SURFACING NORMS TO INCREASE VACCINE ACCEPTANCE

By Alex Moehring, Avinash Collis, Kiran Garimella, M. Amin Rahimian, Sinan Aral, Dean Eckles

IN THIS BRIEF

Vaccine hesitancy presents a challenge to successful control of the COVID-19 pandemic. We find that this hesitancy may shift based on beliefs about whether other people will accept a vaccine.

Evidence from a large-scale randomized, international survey indicates that information about descriptive norms—that is, what other people do, believe, or say—can have substantial positive effects on intentions to accept new vaccines for COVID-19.

A survey in 67 countries in local languages assessed people's knowledge about COVID-19, beliefs about and use of preventative behaviors, beliefs about others' behaviors and beliefs, and economic experiences and expectations. To date, the survey has yielded more than 1.8 million responses.

When respondents were presented with accurate positive information about vaccine acceptance by others, they were generally more likely to say they would probably or definitely receive the COVID-19 vaccine. This information also lowered the percentage who said they were unsure.

Despite the emergence of multiple safe vaccines, vaccine hesitancy presents a challenge to successful control of the COVID-19 pandemic. As with many human behaviors, people's vaccine acceptance may be affected by their beliefs about whether others will accept a vaccine (i.e., descriptive norms). One variable, information dissemination about these descriptive norms, results in different effects depending on people's baseline beliefs and the relative importance of conformity, social learning, and so-called free-riding (in this case, avoiding a vaccine while benefiting from the vaccinations of others).

We provide evidence from a large-scale randomized experiment embedded in an international survey, that information about descriptive norms—that is, what other people do, believe, or say—can have substantial positive effects on intentions to accept new vaccines for COVID-19.

DESCRIPTIVE NORMS

The effectiveness of non-pharmaceutical interventions in response to epidemics, such as the COVID-19 pandemic, often depends on the behavioral responses of the public. Even when vaccines are amply available, success depends on people's willingness to accept or seek out the vaccine (Malik et al., 2020). Even low rates of vaccine refusal can prevent a society from achieving herd immunity (Sanche et al., 2020; Anderson et al., 2020). Given both the value of individual autonomy and the significant challenges of imposing vaccine mandates (Signorelli et al., 2018; Omer et al., 2019; Betsch et al., 2016), it is important to understand how public health

messaging can increase the acceptance of safe and effective COVID-19 vaccines.

Many messaging strategies address individual barriers to vaccination, such as complacency and inconvenience (Betsch et al., 2015), as well as the perceived relative risks of both the vaccines and the disease (Malik et al., 2020). For example, field studies show that corrective information about vaccine safety can effectively reduce misconceptions and false beliefs (Nyhan, 2014 and 2015). Similarly, messaging strategies that share recommendations from experts while also emphasizing reasons for accepting a vaccine have shown promise in increasing vaccine acceptance (Green et al., 2021).

However, while acceptance of COVID-19 vaccines will likely involve substantial social influence, it is not yet clear whether learning that others' are accepting a vaccine will increase or decrease acceptance. Positive peer effects can arise due to a number of factors, including information diffusion (Banerjee et al., 2019; Alatas et al., 2019), conformity and injunctive norms (Oraby et al., 2014), and inferring vaccine safety and effectiveness from others' choices (Bauch et al., 2012; Rao et al., 2007).

On the other hand, the negative effects of others' acceptance can arise as a result of free-riding on vaccine-generated herd immunity, even if that's only partial or local (Ibuka et al., 2014; Bohm et al., 2016). As of now, the empirical evidence is inconclusive.

Therefore, we need further empirical guidance about which scalable and effective messaging strategies can leverage social influence. Some interpretations of the theoretical and empirical literature could lead public-health communicators to emphasize high rates of vaccine acceptance. But little is known about how this kind of intervention will actually affect the public's acceptance of new vaccines.

RESEARCH METHODOLOGY

Through a collaboration with Facebook and Johns Hopkins University—and with input from experts at the World Health Organization and the Global Outbreak Alert and Response Network—we fielded a survey in 67 countries in their local languages. This survey assessed people's knowledge about COVID-19, beliefs about and use of preventative behaviors, beliefs about others' behaviors and beliefs, and economic experiences and expectations. To date, the survey has yielded more than 1.8 million responses (Collis et al., 2020).

Beginning in October 2020, and for the 23 countries with ongoing data collection in this study, we provided respondents with accurate information about how previous respondents in their country had responded to a survey question about vaccine acceptance, mask-wearing, or physical distancing. We randomized at what point in the survey this information was provided, which behavior the information was about, and how we summarized previous respondents' answers. This enabled us to estimate the effects of providing information about descriptive norms on people's stated intentions to accept a vaccine.

> ***"Even low rates of vaccine refusal can prevent a society from achieving herd immunity."***

In the case of vaccine acceptance, we told some respondents, "Your responses to this survey are helping researchers in your region and around the world understand how people are responding to COVID-19. For example, we estimate from survey responses in the previous month that X% of people in your country say they will take a vaccine if one is made available." In this statement, X is the (weighted) percent of respondents saying "Yes" to a vaccine-acceptance question.

