



Normalizing Community Mask-Wearing: Evidence from a Randomized Evaluation in Bangladesh



PHOTO: ABU RAIHAN

Evidence suggests that face masks can slow the spread of COVID-19 and save lives, but getting people to consistently and properly wear masks has been a public health challenge. In Bangladesh, researchers partnered with policymakers to design and evaluate strategies to increase mask uptake. Masks were distributed to households and in public places. Mask use was promoted through role-modeling, messages by prominent Bangladeshi leaders and personalities, informational brochures, and in-person reinforcement. The researchers also tested a number of incentives and behavioral nudges, including public commitment devices and text message reminders.

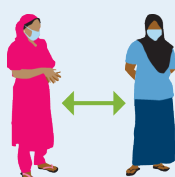
Key Findings



The free mask distribution and promotion strategy more than tripled mask use. Mask-wearing increased by 29 percentage points on average. Mask use was sustained 10 weeks into the trial, even after the mask promotion ended.



Mask promotion with reinforcement is an essential complement to free mask distribution. In Pilot 2, mask-wearing increased by 28 percentage points when masks were not only distributed but promoted with in-person reinforcement.



Physical distancing increased in intervention villages. On average, physical distancing increased by 5 percentage points across all observed locations in intervention villages.



The total cost of the distribution and promotion campaign, including **the cost of the masks themselves, was between \$9 and \$12 per person adopting a mask.** Costs would be lower at scale.¹



People were just as likely to wear a surgical mask as a cloth mask. Surgical masks are one-third the cost of cloth masks and have much better filtration efficiency.



This study suggests **removing constraints to mask take-up (namely cost and availability), leveraging local leaders to role-model and promote mask use, and reinforcement can dramatically increase mask-wearing in Bangladesh and beyond.**

The Challenge

As of February 2021, over 2 million people around the world have died from COVID-19, a pandemic of proportions unseen in over a century. Laboratory studies of influenza and other coronaviruses establish the potential efficacy of face masks as a means of source control, blocking particles emitted by infected individuals.² Since a substantial share of coronavirus transmission is due to asymptomatic or presymptomatic individuals, universal mask-wearing, rather than only symptomatic mask-wearing, has the potential to dramatically slow the spread of the virus.

Yet consistent mask-wearing in public spaces continues to be limited in many countries, despite the rapid community spread of COVID-19 and concerns about mask adoption remain. While institutions such as the World Health Organization (WHO) currently recommend masks as part of an overall portfolio of protective behaviors, the WHO declined to recommend mask adoption until June 2020, citing in part, concerns that masks would create a false sense of security.³ Critics of face masks argued that those who wore masks would engage in compensatory behaviors such as failing to physically distance themselves from others, leading to a net increase in transmission.⁴ Further, it has not been clear whether mass distribution and promotion are worth the cost.

While vaccines may offer a long-term solution, widespread vaccination in low-income countries may be more than a year away and new, more contagious strains continue to emerge. Until the virus is eradicated globally, protective behaviors like mask-wearing remain critical.

Therefore, determining scalable and cost-effective means of promoting mask use, as well as measuring the impact of these interventions on proper, consistent usage and physical distancing behavior, is of first-order policy importance.

Context

Bangladesh, as the eighth-most populous country in the world (approx. 166 million people)⁵ is a key country in the global fight against COVID-19. It is also one of the most densely populated countries in the world (with 2,890 people/mi²),⁶ making COVID-19 prevention measures such as physical distancing extremely difficult to implement.

Despite the recommendations of health experts and government policy requiring the use of masks, IPA and local partners documented a decline in mask-wearing in Bangladesh. An observational study in May 2020 in 1,441 locations in 52 districts of Bangladesh showed that only 51 percent of more than 152,000 individuals observed were wearing a mask. By June 2020, that number had dropped to 26 percent with only 20 percent wearing masks that covered both their nose and mouth.

