Unlocking Immunity: Strategies for Cost-Effective Promotion of COVID-19 Vaccination in Developing Countries*

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Abstract

Encouraging COVID-19 vaccination among hesitant individuals is vital for achieving herd immunity and curbing the spread of the virus, especially in resource-constrained settings. We conducted a large-scale randomized experiment in India to evaluate five interventions targeting individuals that remained unvaccinated after the initial mass vaccination campaign: (i) information only; (ii) information plus a gift worth $5 upon vaccination; (iii) information plus a 5% chance to win a gift worth $100 upon vaccination; (iv) information combined with improved vaccine accessibility; (v) information disseminated through community leaders ("vaccine ambassadors"). Our findings indicate that all interventions significantly increased first-dose vaccine uptake, with the guaranteed in-kind gift and accessibility interventions showing the largest effects. The ambassador intervention was particularly effective in promoting second-dose completion. Selection analysis reveals that economically disadvantaged individuals and those with limited access to transportation benefited most from these interventions. We find suggestive evidence of spillover effects on social networks, including friends and neighbors, highlighting the broader community benefits of targeted vaccination campaigns.

Keywords: incentive, information, vaccination, randomized experiment

JEL Codes: I12, I14, I18, I31

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1. Introduction

Despite global efforts to vaccinate against COVID-19, a significant portion of the world's population remains unvaccinated. As of November 2023, 79.8% of people in high-income countries have received at least one dose, compared to 32.8% in developing nations. Some countries, such as Australia and all EU member states, advocated for booster shots to maintain protection over time. However, in absence of targeted interventions, individuals who were initially hesitant about vaccination are likely to remain unvaccinated. Actively encouraging both hesitant and unvaccinated individuals to get the vaccine is crucial for ensuring widespread protection against the virus.

To boost vaccination rates, various incentive schemes have been deployed around the world. In the US, some states introduced cash rewards and lottery ticket incentives.[1] While conventional economic theory suggests that financial incentives can motivate vaccination, their effectiveness depends on the specific nature and requires evaluation. The design of incentives—whether guaranteed or probabilistic—can significantly affect behavioral responses. According to prospect theory, lottery incentives might be more effective than cash incentives due to probability distortion, where people tend to overestimate their chances of winning the lottery (Spencer, 2023).[2,3] However, the relative effectiveness of these incentives depends on contextual factors, such as the perceived value of the reward and the level of trust in the organizing institution. These nuances remain underexplored, particularly in low-income settings.

Another key strategy for boosting vaccine uptake relies on effective communication and information campaigns that counter misinformation and promote health-conscious behaviors. Recent studies have shown that providing the accurate information from reputable sources can encourage positive health behaviors during a pandemic (e.g., Breza et al., 2021; Siddique et al., 2024), reduce stigma associated

[1] For example, the U.S. implemented lottery-for-vaccination programs in Ohio (Ohio Vax-a-Million), Maryland (VaxCash), and New York (Vax&Scratch). The cash prizes vary from $40,000 in Maryland to $5m in New York. In Hong Kong, the Sino Group has promised to give a new apartment worth HK$10.8 million as a vaccine lottery prize. On the other hand, some states in the U.S. offer a fixed amount of money to encourage vaccination. For example, Detroit gives a $25 cash voucher for an individual each time he gets vaccinated (i.e., $50 in total for two doses). West Virginia provides a $100 deposit certificate upon completion of the vaccination.

[2] Indeed, a laboratory experiment with hypothetical policy settings showed that people respond better to lottery incentives than cash incentives to get vaccinated (Kim, 2021).

[3] Another reason is that winning lotteries could generate larger spillover effects than receiving sure cash payments due to wider media coverage on lottery winners. This media exposure can generate peer effects—which are well documented to increase adoption of health products and technology (Oster and Thornton, 2012)—and in turn increase vaccination.

with the virus (Islam et al., 2021), and enhance COVID-19 vaccination rates (Dai et al., 2021).[4] However, evidence on the role of tailored, localized information dissemination strategies—particularly in developing countries—remains limited.

In Uttar Pradesh, India, we conducted a randomized controlled trial to identify the most effective strategy for increasing vaccine uptake among unvaccinated populations during a mass vaccination campaign. We assessed the impacts of five interventions: *Information Only* (T1), an information campaign by field workers; *Information + Sure Gift* (T2), an information campaign combined with a gift—a basket of food items such as 1kg of sugar and 1kg of salt—worth INR 400 (approximately US$5) upon the first-dose vaccination; *Information + Lucky Draw (Lottery)* (T3), an information campaign combined with a 5% chance to win a gift worth INR 8,000 (approximately US$100), such as an LCD TV and a washing machine, upon the first-dose vaccination; *Information + Access* (T4), an information campaign combined with free registration and transportation to vaccination sites for the first-dose vaccination; and *Information + Ambassador* (T5), disseminating information through respected community members known as "vaccine ambassadors."

We report several key findings. First, all interventions increased take-up rates for the first vaccine dose, including T1, which led to an increase of 16.6% point. Adding in-kind incentives further increased take-up rates – by 37.2% for T2 and 24.6% for T3. However, these results must be interpreted cautiously due to the different types of gifts offered in T2 and T3. While both treatments were designed to have the same expected monetary value (INR 400), T2 provided consumable food items, whereas T3 offered durable electronic goods. These differences likely influenced participants' preferences and effectiveness beyond the comparison of certain versus probabilistic rewards. This underscores the importance of tailoring incentives to local preferences and economic conditions.

Second, T4 and T5 also significantly improved vaccine take-ups by 35.3% and 18.7% point, respectively. Notably, T5 had a significant impact on second dose uptake, indicating its efficacy in encouraging follow-up vaccinations. This may be attributed to the ambassadors' repeated interactions with participants, which built trust and addressed vaccine hesitancy over time.

[4] Evidence on the impacts of information provision on COVID-19 vaccine take-up rates is rather mixed. Some recent studies that implemented virtual (Ho et al., 2022) and in-person (Islam, et al., 2024) information provision experiments late into the pandemic—more than one year into the pandemic—find null impacts on take-up rates.

We conducted analyses beyond treatment effects to compare the characteristics of compliers (those who got vaccinated) and never takers (those who did not get vaccinated) for each intervention. This selection analysis reveals two key findings. First, economically disadvantaged respondents were more attracted to the *Information + Lottery* intervention (T3). Second, the *Information + Access* intervention (T4), which provided free transportation, had a significant impact on older individuals and those with relatively lower incomes. These findings underscore the importance of reducing logistical barriers and tailoring interventions to specific demographic groups. Moreover, we observed spillover effects from the interventions, with unvaccinated household members, neighbors, and close friends of participants reporting increased vaccination rates.

Our heterogeneity analyses further reveal nuanced patterns. For example, *Information + Ambassador* (T5) resonated more strongly with males, the elderly, individuals with lower education levels, and those from lower-income backgrounds. *Information + Sure Gift* (T2) had greater impacts on individuals with less-education or who were misinformed about vaccines. The effect of *Information + Lottery* is more pronounced among economically disadvantaged individuals and those underestimating the risks of COVID-19. Together, these findings underscore the complexity of factors influencing vaccine acceptance and provide valuable insights for tailoring interventions to the specific demographics and socioeconomic characteristics.

Our study makes several contributions to the literature on strategies to promote vaccine uptake, particularly in the context of COVID-19 vaccination. First, we provide evidence on the effectiveness of strategies to promote vaccine uptake during the later stages of the pandemic, where vaccination rates (first dose) were still low (around 40 % in our context) despite availability of the supply of vaccine but further increases in take-up seemed to be challenging (Chang et al., 2023). Existing studies conducted mainly during later phases of pandemic- many of which focus primarily on information-based interventions- have reported limited success in increasing vaccine uptake (Dai et al., 2021; Bahety et al., 2021; Ho et al., 2022; Islam, et al., 2024). In contrast, we explore a more diverse interventions beyond information provision, including in-kind incentives, accessibility measures, and ambassador-led communication.[5] By doing so, it offers a more comprehensive understanding of effective vaccination promotion strategies. We build upon studies such as

[5] One exception is a study by Arora et al. (2023), which focuses on promoting COVID-19 vaccination among vaccine-hesitant individuals in Bangladesh employing various strategies beyond information intervention.

Bronchetti et al. (2015), which combine incentives with peer endorsements, and Milkman et al. (2022a), which evaluate 22 different nudges to enhance flu vaccination rates.

Second, our study contributes to the debate about potential unintended consequences of incentives for vaccination. While some studies raise concerns of the potential negative consequences of financial incentives (Volpp, Loewenstein, and Buttenheim, 2021; Chang et al., 2023), we demonstrate that in-kind incentives can actually enhance confidence in the efficacy of COVID-19 vaccines, the government's distribution strategy, and the public health system in general. This finding aligns with recent studies in developed countries, which suggest that financial incentives for vaccination do not negatively impact risk perceptions. For instance, studies in Sweden and the US do not find adverse effect of payment on COVID-19 vaccination risk perceptions (Schneider et al., 2023), while similar findings were reported for clinical trial participation in the US (Halpern et al., 2021). Financial incentives have even been shown to increase demand for vaccinations, such as flu shots (Alsan et al., 2019). To our knowledge, this is among the first studies to demonstrate the positive impacts of such incentives in a developing country context, providing critical insights into how incentive designs can avoid negative signaling and build public trust.

Third, our study contributes new evidence on the effects of lottery-based incentives in promoting vaccination. The use of lotteries in public health campaigns has yielded mixed results in prior studies. For example, some studies have found significant increases in vaccine uptake due to lottery-based incentives, such as Ohio's Vax-a-Million initiative (Barber and West, 2021; Brehm et al., 2022), while others report negligible impacts (Lang et al., 2022). Our findings indicate that non-cash lottery incentives, such as durable goods, can positively impact vaccine adoption in a developing country setting, where material goods hold substantial value relative to monetary prizes. This adds valuable context-specific evidence to the global debate on the efficacy of lottery-based interventions.

Fourth, this study provides rare experimental evidence on the effects of interventions designed to improve vaccine accessibility, such as providing free transportation to vaccination centers. While logistical challenges are well-documented barriers to vaccine uptake in low-income settings, there is limited empirical research on how addressing these barriers affects vaccination rates. A notable exception is the study by Meriggi et al. (2024), which evaluates the impact of bringing vaccines directly to remote villages in Sierra Leone. Our study complements this work by focusing on demand-side strategies in areas where vaccine supply is sufficient but logistical barriers remain. We find that

reducing hassle costs through free transportation is both effective and cost-efficient, offering actionable insights for policymakers in similar contexts.

Fifth, this study advances the literature on the role of information dissemination in promoting health behaviors during pandemics. Previous research has demonstrated that providing accurate information through videos (Banerjee et al., 2024), SMS and phone calls (Siddique et al., 2024), and WhatsApp messages (Armand et al., 2021) can positively influence health-related decisions. We extend this literature by exploring how information delivered through local leaders—acting as "vaccine ambassadors"—can enhance vaccine uptake. While Banerjee et al. (2019) highlights the potential of local influencers in encouraging health behaviors, their effectiveness varies by context (Islam et al., 2024). Our findings underscore the value of leveraging respected community figures to address vaccine hesitancy, particularly in culturally and economically diverse settings like rural India.

Finally, the study bridges the gap between academic research and practical policy implementation by evaluating multi-strategy approaches to vaccination promotion. Unlike studies that focus on single interventions, such as Bronchetti et al. (2015), which combines incentives with peer endorsements, or Milkman et al. (2022a), which evaluates 22 nudges for flu vaccination, our research incorporates multiple complementary strategies to address a range of barriers simultaneously. By examining combinations of information, incentives, and logistical support, we provide a holistic framework for designing cost-effective vaccination campaigns that maximize uptake.

Overall, our study offers a nuanced understanding of how tailored interventions can overcome vaccine hesitancy and logistical barriers in developing countries. It also provides actionable insights for policymakers seeking to promote vaccine uptake during public health emergencies in resource-constrained settings.

The remainder of this paper is structured as follows. Section 2 outlines the background and research design. Section 3 describes the data. Section 4 presents the empirical framework. Section 5 presents the main results, selection analysis, spillover effects, and heterogeneity analysis. Section 6 discusses costs effectiveness of the intervention. Section 7 discusses the paper. Finally, section 8 concludes the paper.

2. Research Design

2.1 COVID-19 Vaccination in India

India initiated its mass vaccination program on January 16, 2021, primarily targeting healthcare and frontline workers. Subsequently, vaccines became available to all adults starting May 1, 2021. Despite this, India faced challenges with vaccine hesitancy, especially during the early stages. To receive the COVID-19 vaccination, individuals must pre-register and schedule an appointment on the CO-WIN/Arogya Setu portals[6] using valid online identification. The nearest vaccination center can also be located online.[7] Those who have been vaccinated can later download their vaccination status certificates from the apps for future reference, using their exact login details.

Data from the COVID-19 Trends and Impact Survey in mid-2021 suggested that 45% of unvaccinated individuals exhibited hesitancy (Ishank and Shashidhara, 2022).[8] A 2021 longitudinal survey across four states involving approximately 3,000 adults indicated that only 58.5% anticipated getting vaccinated (Umakanthan et al., 2021). Joshi et al. (2022) reported a 46% acceptance rate from 3,130 individuals in Tamil Nadu, primarily citing safety concerns as the main reason. An online study conducted nationwide in 2020, covering 27 states and Union territories, found that 37% of 1,638 adults exhibited hesitancy, translating to more than 200 million people nationwide. This hesitancy was largely attributed to concerns about vaccine side effects (Chandani et al., 2021). However, a separate study from an October 2021 survey suggested that this figure had dropped to approximately 75 million.[9] Furthermore, another recent survey involving 6,319 adults revealed that 36% remained unvaccinated, with 20% of them expressing hesitancy due to a lack of knowledge, misinformation, and distrust in medical professionals (Shashidhara et al., 2022).

According to the Ministry of Health and Family Welfare (MOHFW), COVID-19 vaccination coverage varies significantly across Indian states, with some states such as Uttar Pradesh (UP) and

[6] See, https://www.cowin.gov.in/ and https://www.aarogyasetu.gov.in/

[7] According to the government of India, average radial distance covered by a sub-centre was about 1.89km, 5.03km for a primary health centre and 10.46km for a community health centre (Sharma, 2019). The issues related to accessibility and reach out of the centres can also be apprehended from the following numbers: The average number of sub-centres served by a planning unit is the highest for the state of Uttar Pradesh with a total of 27, with one of the highest median population of 234,567 being served by it and an average distance of 26km and an average time of 90 mins taken to travel between the planning unit and the farthest sub-center.

[8] https://www.ideasforindia.in/topics/governance/covid-19-identifying-and-addressing-vaccine-hesitancy-using-personas.html

[9] Local Circles Estimates 115 million Indian adults are currently hesitant to take the COVID vaccine. Available online: https://www.localcircles.com/a/press/page/localcircles-vaccine-hesitancy-survey

Bihar experiencing the lowest vaccination rates (Dhalaria et al., 2022). Although UP has shown a great progress in COVID-19 vaccination, administering over 100 million doses during the study time a large proportion of the adults in Uttar Pradesh at the time (January 2022) were still not fully vaccinated due to prevalence of vaccine hesitancy.

The study was conducted in the districts of Mahoba, Sitapur, and Farrukhabad in Uttar Pradesh (UP), India, after consultation with the UP government. Appendix B provides the maps of the study area. As of October 31, 2021, before we started this study, the first-dose vaccination coverage in these districts stood at 43.78%, 41%, and 38% of the district population, respectively, and only 14.62%, 9.6%, and 10.5% of the district population had received the second dose at that time.[10] The high hesitancy rate in our study area may be attributed to a lack of trust in vaccine efficacy, the prevalence of misinformation regarding vaccine side effects, and ongoing challenges related to vaccine accessibility.

It is worth highlighting that there has been a significant increase in vaccination coverage in India since the time of our study. According to the World Health Organization (WHO), as of September 2023, 74% of the Indian population had received at least one dose of the COVID-19 vaccine, while 69% had received both doses. However, the uptake of booster shots remained relatively low, with only 16.58% of the population having received them. It is essential to acknowledge that vaccination rates have exhibited considerable variations across different states and geographic locations, including districts within states.[11]

Vaccine hesitancy is not a phenomenon exclusive to COVID-19 vaccines in India; it also extends to childhood vaccinations. The government encountered similar challenges with the Universal Immunization Programme (UIP) introduced in 1985. Despite the program offering free vaccinations, full immunization rates for children aged 12-23 months, measured in terms of BCG, measles, and three doses each of polio and DPT vaccines, only saw a modest increase from 43.5% in 2005-06 to 62% in 2015-16, with significant disparities observed across states and Union territories (NFHS-4, 2017). Households often refrained from allowing their children to receive vaccinations due to concerns about potential side effects and a lack of trust in vaccines.

[10] https://www.devdatalab.org/covid
[11] https://covid19.who.int/region/searo/country/in

It is crucial to recognize that while Indians are familiar with vaccines for children, the concept of adult vaccinations, particularly for COVID-19, has been accompanied by rumors and misconceptions since its inception. Consequently, at the time of we initiated this study a substantial portion of the population has expressed mistrust in the vaccine, questioned its efficacy, and voiced concerns about potential side effects. For instance, in Uttar Pradesh, there were reports of villagers resorting to drastic measures, such as jumping into a river, out of fear that the vaccines were poisonous. Despite repeated efforts by district administrations to dispel these vaccine-related rumors and educate communities about the benefits of vaccination, the uptake remained limited.[12]These challenges underscore the complexity of addressing vaccine hesitancy and the importance of tailored interventions that consider both demographic variations and the unique factors influencing vaccination decisions among different population groups.

2.2 Experimental Design

Figure 1 illustrates the study timeline. We conducted the baseline survey from April to June 2022, followed by the intervention to promote first-dose vaccination in July 2022. From late August to October 2022, we completed both the first-dose verification and endline survey. To maintain consistent intervals, we revisited participants in the same sequence as the baseline—individuals surveyed in April were revisited in August, maintaining approximately four months between baseline and endline surveys for each participant. All individuals had more than six-week gap between the intervention and endline survey.

We combined administrative data with village level information from the local networks to prepare the list of target locations (villages in the case of rural area, and neighborhood in case of urban or peri-urban places in these districts). We randomly selected 884 locations through stratified random sampling. From each location, we then prepared a list of targeted eligible population using a snowball approach, based on the set of eligibility and exclusion criteria.[13]

[12] https://www.indiatoday.in/coronavirus-outbreak/story/villagers-jump-river-up-barabanki-to-escape-covid-vaccination-1806217-2021-05-24

[13] We only listed adult individuals who were eligible for COVID-19 vaccine free of cost but who were still unvaccinated and excluded those who had serious comorbidities. Several enumerators started to visit households randomly targeting different parts of a location and then followed the snowball approach to find out unvaccinated individuals as there were no list of vaccinated or unvaccinated people at the location level. All the enumerators started around the same time of the day in a location and a coordinator was assigned to make sure they target different areas within a location. They continued until a target number of people was listed as unvaccinated.

