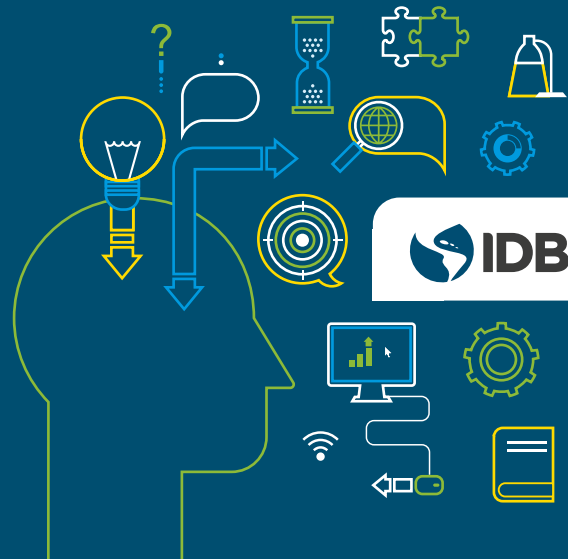


# Can Behavioral Economics Help Overcome Vaccine Hesitancy?

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**A large-scale SMS-based campaign in Cali, Colombia, featuring tailored messages addressing key behavioral barriers, increased HPV vaccine uptake by 34% to 55%.**



**Increasing confidence in the vaccine and providing reliable information are the most effective strategies to enhance HPV vaccination uptake.**



**The intervention achieved high cost-effectiveness, generating USD 3.6 to USD 5.75 per dollar spent.**



## CONTEXT

**Human Papillomavirus (HPV), a widespread sexually transmitted infection (STI), is responsible for over 90% of cervical cancer cases.** Although HPV vaccination is a highly effective preventive strategy and widely available, uptake remains persistently low despite significant efforts to promote it. This is particularly notable in Colombia. Despite achieving an initial coverage of 95% within two years of introducing the HPV vaccine into its National Immunization Program, a 2014 medical incident in Carmen de Bolívar—later found have no causal link to the HPV vaccine—triggered extensive media coverage and vaccine hesitancy, with a steep drop in immunization rates.



## PROJECT

**A mixed methods approach was employed to understand barriers to HPV vaccine uptake in Cali, Colombia.** Insights from interviews with 14 parents of unvaccinated daughters allowed us to identify the constraints affecting our target population.

Based on these findings, a randomized controlled trial was conducted with 15,231 parents who were randomly assigned to six groups: a control group, a placebo group which received a public health message, and four treatment groups incorporating behavioral economics strategies. Over eight weeks, all groups except the control group received weekly SMS messages personalized with their daughter's name and signed by the Health Secretariat.

## RESULTS

**Behaviorally informed messages sent to the four treatment groups were effective in increasing vaccination rates.** As shown in [Figure 1](#), the informational SMS treatment group achieved a 2.8 percentage point (p.p.) increase, the social norms SMS treatment group showed a 2 p.p. increase, and the trust SMS treatment group demonstrated a 3.2 p.p. increase. Lastly, the framing SMS treatment group displayed a 2.7 p.p. increase. Increasing confidence in the vaccines and providing information from reliable sources appear to be the most effective treatments, with increases in HPV vaccination equivalent to 55.2% and 48.3%, respectively.

### Key Concept

#### SOCIAL NORMS

Refer to the unwritten rules and expectations that guide behavior within a society or group. People tend to conform to societal standards, and failure to comply can lead to disapproval from peers.



Additionally, we analyzed heterogeneous effects across dose, age, and income. Girls who had received their first dose were more likely to get the second dose when assigned to the information or Framing SMS groups. Regarding age groups, we compared those under 17 to those who were exactly 17, since the vaccine is no longer free after girls turn 18, making it interesting to assess whether this upcoming deadline had an impact. However, we found no significant differences between these age groups. For income, effects were similar across middle- and high-income households, both groups had higher vaccination rates than lower-income households, especially in the Framing and Information groups.

The intervention is highly cost-effective, with economic benefits far exceeding its costs, generating between USD 3.6 and USD 5.75 for every dollar spent, primarily due to prevented deaths. **These results highlight the potential of behavioral interventions to significantly increase vaccination rates, even in contexts of high vaccine hesitancy.**



## POLICY IMPLICATIONS

**This study provides valuable insights for policy-makers and public health practitioners seeking to implement cost-effective and scalable strategies to increase vaccination uptake in areas where adverse events have harmed vaccine confidence.**

By identifying context-specific behavioral barriers, the diagnostic guides the design of a tailored intervention that addresses key psychological drivers and helps to restore vaccination rates, even in hesitant populations. The intervention highlights the effectiveness of behaviorally informed SMS messaging that leverages healthcare professionals' endorsements, clear and concise information, framing strategies and social norms. This approach demonstrates that targeted communication, rather than generic reminders, is critical to overcoming hesitancy rooted in mistrust and misinformation.

Moreover, the findings underscore the importance of effectively managing crises of public confidence, which require rapid and well-coordinated communication strategies. Incorporating behavioral insights into these responses can be highly beneficial for rebuilding trust and mitigating the long-term impact of misinformation. Strengthening institutional capacity to apply behavioral science in the design and implementation of public health strategies—not only during crises—can help governments enhance the effectiveness of public health programs by grounding them in real-world behaviors and decision-making processes.