Bangladesh is an ideal place to collaborate on this research of global benefit as IPA has a strong local research capacity, having collaborated on projects in Bangladesh for over twelve years. Further, the team has existing relationships with relevant Bangladeshi policymakers including The Ministry of Health and Family Welfare, The Bangladesh Medical Research Council, and Access to Information (a2i). This ensures that research practices and recommendations are tailored to the context at hand and respond to policymakers' questions.

Combination that worked to NORMalize mask-wearing



No-cost

free masks distributed
door-to-door

Offering information

on mask wearing via
video and brochures

Reinforcement

in-person and in public

Modeling

and endorsement
by trusted leaders

The Evaluation

In Bangladesh, researchers implemented a cluster-randomized evaluation to help answer two questions: 1) what strategies, if any, increase mask-wearing and 2) what is the impact of mask-wearing on individual- and community-level COVID-19 infection rates. This policy brief deals with the first part of the research.

To select participating villages, the research team chose 1000 rural and peri-urban villages based on population data and in-person scoping to identify the largest markets. They used a pair-wise randomization to select 300 treatment and 300 comparison villages within the same *upazila* (Bangladesh is divided into 492 *upazilas*). Paired villages were similar in terms of (limited) COVID-19 case data, population, and density. All villages are at least 2 km apart to minimize spillover risk. Comparison group villages continued mask-wearing as usual.

Core Intervention: Mask Distribution, Promotion, and Periodic Reinforcement

All treatment villages received the core community-level mask distribution and promotion campaign, comprising the following elements:

Household-level distribution and promotion

- » Three masks were distributed free to each household.
- » To emphasize the importance of mask-wearing, the research team showed a brief video of notable public figures discussing why, how, and when to wear a mask. The video featured the Honorable Prime Minister of Bangladesh Sheikh Hasina, the head of the national Imam Training Academy, and the national cricket star Shakib Al Hasan.
- » During the distribution visit, households also received a brochure based on WHO materials depicting proper mask-wearing.

Community-level distribution, promotion, and in-person reinforcement

- » Masks were distributed in markets and other public spaces on three to six days per week in the first four weeks of the intervention.
- » Masks were distributed at mosques on three Fridays and in the first four weeks of the intervention.
- » Masks were promoted using public service announcements played by handheld microphones in public areas.
- » Periodic in-person mask monitoring allowed people without masks in public places to be reminded to wear a mask and given one if they didn't have one at hand.

Role-modeling and advocacy by local leaders,⁷ including imams discussing the importance of mask-wearing at Friday prayers from a scripted speech provided by the research team.

Comparing Cloth to Surgical Masks

The project masks were woven by and procured from local Bangladeshi garment factories within six weeks after ordering. The relatively large scale of our bulk order allowed us to negotiate mask prices of \$0.40 per cloth mask and \$0.13 per surgical mask. Surgical masks were outfitted with a sticker that had a logo of a mask with an outline of the Bangladesh flag and a phrase in Bengali that noted the mask could be washed and reused; this sticker doubled the cost of the surgical mask.

Other Interventions: Incentives and Behavioral Nudges

To be able to further test strategies to increase mask uptake, the research team randomly selected villages in the treatment group (total 300 villages) to be offered the following:

- » **Village-level incentives:** Villages were randomized to receive no incentive, a monetary incentive (USD 190/ village to be spent on a communal good), or a non-monetary incentive (certificate of recognition from the Government of Bangladesh). The incentives were to be awarded if village-level mask-wearing among adults exceeded 75 percent eight weeks after the start of the intervention.
- » **Public commitment (signage):** In randomly selected villages, households were asked to display a sign that they were mask-wearing households. The sign was meant to encourage the formation of social norms through public signaling.
- » **Text reminders (twice-weekly):** In randomly selected villages, households received messages reminding them about the importance of mask use.

In addition, there were some strategies tested within villages i.e. at the household level. Within each village, only one strategy was tested.