We used the snowball sampling method out of necessity because no comprehensive list of vaccinated or unvaccinated individuals existed at the location level.[14] While we acknowledge that snowball sampling approach may have introduced some selection bias, the combination of our initial randomized approach, geographic coverage, and input from local representatives helped us recruit a reasonably diverse sample. This approach, though less common in randomized experiments, has proven effective for recruiting hard-to-reach populations, as demonstrated in recent studies such as Lee et al. (2021) that use such approach to help identify households with migrant workers from low-income backgrounds in Dhaka and Islam et al. (2024) to help identify unvaccinated individuals in rural West Java, Indonesia.

In total, we recruited 8,065 eligible unvaccinated individuals and randomized them into treatment and control groups at the location level. We randomly assigned 884 locations[15] to either five different treatment groups or the control group. 295 locations were assigned to the control group, 103 locations to *Information only*, 124 locations to *Information + Sure Gift*, 133 locations to *Information + Lottery*, 118 locations to *Information + Access*, and 111 locations to *Information + Ambassador*. We describe each of the treatments below. Detailed instruction for each intervention is provided in Appendix F.

- **Treatment group 1 (T1, *Information Only*).** We provided standard information about the available COVID-19 vaccines and its benefits for recipients as well as their families, friends, neighbors, and close relatives. The information was based on the documents of WHO[16], the Ministry of Health and Family Welfare (MoHFW), and the Government of India.[17] The information was delivered verbally by trained fieldworkers to each participant along with a 1-page information sheet (maximum time taken to disseminate the information was about 10-15 minutes) (See figures 1 and 2 of Appendix E).

- **Treatment group 2 (T2, *Information + Sure Gift*).** In addition to standard information as in T1, we provided a gift worth INR 400 (≈US$5) upon the first-dose vaccination. The gift

[14] To do this, we assigned our enumerators to different parts of each location, where they visited households in a randomized manner. Once an unvaccinated individual was identified, the enumerators asked them to refer others in the community who were similarly unvaccinated. Additionally, we enlisted local village representatives to help identify unvaccinated individuals who might not have been reached through the initial snowball recruitment, ensuring our sample included individuals from diverse social, economic, and geographic backgrounds.
[15] On an average, we could identify about 12-15 eligible unvaccinated individuals from each location of about 150-200 individuals, out of which about 9-10 individuals agreed to participate in the study and the rest declined.
[16] https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public
[17] https://www.mohfw.gov.in/

consists of a basket of food items such as 1kg of salt and 1kg of sugar.[18] The gift was given to compensate participants for lost daily wages due to travel and forgone earnings for additional day's work in case of any side effects that may arise. Our field staff gave respondents the gift within two weeks upon confirmation of vaccination, which was verified through a paper or digital vaccination certificate.

- **Treatment group 3 (T3, *Information + Lottery*).** In addition to standard information, we provided a chance to participate in a lottery with a 5% chance of winning a gift worth INR 8,000 (≈ US$100), conditional upon the first-dose vaccination. One in 20 eligible respondents was randomly selected as the lottery winner. The lottery, which was drawn once a month, had the same expected value as T2 (INR 400 (Sure Gift) = INR 8,000*0.05). The gift was made available to the winner within two weeks of the lottery results being declared.[19]

- **Treatment group 4 (T4, *Information + Access*).** In addition to standard information, we provided free assistance with registration/enrolment as well as transportation to vaccination centers for the first-dose vaccination.[20] Those who availed the services were reminded about their appointment dates in advance via scheduled phone calls and text messages and were provided transportation to the vaccination centres free of charge. Respondents who did not avail the free transportation received reminders through phone calls and text messages about two weeks after the intervention is delivered to get vaccinated. We also tracked their progress from registration to vaccination.

- **Treatment group 5 (T5, *Information + Ambassador*).** In addition to standard information through fieldworkers, eminent figures (ambassadors) in the community (e.g., village leaders, teachers, doctors, etc) were approached to provide information and promote COVID-19 vaccination.[21] Ambassadors were trained to facilitate compassionate communication and asked to have a one-to-one meeting with each respondent in order to convince them to get

[18] The gift basket includes 1kg of salt, 1kg of sugar, 1lt of mustard oil, and 1kg of arhar dal (lentils).
[19] Figures 3 and 4 in Appendix E provide the pamphlets showing a list of gifts and their worths for T2 and T3, respectively. For lottery prizes, the winner could get either an LCD TV, a mixer and a dinner set, a cooler, an inverter, a washing machine, or a mobile phone. Only after the winner's name was revealed in the lottery, was he/she asked to reveal his/her preference from the list of these six gifts, each with the same market value/cost.
[20] To get vaccinated at the vaccination centres, those intending to get vaccinated needs to locate the vaccination centres, book a slot/register themselves online and then go over there or travel to the vaccination centres directly and get vaccinated if a slot is available. We help in each of the steps, all free of cost.
[21] The selected ambassadors had to get vaccinated before doing their task.

vaccinated by addressing their personal concerns. Moreover, to increase information retention about the visit, the ambassadors delivered a pamphlet summarizing key information.

- **Control group**. Respondents in this group did not receive any intervention.

The intervention was implemented by a team from the Indian Institute of Technology, Kanpur (IITK)—a prestigious institution well-known to study participants. IITK's strong reputation helped establish credibility for the information materials and incentives provided to participants.

While the project collaborated with India's Ministry of Health and received local health department support, public officials were not involved in surveys or interventions. To minimize experimenter demand effects, we used separate teams for surveys and interventions, and assigned different enumerators for baseline and endline interviews. Local NGOs and community leaders supervised the lottery process to ensure transparency.

3. Data Collection

We collected a range of information on socio-economic characteristics, demographic characteristics, mental health indicators, life satisfaction, and beliefs as well as attitudes toward COVID-19 and its vaccines.[22] At the endline survey, we collected additional data, including knowledge about the benefits and costs of vaccination, feelings and perceptions about getting vaccinated, and vaccination status (take-up, registration, and intention). To understand spillover effects from our intervention, we collected information on the vaccination status of respondents' neighbors and friends. In total, we surveyed 8,065 eligible individuals at the baseline. We were successful to interview 7,913 individuals of those that were interviewed at the baseline during the endline survey. Thus, our survey attrition rate is very low, less than 2%. We do not adjust our outcomes for attrition because of such low attrition and our results (not reported here) remain unchanged accounting for attrition.

3.1 Outcomes

We are primarily interested in estimating the impacts of the interventions on an individual's vaccination decision, which is primarily measured by indicators for vaccination status, verified by the

[22] This study was pre-registered with Australian New Zealand Clinical Trials Registry (ANZCTR) and also registered with the American Economic Association (AEA) social science registry.[22] We mentioned all the data and variable definitions in the AEA pre-analysis plan. The registry can be accessed here AEARCTR-0008599.

official vaccine certificates.[23] Additionally, we also examine impacts on vaccine registration since registering to get vaccinated is a critical first step toward an individual's commitment to get vaccinated. Finally, we also examine impact on intention to be vaccinated, which has been used in prior studies (Campos-Mercade et al., 2021; Alsan and Eichmeyer, 2024). To investigate plausible channels of vaccination decisions, we also measure the impacts on subjective beliefs about COVID-19 and COVID-19 vaccines.

In addition to vaccination decisions and subjective beliefs, we hypothesized, as pre-specified in the pre-analysis plan, that the interventions through information contents, encouragement, and various assistance to vaccine uptake may have affected other related outcomes, such as compliance behaviors related to COVID-19 (index), susceptibility to post-intervention COVID-19 infection (index), and confidence about the efficacy of the vaccines and the public health system (index). Finally, we also estimate the impacts on index variables of self-reported physical and mental health, level of happiness, and knowledge as well as misinformation about COVID-19. Details of variable construction are provided in Appendix C.

3.2 Study Sample

Table 1 and Appendix Table A.1 provide the summary statistics of selected baseline individual (socio-economic and demographic characteristics) and village level variables (village composition and distance from basic infrastructure). Panels A and B present the results from the balance tests for the individual level and village level variables, respectively. We regress each of the baseline variables at baseline on treatment indicators (separately for different combinations of two treatments out of the five treatment and control groups) to conduct balance tests. The regression results show that only 23 out of 360 coefficients are statistically significant at the conventional level suggesting that the randomization is successful, that is, the sample is well balanced in terms of both individual and village level characteristics.

Table A.2 reports the characteristics of our 111 ambassadors. They are, on average, relatively young, 38.3 years old and predominantly male (75%). In terms of education, about one-third (34%) were

[23] We verified vaccination status primarily through official digital certificates, which we obtained for 95.4% of first-dose recipients. For the remaining 4.6% of cases where digital certificates were either unavailable or inaccessible, we confirmed vaccination through alternative official sources: local Accredited Social Health Activists (ASHAs), health centers' administrative records, or official vaccination cards issued by the health centers.

college graduates. The composition of ambassadors includes ASHA/Anganwadi workers (18%), Village/Panchayat representatives (19%), teachers (4%), and doctors (3%), with others comprising 57% of the sample. These ambassadors demonstrated strong knowledge about COVID-19 and vaccines, scoring an average of 8.52 out of 10 on our knowledge index as found during our post-training test of knowledge.

4. Empirical Analysis

To investigate the effects of our treatments on our outcomes of interest, we estimate the following specification:

$$Y_{i,t=1} = \alpha + \beta_1 INFO_i + \beta_2 SURE\ GIFT_i + \beta_3 LOTTERY_i + \beta_4 ACCESS_i + \beta_5 AMBASSADOR_i + \delta Y_{i,t=0} + \tau \boldsymbol{X}_i + \gamma S_b + \varepsilon_i \qquad (1)$$

where $Y_{i,t=1}$ indicates a range of outcomes for individual *i* captured during the endline survey, including the vaccination take-up indicator. We include all indicator treatment variables: $INFO_i$ indicates the information only treatment, $SURE\ GIFT_i$ indicates *Information + Sure Gift* treatment, $LOTTERY_i$ indicates *Information + Lottery* treatment, $ACCESS_i$ indicates *Information + Access* treatment and finally $AMBASSADOR_i$ indicates the *Information + Ambassador* treatment. The pure control group is the base category. We include the baseline value of outcomes $Y_{i,t=0}$ when available. $\boldsymbol{X}_i$ refer to a vector of baseline individual and household level characteristics, including age, and indicators for gender, religion, caste, educational attainment, marital status, house ownership, employment status, locality of residence (rural or urban), and household level variables such as household income and type (nuclear or joint family). We also include block indicator variables S_b.[24] Standard errors ε_i are clustered at the location level.

Our main coefficients of interest, β_1, β_2, β_3, β_4 and β_5, estimate the intention to treat (ITT) effects. We compare the coefficients associated with different treatment indicators to identify the most effective treatment on vaccination decisions. Specifically, we examine $\beta_2 - \beta_3$ to compare sure gift and lottery, and β_5 - β_1 to test the importance of the entity delivering information. We also analyze

[24] Each district is divided into a number of administrative blocks, which further includes different rural and urban locations.

potential spillover effects on household members, adjacent neighbors, and three close friends identified by participants at baseline.

The effect on vaccine take up in equation (1) applies to compliers, and may not generalize to the general population. To investigate this issue, we conduct selection analysis comparing observable characteristics of compliers, always-takers, and never-takers, following the approach of Kim and Lee (2017) and Einav et al (2020). See Appendix D for more details.

5. Results

5.1 Main Results

Figure 2 illustrates the vaccine uptake rates among individuals who were unvaccinated at the time of our baseline survey, comparing different treatment groups. The treatment effects, representing the differences in uptake rates between treatment and control groups, are presented in Table 2. To account for multiple hypothesis testing, we report family-wise adjusted *p*-values in square brackets, calculated using 1,000 simulations of estimations following the method described by Westfall and Young (1993).

The results demonstrate that all intervention types increased vaccine take-up rates. For first-dose vaccination take-up rates, *Information Only* (T1) showed a 16.6 percentage point increase. Adding complementary interventions generated stronger results: *Information + Sure Gift* (T2) produced the largest gain at 37.2 pp, followed by *Information + Access* (T4) at 35.3 pp. *Information + Lottery* (T3) and *Information + Ambassador* (T5) generated increases of 24.6 and 18.7 pp, respectively. Combining information with gift upon vaccination (T2), a chance to win a lottery prize (T3), or accessibility assistance (T4) were more effective at promoting first-dose vaccination than providing information alone (T1).

While *Information + Ambassador* treatment (T5) significantly increased first-dose vaccine uptake, it was the only treatment group whose impact was statistically indistinguishable from that of *Information Only* (T1) ($p = 0.64$). Interestingly, T5 emerged as the most effective treatment in increasing two-dose vaccination completion rates (Column 2). This pattern may be explained by the local nature of our ambassadors. As community members, ambassadors likely maintained contact with participants after their first dose, enabling them to encourage second dose completion, remind participants about scheduling, and address concerns that may have emerged following the initial dose.

The verification of vaccination status relies on both digital and paper certificates. One might raise concerns that while digital certificates provide standardized verification, paper certificates issued by ASHAs and health centres may have varying levels of validity across different regions. To address this concern about the reliability of paper certificates, we conduct a robustness check by considering only individuals with verifiable digital certificates as vaccinated. In this analysis, individuals who reported vaccination but lacked verifiable digital certificates were categorized as unvaccinated. The results using this more stringent definition, reported in Table A.3, remain consistent with the main findings in Table 2. This consistency is unsurprising given our successful verification of digital certificates for over 95% of vaccinated participants.

Columns 3 and 4 report treatment effects on vaccine registration and vaccination intention among participants who had not received any vaccine doses. The *Information Only* treatment (T1) was most effective in encouraging registration, with respondents 8.9 pp more likely to register than the control group. *Information + Lottery* (T3), *Information + Sure Gift* (T2), and *Information + Ambassador* (T5) increased registration likelihood by 8.1, 1.6, and 1.5 percentage points, respectively. While *Information + Access* (T4) did not significantly impact registration rates, it had the highest treatment effect on vaccination status. This discrepancy highlights the complexity of vaccination behaviour, where different factors may influence the decision to register and the follow-through decision to vaccinate. For instance, accessibility improvements might be more important in addressing practical barriers for those already motivated to vaccinate, rather than in persuading hesitant individuals to register.

The stronger treatment effects on vaccine uptake relative to vaccine registration can be attributed to several factors. First, vaccine registration presents a minimal barrier since it can be completed on-site during vaccination, making it a non-binding constraint. Second, time-inconsistent preferences play a key role—people may register when vaccination seems distant but hesitate when faced with immediate costs (time, effort, side effects) versus future benefits (disease protection). Third, practical constraints like limited vaccination slots and scheduling beyond our survey period affected the registration-to-uptake conversion.

5.2. Selection Analysis

Our study has demonstrated the effectiveness of interventions in promoting vaccinations. However, to explain why some interventions were more effective for specific subgroups, we compare the baseline characteristics of compliers, always-takers, and never-takers (Almond and Doyle, 2011; Kim and Lee, 2017; Asuming, Kim, and Sim, 2024). This approach allows us to understand the differences between individuals that responded and did not respond to the interventions. In our context, compliers are individuals who received vaccinations due to our intervention; always-takers are those who would have been vaccinated regardless of the intervention; and never-takers are those who remained unvaccinated despite the intervention. We focus on comparing the characteristics of compliers with never-takers to understand the underlying factors that make individuals responsive to our interventions, that is, selection into vaccination. [25]

We test for selection heterogeneity by examining differences in a comprehensive set of baseline socio-economic characteristics. These include demographic factors such as age, sex (1 for being male), marital status (1 for being married), and religion (1 for being Muslim); socio-economic indicators like education level (1 for having primary education or lower and 0 for secondary education or above), employment status (1 for being employed), and poverty status (1 for having household expenditure per capita above the poverty line); health-related behaviors, particularly compliance with health protocols (index); belief and knowledge index (confidence and fake news index); and the influence of social network, measured by the proportion of vaccinated friends and neighbors.

5.2.1 Compliers and Never-takers

Table 3 reports the mean characteristics of compliers, always-takers, and never-takers, along with t-test results for mean differences. Significant differences between compliers and never-takers across multiple dimensions indicate evidence of selection into vaccination. In the *Information Only* group, compliers are more likely to be male, older, more educated, economically disadvantaged, with fewer vaccinated friends compared to never-takers.

We further investigate how adding components to the information intervention attracts different respondent profiles. We observe that compliers in the *Information + Sure Gift* group tend to be male, older, more compliant with protocols, and more confident in vaccines. Interestingly, they are more

[25] Selection analysis was not pre-specified in our PAP.

likely to have vaccinated neighbors but less likely to have vaccinated friends, suggesting a complex influence of social networks. The profile for compliers in the *Information + Lottery* group differs; they are more likely to be poorer but have higher education and greater confidence in vaccines compared to never-takers. This contrasts with compliers in the *Information + Sure Gift* group, who show no significant differences from never-takers in terms of poverty status and education.

Compliers in the *Information + Access* group share similarities with those in the *Information + Lottery* group but are younger than never-takers. The addition of a personal element through local ambassadors to the standard information campaign attracted a similar profile of compliers as the *Information + Access* group.

Table 4 compares groups receiving the information campaign with those receiving additional interventions, allowing us to profile compliers attracted to *Sure Gift*, *Lottery*, *Access*, or *Ambassadors*, using *Information Only* as the reference group. The results show that *Sure Gift* attracted more males, older and less educated respondents, and individuals more confident in vaccines compared to *Information Only*. *Lottery* drew a similar demographic, but these respondents were younger and less compliant with health protocols than never-takers. Contrary to our initial hypothesis, respondents attracted to free transportation are generally younger and less educated than never-takers.

5.2.2 Selection among Treatment Groups

This section examines potential differences in individual selection for vaccination among compliers across various treatment groups. These findings are crucial for policymakers seeking to improve intervention effectiveness, particularly in understanding which demographic groups are most responsive to specific interventions. For instance, we explore whether economically disadvantaged respondents were more attracted to the *Sure Gift* or *Ambassadors* intervention. We focus our analysis on respondents who received vaccination within the treatment groups (Kim and Lee, 2017; Asuming, Kim, and Sim, 2024). Since this sample comprises both compliers and always-takers, any observed differences between treatment groups can be attributed to changes in the composition of compliers, as the always-takers effectively cancel each other out.

