Behavioral Science and COVID-19

An Interactive Solutions Guide for Better Policy Design

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About This Interactive Brief

This brief is part of a knowledge product series to support ongoing policy design and implementation of interventions related to the Coronavirus (COVID-19). It is based on existing literature review, including published peer-reviewed journal articles, grey literature, and research conducted by the World Bank. The guide is not meant to be all inclusive or exhaustive, but rather to provide a range of ideas of what has been tried, with the aim to guide policymakers in different contexts with a set of potential evidence-based solutions that deal with different aspects of COVID-19 that could be adapted for their settings.

The brief was prepared by a team comprised by JungKyu Rhys Lim, Renos Vakis, Corey Cameron, and Michelle Dugas. Additional contributing team members include Zeina Afif, Ellen Moscoe, Laura Zoratto, Mohamad Chatila, Daniel Pinzon Hernandez, and Haena Kim. The authors also acknowledge and thank insights and recommendations received by an extended set of collaborators from the World Bank’s Health, Nutrition and Population Global Practice, the Development Impact Evaluation Department, and country government partners. The work was partially funded by the Alliance for Advancing Health Online, an initiative to advance public understanding of how behavioral sciences can be leveraged to improve the health of communities around the world. The findings, conclusions, and recommendations expressed in this brief are those of the authors and do not necessarily reflect any other views. For additional information please contact embed@worldbank.org.

In partnership with:
Behavioral Science and COVID-19
An Interactive Solutions Guide for Better Policy Design

Background

The first COVID-19 cases were reported in December 2019 (WHO, 2020). Governments around the world have tried various interventions to stop the COVID-19 spread and encourage vaccination. With growing evidence of the governments' COVID-19 efforts to deal with the pandemic, this guide aims to summarize interventions and applications, and their effectiveness to address three COVID-19 topics:

• How to reduce COVID-19 spread
• How to encourage people to get vaccinated
• How to address misinformation and fake news

How to Use This Interactive Brief

Move to the next slide and simply click on the topic of your interest. You’ll be taken to relevant interventions, their effectiveness, and key takeaways for design considerations.

Click the "Back to Main Menu" tab to come to main menu and select other themes.

The following color coding indicates an intervention’s effectiveness based on rigorous impact evaluations.
What COVID-19 Issue Do You Want to Address?

Each country has its own journey, but we can learn from each other during these difficult times.

What is the most pressing need for you? Please click a button below.

- How to Slow COVID-19 Spread?
- How to Encourage People to Get Vaccinated?
- How to Address Misinformation and Fake News?
How to Stop the COVID-19 Spread – Restricting contact

Governments have slowed the spread of the COVID-19 using combinations of interventions to reduce contact. These interventions were in general effective (U.S. CDC, 2020). While banning gatherings and closing schools and businesses used early in the pandemic strongly mitigated COVID-19 spread, they also incurred societal and financial costs. Mandatory masks or less stringent social distancing were more difficult to enforce, led to smaller effects but were also less disruptive.
How to Slow the COVID-19 Spread – Restricting contact

The effect of contact restriction on COVID-19 spread (% reduction in secondary infections)

Summary of existing studies

Each bar represents a study and shows $R_t$, the percentage reduction in the number of secondary infections generated at time $t$ (Brauner et al., 2020; Royal Society, 2020). Caution needs to be applied in interpreting the results due to country specific contextual factors and the different timing of the interventions. Additional information in Mendez-Brito et al., 2021 and Talic et al., 2021.
How to Slow the COVID-19 Spread - Takeaways

Restricting contacts worked in general to contain COVID-19 spread.

Earlier and wider restrictions worked best
When the more people were restricted earlier, the restrictions tend to have higher impacts.

However, stricter restrictions came at other costs
Economic, societal, learning costs and mental toll were significantly high from closing businesses and schools.
How to Encourage People to Get Vaccinated

Governments can encourage vaccination in many ways. Which one do you want to know? Please click the button.
How to Encourage People to Get Vaccinated – Provide Incentives

Governments have provided various types of incentives to motivate people to get vaccinated. These incentives include:

- Small Incentives
- Large Incentives
- Lottery (Vax-A-Million)
In general, higher incentives can encourage more vaccinations. However, too large incentives can make people suspicious about the vaccine’s risks and lower vaccinations. Small incentives may need to be large enough to attract people to get vaccinated. Finally, incentives tend to be ineffective to encourage those who are against vaccination.