- » **Message framing (altruistic vs. self-protection):** Households within a village received either altruistic text messages or self-protection messages.
- » **Network effects:** In other villages, zero, 50, or 100 percent of the households received weekly text messages or not.
- » **Verbal commitment (in villages without the signage):** Households were randomly asked to make a verbal commitment to be a mask-wearing household or not.

The research team measured mask-wearing and physical distancing through direct observation, which IPA conducted at baseline and once per week every other week after the intervention. Correct mask-wearing was defined as wearing either a project mask or an alternative mask over the mouth and nose. A person was recorded as practicing physical distancing if they were at least one arm's length away from the nearest person.



Findings

The household and community free mask distribution and promotion campaign (the “core intervention”) more than tripled mask use. In villages that received the intervention, mask use increased by 29 percentage points (from 13 percent in the comparison villages to 42 percent in treatment villages) (see Figure 1). Mask use was sustained 10 weeks into the intervention, even after the mask promotion ended.

Physical distance increased in the intervention villages. Contrary to concerns that mask-wearing would promote risky behavior (giving people a false sense of security and reducing physical distancing) the study finds that the intervention increased physical distancing. On average, physical distancing increased by 5 percentage points across all locations in intervention villages, but the change was larger in some locations than others. In markets, people were substantially more likely to physically distance (7 percentage points increase). In mosques, researchers observed no change (they observed little physical distancing in any mosques) (see Figure 2), testifying to the inelastic nature of group prayer rituals.

In-person public reinforcement is a critical part of the intervention. Researchers conducted two pilot tests. In the first pilot, masks were only distributed. The second pilot includes mask distribution, promotion, and in-person periodic reinforcement. Researchers found proper mask-wearing increased 28 percentage points when masks were not only distributed but promoted and their use was reinforced (pilot 2).

None of the community-or household-level behavioral interventions or incentives led to additional increases in mask-wearing or physical distancing. Neither text message reminders, public signage, monetary and non-monetary

incentives, altruistic messaging, or verbal commitments had any further effect on mask-wearing.

People were just as likely to wear a surgical mask as a cloth mask. Surgical masks were equally as likely to be adopted as sturdier-appearing cloth masks. This is an important finding because high-quality surgical masks are one-third to one-fourth the cost to produce (in this study surgical masks with a branded reminder cost \$0.13 compared to cloth masks which cost \$0.40) and three to four times better filtration efficiency even after being washed 10 times. While our results suggest that surgical masks remain durable for the six to eight weeks of the intervention, their long-term durability remains a possible concern.

Local preferences mattered. In our study, mask color had a significant effect on uptake, both for surgical and cloth masks. In villages where surgical masks were distributed, blue surgical masks were 3 percentage points more likely than green surgical masks to be observed. In villages where cloth masks were distributed, violet cloth masks were 6 percentage points more likely than red cloth to be observed.

Some groups had higher take-up in mask use than others. The largest increase in mask use was in mosques, which saw a 38 percentage point increase in mask use, while in all other locations it was roughly 25-29 percentage points.

Researchers also found a larger increase in mask use in villages that had below-average initial mask-wearing. In those villages, mask-wearing went from 9 percent to 43 percent after, whereas in villages with above-average initial mask-wearing, it went from 18 percent to 43 percent.

