**Supplementary information**

[Survey information 2](#_Toc135676199)

[Additional background information for the nine countries at the time of the two surveys 3](#_Toc135676200)

[Summary of responses to different demographic questions by country 3](#_Toc135676201)

[Converting survey responses to numeric scores 5](#_Toc135676202)

[Quantification of factor effects 6](#_Toc135676203)

[Sensitivity analysis: using the raw, unimputed data in the regression analysis 14](#_Toc135676204)

[Sensitivity analysis: potential changes in the impacts of diverse explanatory variables on vaccine endorsement at the two time points of the surveys 16](#_Toc135676205)

[References 21](#_Toc135676206)

# Survey information

**Sampling approach**: Samples in all countries composed of adults (over 18 years old) residing in the survey countries and speaking at least one of the survey languages. The final samples were supposed to be representative of the wider population in terms of age and gender, and weights would be assigned if the final sample differed significantly from the available national data. More specifically, in CATI (computer-assisted telephonic interviews) countries, the sample was chosen from existing telephone databases of respondents who have registered to take part in opinion surveys, and quotas were set to ensure an appropriate distribution in terms of gender, age, and region. In countries where surveys were conducted online, a similar approach was used where a sample was drawn from existing online panels with quotas set to ensure a representative spread of the population. In CAPI (computer-assisted personal interviews) countries, the number of interviews to be conducted in each region was determined by the distribution of the population according to the latest estimates, after which an appropriate number of Primary Sampling Units (PSUs, specific areas in which interviews are to be conducted) were randomly selected from the best available database and interviewing teams were then dispatched to the required areas to conduct the interviews.

**Respondent selection**: The interviewing teams, which composed of interviewers and a supervisor, selected a local focal point as the starting point at the required PSUs. Then, each interviewer proceeded in a different direction, utilizing a randomizing ‘skip pattern’ derived from the day’s date to select households and establish contact with residents. After contact was made, a respondent within each household was randomly chosen using a Kish Grid approach and interviewers would either conduct the interview with him or her or schedule a call-back appointment. The interview would be terminated immediately once the respondent withdrew his or her consent to interview.

**Languages**: The original survey was composed in English, but was translated by local fieldwork partners and verified by an external agency.

**Quality control**: Before fieldwork started, all interviewers were trained on the questionnaire, while both CATI and CAPI survey scripts underwent thorough checks to ensure all appropriate logic checks were in place. In CATI countries, interviewers’ first calls were overseen by a supervisor to ensure their use of proper interviewing techniques. The duration of interview was also monitored to prevent the interviewers from speeding, in terms of the length for both the entire interview and specific sections within the survey. Between 10% and 15% of calls per country were randomly selected for back-checking to ensure validity of data. Meanwhile, all face-to-face interviews were closely monitored during fieldwork through daily checking of new interviews, assessing duration of the overall interview and specific sections within the survey, verification of interview location accuracy via GPS, and review of interviewer recordings to ensure correct methodology was followed. Upon completion of fieldwork in each country, the data were ‘cleaned’ to ensure a comprehensive and reliable final dataset.

**Table S1. Summary of the sampling approaches, languages, and time of the two surveys in each of the nine countries.** CATI means computer-assisted telephonic interviews, while CAPI means computer-assisted personal interviews. A mixed CATI and CAPI approach was used in Vietnam in 2021 to achieve the 1000 samples. Surveys for Malaysia in 2022 were in either Malay or English. PNG stands for Papua New Guinea.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Mongolia** | **Japan** | **South Korea** | **Vietnam** | **Laos** | **Cambodia** | **Philippines** | **Malaysia** | **PNG** |
| **Methodology** | CATI | Online | Online | CAPI (2021),  CATI | CATI | CATI | CATI | Online | CATI |
| **Languages** | Mongolian | Japanese | Korean | Vietnamese | Lao | Khmer | Tagalog, Hiligaynon, Cebuano | Malay,  English (2022) | Tok Pisin |
| **Time (2021)** | 22/06–30/06 | 05/07–08/07 | 05/07–14/07 | 16/06–14/07 | 17/06–11/07 | 16/06–04/07 | 11/06–04/07 | 14/06–27/06 | 05/08–25/08 |
| **Time (2022)** | 01/05–15/05 | 17/05–26/05 | 19/05–01/06 | 17/05–26/05 | 17/05–26/05 | 17/05–26/05 | 12/05–31/05 | 20/05–20/06 | 17/05–26/05 |

**Contents of the surveys**: Each survey consisted of four sections, including socio-demographic information, knowledge of COVID-19 vaccine, perception and attitude towards COVID-19 vaccine, and COVID-19 related rumour management. Responses to most of the questions are either yes or no, or on a Likert scale, and the respondents could choose the answer that best matched their perceptions. We did not include any open-ended questions in our analyses. Respondents were supposed to answer all the survey questions, but they might choose ‘Don’t know’ or ‘Refused to say’ if they did not wish to provide an answer. The two surveys were conducted independently, in mid 2021 and 2022 respectively.

# Additional background information for the nine countries at the time of the two surveys

We estimated the mean vaccination rates at the time of the surveys using statistics from Our World in Data,1 a website that collected data from public official sources only. Since not all the countries reported their vaccination data on a daily basis, we interpolated and extrapolated the missing parts using ‘gam’ function in R package ‘mgcv’,2 and took the average over the entire survey periods. The estimated mean percentage (%) of people receiving at least one dose in each country is presented in Table S2. The figures are different from the estimated proportions from the survey responses, since some countries (e.g., Mongolia) stopped updating their vaccine uptake and children were also who are ineligible for vaccination were also counted in the denominators, but generally we see by the time of the 2021 survey, the vaccination campaigns had rolled out and by the time of the 2022 survey, majority of the population in all but Papua New Guinea had been vaccinated.

**Table S2. Summary of vaccination rates (%, proportion of people receiving at least one dose)in each country at the time of the surveys.**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Mongolia** | **Japan** | **South Korea** | **Vietnam** | **Laos** | **Cambodia** | **Philippines** | **Malaysia** | **PNG** |
| **2021** | 61 | 31 | 30 | 3·0 | 11 | 23 | 5·7 | 16 | 0·79 |
| **2022** | 65 | 83 | 87 | 85 | 77 | 89 | 65 | 83 | 3·23 |

In addition, we obtained from the Oxford COVID-19 Government Response Tracker COVID-19 vaccination policies in each country.3 The COVID-19 vaccines were free for all the adult residents in the nine countries investigated. While the COVID-19 vaccines were universally available at the time of the 2022 survey, not all the residents in these countries were eligible for vaccination when the 2021 survey were conducted, but all the priority groups, such as essential workers and the elderly had had access to the vaccines.

# Summary of responses to different demographic questions by country

**Table S3. Summary of demographic characteristics (age, gender, education and religion) of the respondents by country for the survey in 2021.** PNG stands for Papua New Guinea. NA indicates not provided.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Mongolia** | **Japan** | **South Korea** | **Vietnam** | **Laos** | **Cambodia** | **Philippines** | **Malaysia** | **PNG** | **Total** |
| **By age** |  |  |  |  |  |  |  |  |  |  |
| 18–24 | 156 | 108 | 184 | 126 | 265 | 200 | 227 | 242 | 142 | 1650 |
| 25–34 | 273 | 128 | 176 | 261 | 291 | 319 | 260 | 351 | 167 | 2226 |
| 35–44 | 224 | 157 | 181 | 260 | 197 | 234 | 231 | 264 | 112 | 1860 |
| 45–54 | 171 | 174 | 201 | 183 | 139 | 166 | 146 | 85 | 97 | 1362 |
| 55+ | 176 | 473 | 391 | 214 | 108 | 81 | 136 | 58 | 34 | 1671 |
| **By gender** |  |  |  |  |  |  |  |  |  |  |
| Female | 513 | 521 | 495 | 517 | 496 | 509 | 500 | 498 | 234 | 4283 |
| Male | 487 | 498 | 547 | 527 | 504 | 490 | 500 | 502 | 318 | 4373 |
| Other | 0 | 3 | 15 | 0 | 0 | 1 | 0 | 0 | 0 | 19 |
| NA | 0 | 18 | 76 | 0 | 0 | 0 | 0 | 0 | 0 | 94 |
| **By education** |  |  |  |  |  |  |  |  |  |  |
| No formal | 2 | 8 | 13 | 3 | 19 | 168 | 4 | 8 | 67 | 292 |
| Primary | 18 | 2 | 20 | 53 | 224 | 321 | 189 | 21 | 152 | 1000 |
| Secondary | 478 | 174 | 252 | 642 | 507 | 361 | 480 | 294 | 227 | 3415 |
| Vocational | 63 | 234 | 88 | 86 | 170 | 10 | 70 | 88 | 39 | 848 |
| University | 412 | 440 | 479 | 248 | 68 | 138 | 239 | 528 | 60 | 2612 |
| Masters/PhD | 27 | 72 | 165 | 12 | 12 | 2 | 6 | 51 | 1 | 348 |
| Other | 0 | 40 | 16 | 0 | 0 | 0 | 10 | 0 | 0 | 66 |
| NA | 0 | 70 | 100 | 0 | 0 | 0 | 2 | 10 | 6 | 188 |
| **By religion** |  |  |  |  |  |  |  |  |  |  |
| None | 404 | 182 | 263 | 674 | 0 | 0 | 0 | 11 | 0 | 1534 |
| Animism | 0 | 3 | 7 | 4 | 237 | 0 | 0 | 0 | 0 | 251 |
| Buddhism | 487 | 443 | 272 | 266 | 746 | 968 | 1 | 203 | 0 | 3386 |
| Christian | 21 | 37 | 332 | 85 | 16 | 15 | 858 | 135 | 0 | 1499 |
| Hindu | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 67 | 0 | 71 |
| Muslim | 34 | 1 | 4 | 0 | 0 | 11 | 48 | 531 | 0 | 629 |
| Taoism | 0 | 5 | 18 | 11 | 0 | 1 | 1 | 28 | 0 | 64 |
| Other | 49 | 52 | 70 | 0 | 0 | 2 | 92 | 0 | 0 | 265 |
| NA | 5 | 316 | 164 | 4 | 1 | 3 | 0 | 25 | 552 | 1070 |
| **Total** | 1000 | 1040 | 1133 | 1044 | 1000 | 1000 | 1000 | 1000 | 552 | 8769 |

