

# Vaccine Acceptance Across Twenty Low- and Middle-Income Countries

Insights from the COVID Behaviors Dashboard

## Research Question

The large-scale, equitable, and rapid distribution of vaccines is one critical way to control the COVID-19 pandemic. Lags in vaccine uptake, coupled with sustained disease transmission, are engines for the emergence of new, vaccine-resistant virus variants, threatening progress towards achieving herd immunity.<sup>1</sup> Globally, countries are introducing COVID-19 vaccines at different rates, and in some countries, like the United States, uptake has stagnated despite widespread access<sup>2</sup> among the general population. Vaccine acceptance is a major facilitator of vaccine uptake. Analyzing vaccine acceptance in different geographic and demographic contexts is, therefore, critical as healthcare workers, public health experts, and government officials tailor public health messages to promote vaccine distribution. To date, many studies assessing COVID-19 vaccine acceptance have been centered in high- and middle-income countries.<sup>3</sup> This brief focuses on vaccine acceptance in countries identified as “priority” (see page 2) by the United States Agency for International Development (USAID) to aid in vaccine distribution and planning.

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Understanding vaccine acceptance  
helps practitioners target public health  
messages to support vaccine distribution.

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## Data and Methods

The CTIS (see sidebar) measures vaccine acceptance in participants who were self-reported as unvaccinated through the question, “If a vaccine to prevent COVID-19 were offered to you today, would you choose to get vaccinated?” Respondents chose from four options: “Yes, definitely,” “Yes, probably,” “No, probably not,” and “No, definitely not.”

## About the COVID Behaviors Dashboard and the data behind it

This brief provides a secondary analysis of data from the COVID-19 Trends and Impact Survey (CTIS), generated by the University of Maryland Social Data Science center in collaboration with Facebook’s Data for Good Initiative Analysis. CTIS data are presented through the interactive COVID Behaviors Dashboard, prepared by researchers and social and behavior change communication experts at Johns Hopkins Center for Communication Programs (CCP) in coordination with WHO’s Global Outbreak Alert and Response Network (GOARN). The dashboard presents data on COVID-related knowledge, attitudes, and practices, and responses are weighted for better data representation within each country<sup>4</sup>.

## Data and Methods, continued

This analysis includes survey responses from September 1 to September 30, 2021. The analysis is limited to unvaccinated participants who provided responses to all four demographic questions (age, gender, education, and residence) and answered the vaccine acceptance question. Johns Hopkins Center for Communication Programs' data analysts compared weighted percentages of each response category across countries and demographic factors and computed vaccine acceptance for 22 priority countries (see box) by averaging the weighted country-specific proportions. Any group or subgroup with fewer than 100 participants per question was excluded from the analysis because statistical weights could not be applied. The analysis was initially intended for 22 USAID priority countries, but the data from Guinea and Zimbabwe were not sufficiently robust for analysis and were ultimately excluded from the analysis.

### USAID Priority Countries

-Bangladesh	-Jordan
-Burkina Faso	-Kenya
-Côte d'Ivoire	-Mali
-Dem. Rep of Congo	-Mozambique
-Egypt	-Nepal
-Ethiopia	-Nigeria
-Ghana	-Pakistan
-Guatemala	-Philippines
-Guinea*	-Senegal
-India	-South Africa
-Indonesia	-Zimbabwe*