Figure 1

Impacts of distribution, promotion, and reinforcement on mask-wearing

Percentage of people properly wearing mask, %

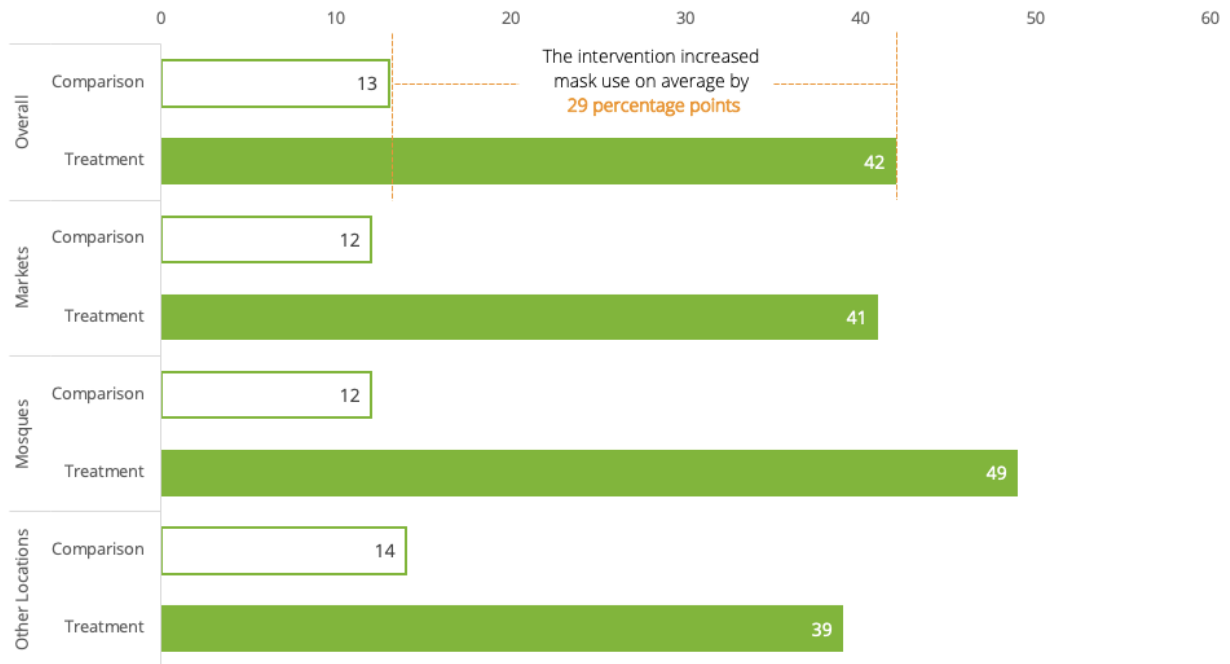
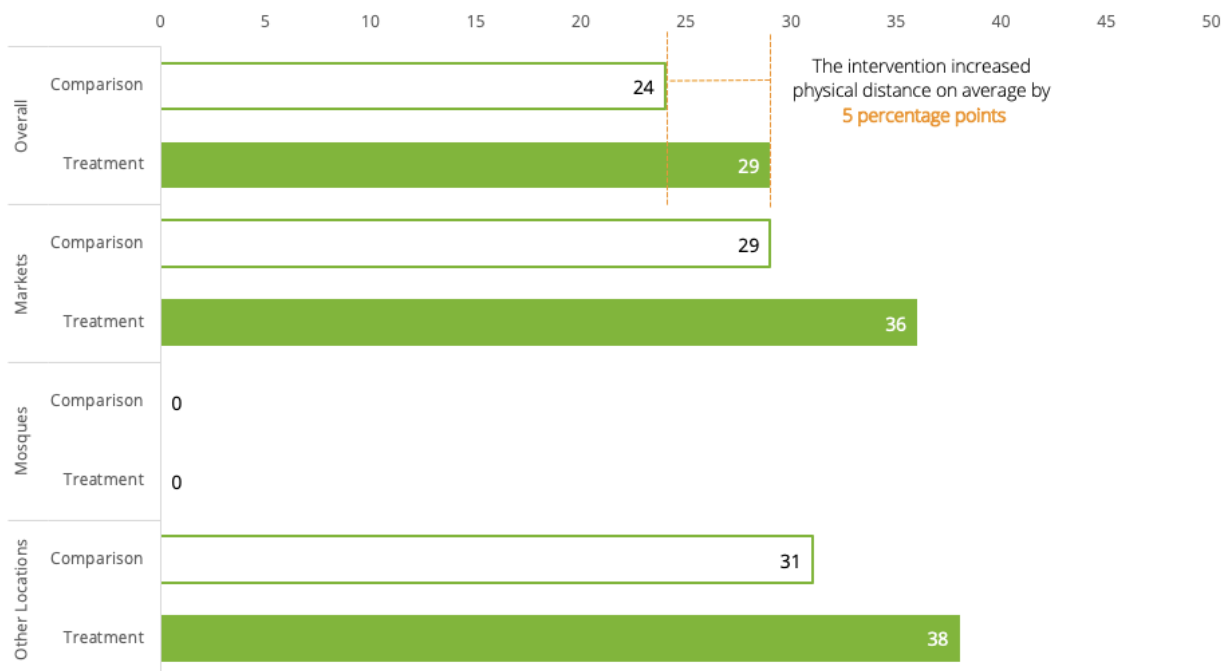