**Table S4. Summary of demographic characteristics (age, gender, education and religion) of the respondents by country for the survey in 2022.** PNG stands for Papua New Guinea. NA indicates not provided.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Mongolia** | **Japan** | **South Korea** | **Vietnam** | **Laos** | **Cambodia** | **Philippines** | **Malaysia** | **PNG** | **Total** |
| **By age** |  |  |  |  |  |  |  |  |  |  |
| 18–24 | 156 | 138 | 237 | 127 | 208 | 180 | 210 | 249 | 127 | 1632 |
| 25–34 | 273 | 135 | 177 | 253 | 306 | 270 | 274 | 325 | 145 | 2158 |
| 35–44 | 224 | 157 | 181 | 221 | 211 | 203 | 214 | 271 | 111 | 1793 |
| 45–54 | 171 | 172 | 191 | 182 | 164 | 148 | 163 | 113 | 103 | 1407 |
| 55+ | 176 | 464 | 369 | 220 | 111 | 199 | 139 | 42 | 27 | 1747 |
| **By gender** |  |  |  |  |  |  |  |  |  |  |
| Female | 513 | 510 | 472 | 509 | 459 | 510 | 499 | 496 | 250 | 4218 |
| Male | 487 | 487 | 519 | 494 | 541 | 490 | 501 | 504 | 263 | 4286 |
| Other | 0 | 12 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 24 |
| NA | 0 | 57 | 152 | 0 | 0 | 0 | 0 | 0 | 0 | 209 |
| **By education** |  |  |  |  |  |  |  |  |  |  |
| No formal | 9 | 4 | 10 | 1 | 15 | 243 | 5 | 10 | 32 | 329 |
| Primary | 40 | 30 | 21 | 40 | 148 | 367 | 125 | 21 | 106 | 898 |
| Secondary | 466 | 283 | 234 | 675 | 352 | 222 | 540 | 270 | 220 | 3262 |
| Vocational | 76 | 189 | 57 | 65 | 121 | 12 | 69 | 72 | 54 | 715 |
| University | 377 | 431 | 500 | 217 | 355 | 136 | 256 | 533 | 100 | 2905 |
| Masters/PhD | 29 | 59 | 166 | 5 | 8 | 11 | 4 | 75 | 0 | 357 |
| Other | 0 | 4 | 5 | 0 | 1 | 0 | 0 | 0 | 1 | 11 |
| NA | 3 | 66 | 162 | 0 | 0 | 9 | 1 | 19 | 0 | 260 |
| **By religion** |  |  |  |  |  |  |  |  |  |  |
| None | 429 | 152 | 242 | 556 | 1 | 0 | 1 | 22 | 0 | 1403 |
| Animism | 1 | 7 | 3 | 0 | 260 | 0 | 0 | 3 | 0 | 274 |
| Buddhism | 492 | 545 | 234 | 327 | 720 | 967 | 0 | 233 | 1 | 3519 |
| Christian | 18 | 39 | 301 | 102 | 15 | 14 | 897 | 85 | 510 | 1981 |
| Hindu | 1 | 3 | 6 | 1 | 0 | 0 | 0 | 90 | 0 | 101 |
| Muslim | 32 | 4 | 5 | 0 | 0 | 14 | 29 | 533 | 0 | 617 |
| Taoism | 0 | 6 | 10 | 9 | 0 | 2 | 1 | 33 | 0 | 61 |
| Other | 17 | 77 | 91 | 0 | 0 | 3 | 72 | 1 | 1 | 262 |
| NA | 10 | 233 | 263 | 8 | 4 | 0 | 0 | 0 | 1 | 519 |
| **Total** | 1000 | 1066 | 1155 | 1003 | 1000 | 1000 | 1000 | 1000 | 513 | 8737 |

**Table S5. Summary of the percentages (%) of the missing demographic data for the two surveys.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Age** | **Country** | **Gender** | **Education** | **Religion** |
| 2021 | 0 | 0 | 1·1 | 2·1 | 12\* |
| 2022 | 0 | 0 | 2·4 | 3·0 | 5·9 |

\*6·3% if Papua New Guinea is excluded.

# Converting survey responses to numeric scores

**Table S6. Recoded levels to responses for different survey questions or statements.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Questions/Statements** | | **Recoded level** | | | | |
| **1** | **2** | **3** | **4** | **5** |
| **Vaccine endorsement** | |  |  |  |  |  |
|  | Would you accept the COVID-19 vaccine for yourself? (2021) | Definitely no | Unsure but  leaning towards no | Don’t know/  Refused | Unsure but  leaning towards yes | Definitely yes |
| **Trust-related** | |  |  |  |  |  |
| **T1** | I think new COVID-19 vaccines would be safe. (2021)/  I think the COVID-19 vaccines are safe. (2022) | Strongly disagree | Tend to disagree | Don’t know/  Refused | Tend to agree | Strongly agree |
| **T2** | I think new COVID-19 vaccines would be important. (2021)/  I think the COVID-19 vaccines are important. (2022) | As above | | | | |
| **T3** | I think new COVID-19 vaccines would be effective. (2021)/  I think the COVID-19 vaccines are effective. (2022) | As above | | | | |
| **T4** | How much do you trust the local health care providers who would give you a COVID-19 vaccine? | Not at all | Not much | Don’t know/  Refused | Some what | A lot |
| **Misinformation-related** | |  |  |  |  |  |
| **M1** | Vaccine trials have led to the death of people. (2021)/  COVID-19 vaccine trials have led to the death of people. (2022) | Definitely true | Maybe true | Don’t know/  Refused | Maybe false | Definitely false |

# Quantification of factor effects

**Logistic regression model**

A logistic regression framework was used to infer contributions of different factors (both socio-demographic indicators and perceptions towards the COVID-19 vaccines) to the vaccine endorsement in 2021 and 2022.

The socio-demographic factors of interest include age, gender, education level and religion, but since there was no religion-related information available for Papuan respondents in the 2021 survey, we excluded this predictor in the regression analysis for Papua New Guinea. Besides, for education level, we reclassified the original seven levels into two: under-educated and well-educated, wherein people having received post-secondary education, including vocational, university, master’s and PhD education belonged to the well-educated group and those with at most secondary education or other education were treated as under-educated. The perceptions towards the COVID-19 vaccines were measured in levels through people’s sentiments towards the trust- or misinformation-related questions or statements specified in Table S4. Since answers to the first three trust-related statements in each survey were highly correlated (Table 2), we instead utilized a trust score calculated from the responses to these three statements with principal component analysis. Details for the derivation are to be illustrated in the subsequent sections.

For individual from country surveyed at time (), the binary response only when he or she reported a positive attitude towards the COVID-19 vaccines in 2021 (‘Unsure but leaning towards yes’ or ‘Definitely yes’), or having received at least one dose by 2022. Then, the logistic regression model was

, for , , ,

where a logit link function was used for as

.

In this, was the intercept for all the respondents from country and was the regression coefficient for factor . To allow the estimates to be fully data-driven, we did not incorporate any prior knowledge or set constraints to the coefficient s, but we did assume a specific factor would have the same impact on vaccine endorsement at different time points.

Considering the low counts of respondents who held a non-positive attitude towards the COVID-19 vaccine in 2021 or had not been vaccinated in 2022 in some countries (e.g., Vietnam and Cambodia), we estimated the model parameters using Firth’s bias-reduced logistic regression, realized through the R-package “logistf”.4 This approach maximized the penalized log-likelihood with the incorporation of the Fisher information matrix, i.e.,

,

where was the likelihood function for the vector of parameters to be estimated, ,and was the corresponding Fisher information matrix.

**Meta-analysis for the regression coefficients**

We conducted a meta-analysis to estimate the overall contribution of each factor to vaccine endorsement across different countries. We considered a random-effects model with the function “estmeta” from the R-package “metaan”,5,6 in which the mean and standard error for coefficient were calculated as

,

,

where , was the number of countries involved in the model and .

**Imputation of the missing data**

The sample size would be greatly reduced if we exclude all the respondents with missing socio-demographic information (6.9% and 7.1% for the 2021 and 2022 survey respectively) or trust responses (53·6% of the Laotian respondents in the 2022 survey). Therefore, we utilized multiple imputation to compensate for the missing proportion. We augmented 100 datasets, in which the missing socio-demographic data were inferred sequentially from the known information (i.e., the missing data regarding gender were predicted from age and country, while education levels were predicted from age, country and gender (including the imputed ones), on the basis of which we further made up the missing data of religion). As for the unknown responses to trust-related statements in Laos in the 2022 survey, the predictions were made based on the country, age, gender and religion information in each imputed dataset, assuming these predictors were the only influencing factors. All the imputation was done using multinomial models, implemented through the “multinom” function in the R-package “nnet”.7

**Derivation of the trust score**

A principal component analysis was performed on the responses (in five levels from 1 to 5, excluding the imputed data) to the first three trust-related statements in both surveys concerning the safety, importance and effectiveness of the COVID-19 vaccines. We took the first principal component (PC), which could be seen as a weighted average of the three variables included and explained around 80% of the total variation in the raw data. We calculated the scores for this PC and re-scaled them so that they had the same range as the original responses (i.e., from 1 to 5). The re-scaled values were taken to be the trust scores. For the Laotians whose responses to trust-related statements were missing in the 2022 survey, we extrapolated the trust scores from the imputed data using the same parameters as the previous calculations.

**Calculation of the point estimates and 95% confidence intervals in the regression model**

We fitted the logistic regression model to each imputed dataset. The pooled univariate estimates were then calculated from the point estimates and standard deviations of the coefficients in these complete data analyses, using the “pool.scalar” function in the R-package “mice”.8