Table 5 presents the results of bivariate regressions, comparing baseline characteristics across pairs of treatment groups. Each pair includes the information campaign plus an additional intervention (e.g., *Information + Sure Gift* vs. *Information + Lottery*, *Information + Sure Gift* vs. *Information +*

Access). Our analysis reveals evidence of selection in certain treatment groups based on employment status, poverty level, and adherence to health protocols.

Compliers in the *Information + Sure Gift* group demonstrate significantly lower adherence to health protocols compared to those in the *Information + Lottery* group. Although there are no noticeable differences in socio-economic characteristics between these two groups, *Information + Sure Gift* compliers are poorer than those in the *Information + Ambassadors* group. This suggests that tangible incentives may be more effective than appeals from local eminent individuals in motivating economically disadvantaged individuals to get vaccinated against COVID-19.

Similarly, offering free transportation to vaccination centers appears more effective than personal appeals (*Information + Access* vs. *Information + Ambassadors*) in encouraging poorer individuals to get vaccinated. The free transportation option also attracts more working individuals compared to the prospect of winning a lottery (*Information + Access* vs. *Information + Lottery*).

Summary. Overall, these results highlight the complex interplay between intervention strategies and individual characteristics in driving COVID-19 vaccine uptake. The findings reveal that different intervention components attract distinct demographic profiles, with socioeconomic factors playing significant roles. For instance, tangible incentives like sure gifts and free transportation appear particularly effective in motivating economically disadvantaged and working individuals, while lotteries and information campaigns may appeal to those with higher education and greater confidence in vaccines. These insights suggest that policymakers should consider the specific characteristics and needs of target populations when designing vaccination campaigns, leveraging appropriate incentives to optimize uptake.

5.3 Spillover Effects

In this section, we examine the spillover effects of our interventions on first-dose vaccination status within respondents' social networks, including household members aged 12 and above, nearest neighbors, and closest friends. While our interventions primarily targeted individual respondents, understanding these spillover effects provides valuable insights into how vaccination behaviors may diffuse through social networks.

Data collection. To systematically measure these spillover effects, our endline survey collected specific data on vaccination uptake across different social networks, relying only on reports from the primary participants. Household vaccination rates were calculated as the proportion of eligible household members (aged 12 and above) who received their first COVID-19 vaccine dose. Neighbor's vaccination uptake was measured through a binary indicator capturing whether any immediate neighbors (residing in adjacent houses to the left, right, front, or back) received their first dose during the two-month period between intervention and verification. Friend vaccination uptake was measured using a binary indicator for whether any of the respondent's three closest friends (identified at baseline) received their first dose during the same period. The vaccination uptake of these

Treatment effects. The spillover effects are reported in Appendix Table A.4 Columns 1-3 report the effects on household members, while columns 4 and 5 report the effects on respondents' neighbors and close friends (approximately three closest friends identified at baseline), respectively. Our analysis reveals varying patterns of spillover effects across treatments and social networks. The most substantial effect comes from the *Information + Ambassador* (T5) treatment, with household members (overall), nearest neighbors, and best friends being 8.2, 13, and 14 percentage points more likely to be vaccinated, respectively. While this intervention had a modest impact on the participants' vaccination uptake rates (18.7pp, as seen in column 1 of Table 2) relative to other treatment groups, it was remarkably effective in influencing vaccination decisions within their social networks.

The differential magnitude of spillover effects across treatments likely reflects the characteristics of intervention delivery. For instance, *the Information + Ambassador* treatment may have naturally generated spillovers as local ambassadors (village leaders, teachers, or doctors) drew attention from other household members and neighbors during their household visits. Similarly, the *Information + Access* treatment may have generated spillovers as the process of assisting participants register and travel to vaccination centers drew interest from family members and friends.

While most interventions demonstrated significant spillover effects on participants' friends and neighbors, the *Information Only* group generated limited spillover impact, suggesting limitation of purely informational content. The *Information + Lottery* treatment interestingly showed positive impacts on family and friends, despite their ineligibility for lottery participation. Similarly, the

Information + Access treatment also had a positive impact on family and friends, as excluding them from free transportation could create conflicts within the community.

Limitations and interpretations. We interpret these findings as suggestive evidence of broader community impacts rather than definitive causal effects due to several limitations. First, we lack baseline data on indirect beneficiaries' characteristics and vaccination attitudes, and our reliance on participants' self-reported data about their social networks may introduce reporting bias. Second, while interventions targeted individuals, treatments like the ambassador and accessibility programs inherently created wider community exposure, complicating direct comparisons of spillover effects. Despite these limitations, our findings provide valuable insights into how vaccination interventions may generate broader community impacts beyond their direct beneficiaries, particularly through social networks and community interactions.

5.4 Secondary Outcomes

Table 6 reports that our interventions enhance knowledge and reduce misinformation, along with concerns about contracting COVID-19, as indicated by impacts on the susceptibility index. Interestingly, the addition of in-kind incentives (T2 and T3) significantly amplifies these confidence effects compared to the information-only treatment (0.290 and 0.274 versus 0.133), while maintaining similarly positive effects on knowledge, misinformation, and susceptibility measures. Appendix Table A.5 shows that these interventions improve confidence in the efficacy of COVID-19 vaccines, the government's distribution strategy, and the public health system in general.

Our findings challenge prior concerns that incentives may undermine confidence in vaccines (Volpp, Loewenstein, and Buttenheim, 2021). Instead, we find that vaccination incentives amplify the positive effects of information campaigns on confidence, at least in our context. One possible explanation is that the incentives could signal the government's commitment to the vaccination program, thereby enhancing rather than diminishing trust. However, we cannot test this explanation.

In addition to positive impacts on knowledge, confidence in vaccines, and trust in public health system in general, we also document improvement on subjective wellbeing, as reported in Appendix Table A.6 Even the basic information treatment (T1) generates meaningful improvements in wellbeing, though with more modest effects ranging from 0.558 to 0.741 standard deviations, which

is consistent with Vlassopoulos et al. (2024) that find substantial positive effects of mental health counselling combined with evidence-based information about COVID-19. We find that combining information with a guaranteed basket of gift upon vaccination has the largest impacts across wellbeing measures.

Overall, these results suggest that reduced misinformation, increased confidence in vaccines, and improved subjective wellbeing can plausibly explain why our interventions increase vaccine take up.

5.5 Heterogeneity Analysis

In this section, we explore how treatment effects on vaccine uptake differ based on baseline socio-demographic characteristics, compliance with COVID-19 protocols, confidence index, misinformation index, and susceptibility index. For simplicity, we convert continuous index variables into binary variables (below and above the median value).

Socio-demographic characteristics. Appendix Table A.7 indicates that all treatments, except *Information Only*, are more effective for males than females, particularly the effect of *Information + Lottery*, where males are 9.5 pp more likely to get vaccinated. Older respondents show a greater response to *Information + Ambassadors* (7.4 pp) and *Information + Sure Gift* (5.8 pp) interventions. Less educated respondents were more responsive to *Information + Ambassadors*—they were 12.3 pp more likely to get vaccinated than more educated respondents. Respondents from poorer backgrounds responded more positively to interventions with the lottery component (T3) (the difference is 8.1 pp) and ambassador component (T5) (14.7 pp). In summary, adding ambassadors to information (T5) has stronger effects for males, older, less educated, and poorer respondents. Adding the *Sure Gift* component (T2) is more effective for less educated respondents, whereas adding the lottery component (T3) works better for respondents from relatively poorer economic backgrounds.

Baseline secondary outcomes. Panel A of Appendix Table A.8 indicates that treatment effects, except for T5, do not differ by baseline compliance with COVID-19 protocols. This suggests that ambassadors successfully increased vaccination rates among non-compliant individuals. Treatment effects do not vary with confidence in the public health system. Panel B reports varying effects for *Information + Sure Gift* and *Information + Lottery*, depending on misinformation and susceptibility levels. Effects are concentrated among respondents with high misinformation and low susceptibility.

5.6 Robustness Check

We use the 13-item social desirability scale (Crowne and Marlowe, 1960; Reynolds, 1982; Dhar et al., 2022 from the baseline survey to address potential social desirability bias. This scale measures a respondent's tendency to provide socially desirable responses. Using the median score (0-13) as a cutoff, we created a high Social Desirability Scale (SDS) indicator to identify respondents more likely to conform to social norms and expectations. Appendix Table A.9 presents regression results for each subgroup and its interaction terms. The findings suggest that social desirability bias is not a significant concern in this study.

6. Cost effectiveness

Table 7 presents detailed cost estimates for each treatment across the three districts of Uttar Pradesh (Mahoba, Sitapur, and Farrukhabad). The cost per individual for interventions ranges from $4.76 to $9.37, with the information-only treatment (T1) being the least expensive at $4.76, and the information and sure gift treatment (T2) the costliest at $9.37. The information and lottery treatment (T3) cost $7.93, while providing information and free transportation to vaccination sites (T4) cost $5.55. Lastly, the vaccine ambassador treatment (T5) cost $5.21 per person. These costs may appear relatively high due to the interventions being implemented in remote, sparsely populated districts. However, scaling up to cover the entire state or nation would likely reduce fixed costs per individual, thereby reducing the overall cost per individual.

To gauge the most cost-effective intervention in our study, we calculate the incremental cost-effectiveness ratio (ICER) for each intervention (Laska et al., 1997). ICER, which measures the difference in cost between two interventions divided by the difference in their treatment effects, help policymakers identify interventions with the highest return investment. A lower ICER generally indicates greater cost-effectiveness.

Comparing each intervention with T1, our analysis indicates that T4 is the most cost-effective intervention with an ICER of $4,406. This suggests that switching from T1 to T4 will require an additional $4,406 to increase vaccine uptake by 1 percentage point. T5 is the second most cost-effective intervention (ICER of $11,095), followed by T2 (ICER of $22,932), and T3 (ICER of $41,300).

To assess the cost-effectiveness of our intervention in a broader context, we follow Meriggi et al., (2024) by comparing the vaccination cost per person. To examine the cost-effectiveness of in-kind incentive interventions in our study, we compare it with other studies examining the effects of cash and lottery incentives in developed countries. In Sweden, Campos-Mercade et al. (2021) find that a $24 monetary reward increased vaccination rates by 4 percentage points from 72% to 76%. In contrast, Chang et al. (2023) finds that $10-$50 cash rewards failed to boost vaccine uptake of unvaccinated members of a Medicaid managed care plan in California, USA. An experimental study in Philadelphia offering a high-prize lottery of up to $50,000 only led to a very small increase in the vaccination rate, resulting in a very high cost per person of running this lottery scheme, that is, more than $4,000 per person (Milkman et al., 2022b). Taken together, our in-kind incentives, costing less than $10 per person, are relatively cost-effective compared to other studies. However, we acknowledge that these studies are not entirely comparable to ours because we offered in-kind incentives.

Regarding access to vaccine intervention, Meriggi et al., (2024) averaged $32 per vaccine, higher than our $5.55 cost, due to their very high logistical cost of vaccine supply provision in very remote Sierra Leone villages. In our study, the per-respondent cost of local outreach by village ambassadors was $5.21, slightly higher than the cost of a similar study in Indonesia, $3.75 (Islam et al., 2024). However, unlike Islam et al. (2024), our intervention significantly increased vaccine uptake.

7. Discussion and Conclusion

Increasing COVID-19 vaccination uptake has been a critical challenge for public health policy worldwide, particularly in developing countries that face resource constraints, institutional barriers, and deep-rooted vaccine hesitancy. Understanding which strategies work in these challenging contexts is crucial for global health policy, particularly as the world prepares for possible future pandemics.

Our cluster randomized experiment across 884 locations in rural Uttar Pradesh, India, covering 8,065 individuals, tests and demonstrates the effectiveness of multiple demand-side interventions in increasing vaccination rates during the late stage of vaccine rollout. All five interventions—information campaign (*Information Only*), information plus a gift worth $5 upon the first-dose vaccination (*Information + Sure Gift*), information plus a 5% chance to win a gift worth $100 upon

the first-dose vaccination (*Information + Lottery*), information combined with improved vaccine accessibility for the first-dose vaccination (*Information + Access*), and information disseminated through community leaders (*Information + Ambassadors*)—significantly improved the first-dose uptake, with *Information + Sure Gift* and *Information + Access* showing particular promise, with the effects on first-dose uptake of both treatments exceeding 100% relative to the control mean. For second-dose uptake, information delivered through ambassadors outperformed information-only approaches, while the *Information + Sure Gift* consistently showed more consistent effects than that of *Information + Lottery*.

While our treatment effects may appear large compared to previous studies in developed countries, such as Sweden (Campos-Mercade et al., 2021) and the US (Jacobson et al., 2022; Milkman et al., 2022b; Chang et al., 2023), several important contextual factors may help explain these differences. First, our study took place in early 2022 when vaccination rates in our study districts were only around 40% for first doses and 10-15% for second doses, compared to over 70% baseline rates in Sweden and over 60% in the US. This lower baseline created more room for improvement through our interventions.

Second, we provided in-kind incentives of approximately $5 specifically designed to offset daily wages and recovery time from potential side effects—addressing key practical barriers in our context.[26] In contrast, vaccine studies in developed countries offered monetary incentives equivalent to hourly wages, such as 200 SEK ($24) in Sweden (Campos-Mercade et al., 2021) and $10–$15 in the US (Jacobsen et al., 2022). This alignment between our incentives and local economic conditions likely explains the greater impact observed in our study. By matching our incentives to a full day's wages, we effectively removed the economic barrier of lost income without providing cash directly. Moreover, unlike some studies where offering financial incentives may signal danger and backfire (Volpp, Loewenstein, Buttenheim, 2021; Chang et al., 2023), our in-kind incentives increased confidence in vaccine efficacy, which is in line with Campos-Mercade et al. (2023).

Next, our multi-pronged design may have generated complementary effects by simultaneously addressing multiple barriers. The information component was carefully designed based on WHO and Ministry of Health guidance, delivered in-person by trained fieldworkers, and reinforced through

[26] For reference, the official monthly minimum wage in Uttar Pradesh ranges from INR 10,275 (~$121) for unskilled workers to INR 12,661(~$150) for skilled workers, which translates to approximately $4-5 per day.

physical information pamphlets. This approach differs from more limited information interventions in other settings. For example, in areas with limited vaccine accessibility, providing free transportation combined with information was highly effective, aligning with evidence that logistical barriers remain a critical challenge in rural areas of developing countries (Meriggi et al., 2024; Arora et al., 2023). Finally, the implementation of our interventions through IIT Kanpur—a highly respected local institution—likely enhanced intervention effectiveness, aligning with evidence that institutional credibility strengthens program outcomes (Usmani et al., 2022).

Selection analysis reveals varying patterns in intervention effectiveness across demographic groups. The *Information + Lottery* appealed more strongly to economically disadvantaged respondents, suggesting tangible incentives can motivate vaccination in this group. Free transportation successfully encouraged older and relatively poorer respondents to get vaccinated, though this effect was not statistically significant. Ambassador interventions were particularly effective for males, older individuals, and those with lower education levels or from poorer backgrounds. Providing sure gift upon vaccinations had stronger impacts on less educated respondents and those with higher misinformation levels, while a chance to win a lottery resonated more with poorer respondents and those who perceived themselves as less susceptible to COVID-19.

Our study also reveals suggested evidence of promising spillover effects beyond direct recipients, such as friends and neighbors. While these spillover effects should be interpreted cautiously as they rely on self-reported data from the respondents—we did not verify vaccination status of the respondents' networks—, these effects are particularly valuable in developing country contexts where formal information channels may be less effective and social networks play a crucial role in decision-making.

These findings offer valuable insights for policymakers, demonstrating that successful vaccination campaigns in developing countries require carefully tailored interventions that address both practical barriers and hesitancy. The effectiveness of strategies providing tangible incentives or logistical support, combined with the substantial spillover effects, suggests that targeted interventions can generate broader community benefits. In-kind incentives and logistical support, such as transportation, can significantly increase vaccine uptake while fostering broader community benefits through spillover effects. Furthermore, engaging trusted community leaders as vaccine ambassadors can effectively encourage follow-up vaccinations and build trust in public health systems.

Our study underscores the importance of tailoring vaccination strategies to local contexts, leveraging culturally appropriate interventions to address practical and psychological barriers. By demonstrating the effectiveness of targeted incentives, accessibility enhancements, and community-based approaches, we contribute to a growing body of evidence that supports the design of cost-effective vaccination campaigns. These findings are particularly valuable as global health policymakers prepare for future pandemics, emphasizing the need for adaptable, evidence-based strategies to overcome vaccine hesitancy and logistical barriers.