Other respondents received information on how many say they "may" take a vaccine, which is the (weighted) percent who chose "Yes" or "Don't know" for that same question. Whether this information occurs before or after a more

detailed vaccine acceptance question, and whether it uses the broad (combining "Yes" and "Don't know") or narrow ("Yes" only) definition of potential vaccine accepters, is randomized. This allowed us to estimate the causal effects of this normative information.

While it is often impossible to account for all factors that may jointly determine selection into the sample and survey responses, our collaboration with Facebook allowed the use of state-of-the-art, privacy-preserving weighting for non-responses using rich behavioral and demographic variables. This also allowed us to use further weighting to target the adult population of each country (Collis et al., 2020; Barkay et al., 2020).

BOOSTING INTENTION

On average, when we presented people with normative information about the willingness of others to accept a vaccine, the stated intention of respondents to take a vaccine increased. The broad and narrow treatments caused 0.04 and 0.03 increases, respectively, on a 5-point scale. The distribution of responses across treatments (see Figure 1) reveals that the effects of the treatments are concentrated in inducing an additional 1.8% of those receiving the broad treatment and 1.2% of those receiving the narrow treatment to say they will at least "probably" accept the vaccine. It also moved 2.0% of those receiving the broad treatment and 1.9% of those receiving the narrow treatment to "definitely." This marks a 5% relative reduction in the fraction of people choosing a response that is "unsure" or more negative.

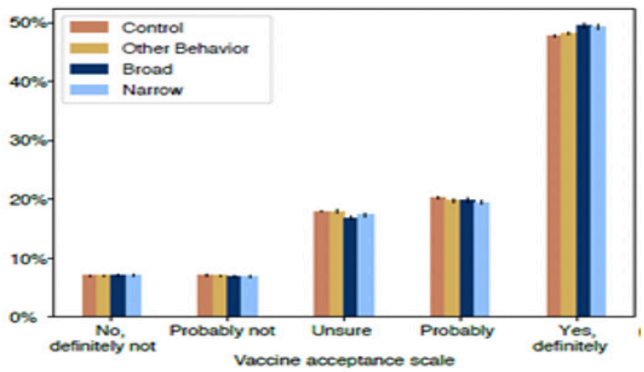

Fig. 1: Vaccine 'yes'/ acceptance' rate increases with both broad and narrow treatment

A post-hoc analysis also concluded that these effects are largest among people who answer "Don't know" to the baseline vaccine-acceptance question, which is consistent with the idea of targeting vaccine fence-sitters (Betsch et al., 2015A). These effects are relatively large and are of similar overall magnitude to global trends in vaccine acceptance over the course of the experiment (a 0.11 increase on the 5-point scale), a period that featured frequent and widely distributed vaccine-related news.

The effects on vaccine acceptance can be at least partially explained by changes in respondents' beliefs about these descriptive norms. We can examine this because the survey also measured respondents' beliefs about vaccine acceptance in their communities. We randomized whether this was measured before or after providing the normative information. As expected, the normative information treatment increased the fraction of people that the respondents estimate will accept a vaccine.

CONCLUSION

Despite the availability of multiple safe vaccines, vaccine hesitancy presents a challenge to the successful control of the COVID-19 pandemic. As with many human behaviors, vaccine acceptance is affected by people's beliefs about the behavior of others. What's more, information about these descriptive norms has different effects depending on baseline beliefs and the relative importance of conformity, social learning, and free-riding.

Using a large, pre-registered, randomized experiment embedded in an international survey, we show that accurate information about descriptive norms can substantially increase intentions to accept a COVID-19 vaccine. These positive effects are largely consistent across the 23 countries, and they are especially concentrated among people who were previously uncertain about accepting a vaccine. These results suggest that public-health communications should present positive information about the widespread and growing intentions to accept COVID-19 vaccines.

REPORT

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ABOUT THE AUTHORS

Alex Moehring is a doctoral candidate at the MIT Sloan School of Management.

Avinash Collis is an Assistant Professor in the Department of Information, Risk and Operations Management at the McCombs School of Business at The University of Texas at Austin. He is also a digital fellow at the Stanford University Digital Economy Lab and the MIT Initiative on the Digital Economy.

Kiran Garimella is a post-doctoral Hammer Fellow at the MIT Institute for Data, Systems, and Society. His research has examined the spread of rumors and misinformation on closed social-media platforms.

M. Amin Rahimian is an Assistant Professor of Industrial Engineering at the University of Pittsburg's Swanson School of Engineering. He has done post-doctoral work at the MIT Institute for Data, Systems, and Society and MIT Sloan School of Management. He is also a digital fellow at the MIT Initiative on the Digital Economy.

Sinan Aral is Director of the MIT Initiative on the Digital Economy and the David Austin Professor of Management at MIT, where he is a Professor of IT & Marketing, and a Professor in the Institute for Data, Systems, and Society.

Dean Eckles is an Assistant Professor of Marketing at the MIT Sloan School of Management and a research leader at the Initiative on the Digital Economy. His research examines people's interactions with and through communication technologies, especially how these technologies mediate, amplify, and direct social influence. Prior to joining MIT, he was a scientist at Facebook.

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Contact Us: David Verrill, Executive Director
MIT Initiative on the Digital Economy
MIT Sloan School of Management
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Cambridge, MA 02142-1347
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