
COVID-19 Recovery:
Building Future Pandemic
Preparedness and
Understanding Citizen
Engagement in the G7

Mapping the Roles of Divisions, Risk, and Norms to Overcome Vaccine Hesitancy in the UK, Germany, and Italy

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About COVID-19 Recovery: Building Future Pandemic Preparedness and Understanding Citizen Engagement in the G7

The programme aims to facilitate global and interconnected learning about the contexts, causes and factors leading to vaccine engagement. Through the programme, the Academy has awarded funding to seven research projects exploring vaccine engagement in Canada, France, Germany, Italy, Japan and the UK. The programme, which was funded by the UK's Department for Business, Energy and Industrial Strategy, builds on a series of statements developed in partnership with humanities and social sciences bodies across G7 countries. The Academy has supported another series of projects focused on the USA and UK.

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Introduction

This research project was funded by the British Academy scheme *COVID-19 Recovery: Building future pandemic preparedness and understanding citizen engagement in the G7*. It investigates the behavioural drivers of vaccine hesitancy in the United Kingdom (UK), Germany, and Italy. This summary will not engage with the literature and also will not address details of scenarios and games used in the studies.

Our project objectives were to:

- Understand the role of risk aversion stemming from the possibility of negative consequences of vaccination to oneself.
- Examine how the willingness to help others can moderate risk aversion.
- Investigate the role of regional identities in the willingness to help others and in taking risks that benefit the community.
- Investigate the role of advisers in the willingness to vaccinate and how it is affected by the social distance to the adviser and their position of authority with respect to the advisee.
- Investigate the role of tying one's vaccination status to their employment on their willingness to vaccinate.
- Determine factors that influence the decision to vaccinate, including gender differences and individuals with caring responsibilities.
- Identify other regularities related to ethnic or national identities and religious beliefs in relation to willingness to vaccinate and map their variation across the three countries.

Rationale of this project and the research conducted

Taking a new vaccine can be seen as a risk to health, since side effects can be a worry. Taking a vaccine can also be seen as contributing to a society where the majority of people are vaccinated and the virus has reduced chances of being transmitted. Therefore, if an individual takes the vaccine, they protect themselves and protect others by contributing to the public's health. Based on this reasoning, this project examines whether the risk-taking behaviour for the individual, the personal risk, shifts when fellow citizens' risk comes into play.

- Do we take more risks when we can decrease others' risk of ill-health?
- What are the underlying conditions that support helping behaviour towards others?
- Does it matter whether they come from the same region as us or from different parts of the country?
- How much do we feel we can trust them?
- How altruistic are we when we think of others in the context of vaccination?

Individuals do not tend to make the decision to take a vaccine alone. We tend to discuss this with partners, relatives, close friends, trusted mentors, and even work colleagues.

- Who do we listen to and who influences our decision to take the vaccine?
- Is our decision also influenced by our typical sources of information, the online or printed news media, TV, and social media?
- Or are we influenced by our religious beliefs and general impressions about what others may do in our situation?
- How are decisions made across the UK, Italy, and Germany?

All three countries face geographical divides (North/South in the case of the UK and Italy and East/West in the case of Germany). The full discussion of the countries' regional differences is presented in the full report. Examples of these are: unemployment numbers, income, economic power, economic growth, voting and political preferences, child mortality, and willingness to recycle.

- Does this divide change people's behaviour?
- What can we learn from them and the factors that influence their decisions to vaccinate?

This project achieves its aim to provide answers to these questions by utilising experiments, scenarios, and vignettes; all tools derived from game theory and behavioural economics.

Behavioural economics

Behavioural economics (also referred to as experimental economics) is the use of experimental methods with monetary incentives to evaluate theoretical predictions of human behaviour. It uses controlled, scientifically-designed experiments to test human behaviour. Experimental economic research offers the advantage of an immediate observation of people's decisions. The incentivised research method leads to reliable prognoses of human behaviour.

By conducting a series of experiments to measure participants' personal preferences, we can understand why and how people behave in situations/circumstances in their life. This then enables us to measure shifts towards desired behaviour when we change and design 'nudges' and use this information to shift people's behaviour.