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Main Figures and Tables

Figure 1: Timeline

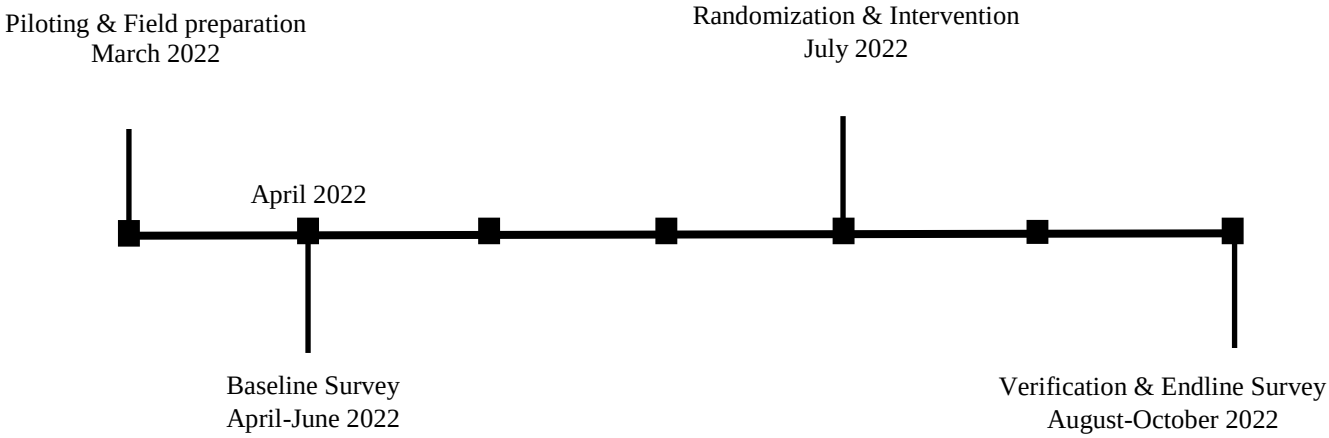
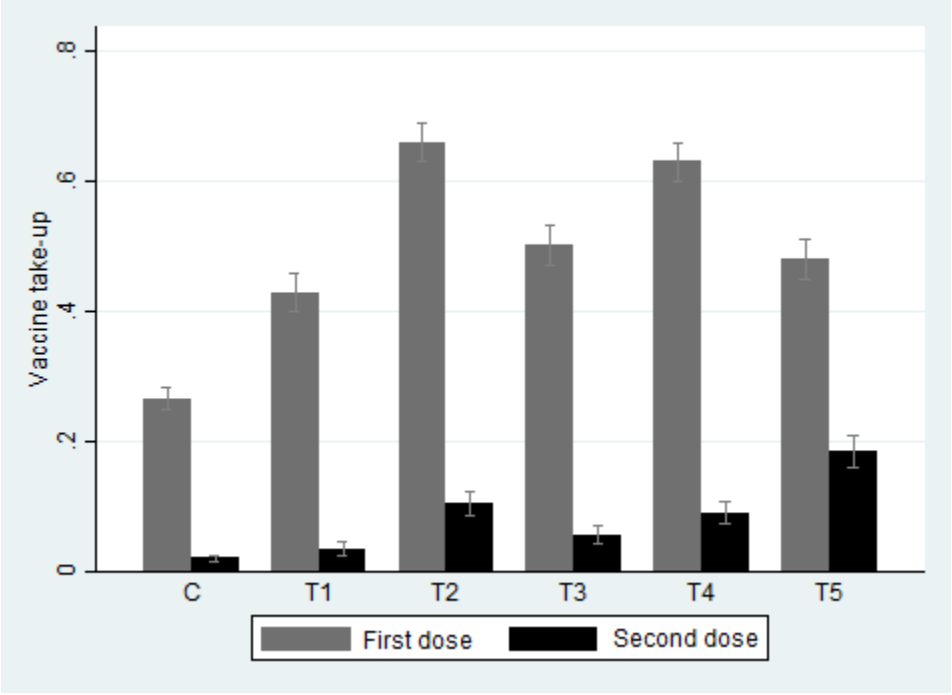


Figure 2: Vaccine Take-Up by Treatment Status



Note: In this figure, we plot the incidence of vaccination for both the first as well as the second doses for each of the five treatments and as well as the control group (C). Info only refers to the first treatment: Information only (T1); *Information + Sure Gift* (T2) where individuals receive a gift worth ≈ $5 conditional upon vaccination; *Information + Lottery* (T3) with a 5% chance of winning a gift worth ≈ $100, conditional upon vaccination; *Information + Access* (T4) and *Information + Ambassador* (T5) each compared to the reference category (the control group) which did not receive any intervention.

Table 1: Balance and Summary Statistics

	N	Control mean	Mean difference between groups							
			Control vs Info Only	Control vs Info+Sure Gift	Control vs Info+Lottery	Control vs Info+Access	Control vs Info+Ambassador	Info Only vs Info+Sure Gift	Info Only vs Info+Lottery	Info Only vs Info+Access
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A: Individual characteristics										
Male	8,065	0.465	0.025	0.020	0.001	0.031	0.023	-0.005	-0.024	0.006
Married	8,065	0.817	-0.012	-0.029	-0.032	-0.016	-0.059**	-0.017	-0.020	-0.004
Muslim	8,065	0.122	0.006	0.014	0.016	-0.022	0.040	0.008	0.011	-0.028
General	8,065	0.255	-0.027	-0.004	0.003	0.017	-0.008	0.022	0.030	0.043
Age	8,065	33.421	1.108	0.158	1.019	1.120	-0.691	-0.950	-0.089	0.012
Primary education	8,065	0.614	-0.025	-0.002	0.031	0.037	0.030	0.023	0.055	0.062*
Secondary education	8,065	0.332	-0.048*	-0.012	0.005	-0.003	-0.019	0.036	0.053*	0.045
Secondary high education	8,065	0.184	-0.036**	-0.001	0.010	0.002	-0.013	0.035	0.046**	0.037*
Employed	8,065	0.222	0.003	-0.002	-0.017	0.014	-0.017	-0.006	-0.020	0.011
High monthly income household	8,065	0.733	-0.025	0.001	0.012	-0.008	-0.051	0.026	0.037	0.017
Follow COVID-19 protocols (index)	8,065	1.316	0.060	-0.033	-0.080	0.154	0.149	-0.093	-0.139	0.094
Joint-Test Prob > F			0.430	0.968	0.418	0.803	0.308	0.853	0.269	0.499
Panel B: Village characteristics										
Proportion of Hindus	884	0.794	-0.010	-0.027	0.026	0.046*	-0.032	-0.016	0.036	0.056
Proportion of backward castes	884	0.701	-0.048	-0.037	-0.013	-0.017	-0.012	0.011	0.036	0.031
Proportion of landless households	884	0.229	0.004	0.040	-0.005	-0.003	-0.002	0.036	-0.009	-0.007
BPL	884	0.283	-0.001	0.015	0.010	0.017	0.066*	0.016	0.012	0.018
Village head lives in the village	884	0.529	0.083	-0.045	-0.033	-0.012	-0.015	-0.128*	-0.115*	-0.095
Distance to COVID-19 vaccine centers (in km)	884	2.271	0.787	0.059	0.308	0.737*	0.305	-0.728	-0.479	-0.050
Distance to railway station (in km)	884	11.159	0.598	-1.046	0.299	-1.456	-0.412	-1.644	-0.299	-2.054
Distance to busway stop (in km)	884	9.569	-0.259	-0.618	0.498	-0.620	-0.741	-0.359	0.757	-0.362
Distance to community clinic (in km)	884	5.214	-0.165	-0.480	0.516	0.566	0.012	-0.315	0.681	0.731
Joint-Test Prob > F			0.298	0.890	0.939	0.178	0.567	0.527	0.383	0.252

Note: In panel A, we present the balance test at the individual level for the five treatment and control groups for the sample of 8,065 individuals while in panel B we present the same for the village characteristics for 884 regions. Distance to various facilities refers to the nearest distance. *** p<0.01, ** p<0.05, * p<0.1

Table 2: Treatment effects on Vaccine Take-up, Registration, and Intention

Variables of Interest	Vaccination			
	First dose	Both doses	Registered	Intention
	(1)	(2)	(3)	(4)
Info only (T1)	0.166***	0.008	0.089***	0.126**
	(0.028)	(0.011)	(0.015)	(0.054)
	[0.000]	[0.000]	[0.000]	[0.000]
Info+sure gift (T2)	0.372***	0.078***	0.016*	0.277***
	(0.035)	(0.012)	(0.008)	(0.058)
	[0.000]	[0.000]	[0.006]	[0.000]
Info+lottery (T3)	0.246***	0.034***	0.081***	0.209***
	(0.036)	(0.009)	(0.028)	(0.050)
	[0.000]	[0.000]	[0.000]	[0.000]
Info+access (T4)	0.353***	0.067***	0.021	0.038
	(0.034)	(0.012)	(0.032)	(0.054)
	[0.000]	[0.000]	[0.102]	[0.102]
Info+ambassador (T5)	0.187***	0.155***	0.015*	0.169***
	(0.041)	(0.029)	(0.008)	(0.049)
	[0.000]	[0.000]	[0.006]	[0.000]
Observations	8,065	8,065	4,495	4,345
R-squared	0.158	0.077	0.118	0.277
Control mean	0.27	0.02	0.01	0.32
p-value (T1-T2)	0.00	0.00	0.00	0.03
p-value (T1-T3)	0.04	0.05	0.77	0.19
p-value (T1-T4)	0.00	0.00	0.06	0.19
p-value (T1-T5)	0.64	0.00	0.00	0.49
p-value (T2-T3)	0.00	0.00	0.01	0.31
p-value (T2-T4)	0.65	0.49	0.88	0.00
p-value (T2-T5)	0.00	0.01	0.89	0.09
p-value (T3-T4)	0.01	0.02	0.20	0.01
p-value (T3-T5)	0.22	0.00	0.01	0.51
p-value (T4-T5)	0.00	0.00	0.85	0.05
p-value (T1=T2=T3=T4=T5)	0.00	0.00	0.00	0.01

Note: *Vaccination (first dose)* is equal to 1 if the respondent took the first dose of the COVID-19 vaccine after the intervention and presented proof of vaccination during the verification stage, and 0 otherwise. *Vaccination (both doses)* is equal to 1 if the respondent took both doses (first as well as second) of the COVID-19 vaccination after the intervention and presented proof of vaccination during the verification stage respectively, and 0 otherwise. *Registered* is equal to 1 if the respondent has already registered for vaccination (after the intervention) and presented proof of registration during the verification stage but has not been vaccinated yet, and 0 otherwise. *Intention dummy* on the other hand takes a value of 1 if the respondent neither received vaccination so far nor got themselves registered (as of the verification stage) but is willing to get vaccinated soon and 0 otherwise. Sample in Columns 3 and 4 are restricted for individuals who were not vaccinated as of verification stage. For each regression, we control for the following baseline variables: age (in years), indicators for male, marital status, Muslim, general caste, rural, house ownership, living in joint household, completed high secondary education, employment status, and non-poor status based on monthly household expenditure. All regressions also include block indicators. In total, there are 23 blocks from 3 districts in the state of Uttar Pradesh. Standard errors clustered at the location level are in parentheses. The Westfall-Young (WY) *p*-values adjusted for multiple hypothesis testing are presented in italics and brackets below each estimated standard errors. *** p<0.01, ** p<0.05, * p<0.1

Table 3: Selection by Treatment Groups: Characteristics of Compliers, Always-takers, and Never-takers (Control vs Treatment)

Dep. variable: Vaccinated (1st dose)	Mean			t-stat		
	Complier	Always	Never	A=N	C=N	C=A
	(1)	(2)	(3)	(4)	(5)	(6)
Control vs Info Only						
Proportion	0.16	0.27	0.57			
Male	0.63	0.44	0.48	-1.47	7.23	10.55
Age	36.13	32.61	34.98	-3.18	2.01	7.55
Primary education	0.47	0.63	0.61	0.76	-7.02	-9.37
Employed	0.23	0.23	0.22	0.44	0.58	0.00
Non poor	0.64	0.75	0.71	1.66	-3.60	-6.91
Follow protocol (index)	0.04	-0.12	0.09	-3.91	-1.16	5.35
Share friends vaccinated	0.28	0.28	0.61	-12.73	-16.30	0.00
Share neighbors vaccinated	0.54	0.70	0.57	4.91	-1.41	-9.80
Confidence(index)	-0.04	-0.07	-0.01	-1.10	-0.79	0.78
Fake news (index)	-0.19	0.02	-0.04	1.15	-3.62	-6.91
Control vs Info + Sure Gift						
Proportion	0.39	0.27	0.34			
Male	0.56	0.44	0.44	0.00	4.41	6.55
Age	35.45	32.61	32.17	0.53	4.82	6.03
Primary education	0.61	0.63	0.61	0.64	0.12	-0.97
Employed	0.20	0.23	0.23	0.00	-1.50	-2.22
Non poor	0.72	0.75	0.75	0.00	-1.43	-2.17
Follow protocol (index)	0.17	-0.12	-0.14	0.41	7.88	9.61
Share friends vaccinated	0.41	0.28	0.79	-18.75	-17.23	8.33
Share neighbors vaccinated	0.63	0.70	0.43	8.61	7.61	-4.06
Confidence(index)	0.17	-0.07	-0.15	1.31	6.23	6.97
Fake news (index)	-0.10	0.02	-0.10	2.19	0.06	-3.80
Control vs Info + Lottery						
Proportion	0.24	0.27	0.50			
Male	0.57	0.44	0.44	0.00	5.87	7.16
Age	34.64	32.61	35.33	-3.46	-1.10	4.31
Primary education	0.61	0.63	0.67	-1.49	-2.98	-1.24
Employed	0.12	0.23	0.23	0.00	-5.82	-7.11
Non poor	0.69	0.75	0.77	-0.83	-4.57	-4.15
Follow protocol (index)	-0.27	-0.12	0.12	-4.04	-7.60	-5.02
Share friends vaccinated	0.47	0.28	0.79	-20.96	-17.80	12.10
Share neighbors vaccinated	0.55	0.70	0.64	2.23	-4.23	-9.13
Confidence(index)	0.12	-0.07	-0.03	-0.67	3.07	5.70
Fake news (index)	-0.15	0.02	-0.06	1.37	-1.83	-5.54

Table 3: Selection by Treatment Groups: Characteristics of Compliers, Always-takers, and Never-takers (Control vs Treatment)—Continued

Dep. variable: Vaccinated (1st dose)	Mean			t-stat		
	Complier	Always	Never	A=N	C=N	C=A
	(1)	(2)	(3)	(4)	(5)	(6)
Control vs Info + Access						
Proportion	0.36	0.27	0.37			
Male	0.58	0.44	0.46	-0.64	4.67	7.74
Age	33.48	32.61	36.98	-4.95	-4.70	1.84
Primary education	0.63	0.63	0.69	-2.06	-2.56	0.00
Employed	0.25	0.23	0.24	-0.38	0.34	1.15
Non poor	0.70	0.75	0.73	0.73	-1.43	-3.36
Follow protocol (index)	-0.10	-0.12	0.36	-6.57	-6.94	0.58
Share friends vaccinated	0.47	0.28	0.76	-17.54	-13.19	11.90
Share neighbors vaccinated	0.58	0.70	0.58	3.99	-0.05	-7.36
Confidence(index)	0.16	-0.07	0.03	-1.55	2.28	6.68
Fake news (index)	-0.24	0.02	-0.02	0.64	-4.09	-8.44
Control vs Info + Ambassador						
Proportion	0.21	0.27	0.52			
Male	0.62	0.44	0.46	-0.71	7.38	10.17
Age	33.85	32.61	32.34	0.36	2.56	2.63
Primary education	0.70	0.63	0.63	0.00	3.21	3.92
Employed	0.14	0.23	0.22	0.43	-4.47	-5.99
Non poor	0.48	0.75	0.73	0.81	-13.38	-18.37
Follow protocol (index)	0.55	-0.12	-0.04	-1.58	15.28	24.72
Share friends vaccinated	0.62	0.28	0.58	-11.15	1.82	22.50
Share neighbors vaccinated	0.54	0.70	0.74	-1.57	-10.35	-9.66
Confidence(index)	0.11	-0.07	0.10	-3.29	0.26	5.34
Fake news (index)	-0.27	0.02	-0.09	2.12	-4.41	-9.59

Note: This table presents the mean baseline characteristics of compliers, always-takers, and never-takers of control and some of the treatment groups. Columns 4-6 present the *t*-statistics.

Table 4: Selection by Treatment Groups: Characteristics of Compliers, Always-takers, and Never-takers (Info Only vs Information + Additional Intervention)

Dep. variable: Vaccinated (1st dose)	Mean			t-stat		
	Complier	Always	Never	A=N	C=N	C=A
	(1)	(2)	(3)	(4)	(5)	(6)
Info Only vs Info + Sure Gift						
Proportion	0.23	0.43	0.34			
Male	0.51	0.51	0.44	1.97	2.63	0.00
Age	34.97	33.94	32.17	1.89	4.11	1.60
Primary Edu	0.71	0.57	0.61	-1.14	3.96	6.10
Employed	0.17	0.23	0.23	0.00	-2.56	-2.89
Non Poor	0.77	0.71	0.75	-1.25	0.73	2.64
Follow Protocol (index)	0.25	-0.06	-0.14	1.37	10.25	7.31
Share friends vaccinated	0.51	0.28	0.79	-16.74	-13.13	11.00
Share neighbors vaccinated	0.70	0.64	0.43	6.00	10.03	2.53
Confidence(index)	0.31	-0.06	-0.15	1.31	9.20	8.13
Fake news (index)	-0.03	-0.06	-0.10	0.66	1.51	0.70
Info Only vs Info + Lottery						
Proportion	0.07	0.43	0.50			
Male	0.44	0.51	0.44	2.17	0.06	-2.93
Age	31.33	33.94	35.33	-1.55	-6.45	-4.12
Primary Edu	0.91	0.57	0.67	-3.19	15.30	17.50
Employed	-0.11	0.23	0.23	0.00	-26.51	-23.08
Non Poor	0.78	0.71	0.77	-2.11	0.48	3.19
Follow Protocol (index)	-0.95	-0.06	0.12	-2.68	-27.95	-33.11
Share friends vaccinated	0.90	0.28	0.79	-18.25	N/A	N/A
Share neighbors vaccinated	0.57	0.64	0.64	0.00	-3.26	-3.05
Confidence(index)	0.49	-0.06	-0.03	-0.44	11.57	13.33
Fake news (index)	-0.06	-0.06	-0.06	0.00	0.00	0.00

Table 4: Selection by Treatment Groups: Characteristics of Compliers, Always-takers, and Never-takers (Info Only vs Information + Additional Intervention) — Continued

Dep. variable: Vaccinated (1st dose)	Mean			t-stat		
	Complier	Always	Never	A=N	C=N	C=A
	(1)	(2)	(3)	(4)	(5)	(6)
Info Only vs Info + Access						
Proportion	0.20	0.43	0.37			
Male	0.54	0.51	0.46	1.44	3.20	1.33
Age	31.34	33.94	36.98	-3.09	-7.59	-4.07
Primary Edu	0.76	0.57	0.69	-3.61	2.94	8.07
Employed	0.26	0.23	0.24	-0.34	0.97	1.58
Non Poor	0.74	0.71	0.73	-0.64	0.51	1.44
Follow Protocol (index)	-0.22	-0.06	0.36	-5.28	-8.66	-3.62
Share friends vaccinated	0.62	0.28	0.76	-15.68	-6.49	17.22
Share neighbors vaccinated	0.61	0.64	0.58	1.77	1.14	-1.38
Confidence(index)	0.32	-0.06	0.03	-1.25	5.25	8.24
Fake news (index)	-0.28	-0.06	-0.02	-0.59	-4.82	-5.44
Info Only vs Info + Ambassadors						
Proportion	0.05	0.43	0.52			
Male	0.60	0.51	0.46	1.55	6.69	4.05
Age	26.62	33.94	32.34	1.83	-11.86	-13.45
Primary Edu	1.41	0.57	0.63	-1.90	N/A	N/A
Employed	-0.15	0.23	0.22	0.37	-85.26	-40.02
Non Poor	-0.04	0.71	0.73	-0.69	N/A	N/A
Follow Protocol (index)	2.19	-0.06	-0.04	-0.34	N/A	N/A
Share friends vaccinated	1.69	0.28	0.58	-9.93	N/A	N/A
Share neighbors vaccinated	0.55	0.64	0.74	-3.36	-10.32	-4.22
Confidence(index)	0.60	-0.06	0.10	-2.64	20.47	18.92
Fake news (index)	-0.53	-0.06	-0.09	0.52	-12.38	-13.71

Note: This table presents the mean baseline characteristics of compliers, always-takers, and never-takers of *Information Only* and *Information + additional intervention* groups. We consider *Information Only* as the reference or control group. Columns 4-6 present the *t*-statistics.