**Financial incentives and vaccination rates (or intentions) increase**

**Small Incentives**

- US$ 10: USA (the unvaccinated)
- US$ 20: USA

**Large Incentives**

- US$ 50: USA (the unvaccinated)
- US$ 10: USA (the unvaccinated)
- US$ 20: USA

Experimental work from the World Bank team reminding people of a November 2021 presidential announcement that Ukrainians would receive UAH 1,000 (~US$ 37) for having 2 doses of the COVID-19 vaccine had a negative effect on intentions. Note that the transfer received is estimated to be about 1% of annual income per capita.

The unvaccinated people decided to remain unvaccinated regardless of incentives.

Too small incentives (US$ 20) rather reduced vaccination intentions in the U.S.

**CAUTION:** Prior research found that people could think high incentives as high risks. One study found that, when incentives increased, people are more willing to participate, yet people perceived higher risks ([Cryder et al., 2010](#)).
Governments have offered small incentives for non-COVID vaccines, such as measles, BCG, or flu. Both small financial incentives (e.g., cash or mobile credit) less than US$ 10 and non-financial incentives (e.g., lentils and metal plates) were effective. When multiple vaccination is required, flat rates of incentives were effective.

**Too small incentives and increasing incentive rates** did not have impacts on vaccinations in India (Banerjee *et al.*, 2021)
How to Encourage People to Get Vaccinated – Provide Incentives

Some state governments in the U.S. have offered lottery prizes for COVID-19 vaccination. The lottery programs showed a small impact of a 2.1% increase in vaccine uptakes across states (Acharya & Dhakal, 2021).

Depending on analyses, Ohio’s lottery increased vaccination by 1% (Walkey et al., 2021), 0.09 log points (Acharya & Dhakal, 2021), or had no impact (Sehgal, 2021).
Incentives need to be large enough to effectively attract people to get vaccinated. In some countries, in-kind, non-financial incentives (e.g., lentils) were also effective. Flat incentives seem to work better than increasing ones. Incentives may not change those who are against vaccination.

Generally, large incentives can increase vaccine uptake but also suspicion. People get suspicious and perceive high risks when incentives increase. Too high incentives can backfire and decrease vaccine uptake.

More evidence is needed for lottery. At least in the United States, lottery has limited impacts (overall, 2.1% increase in vaccine uptakes). However, it may be effective in other countries and cultures.
Governments can better communicate COVID-19 vaccination:

**General populations**
Choosing effective messages

**General populations**
Choosing the right messenger

**Targeted communication**
(e.g., those who had COVID, parents)
How to Encourage People to Get Vaccinated – Choose Effective Messages

Sending multiple reminders for vaccine appointments has been effective (Berliner Senderey, 2021; Dai et al., 2021). Despite mixed findings, sending variants of the following messages have shown some effects on increasing vaccination intentions in most settings:

- Vaccines are safe and underwent standard safety testing (vaccine safety)
- Vaccines can protect you, and your family, friends, and community (response efficacy/perceived benefits)
- Many others in the community have already got vaccinated (descriptive/dynamic social norms)
- COVID-19’s risks, including Long COVID, are much higher than vaccine risks (COVID-19 risks)
- People will all be exposed to the virus eventually

From evidence: What worked

<table>
<thead>
<tr>
<th>Increase</th>
<th>No impact</th>
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<tr>
<td>Argote et al., 2021; Chao et al., 2021;</td>
<td>Kerr et al., 2021;</td>
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Note: Message’ effectiveness do change overtime, so it is important to keep testing message efficacy.
Using the right messenger can increase vaccination:

Use healthcare professionals as messengers and share their views on COVID-19 vaccination

Insights from harmonized data collected in more than 25 countries suggest that healthcare professionals are the most trusted information source. Family and friends are next, especially relevant among people who trust institutions less.