**Quantitative results**

**Table S7. Estimated proportions (medians and 95% Bootstrap confidence intervals) of people willing to accept the COVID-19 vaccine by age, gender, education or religion for each country in 2021.** Groups whose sizes are smaller than 10 are marked in grey. PNG stands for Papua New Guinea.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | |  | | Mongolia | | Japan | | South Korea | | Vietnam | | Laos | | Cambodia | | Philippines | | Malaysia | PNG |
| Age | | **18–24** | | 0·95  [0·91,0·98] | | 0·59  [0·50,0·68] | | 0·56  [0·49,0·63] | | 0·94  [0·89,0·98] | | 0·92  [0·88,0·95] | | 0·89  [0·84,0·93] | | 0·78  [0·72,0·83] | | 0·88  [0·83,0·92] | 0·36  [0·28,0·44] |
| **25–34** | | 0·89  [0·85,0·92] | | 0·75  [0·67,0·82] | | 0·63  [0·56,0·7] | | 0·96  [0·93,0·98] | | 0·95  [0·93,0·98] | | 0·89  [0·85,0·92] | | 0·76  [0·70,0·81] | | 0·89  [0·85,0·92] | 0·38  [0·30,0·45] |
| **35–44** | | 0·96  [0·93,0·98] | | 0·69  [0·61,0·76] | | 0·74  [0·67,0·8] | | 0·95  [0·92,0·97] | | 0·96  [0·94,0·99] | | 0·87  [0·82,0·91] | | 0·69  [0·63,0·75] | | 0·88  [0·84,0·92] | 0·34  [0·25,0·43] |
| **45–54** | | 0·95  [0·91,0·98] | | 0·75  [0·68,0·81] | | 0·82  [0·77,0·87] | | 0·96  [0·93,0·99] | | 0·94  [0·89,0·97] | | 0·89  [0·84,0·94] | | 0·68  [0·60,0·75] | | 0·91  [0·84,0·96] | 0·36  [0·27,0·46] |
| **55+** | | 0·96  [0·93,0·99] | | 0·84  [0·81,0·87] | | 0·86  [0·83,0·9] | | 0·94  [0·90,0·97] | | 0·96  [0·91,0·99] | | 0·92  [0·85,0·97] | | 0·71  [0·63,0·78] | | 0·88  [0·79,0·96] | 0·44  [0·28,0·62] |
| Gender | | **Female** | | 0·93  [0·91,0·95] | | 0·72  [0·69,0·76] | | 0·76  [0·72,0·79] | | 0·95  [0·93,0·97] | | 0·94  [0·92,0·96] | | 0·88  [0·85,0·90] | | 0·70  [0·66,0·74] | | 0·89  [0·87,0·92] | 0·35  [0·29,0·41] |
| **Male** | | 0·94  [0·92,0·96] | | 0·82  [0·78,0·85] | | 0·82  [0·79,0·85] | | 0·95  [0·93,0·96] | | 0·94  [0·92,0·96] | | 0·90  [0·87,0·92] | | 0·76  [0·72,0·79] | | 0·88  [0·84,0·90] | 0·38  [0·32,0·43] |
| **Other** | |  | | 1·00  [0·29,1·00] | | 0·53  [0·27,0·80] | |  | |  | | 1·00  [0·03,1·00] | |  | |  |  |
| Education | | **No** | | 1·00  [0·16,1·00] | | 0·64  [0·25,1·00] | | 0·54  [0·25,0·82] | | 0·67  [0·01,1·00] | | 1·00  [0·82,1·00] | | 0·83  [0·77,0·88] | | 0·75  [0·19,0·99] | | 0·75  [0·35,0·97] | 0·27  [0·17,0·38] |
| **Primary** | | 1·00  [0·82,1] | | 1·00  [0·16,1·00] | | 0·55  [0·33,0·77] | | 0·89  [0·80,0·97] | | 0·93  [0·89,0·96] | | 0·88  [0·85,0·92] | | 0·56  [0·49,0·63] | | 0·86  [0·68,1·00] | 0·30  [0·23,0·38] |
| **Secondary** | | 0·92  [0·89,0·94] | | 0·76  [0·69,0·82] | | 0·81  [0·76,0·86] | | 0·95  [0·93,0·97] | | 0·93  [0·91,0·95] | | 0·90  [0·87,0·93] | | 0·74  [0·70,0·78] | | 0·87  [0·83,0·90] | 0·43  [0·36,0·49] |
| **Vocational** | | 0·98  [0·95,1] | | 0·72  [0·66,0·78] | | 0·65  [0·55,0·74] | | 0·96  [0·90,0·99] | | 0·97  [0·93,0·99] | | 0·71  [0·40,1·00] | | 0·80  [0·70,0·89] | | 0·91  [0·84,0·97] | 0·49  [0·33,0·65] |
| **University** | | 0·95  [0·92,0·97] | | 0·80  [0·76,0·84] | | 0·85  [0·82,0·88] | | 0·96  [0·93,0·98] | | 0·99  [0·95,1·00] | | 0·95  [0·91,0·98] | | 0·81  [0·76,0·86] | | 0·89  [0·87,0·92] | 0·35  [0·23,0·47] |
| **Masters/**  **PhD** | | 0·93  [0·81,1·00] | | 0·89  [0·81,0·96] | | 0·78  [0·72,0·84] | | 1·00  [0·74,1·00] | | 1·00  [0·74,1·00] | | 0·50  [0·01,0·99] | | 0·86  [0·43,1·00] | | 0·90  [0·81,0·98] | 0  [0,0·98] |
| **Other** | |  | | 0·85  [0·73,0·95] | | 0·82  [0·60,1·00] | |  | |  | |  | | 0·70  [0·38,1·00] | |  |  |
| Religion | **None** | | 0·93  [0·91,0·96] | | 0·83  [0·77,0·88] | | 0·82  [0·77,0·87] | | 0·95  [0·93,0·96] | |  | |  | |  | | 1·00  [0·72,1·00] | |  |
| **Animism** | |  | | 0·67  [0·09,0·99] | | 0·28  [0·03,0·71] | | 1·00  [0·40,1·00] | | 0·96  [0·93,0·98] | |  | |  | |  | |  |
| **Buddhism** | | 0·95  [0·92,0·97] | | 0·82  [0·78,0·85] | | 0·80  [0·75,0·85] | | 0·94  [0·91,0·97] | | 0·94  [0·92,0·96] | | 0·88  [0·86,0·90] | | 1·00  [0·03,1·00] | | 0·87  [0·82,0·92] | |  |
| **Christian** | | 0·91  [0·76,1·00] | | 0·73  [0·58,0·86] | | 0·85  [0·81,0·89] | | 0·95  [0·90,0·99] | | 0·94  [0·79,1·00] | | 0·94  [0·77,1·00] | | 0·73  [0·70,0·76] | | 0·88  [0·83,0·93] | |  |
| **Hindu** | |  | | 1·00  [0·03,1·00] | | 0·67  [0·09,0·99] | |  | |  | |  | |  | | 0·79  [0·69,0·89] | |  |
| **Muslim** | | 1·00  [0·90,1·00] | | 1·00  [0·03,1·00] | | 1·00  [0·40,1·00] | |  | |  | | 0·92  [0·70,1·00] | | 0·60  [0·46,0·74] | | 0·90  [0·88,0·93] | |  |
| **Taoism** | |  | | 0·83  [0·33,1·00] | | 0·67  [0·43,0·88] | | 1·00  [0·72,1·00] | |  | | 1·00  [0·03,1·00] | | 1·00  [0·03,1·00] | | 0·97  [0·88,1·00] | |  |
| **Other** | | 0·84  [0·73,0·94] | | 0·71  [0·58,0·83] | | 0·76  [0·65,0·86] | |  | |  | | 1·00  [0·16,1·00] | | 0·72  [0·62,0·81] | |  | |  |
| Total |  | | 0·94 [0·92,0·95] | | 0·77 [0·74,0·79] | | 0·75 [0·72,0·78] | | 0·95 [0·93,0·96] | | 0·94 [0·93,0·96] | | 0·89 [0·86,0·91] | | 0·73 [0·70,0·75] | | 0·88 [0·86,0·90] | | 0·37 [0·33,0·41] |

**Table S8. Estimated COVID-19 vaccination rates** (medians and 95% Bootstrap confidence intervals), defined as proportions of people having received at least one dose) by age, gender, education or religion for each country in 2022. Groups whose sizes are smaller than 10 are marked in grey. PNG stands for Papua New Guinea.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | |  | | Mongolia | | Japan | | South Korea | | Vietnam | | Laos | | Cambodia | | Philippines | | Malaysia | | PNG | |
| Age | | **18–24** | | 0·96 [0·93,0·99] | | 0·64 [0·55,0·72] | | 0·50 [0·43,0·56] | | 1·00 [0·97,1·00] | | 0·99 [0·98,1·00] | | 0·99 [0·97,1·00] | | 0·95 [0·92,0·98] | | 0·98 [0·96,0·99] | | 0·14 [0·08,0·21] | |
| **25–34** | | 0·94 [0·90,0·96] | | 0·77 [0·70,0·84] | | 0·84 [0·78,0·89] | | 1·00 [0·99,1·00] | | 0·97 [0·95,0·99] | | 0·99 [0·97,1·00] | | 0·94 [0·91,0·97] | | 0·96 [0·94,0·98] | | 0·23 [0·17,0·3] | |
| **35–44** | | 0·98 [0·96,1·00] | | 0·83 [0·77,0·88] | | 0·88 [0·83,0·93] | | 1·00 [0·98,1·00] | | 1·00 [0·98,1·00] | | 0·99 [0·97,1·00] | | 0·91 [0·86,0·94] | | 0·97 [0·94,0·99] | | 0·20 [0·12,0·28] | |
| **45–54** | | 0·98 [0·95,1·00] | | 0·87 [0·82,0·92] | | 0·85 [0·80,0·90] | | 0·99 [0·97,1·00] | | 0·99 [0·97,1·00] | | 0·99 [0·98,1·00] | | 0·93 [0·88,0·96] | | 0·96 [0·91,0·99] | | 0·16 [0·09,0·23] | |
| **55+** | | 0·98 [0·95,1·00] | | 0·90 [0·88,0·93] | | 0·92 [0·89,0·95] | | 1·00 [0·98,1·00] | | 0·99 [0·97,1·00] | | 0·97 [0·94,0·99] | | 0·85 [0·78,0·91] | | 0·98 [0·92,1·00] | | 0·14 [0·03,0·30] | |
| Gender | | **Female** | | 0·95  [0·93,0·97] | | 0·86  [0·83,0·89] | | 0·85  [0·82,0·88] | | 1·00 [0·99,1·00] | | 0·98  [0·96,0·99] | | 0·98  [0·96,0·99] | | 0·90  [0·88,0·93] | | 0·98  [0·96,0·99] | | 0·14  [0·10,0·18] | |
| **Male** | | 0·98  [0·96,0·99] | | 0·88  [0·84,0·90] | | 0·92  [0·89,0·94] | | 1·00 [0·99,1·00] | | 0·99  [0·98,1·00] | | 0·99  [0·98,1·00] | | 0·94  [0·92,0·96] | | 0·96  [0·94,0·97] | | 0·23  [0·18,0·28] | |
| **Other** | |  | | 0·67  [0·38,0·92] | | 0·75  [0·50,1·00] | |  | |  | |  | |  | |  | |  | |
| Education | | **No** | | 1·00  [0·66,1·00] | | 0·50  [0·07,0·93] | | 0·70  [0·38,1·00] | | 1·00 [0·16,1·00] | | 1·00  [0·78,1·00] | | 0·97  [0·95,0·99] | | 0·60  [0·15,0·95] | | 0·91  [0·67,1·00] | | 0·12  [0·03,0·25] | |
| **Primary** | | 0·93  [0·83,1·00] | | 0·81  [0·64,0·94] | | 0·62  [0·41,0·83] | | 1·00 [0·93,1·00] | | 0·95  [0·92,0·98] | | 0·98  [0·96,0·99] | | 0·87  [0·81,0·93] | | 0·96  [0·83,1·00] | | 0·13  [0·07,0·20] | |
| **Secondary** | | 0·96  [0·95,0·98] | | 0·88  [0·84,0·92] | | 0·87  [0·82,0·91] | | 1·00 [0·99,1·00] | | 0·99  [0·98,1·00] | | 1·00  [0·98,1·00] | | 0·91  [0·89,0·93] | | 0·96  [0·94,0·98] | | 0·14  [0·10,0·19] | |
| **Vocational** | | 0·99  [0·96,1·00] | | 0·91  [0·86,0·94] | | 0·90  [0·81,0·97] | | 1·00 [0·93,1·00] | | 1·00  [1·00,1·00] | | 1·00  [0·74,1·00] | | 0·96  [0·90,1·00] | | 0·99  [0·95,1·00] | | 0·31  [0·20,0·44] | |
| **University** | | 0·96  [0·94,0·98] | | 0·87  [0·84,0·90] | | 0·91  [0·89,0·94] | | 1·00 [0·98,1·00] | | 0·99  [0·98,1·00] | | 1·00  [0·97,1·00] | | 0·96  [0·94,0·98] | | 0·98  [0·97,0·99] | | 0·27  [0·18,0·36] | |
| **Masters/**  **PhD** | | 0·94  [0·82,1·00] | | 0·85  [0·75,0·93] | | 0·94  [0·90,0·97] | | 1·00 [0·66,1·00] | | 1·00  [0·63,1·00] | | 1·00  [0·72,1·00] | | 1·00  [0·40,1·00] | | 0·96  [0·91,1·00] | |  | |
| **Other** | |  | | 0·75  [0·19,0·99] | | 1·00  [0·48,1·00] | |  | | 1·00  [0·03,1·00] | |  | |  | |  | | 1·00  [0·03,1·00] | |
| Religion | **None** | | 0·96  [0·94,0·98] | | 0·80  [0·73,0·86] | | 0·93  [0·89,0·96] | | 1·00  [0·99,1·00] | | 1·00  [0·03,1·00] | |  | | 1·00  [0·03,1·00] | | 0·96  [0·85,1·00] | |  | |
| **Animism** | | 0  [0,0·98] | | 0·88  [0·50,1] | | 0·67  [0·09,0·99] | |  | | 0·99  [0·97,1·00] | |  | |  | | 1·00  [0·29,1·00] | |  | |
| **Buddhism** | | 0·97  [0·96,0·99] | | 0·91  [0·89,0·94] | | 0·92  [0·89,0·96] | | 1·00  [0·99,1·00] | | 0·98  [0·97,0·99] | | 0·98  [0·98,0·99] | |  | | 0·99  [0·97,1·00] | | 1·00  [0·03,1·00] | |
| **Christian** | | 0·84  [0·64,1·00] | | 0·80  [0·66,0·91] | | 0·91  [0·88,0·94] | | 1·00  [0·96,1·00] | | 1·00  [0·78,1·00] | | 0·93  [0·75,1·00] | | 0·92  [0·90,0·94] | | 0·96  [0·90,0·99] | | 0·18  [0·15,0·22] | |
| **Hindu** | | 1·00  [0·03,1·00] | | 0·67  [0·29,1·00] | | 0·86  [0·50,1·00] | | 1·00  [0·03,1·00] | |  | |  | |  | | 0·96  [0·91,0·99] | |  | |
| **Muslim** | | 0·97  [0·90,1·00] | | 1·00  [0·40,1·00] | | 1·00  [0·48,1·00] | |  | |  | | 1·00  [0·77,1·00] | | 0·87  [0·72,0·97] | | 0·96  [0·94,0·98] | |  | |
| **Taoism** | |  | | 0·67  [0·25,1·00] | | 0·71  [0·38,1·00] | | 1·00  [0·66,1·00] | |  | | 1·00  [0·16,1·00] | | 1·00  [0·03,1] | | 1·00  [0·89,1·00] | |  | |
| **Other** | | 0·89  [0·70,1·00] | | 0·86  [0·78,0·93] | | 0·79  [0·70,0·87] | |  | |  | | 1·00  [0·29,1·00] | | 0·93  [0·87,0·98] | | 0  [0,0·98] | | 1·00  [0·03,1·00] | |
| Total |  | | 0·96 [0·95,0·97] | | 0·84 [0·81,0·86] | | 0·80 [0·78,0·83] | | 1·00 [0·99,1·00] | | 0·98 [0·98,0·99] | | 0·98 [0·97,0·99] | | 0·92 [0·90,0·94] | | 0·97 [0·95,0·98] | | 0·18 [0·15,0·22] | |