Table 5: Selection among Vaccinated Respondents in Treatment Groups

	Male	Age	Primary Edu	Employed	Non Poor	Follow Protocol (index)	Share friends vaccinated	Share neighbors vaccinated	Confidence (index)	Fake news (index)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Independent variable										
Sure Gift (=0) vs Lottery (=1)	-0.012	-0.746	0.004	-0.032	-0.009	-0.238**	0.006	-0.030	-0.051	-0.009
	(0.039)	(1.284)	(0.038)	(0.029)	(0.046)	(0.107)	(0.032)	(0.033)	(0.101)	(0.134)
N	1,209	1,209	1,209	1,209	1,209	1,209	1,198	1,198	1,209	1,209
Access (=0) vs Ambassador (=1)	0.004	0.045	0.030	-0.042	-0.093*	0.287**	0.046	0.004	-0.048	0.022
	(0.043)	(0.945)	(0.036)	(0.037)	(0.053)	(0.128)	(0.055)	(0.059)	(0.088)	(0.089)
N	1,140	1,140	1,140	1,140	1,140	1,140	1,094	1,094	1,140	1,140
Sure Gift (=0) vs Access (=1)	0.010	-1.193	0.010	0.022	-0.006	-0.159	0.029	-0.029	-0.008	-0.078
	(0.038)	(0.986)	(0.034)	(0.031)	(0.048)	(0.110)	(0.031)	(0.039)	(0.087)	(0.080)
N	1,343	1,343	1,343	1,343	1,343	1,343	1,332	1,332	1,343	1,343
Sure Gift (=0) vs Ambassadors (=1)	0.015	-1.148	0.040	-0.020	-0.099**	0.128	0.075	-0.025	-0.056	-0.056
	(0.041)	(1.063)	(0.038)	(0.034)	(0.047)	(0.151)	(0.058)	(0.058)	(0.093)	(0.093)
N	1,165	1,165	1,165	1,165	1,165	1,165	1,108	1,108	1,165	1,165
Access (=0) vs Lottery (=1)	-0.022	0.447	-0.006	-0.054*	-0.003	-0.079	-0.023	-0.002	-0.043	0.069
	(0.041)	(1.189)	(0.037)	(0.032)	(0.053)	(0.071)	(0.026)	(0.034)	(0.096)	(0.132)
N	1,184	1,184	1,184	1,184	1,184	1,184	1,184	1,184	1,184	1,184
Ambassadors (=0) vs Lottery (=1)	-0.027	0.402	-0.036	-0.012	0.090*	-0.366***	-0.069	-0.006	0.005	0.047
	(0.043)	(1.253)	(0.040)	(0.035)	(0.052)	(0.125)	(0.056)	(0.055)	(0.101)	(0.140)
N	1,006	1,006	1,006	1,006	1,006	1,006	960	960	1,006	1,006

Note: This table reports estimation results of running separate bivariate regressions of baseline characteristics on an indicator variable for a pair of treatment group. Sample is restricted to vaccinated respondents. *** p<0.01, ** p<0.05, * p<0.1

Table 6: Treatment Effects on Secondary Outcomes

Variables of Interest	Knowledge Index (1)	Misinformation Index (2)	Susceptibility Index (3)	Confidence Index (4)	Follow COVID-19 protocols (5)
Info only (T1)	0.259***	-0.139***	-0.366***	0.133**	-0.149***
	(0.089)	(0.036)	(0.048)	(0.058)	(0.050)
Info+sure gift (T2)	0.306***	-0.230***	-0.578***	0.290***	-0.179**
	(0.063)	(0.065)	(0.103)	(0.076)	(0.082)
Info+lottery (T3)	0.293***	-0.167***	-0.398***	0.274***	-0.189***
	(0.070)	(0.053)	(0.071)	(0.069)	(0.072)
Info+access (T4)	0.289***	-0.176***	-0.427***	0.121*	-0.153***
	(0.100)	(0.039)	(0.058)	(0.066)	(0.058)
Info+ambassador (T5)	0.268***	-0.180*	-0.349***	0.366**	-0.206*
	(0.095)	(0.102)	(0.112)	(0.159)	(0.109)
Observations	7,913	7,913	7,913	7,913	7,913
R-squared	0.056	0.100	0.091	0.105	0.093
Control mean	8.64	20.07	10.50	19.22	2.16
p-value (T1-T2)	0.64	0.16	0.04	0.06	0.73
p-value (T1-T3)	0.74	0.58	0.67	0.08	0.61
p-value (T1-T4)	0.82	0.32	0.35	0.88	0.95
p-value (T1-T5)	0.95	0.69	0.88	0.17	0.62
p-value (T2-T3)	0.88	0.41	0.13	0.86	0.92
p-value (T2-T4)	0.87	0.39	0.16	0.06	0.78
p-value (T2-T5)	0.71	0.67	0.11	0.66	0.83
p-value (T3-T4)	0.97	0.87	0.72	0.07	0.66
p-value (T3-T5)	0.81	0.91	0.69	0.59	0.89
p-value (T4-T5)	0.86	0.97	0.50	0.15	0.65
p-value (T1=T2=…=T5)	0.99	0.67	0.34	0.09	0.97

Note: See footnote of Table 2. The Knowledge Index is constructed from 12 True-False questions related to COVID-19 vaccines, its benefits, and costs (higher value means better knowledge). The Misinformation Index (MI) is constructed from 9 questions related to misinformation/rumours (related to infertility, unknown long term side effects, etc) about the COVID-19 vaccine (where lower values mean less misinformation). The Susceptibility Index (SI) is created from 4 questions related to how the respondent is worried about COVID-19 infection (where lower values mean less worried). MI&SI have been created from the Health Belief Model (HBM) module. Confidence Index captures confidence of the respondent (on a 0 to 30 scale) about the efficacy of COVID-19 vaccine distribution strategy adopted by the government and public health system; about the efficacy of the Covid vaccines; and about the current public health system, each on a 0 "not at all confident" to 10 "extremely confident" scale. We construct the *Follow COVID-19 protocols* index using the responses to the following question: ""*What steps have you taken during the last week to keep you and your family safe from COVID-19?"* (without prompting the steps to the respondents) with respect to 8 safety measures such as wearing mask, physical distance, etc, where each dummy takes the value 0 if they follow a protocol and 1 otherwise. Thus, a lower value on a scale of 0 to 8 means less protocols are broken. All the outcome variables (except dummies and proportions) or indices are control group-standardized to create z-scores, following Kling, Liebman, and Katz (2007) so that each variable has a mean 0 and standard deviation 1 for the control group. All regressions also control for block-fixed effects. There are a total of 23 blocks from the 3 districts in the state of Uttar Pradesh. Standard errors clustered at the location level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7: Cost of Intervention

Cost head	Unit	Unit cost (US$)	Total Cost
Intervention (T1): Information only			
Information campaign management remuneration	12	267	3204
Mobile communication expenses (campaign managers)	12	3.33	40
Travel Expenses	12	133.33	1600
Flyers on COVID-19 and Vaccination	1046	0.13	136
Total Cost			**4980**
Per unit cost of the intervention (cost per treated individual)			**4.76**
Intervention (T2): Information and sure gift			
Information campaign management remuneration	12	267	3204
Mobile communication expenses (campaign managers)	12	3.33	40
Travel Expenses	12	133.33	1600
Flyers on COVID-19 and Vaccination	1036	0.26	269
Cost of gift	684	5.33	3646
Provisioning of gift			945
Total Cost			**9704**
Per unit cost of the intervention (cost per treated individual)			**9.37**
Intervention (T3): Information and lottery			
Information campaign management remuneration	12	267	3204
Mobile communication expenses (campaign managers)	12	3.33	40
Travel Expenses	12	133.33	1600
Flyers on COVID-19 and Vaccination	1045	0.26	272
Cost of gift	27	106.67	2880
Provisioning of gift			288
Total Cost			**8284**
Per unit cost of the intervention (cost per treated individual)			**7.93**
Intervention (T4): Information and access			
Accessibility support costs for vaccine recipients	412	2	824
Mobile communication expenses (campaign managers)	12	3.33	40
Information campaign management transport expenses (for facilitating target respondents)			1600
Information campaign management remuneration	12	267	3204
Flyers on COVID-19 and Vaccination	1045	0.13	136
Total Cost			**5804**
Per unit cost of the intervention (cost per treated individual)			**5.55**
Intervention (T5): Information via ambassador			
Ambassador training materials	111	1.33	148
Ambassador training attendance fee	111	4	444
Catering (Ambassador)	111	3	333
Flyers on COVID-19 and Vaccination	1001	0.4	400
Mobile communication expenses (Ambassador)	111	1.33	148
Incentive to Ambassadors (Appreciation crest)	111	6.67	740
Ambassador training cost by research team	3	1000	3000
Total Cost			**5213**
Per unit cost of the intervention (cost per treated individual)			**5.21**

Note: All costs are in US$ and in 2022 value (at the time of the interventions). Those who have received the allocated intervention (direct beneficiaries) are included here(n=5,173).

Appendix A

Table A.1: Balance and Summary Statistics

	N	Control mean	Mean difference between groups						
			Info Only vs Info+Ambassador	Info+Sure Gift vs Info+Lottery	Info+Access vs Info+Ambassador	Info+Sure Gift vs Info+Access	Info+Sure Gift vs Info+Ambassador	Info+Lottery vs Info+Access	Info+Lottery vs Info+Ambassador
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Individual characteristics									
Male	8,065	0.465	-0.002	-0.019	-0.008	0.011	0.003	-0.031	-0.022
Married	8,065	0.817	-0.048*	-0.003	-0.044	0.013	-0.030	-0.016	0.027
Muslim	8,065	0.122	0.035	0.003	0.062**	-0.036	0.027	0.038	-0.024
General	8,065	0.255	0.018	0.007	-0.025	0.021	-0.004	-0.013	0.012
Age	8,065	33.421	-1.799*	0.861	-1.811	0.962	-0.849	-0.101	1.710*
Primary education	8,065	0.614	0.054	0.032	-0.007	0.039	0.031	-0.007	0.001
Secondary education	8,065	0.332	0.029	0.017	-0.016	0.010	-0.007	0.008	0.024
Secondary high education	8,065	0.184	0.023	0.011	-0.015	0.002	-0.013	0.009	0.023
Employed	8,065	0.222	-0.020	-0.014	-0.031	0.016	-0.014	-0.031	-0.000
High monthly income household	8,065	0.733	-0.026	0.011	-0.043	-0.009	-0.052	0.020	0.063*
Follow COVID-19 protocols (index)	8,065	1.316	0.090	-0.046	-0.004	0.187	0.183	-0.233	-0.229
Joint-Test Prob > F			0.579	0.913	0.410	0.966	0.877	0.873	0.561
Panel B: Village characteristics									
Proportion of Hindus	884	0.794	-0.022	0.053	-0.078**	0.072**	-0.006	-0.020	0.059
Proportion of backward castes	884	0.701	0.036	0.024	0.005	0.020	0.025	0.005	-0.000
Proportion of landless households	884	0.229	-0.006	-0.044	0.001	-0.042	-0.042	-0.002	-0.003
BPL	884	0.283	0.067	-0.005	0.049	0.002	0.051	-0.007	-0.055
Village head lives in the village	884	0.529	-0.098	0.012	-0.003	0.033	0.030	-0.021	-0.017
Distance to COVID-19 vaccine centers (in km)	884	2.271	-0.482	0.248	-0.432	0.678	0.246	-0.430	0.002
Distance to railway station (in km)	884	11.159	-1.010	1.346	1.044	-0.410	0.635	1.755	0.711
Distance to busway stop (in km)	884	9.569	-0.482	1.116	-0.120	-0.002	-0.123	1.119	1.239
Distance to community clinic (in km)	884	5.214	0.177	0.995	-0.554	1.046	0.491	-0.050	0.504
Joint-Test Prob > F			0.663	0.820	0.269	0.237	0.940	0.852	0.707

Note: In panel A, we present the balance test at the individual level for the five treatment and control groups for the sample of 8,065 individuals while in panel B we present the same for the location characteristics for the 884 locations. Distance to various facilities refers to the nearest distance. *** p<0.01, ** p<0.05, * p<0.1.

Table A.2: Characteristics of Vaccine ambassadors

Variables of Interest	Mean	Std. dev.	Min	Max
Age (in years)	38.33	9.90	22.00	65.00
Graduate dummy	0.34	0.48	0.00	1.00
Male dummy	0.75	0.44	0.00	1.00
ASHA/Anganwadi workers	0.18	0.39	0.00	1.00
Village/Panchayat representatives	0.19	0.39	0.00	1.00
Teachers	0.04	0.19	0.00	1.00
Doctors	0.03	0.16	0.00	1.00
Others	0.57	0.50	0.00	1.00
Knowledge index	8.52	1.42	4.00	10.00

Note: There were a total of 111 vaccine ambassadors (one from each location). Graduate dummy takes the value 1 if the ambassadors has completed his graduation (B.A, B.Sc, MBBS, etc) and 0 otherwise. Here, 'Others' refer those who are farmers, volunteers, and other influential persons from the locations. The 'knowledge index' captures the performance of the ambassadors in the post-training evaluation (on a scale of 0 to 10) based on responses from a series of 10 questions, which includes both multiple choices as well as true and false questions, and which covers the material learnt during the ambassador training session.

Table A.3: Treatment effects on Vaccine Take-up with Alternative Definitions

Variables of Interest	Vaccination			
	First dose		Both doses	
	(1)	(2)	(3)	(4)
	Digital or paper certificate	Digital certificate only	Digital or paper certificate	Digital certificate only
Info only (T1)	0.166***	0.161***	0.008	0.008
	(0.028)	(0.028)	(0.011)	(0.010)
Info+sure gift (T2)	0.372***	0.353***	0.078***	0.074***
	(0.035)	(0.035)	(0.012)	(0.011)
Info+lottery (T3)	0.246***	0.231***	0.034***	0.031***
	(0.036)	(0.035)	(0.009)	(0.009)
Info+access (T4)	0.353***	0.338***	0.067***	0.063***
	(0.034)	(0.032)	(0.012)	(0.012)
Info+ambassador (T5)	0.187***	0.183***	0.155***	0.152***
	(0.041)	(0.040)	(0.029)	(0.028)
Observations	8,065	8,065	8,065	8,065
R-squared	0.158	0.144	0.077	0.075
Control mean	0.27	0.25	0.02	0.02

Note: Columns (1) and (3) refer to the full sample of vaccinated individuals (those whose vaccinated (online) certificates could be accessed along with those without but could be verified using other means such as paper certificate). Columns (2) and (4) only consider those whose online vaccine certificates could be accessed during the verification stage. These results are therefore only related to those individuals whose vaccination as well as registration certificates could be verified during the verification stage. *Vaccination (first dose)* is equal to 1 if the respondent took the first dose of the COVID-19 vaccine after the intervention and presented proof of vaccination during the verification stage, and 0 otherwise. *Vaccination (both doses)* is equal to 1 if the respondent took both doses (first as well as second) of the COVID-19 vaccination after the intervention and presented proof of vaccination during the verification stage respectively, and 0 otherwise. For each regression, we control for the following baseline variables: age (in years), indicators for male, marital status, Muslim, general caste, rural, house ownership, living in joint household, completed high secondary education, employment status, and non-poor status based on monthly household expenditure. All regressions also include block indicators. In total, there are 23 blocks from 3 districts in the state of Uttar Pradesh. Standard errors clustered at the location level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.4: Spillover Effects on Vaccination (First Dose) on The Untreated: Household Members, Friends, and Neighbors

Variables of Interest	Share of household members vaccinated			Neighbor	Friends
	Males	Females	Overall		
	(1)	(2)	(3)	(4)	(5)
Info only (T1)	0.009	0.017	0.012	0.032	0.064***
	(0.011)	(0.011)	(0.010)	(0.029)	(0.024)
Info+sure gift (T2)	0.013	0.025	0.020	0.057*	0.115***
	(0.018)	(0.020)	(0.017)	(0.033)	(0.036)
Info+lottery (T3)	0.021*	0.021*	0.018*	0.081***	0.168***
	(0.012)	(0.011)	(0.010)	(0.029)	(0.025)
Info+access (T4)	0.034***	0.022**	0.029***	0.042	0.131***
	(0.013)	(0.010)	(0.011)	(0.030)	(0.024)
Info+ambassador (T5)	0.095***	0.076***	0.082***	0.129***	0.139***
	(0.024)	(0.019)	(0.020)	(0.038)	(0.039)
Observations	7,569	7,570	7,796	7,913	7,913
R-squared	0.158	0.177	0.186	0.099	0.087
Control mean	0.05	0.05	0.04	0.54	0.40
p-value (T1-T2)	0.85	0.71	0.70	0.51	0.21
p-value (T1-T3)	0.40	0.77	0.65	0.15	0.00
p-value (T1-T4)	0.10	0.65	0.19	0.77	0.02
p-value (T1-T5)	0.00	0.00	0.00	0.02	0.09
p-value (T2-T3)	0.68	0.82	0.91	0.52	0.17
p-value (T2-T4)	0.31	0.89	0.65	0.70	0.69
p-value (T2-T5)	0.00	0.05	0.01	0.11	0.63
p-value (T3-T4)	0.39	0.88	0.39	0.25	0.21
p-value (T3-T5)	0.00	0.00	0.00	0.24	0.50
p-value (T4-T5)	0.02	0.01	0.01	0.04	0.83
p-value (T1=T2=T3=T4=T5)	0.02	0.06	0.02	0.15	0.01

Note: See footnote of Table 2. In the first three columns, we report spillover effects on other household members i.e. share of those who have received the first dose of the COVID-19 vaccine (above the age of 12 years) separately for males, females and overall. In the fourth column, we present the results for whether during the last two months (between the intervention and verification stages) anyone of the neighbours on the left, right, front, or back house of the respondent have been vaccinated with the first dose of the vaccine and in the last column we report the results for whether any of your close friends (think of three closest friends identified at baseline) got vaccinated during the last two months (between the intervention and verification stages). All regressions also control for block-fixed effects. There are a total of 23 blocks from the 3 districts in the state of Uttar Pradesh. Standard errors clustered at the location level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.5: Treatment Effects on Components of Confidence Index