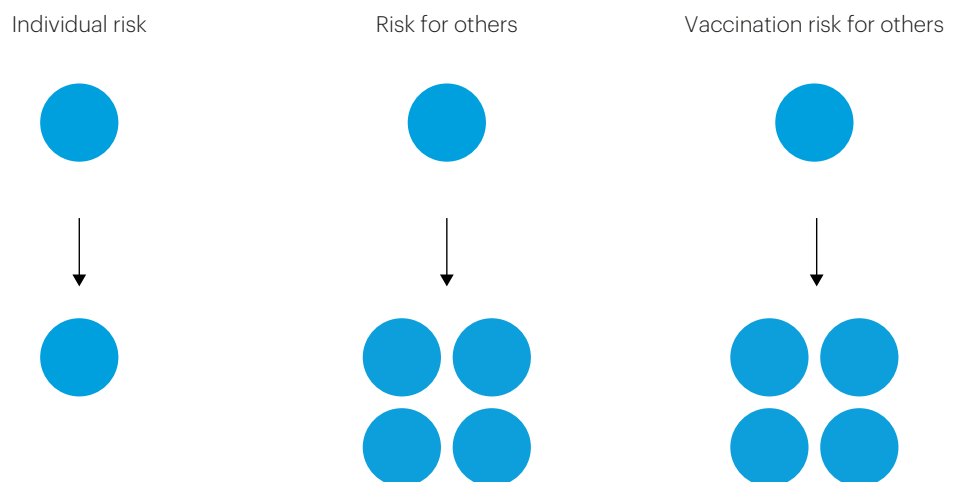
Methods

In this project we employed three games and decision-making tasks used widely in the experimental economics literature. Specifically, we employed the **Dictator Game** to measure participants' willingness to help others and the **Trust Game** to measure participants' willingness to cooperate with others as well as their tendency to return favours (i.e., their trustworthiness). The willingness to cooperate with others and one's own trustworthiness may be crucial factors in collective action problems, such as achieving collective immunity through taking up vaccines. We varied the location of the person with whom participants were matched in these two games to measure the effect of regional identities. We also used the **Risk Game** which yields a small benefit to a third party and asks participants to choose between a certain benefit to themselves and a risky outcome which may harm them with a small probability. This feature is designed to simulate a crucial aspect of vaccination decisions, which has been found to correlate with actual decisions to be vaccinated.

We elicited three measures related to risk preferences. Individual risk, risk taking for others and risk taking for others in the vaccination context. The three treatments are shown in Figure A:

- When a decision affects only the decision-maker
- When the decision yields a small benefit to a third party and the total benefit to the third party depends on the decisions of a group of decision-makers (i.e., positive externality)
- Where positive externality is framed as a benefit accrued by someone as a result of the decision-maker's choice to get vaccinated.

Figure A: Treatments in this study



In addition to the aforementioned tasks, we employed **a series of vignettes**, which were designed to measure the effect of influencers and of vaccination mandates tied to employment on the participants' willingness to get vaccinated. The variations in the vignettes are shown in figure B.

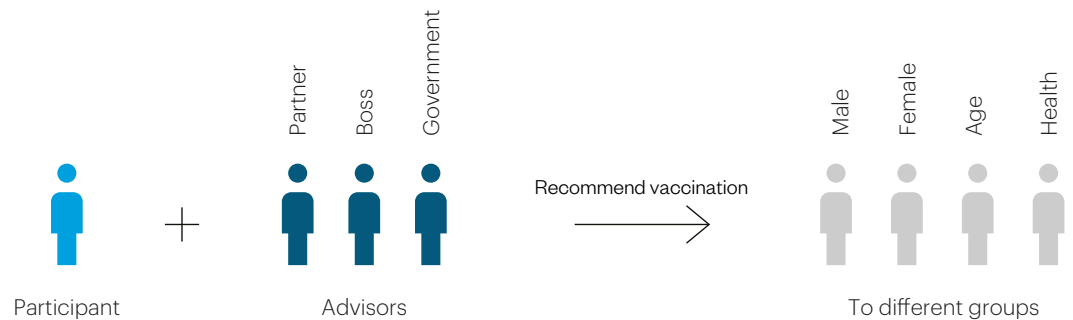


Figure B: Vignettes in this study

In the United Kingdom the questionnaire was in English, in Germany in German and in Italy in Italian. After providing consent and answering basic screening questions, the participants were directed to the experiment where they made choices in the tasks and games in the following order: the Dictator Game, the Trust Game, the Baseline treatment of the Risk Game, the Unframed treatment of the Risk Game, the framed treatment of the Risk Game and the Vignettes.

In the Dictator Game, Trust Game and Risk Game, the participants were asked to make choices four times: once with someone from the same region as themselves, once with someone from the same greater spatial division as themselves, once with someone from the other spatial division (more details below) as themselves, and once with someone from the same country.

By the term “greater spatial division” we mean West Germany and East Germany, the north and the south of Italy, and the south of England and the rest of the United Kingdom (UK). The south of England, the north of Italy, and West Germany are seen as economically privileged, and politically different compared to the remaining areas. In the United Kingdom we chose to group Scotland, Wales, and Northern Ireland together with the north of England, whereas we grouped the Southwest of England together with the southeast of England, the east of England and London. This was necessary to be able to include all four nations of the United Kingdom in our study, while keeping the length of the experiment manageable and comparable between countries.

With respect to the local region, we used the regions in Italy, the Laender in Germany, and the regions of England as well as Scotland, Wales and Northern Ireland in the United Kingdom.

