated, expecting lower effort levels chosen by their teammates than when the message is human-written.

- **Outcome variables**: Leaders beliefs about followers (discrete variable, takes values from 0 to 4); Followers beliefs about leader (discrete variable, takes values from 0 to 3); followers beliefs about other followers ((discrete variable, takes values from 0 to 3)
- **Test**: Wilcoxon-Mann-Whitney test with 132 observations per treatment for followers (AI message and Human message) and 165 for leaders.
- **Regression**: Ordered logit of each outcome variable (beliefs) on Treatment dummy, with and without control on text quality of the human message, followers' charateristics, clustered standard errors at the group level. Ordered probit and OLS as robustness checks.

Secondary analyses:

- **Leader's behavior**: Is there any significant difference in the effort level chosen by leaders between those who keep their own message and those who prefer ChatGPT?
- **Leader's choice**: Outcome variable is Choosing ChatGPT (binary variable); logit of outcome variable on the quality of the text, on the gender of the leader, and on the familiarity/trust in AI. Probit and OLS as robustness checks.