\*excluded due to too few responses

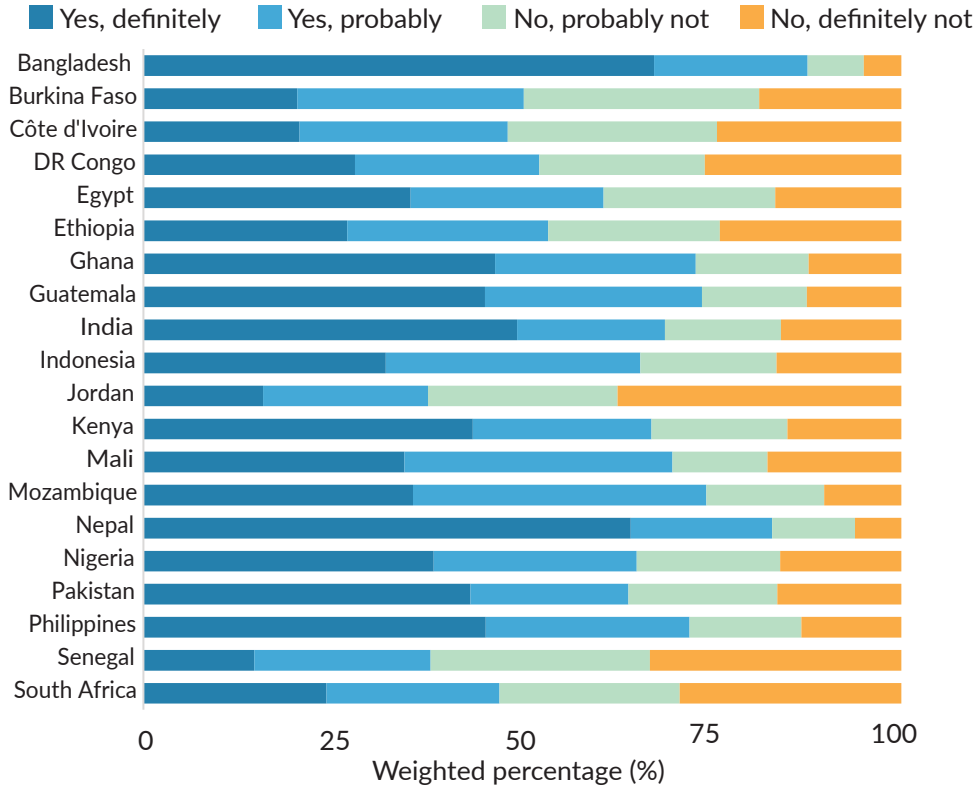
Lastly, data analysts plotted vaccine acceptance according to the timing of COVID-19 vaccine rollout. Vaccine rollout status, measured by people fully vaccinated (%) and people partially or fully vaccinated (%), was imported from Our World in Data,<sup>2</sup> and the analysis used cumulative statistics up to September 15, 2021. Pearson correlation coefficients were calculated to assess the association between vaccine acceptance and vaccine rollout status in each country.

## Findings and Implications

- Vaccine acceptance in the unvaccinated population varied across the priority countries, with a median of 35.41% (interquartile range [IQR] 26.20–45.10%) responding “Yes, definitely” and 25.97% (IQR 22.58–27.77%) responding “Yes, probably” (Figure 1). The proportion of people who said they were “definitely” willing to be vaccinated ranged from 14.63% in Senegal to 67.40% in Bangladesh. Vaccine acceptance among the unvaccinated was lower in this analysis than other multi-country studies on vaccine acceptance and hesitancy in low- and middle-income countries<sup>3,5</sup>. This may be attributed to the differences in sampling procedures (in particular, because this survey was administered via the internet through Facebook), the focus of the analysis on only unvaccinated participants, and the large size and scope of the CTIS survey.
- In a pooled analysis across the priority countries, higher education and higher age were associated with lower vaccine acceptance rates (Figure 2). Overall vaccine acceptance rates among unvaccinated participants were comparable across gender and residential settings (urban or rural areas). The findings of these pooled results should be interpreted with caution, as the CTIS survey included respondents with higher education and from higher age groups than the national populations which may bias the results.<sup>4</sup>