Figure C: Four spatial regional divisions where participants interacted within in the UK

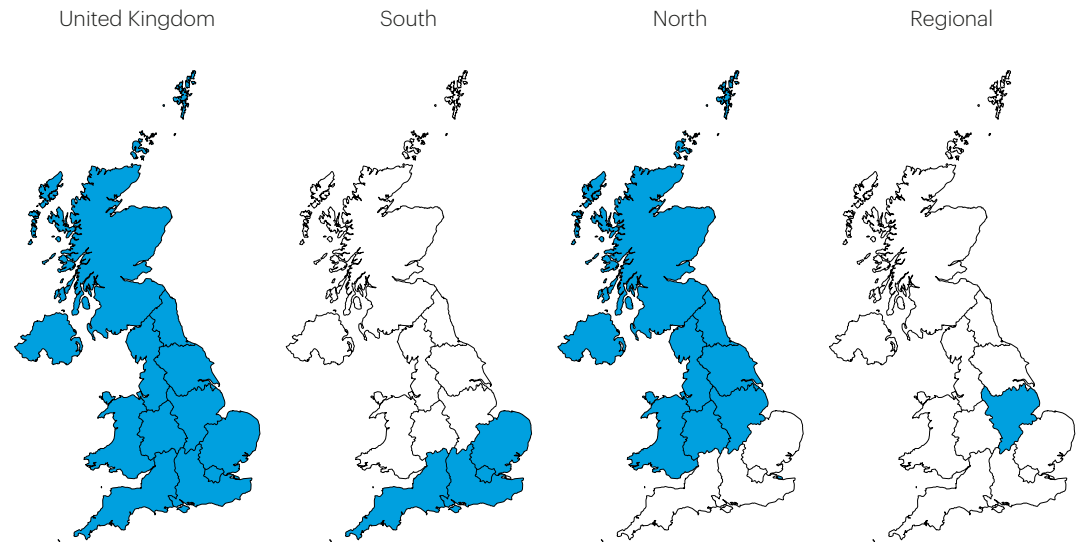
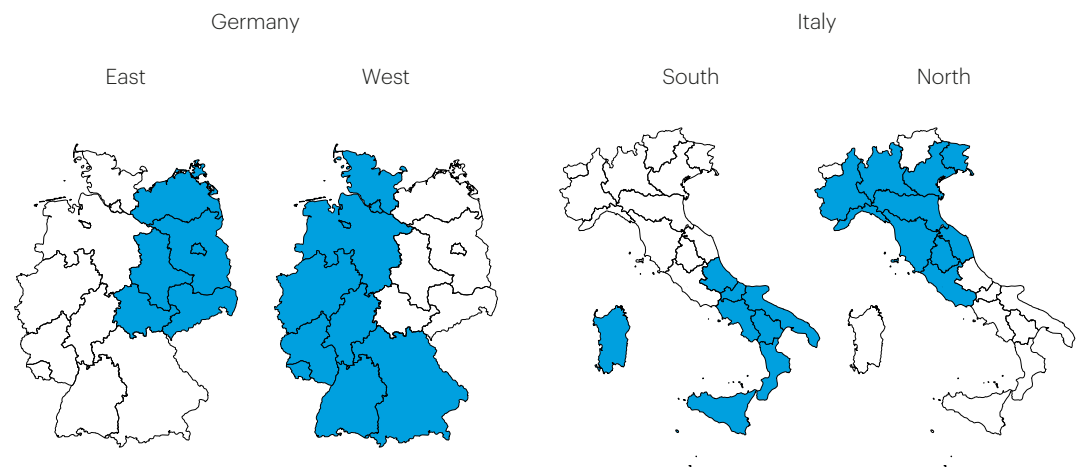


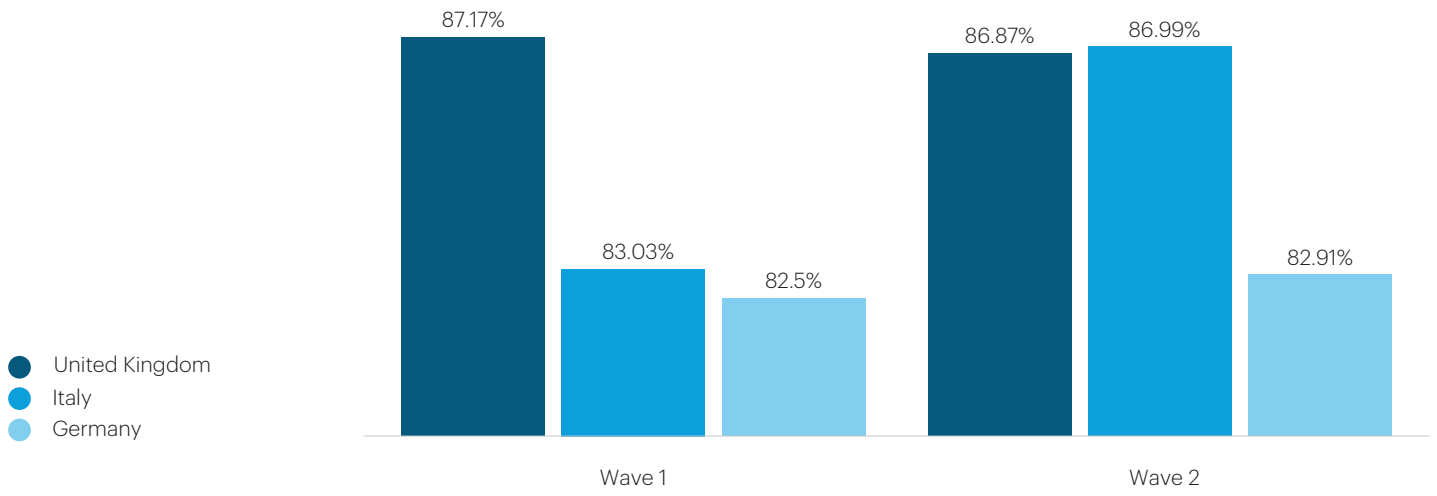
Figure D: East/West and South/North divisions in Germany and Italy



The project was administered and data were collected online in two waves in December 2021 and February 2022. Sampling was designed to maximise our ability to detect regional differences within each country, by recruiting an equal number of individuals from each region within each country.

