Information Provision and Subjective Assessment of COVID-19 Risks in Japan: April 2023 Survey

October 8, 2023

Asako Chiba (Tokyo Foundation for Policy Research)

Kazuya Haganuma (University of Tokyo)

Taisuke Nakata (University of Tokyo)

Thuy Linh Nguyen (University of Tokyo)

Reo Takaku (Hitotsubashi University)

Research purposes

- Explore how the dissemination of COVID-19 related information affects the subjective risk assessment
  - Infection risk
  - Fatality risk

What we do

- We conduct a large-scale survey to investigate how various types of information related to COVID-19 affect people's subjective assessment of infection and fatality risks.

Key results: Information provision

- The group provided with level information (total infected cases and total deaths) does not exhibit significantly different subjective risks than the control group (receiving no information).
- The group provided with percentage information on actual infection and fatality risk exhibits lower subjective risks than the control group.
- The group provided with qualitative information (i.e., the increasing trend in the number of new cases and fatality rate) exhibits higher subjective risks than the control group.

Design of the survey

- Timing: April 25 to April 27, 2023
- Target: Men and women aged 20 and older nationwide
- Number of valid responses: 10,008
- Nationally representative: Distributions in age, gender was matched to those in the 2020 Population Census
- Ethics approval number (University of Tokyo): 23-32
- Attributions:
  - Male: 49.4%, Female: 50.6%
  - Age groups: 20s-30s: 28.2%, 40s-50s: 37.5%, Over 60s: 34.3%

Information provision

Participants were divided into four groups, each consisting of 2,502 respondents, and were provided with the following information:

- **Group 1 – "No Information":**
  - No information was provided.
- **Group 2 – "Information (Level)":**
  - Total infected cases from mid-March 2023 to mid-April 2023: 226,007
  - Total deaths from April 2022 to March 2023: 45,727
- **Group 3 – "Information (Percentage)":**
  - Actual infection rate from mid-March 2023 to mid-April 2023: 0.18%
  - Actual fatality rate from April 2022 to March 2023: 0.17%
- **Group 4 – "Information (Qualitative)":**
  - "The number of new cases has been gradually increasing, and there is concern about the spread of infection after the holidays in May. On April 19, the expert group mentioned the possibility of a 9th wave, which would be larger than the 8th wave."
  - "Compared to the 6th and 7th waves (January-April 2022 and July-September 2022), the 8th wave (November 2022-February 2023) showed an increase in fatality rate."