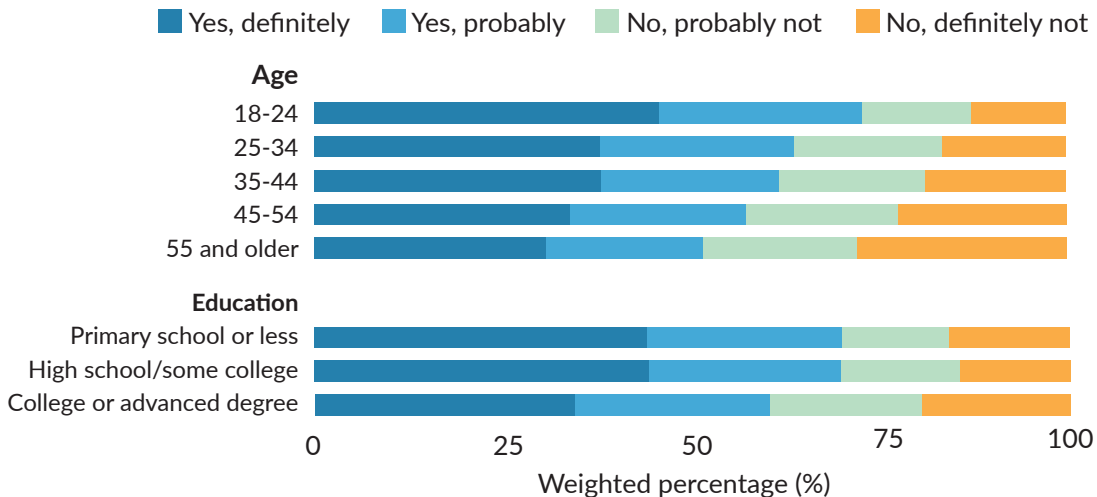
**Figure 1: Vaccine Acceptance among Unvaccinated in USAID Priority Countries**

Responses to: If a vaccine to prevent COVID-19 were offered to you today, would you choose to get vaccinated?

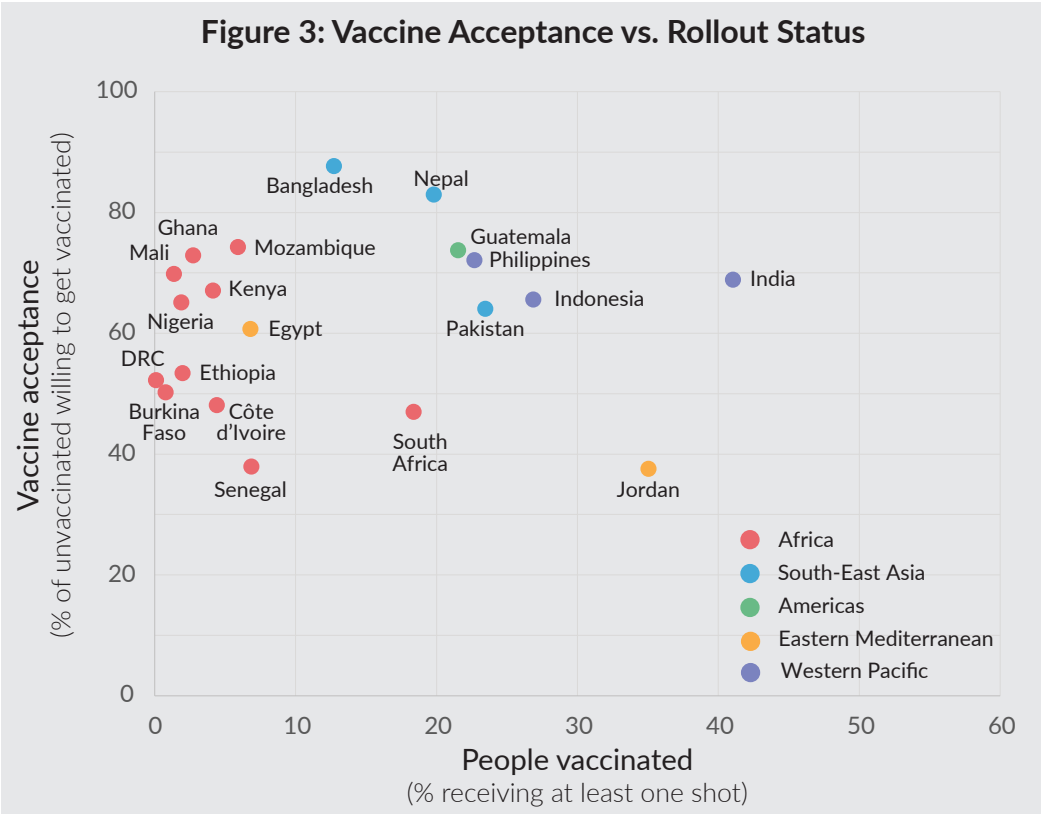


**Figure 2: Vaccine Acceptance among Unvaccinated in USAID Priority Countries (pooled data) by Age and Education**

Responses to: If a vaccine to prevent COVID-19 were offered to you today, would you choose to get vaccinated?