We had equal numbers of participants in each data collection wave, with each providing 1380, 1368, and 1469 participants from the UK, Italy, and Germany, respectively. The participants, all adults, were recruited via Lucid. A large percentage of participants in each country were not fully vaccinated. In wave 1 (wave 2), the percentage of vaccinated participants was 87.1% (86.8%) in the United Kingdom, 83% (87%) in Italy, and 83% (83%) in Germany.

Figure E: Share of participants who are vaccinated in wave 1 and 2



Main findings

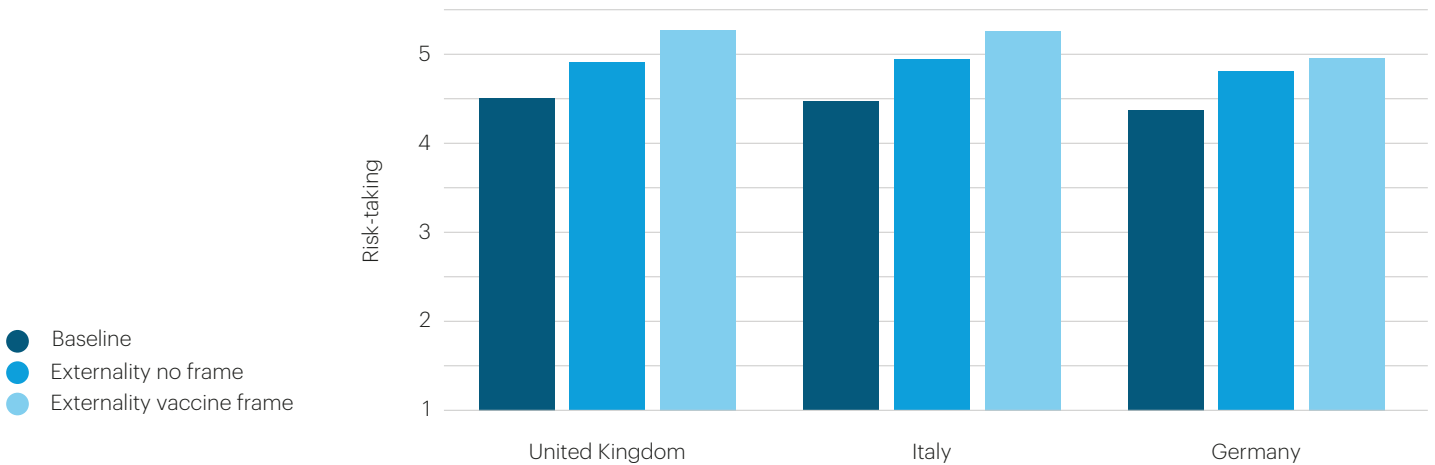
1. Risk-taking in the three decision scenarios

(when the decision only affects the decision maker; when the decision yields a small benefit to a third party; and when the decision yields a small benefit to a third party and is framed as choice to vaccinate)

- **In all three countries participants are more willing to take risks, despite the potential loss for themselves, when their risk-taking will benefit others.**
- **Framing the risk-taking task as a vaccination decision increases participants' willingness to take risks, suggesting the existence of a strong social norm.** This finding applies to all three countries. However, the effect is stronger among those already vaccinated, indicating that there are limits to the potential use of this norm to increase vaccination rates.

Figure F: Risk-taking behaviour of participants for three treatments

Higher numbers reflect more risk



- **There were no differences in the unframed willingness to take risk to benefit others between vaccinated and unvaccinated participants.** This suggests untapped resources of pro-social predisposition in all groups, which has potential to be used for behaviour change.
- **In all countries, participants expect others to take more risks when the decision is framed as a vaccine-taking one.** This further reinforces the idea of a strong norm or shared attitudes regarding vaccination decisions.