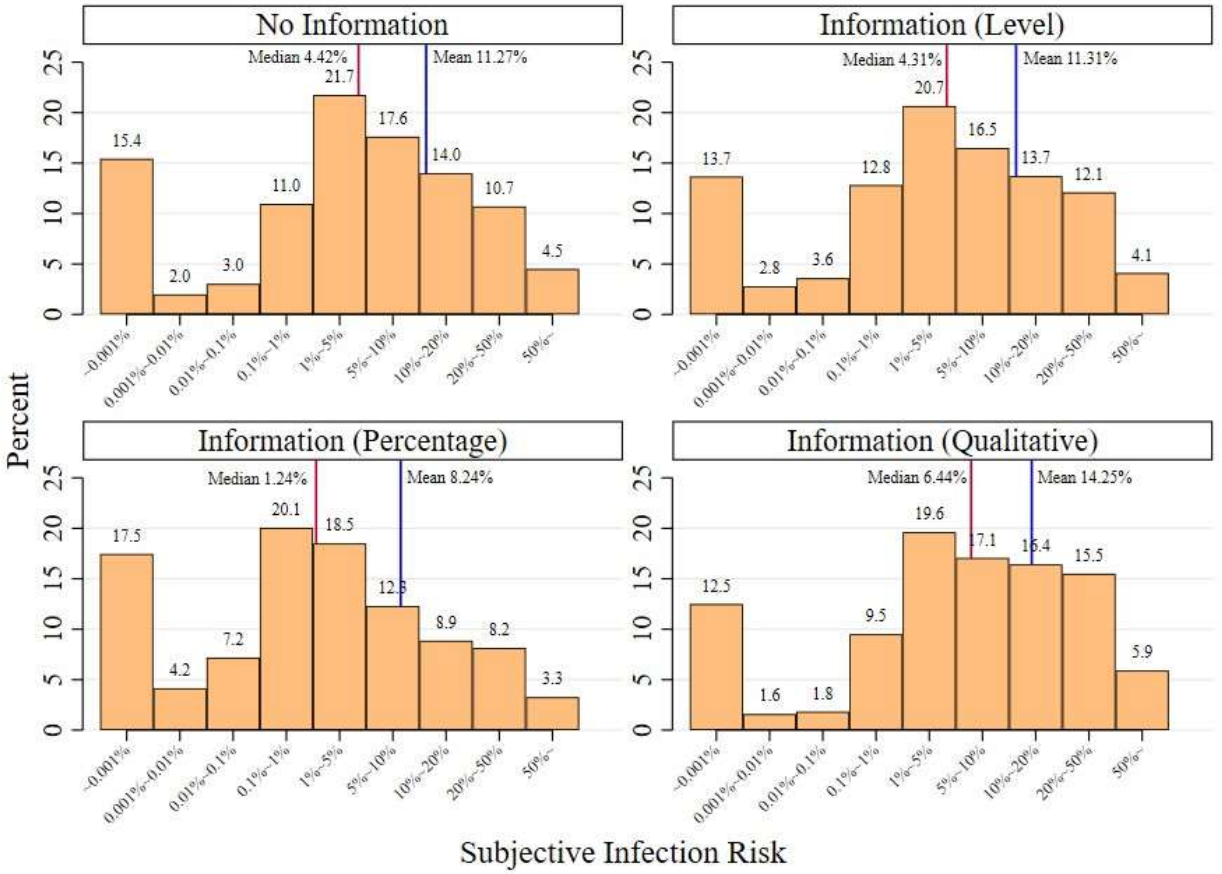
Survey questions

- Questions on the perception of COVID-19 risks (inquired after providing the information related to COVID-19 infection or fatality risk):
  - Subjective probability of contracting COVID-19 within the next month
  - Subjective probability of fatality if infected within the next month
  - Response options: (1) less than 0.001%, (2) 0.001% – 0.01%, (3) 0.01% – 0.1%, (4) 0.1% – 1%, (5) 1% – 5%, (6) 5% – 10%, (7) 10% – 20%, (8) 20% – 50%, and (9) 50% or higher
- Questions on individual characteristics:
  - Basic information: age, gender, place of residence, education level, marital status
  - Health situation: medical history of chronic diseases
  - COVID-19-related experiences: vaccination status, number of past infections, acquaintances' COVID-19-related deaths
  - Primary media source (e.g., television, newspaper, internet, SNS, or others)

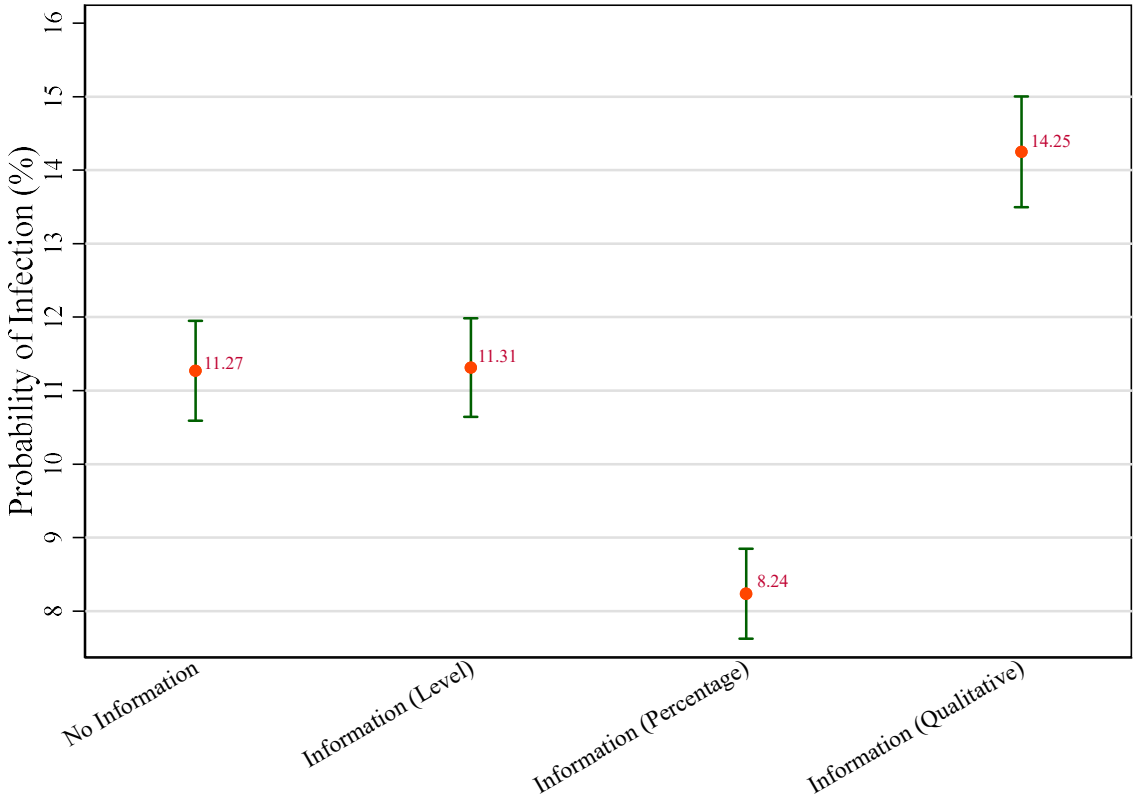
Calculation of “actual risks” for overestimation/underestimation analyses

- Data sources:
  - Population of Japan – Statistics Bureau of Japan
  - Newly confirmed and death cases – Ministry of Health, Labour and Welfare
- “Actual risks”:
  - Infection risk: 0.23% (Period: April 9 – May 8, 2023)
    - After COVID-19 was classified as a Category V Infectious Disease on May 8, 2023, the system changed from recording the number of daily new infections (“notifiable disease surveillance”) to recording the number of new infections in selected medical institutions (“sentinel surveillance”).
    - ➢ The statistic represents only an estimate of the actual risk at the time of the survey.
  - Fatality risk: 0.24% (Period: November 1, 2022 – February 28, 2023 (eighth wave of COVID-19))