- The gap between subgroups and the directionality between the associations varied by country. For example, vaccine acceptance rates were 10% higher in females in Jordan, but 14% higher in males in Ethiopia. In Egypt, vaccine acceptance was 10% lower in people 55 years and older compared to people aged 18–24 years old. This pattern was similar in South Africa, where acceptance rates were 36.5% higher among the youngest demographic (18–24 years old). Therefore, public health programs employing targeted messaging strategies should tailor messages in each country to specific audiences exhibiting greater levels of vaccine hesitancy.
- The relationship between vaccine acceptance and rollout status varied across countries and geographic regions. There was no statistical relationship between vaccine acceptance among the unvaccinated and percent vaccinated in the population, with negligible Pearson correlation coefficients below 0.10.
- Countries including Ethiopia, the Democratic Republic of the Congo, Burkina Faso, Côte d'Ivoire, South Africa, Senegal, Zimbabwe, and Jordan have low vaccine acceptance rates (below 60%), even though these countries have fewer than 40% vaccinated. Efforts to boost vaccine uptake in these countries will need to both address vaccine distribution and focus on sensitizing the population to vaccine rollout through vaccine acceptance campaigns.
- Many African countries, including Mozambique, Ghana, Mali, Kenya, and Nigeria, have higher vaccine acceptance rates (over 60%) while having a relatively small proportion of the population vaccinated (i.e., in Mozambique, 5.92% are vaccinated as of September 15, 2021).<sup>2</sup> In these countries, officials should anticipate high demand for the vaccines immediately upon availability, and rapid vaccine rollout matching the demand could quickly boost population immunization status.
- In Figure 3, countries in the lowest left quadrant of the graphic, such as Senegal, have both low vaccine acceptance and low percentages of current vaccination. In these countries, simultaneous implementation of vaccine promotion campaigns and improved vaccine supply could have a synergistic effect in increasing the vaccination rate.



Countries in the upper right of Figure 3, including Bangladesh and Nepal, have high vaccine acceptance and moderate vaccine rollout status. These countries may improve vaccine uptake with relative ease if they both secure vaccine supply and accessibility and maintain communication efforts to ensure vaccine acceptance remains high.

## Conclusions and Recommendations

- Unvaccinated respondents in USAID priority countries had an overall vaccine acceptance of 65.32% (IQR 51.72–72.27), ranging from 37.91% in Senegal to 87.65% in Bangladesh. As this is lower than typically expected in low- and middle-income countries,<sup>3,5</sup> efforts to improve vaccine acceptance are needed.
- Pooled across USAID priority countries, vaccine acceptance was lower in higher education and higher age groups, but the strength and directionality of demographic associations varied by country. Targeted and stratified community campaigns should be planned to tailor messages in each country to specific audiences exhibiting greater levels of vaccine hesitancy.
- In countries with low vaccine rollout and high vaccine acceptance, rapid vaccine rollout could effectively match supply with demand; in countries with low vaccine acceptance (<60%), demand-creation campaigns seeking to improve vaccine acceptance could more effectively sensitize the population to future vaccine rollout efforts.
- Countries with high demand that are beginning vaccine rollout should ensure that messaging and infrastructure maximizes transparency, articulates expectations and procedures, and listens to communities to modify procedures and maximize reach.

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**In countries with high vaccine acceptance, vaccine rollout may match demand. In countries with lower vaccine acceptance, vaccine rollout activities will need to be accompanied by demand-creating campaigns.**

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## References

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Recommended citation:

Hwang, J., Rosen, G., Tseng, T., Rosen, E., Nybro, E., Shaivitz, M. & Shattuck, D. (2021). Vaccine Acceptance across Twenty Low- and Middle-Income Countries. Johns Hopkins Center Communication Programs. [https://covidbehaviors.org/vaccine\\_acceptance\\_technical\\_brief.pdf](https://covidbehaviors.org/vaccine_acceptance_technical_brief.pdf)