2. Regional identities and the effect on individuals' willingness to cooperate and to take risks

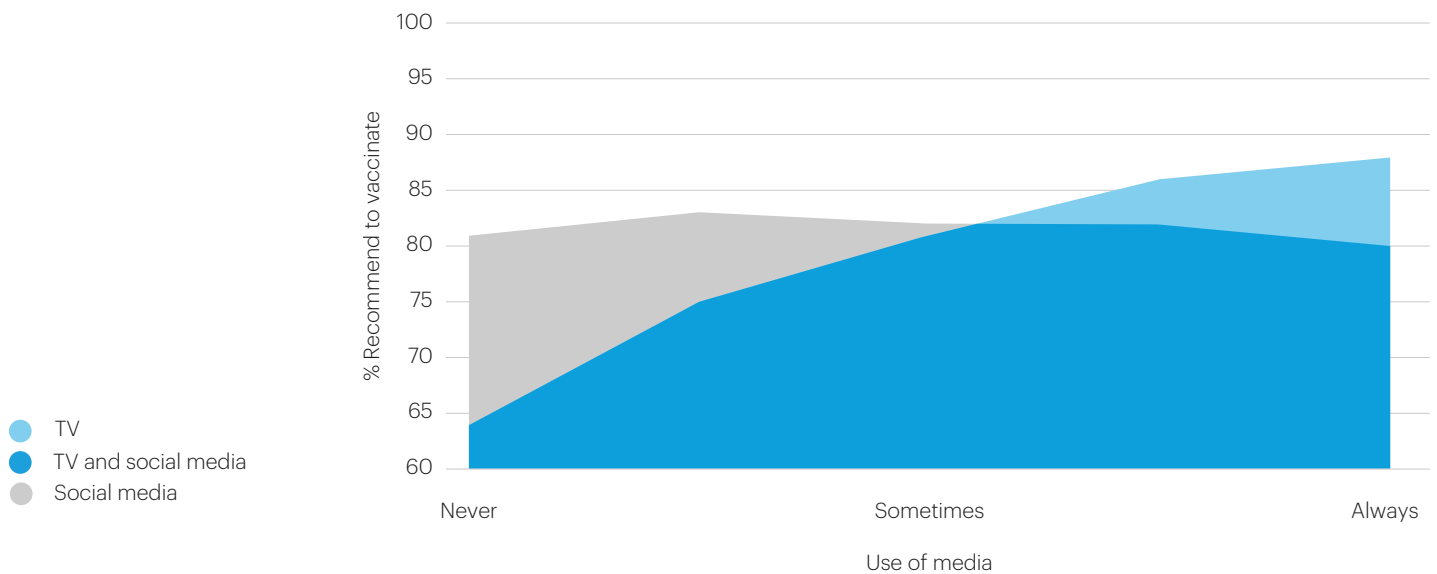
- **Participants in the UK exhibit similar levels of willingness to take risks regardless of where they reside or with whom they are matched.** Participants in the south of Italy are less willing to take risks than those from the north of the country. Participants in the former East Germany are less willing to take risks than those in the former West Germany. Participants in West Germany take more risks when the beneficiary of their decision-making is also in West Germany.
- **In the UK participants residing outside of the south of England are more willing to take risks when the beneficiary also resides outside of the South of England.** We find no such regional differences in the willingness to vaccinate in Italy and Germany.
- **Regional differences affect the willingness to cooperate with others.** In the UK, participants residing in the south of England are perceived as more cooperative by those residing in other regions. In Italy, participants from the south exhibit diminished willingness to cooperate with those from the north. Likewise, in Germany participants from the former East or West show higher willingness to cooperate with participants from their own region.
- **In the UK we observe similar levels of trustworthiness for most regions and nations.** In Italy, participants from the south are 'punished' less by fellow southerners for being uncooperative. In Germany, we observe the same for those residing in the former East when matched with partners from the former East. We also observe that those from the former West are more willing to reward those from the West who cooperate at least to some extent.

3. The effect of socio-demographic and contextual factors on the decision to vaccinate

- **We found differences among the three countries in the percentage of participants who would recommend vaccination** using the vignettes. On average, 86.9% would recommend someone to get vaccinated in the UK, 84.7% in Italy, and 81.6% in Germany.
- **In the UK participants are more likely to recommend vaccination when someone is older or has underlying health conditions.** In Italy and Germany, participants are more likely to recommend vaccination when someone is older, but they are less likely to recommend vaccination when someone has underlying health conditions. In the UK and Germany, a governmental recommendation to vaccinate increases the likelihood of the participants to also recommend vaccination compared to the cases where vaccination is recommended by one's partner or boss.
- **Being older is positively associated with the decision to get vaccinated in all three countries.**
- **Being female is positively associated with the decision to get vaccinated in the UK, but not in Italy and Germany. Mixed ethnicity or an immigrant background are negatively associated with the decision to get vaccinated in all three countries.** However, there are differences among groups of immigrants that are worth exploring further.

- **The more important religion is reported to be for a participant in the UK and Germany, the less likely it is that they will get vaccinated.**
- Income and education have a small positive effect in the decision to get vaccinated in Germany, but not in the UK or Italy.
- **Consuming information primarily from the television is positively associated with the decision to get vaccinated in the UK, Italy, and Germany.** However, relying on social media as a main source of information is negatively associated with the decision to get vaccinated across all countries.

Figure G: Primary source of information and the recommendation to get vaccinated (%).