**Future research should explore the broader applicability of these insights across different health challenges, as behavioral approaches offer cost-effective solutions to public health crises beyond HPV vaccination.** Integrating behavioral science into public health strategies is essential to reduce the burden of vaccine-preventable diseases. Successful strategies for HPV vaccination can also inform other immunizations campaigns, including routine childhood vaccines, COVID-19 boosters, and influenza shots.

**FIGURE 1. Effect on HPV vaccination uptake by treatment**

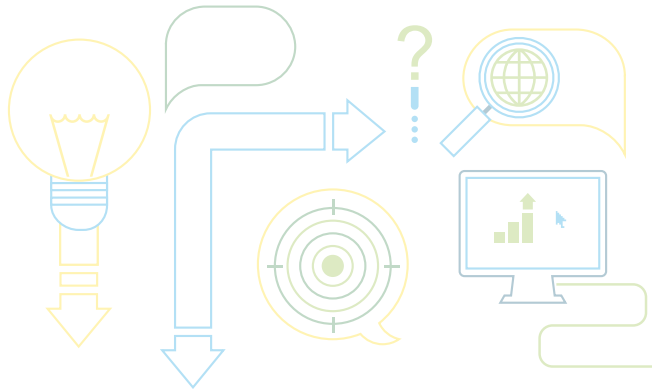


Note: The figure shows the marginal effect of each treatment compared to the control group. The control group effect is 5.8 p.p., represented by the horizontal line. It includes 99.9%, 99% and 95% confidence intervals.

**Key Concept**

**FRAMING**

Refers to the way in which information is presented, influencing people's decisions. Options can be framed by emphasizing their positive or negative aspects, leading each to be perceived as relatively more or less attractive.



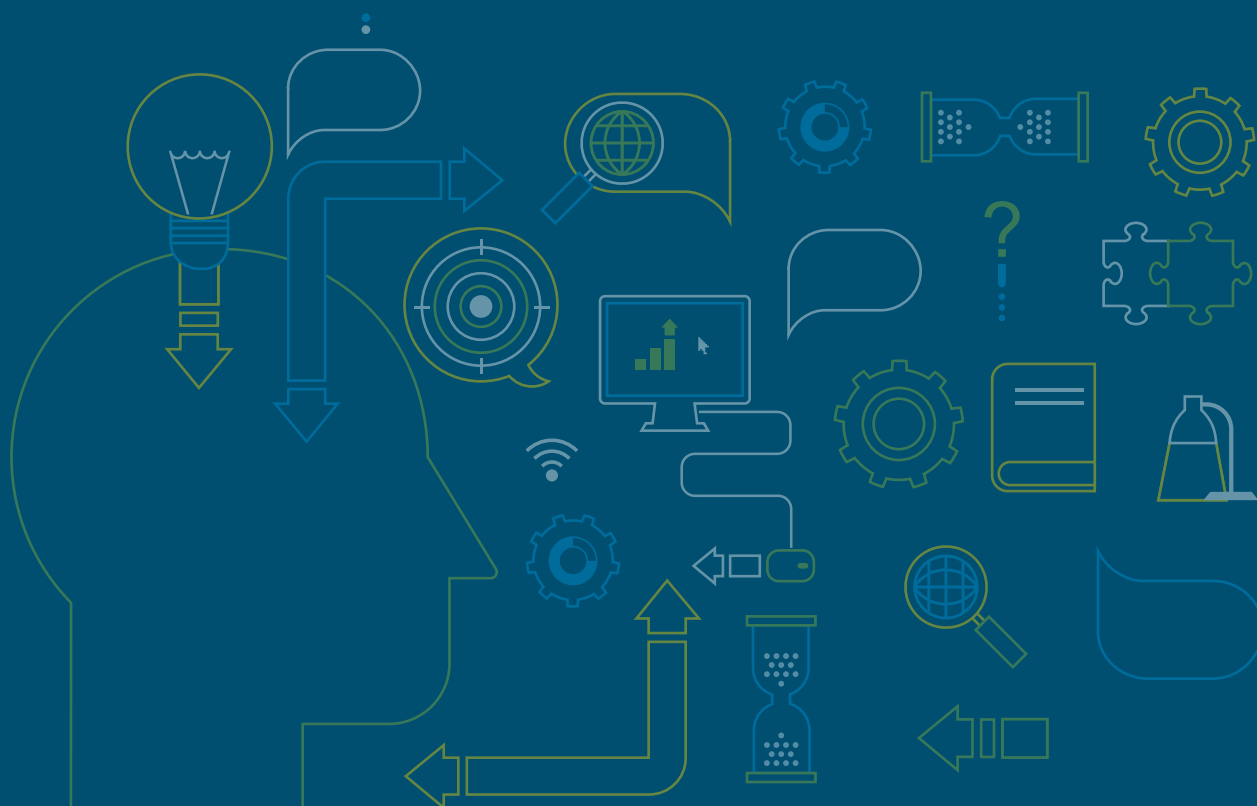
**FULL STUDY**

Diaz, Lina, Deborah Martinez Villarreal, Karina Marquez, and Carlos Scartascini. 2025. "Combating Vaccine Hesitancy: The Case of HPV Vaccination." *Social Science & Medicine* 381 (September): 118081. <https://doi.org/10.1016/j.socscimed.2025.118081>.

This study also appeared as an [IDB Working Paper](#).

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