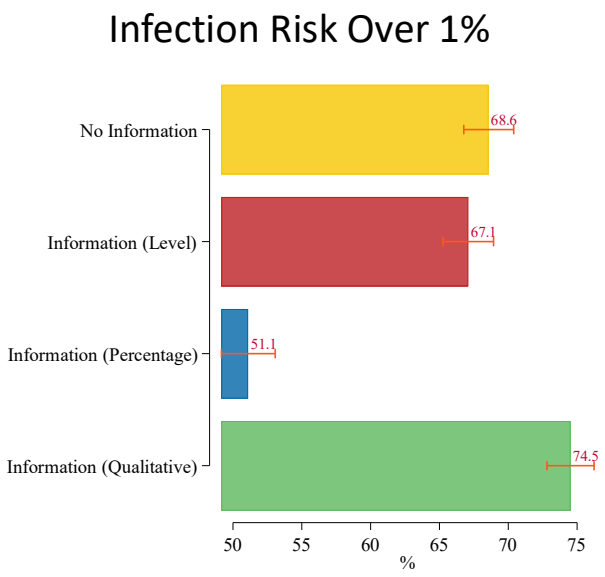
Distribution of infection risk perception

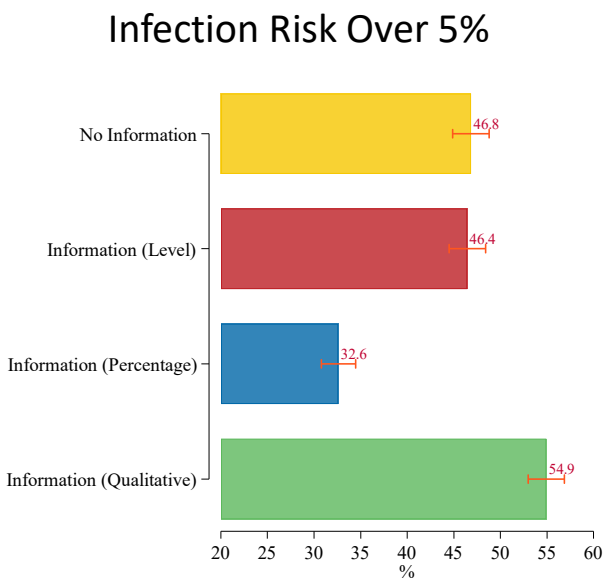


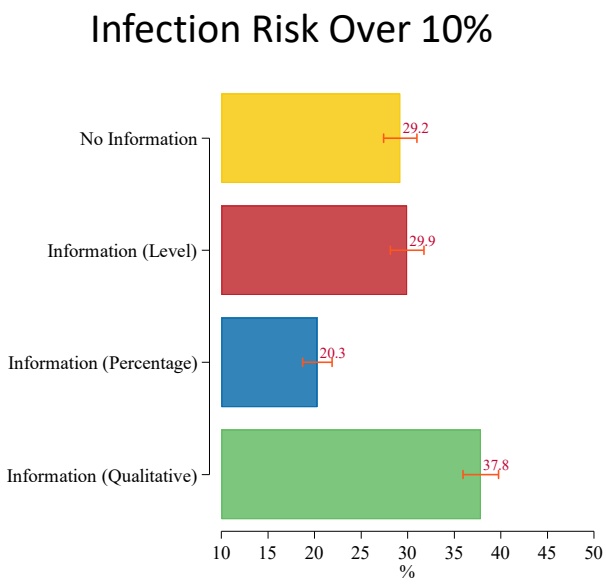
Information intervention and risk perception: Subjective probability of infection



