

# The impact of the COVID-19 pandemic on childhood vaccine confidence and uptake

**Vaccine acceptance meeting, Fondation Merieux, 31 October 2023**

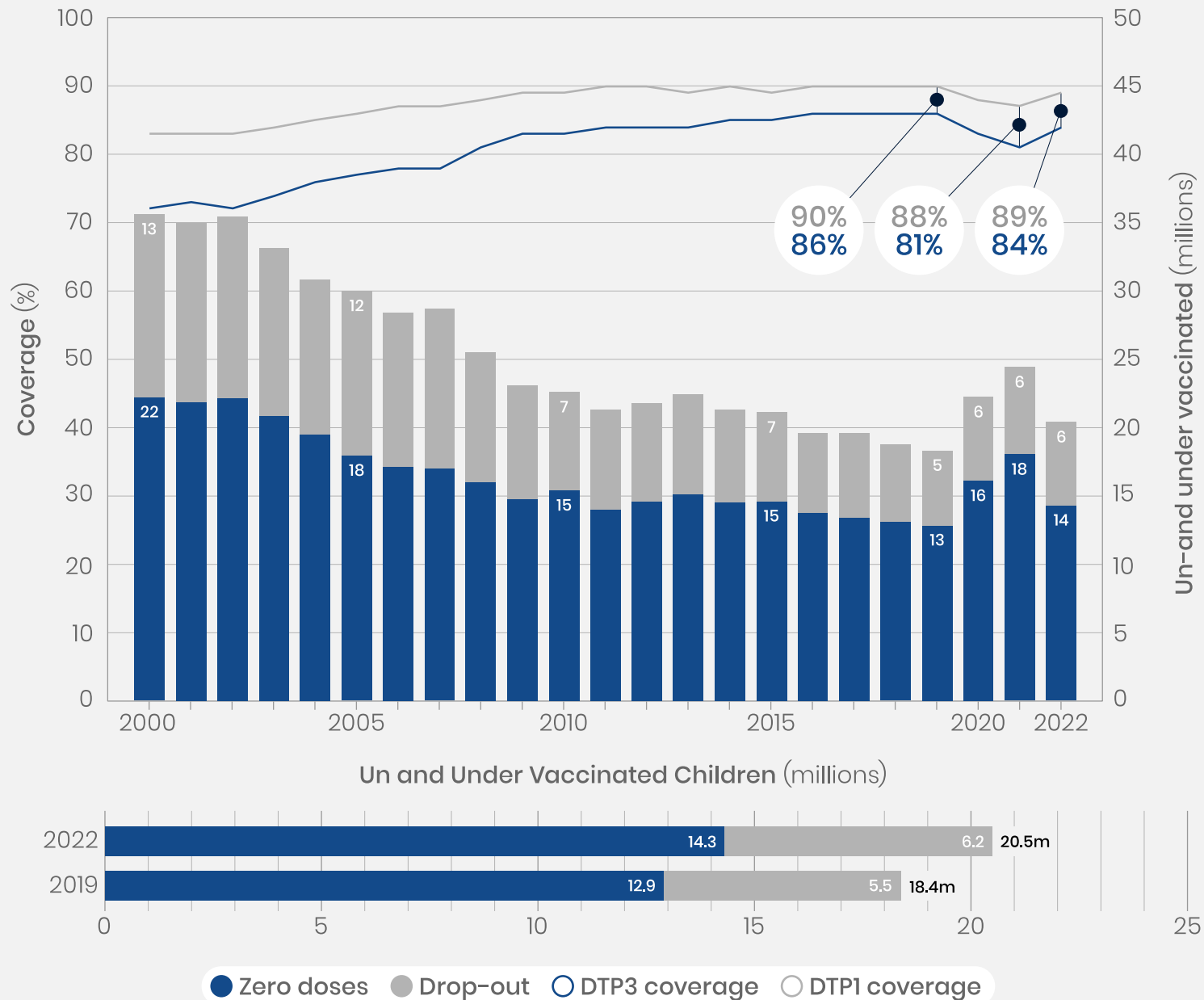
Lisa Menning, Team lead, Vaccine Demand and Behavioural Sciences

Department of Immunization, Vaccines and Biologicals

WHO Headquarters, Geneva

# Global DTP coverage has almost recovered to 2019 levels

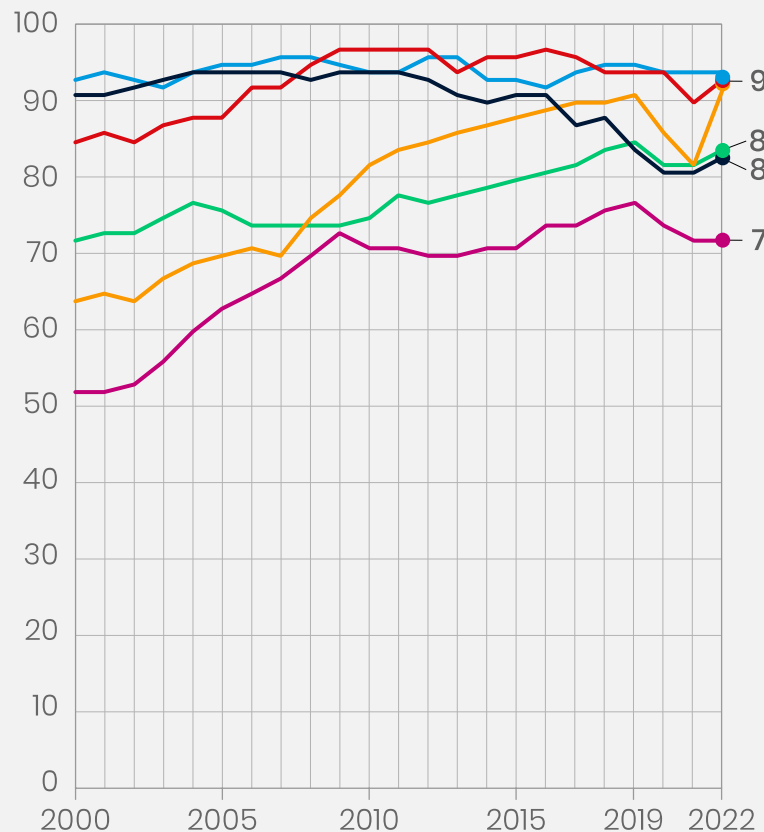
*In this analysis, zero-dose children are those who lack any dose of DTP. Under-vaccinated are those who received one dose, but not a third protective dose.*