Variables of Interest	Efficacy of COVID-19 vaccine distribution strategy (1)	Efficacy of the Covid vaccines (2)	Current public health system (3)
Info only (T1)	0.142**	0.142**	0.143**
	(0.069)	(0.064)	(0.068)
Info+sure gift (T2)	0.382***	0.248***	0.302***
	(0.097)	(0.076)	(0.085)
Info+lottery (T3)	0.268***	0.333***	0.280***
	(0.076)	(0.079)	(0.074)
Info+access (T4)	0.217**	0.084	0.085
	(0.093)	(0.070)	(0.071)
Info+ambassador (T5)	0.448***	0.387**	0.340*
	(0.172)	(0.172)	(0.177)
Observations	7,913	7,913	7,913
R-squared	0.091	0.091	0.082
Control Mean	6.35	6.42	6.46

Note: See footnote of Table 2. Confidence Index captures confidence of the respondent (on a 0 to 30 scale) about the efficacy of COVID-19 vaccine distribution strategy adopted by the government and public health system; about the efficacy of the Covid vaccines; and about the current public health system, each on a 0 "not at all confident" to 10 "extremely confident" scale. We run regressions on each of the three components (each on a scale of 0 to 10) of the confidence index variable separately here. All the outcome variables (except dummies and proportions) or indices are control group-standardized to create z-scores, following Kling, Liebman, and Katz (2007) so that each variable has a mean 0 and standard deviation 1 for the control group. All regressions also control for block-fixed effects. There are a total of 23 blocks from the 3 districts in the state of Uttar Pradesh. Standard errors clustered at the location level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.6: Treatment Effects on Subjective Wellbeing

Variables of Interest	Mental health	Physical health	Life satisfaction
	(1)	(2)	(3)
Info only (T1)	0.726***	0.741***	0.558***
	(0.068)	(0.065)	(0.066)
Info+sure gift (T2)	1.259***	1.244***	1.200***
	(0.078)	(0.065)	(0.097)
Info+lottery (T3)	0.872***	0.828***	0.969***
	(0.081)	(0.063)	(0.085)
Info+access (T4)	1.055***	0.969***	1.184***
	(0.077)	(0.052)	(0.082)
Info+ambassador (T5)	0.796***	0.901***	0.678***
	(0.112)	(0.092)	(0.155)
Observations	7,913	7,913	7,913
R-squared	0.155	0.21	0.185
Control Mean	0.000	0.000	0.000

Note: See footnote of Table 2. Mental health and physical health are responses to the questions "On an average, how do you feel your physical health has been in general in the past 7 days?" on a scale of 1 (very bad) to 5 (very good). Life satisfaction captures the responses to the following question: "All things considered, how satisfied are you with your life? (as a whole nowadays) Pick a number between 0 and 10 to indicate how satisfied you are. The more satisfied you are, the higher the number you should pick. The less satisfied you are, the lower the number." Vaccinated takes the value 1 if the respondent received the first dose and 0 otherwise. All the standard outcome variables (except dummies and proportions) or indices have been control group-standardized to create z-scores, following Kling, Liebman, and Katz (2007) so that each variable has a mean 0 and standard deviation 1 for the control group. All regressions also control for block-fixed effects. There are a total of 23 blocks from the 3 districts in the state of Uttar Pradesh. Standard errors clustered at the location level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.7: Heterogeneity Results by Baseline Socio-Economic Characteristics

Panel A:	Male	Female	Interaction terms	Age>=30	Age<30	Interaction terms
	(1)	(2)	(3)	(4)	(5)	(6)
Info only (T1)	0.186***	0.146***	0.041	0.175***	0.154***	0.013
	(0.036)	(0.030)	(0.035)	(0.034)	(0.033)	(0.035)
Info+sure Gift (T2)	0.402***	0.342***	0.061*	0.401***	0.336***	0.058*
	(0.039)	(0.040)	(0.035)	(0.040)	(0.039)	(0.034)
Info+lottery (T3)	0.294***	0.205***	0.095**	0.244***	0.243***	0.000
	(0.040)	(0.043)	(0.041)	(0.041)	(0.043)	(0.042)
Info+access (T4)	0.390***	0.316***	0.079**	0.334***	0.366***	-0.028
	(0.042)	(0.035)	(0.037)	(0.042)	(0.036)	(0.042)
Info+ambassador (T5)	0.230***	0.141***	0.082*	0.224***	0.143***	0.074**
	(0.046)	(0.048)	(0.043)	(0.050)	(0.040)	(0.036)
Observations	3,857	4,208	8,065	3,964	4,101	8,065
R-squared	0.203	0.125	0.160	0.189	0.140	0.160

Panel B:	Less than secondary education	Secondary education and above	Interaction terms	Poor background	Non-poor background	Interaction terms
Info only (T1)	0.192***	0.114***	0.073**	0.195***	0.152***	0.039
	(0.033)	(0.033)	(0.037)	(0.046)	(0.029)	(0.043)
Info+sure Gift (T2)	0.410***	0.295***	0.109***	0.390***	0.364***	0.021
	(0.037)	(0.046)	(0.040)	(0.051)	(0.036)	(0.044)
Info+lottery (T3)	0.261***	0.217***	0.044	0.288***	0.226***	0.081*
	(0.039)	(0.042)	(0.038)	(0.047)	(0.040)	(0.049)
Info+access (T4)	0.363***	0.334***	0.026	0.391***	0.338***	0.041
	(0.037)	(0.042)	(0.042)	(0.048)	(0.036)	(0.044)
Info+ambassador (T5)	0.233***	0.097**	0.123***	0.290***	0.134***	0.147***
	(0.046)	(0.045)	(0.047)	(0.056)	(0.042)	(0.048)
Observations	5,468	2,597	8,065	2,229	5,836	8,065
R-squared	0.176	0.141	0.160	0.211	0.148	0.160

Note: See footnote of Table 2. All regressions also control for block-fixed effects. There are a total of 23 blocks from the 3 districts in the state of Uttar Pradesh. Standard errors clustered at the location level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1 In this Table, we present the heterogeneity analysis by considering both different sub-samples and interactions. In Panel A, columns (3) and (6) the reference categories are female and age less than 30 years respectively, in Panel B column (3) and (6) the reference categories are have secondary education and above and non-poor background (above 5000 Rs monthly household expenditure) respectively.

Table A.8: Heterogeneity Results by Other Baseline Characteristics

Panel A:	Compliance dummy			Confidence Index		
	No	Yes	Interaction terms	Below median	Above median	Interaction terms
	(1)	(2)	(3)	(4)	(5)	(6)
Info only (T1)	0.156***	0.170***	0.024	0.150***	0.183***	0.015
	(0.038)	(0.029)	(0.037)	(0.038)	(0.028)	(0.035)
Info+sure Gift (T2)	0.403***	0.352***	-0.051	0.384***	0.363***	-0.018
	(0.052)	(0.035)	(0.046)	(0.044)	(0.036)	(0.037)
Info+lottery (T3)	0.230***	0.252***	0.015	0.269***	0.230***	-0.028
	(0.043)	(0.039)	(0.038)	(0.045)	(0.039)	(0.039)
Info+access (T4)	0.325***	0.368***	0.050	0.376***	0.332***	-0.054
	(0.044)	(0.033)	(0.036)	(0.038)	(0.037)	(0.033)
Info+ambassador (T5)	0.237***	0.157***	-0.073*	0.177***	0.203***	0.023
	(0.050)	(0.043)	(0.044)	(0.044)	(0.048)	(0.039)
Observations	2,846	5,219	8,065	3,901	4,164	8,065
R-squared	0.186	0.151	0.160	0.176	0.151	0.159

Panel B:	Misinformation Index			Susceptibility Index		
	Below median	Above median	Interaction terms	Below median	Above median	Interaction terms
Info only (T1)	0.149***	0.181***	0.032	0.175***	0.151***	-0.020
	(0.032)	(0.035)	(0.034)	(0.031)	(0.035)	(0.038)
Info+sure Gift (T2)	0.288***	0.444***	0.151***	0.440***	0.303***	-0.129***
	(0.041)	(0.038)	(0.036)	(0.039)	(0.038)	(0.035)
Info+lottery (T3)	0.208***	0.282***	0.077*	0.281***	0.209***	-0.073*
	(0.042)	(0.042)	(0.042)	(0.037)	(0.043)	(0.038)
Info+access (T4)	0.356***	0.351***	0.000	0.337***	0.367***	0.033
	(0.035)	(0.039)	(0.034)	(0.037)	(0.037)	(0.036)
Info+ambassador (T5)	0.161***	0.213***	0.043	0.208***	0.155***	-0.055
	(0.045)	(0.046)	(0.038)	(0.042)	(0.047)	(0.038)
Observations	3,820	4,245	8,065	4,016	4,049	8,065
R-squared	0.136	0.191	0.162	0.184	0.146	0.161

Note: See footnote of Table 2. All regressions also control for block-fixed effects. There are a total of 23 blocks from the 3 districts in the state of Uttar Pradesh. Standard errors clustered at the location level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1 See footnote of Table 8 for further discussion of the indices. The Compliance dummy (at baseline) is constructed from the *Follow COVID-19 protocols* index, where a lower value on a scale of 0 to 8 means less protocols are broken. The Compliance dummy takes a value 0 (or 'No') if COVID-19 protocols were broken at baseline and 1 (or 'Yes') otherwise. For MI & SI, less is better. In this Table, we present the heterogeneity analysis by considering both different sub-samples and interactions. The reference categories for the interaction terms are below the median except for the compliance dummy, where the reference category is those who do not comply with COVID-19 protocols at baseline.

Table A.9: Robustness Check for Social Desirability Bias

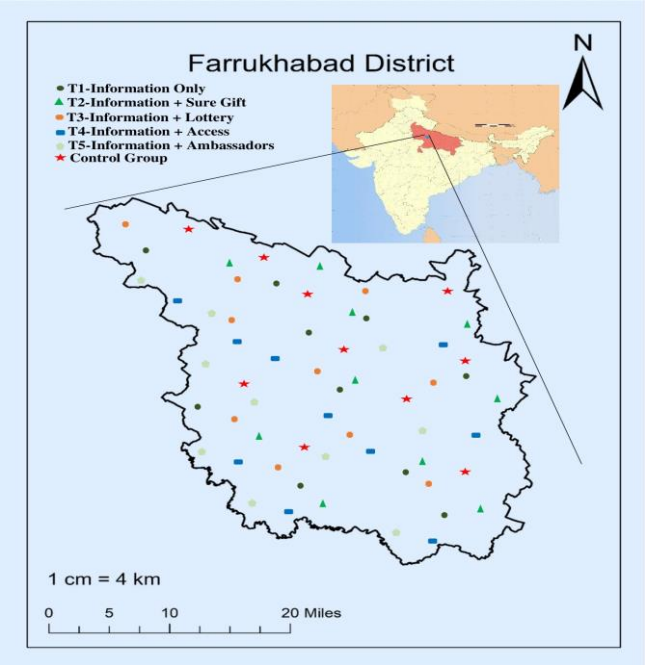
Variables of Interest	Mental health	Physical health	Life satisfaction	Knowledge Index
T1 × HSDS	-0.031	0.015	0.134	-0.002
	(0.085)	(0.073)	(0.117)	(0.072)
T2 × HSDS	-0.031	-0.039	0.091	-0.031
	(0.096)	(0.080)	(0.100)	(0.076)
T3 × HSDS	-0.137	0.004	-0.070	-0.139**
	(0.096)	(0.077)	(0.103)	(0.065)
T4 × HSDS	-0.102	-0.068	-0.000	-0.055
	(0.088)	(0.072)	(0.092)	(0.080)
T5 × HSDS	0.029	-0.012	-0.025	0.052
	(0.099)	(0.076)	(0.097)	(0.070)
Observations	7,913	7,913	7,913	7,913
R-squared	0.155	0.210	0.185	0.057

Variables of Interest	Misinformation Index	Susceptibility Index	Confidence Index	Follow COVID-19 protocols
T1 × HSDS	-0.043	0.043	0.144**	0.043
	(0.050)	(0.065)	(0.068)	(0.065)
T2 × HSDS	0.002	0.089	0.020	0.114
	(0.058)	(0.080)	(0.065)	(0.081)
T3 × HSDS	0.011	0.054	-0.030	-0.022
	(0.056)	(0.068)	(0.069)	(0.073)
T4 × HSDS	0.018	0.106	0.043	0.085
	(0.056)	(0.085)	(0.062)	(0.071)
T5 × HSDS	0.010	0.051	0.001	-0.008
	(0.063)	(0.086)	(0.084)	(0.076)
Observations	7,913	7,913	7,913	7,913
R-squared	0.100	0.091	0.106	0.093

Note: All the outcome variables (except dummies and proportions) or indices are control group-standardized to create z-scores, following Kling, Liebman, and Katz (2007) so that each variable has a mean 0 and standard deviation 1 for the control group. All regressions control variables in the main specifications and block-fixed effects. There are a total of 23 blocks from the 3 districts in the state of Uttar Pradesh. Standard errors clustered at the location level are in parentheses. Social desirability score is a baseline measure of the participant's propensity to give socially desirable answers. We construct the social desirability score using the 13-item Social Desirability Scale collected at baseline, following Crowne & Marlowe (1960). A high social desirability score (HSDS) refers to having a score above or equal to the median for the sample. *** p<0.01, **

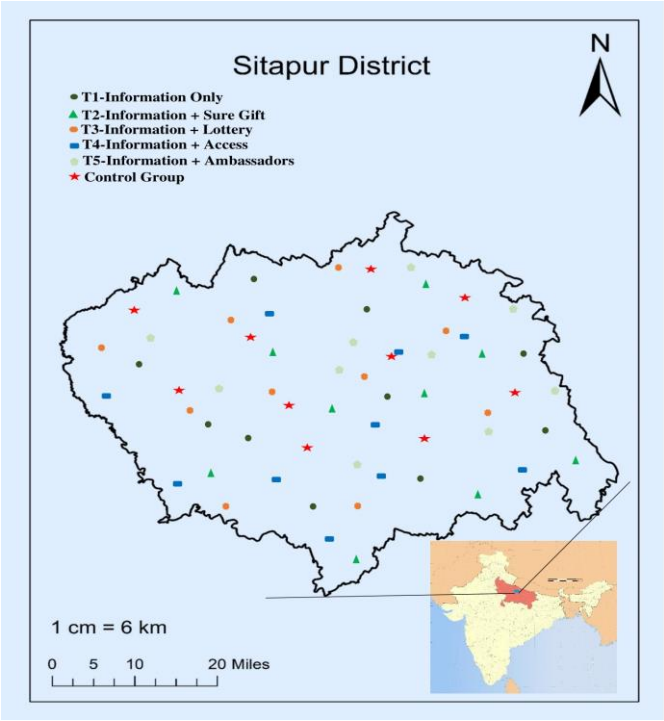
Appendix B: Map of study areas

Figure B.1: Map showing selected locations in the district of Farrukhabad



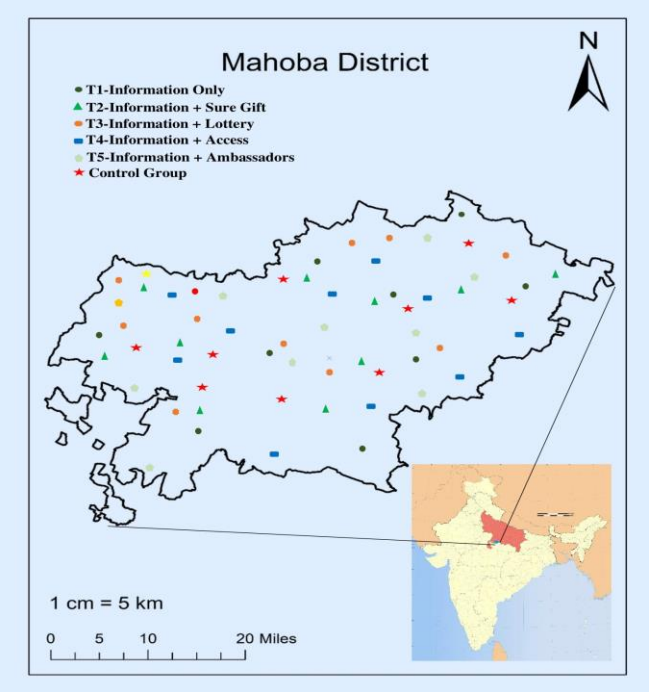
Note: One of the study sites for this project is the district of Farrukhabad, within the state of Uttar Pradesh. The map above illustrates selected locations in the district of Farrukhabad. The six different symbols indicate assignment to the different study arms.

Figure B.2: Map showing selected locations in the district of Sitapur



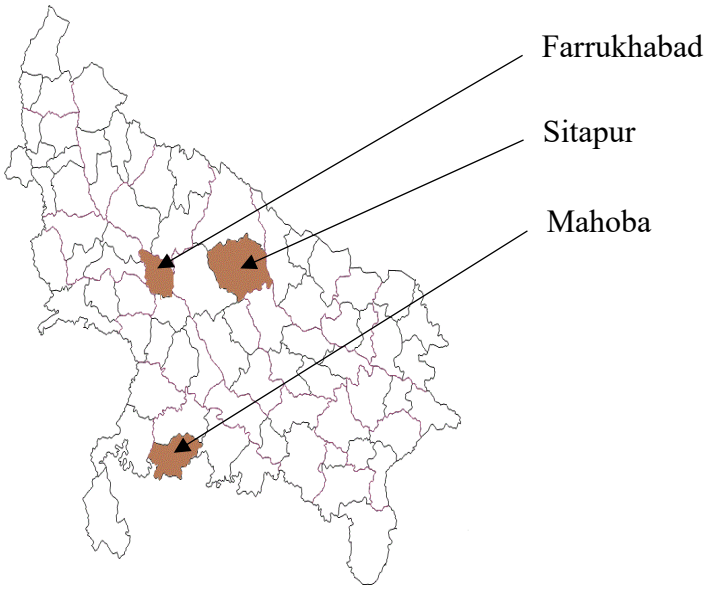
Note: One of the study sites for this project is the district of Sitapur, within the state of Uttar Pradesh. The map above illustrates selected locations in the district of Sitapur. The six different symbols indicate assignment to the different study arms.

Figure B.3: Map showing selected locations in the district of Mahoba



Note: One of the study sites for this project is the district of Mahoba, within the state of Uttar Pradesh. The map above illustrates selected locations in the district of Mahoba. The six different symbols indicate assignment to the different study arms.