In Czech Republic, sharing information about physicians’ views (e.g., high trust, vaccination willingness, recommendation) around COVID-19 vaccination increased vaccine uptakes by 4 to 5% over 9 months (Bartoš et al., 2022).

On social media, using celebrity’s vaccination messages spread much faster and increased awareness and knowledge than medical authority (Alatas et al., 2021). In the local setting (village), using people good at spreading information (or, gossip) increased immunization than using trusted individuals (Banerjee et al., 2021).

Matching messengers’ races (including healthcare providers’) to target groups increased vaccination (Alsan et al., 2019; Alsan & Eichmeyer, 2021).
How to Encourage People to Get Vaccinated – Communicate Effectively

For those who already had COVID

- Communicate that **vaccines still offer the best protection** against future disease
- Communicate their **natural immunity may not be strong enough** to protect themselves
- Use **trusted healthcare professionals** as messengers (and their views) and social media, TV
- Provide **healthcare professionals materials, training, and talking points** to communicate with patients

Examples from around the world
For parents and caregivers with child(ren)

- **Emphasize risks as well as safety and efficacy** to alleviate parents' concerns. Communicate the rigorous clinical process of safety, efficacy, the risks of not choosing vaccines, and benefits of vaccine.

- **Encourage parent-healthcare provider communication** and primary healthcare providers' recommendations. **Provide primary healthcare providers training** and information on how they can help children and parents.

- **Collaborate with healthcare providers** (e.g., Society of Pediatrics) to communicate recommendations.

- **Identify and leverage parents' social networks to influence their vaccination decisions.** The most influential members within the networks can help encourage parents with vaccination decisions.

Examples from around the world

"Now, COVID-19 is the 8th largest killer of children. Kids are dying from this, not just kids who have medical conditions."

Ask a doctor: Is COVID really a threat for kids?
Ask a doctor: Why do children need COVID-19 vaccines?
In general, sending multiple reminders help increase vaccination.

Using effective messages is important. Still, given that messages’ effectiveness has dynamically changed, it is also important to test messages before sending them.

Using the right messenger can increase vaccination. Work with healthcare professionals (ideally, the same races with the target group), as they are the most trusted information sources for the COVID-19 vaccination. Using celebrities on social media or recruiting people good at spreading information in the village can help.

For those who had COVID-19, governments can communicate that their natural immunity is not strong enough to protect themselves and that they still need to get vaccinated to protect themselves.

For parents with child(ren), governments can work with pediatricians and communicate COVID-19 risks and the risks of not choosing vaccines as well as vaccine safety and efficacy.
Governments can create an easy vaccination scheduling system, and automate appointments for booster shots and follow-up doses.

Sharing a link to the vaccination appointment scheduling system didn’t have an impact on unvaccinated people’s vaccination in the U.S., although the intentions increased by 8.6% (Chang et al., 2021).

Governments can bring vaccination sites into the community, with increased hours and locations.

Vaccination camps increased non-COVID vaccinations (e.g., BCG, DPT, polio, measles) by 12% (Banerjee et al., 2010).
To make it difficult to remain unvaccinated, governments used the following interventions:

- Make the vaccination appointment default (requiring opt-out)
- Introduce a mandatory COVID-19 certificate (e.g., pass)
- Impose a fine or disadvantage for not getting vaccinated
In July 2021, Trento, Northern province in Italy, made a scheduled COVID-19 vaccination appointment as a default option for 50- to 59-year-old adults. People had to opt out if they did not want to receive the vaccination (Tentori et al., 2021).

Governments can make the vaccination as a default option for everyone. Those who do not want to get vaccinated need to put additional efforts to opt out, leading many people remained with a default option.

Pre-selecting ‘yes’ or ‘no’ responses for wanting to take the vaccine did not impact the vaccination intentions (Strickland et al., 2022).

In July 2021, Trento, Northern province in Italy, made a scheduled COVID-19 vaccination appointment as a default option for 50-to-59-year-old adults. People had to opt out if they did not want to receive the vaccination (Tentori et al., 2021).
Governments have introduced a mandatory COVID-19 pass, showing vaccination, recent negative test, or proof of recovery.