**Table S9. Estimated numbers of COVID-19 vaccine doses per person (medians and 95% Bootstrap confidence intervals) by age, gender, education or religion for each country in 2022.** Groups whose sizes are smaller than 10 are marked in grey. PNG stands for Papua New Guinea.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | |  | | Mongolia | | Japan | | South Korea | | Vietnam | | Laos | | Cambodia | | Philippines | | Malaysia | | PNG | |
| Age | | **18–24** | | 2·22  [2·11,2·34] | | 1·68  [1·50,1·85] | | 1·52  [1·36,1·68] | | 2·57  [2·47,2·66] | | 2·28  [2·19,2·36] | | 2·71  [2·62,2·80] | | 1·98  [1·89,2·06] | | 2·46  [2·37,2·54] | | 0·23  [0·12,0·35] | |
| **25–34** | | 2·30  [2·19,2·40] | | 1·82  [1·64,2·00] | | 2·08  [1·94,2·21] | | 2·74  [2·68,2·80] | | 2·34  [2·25,2·43] | | 2·71  [2·64,2·78] | | 1·96  [1·88,2·04] | | 2·41  [2·32,2·49] | | 0·38  [0·26,0·50] | |
| **35–44** | | 2·52  [2·43,2·60] | | 2·12  [1·97,2·27] | | 2·22  [2·08,2·35] | | 2·80  [2·74,2·85] | | 2·54  [2·45,2·63] | | 2·8  [2·73,2·87] | | 1·95  [1·84,2·06] | | 2·54  [2·45,2·62] | | 0·36  [0·22,0·52] | |
| **45–54** | | 2·60  [2·51,2·69] | | 2·37  [2·22,2·50] | | 2·28  [2·14,2·41] | | 2·79  [2·71,2·85] | | 2·40  [2·27,2·52] | | 2·81  [2·72,2·88] | | 2·06  [1·94,2·17] | | 2·56  [2·41,2·69] | | 0·31  [0·17,0·47] | |
| **55+** | | 2·62  [2·53,2·72] | | 2·56  [2·48,2·64] | | 2·65  [2·57,2·72] | | 2·81  [2·76,2·86] | | 2·37  [2·25,2·48] | | 2·74  [2·64,2·82] | | 1·84  [1·68,2·00] | | 2·33  [2·11,2·54] | | 0·25  [0·04,0·56] | |
| Gender | | **Female** | | 2·39 [2·32,2·46] | | 2·23 [2·15,2·32] | | 2·20 [2·12,2·29] | | 2·79 [2·75,2·82] | | 2·34 [2·28,2·40] | | 2·72 [2·67,2·78] | | 1·94 [1·86,2·01] | | 2·53 [2·47,2·58] | | 0·24 [0·16,0·33] | |
| **Male** | | 2·50 [2·44,2·56] | | 2·39 [2·31,2·47] | | 2·41 [2·33,2·48] | | 2·73 [2·69,2·77] | | 2·42 [2·35,2·48] | | 2·78 [2·73,2·82] | | 1·99 [1·93,2·05] | | 2·41 [2·34,2·48] | | 0·39 [0·30,0·49] | |
| **Other** | |  | | 1·91 [1·17,2·54] | | 1·43 [0·83,2·00] | |  | |  | |  | |  | |  | |  | |
| Education | | **No** | | 2·20 [2·00,2·56] | | 2·00 [0,3·00] | | 1·40 [0·67,2·13] | | 2·00 [2·00,2·00] | | 2·27 [2·00,2·54] | | 2·66 [2·58,2·74] | | 1·20 [0,2·00] | | 2·00 [1·31,2·62] | | 0·21 [0·03,0·48] | |
| **Primary** | | 2·48 [2·19,2·72] | | 1·94 [1·53,2·30] | | 2·00 [1·44,2·50] | | 2·71 [2·59,2·83] | | 2·20 [2·08,2·32] | | 2·67 [2·60,2·74] | | 1·80 [1·64,1·95] | | 2·20 [1·83,2·53] | | 0·23 [0·12,0·37] | |
| **Secondary** | | 2·45 [2·38,2·51] | | 2·34 [2·23,2·44] | | 2·29 [2·16,2·40] | | 2·74 [2·70,2·77] | | 2·33 [2·25,2·40] | | 2·86 [2·80,2·91] | | 1·95 [1·88,2·02] | | 2·42 [2·33,2·50] | | 0·24 [0·16,0·33] | |
| **Vocational** | | 2·44 [2·28,2·58] | | 2·37 [2·24,2·48] | | 2·09 [1·89,2·28] | | 2·86 [2·76,2·94] | | 2·54 [2·43,2·65] | | 3·00 [3·00,3·00] | | 2·09 [1·92,2·25] | | 2·49 [2·34,2·64] | | 0·56 [0·32,0·80] | |
| **University** | | 2·46 [2·39,2·53] | | 2·32 [2·23,2·41] | | 2·40 [2·32,2·47] | | 2·82 [2·76,2·88] | | 2·46 [2·38,2·53] | | 2·89 [2·83,2·95] | | 2·04 [1·97,2·12] | | 2·52 [2·46,2·58] | | 0·45 [0·29,0·63] | |
| **Masters/**  **PhD** | | 2·31 [1·96,2·61] | | 2·26 [1·98,2·51] | | 2·33 [2·20,2·46] | | 2·88 [2·57,3·00] | | 2·75 [2·25,3·00] | | 2·92 [2·69,3·00] | | 2·22 [2·00,3·00] | | 2·51 [2·33,2·68] | |  | |
| **Other** | |  | | 1·75 [0,3·00] | | 2·83 [2·33,3·00] | |  | | 3·00 [3·00,3·00] | |  | |  | |  | | 3·00 [3·00,3·00] | |
| Religion | **None** | | 2·40 [2·33,2·47] | | 2·17 [1·98,2·35] | | 2·39 [2·28,2·49] | | 2·80 [2·76,2·83] | | 2·00 [2·00,2·00] | |  | | 2·00 [2·00,2·00] | | 2·32 [1·93,2·67] | |  | |
| **Animism** | | 0 [0,0] | | 2·17 [1·25,2·83] | | 2·00 [2·00,2·00] | |  | | 2·33 [2·24,2·42] | |  | |  | | 2·33 [1·00,3·00] | |  | |
| **Buddhism** | | 2·51 [2·45,2·57] | | 2·42 [2·35,2·49] | | 2·40 [2·29,2·51] | | 2·76 [2·70,2·81] | | 2·40 [2·35,2·45] | | 2·75 [2·71,2·78] | |  | | 2·63 [2·54,2·71] | | 1·00 [1·00,1·00] | |
| **Christian** | | 2·12 [1·54,2·62] | | 1·95 [1·59,2·29] | | 2·44 [2·34,2·53] | | 2·50 [2·40,2·60] | | 2·32 [2·06,2·60] | | 2·80 [2·29,3·00] | | 1·98 [1·93,2·03] | | 2·51 [2·33,2·67] | | 0·31 [0·25,0·38] | |
| **Hindu** | | 3·00 [3·00,3·00] | | 1·33 [0,2·00] | | 1·50 [0·75,2·00] | | 2·00 [2·00,2·00] | |  | |  | |  | | 2·40 [2·23,2·55] | |  | |
| **Muslim** | | 2·54 [2·29,2·74] | | 1·78 [1·00,2·00] | | 1·83 [1·33,2·00] | |  | |  | | 2·87 [2·64,3·00] | | 1·49 [1·20,1·76] | | 2·40 [2·34,2·47] | |  | |
| **Taoism** | |  | | 1·67 [0·50,2·75] | | 1·71 [0·83,2·50] | | 2·75 [2·42,3·00] | |  | | 2·50 [2·00,3·00] | | 1·00 [1·00,1·00] | | 2·61 [2·37,2·82] | |  | |
| **Other** | | 2·07 [1·60,2·46] | | 2·24 [2·01,2·46] | | 1·87 [1·67,2·06] | |  | |  | | 3·00 [3·00,3·00] | | 1·99 [1·81,2·15] | |  | | 3·00 [3·00,3·00] | |
| Total |  | | 2·45 [2·40,2·49] | | 2·27 [2·21,2·33] | | 2·25 [2·19,2·30] | | 2·76 [1·88,3·64] | | 2·40 [2·36,2·45] | | 2·75 [1·59,3·90] | | 1·96 [1·92,2·01] | | 2·47 [2·42,2·51] | | 0·32 [0·25,0·38] | |

Graphical user interface

Description automatically generated

**Figure S1. Results of the logistic regression.** Odds ratios and 95% confidence intervals for religion in the logistic model that infers the contribution of age, gender, education, religion, and responses to some trust- or misinformation-related questions to vaccine confidence for each country in 2021 and 2022. The reference group for religion in a country is that with the most believers, as is highlighted in the parentheses after the corresponding religion in the plot. Coefficients for religions with fewer than 10 believers among the respondents from the same country in either year are not shown for presentation purposes. Papua New Guinea is omitted as no religion data were collected there in 2021.