Information intervention and infection risk perception: Overestimation

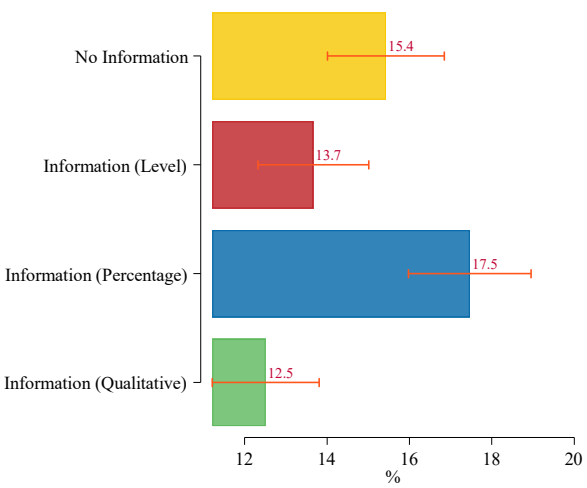




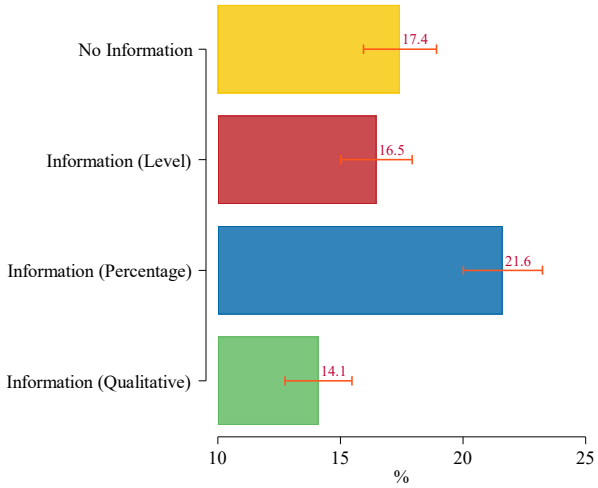


Information intervention and infection risk perception: Underestimation

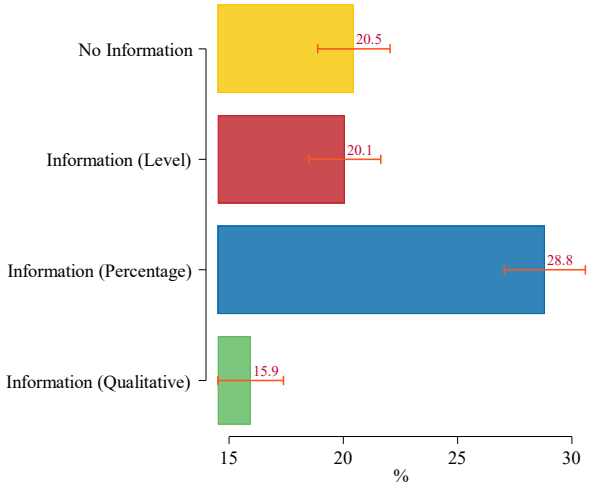