Figure 2

Impacts of distribution, promotion, and reinforcement on physical distancing

Percentage of people maintaining at least one arm's length away from other people in public spaces, %



Conclusion

This study found that a free mask distribution, promotion, and reinforcement campaign at the household and community levels can be very effective at increasing the number of people who wear masks and adhere to physical distancing guidelines. An important part of the campaign may also be the involvement of, and role modeling by, credible national figures and local leaders. The total cost of the distribution and promotion campaign, including the cost of the masks themselves, was between \$9 and \$12 per person adopting a mask.

The result that the intervention increases physical distancing behavior is a critical finding given concerns that masks—and mask mandates—could lead to riskier behavior such as reducing physical distancing. The results from this large-scale study strongly suggest the opposite: when people decide to wear a mask, they are also more likely to adhere to other public health protocols. This finding should significantly reduce concerns about aggressively promoting mask use.

That surgical masks were equally as likely to be adopted as sturdier-appearing cloth masks is another important finding

when it comes to costs and scalability: high-quality surgical masks are one-third the cost to produce and have better filtration efficiency than cloth masks. That said, durability remains a question: in this study, surgical masks remained durable for the six weeks of the campaign, but their long-term durability remains a possible concern.

Further, mask use was maintained 10 weeks after the mask promotion ended. Findings also suggest that local preferences and aesthetics need to be taken into account, as colors mattered in this case.

Overall, this study suggests removing constraints to mask take-up (namely cost and availability), leveraging local leaders to role-model and promote mask use, and periodic mask monitoring and in-person reinforcement can dramatically increase mask-wearing without costly incentives or unpopular compliance strategies such as fines.

Before the intervention began, the research team obtained informed consent and collected data following appropriate and approved public health protocols. All protocols were approved by the Bangladesh Medical Research Council, IPA, and Yale University.

References

1. The costs of relatively small scale and study-specific elements would be avoided in a mass distribution system. In this study, for instance, the cloth masks were hand-stitched and the surgical masks had a sticker on them reminding people that they were not disposable, which doubled the cost of the surgical masks.
2. N.H Leung et al., Nature Medicine 26, 676 (2020)
3. T.A. Ghebreyesus, WHO Director-General's opening remarks at the media briefing on COVID-19, 5 June 2020 (2020), Publisher: WHO
4. L. Brousseau, M. Sietsema, Commentary: Masks-for-all for COVID-19 not based on sound data (2020). Publisher: Center for Infectious Disease Research and Practice (CIDRAP), University of Minnesota
5. World Population Review 2020, 2021 World Population by Country
6. World Population Review, 2020. "Countries by Density 2020"
7. The research team met with all local leaders and imams before the intervention began to get their support of the activities and their commitment as active role-modelers.

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TIMELINE

2020-2021

SAMPLE

600 villages (approx. 130,000 households)

STUDY DESIGN

Randomized controlled trial



The research team gratefully acknowledges [GiveWell](#), which recommended a grant from the Effective Altruism Global Health and Development Fund to support this research.

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APRIL 2021

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