Figure B.4: Combined Map of Study Site: Uttar Pradesh



Appendix C: Variable Description

Variables	Description
Panel A: Primary outcomes	
Vaccination (First dose)	Indicator variable that is equal to 1 if the respondent took the first dose of the COVID-19 vaccination after the intervention and presented proof of vaccination during the verification stage, and 0 otherwise.
Vaccination (Both doses)	Indicator variable that is equal to 1 if the respondent took both doses (first as well as second) of the COVID-19 vaccination after the intervention and presented proof of vaccination during the verification stage, and 0 otherwise.
Registered	Indicator variable that is equal to 1 if the respondent has already registered for vaccination (after the intervention) and presented proof of registration during the verification stage but has not been vaccinated yet, and 0 otherwise.
Intention	Indicator variable that is equal to 1 if the respondent neither received vaccination so far nor got themselves registered (as of the verification stage) but is willing to get vaccinated soon and 0 otherwise. This variable therefore measures whether an individual is willing to get vaccinated.
Panel B: Vaccination Status of others	
Share of males vaccinated	Represents the share of eligible males (above the age of 12 years) in the respondent's household who has received the first dose of COVID-19 vaccination.
Share of females vaccinated	Represents the share of eligible females (above the age of 12 years) in the respondent's household who has received the first dose of COVID-19 vaccination.
Share of household members vaccinated (Overall)	Represents the share of eligible males and females (above the age of 12 years) in the respondent's household who has received the first dose of COVID-19 vaccination.
Neighbours vaccinated	Indicator variable that is equal to 1 if any of the respondent's neighbours (anyone of the neighbours residing on the left, right, front, or back house of the respondent) took up the first dose of vaccination in the last two months (between the intervention and verification stages), and 0 otherwise.
Friends vaccinated	Indicator variable that is equals to 1 if any of the three closest friends of the respondent (the three closest friends identified at baseline) got the first dose of vaccination during the last two months (between the intervention and verification stages), and 0 otherwise.
Panel C: Secondary outcomes	
Knowledge Index	This index variable is constructed from responses to a set of 12 true/false questions related to the vaccines and its ability to protect from the virus and save from hospitalizations, ability to provide immunity, number of doses required, protections to be taken post-virus infection, side effects such as allergic reaction and deaths, whether pregnant women can take it, etc, where a higher value means that the respondent has better knowledge/correct information related to the virus and the vaccines.
Susceptibility Index	This index variable is constructed from 4 questions related to how the respondent is worried about COVID-19 infection. It captures whether the respondent is worried about self, family members and anyone catching COVID-19 infection, both now and in the next few months. This index captures attitudes towards different statements ranging from strongly disagree to strongly agree, where lower values indicate that the respondent is less worried. The susceptibility index has

	been created from the health belief model module. The responses to each of these statements were added to create the susceptibility index on a scale of 0 to 16.
Misinformation Index	This index variable is constructed from responses to 9 questions related to misinformation/rumours about the COVID-19 disease and its vaccine. This index captures attitudes towards different statements ranging from strongly disagree to strongly agree, where lower values mean less misinformation. The statements range from infertility, unknown side-effects in the long run, government vaccines are ineffective, COVID-19 vaccination is a government strategy to control population, the vaccine was not tested rigorously before being launched, the vaccine has ingredients against religion, there is a tracking chip in the vaccine, the vaccine is a big con designed by pharmaceutical companies and that the authorities are promoting COVID-19 vaccine for political and financial gain, not to improve people's health. All these statements capture the fake rumours that were being spread at the time of the study. The misinformation index has been created from the health belief model module. The responses to each of these statements were added to create the misinformation index on a scale of 0 to 36.
Confidence Index	This index variable is constructed from responses to 3-questions that capture confidence of the respondent about (i) the efficacy of COVID-19 vaccine distribution strategy adopted by the government and public health system, (ii) the efficacy of the COVID-19 vaccines, and (iii) the current public health system. These questions were elicited on 0-10 Likert scale, where 0 is *"not at all confident"* to 10 is *"extremely confident"*. The responses to each of these statements were added to create the confidence index on a scale of 0 to 30.
Follow COVID-19 protocols	This index variable is constructed from responses to the following question: "*What steps have you taken during the last week to keep you and your family safe from COVID-19?"* with respect to eight safety measures such as wearing mask, physical distance, etc, where each dummy takes the value 0 if they follow a protocol and 1 otherwise. Higher value on a scale of 0 to 8 means less compliance to protocols.
Panel D: Subjective wellbeing	
Mental Health Index	This index variable is constructed from the self-reported mental health status question asked to the respondents. This variable is constructed from responses to question that ask *"On an average, how do you feel about your mental health has been in general in the past 7 days?* on a scale of 1 (very bad) to 5 (very good).
Physical Health Index	This index variable is constructed from the self-reported physical health status question asked to the respondents. This variable is constructed from responses to question that ask *"On an average, how do you feel about your physical health has been in general in the past 7 days?* on a scale of 1 (very bad) to 5 (very good).
Life satisfaction Index	This index variable is constructed from the individual's overall satisfaction with their life question asked to the respondents. This variable is constructed from responses to question that ask *"All things considered, how satisfied are you with your life? (as a whole nowadays) Pick a number between 0 and 10 to indicate how satisfied you are. The more satisfied you are, the higher the number you should pick. The less satisfied you are, the lower the number."*
Panel E: Respondent characteristics	
Age	Respondent's age (in years)
Male	Indicator variable equal to 1 for male respondents, and 0 for female
Married	Indicator variable equal to 1 for married respondents, and 0 for otherwise
Muslim	Indicator variable equal to 1 for Muslim respondents, and 0 for otherwise

General	Indicator variable equal to 1 for General caste respondents, and 0 for otherwise
Rural	Indicator variable equal to 1 for living in rural area, and 0 for otherwise
Joint family	Indicator variable equal to 1 for living in a joint family, and 0 for otherwise
Own house	Indicator variable equal to 1 for owning a house, and 0 for otherwise
Have higher secondary education	Indicator variable equal to 1 if the respondents have completed higher secondary-level education, and 0 for otherwise
Employed	Indicator variable equal to 1 for respondents who are employed, and 0 for otherwise
Non-poor status	Indicator variable equal to 1 for respondents living in a non-poor household based on monthly household expenditure, and 0 for otherwise

Note: *Index construction*— We construct index variables in two steps. First, we re-code all outcomes belonging to the same domain so that higher values correspond to treatment effects in the same direction (improvements in the outcomes) except for following post-intervention COVID-19 protocols. Second, all the indices are control group-standardized to create z-scores following Kling, Liebman, and Katz (2007) so that each variable has a mean 0 and standard deviation 1 for the control group.

Appendix D. Complier Analysis Framework

To analyze how individuals select into vaccination based on our interventions, we first categorize them into three groups. This categorization is crucial because it allows us to understand who is affected by the intervention and to estimate the intervention's impact on different subpopulations. The first group consists of always-takers, who would get vaccinated regardless of receiving our intervention. The second group comprises never-takers, who would not get vaccinated even if offered our intervention. The third group contains compliers, whose vaccination decision is changed by receiving our intervention.

We define $T \in \{0,1\}$ as the treatment assignment indicator, where $T = 1$ represents treated individuals (received information plus an additional intervention) and $T = 0$ represents the control group (did not receive any intervention). For each individual, *H(t)* takes two potential values: *H(1)* represents whether they would get vaccinated if they received our intervention (e.g., information plus accessibility assistance), while *H(0)* represents whether they would get vaccinated if they were in the control group. For example, a complier would have *H(1)*=1 (would get vaccinated if offered the intervention) and *H(0)*=0 (would not get vaccinated without the intervention). Using this notation, we can formally define our three groups. Always-takers are characterized by $H(1) = H(0) = 1$, indicating they would be vaccinated regardless of treatment assignment. Never-takers are characterized by $H(1) = H(0) = 0$, showing they would remain unvaccinated regardless of assignment. Compliers are characterized by $H(1) = 1$, $H(0) = 0$, indicating they would get vaccinated only when treated.

Our analysis relies on three key assumptions. First, we assume the existence of a first stage, meaning the intervention affects vaccination decisions. Second, we assume monotonicity, meaning there are no defiers—individuals who would get vaccinated only when not offered the intervention, that is, no one with $H(1) = 0$ and $H(0) = 1$. Third, we assume independence, meaning treatment assignment is random and independent of potential outcomes.

For any baseline characteristic *X*, we can write $E(X|H(1) = 1)$ as the sum of always-takers and compliers components:

$$E(X|H(1) = 1) = E(X|H(1) = 1, H(0) = 1) \cdot P(H(0) = 1|H(1) = 1) + E(X|H(1) = 1, H(0) = 0) \cdot P(H(0) = 0|H(1) = 1) \quad (2)$$

where E[$X|H(1) = 1, H(0) = 1$] denotes the characteristics of always-takers, while E[$X|H(1) = 1, H(0) = 0$] denotes the characteristics of compliers. We obtain the proportion of always-takers, P_a, by calculating the proportion of vaccinated individuals in the control group, while the proportion of never-takers, P_b, is obtained by calculating the proportion of unvaccinated individuals in the treatment group. The proportion of compliers, P_c, equals 1- P_a - P_b.

Using this information, we obtain P($H(0) = 1|H(1) = 1$) = $Pa/(Pa + Pc)$, which gives the information on the proportion of always-takers among treated & vaccinated individuals. The term P($H(0) = 0|H(1) = 1$) = $Pc/(Pa + Pc)$ gives the proportion of compliers among treated & vaccinated individuals. From the monotonicity assumption we can write E($X|H(1) = 1, H(0) = 1$) = E($X|H(0) = 1$).

Next, we rearrange equation (2) to calculate characteristic of compliers

$$E[X|H(1) = 1, H(0) = 0] = ((P_a + P_c) / P_c)\cdot[E[X|H(1) = 1] - (P_a / (P_a + P_c))\cdot E[X|H(0) = 1]] \quad (3)$$

This equation allows us to estimate the mean characteristics of compliers using three components from our data: the mean characteristics of treated individuals who got vaccinated E[$X|H(1) = 1$], the mean characteristics of control individuals who got vaccinated E[$X|H(0) = 1$], and the proportions P_a and P_c calculated from vaccination rates.

Appendix E: Pamphlets and Flyers

Coronavirus Vaccine

Some misconceptions and facts about vaccines

Myth	Fact
Pregnant women and mothers who breastfeed their babies cannot get vaccinated.	**There is no barrier to vaccination for pregnant women or those who are breastfeeding or wanting to have children. The vaccine is safe for them too.**
Many died from vaccinations	This idea is not entirely correct. The **vaccine is safe**, it does not cause death.
No vaccine is needed if you had **COVID earlier**	**According to the World Health Organization**, those who have already been **infected with the coronavirus should also be vaccinated**
No need to wear a mask after vaccination	**Wearing a mask, hand sanitizing** and **maintaining physical distance** will be essential as long as there is an epidemic

Get vaccinated || Keep yourself and your family healthy || Get rid of the epidemic

ADB
Asian Development Bank

Gift basket worth Rupees 400

XYZ Salt (1 Kg)

Sugar (1 Kg)

Mustard Oil (1 Lt.)

Arhar Dal (1 Kg)

One out of 20 individuals (if they get vaccinated) will get one of these gifts worth Rupees 8000!

LCD TV

Mixer + Dinner Set

Cooler

Inverter

Washing Machine

Mobile Phone

Appendix F: Intervention Protocol

Protocol for Information Only (T1) Treatment

This document provides detailed guidelines to the research team to execute the intervention well. For this intervention, we provide a brief description of information related to COVID-19 and the available vaccines (the benefits and side effects) to the participants in addition to the payment information (following the protocol). Research team must follow the protocol closely in all circumstances. Problems not covered in the guidelines need to be consulted with PIs.

Treatment information for discussion

Instruction for the vaccine para-counsellors/social workers (this is not for the participants): Following topics should be discussed with the counselee/participants (unvaccinated individuals aged 18-65 years only selected for the research during the listing phase) in person. The vaccine para-counsellors/social workers will discuss these topics in simple language so that the counselee can easily understand. The vaccine para-counsellors/social workers should talk slowly and with empathy so that the counselee understands everything. The vaccine para-counsellors/social workers should not take more than 10-15 minutes with each counselee. Offer a mask to the participant and speak with him/her when he/she is masked and follow covid protocols such as always maintaining distance from the participant. Follow the information sheet carefully.
Salaam-walekum/Namaste!!

I am _____ from IIT Kanpur. How are you? Remember, we visited you last month and spoke with you. I believe you are doing well. We have visited you today to discuss how to protect oneself and the family from the virus with the government funded free vaccines. In today's time, we must keep our family and ourselves healthy and safe. **All discussions with you and your identity will remain confidential, anonymous, and safe and will not be disclosed to anyone. This anonymized information will only be used for research purposes, but no one will be identified, and researchers will not have access to your name.**

Let us confirm. Did you receive any vaccine so far?
0=No;
1=Yes, 1st vaccine;
2=Yes, 2nd vaccine.
3= Yes, 3rd vaccine (booster dose)

The participant should be unvaccinated and must not have received even a single dose of any COVID-19 vaccine.

Which vaccine have you taken so far?
0=No vaccines taken.
2= Covishield
3= Covaxin
4= Sputnik

Instruction for the vaccine para-counsellors/social workers (this is not for the participants): *Once you have confirmed that the participant is unvaccinated, speak (slowly and calmly as if as part of a conversation so that the participant is comfortable) with the participant (and introduce to him/her) the context of the COVID-19 disease and the importance of the vaccine. Then start the information dissemination process like this: If you have not already vaccinated yourself, you should* ***get vaccinated at the earliest as:***

- ***Vaccination builds protection:*** COVID-19 vaccines help your body develop immunity and are effective at preventing the disease. The vaccines are safe for the wider population as it has been tested by the vaccine maker and other agencies.

- ***It's safer than getting the disease:*** COVID-19 can have complications that are serious and sometimes life-threatening, the vaccines are comparatively safer and can build protection against the disease. ***It is all safe and highly recommended.*** *As of early May 2022, 60% (6 out of 10) of Indians have received both doses of the COVID-19 vaccine and about 70% (or 7 out of 10) have received atleast one dose of the vaccine.*

  It is quite common to have mild- to moderate-side effects post-vaccination as your immune system will be fighting the virus.

  Mild side effects from COVID-19 are soreness or redness around the injection site, mild fever, tiredness, headache, chills and diarrhea, and muscle or joint aches, are normal and not a cause for alarm. These mild side effects can be managed with a day's rest (and usually will go away on it's own) and by taking medicines for fever and pain (also being provided at the vaccination sites), if needed. However, not experiencing side effects does not mean that the vaccines are ineffective, as everybody responds differently to the vaccines.

  Serious complications after vaccination are rare and coincidental, however, if it happens: Contact the facility where you received the vaccine, you will get proper medical care to deal with your symptoms.

- ***Vaccination will help stop the pandemic:*** The vaccine can slow the spread of COVID-19, protect individuals, and put an end to the pandemic. The more people are vaccinated, the harder it will be for the virus to spread, and it will be safer for you and your loved ones.

Instruction for the vaccine para-counsellors/social workers (this is not for the participants): *Remember to mention that the research team is fully vaccinated. Say that all of us are fully vaccinated and are completely safe and healthy even after receiving both the vaccines.*

With so many **different types of vaccines (Covishield, Covaxin, Sputnik, etc)** being produced to reduce the degree of harm due to covid-19, **there is hope for a better tomorrow - to get back to what was normal** - in the near future.

- **you can register on the spot for the vaccine (or walk-in), or you can register on the Arogya Setu app/Cowin app and get an appointment for your vaccine.**
- **pregnant and lactating woman can also take Covid-19 vaccines.**

- **those who already had Covid can also get vaccinated.** Infact, the natural immunity can weaken over time and so the vaccine only acts as a booster that strengthens the immune response. There have also been some instances of people getting infected a second time, so getting vaccinated is even more important.

Note: Two types of physical conditions should not be vaccinated.

- If you have a history of allergic side effects to the ingredients in the Covid-19 vaccine, you should not be vaccinated.
- If you are currently ill or you have corona symptoms.

We must keep in mind that the vaccine reduces the chances of dying from coronavirus should you contract the virus. The vaccine **does not eliminate your chances of getting the virus completely but it protects you**. It is important to remember that the **vaccine only reduces the degree of harm (including significantly reducing chances of hospitalization with serious symptoms and death) from the virus**. This is why, after the vaccine, it is equally important to follow the basic guidelines even after getting vaccinated until the MoHFW recommends otherwise.

However, do note the fight outside is not over yet. Stay safe:
We all know that corona has been a part of our daily life for a while now. However, we must realize that, although the government rules have become less strict – there are lesser restrictions; it does not mean that the corona virus issue is over. Please follow these do's & don't in order to reduce your chances of getting corona and keeping everyone safe (MoHFW; WHO) in the days to come:

Stay safe:

- **Maintain physical distance of minimum 6 feet or 2 gaj from others.**
- **Wear re-usable face-cover/mask at all times.**
- **Practice frequent hand washing. Wash hands with soap and water** (for 20 seconds with soap and water) **or use alcohol-based hand rub. Wash hands even if they are visibly clean.**

REMINDER & REVISE: So, overall the vaccine para-counsellors/social workers should remind the counselee again before wrapping up *(remind them again and again):*

- **Get vaccinated at the earliest as it is safe**
- **Keep following Covid guidelines even after getting vaccinated.**

Have you learned something new today, from what we have just discussed?
(If Yes) Could you please mention them? ----------
(If No, Write 0 here) ----------
Will you follow the instructions given to you by the social workers/coaches above? _____

We hope that you will follow these instructions. Be careful. Will get in touch with you again soon after 30 days to see if you have been vaccinated. Salam/Nameste/Adab!!

Protocol for Information + Sure Gift (T2) Treatment

Instruction for the vaccine para-counsellors/social workers (this is not for the participants): *Before discussing the payment protocol, make sure to draw back the attention of the participants to what you are going to say next. This is very important and make sure that the participants understand that there is a gift/compensation component in the experiment in addition to the information part. They must be very careful in conveying this message. Their tone must be empathetic towards respondents.*

Say this: *Dear participant! I hope you understood the information that we have shared with you today. I believe that we have been able to convince you that the vaccines are safe and can protect you from significant harm in the future. Now, we are going to let you know something very interesting. If you get vaccinated with the first dose of the vaccines that are being made available by the government by the next time we* ***visit you after 30 days****, we will give you a sure gift worth INR 400 (subject to the research team verifying your vaccination status).*

To clarify, yes, you heard it right!

You get vaccinated by the time we come back after 30 days and show us the proof of vaccination or the research team verifies your vaccination status online using the registration number/phone number you used for registration, you will get ***sure gift worth INR 400****.*

No strings attached!! You do not have to do anything else. Only get vaccinated and prove it to us/research team.

This compensation, however, is being offered ***only to you*** *(the participant selected by us at the time of the listing) at the moment and not to any other member of your household. Your other household members/neighbours/friends not part of this study is however free to get vaccinated if they want to but they will not get any compensation from us for that purpose.*

How to make the payment?