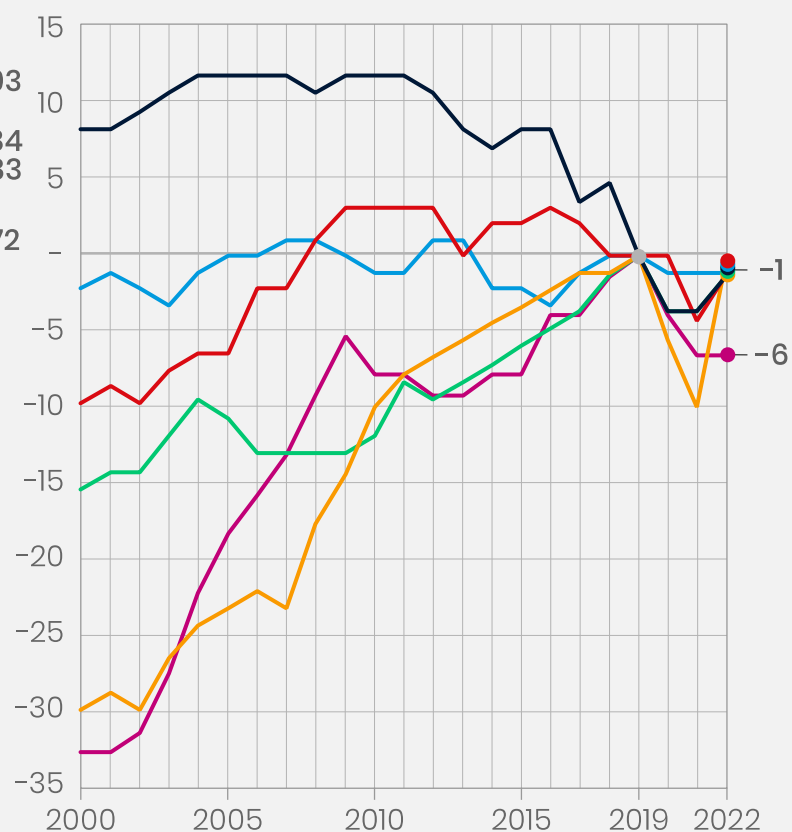
# All WHO Regions apart from the African region has experienced a robust recovery

Coverage of a third dose of vaccine protecting against diphtheria, tetanus, and pertussis (DTP-3) recovered to just below 2019 levels in all regions apart from the African Region, which is still 6 percent below 2019 levels.

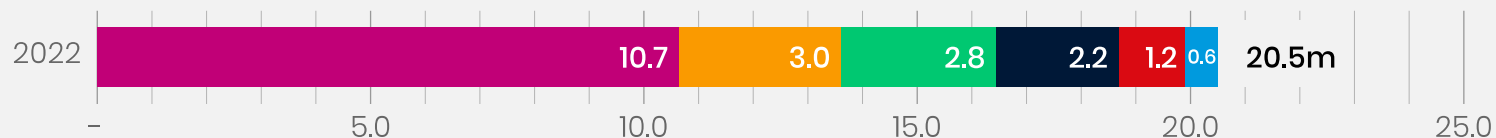
DTP3 coverage by region (%)



Relative change compared to 2019 (%)



Un and Under Vaccinated Children (millions)