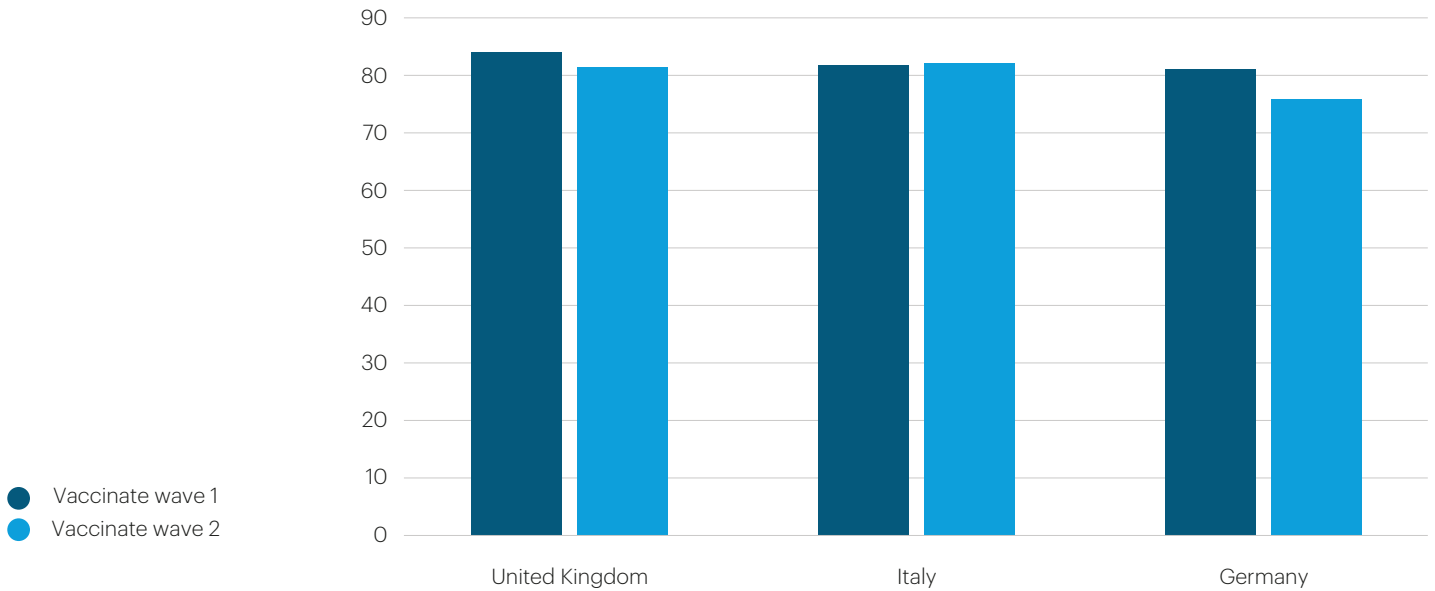


4. The effect of vaccine mandates on the decision to vaccinate

- **In the UK, making vaccination a requirement for continuing employment decreases the likelihood that one will recommend vaccination.** The same applies to Germany. However, this mandate increases the likelihood that one will recommend vaccination in Italy.

Figure H: Share of subjects who choose to vaccinate in our two vignette experiments:

i) Wave 2 - when being unable to work because of choosing not to vaccinate is mentioned and
 ii) Wave 1 - when it is not mentioned.



5. The effect of having tested positive for COVID-19 on the decision to vaccinate

- **Participants who tested positive for COVID-19 in the past are less likely to recommend vaccination and less willing to take risk to benefit others.**

Figure J: Share of participants who chose to get vaccinated according to whether they had tested positive for COVID-19

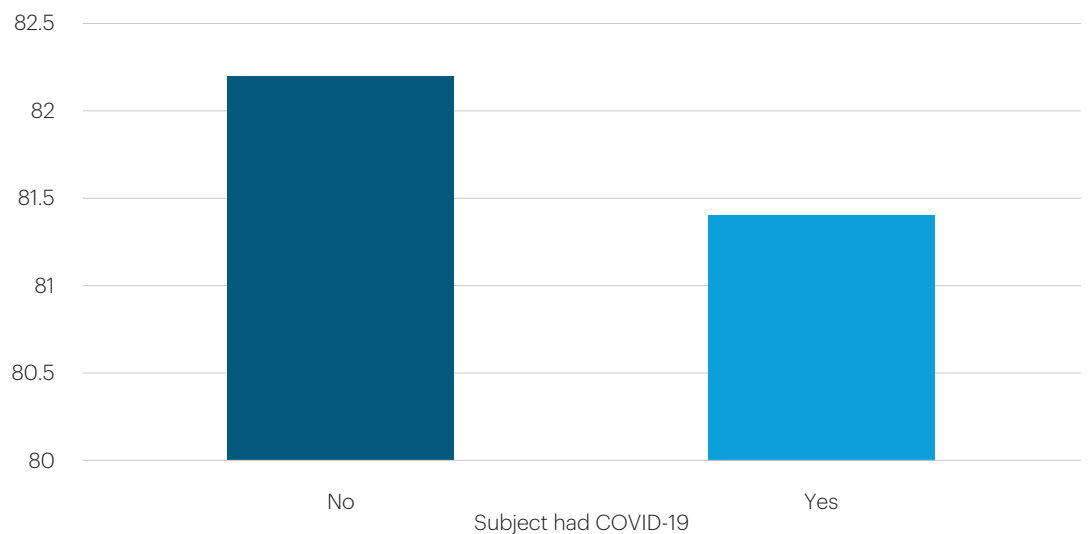
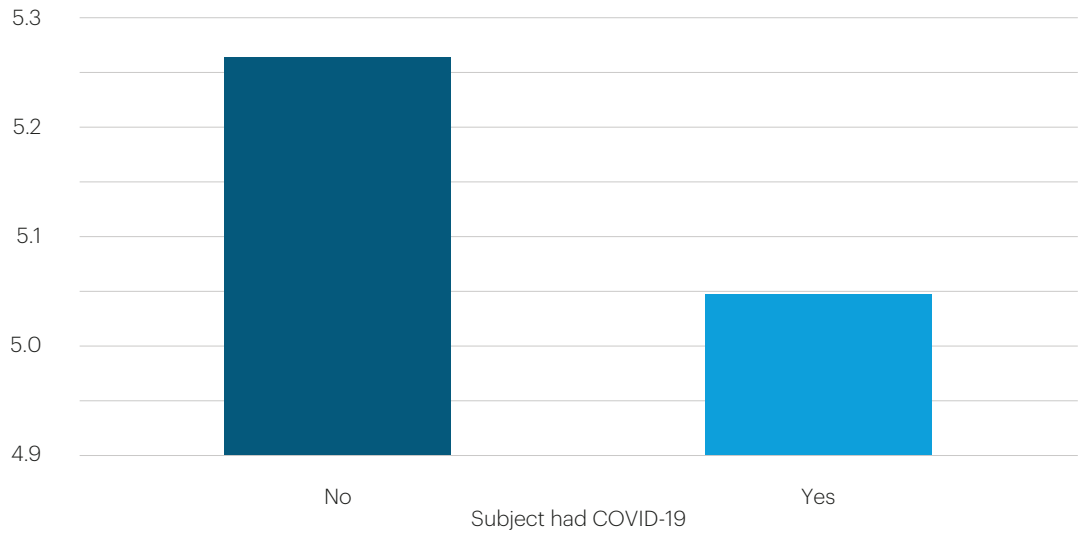