**Table S10. Numeric results of the logistic regression.** Odds Ratios and the corresponding 95% confidence intervals for the diverse demographic factors, trust score and trust- or misinformation-related questions (‘T4’ for the fourth trust-related question and ‘M1’ for the first misinformation-related question). Different education levels were re-classified into two groups: the under- and well-educated, wherein the former was set as baseline. Groups with fewer than 10 samples in either survey are marked in grey. PNG stands for Papua New Guinea.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Mongolia | Japan | South Korea | Vietnam | Laos | Cambodia | Philippines | Malaysia | PNG |
| Time | **2022** | 1·90\*\*\* [1·25,2·92] | 2·69\*\*\* [1·99,3·60] | 2·34\*\*\* [1·82,3·03] | 17\*\*\* [3·97,69] | 2·94\*\*\* [1·57,5·53] | 5·26\*\*\* [3·10,8·94] | 3·49\*\*\* [2·56,4·76] | 9·30\* [5·70,15] | 0·17\*\*\* [0·11,0·24] |
| Age | **18–24**  **(baseline)** |  |  |  |  |  |  |  |  |  |
| **25–34** | 0·42\*\*\* [0·23,0·79] | 2·18\*\*\* [1·34,3·56] | 2·86\*\*\* [1·99,4·10] | 1·63 [0·64,4·14] | 0·85 [0·47,1·55] | 0·84 [0·49,1·46] | 1·07 [0·70,1·65] | 1·03 [0·63,1·68] | 1·34 [0·86,2·08] |
| **35–44** | 1·34 [0·63,2·83] | 2·27\*\*\* [1·42,3·63] | 3·90\*\*\* [2·64,5·81] | 1·38 [0·54,3·46] | 1·58 [0·70,3·60] | 0·72 [0·40,1·27] | 0·66\* [0·43,1·02] | 1·09 [0·64,1·86] | 0·84 [0·52,1·38] |
| **45–54** | 1·04 [0·47,2·32] | 3·06\*\*\* [1·90,4·95] | 3·35\*\*\* [2·29,4·95] | 1·49 [0·55,4·06] | 0·84 [0·40,1·79] | 0·96 [0·50,1·86] | 0·81 [0·50,1·32] | 0·96 [0·46,1·97] | 0·93 [0·55,1·57] |
| **55+** | 0·85 [0·38,1·93] | 3·29\*\*\* [2·16,4·95] | 4·90\*\*\* [3·42,6·96] | 0·70 [0·29,1·73] | 0·92 [0·37,2·29] | 0·53\* [0·26,1·09] | 0·46\*\*\* [0·28,0·75] | 0·89 [0·38,2·10] | 1·14 [0·53,2·44] |
| Gender | **Female**  **(baseline)** |  |  |  |  |  |  |  |  |  |
| **Male** | 1·35 [0·89,2·08] | 1·28\* [0·97,1·72] | 1·25\* [0·97,1·60] | 0·83 [0·47,1·43] | 1·04 [0·63,1·70] | 1·12 [0·76,1·63] | 1·34\*\* [1·00,1·79] | 0·69\* [0·48,1·01] | 1·51\*\* [1·08,2·12] |
| **Other** |  | 0·96 [0·72,1·27] | 1·21 [0·94,1·55] |  |  | 3·03\* [1·40,6·49] |  |  |  |
| Education | **Well-educated** | 1·35 [0·88,2·08] | 1·11 [0·31,4·01] | 0·83 [0·38,1·80] | 1·57 [0·76,3·25] | 2·14 [0·84,5·42] | 1·43 [0·06,36] | 1·93\*\*\* [1·34,2·77] | 1·30 [0·88,1·90] | 1·14 [0·73,1·79] |
| Response to questions | **trust score** | 1·86\*\*\* [1·49,2·32] | 4·01\*\*\* [3·35,4·85] | 2·80\*\*\* [2·39,3·29] | 1·93\*\*\* [1·28,2·89] | 1·72\*\*\* [1·32,2·20] | 2·16\*\*\* [1·73,2·72] | 2·51\*\*\* [2·20,2·86] | 3·19\*\*\* [2·56,3·97] | 3·13\*\*\* [2·61,3·78] |
| **T4** | 1·36\*\*\* [1·14,1·63] | 1·60\*\*\* [1·40,1·84] | 1·73\*\*\* [1·54,1·97] | 2·46\*\*\* [1·93,3·16] | 1·45\*\*\* [1·20,1·75] | 1·57\*\*\* [1·28,1·92] | 1·38\*\*\* [1·21,1·55] | 1·52\*\*\* [1·30,1·80] | 1·39\*\*\* [1·21,1·60] |
| **M1** | 1·05 [0·89,1·25] | 1·23\*\*\* [1·07,1·43] | 1·11\* [1·00,1·23] | 1·21 [0·95,1·55] | 1·13 [0·95,1·32] | 1·22\*\*\* [1·05,1·42] | 1·09 [0·98,1·22] | 0·96 [0·81,1·14] | 1·12 [0·96,1·30] |
| Religion | **None** | 0·91 [0·58,1·43] | 0·86 [0·61,1·21] | 1·17 [0·84,1·63] | 1# | 0·04\* [0,1·05] |  | 0·05\* [0,1·36] | 1·32 [0·24,7·10] |  |
| **Animism** | 0·03\*\* [0,0·68] | 0·82 [0·12,5·42] | 0·52 [0·16,1·67] | 0·66 [0·03,14] | 1·35 [0·73,2·51] |  |  | 0·22 [0·01,4·62] |  |
| **Buddhism** | 1# | 1# | 1·00 [0·73,1·36] | 0·94 [0·50,1·77] | 1# | 1# | 0·34 [0·01,8·76] | 1·06 [0·65,1·73] |  |
| **Christian** | 0·28\*\* [0·10,0·76] | 0·92 [0·52,1·63] | 1# | 2·25 [0·74,6·82] | 0·78 [0·15,4·06] | 0·51 [0·13,1·97] | 1# | 0·71 [0·40,1·27] |  |
| **Hindu** | 0·03\*\* [0,0·90] | 1·00 [0·20,9·87] | 0·86 [0·20,3·78] | 0\*\*\* [0,0·13] |  |  |  | 0·60 [0·32,1·13] |  |
| **Muslim** | 2·20 [0·41,12] | 1·54 [0·22,11] | 2·18 [0·38,13] |  |  | 0·59 [0·11,3·13] | 0·64 [0·34,1·21] | 1# |  |
| **Taoism** |  | 0·71 [0·20,2·46] | 0·79 [0·35,1·79] | 0·64 [0·04,10] |  | 0·36 [0·02,7·39] | 0·40 [0·02,8·67] | 3·67 [0·68,20] |  |
| **Other** | 0·40\*\* [0·18,0·90] | 0·84 [0·52,1·35] | 0·79 [0·53,1·21] |  |  | 0·34 [0·02,6·75] | 1·00 [0·66,1·86] | 0·01\*\*\* [0·00,0·30] |  |

# reference religion

\* p<0·10

\*\* p<0·05

\*\*\* p<0·01

**Table S11. Estimated pooled coefficients for the nine countries using meta-analysis.** Odds Ratios and the corresponding 95% confidence intervals for the diverse demographic factors, trust score and trust- or misinformation related questions (‘T4’ for the fourth trust-related question and ‘M1’ for the first misinformation-related question). Higgin’s and Thompson’s was additionally included for each regression coefficients (except for ‘other’ gender) to indicate the amount of the inter-study heterogeneity.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Pooled mean | Pooled confidence interval | Higgins’ and Thompson’s (%) |
| Time | **2022** | 2·75 | [1·34,5·7] | 96·4 |
| Age | **18–24**  **(baseline)** |  |  |  |
| **25–34** | 1·20 | [0·82,1·77] | 79·9 |
| **35–44** | 1·31 | [0·82,2·10] | 84·2 |
| **45–54** | 1·31 | [0·84,2·05] | 80·3 |
| **55+** | 1·12 | [0·56,2·25] | 91·3 |
| Gender | **Female**  **(baseline)** |  |  |  |
| **Male** | 1·17 | [1·00,1·36] | 37·9 |
| Education | **Well-educated** | 1·42 | [1·19,1·72] | 0 |
| Response to questions | **trust score** | 2·53 | [2·14,3·00] | 84·4 |
| **T4** | 1·55 | [1·42,1·72] | 66·2 |
| **M1** | 1·12 | [1·06,1·17] | 0 |

# Sensitivity analysis: using the raw, unimputed data in the regression analysis

We conducted a sensitivity analysis in which all the samples with missing responses were omitted (proportions by country listed in Table S12). Estimates of the odds ratios are approximately the same for all but Japan, South Korea, and Laos, wherein a relatively large proportion of the respondents were removed (Table S13). However, we still managed to identify the statistically significant impacts of trust in either the COVID-19 vaccines or the local health care providers in these three countries.

**Table S12. Proportion of data omitted in the regression analysis (due to invalid or uninformative responses) for each country.**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Proportion (%) | Mongolia | Japan | South Korea | Vietnam | Laos | Cambodia | Philippines | Malaysia | PNG |
| 2021 | 0·5 | 31 | 17 | 0·4 | 0·1 | 0·3 | 0 | 2·5 | 0 |
| 2022 | 1 | 23 | 26 | 0·8 | 53·7 | 0 | 0 | 0 | 0 |
| Overall | 0·8 | 27 | 21 | 0·6 | 27 | 0·2 | 0 | 1 | 0 |