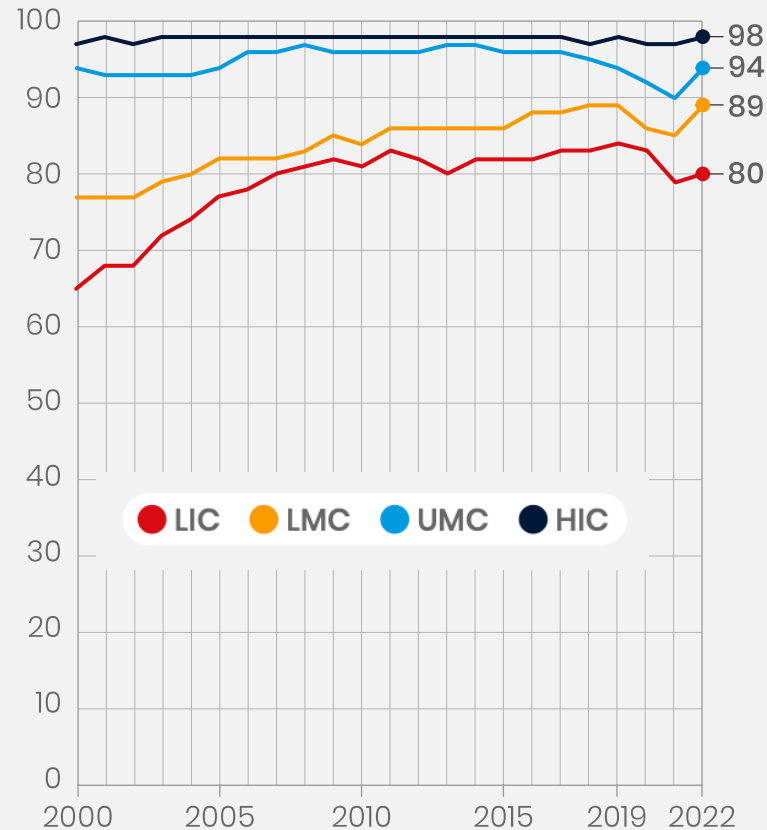


# Low-income countries (LICs) are lagging in the recovery – for DTP1 and even more for MCV1

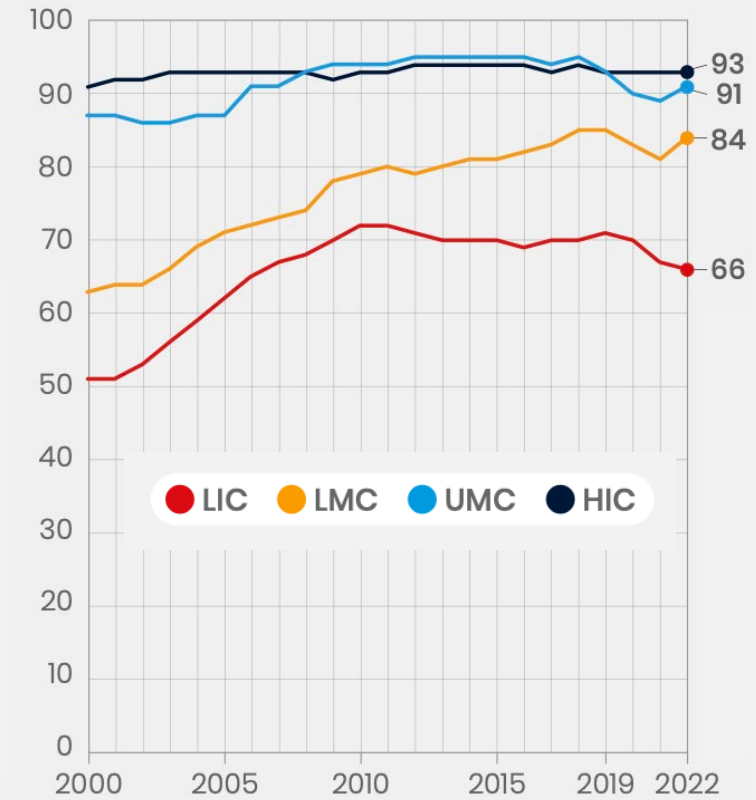
For DTP1, LICs showed limited signs of recovery rising only 1% for DTP1, well below other World Bank income groups.

For MCV1, coverage in LICs shows less recovery than DTP1.

DTP1 coverage by WB Income group (%)



MCV1 coverage by WB Income group (%)



Zero Dose Children (millions)

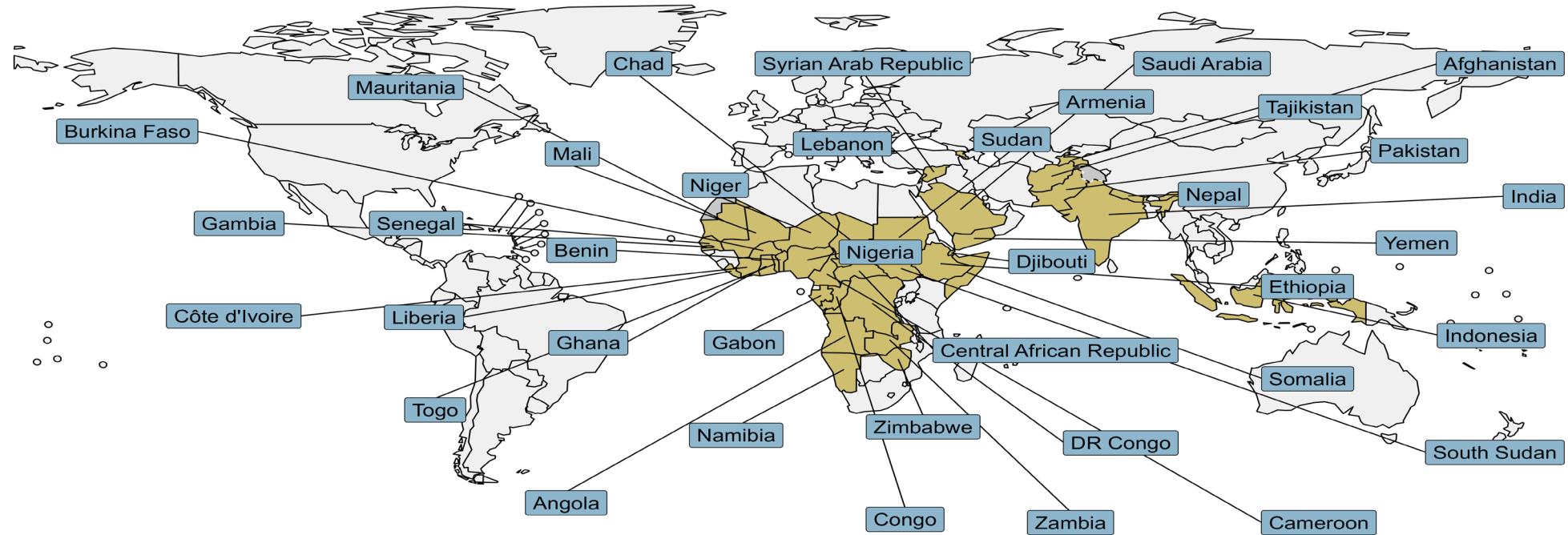


Number of infants without a first dose of measles vaccine (millions)



# >40 countries experienced large or disruptive measles outbreaks in past year

Countries provisionally meeting the large and disruptive outbreaks definition - Data from 2022-04 to 2023-03 included



Map production: World Health Organization, 2023. All rights reserved  
Data source: IVB Database

**Disclaimer:** The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.



In the frame of tracking progress towards the goals of Immunization Agenda 2030 (IA2030), an indicator has been developed by a working group in order to represent large and disruptive measles outbreaks. This indicator is defined as an incidence equal or greater than 20 reported measles cases per million population over a period of 12 months. It is important to note that measles outbreak definitions vary between countries and regions according to local context and level of progress towards regional elimination goals. This definition of large and disruptive outbreaks aims to complement and not replace the national and regional definitions, while also providing a degree of global standardization and permitting tracking of progress against a common metric.