In summer 2021, France, Germany, and Italy all introduced nationwide vaccine mandates for non-essential activities. By the end of October 2021, more than 85% of Italy’s eligible population had been jabbed, an estimated 12% points more than otherwise. In France, the policy was credited with an 8%-point increase; in Germany with 5%p (Karaivanov et al., 2021).

Additionally, mandatory COVID-19 passes increased vaccination 20 days before the introduction and impacts lasted 40 days after in Denmark, Israel, Italy, France, Germany, and Switzerland (Mills & Rüttenauer, 2021). These impacts were highest on people younger than 30 years old.

Source: Economist, 2022

However, mandatory vaccination can also increase negative emotions and avoidance to COVID-19 vaccine when individuals have low vaccination intentions (Sprengholz et al., 2021).
While it is out of scope of this synthesis, human rights concerns remain, as overly-regulatory vaccination measures can limit people’s access, freedom, and basic human rights, as noted in *The Universal Declaration on Bioethics and Human Rights* and *Siracusa Principles on the Limitation and Derogation Provisions in the International Covenant on Civil and Political Rights.*

One country introduced a fine (e.g., €100) per month for people over 60 if they do not comply with compulsory vaccination for COVID-19.

Another country introduced blanket mandatory vaccine policies, such as ‘no jab, no job, and no benefits’ policies.

**How to Encourage People to Get Vaccinated – Make It Difficult To Remain Unvaccinated**

*Impose a fine or disadvantage for not getting vaccinated*
Generally, making vaccination default and introducing a vaccine pass worked well. The COVID-19 vaccine pass showed its impacts on vaccination before the introduction and lasted for a month. The COVID-19 vaccine pass’s impacts were highest among young people (i.e., less than 30 years old). Still, human rights concerns remain, as the vaccine pass limits people’s access and freedom.
COVID-19 misinformation can be addressed with the following strategies:

### Pre-bunk
- **Teach common misinformation techniques**

### De-bunk
- **Use fact-checkers to directly address misinformation**

### Reminders
- **Ask people to check misinformation before sharing**
Some researchers have developed video clips and games to teach common misinformation techniques “in the shoes of a fake news creator,” such as using emotional languages, being incoherent, and proposing false dilemma ([Inoculation Science, 2022]).

Pre-bunk: Teach Common Misinformation Techniques

After playing the games, people better identified misinformation ([Basol et al., 2021; CAH Health, 2021; Roozenbeek et al., 2020]). After reading the infographics, people better identified misinformation ([Basol et al., 2021]). Still, people were more willing to share games than infographics ([Basol et al., 2021]). These effects were small, but significant.
De-bunk: Use fact-checkers to address COVID-19 misinformation

The Africa Infodemic Response Alliance (AIRA) track and respond to health misinformation have used fact-checkers Viral Facts Africa to debunk COVID-19 myths on social media.

By reading fact-checkers, people identified misinformation better, especially among the most vulnerable groups to these claims, who distrust the healthcare system or media. However, the impact did not last long even after repeated exposure (Carey et al., 2022).

A meta-analysis on COVID-19 misinformation mitigation found that text-only messages were more effective than text and image messages (Janmohamad et al., 2022).
Address Misinformation and Fake News

Reminders: Ask people to check misinformation before sharing

Some social media platforms, including Facebook, provided the reminder notification with additional context about an article or link, such as when it was first shared and its source to tackle misinformation.
Address Misinformation and Fake News - Takeaways

Generally, it was effective to teach misinformation techniques and use fact-checkers.

Using games to teach misinformation helped people to identify misinformation and share the intervention with others.

Fact-checkers were effective particularly for people, who do not trust health organizations and media and are susceptible to misinformation. However, the impacts did not last long.

To mitigate misinformation, text-only messages have been more effective than messages using texts and images together.
Stay Connected

Let’s vaccinate together

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Introduction


How to Slow COVID-19 Spread?


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How to Address Misinformation and Fake News?


References and Bibliography

Back to Main Menu