Figure K: Risk-taking behaviour according to whether participants had tested positive for COVID-19

Higher numbers reflect more risk



6. Different types of vaccine affect trust and the decision to vaccinate

- Participants exhibit different levels of trust for different vaccines.**
 Participants trust Pfizer-BioNTech and Moderna more and AstraZeneca and Johnson & Johnson less.
- For all type of vaccines, we found that a lower level of trust in the vaccine is associated with a lower likelihood to recommend vaccination.

Figure L: Frequency of reported trust by type of vaccine

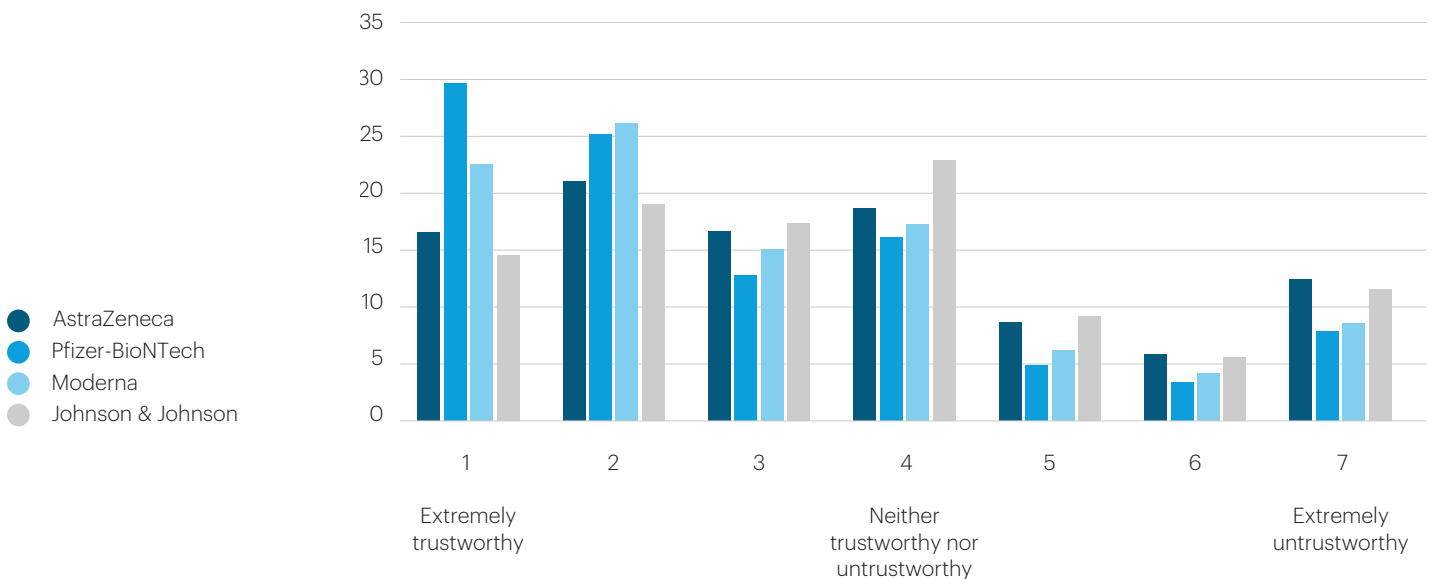
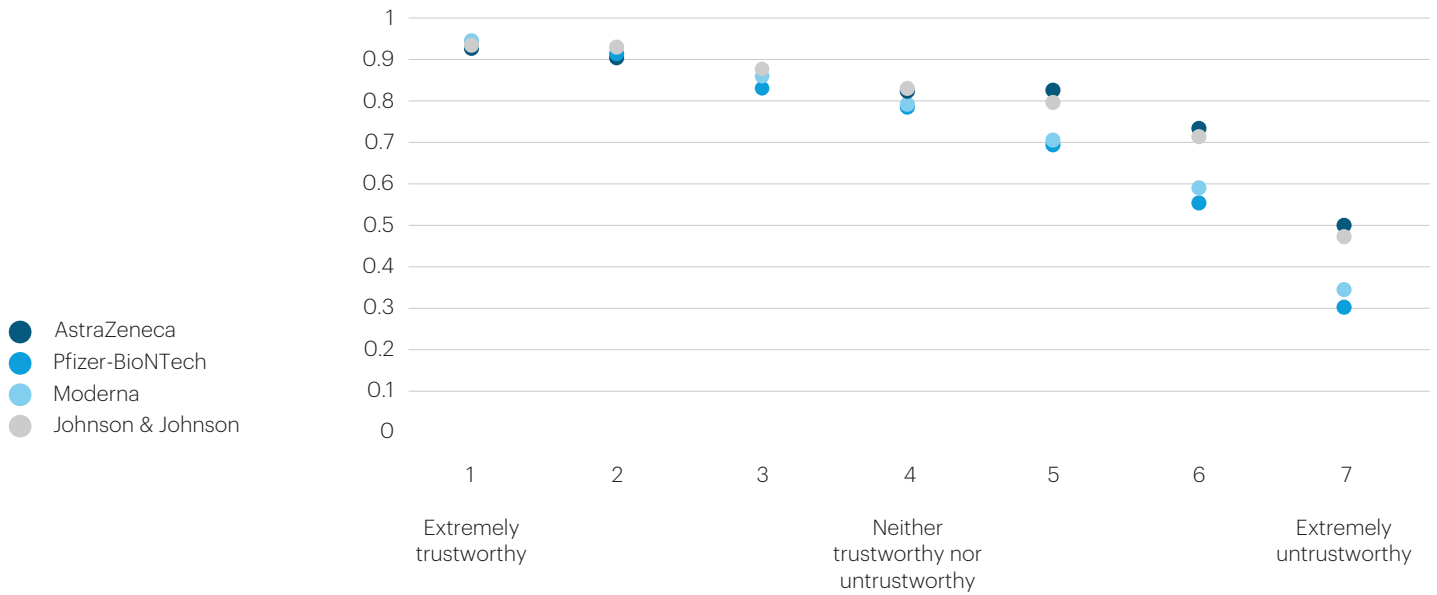


Figure M: Share of subjects who chose to vaccinate by level of trust for a specific type of vaccine



Recommendations

1. Risk-taking in the three decision scenarios

- Communications about the vaccines should emphasise the benefit to others in order to take advantage of pre-existing norms.
- When attempting to reach the unvaccinated, messages may be based on the underlying willingness to help others.

2. Regional identities and the effect on individuals' willingness to cooperate and to take risks

- In certain regions communications may also want to emphasise benefits to those communities specifically.

3. The effect of socio-demographic and contextual factors on the decision to vaccinate

- The advice to get vaccinated in the UK and in Germany should be communicated from and be supported by the appropriate governmental health authorities.
- Messages that younger citizens should get vaccinated should increase. The focus in official communications on those older seems to have created the impression that younger ones do not need to get vaccinated.
- In Italy and in Germany the authorities should clarify to their populations that underlying health conditions are a reason to get vaccinated.