Notes: Based on data received 2023-08 and covering the period between 2022-04 and 2023-03 - Incidence: Number of cases / 1M population - Population Data: World population prospects, 2019 revision - A high proportion of clinical cases indicates a high level of uncertainty associated with the incidence rates and the inclusion of countries in this list.

# Diphtheria outbreaks in 2023

Member State	Start / end	Case count	Subnational focus	DTP3 2022	Cases 2022	Status	Source
Nigeria	May 2022	11,587 suspected cases, 453 deaths	Kano: 80% of cases	62%	NA	Live	EMS
Guinea	July 2023	281 suspected cases, 13 confirmed cases. 37 reported deaths	Siguiry District: 86% of cases	47%	0	Live	EMS
Niger	July 2023	665 reported cases, 30 deaths	Zinder region	74%	736	Live	EMS
Algeria	August 2023	80 suspected cases, 16 confirmed cases (mostly foreign nationals)	Southern regions	77%	4	Live	EMS
Viet Nam	May & August 2023	49 suspected cases, 13 lab confirmed cases, 2 deaths	Dien Bien Province	91%	2	Live	EMS
Yemen	Unclear	*no details – ongoing since 2017		74%	37	Unknown	
Philippines	early 2023 - May 2023	32 cases, 9 deaths	Manila	72%	88	Unknown	News
South Africa	April / May 2023	2 cases		85%	0	Complete	News
Venezuela	March 2023	3 cases	Bolivar State	56%	NA	Complete	News
Dominican R.	Feb 2023	4 cases	Santo Domingo	88%	8	Complete	News
Indonesia	Feb 2023	23 cases, 7 deaths	West Java		540	Complete	EMS

# The Big Catch-up: A multi-partner initiative for immunization intensification

## 1 Catch-up missed children

Reach children who missed vaccination during 2020-2022, some of which was due to the pandemic (this includes the 2019 zero-dose and under-immunized children as part of the accumulated susceptible cohort)...  
*with intensified planning, funding, revised policies, adequate supply, etc.*

## 2 Restore immunization programmes

Restore vaccination coverage in 2023 back to at least 2019 coverage levels

## 3 Strengthen immunization programmes

Strengthen immunization systems within Primary Health Care, to improve program resilience & resume the trajectory of the IA2030 goals & targets

**THE BIG  
CATCH-UP!**



# IA2030 Action Agenda: endorsed by SAGE



*IA2030 shared action agenda for 2023-2024 sets out a series of short-term and high-level priorities to align the efforts of countries, regions, global partners and other stakeholders*

- 1. Catch-up and strengthening:** Intensify efforts to reach children missed during the pandemic years and strengthen programmes for all vaccines across the life-course.
- 2. Promoting equity:** Ensure that catch-up and strengthening activities specifically benefit communities that are currently most left out.
- 3. Regaining control of measles:** Enhance measles outbreak responses and intensify prevention.
- 4. Making the case for investment:** Strengthen advocacy at national, regional and global levels for increased investment in immunization, through primary healthcare and as part of systems for health.
- 5. Accelerate new vaccine introductions:** Promote implementation of WHO-recommended vaccines that have yet to be introduced.
- 6. Advance vaccination in adolescence:** Accelerate introduction of HPV vaccination where it is not yet in programmes and increase coverage where it has already been introduced.



# Did the pandemic cause more hesitancy?

*What data do we have?*

# What could have contributed to lower coverage of childhood vaccination?



## ***Vaccine confidence:***

- Spillover from negative side-effects of COVID-19 vaccination
- Less belief in benefits
- More movement towards polarities

## ***COVID-19 vaccination experiences:***

- Reactance from mandates
- Less trust in health system and government



## ***COVID-19 related practical issues:***

- Concerns about exposure to COVID-19
- More out-of-pocket costs
- Other life priorities