**Table S13. Numeric results of the logistic regression in which samples with missing responses were omitted.** Odds Ratios and the corresponding 95% confidence intervals for the diverse demographic factors, trust score and trust- or misinformation-related questions (‘T4’ for the fourth trust-related question and ‘M1’ for the first misinformation-related question). Different education levels were re-classified into two groups: the under- and well-educated, wherein the former was set as baseline. Groups with fewer than 10 samples in either survey are marked in grey. PNG stands for Papua New Guinea.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Mongolia | Japan | South Korea | Vietnam | Laos | Cambodia | Philippines | Malaysia | PNG |
| Time | **2022** | 1·95\*\*\* [1·26,3·06] | 3·27\*\*\* [2·22,4·89] | 4·83\*\*\* [3·33,7·14] | 17\*\*\* [4·65,119] | 2·43\*\* [1·05,6·57] | 5·29\*\*\* [3·16,9·36] | 3·49\*\*\* [2·58,4·78] | 9·05\*\*\* [5·54,15] | 0·17\*\*\* [0·11,0·24] |
| Age | **18–24**  **(baseline)** |  |  |  |  |  |  |  |  |  |
| **25–34** | 0·40\*\*\* [0·2,0·75] | 1·25 [0·56,2·74] | 1·73\*\* [1·02,2·95] | 1·60 [0·59,4·17] | 1·22 [0·62,2·44] | 0·84 [0·48,1·47] | 1·07 [0·69,1·64] | 0·97 [0·57,1·61] | 1·34 [0·86,2·09] |
| **35–44** | 1·24 [0·56,2·71] | 0·99 [0·47,2·04] | 2·03\*\* [1·18,3·51] | 1·36 [0·51,3·51] | 1·78 [0·78,4·43] | 0·70 [0·39,1·26] | 0·66\* [0·42,1·02] | 1·15 [0·65,2·04] | 0·84 [0·51,1·38] |
| **45–54** | 0·96 [0·42,2·21] | 1·65 [0·77,3·51] | 1·68\* [0·98,2·90] | 1·50 [0·53,4·27] | 1·01 [0·46,2·41] | 0·96 [0·49,1·89] | 0·81 [0·50,1·32] | 0·93 [0·45,2·02] | 0·93 [0·55,1·57] |
| **55+** | 0·79 [0·34,1·87] | 1·44 [0·72,2·80] | 2·76\*\*\* [1·66,4·62] | 0·71 [0·27,1·75] | 0·93 [0·37,2·57] | 0·53\* [0·26,1·12] | 0·46\*\*\* [0·28,0·75] | 0·81 [0·35,2·06] | 1·14 [0·52,2·45] |
| Gender | **Female**  **(baseline)** |  |  |  |  |  |  |  |  |  |
| **Male** | 1·32 [0·85,2·05] | 1·30 [0·90,1·88] | 1·16 [0·83,1·62] | 0·83 [0·46,1·48] | 0·96 [0·55,1·67] | 1·11 [0·75,1·64] | 1·34\*\* [1·00,1·80] | 0·61\*\* [0·41,0·90] | 1·51\*\* [1·08,2·13] |
| **Other** |  | 2·68 [0·31,43] | 0·29\*\*  [0·09,0·99] |  |  | 1·45 [0·07,214] |  |  |  |
| Education | **Well-educated** | 1·32 [0·85,2·08] | 0·99  [0·68,1·43] | 1·17 [0·82,1·64] | 1·56 [0·76,3·49] | 1·40 [0·54,4·57] | 3·04\*\*\* [1·47,7·15] | 1·91\*\*\* [1·33,2·78] | 1·55\*\* [1·04,2·31] | 1·13 [0·72,1·78] |
| Response to questions | **trust score** | 1·92\*\*\* [1·53,2·42] | 4·21\*\*\* [3·37,5·32] | 3·23\*\*\* [2·63,4·00] | 1·91\*\*\* [1·24,2·92] | 1·81\*\*\* [1·34,2·42] | 2·17\*\*\* [1·73,2·73] | 2·50\*\*\* [2·19,2·85] | 3·21\*\*\* [2·55,4·06] | 3·14\*\*\* [2·63,3·80] |
| **T4** | 1·33\*\*\* [1·10,1·59] | 1·60\*\*\* [1·35,1·89] | 1·61\*\*\* [1·39,1·88] | 2·48\*\*\* [1·92,3·21] | 1·39\*\*\* [1·13,1·73] | 1·58\*\*\* [1·28,1·94] | 1·37\*\*\* [1·21,1·56] | 1·51\*\*\* [1·27,1·80] | 1·39\*\*\* [1·21,1·61] |
| **M1** | 1·04 [0·87,1·24] | 1·15 [0·95,1·38] | 1·16\*\* [1·01,1·33] | 1·21 [0·94,1·58] | 1·08 [0·90,1·29] | 1·21\*\* [1·04,1·41] | 1·09 [0·98,1·22] | 0·96 [0·81,1·15] | 1·11 [0·96,1·29] |
| Religion | **None** | 0·91 [0·57,1·45] | 0·74 [0·48,1·16] | 1·15 [0·74,1·79] | 1\* |  |  | 0·05 [0·00,7·83] | 1·32 [0·30,13] |  |
| **Animism** | 0·03\*\* [0·00,0·52] | 4·91 [0·25,78] | 0·42 [0·08,2·00] | 0·66 [0·05,99] | 1·19 [0·62,2·47] |  |  | 0·24 [0·02,34] |  |
| **Buddhism** | 1# | 1# | 0·96 [0·63,1·46] | 0·94 [0·50,1·85] | 1# | 1# | 0·34 [0·02,51] | 1·03 [0·62,1·73] |  |
| **Christian** | 0·28\*\* [0·10,0·85] | 0·80 [0·38,1·74] | 1# | 2·26 [0·79,8·18] | 0·68 [0·16,6·35] | 0·51 [0·15,2·65] | 1# | 0·69 [0·39,1·29] |  |
| **Hindu** | 0·03 [0·00,5·02] | 1·16 [0·09,16] | 2·30 [0·21,33] | 0·00\*\* [0·00,0·57] |  |  |  | 0·57\* [0·31,1·11] |  |
| **Muslim** | 2·17 [0·53,20] | 0·77 [0·04,117] | 2·67 [0·24,368] |  |  | 0·59 [0·14,5·45] | 0·64 [0·34,1·24] | 1# |  |
| **Taoism** |  | 0·53 [0·11,3·83] | 0·76 [0·25,2·41] | 0·64 [0·08,84] |  | 0·30 [0·03,41] | 0·40 [0·03,56] | 4·03\* [0·83,41] |  |
| **Other** | 0·40\*\* [0·18,0·95] | 0·82 [0·46,1·53] | 0·72 [0·40,1·32] |  |  | 0·34 [0·03,46] | 1·12 [0·67,1·91] | 0·01\*\*\* [0·00,0·29] |  |

# reference religion

\* p<0·10

\*\* p<0·05

\*\*\* p<0·01

# Sensitivity analysis: potential changes in the impacts of diverse explanatory variables on vaccine endorsement at the two time points of the surveys

To account for the potential changes in the impacts of diverse socio-demographic factors and people’s responses to trust- or mis-information related questions on the COVID-19 vaccine endorsement in 2021 and 2022, we applied the same logistical regression model (with the factor of time excluded) to the 2021 and the 2022 data sets respectively. Judging from the estimated odds ratios, the impact of gender was greater on COVID-19 vaccine uptake in 2022 in the Philippines, Malaysia, and Papua New Guinea, but disbelieving in misinformation tended to have a more profound effect on COVID-19 vaccine acceptance in 2021 in Japan and Cambodia. Generally, trust in COVID-19 vaccines and the local health care providers is positively associated with higher vaccine endorsement for both 2021 and 2022 (Table S14–15). However, it is also worth noting that the vaccination rates in Vietnam, Laos, and Cambodia are close to 100%, making it challenging to precisely estimate the impact of each factor in 2022.

**Table S14. Numeric results of the logistic regression in which only data for the 2021 survey was used.** Odds Ratios and the corresponding 95% confidence intervals for the diverse demographic factors, trust score and trust- or misinformation-related questions (‘T4’ for the fourth trust-related question and ‘M1’ for the first misinformation-related question). Different education levels were re-classified into two groups: the under- and well-educated, wherein the former was set as baseline. Groups with fewer than 10 samples in the survey are marked in grey. PNG stands for Papua New Guinea.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Mongolia | Japan | South Korea | Vietnam | Laos | Cambodia | Philippines | Malaysia | PNG |
| Age | **18–24**  **(baseline)** |  |  |  |  |  |  |  |  |  |
| **25–34** | 0·34\*\* [0·15,0·79] | 1·31 [0·63,2·75] | 1·34 [0·79,2·29] | 1·67 [0·64,4·26] | 1·39 [0·68,2·83] | 0·88 [0·48,1·58] | 0·94 [0·57,1·57] | 1·08 [0·61,1·95] | 1·06 [0·61,1·86] |
| **35–44** | 1·11 [0·41,2·92] | 0·94 [0·47,1·86] | 2·08\*\* [1·19,3·67] | 1·39 [0·54,3·53] | 1·75 [0·73,4·22] | 0·72 [0·39,1·34] | 0·61\* [0·36,1·03] | 1·03 [0·55,1·92] | 0·63 [0·33,1·19] |
| **45–54** | 0·74 [0·27,2·03] | 1·32 [0·65,2·72] | 2·03\*\* [1·14,3·60] | 1·80 [0·64,5·16] | 0·91 [0·40,2·08] | 0·93 [0·46,1·88] | 0·74 [0·41,1·34] | 1·21 [0·49,3·00] | 0·82 [0·42,1·60] |
| **55+** | 0·73 [0·25,2·12] | 1·27 [0·68,2·36] | 2·53\*\*\* [1·51,4·31] | 0·69 [0·28,1·72] | 1·09 [0·40,3·03] | 0·73 [0·30,1·84] | 0·55\* [0·30,1·02] | 0·82 [0·32,2·10] | 1·03 [0·43,2·48] |
| Gender | **Female**  **(baseline)** |  |  |  |  |  |  |  |  |  |
| **Male** | 1·08 [0·64,1·86] | 1·28 [0·85,1·93] | 1·25 [0·88,1·79] | 0·87 [0·50,1·54] | 0·84 [0·48,1·49] | 0·98 [0·64,1·49] | 1·19 [0·83,1·70] | 0·86 [0·55,1·34] | 1·20 [0·79,1·84] |
| **Other** |  | 13 [0·20,863] | 0·77 [0·25,2·36] |  |  | 1·55 [0·06,40] |  |  |  |
| Education | **Well-educated** | 1·57 [0·90,2·75] | 0·90 [0·59,1·35] | 1·00 [0·70,1·45] | 1·54 [0·74,3·19] | 2·72 [0·55,13] | 2·69\*\*  [1·22,5·87] | 1·73\*\* [1·12,2·69] | 1·23 [0·78,1·93] | 0·99 [0·51,1·90] |
| Response to questions | **trust score** | 1·57\*\*\* [1·19,2·08] | 8·08\*\*\* [5·58,12] | 4·66\*\*\* [3·53,6·17] | 1·99\*\*\* [1·32,3·03] | 1·86\*\*\* [1·39,2·51] | 2·44\*\*\* [1·90,3·10] | 2·75\*\*\* [2·32,3·25] | 3·74\*\*\* [2·83,4·90] | 2·86\*\*\* [2·32,3·56] |
| **T4** | 1·57\*\*\* [1·26,1·95] | 1·75\*\*\* [1·42,2·18] | 1·92\*\*\* [1·60,2·32] | 2·48\*\*\* [1·92,3·19] | 1·39\*\*\* [1·13,1·73] | 1·48\*\*\* [1·19,1·84] | 1·43\*\*\* [1·23,1·68] | 1·54\*\*\* [1·27,1·86] | 1·35\*\*\* [1·15,1·58] |
| **M1** | 1·23\* [0·99,1·55] | 1·30\*\* [1·03,1·65] | 1·08 [0·91,1·28] | 1·26\* [0·98,1·63] | 1·14 [0·94,1·38] | 1·26\*\*\* [1·07,1·48] | 1·12 [0·97,1·28] | 1·06 [0·88,1·30] | 1·03 [0·82,1·30] |
| Religion | **None** | 0·98 [0·55,1·75] | 1·19 [0·73,1·92] | 0·98 [0·61,1·58] | 1# |  |  |  | 2·32 [0·15,37] |  |
| **Animism** |  | 6·55 [0·30,141] | 0·42 [0·09,1·99] | 0·71 [0·03,16] | 1·28 [0·63,2·64] |  |  |  |  |
| **Buddhism** | 1# | 1# | 0·79 [0·51,1·25] | 0·89 [0·47,1·67] | 1# | 1# | 0·30 [0·01,7·69] | 0·95 [0·54,1·67] |  |
| **Christian** | 0·57 [0·13,2·44] | 0·80 [0·36,1·77] | 1# | 2·14 [0·69,6·62] | 0·63 [0·12,3·42] | 0·76 [0·13,4·31] | 1# | 0·8 [0·41,1·55] | 1# |
| **Hindu** |  | 0·04\* [0·00,1·16] | 0·54 [0·03,11] |  |  |  |  | 0·34\*\*\* [0·16,0·70] |  |
| **Muslim** | 4·66 [0·28,78] | 0·89 [0·04,18] | 1·70 [0·14,21] |  |  | 0·43 [0·07,2·48] | 0·74 [0·35,1·57] | 1# |  |
| **Taoism** |  | 0·49 [0·08,2·83] | 2·08 [0·68,6·30] | 0·57 [0·03,9·39] |  | 0·23 [0·01,5·93] | 0·29 [0·01,7·61] | 2·94 [0·49,17] |  |
| **Other** | 0·56 [0·21,1·46] | 0·74 [0·36,1·52] | 0·98 [0·50,1·92] |  |  | 0·28 [0·01,6·05] | 1·05 [0·56,1·95] |  |  |