Infection Risk Under 0.001%



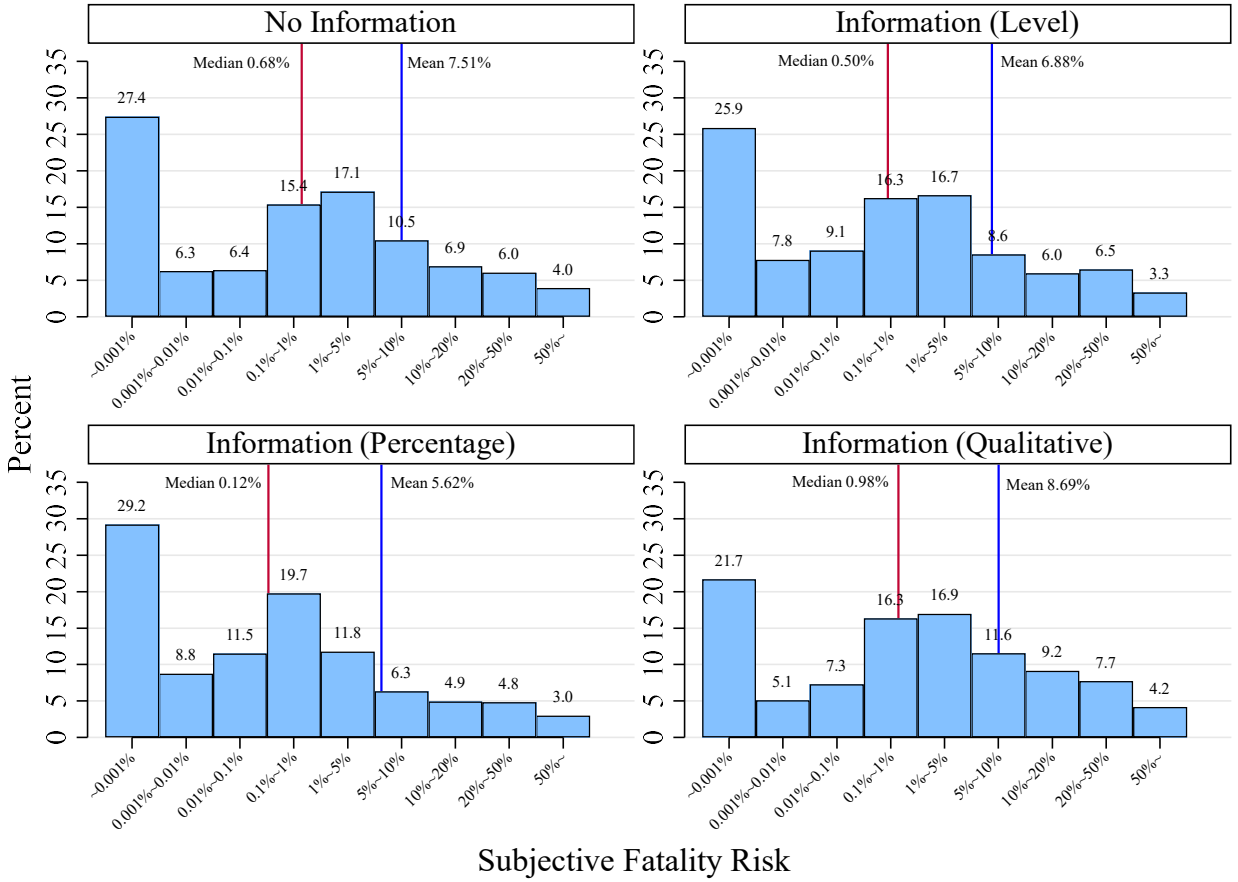
Infection Risk Under 0.01%



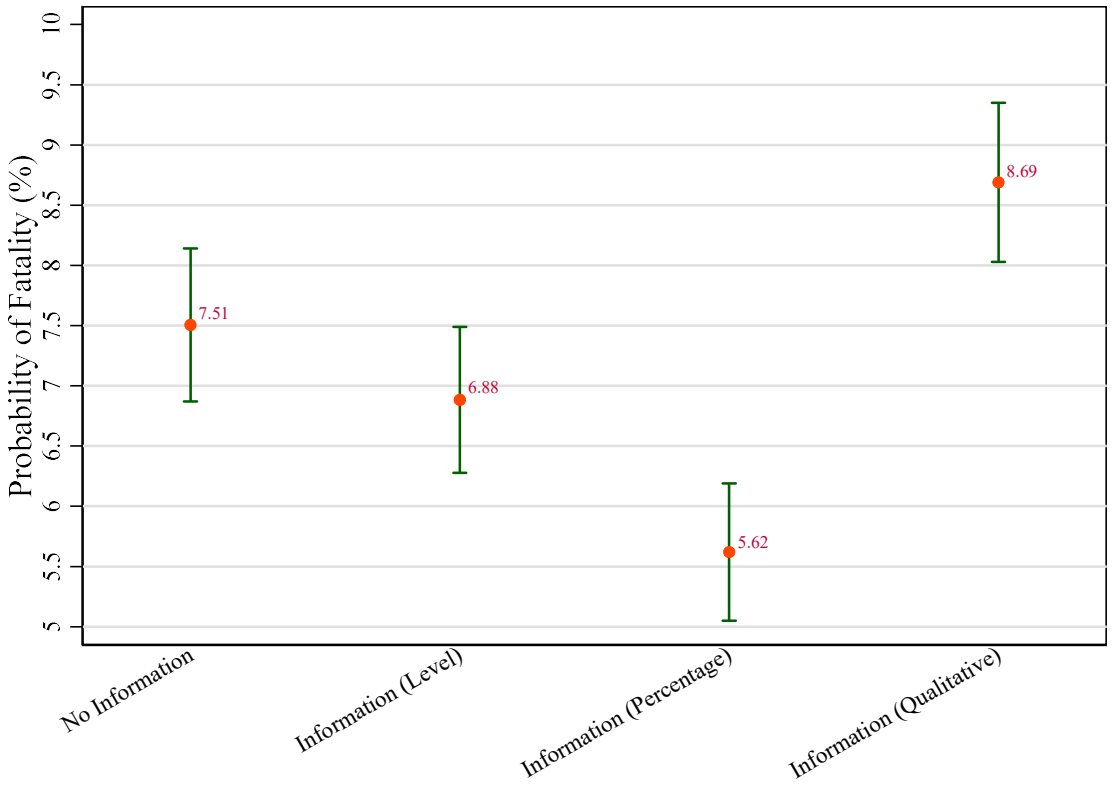
Infection Risk Under 0.1%



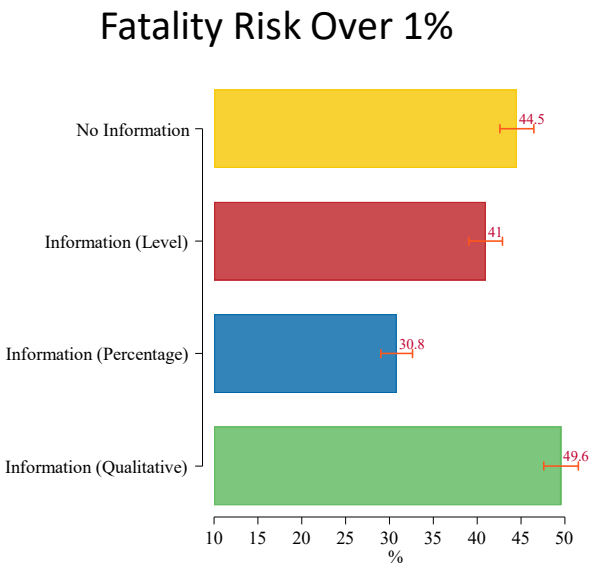
Distribution of fatality risk perception