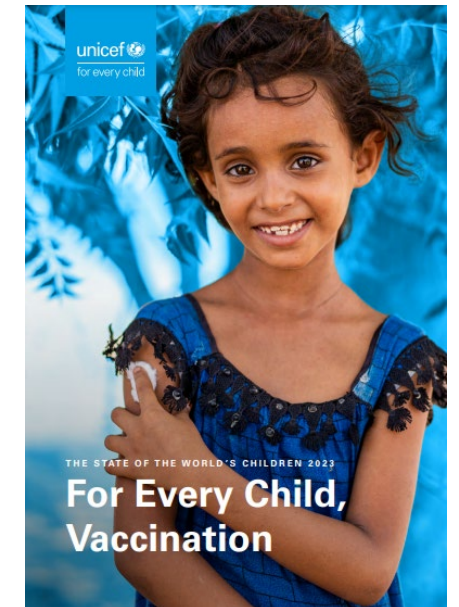
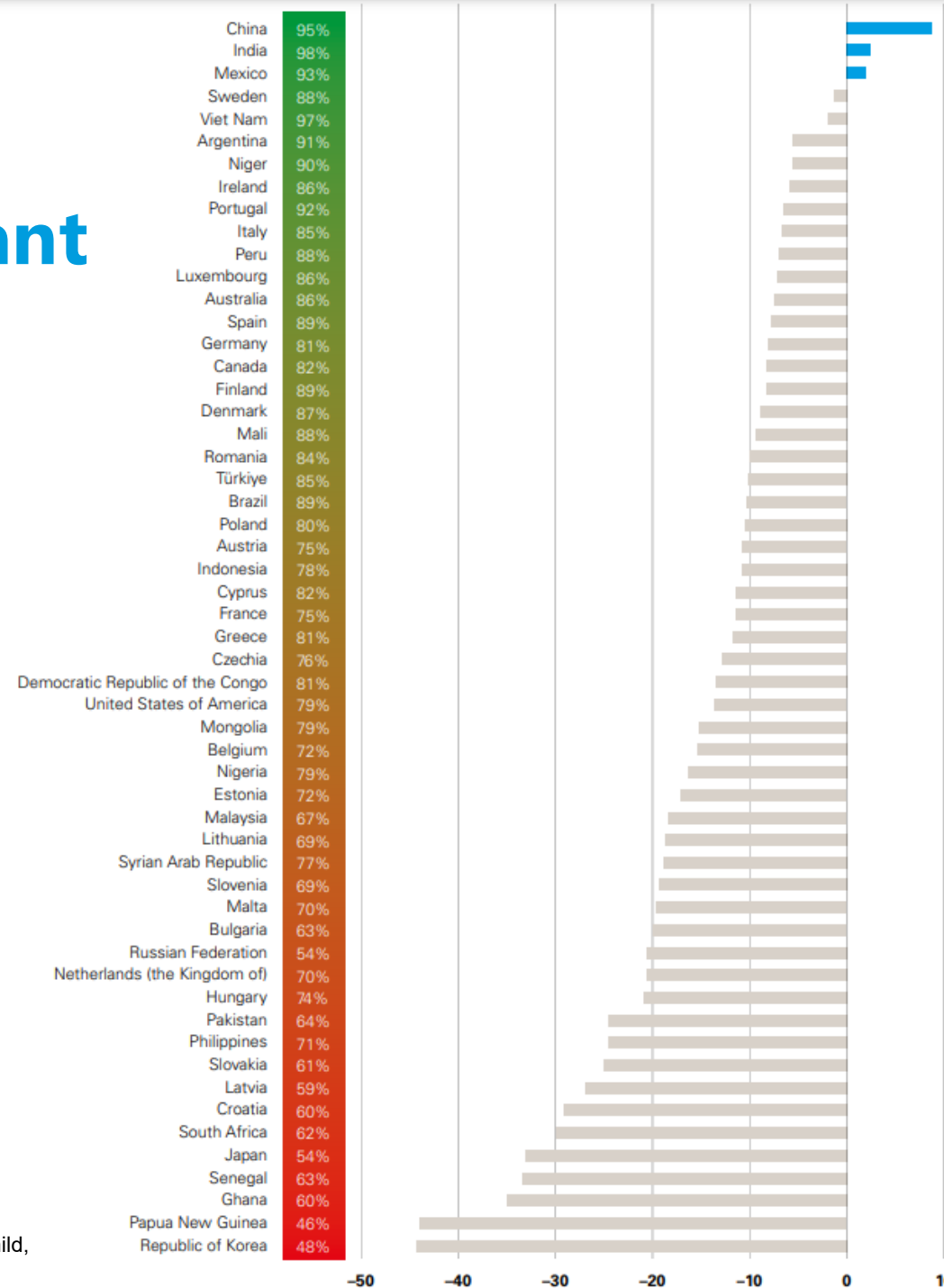
## ***Health system disruptions:***

- Disrupted health services
- Lack of health workforce
- Vaccine stock-outs

# Confidence that vaccines are important for children

- Percentage of population that currently (most recent year) perceive vaccines as important for children
- Percentage point change before and after the start of the pandemic

***Confidence that vaccines are important declined in the general population in most countries.***



# What about mandates?

“Our analysis strongly suggests that mandatory COVID-19 vaccine policies have had **damaging effects on public trust, vaccine confidence, political polarization, human rights, inequities and social wellbeing.**”<sup>1</sup>

Results indicate that reactance elicited by mandates can cause detrimental effects, such as decreasing the intention to vaccinate... **The result emphasizes potential negative effects of mandates on a country’s vaccination program.**”<sup>2</sup>

Analysis

BMJ Global Health

## The unintended consequences of COVID-19 vaccine policy: why mandates, passports and restrictions may cause more harm than good

Kevin Bardosh,<sup>1,2</sup> Alex de Figueiredo,<sup>3</sup> Rachel Gur-Arie,<sup>4,5</sup> Euzebiusz Jamrozik,<sup>5,6</sup> James Doidge,<sup>7,8</sup> Trudo Lemmens,<sup>9</sup> Salmaan Keshavjee,<sup>10</sup> Janice F. Graham,<sup>11</sup> Stefan Born,<sup>12</sup>

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**ABSTRACT**  
Vaccination policies have shifted dramatic COVID-19 with the rapid emergence of post-vaccine mandates, domestic vaccine passports, differential restrictions based on vaccination status. These policies have prompted ethical, scientific, legal and political debate, there has been little attention to their potential unintended consequences. We outline a comprehensive set of hypotheses for how these policies may ultimately be counterproductive. Our framework considers four domains: (1) psychology, (2) politics and law, (3) socioeconomics and (4) the integrity of science and public health. Current vaccines appear to have had a significant impact on decreasing COVID-19-related morbidity and mortality, but current mandatory policies are scientifically questionable and are likely to cause societal harm that outweighs the benefits. Restricting people's freedom of movement, education, public transport and social activities, and COVID-19 vaccination status impinges on individual autonomy, promotes stigma and social polarisation, affects health and well-being. Current policies lead to a widening of health and economic inequalities, a loss of trust in public health institutions, and reduce the effectiveness of public health measures, including COVID-19 vaccination. Mandating one of the most powerful interventions in public health and should be used sparingly and carefully. Ethical norms and trust in institutions. We argue that current COVID-19 vaccine policies should be re-evaluated in light of the negative consequences that they may have on public health. Leveraging empowering strategies based on public consultation, and improving health infrastructure, represent a more sustainable approach to optimising COVID-19 vaccination programs. Broadly, the health and well-being of the population.

**INTRODUCTION**  
Since 2021, mandatory proof-of-vaccination policies have been implemented by governments and the scientific community. These policies have prompted ethical, scientific, legal and political debate, there has been little attention to their potential unintended consequences. We outline a comprehensive set of hypotheses for how these policies may ultimately be counterproductive. Our framework considers four domains: (1) psychology, (2) politics and law, (3) socioeconomics and (4) the integrity of science and public health. Current vaccines appear to have had a significant impact on decreasing COVID-19-related morbidity and mortality, but current mandatory policies are scientifically questionable and are likely to cause societal harm that outweighs the benefits. Restricting people's freedom of movement, education, public transport and social activities, and COVID-19 vaccination status impinges on individual autonomy, promotes stigma and social polarisation, affects health and well-being. Current policies lead to a widening of health and economic inequalities, a loss of trust in public health institutions, and reduce the effectiveness of public health measures, including COVID-19 vaccination. Mandating one of the most powerful interventions in public health and should be used sparingly and carefully. Ethical norms and trust in institutions. We argue that current COVID-19 vaccine policies should be re-evaluated in light of the negative consequences that they may have on public health. Leveraging empowering strategies based on public consultation, and improving health infrastructure, represent a more sustainable approach to optimising COVID-19 vaccination programs. Broadly, the health and well-being of the population.