# reference religion

\* p<0·10

\*\* p<0·05

\*\*\* p<0·01

**Table S15. Numeric results of the logistic regression in which only data for the 2022 survey was used.** Odds Ratios and the corresponding 95% confidence intervals for the diverse demographic factors, trust score and trust- or misinformation-related questions (‘T4’ for the fourth trust-related question and ‘M1’ for the first misinformation-related question). Different education levels were re-classified into two groups: the under- and well-educated, wherein the former was set as baseline. Groups with fewer than 10 samples in the survey are marked in grey. PNG stands for Papua New Guinea.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Mongolia | Japan | South Korea | Vietnam | Laos | Cambodia | Philippines | Malaysia | PNG |
| Age | **18–24**  **(baseline)** |  |  |  |  |  |  |  |  |  |
| **25–34** | 0·50 [0·2,1·25] | 2·92\*\*\* [1·49,5·64] | 4·95\*\*\* [2·94,8·33] | 1·95 [0·11,34] | 0·17\*\* [0·04,0·76] | 0·66 [0·15,2·83] | 1·35 [0·58,3·16] | 0·83 [0·31,2·23] | 1·97\* [0·94,4·10] |
| **35–44** | 1·52 [0·48,4·81] | 4·62\*\*\* [2·36,9·12] | 6·11\*\*\* [3·39,11] | 1·90 [0·12,31] | 0·71 [0·09,5·75] | 0·70 [0·15,3·25] | 0·73 [0·32,1·68] | 0·93 [0·33,2·64] | 1·38 [0·63,3·00] |
| **45–54** | 1·52 [0·41,5·58] | 6·05\*\*\* [3·06,12] | 4·01\*\*\* [2·36,6·89] | 0·43 [0·04,4·44] | 0·35 [0·05,2·29] | 1·39 [0·21,9·30] | 0·86 [0·35,2·14] | 0·49 [0·15,1·60] | 1·22 [0·53,2·80] |
| **55+** | 1·03 [0·30,3·56] | 6·42\*\*\* [3·63,11] | 6·89\*\*\* [4·10,11] | 1·65 [0·09,31] | 0·28 [0·04,2·12] | 0·41 [0·10,1·63] | 0·33\*\*\* [0·14,0·76] | 1·15 [0·16,8·08] | 1·39 [0·32,6·11] |
| Gender | **Female**  **(baseline)** |  |  |  |  |  |  |  |  |  |
| **Male** | 1·75 [0·87,3·49] | 1·34 [0·88,2·03] | 1·25 [0·87,1·79] | 0·43 [0·08,2·36] | 1·86 [0·69,5·00] | 1·70 [0·68,4·22] | 1·82\*\* [1·08,3·03] | 0·40\*\* [0·19,0·84] | 2·25\*\*\* [1·28,3·90] |
| **Other** |  | 0·84  [0·24,3·00] | 0·89 [0·29,2·77] |  |  |  |  |  |  |
| Education | **Well-educated** | 1·15 [0·59,2·23] | 0·84 [0·56,1·28] | 1·39\*  [0·96,1·99] | 0·58 [0·10,3·56] | 1·95 [0·69,5·53] | 4·31 [0·38,50] | 2·41\*\* [1·20,4·81] | 1·20 [0·59,2·44] | 1·27 [0·68,2·41] |
| Response to questions | **trust score** | 2·27\*\*\* [1·62,3·19] | 3·00\*\*\* [2·41,3·74] | 2·03\*\*\* [1·65,2·53] | 0·96 [0·29,3·19] | 1·36 [0·84,2·20] | 0·90 [0·45,1·82] | 2·08\*\*\* [1·67,2·59] | 2·32\*\*\* [1·52,3·53] | 3·78\*\*\* [2·61,5·47] |
| **T4** | 1·02 [0·73,1·43] | 1·48\*\*\* [1·22,1·80] | 1·52\*\*\* [1·27,1·80] | 3·19\*\*\* [1·43,7·10] | 1·39\* [0·94,2·08] | 2·39\*\*\* [1·52,3·74] | 1·28\*\* [1·01,1·63] | 1·80\*\*\* [1·26,2·59] | 1·48\*\*\* [1·08,1·99] |
| **M1** | 0·86 [0·67,1·12] | 1·14 [0·94,1·39] | 1·21\*\* [1·04,1·40] | 0·54 [0·22,1·34] | 1·07 [0·79,1·46] | 0·99 [0·67,1·45] | 1·12 [0·93,1·34] | 0·77 [0·57,1·05] | 1·19 [0·97,1·46] |
| Religion | **None** | 0·83 [0·40,1·68] | 0·53\*\* [0·32,0·87] | 1·35 [0·84,2·18] | 1# | 0·01\*\* [0·00,0·45] |  | 0·09 [0·00,2·48] | 0·46 [0·07,3·00] |  |
| **Animism** | 0·02\*\* [0·00,0·60] | 0·30 [0·05,1·73] | 0·75 [0·12,4·48] |  | 1·07 [0·36,3·22] |  |  | 0·20 [0·01,4·53] |  |
| **Buddhism** | 1# | 1# | 1·17 [0·73,1·90] | 0·97 [0·13,7·03] | 1# | 1# |  | 1·68 [0·54,5·21] |  |
| **Christian** | 0·11\*\*\* [0·03,0·44] | 1·09 [0·47,2·51] | 1# | 0·81 [0·07,8·85] | 0·37 [0·03,5·31] | 0·16\*\* [0·03,0·90] | 1# | 0·44 [0·15,1·35] |  |
| **Hindu** | 0·02\*\* [0·00,0·76] | 1·95 [0·28,14] | 0·9 [0·18,4·57] | 0·01\*\* [0·00,0·55] |  |  |  | 1·42 [0·45,4·44] |  |
| **Muslim** | 0·84 [0·15,4·76] | 1·55 [0·15,17] | 2·32 [0·26,20] |  |  | 0·39 [0·03,5·58] | 0·38\* [0·12,1·17] | 1# |  |
| **Taoism** |  | 0·79 [0·16,3·90] | 0·39 [0·12,1·31] | 0·03\*\*\* [0·00,0·43] |  | 0·24 [0·01,6·55] | 0·25 [0·01,6·55] | 2·10 [0·13,33] |  |
| **Other** | 0·25\* [0·06,1·08] | 0·97 [0·50,1·88] | 0·76 [0·44,1·32] |  |  | 0·07 [0·00,1·35] | 1·19 [0·46,3·06] | 0·02\*\* [0·00,0·58] |  |

# reference religion

\* p<0·10

\*\* p<0·05

\*\*\* p<0·01

We additionally performed a regression analysis in which interactions between time and all the other factors but religion in the original model, including age, gender, education levels, and perceptions towards trust- or misinformation-related questions were included as explanatory variables. Similar to previous models, we also employed Firth’s bias-reduced logistic regression method to reduce the impact of class imbalance. The estimates for the interaction terms (i.e., terms for difference in difference) shown in Table S16 showed for changes were insignificant for most of the factors. However, we still found the increase in vaccine endorsement among people aged 25 or above from 2021 to 2022 is larger than that of people below 25 in Japan and South Korea. A decreased impact of trust in the COVID-19 vaccines on vaccine endorsement was also observed in 2022 in Japan, South Korea, Cambodia, and the Philippines, while the influence of trusting local health care providers or misinformation tended to be weaker in 2022 compared to 2021 in Mongolia (Table S16).

**Table S16. Odds Ratios and the corresponding 95% confidence intervals for the interaction terms**. In this logistic regression model, we additionally added interactions between time and all the other factors but religion in the original model, including age, gender, education levels, and perceptions towards trust- or misinformation related questions (‘T4’ for the fourth trust-related question and ‘M1’ for the first misinformation-related question). Different education levels were re-classified into two groups: the under- and well-educated, and the former was set as baseline. Groups with fewer than 10 samples in either survey are marked in grey. PNG stands for Papua New Guinea.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Mongolia | Japan | South Korea | Vietnam | Laos | Cambodia | Philippines | Malaysia | PNG |
| Age | **18–24**  **(baseline)** |  |  |  |  |  |  |  |  |  |
| **25–34** | 1·51 [0·43,5·26] | 2·20 [0·82,5·87] | 3·74\*\*\* [1·79,7·92] | 0·97 [0·04,25] | 0·12\*\* [0·02,0·64] | 0·72 [0·15,3·56] | 1·42 [0·53,3·82] | 0·73 [0·23,2·34] | 1·84 [0·73,4·66] |
| **35–44** | 1·48 [0·32,6·69] | 4·31\*\*\* [1·70,11] | 3·22\*\*\* [1·43,7·24] | 1·25 [0·05,30] | 0·40 [0·04,4·06] | 0·99 [0·18,5·31] | 1·19 [0·44,3·16] | 0·89 [0·26,3·00] | 2·18 [0·80,5·99] |
| **45–54** | 2·25 [0·44,12] | 4·31\*\*\* [1·63,11] | 2·18\*\* [1·00,4·71] | 0·23 [0·02,3·46] | 0·38 [0·05,3·06] | 1·54 [0·19,12] | 1·19 [0·41,3·49] | 0·39 [0·08,1·77] | 1·48 [0·51,4·31] |
| **55+** | 1·43 [0·28,7·24] | 4·95\*\*\* [2·16,11] | 2·86\*\*\* [1·40,5·87] | 2·27 [0·08,64] | 0·26 [0·03,2·53] | 0·55 [0·10,2·92] | 0·61 [0·22,1·72] | 1·26 [0·15,11] | 1·35 [0·24,7·54] |
| Gender | **Female**  **(baseline)** |  |  |  |  |  |  |  |  |  |
| **Male** | 1·63 [0·68,3·94] | 1·00 [0·56,1·80] | 1·04 [0·63,1·73] | 0·36 [0·05,2·66] | 2·18 [0·69,6·82] | 1·77 [0·64,4·90] | 1·52 [0·81,2·83] | 0·43\* [0·18,1·04] | 1·86\* [0·93,3·74] |
| **Other** |  | 0·00\*\*\* [0·00,0·23] | 0·94 [0·20,4·57] |  |  |  |  |  |  |
| Education | **Well-educated** | 0·70 [0·29,1·67] | 0·94 [0·53,1·68] | 1·34 [0·80,2·23] | 0·44 [0·05,3·63] | 0·73 [0·11,4·95] | 1·62 [0·11,24] | 1·38 [0·61,3·16] | 1·13 [0·49,2·64] | 1·30 [0·52,3·22] |
| Response to questions | **trust score** | 1·45 [0·92,2·25] | 0·36\*\*\* [0·23,0·56] | 0·43\*\*\* [0·30,0·61] | 0·47 [0·11,2·01] | 0·73 [0·41,1·30] | 0·38\*\* [0·18,0·79] | 0·76\*\* [0·58,1·00] | 0·62\* [0·38,1·02] | 1·32 [0·86,2·01] |
| **T4** | 0·64\*\* [0·42,0·96] | 0·84 [0·63,1·12] | 0·79\* [0·62,1·02] | 1·36 [0·59,3·19] | 1·00 [0·64,1·58] | 1·62\* [0·98,2·69] | 0·89 [0·67,1·19] | 1·14 [0·76,1·72] | 1·09 [0·78,1·54] |
| **M1** | 0·70\*\* [0·49,0·98] | 0·86 [0·64,1·16] | 1·12 [0·90,1·40] | 0·48 [0·18,1·25] | 0·94 [0·66,1·36] | 0·77 [0·51,1·17] | 1·00 [0·79,1·25] | 0·71\* [0·49,1·03] | 1·15 [0·85,1·57] |