Upon verification of the vaccination status, the research staff will arrange and give gift worth INR 400 participants (and only to them and not to others) themselves and not in any public place so that neighbors cannot easily spot it. Even though the amount is probably small, some neighbors might protest to the research staff for not including them. Although violent acts towards research staff might not happen, but research staff must be very careful in handling the transaction. So, it is crucial that the research team be as discrete as possible so that neighbors do not find out.

REMINDER & REVISE: So, overall the vaccine para-counsellors/social workers should remind the counselee the following again before wrapping up *(remind them again and again):*

- **Get vaccinated at the earliest as it is safe.**
- **Keep following Covid guidelines even after getting vaccinated.**
- **Get vaccinated, provide proof of vaccination and claim your gift worth INR 400 from us.**

If you have any queries about the vaccine or the scheme, you can call the helpline @ 1075 (toll-free)

Have you learned something new today, from what we have just discussed?

(If Yes) Could you please mention them? ----------

(If No, Write 0 here) ----------

Will you follow the instructions given to you by the social workers/coaches above? _____

We hope that you will follow these instructions. Be careful. Will get in touch with you again soon after 30 days to see if you have been vaccinated. Make sure you get vaccinated at the earliest.

Salam/Nameste/Adab!!

Protocol for Information + Lottery (T3) Treatment

Instruction for the vaccine para-counsellors/social workers (this is not for the participants): *Before discussing the payment protocol, make sure to draw back the attention of the participants to what you are going to say next. This is very important and make sure that the participants understand that there is a gift/compensation component in the experiment in addition to the information part. They must be very careful in conveying this message. Their tone must be empathetic towards respondents.*

Say this: *Dear participant! I hope you understood the information that we have shared with you today. I believe that we have been able to convince you that the vaccines are safe and can protect you from significant harm in the future. Now, we are going to let you know something very interesting. If you get vaccinated with the first dose of the vaccines that are being made available by the government by the next time we* ***visit you after 30 days****, we will give you an opportunity to participate in a lottery (subject to the research team verifying your vaccination status).*

To clarify, yes, you heard it right!

You get vaccinated by the time we come back after 30 days and show us the proof of vaccination or the research team verifies your vaccination status online using the registration number/phone number you used for registration, you will get ***to participate in a lottery****. As part of the lottery* ***one out of 20 individuals like you (who participated in the study, got the information from us and got vaccinated) will be randomly selected by the research team to receive a gift worth INR 8,000****. The gift will be made available to you within a week of the lottery results being declared.*

No strings attached!! You do not have to do anything else. Only get vaccinated and prove it to us/research team to participate in the lottery. Enumerators must emphasize that the lottery procedure will be transparent, announcement of the winner will be delivered by text message, and if respondents win, their identity will be protected (names will not be made public).

This opportunity to participate in a lottery, however, is being offered ***only to you*** *(the participant selected by us at the time of the listing) at the moment and not to any other member of your household. Your other household members/neighbours/friends not part of this study is however free to get vaccinated if they want to, but they will not get any money/financial compensation from us for that purpose.*

How to make the payment?

Upon verification of the vaccination status and the lottery results being out, the research staff present must give the gift to the winner of the lottery (and only to them and not to others) themselves and not in any public place so that neighbors cannot easily spot it. As the gift is probably large, some neighbors might protest to the research staff for not including them. Although violent acts towards research staff might not happen, but research staff must be very careful in handling the transaction. So, it is crucial that the research team be as discrete as possible so that neighbors do not find out.

REMINDER & REVISE: So, overall, the vaccine para-counsellors/social workers should remind the counselee the following again before wrapping up *(remind them again and again):*

- **Get vaccinated at the earliest as it is safe.**
- **Keep following Covid guidelines even after getting vaccinated.**
- **Get vaccinated, provide proof of vaccination and participate in the lottery.**

If you have any queries about the vaccine or the scheme, you can call the helpline @ 1075 (toll-free)

Have you learned something new today, from what we have just discussed?

(If Yes) Could you please mention them? ----------

(If No, Write 0 here) ----------

Will you follow the instructions given to you by the social workers/coaches above? _____

We hope that you will follow these instructions. Be careful. Will get in touch with you again soon after 30 days to see if you have been vaccinated. Make sure you get vaccinated at the earliest.

Salam/Nameste/Adab!!

Protocol for Information + Access (T4) Treatment

Instruction for the vaccine para-counsellors/social workers (this is not for the participants): *Before discussing the accessibility protocol, make sure to draw back the attention of the participants to what you are going to say next. This is very important and make sure that the participants understand that this is a completely free help (with registering and accessing) component in the experiment in addition to the information part. The vaccine para-counsellors/social workers must tell respondents that this is not a `bribe' or 'direct financial incentive' for vaccination but unconditional help to participants. They must be very careful in conveying this message. Their tone must be empathetic towards respondents.*

The registration process:

- *The research team will offer help to participants, to those who are willing to register for enrollment but cannot do it due to several reasons, such as inability to use internet, unavailable home internet connection, or do not have information on where and how to register.*
- *Barring spotty signal, the research team must ensure that they have internet connection all the time during this intervention.*
- *Register and book the appointment right after giving the information to the participants.*
- *To help schedule an appointment, the research team should coordinate with the participants beforehand to get an appointment and try to book this appointment in the same week or within two weeks from the time of appointment.*
- *After successfully registering participants for vaccine, the research team must inform participants about the date and place. Write the information down on a card/piece of paper (using the format prepared by the core research team).*
- *The research team should remind participants through text message and/or phone call about the vaccine appointment a day before the date.*

How to connect the information section to the accessibility section?

Say this: *Dear participant! I hope you understood the information that we have shared with you today. I believe that we have been able to convince you that the vaccines are safe and can protect you from significant harm in the future. Now, we are going to let you know something very interesting. If after receiving the information from us, you feel that you would like to get vaccinated with the first dose of the vaccines that are being made available by the government, we will help you with the registration/enrolment process, help you identify the nearest vaccination centre, and will remind/encourage you to get fully vaccinated at the right time. All these facilities will be made available to you completely free of cost.*

To clarify, yes, you heard it right! If you are willing to get vaccinated, our team can help you with identifying the nearest vaccination centre, getting you registered and even travelling to get both doses of vaccines, and reminding/encouraging them to get fully vaccinated at the right time.

For vaccination from the nearest vaccination centre and completing your vaccination process, you must:

- ✓ Carry your Photo ID for verification
- ✓ Wait for 30 minutes after you have been vaccinated, so that health workers are there to help in case of any immediate reactions.
- ✓ Do take the second dose at due date to complete the double dose.
- ✓ A booster dose can also be taken after the two doses to provide extra protection.

Photo verification for registration:

Any of the below mentioned Photo ID can be used at the time of registration:

- Voter ID/Aadhar/PAN Card
- Driving License
- Passport
- Pension documents with photograph
- Passbook with photograph issued by Bank/Post Office
- Health Insurance Smart Card issued under the scheme of Ministry of Health and Family Welfare

Note: Produce the Same Photo ID at the vaccination site for verification

Remember when we are safe, Nation is safe!

REMINDER & REVISE: So, overall, the vaccine para-counsellors/social workers should remind the counselee again before wrapping up *(remind them again and again):*

- ➢ **Get vaccinated at the earliest as it is safe.**
- ➢ **Keep following Covid guidelines even after getting vaccinated.**
- ➢ **We are here to help you out, only if you ask for it.**

If you have any queries about the vaccine or the scheme, you can call the helpline @ 1075 (toll-free)

Have you learned something new today, from what we have just discussed?

(If Yes) Could you please mention them? ----------

(If No, Write 0 here) ----------

Will you follow the instructions given to you by the social workers/coaches above? _____

We hope that you will follow these instructions. Be careful.

Salam/Nameste/Adab!!

Follow the prescribed process for vaccination registration.

- Registered on Co-WIN system using a valid Photo ID
- Following registration, beneficiary will receive SMS massages on their registered mobile number-
    - First SMS will be generated on confirmation of registration
    - Second SMS will be generated mentioning the date, time and place of vaccination
    - Third SMS will be generated after 1st dose of vaccination
- On the vaccination site, at entry point Vaccination Officer-1 (police/home guard/ civil defence/NCC/NSS/NYK) for pre-checking registration of beneficiary and Photo ID verification. Will also assist in making queue/crowd management.
- Vaccination Officer No. 2 will authenticate/verify documents on Co-Win.
- Vaccination Officer will vaccinate the beneficiary.
- Following vaccination, all beneficiaries should wait in the observation area for 30 minutes.
- Vaccination officer 4 and 5 to ensure 30 minutes wait, monitoring and guiding the non-registered beneficiaries.
- Come for the second dose of vaccine on the due date as per SMS received.
    - Source: Adapted from the Ministry of Health and Family Welfare, Government of India.

Protocol for Information + Ambassador (T5) Treatment

Instruction for the vaccine ambassadors and para-counsellors/social workers (this is not for the participants): *This specific treatment will be dealt by two individuals in a group: one from the research team and the chosen ambassador. While the standard information session will be provided by the research team, the myth section should be dealt with by the chosen ambassadors. Before introducing the ambassador and discussing the myth protocol, make sure to draw back the attention of the participants to what you are going to say next. This is very important and make sure that the participants understand that the ambassador is here to answer any queries and address the myths associated with the disease and the available vaccines. They (both the research staff as well as the ambassadors) must be very careful in conveying this message. Their tone must be empathetic towards respondents.*

How to connect the information section to the myth section?

Say this: *Dear participant! I hope you understood the information that we have shared with you today. I believe that we have been able to convince you that the vaccines are safe and can protect you from significant harm in the future. Now, we are going to let you know something very interesting. The ambassador (one of you) is here to speak with you and help you understand the importance of vaccines amidst the disease.*

REMINDER & REVISE: So, overall, the vaccine para-counsellors/social workers should remind the counselee again before wrapping up *(remind them again and again):*

- **Get vaccinated at the earliest as it is safe**
- **Keep following Covid guidelines even after getting vaccinated.**

If you have any queries about the vaccine or the scheme, you can call the helpline @ 1075 (toll-free)

Have you learned something new today, from what we have just discussed?

(If Yes) Could you please mention them? ----------

(If No, Write 0 here) ----------

Will you follow the instructions given to you by the social workers/coaches above? _____

We hope that you will follow these instructions. Be careful. Will get in touch with you again soon after 30 days to see if you have been vaccinated. Make sure you get vaccinated at the earliest.

Salam/Nameste/Adab!!

Content for Promoting Covid-19 vaccination in India
Materials for the ambassadors (Misconception part)

A. FAQ: frequently asked questions and suggested answers

1. Is this COVID-19 vaccine safe?
   Vaccines are proven safe and can save our lives. The government only provides COVID-19 vaccines that are proven safe and have passed clinical trials and have obtained an Emergency Use Permit from the Government
   As of June 2022, more than 60% (6 out of 10) of Indians have received both doses of the COVID-19 vaccine and about 70% (or 7 out of 10) have received atleast one dose of the vaccine.
2. I and/or my family members have inherited diseases such as high blood pressure, gout, diabetes, and heart disease. Can we still be vaccinated?
   Can. People with co-morbidities, such as high blood pressure (hypertension), diabetes (diabetes), autoimmune, heart problems, can still be vaccinated on the advice of health workers. Consult them before getting vaccinated.
   Diabetes and hypertension are two comorbidities that are at high risk for people with COVID-19. Therefore, it is highly recommended to vaccinate when the body's condition is under control on the recommendation of health workers.
3. I and/or my family members have an allergic disease, can we still be vaccinated?
   May be with the approval of health workers. You must inform the health officer about your history of allergies so far. However, if there are severe allergic complaints after receiving the 1st dose of vaccine, the second dose of vaccination is not recommended.
4. Do vaccines make diseases in our bodies worse?
   Vaccines do not increase or worsen disease or cause death. In fact, if we are not vaccinated, our bodies are more susceptible to COVID-19 and prevent us from more severe illness and death due to COVID-19.
5. What about vaccine side effects? What is the impact on the health of the person being vaccinated?
   Not everyone experiences side effects after vaccination. Side effects from vaccines are normal. This shows that the vaccine is building the immune system so that if the Corona virus enters, our bodies are ready to withstand and expel it so that we don't get sick or seriously ill, and even die. Like if we ride a motorcycle and wear a helmet. When you first wear a helmet, it's certainly not good, but we feel the benefits of a helmet as a head protector in the event of an accident.
6. What do I do if I experience vaccine side effects?
   Side effects of the injected vaccine are normal reactions, are mild, and temporary. If you experience any reactions/symptoms/complaints after vaccination, please remain calm. If there is a reaction such as pain, swelling or redness at the injection site, apply cold compresses to the site. If fever arises, compress / bathe with warm water, drink plenty of water and rest. Take medication as directed by a health worker if necessary.

   Immediately contact health workers and the nearest Health centre if symptoms last three or more days, or if there is a very severe reaction.

7. From the information we received either on television or on social media, many side effects occur after vaccination and even death. Is it true that if vaccinated, we can get seriously ill, even die?
   No, it is not true. In fact, if we are not vaccinated, our bodies are weaker and more susceptible to diseases related to COVID-19.
8. I and/or my family members are elderly and we do not do much activities outside, why do we still need to get vaccinated?
   Vaccines are given to protect all age groups. Even if you are elderly (over 60 years) and rarely go out of the house, you still need to be vaccinated so that your immune system is stronger against disease. In fact, vaccines really help the elderly because the immune system of the elderly is not as good as that of younger people. In fact, if we are not vaccinated, our bodies are weaker and more susceptible to diseases related to COVID-19.
9. If we want to be vaccinated, where can we get the vaccine?
   Contact the nearest health centers.
10. If we want to be vaccinated, what should we do before getting vaccinated?
    Adequate rest before vaccination day. At the vaccination site, a thorough health check will be carried out by the officer to find out whether you can or can't wait to vaccinate. This examination includes checking body temperature, blood pressure, history of allergies, and other diseases.
11. After we are vaccinated, they say we will be protected from the Corona virus, does that mean we no longer need to wear masks after the vaccine?
    The results of the current study prove that a two-dose vaccination can prevent us from being infected with the COVID-19 virus. However, implementing health protocols after vaccination such as wearing masks, keeping a distance, and washing hands with soap is still highly recommended to reduce the potential for transmission of the COVID-19 virus.
12. Usually I see and hear information about vaccines on social media, television, friends and neighbors, what kind of information and from whom should I trust?
    The Ministry of Health and health workers can be a reference for reliable information on vaccines. Contact local health workers if there is information that you need or clarify the truth.
13. I and/or my family members have already received dose 1 vaccine, why should we be vaccinated again?
    The study proves that full vaccination (two doses) provides adequate immunity to protect us strongly from COVID-19. Therefore, we need to complete the vaccine dose by vaccinating twice (including third dose when available).
14. Why do people who have been vaccinated twice still need another injection?
    Full vaccination can prevent us from being severely ill. Vaccines give us immunity against certain diseases. However, this immunity may diminish after a while. For the COVID-19 vaccine, it is recommended to get the 3rd injection (booster) about 6 months from giving the 2nd dose of vaccine to increase our antibodies and immunity again.

B. Myth Vs Facts for the vaccine ambassador information session

Count	Myth	Fact
1	Since COVID-19 vaccines are experimental, they cannot be trusted. OR The vaccine is unsafe because it was rushed.	Covid vaccine has been developed following standard protocol. Despite accelerated pace, these vaccines had passed rigorous clinical trials (large sample and well-designed) as any other drugs to make sure that they are safe and effective. Drug companies and governments spent a lot of money and involve many researchers to develop these vaccines. Most importantly, they did not compromise on the vaccine quality.
2	Vaccines can impact fertility and sexual function	This is completely incorrect and without evidence. Small side effects of vaccine are not uncommon. Like most of the vaccines, this vaccine may some side effects. **There is no evidence in the country who have had severe side effects. The only side effects someone can experience is :** Soreness or redness around injection site Mild fever Tiredness Headache Muscle or joint aches But again, these side effects may sustain only for the next 24 hours after vaccination. Other side effects beside this are without evidence. Therefore, it will not impact fertility and sexual function
3	Natural immunity is better than getting the vaccine-immunity	Vaccine may have some side effects, but its benefit is long-lasting. On the other hand, natural immunity through infection can be dangerous and it is more dangerous for elderly and people with other health problems. Since reinfection is evident, natural immunity will not provide good protection.

4	Getting vaccinated when you are pregnant can harm the fetus	Evidence about the safety and effectiveness of COVID-19 vaccination during pregnancy has been growing. These data suggest that the benefits of receiving a COVID-19 vaccine outweigh any known or potential risks of vaccination during pregnancy.
5	You do not need the vaccine if you have had COVID before	According to WHO, people who were already infected with coronavirus should still get vaccinated unless told otherwise by their doctor. Even if a person had been previously infected, getting vaccine may strengthen their immunity. Research has also documented that those who have had COVID-19 **AND** get vaccinated stand to have the best odds of protection against COVID-19 in the long run.
6	The vaccines can give you COVID-19	The COVID-19 vaccine does not contain the live virus or carry disease. Therefore, you cannot get COVID-19 from the vaccine. Once vaccinated, your risk of getting a severe COVID-19 infection is significantly reduced. However, you will still need to take precautions (wear a mask, social distance) to reduce transmission to others who aren't vaccinated.
7	The vaccine contains harmful ingredients.	The vaccine's list of ingredients is transparent and does not include any harmful ingredients. There is no aluminum, mercury, food allergens, such as eggs/chicken/meat/fish/insects/red meat, etc., preservatives or any others latex in the vaccine.
		The vaccines are all safe. According to reports issued by the Union Health Ministry of India, such claims are false. Side effects are mostly mild and will resolve within a few days on their own.

9	The COVID-19 vaccine includes a tracking device.	There is no microchip within the syringe and it is not possible to install it too as it is liquid and a very small amounts is given as shot. This claim is completely baseless. The chip itself is not injected into the person getting the vaccine, it is only dose of vaccine.
10	Once I receive the COVID-19 vaccine, I no longer need to wear a mask.	Wearing a mask, sanitizing hands and maintaining physical distance will remain necessary in public until a sufficient number of people amongst the mass population are immune.
11	Taking vaccination can result in death.	According to the reports released by the Union Health Ministry of India, such claims are false and vaccines cannot lead to deaths.
12	It is not safe to get vaccinated for COVID-19 while planning a baby	This is not correct. Women who are trying to conceive or are planning a baby can get a COVID-19 vaccine whichever is available. There are currently no recent studies that suggest that the Covid vaccination causes any problems in the pregnancy or during the development of the placenta. There is no evidence to prove that fertility problems are a side effect of any vaccine including COVID-19 vaccines and like other vaccines.
13	There is a theory that people with younger age cannot get this virus, actually it's a myth.	People of any age (irrespective of religion, caste, income level) can be infected by this disease.