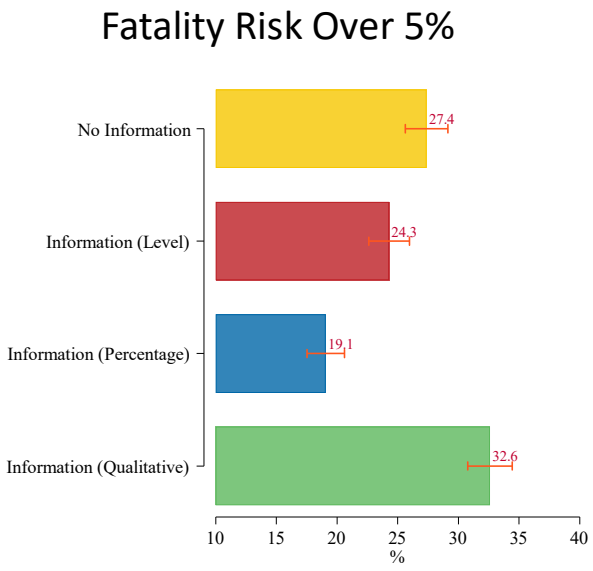


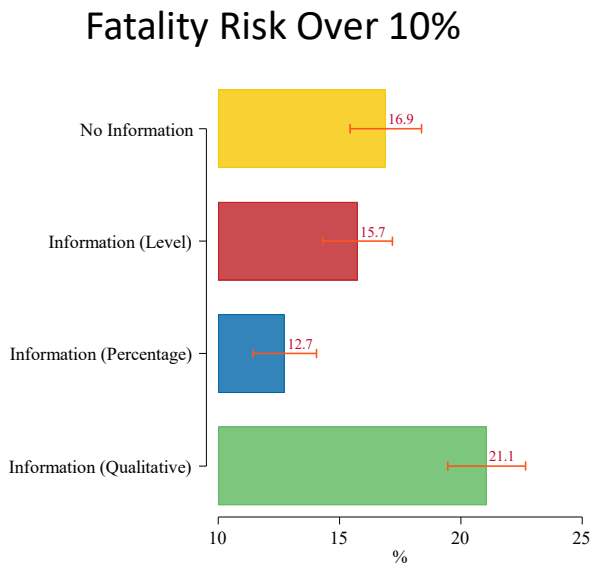
Information intervention and risk perception: Subjective probability of fatality