# reference religion

\* p<0·10

\*\* p<0·05

\*\*\* p<0·01

# Sensitivity analysis: potential impacts of disparity between intention and actual behaviour on the regression results

Although the COVID-19 vaccines were universally available free of charge in the Western Pacific, some who were willing to accept the COVID-19 vaccines had not managed to be vaccinated by the time of the 2022 survey (Table S17). A sensitivity analysis was therefore conducted to assess the potential impacts of such intention-behaviour gap on our previous estimates of the covariates’ effects.

**Table S17. Vaccine intent among the unvaccinated population in each Western Pacific countries.** PNG stands for Papua New Guinea.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Mongolia** | **Japan** | **South Korea** | **Vietnam** | **Laos** | **Cambodia** | **Philippines** | **Malaysia** | **PNG** |
| **Willing to accept** | 6 | 32 | 31 | 1 | 13 | 9 | 30 | 4 | 136 |
| **Unwilling to accept** | 31 | 142 | 196 | 0 | 2 | 8 | 49 | 30 | 283 |
| **Total** | 37 | 174 | 227 | 1 | 15 | 17 | 79 | 34 | 419 |

Specifically, we changed the measure for vaccine endorsement in 2022, assuming someone who was either vaccinated by the time of the 2022 survey, or unvaccinated but willing to accept the COVID-19 vaccine for him- or herself as a supporter of the COVID-19 vaccines. We then estimated the influences of different socio-demographic, trust- and misinformation-related factors on vaccine endorsement at the two time points of the surveys for each country using the same logistic regression model as that in the main analysis. The estimated coefficients are listed in Figure S2 and Table S17. The inclusion of such population only brought minor changes to our research findings for all but Papua New Guinea, in which the sentiments towards the COVID-19 vaccines did not change significantly between the two time points, though fewer people than predicted from the 2021 survey had been vaccinated by the time of the 2022 survey. It is also worth noting that under the new measure all the Vietnamese respondents were pro-vaccine, while only two respondents from Laos did not support the COVID-19 vaccine in 2022.

A picture containing text, screenshot, diagram, parallel

Description automatically generated

**Figure S2.** **Results of the logistic regression when a new measure of vaccine endorsement was utilized for the 2022 survey.** Odds ratios and 95% confidence intervals for all the factors but religion in the logistic model that infers the contribution of age, gender, education, religion, and responses to some trust- or misinformation-related questions to vaccine confidence for each country in 2021 and 2022. The reference groups for age, gender, and education are people aged between 18 and 24 years old, female, and under-educated (those having received at most secondary education) respectively. The unvaccinated who were willing to accept the COVID-19 vaccines for themselves in 2022 are also taken as supporters of the COVID-19 vaccines in this model. Coefficients for people whose genders were neither female nor male are not shown due to the small sample sizes (<20) in either survey. The pooled estimate for each covariate’s effect across different countries through a meta-analysis study is shown as the black diamond at the bottom of each block (details in the Supplementary information). Please note the difference in scale on the x-axes and the logarithmic scales.

**Table S18. Odds Ratios and the corresponding 95% confidence intervals when a new measure of vaccine endorsement was utilized for the 2022 survey**. In this logistic regression model, we additionally took the unvaccinated who were willing to accept the COVID-19 vaccines for themselves as supporters of the COVID-19 vaccines in 2022. Different education levels were re-classified into two groups: the under- and well-educated, and the former was set as baseline. Groups with fewer than 10 samples in either survey are marked in grey. PNG stands for Papua New Guinea.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Mongolia | Japan | South Korea | Vietnam | Laos | Cambodia | Philippines | Malaysia | PNG |
| Time | **2022** | 2·32\*\*\* [1·48,3·67] | 4·35\*\*\* [3·13,6·05] | 3·10\*\*\* [2·36,4·01] | 57\*\*\* [4·26,765] | 22\*\*\* [5·64,85] | 11\*\*\* [5·47,22] | 6·89\*\*\* [4·76,9·97] | 12\*\*\* [6·89,20] | 1·16 [0·83,1·63] |
| Age | **18–24**  **(baseline)** |  |  |  |  |  |  |  |  |  |
| **25–34** | 0·45\*\* [0·24,0·86] | 2·05\*\*\* [1·2,3·49] | 2·51\*\*\* [1·73,3·63] | 1·67 [0·65,4·26] | 1·45 [0·72,2·92] | 0·81 [0·45,1·45] | 1·14 [0·72,1·8] | 0·99 [0·59,1·65] | 1·02 [0·66,1·58] |
| **35–44** | 1·55 [0·71,3·39] | 1·86\*\* [1·13,3·06] | 3·39\*\*\* [2·27,5·10] | 1·39 [0·55,3·49] | 1·82 [0·76,4·35] | 0·68 [0·38,1·26] | 0·65\* [0·41,1·04] | 0·99 [0·57,1·70] | 0·64\* [0·40,1·03] |
| **45–54** | 1·02 [0·45,2·27] | 2·36\*\*\* [1·42,3·94] | 3·13\*\*\* [2·08,4·66] | 1·8 [0·64,5·10] | 0·88 [0·40,1·93] | 0·92 [0·46,1·84] | 0·68 [0·41,1·15] | 0·87 [0·41,1·82] | 0·76 [0·46,1·25] |
| **55+** | 0·88 [0·38,2·05] | 2·39\*\*\* [1·52,3·71] | 4·06\*\*\* [2·83,5·87] | 0·69 [0·28,1·72] | 1·16 [0·42,3·16] | 0·46\* [0·21,1·01] | 0·44\*\*\* [0·26,0·74] | 0·82 [0·35,1·95] | 0·73 [0·35,1·54] |
| Gender | **Female**  **(baseline)** |  |  |  |  |  |  |  |  |  |
| **Male** | 1·22 [0·79,1·90] | 1·27 [0·93,1·72] | 1·26\* [0·98,1·63] | 0·87 [0·50,1·52] | 0·84 [0·48,1·46] | 1·03 [0·69,1·54] | 1·23 [0·90,1·70] | 0·68\* [0·46,1·00] | 1·40\*\* [1·01,1·93] |
| **Other** |  | 1·04 [0·25,4·35] | 0·88 [0·39,1·93] |  |  | 1·46 [0·06,37] |  |  |  |
| Education | **Well-educated** | 1·35 [0·86,2·12] | 1·04 [0·25,4·35] | 0·88 [0·39,1·93] | 1·54 [0·74,3·19] | 3·19 [0·66,15] | 1·46 [0·06,37] | 1·90\*\*\* [1·27,2·80] | 1·35 [0·91,1·99] | 1·19 [0·76,1·84] |
| Response to questions | **trust score** | 1·90\*\*\* [1·52,2·39] | 5·21\*\*\* [4·22,6·42] | 3·06\*\*\* [2·59,3·63] | 1·99\*\*\* [1·32,3·00] | 1·84\*\*\* [1·38,2·48] | 2·34\*\*\* [1·84,2·94] | 2·80\*\*\* [2·44,3·22] | 3·39\*\*\* [2·69,4·26] | 3·63\*\*\* [3·1,4·31] |
| **T4** | 1·39\*\*\* [1·16,1·67] | 1·67\*\*\* [1·45,1·93] | 1·79\*\*\* [1·58,2·03] | 2·48\*\*\* [1·92,3·19] | 1·42\*\*\* [1·14,1·75] | 1·57\*\*\* [1·27,1·93] | 1·35\*\*\* [1·19,1·55] | 1·49\*\*\* [1·26,1·77] | 1·38\*\*\* [1·21,1·57] |
| **M1** | 1·09 [0·91,1·30] | 1·21\*\* [1·04,1·42] | 1·09 [0·97,1·22] | 1·26\* [0·98,1·63] | 1·16 [0·97,1·40] | 1·25\*\*\* [1·06,1·45] | 1·12\* [0·99,1·25] | 0·98 [0·83,1·16] | 1·05 [0·91,1·22] |
| Religion | **None** | 0·86 [0·54,1·38] | 0·9 [0·63,1·30] | 1·17 [0·84,1·65] | 1# | 0·01\*\*\* [0,0·25] |  | 0·02\*\* [0,0·54] | 4·14 [0·27,64] |  |
| **Animism** | 0·02\*\* [0,0·59] | 4·48 [0·5,40] | 0·46 [0·14,1·51] | 0·71 [0·03,16] | 1·35 [0·66,2·77] |  |  | 0·19 [0·01,4·01] |  |
| **Buddhism** | 1# | 1# | 0·94 [0·68,1·30] | 0·89 [0·47,1·67] | 1# | 1# | 0·32 [0·01,8·17] | 1·04 [0·64,1·72] |  |
| **Christian** | 0·46 [0·14,1·52] | 1·02 [0·55,1·88] | 1# | 2·14 [0·70,6·55] | 0·65 [0·12,3·49] | 0·44 [0·11,1·73] | 1# | 0·82 [0·45,1·49] |  |
| **Hindu** | 0·03\*\* [0,0·72] | 4·14 [0·37,47] | 0·76 [0·17,3·53] | 0\*\*\* [0,0·06] |  |  |  | 0·58\* [0·31,1·08] |  |
| **Muslim** | 2·08 [0·39,11] | 1·31 [0·17,10] | 1·93 [0·32,12] |  |  | 0·49 [0·09,2·69] | 0·63 [0·32,1·23] | 1# |  |
| **Taoism** |  | 0·99 [0·25,3·94] | 0·85 [0·37,1·97] | 0·57 [0·04,9·03] |  | 0·27 [0·01,5·64] | 0·34 [0·01,7·77] | 3·82 [0·68,21] |  |
| **Other** | 0·39\*\* [0·17,0·89] | 0·90 [0·54,1·51] | 0·83 [0·54,1·26] |  |  | 0·29 [0·01,5·93] | 1·02 [0·59,1·79] | 0·01\*\*\* [0,0·23] |  |

# reference religion

\* p<0·10

\*\* p<0·05

\*\*\* p<0·01

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