**Vaccination policy reactance: Predictors, consequences, and countermeasures**

Philipp Sprengholz<sup>1</sup>, Lisa Felgendreiff<sup>1</sup>, Robert Böhm<sup>2</sup> and Cornelia Betsch<sup>1</sup>

**Abstract**  
Ending the COVID-19 pandemic will require rapid large-scale uptake of vaccines against the disease. Mandating vaccination is discussed as a suitable strategy to increase uptake. In a series of cross-sectional quota-representative surveys and two preregistered experiments conducted in Germany and the US (total N=4629), we investigated (i) correlates of individual preferences for mandatory (vs voluntary) COVID-19 vaccination policies; (ii) potential detrimental effects of mandatory policies; and (iii) interventions potentially counteracting them. Results indicate that reactance elicited by mandates can cause detrimental effects, such as decreasing the intention to vaccinate against influenza and adhere to COVID-19 related protective measures.

**Keywords**  
vaccination mandates, psychological reactance, health policy

Ending the COVID-19 pandemic will require rapid and large-scale uptake of vaccines, but data from different countries indicates that a significant part of the global population may not intend to get vaccinated against COVID-19. For example, at the end of June 2021, only 66% of American adults were at least partly vaccinated but less than one million vaccine doses were administered per day, a 75% decrease from the peak of 3.38 million reported in mid-April 2021 (New York Times, 2021). Recent polls further show that vaccination willingness in other countries such as Germany and France has increased after approval of the first vaccine population. Thus, achieving a state of herd immunity where those who cannot be vaccinated (e.g. young children, immunocompromised people) are protected from an infection by those who have been immunized renders unlikely given these numbers. Mandates are often discussed as a means of countering low vaccine uptake (Omer et al., 2019). In many countries, selective mandates have been implemented for vaccine-preventable diseases.

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BMJ

Bardosh K, et al. *BMJ Global Health* 2022

# Pandemic preparedness and COVID-19: an exploratory analysis of infection and fatality rates, and contextual factors associated with preparedness in 177 countries, from Jan 1, 2020, to Sept 30, 2021



COVID-19 National Preparedness Collaborators\*

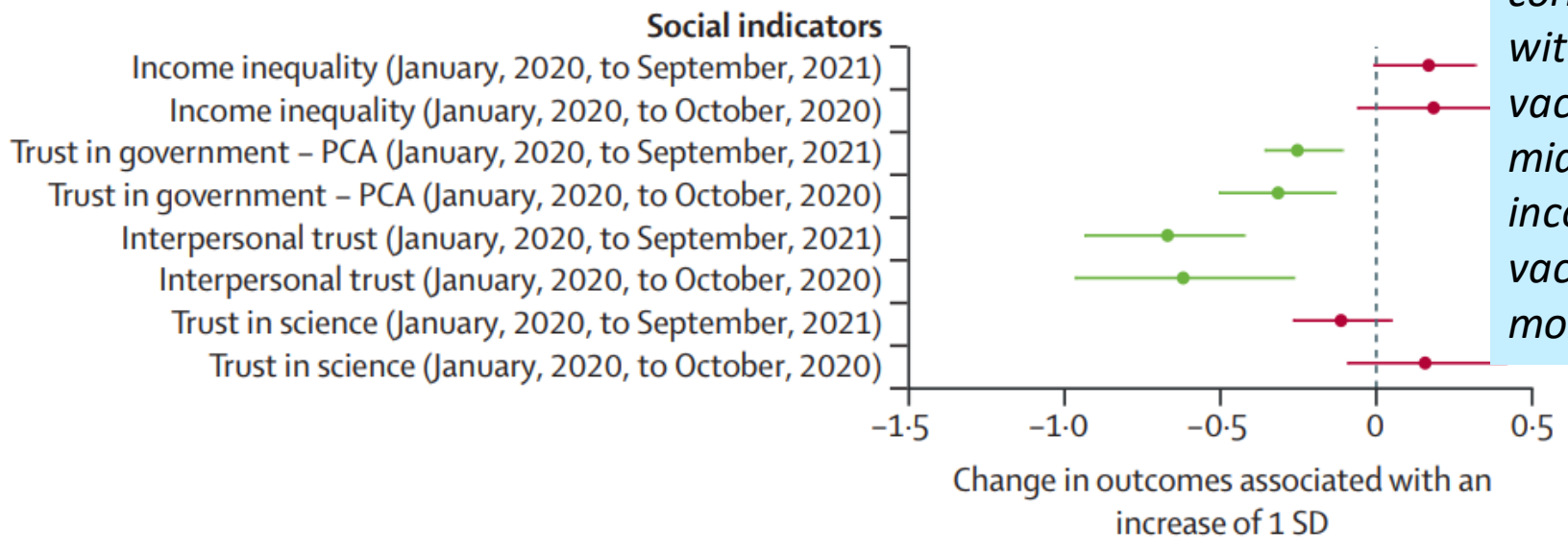


## Summary

**Background** National rates of COVID-19 infection and fatality have varied dramatically since the onset of the pandemic. Understanding the conditions associated with this cross-country variation is essential to guiding investment in more effective preparedness and response for future pandemics.