Information intervention and fatality risk perception: Overestimation

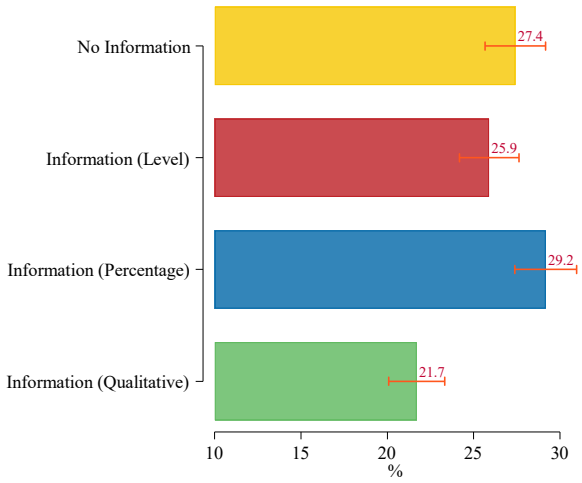




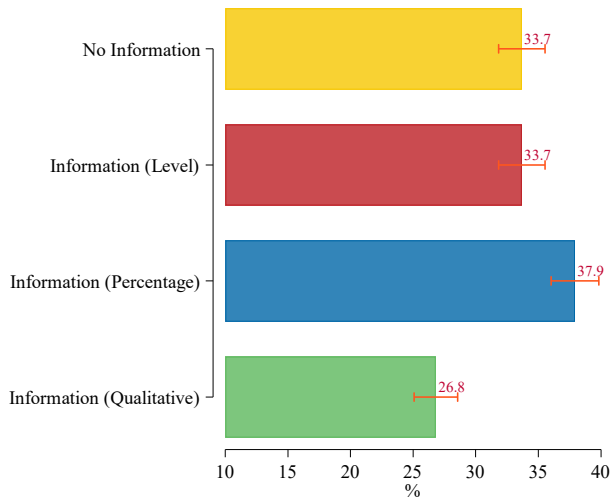


Information intervention and fatality risk perception: Underestimation

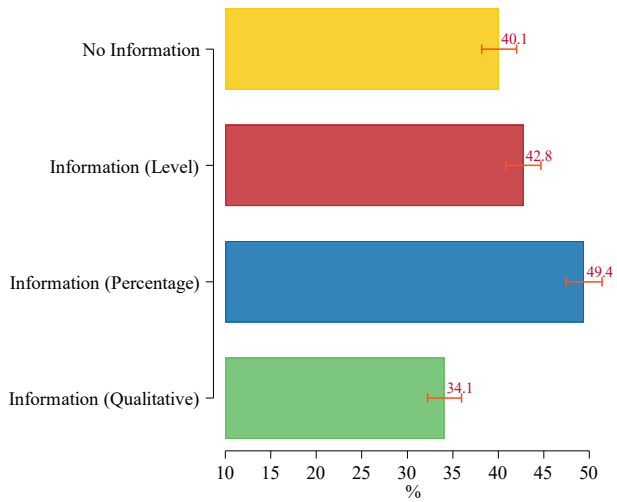
Fatality Risk Under 0.001%



Fatality Risk Under 0.01%



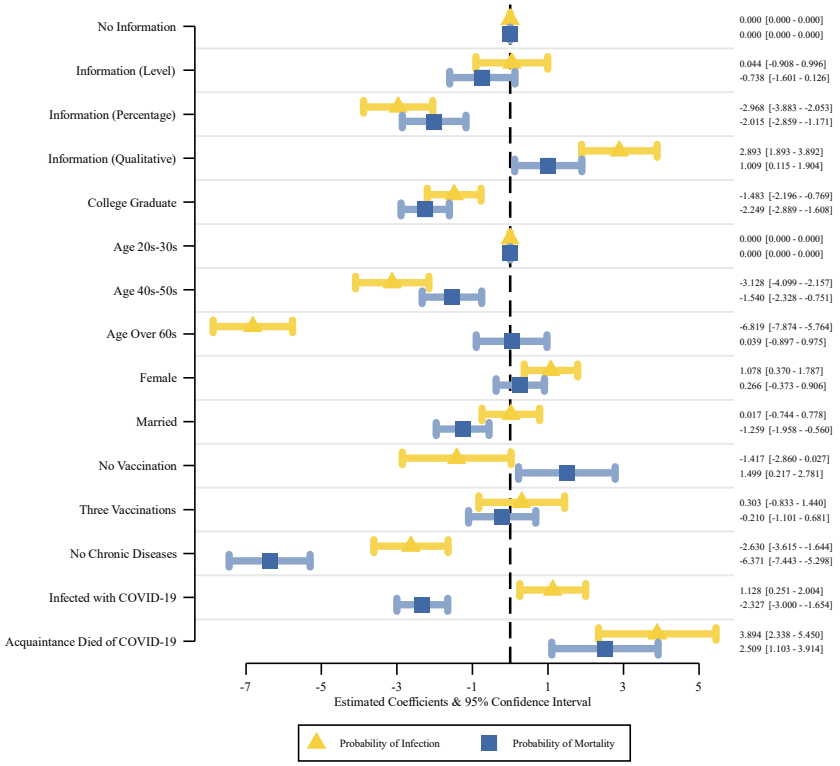
Fatality Risk Under 0.1%



Multivariate Analysis

- Model: Linear regression and logistic regression
- Outcome variables:
  - *Probability of Infection (Fatality):* the midpoints in responses about subjective risks.
    - Example: A participant rated the infection risk to be 50% or higher → The *Probability of Infection* would be 75%.
  - *Infection (Fatality) Over 1%, 5%, 10%*: equals 1 if the subjective risk of infection (fatality) is equal to or higher than 1%, 5% or 10%.
  - *Infection (Fatality) Under 0.001%, 0.01%, 0.1%*: equals 1 if the subjective risk of infection (fatality) is less than 0.001%, 0.01%, or 0.1%.
- Independent variables:
  - Information group dummies
  - *College Graduate*: equals 1 if the person has a bachelor's degree or higher
  - Demographic factors (age group, gender, marital status)
  - Vaccination status, health situation
  - Proxies for COVID-19 related experiences (*Infected with COVID-19* and *Acquaintances Died of COVID-19*)
- Covariates:
  - Primary media source
  - Prefecture fixed effects

Linear regression

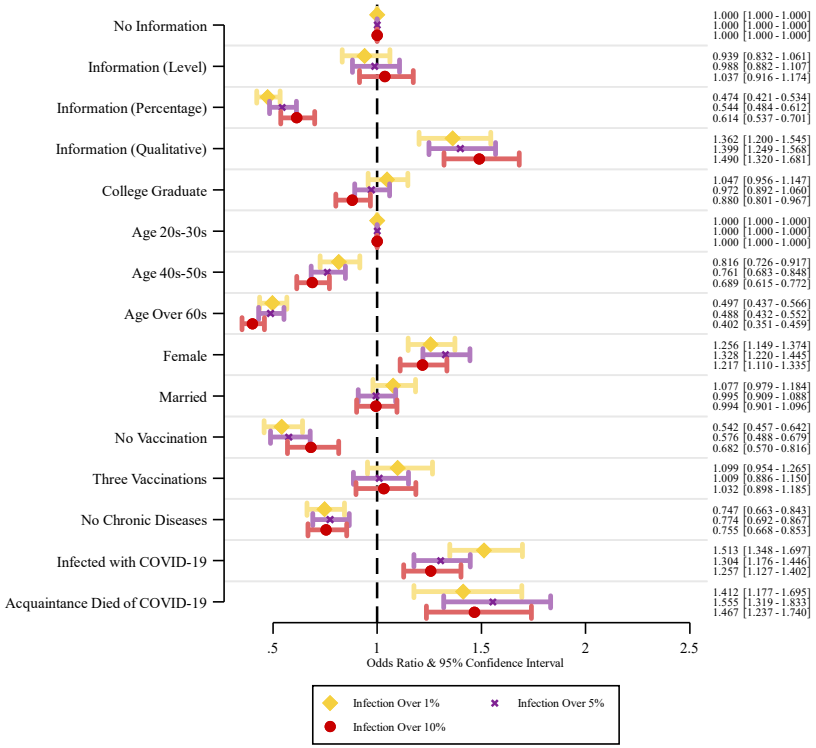


Note: N = 10,008.

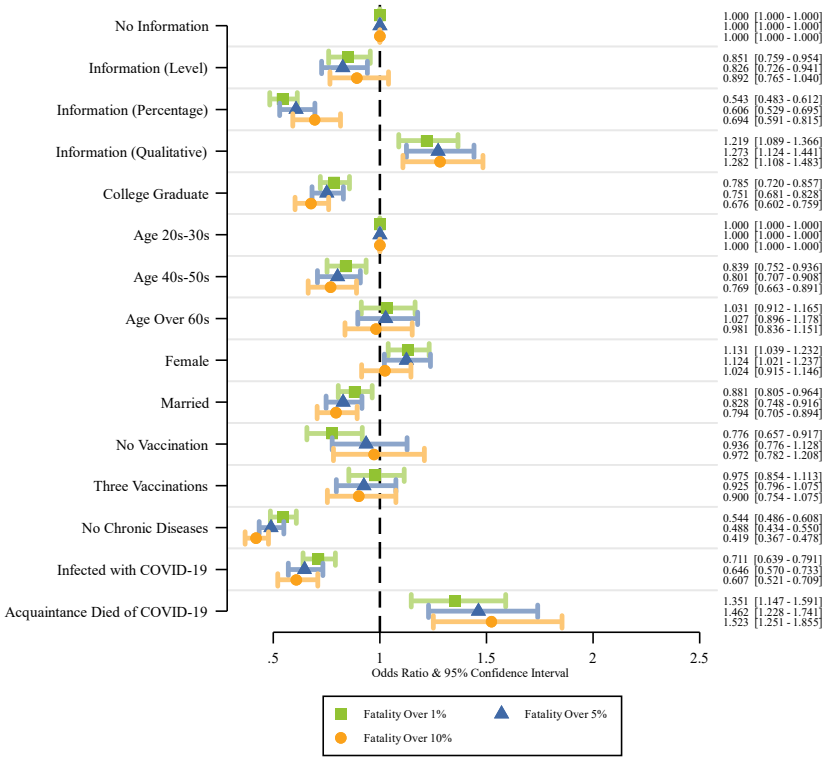
- The outcome variables – *Probability of Infection* (or *Fatality*) – are continuous.
- In the regressions, we also control for the media source and prefecture fixed effects.