- Authorities in the UK and Germany should work with religious leaders to persuade the unvaccinated in their religious constituencies.

4. The effect of vaccine mandates on the decision to vaccinate

- More forceful measures, such as making vaccination a requirement for continued employment, may perform better in some countries (i.e., Italy) but not others.

Areas for future research

- To what extent is the link between underlying health conditions and the lower likelihood to recommend vaccination in Italy and Germany related to the high publicity of the Astra Zeneca vaccine's side effects? Would the results change for different vaccines?
- What is the real-world evidence regarding vaccine mandates and how do they relate to those in our experiment?
- What is the role of social media in vaccine hesitancy? Which age groups are more vulnerable?
- How does trust in the authorities change over time and how does it depend on their recommendations, rules, and messages?
- Science is competing with conspiracy theories and false facts. Since scientific results change, due to updates and knowledge gains, conspiracy theories seem rather stable. Does the perceived instability of scientific results decrease trust in science and foster people's shift towards "stable" conspiracy theories?
- In Germany, we find that Polish immigrants are less likely to vaccinate than Romanian ones. Can this result be replicated by a study focused on detecting differences among immigrant groups and what might explain this difference?
- People in our project have a similar underlying willingness to take risks to help others, but they exhibit different levels of compliance with the norm to get vaccinated. Which behavioural interventions may tap into this underlying pro-sociality to increase vaccination rates?

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