Lancet 2022; 399: 1489–512  
 Published Online  
 February 1, 2022  
<https://doi.org/10.1016/>

**Methods** Daily locations were rate and infec economic fact risk of pneum below 100 m, population, m other betacoro cancer, and G Standardised indices, seven regression. To the relationsh COVID-19 vac



*“High levels of government and interpersonal trust, as well as less government corruption, were associated with higher COVID-19 vaccine coverage among middle-income and high-income countries where vaccine availability was more widespread.”*

## Findings

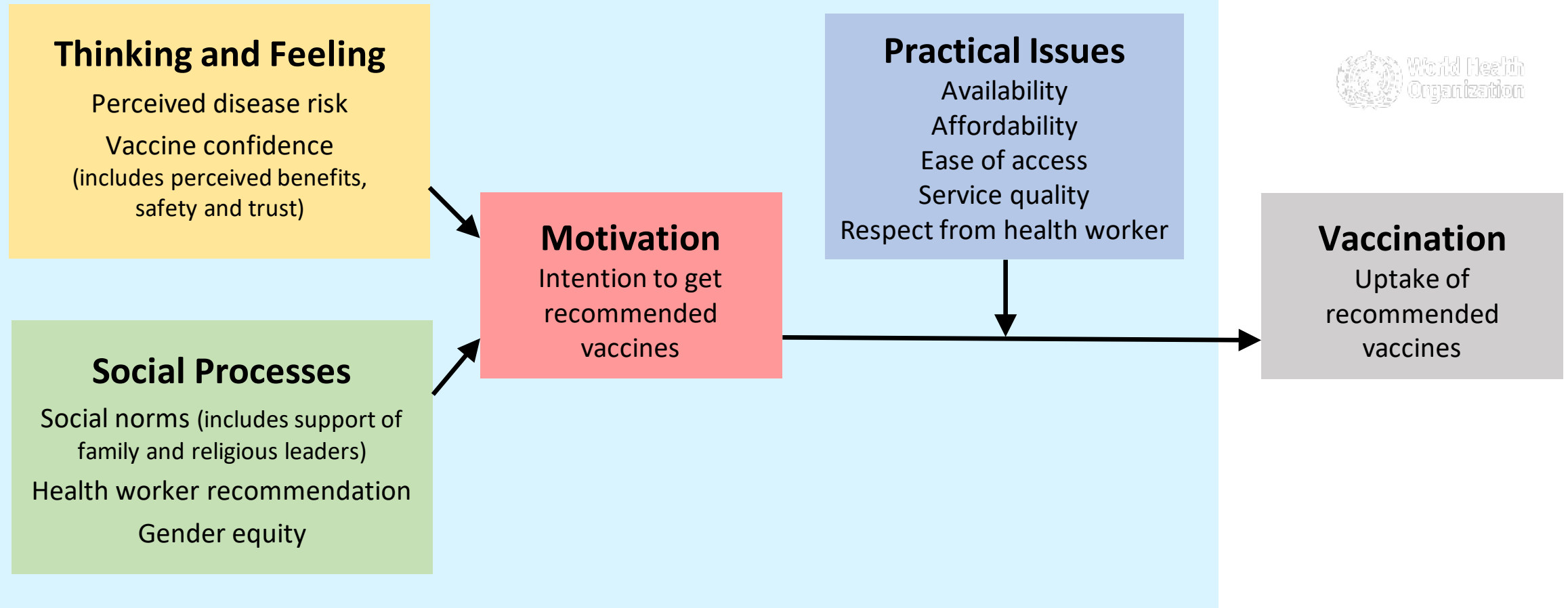
The fa Sept 30, 2021, included the proportion of the population living below 100 m (5.4% [4.0–7.9] of variation), GDP per capita (4.2% [1.8–6.6] of variation), and the proportion of infections attributable to seasonality (2.1% [95% uncertainty interval

# Other implications for immunization?

- **Global cooperation and funding** – for research, development and delivery
- **Acceleration in vaccine development** and authorization for emergency use in short timeframes
- **New vaccine technologies:** use and acceptance of new technologies accelerated, e.g., mRNA
- **Rapid policy and regulatory adaptations** to expedite approvals ensuring safety and efficacy
- **Public awareness** increased about the importance of vaccination
- **Digital platforms** played a significant role, e.g., scheduling, monitoring AEFIs
- **Inequitable access:** disparities in global and local access and intensive discussions on about equitable distribution and vaccine diplomacy

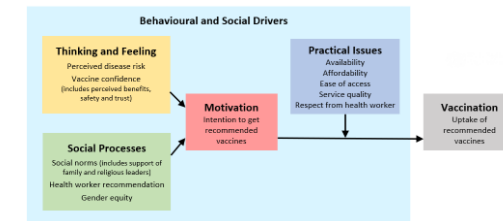
# What drives vaccine uptake?

## Behavioural and Social Drivers



# Moving from data to action:

## *Promising interventions by BeSD domain to guide planning*



Domain where problem is identified	Interventions shown to increase vaccination
Thoughts and feelings and Motivation	<ul style="list-style-type: none"> <li>Campaigns to inform or educate the public about vaccination</li> <li>Dialogue-based interventions, including one-to-one counseling to encourage vaccination</li> </ul>
Social processes	<ul style="list-style-type: none"> <li>Community engagement</li> <li>Positive social norm messages</li> <li>Vaccine champions and advocates</li> <li>Recommendations to vaccinate from health workers</li> </ul>
Practical issues	<ul style="list-style-type: none"> <li>Reduced out-of-pocket costs</li> <li>Service quality improvements</li> <li>Reminder for next dose /recall for missed dose</li> <li>Onsite vaccination at home, work and school</li> <li>Default appointments</li> <li>Incentives</li> <li>School and work requirements (mandates)</li> </ul>

*NB: Multi-component interventions more effective than single – and M&E always needed*



# Further evidence on effective strategies



## Behavioral interventions for vaccination uptake: A systematic review and meta-analysis

Amy A. Malik<sup>a,b</sup>, Noreen Ahmed<sup>c</sup>, Mehr Shafiq<sup>a,d</sup>, Jad A. Elharake<sup>a,c,f</sup>, Erin James<sup>a</sup>, Kate Nyhan<sup>g</sup>, Elliott Paintsil<sup>a,c</sup>, Hannah Camille Melchinger<sup>c</sup>, Yale Behavioral Interventions Team<sup>a</sup>, Fauzia A. Malik<sup>c</sup>, Saad B. Omer<sup>c,\*</sup>