Risk overestimation – Logistic regression

Infection Risk



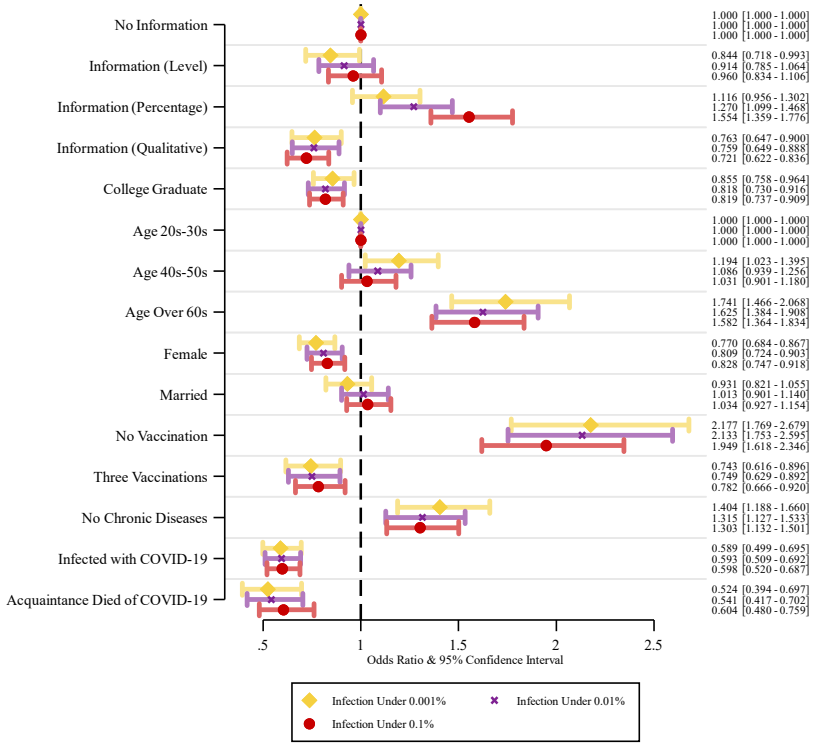
Fatality Risk



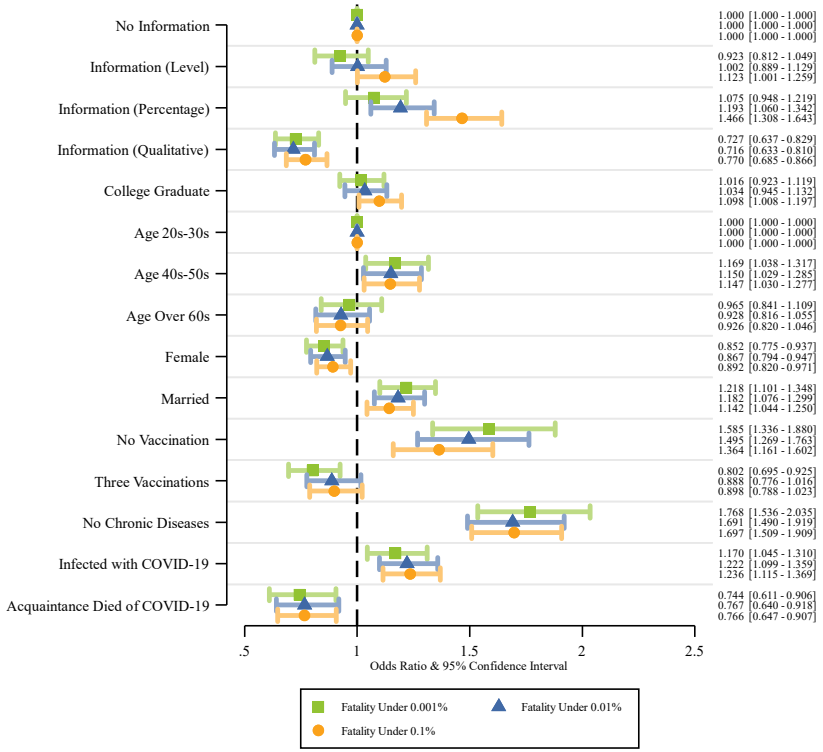
Note: N = 10,008. In the regressions, we also control for the media source and prefecture fixed effects.

Risk underestimation – Logistic regression

Infection Risk



Fatality Risk



Note: N = 10,008. In the regressions, we also control for the media source and prefecture fixed effects.