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### ARTICLE INFO

**Keywords:**  
Vaccine uptake  
Behavioral interventions  
Meta-analysis  
Systematic review


### ABSTRACT

**Background:** Human behavior and more specifically behavioral insight-based approaches to vaccine uptake have often been overlooked. While there have been a few narrative reviews indexed in Medline on behavioral interventions to increase vaccine uptake, to our knowledge, none have been systematic reviews and meta-analyses covering not just high but also low-and-middle income countries.  
**Methods:** We included 613 studies from the Medline database in our systematic review and meta-analysis categorizing different behavioral interventions in 9 domains: education campaigns, on-site vaccination, incentives, free vaccination, institutional recommendation, provider recommendation, reminder and recall, message framing, and vaccine champion. Additionally, considering that there is variability in the acceptance of vaccines among different populations, we assessed studies from both high-income countries (HICs) and low- to middle-income countries (LMICs), separately.  
**Findings:** Our results showed that behavioral interventions can considerably improve vaccine uptake in most settings. All domains that we examined improved vaccine uptake with the highest effect size associated with provider recommendation (OR: 3.4 (95%CI: 2.5–4.6); Domain: motivation) and on-site vaccination (OR: 2.9 (95%CI: 2.3–3.7); Domain: practical issues). While the number of studies conducted in LMICs was smaller, the quality of studies was similar with those conducted in HICs. Nevertheless, there were variations in the observed effect sizes.  
**Interpretation:** Our findings indicate that “provider recommendation” and “on-site vaccination” along with other behavioral interventions can be employed to increase vaccination rates globally.

### 1. Introduction

Vaccines are one of the most effective and cost-effective public health resources available for preventing infectious diseases and saving millions of lives each year [1,2]. However, vaccine uptake is variable across different populations and vaccines. Globally, progress towards

adequate supply of vaccines, and lack of awareness and education about vaccination. While some of the barriers to vaccine uptake are structural, others are related to human behavior [3,4]. Behavioral science, which uses an interdisciplinary approach to systematically study human behavior, offers promise in designing interventions that use the behavioral and social determinants of vaccination to increase vaccine



*“Our results show that behavioral interventions can be used to increase vaccine uptake in most settings, particularly provider recommendations and on-site vaccination. With on-site vaccination, it is important to determine the appropriate timings for vaccination spots and establish rapport with local community leaders to promote vaccination sites.”*

# Addressing low coverage equitably

- Prioritise populations who experience inequity
- Understand, measure and act on the full scope of drivers of vaccination
- Apply evidence for what works
- Engage with communities and civil society
- Understand system weaknesses
- Invest in health workforce and strengthen primary care



Women in Rasuwa district, Nepal await COVID-19 vaccination, April 2021. Image courtesy of Dr Bhesh Raj Pokherel

Where to go for more details?

# Summary of tools and guidance available

**World Health Organization**  
Organisation mondiale de la Santé

**Weekly epidemiological record**  
Relevé épidémiologique hebdomadaire

15 MAY 2022 (Vol. 67, No. 20) | 2022, 2021

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**Understanding the behavioural and social drivers of vaccine uptake: WHO position paper – May 2022**

**Comprendre les facteurs comportementaux et sociaux de l'adoption des vaccins: Note de synthèse de l'OMS – mai 2022**

**Introduction**

In accordance with the WHO's mandate to provide guidance to Member States on health policy matters, the organization regularly issues position papers on vaccination, particularly when they relate to large-scale immunization programmes. These position papers summarize essential background information and results by giving the current WHO position. Position papers are designed to be used mainly by national public health officials and managers of immunization programmes. These papers may also be of interest to international funding agencies.

**Introduction**

Conformément à son mandat, qui prévoit qu'elle conseille les États membres en matière de politique sanitaire, l'OMS publie régulièrement des notes de synthèse sur la vaccination, en particulier lorsqu'elle s'inscrit dans le cadre de programmes de vaccination à grande échelle. Elles résument les informations essentielles et présentent la position actuelle de l'OMS.

Ces notes de synthèse sont principalement destinées aux responsables nationaux de la santé publique et aux administrateurs des programmes de vaccination. Toutefois, elles peuvent également intéresser les agences de financement internationale.

**Behavioural and Social Drivers**

```
graph LR
    subgraph Thinking_and_Feeling [Thinking and Feeling]
        T1[Perceived disease risk]
        T2[Vaccine confidence  
(includes perceived benefits, safety and trust)]
    end
    subgraph Social_Processes [Social Processes]
        S1[Social norms (includes support of family and religious leaders)]
        S2[Health worker recommendation]
        S3[Gender equity]
    end
    subgraph Practical_Issues [Practical Issues]
        P1[Availability]
        P2[Affordability]
        P3[Ease of access]
        P4[Service quality]
        P5[Respect from health worker]
    end
    subgraph Motivation [Motivation]
        M1[Intention to get recommended vaccines]
    end
    subgraph Vaccination [Vaccination]
        V1[Uptake of recommended vaccines]
    end
    Thinking_and_Feeling --> Motivation
    Social_Processes --> Motivation
    Practical_Issues --> Vaccination
    Motivation --> Vaccination
```

through an enhanced understanding of the underlying reasons. This paper also

propose une compréhension accrue des raisons de l'adoption et de la non-adoption grâce à une

**World Health Organization**

**QUALITY IMMUNIZATION SERVICES**

**A Planning Guide**

**Human-Centred Design for Tailoring Immunization Programmes**

May 2022

[YOUR ORGANIZATION LOGO HERE]

**Helping people get vaccinated**

Quick tips for community representatives

Access all guidance here:

<https://www.who.int/teams/immunization-vaccines-and-biologicals/essential-programme-on-immunization/demand>

# Thank you

**QUESTIONS AND DISCUSSION**