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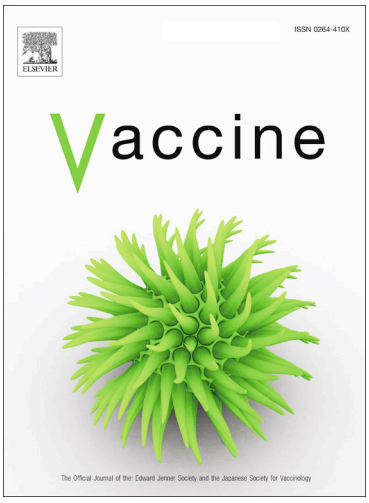

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Alejandro Arrieta, Ariadna García-Prado, Juan Pablo Sarmiento, Carmen Paz Castro

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Identifying early adopters of COVID-19 vaccines in Latin America

Alejandro Arrieta, Florida International University, USA

Ariadna García-Prado, Universidad Pública de Navarra, Spain

Juan Pablo Sarmiento, Florida International University, USA

Carmen Paz Castro, Universidad de Chile, Chile

Corresponding author:

Alejandro Arrieta
11200 SW 8th Street
AHC5-450
Miami, FL 33199,
Estados Unidos
Phone: +1 (305) 348-7525
E-mail: alejarri@fiu.edu

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Introduction

Containment of the COVID-19 pandemic has become even more urgent as more deadly mutations of the SARS-Cov-2 virus emerge. The common goal is to achieve "herd immunity" in every country as soon as possible. However, the achievement of global herd immunity faces many obstacles: problems with the production and delivery of vaccines, unequal access to vaccines for different countries and/or population groups, and vaccine hesitancy and/or refusal, among others.

In this paper, we focus on vaccine hesitancy, which has been aggravated as a result of the COVID-19 pandemic.[1] As acknowledged by the World Health Organization (WHO), a person's willingness and motivation to be vaccinated is affected by a variety of thoughts and feelings about vaccines, including varying levels of perceived risk, worry, confidence, and trust, as well as safety concerns.[2] Our purpose is to identify the factors associated with a person's propensity to get a COVID-19 vaccine across several big cities of Latin America. Knowledge of these factors is especially important for policy purposes because it makes it possible to identify the population groups that are most willing to get vaccinated and thus can be used to increase demand.[3] It also provides information on perceptions of vaccine safety and efficacy that can be used to implement communication campaigns or other strategies tailored to specific populations.

We designed and delivered a survey across citizens of six cities of Latin America with high incidence of COVID-19 (Buenos Aires-Argentina, Santiago-Chile, Bogotá-Colombia, Guayaquil-Ecuador, Lima-Peru, and Santo Domingo-Dominican Republic). The survey took place when the vaccine had not yet arrived to any of these countries (between September and December 2020). The timing of the survey was important, as it allowed us to identify the characteristics of individuals who were likely to become early adopters of the new vaccines before barely any specific information of the vaccine and vaccination process were available. Identifying early adopters, i.e. those individuals who use new products before the majority of people and have an influence on usage, is critical, as these groups can help to spur wider adoption of an innovation, while laggers can have a hindering effect.[4]

Before the current pandemic, vaccine confidence was already decreasing worldwide for cultural, and political reasons.[5] In 2019 vaccine hesitancy was already cited as one of the top ten threats to global health.[2] The current situation may have aggravated the problem, as the use of social media has increased notably during the pandemic and it has been estimated that increased interactions with misleading online news accounts for 17% of resistance to vaccines.[1] In addition, the demand for COVID-19 vaccination

varies widely because, differently from other vaccines, COVID-19 vaccines developed with unprecedented speed and possible side effects are still under investigation.[6-8]

In the past, the region of Latin America has not been known for vaccine hesitancy, at least toward children's vaccines or other well-known vaccines among certain age groups such as the seasonal flu.[9] However, previous evidence in the region from the pandemic H1N1 shows that there was some level of distrust regarding safety of the new vaccine; in particular, pregnant women in the region reported a very low rate of vaccination.[5] But according to surveys made in different countries of the region during October and November 2020, it seems that levels of vaccine refusal[1] related to COVID-19 are much higher than before the pandemic.[5] For instance, in countries like Ecuador more than 50% reported an intention to refuse vaccination in October 2020 and around 38.5% in Colombia. Levels of vaccine refusal are lower in countries such as Chile (16%), Perú (10%) and Argentina (10%) but still higher than before the pandemic.[11]

The willingness to get vaccinated[2] in Latin America also seems to be lower than in other regions of the world. While in Fall 2020 the average level of willingness to get vaccinated was around 73% for a sample of 15 countries around the world,[12] surveys in countries of Latin America in the same period report that only about 40% of Argentineans and Chileans were willing to be among the first to be vaccinated, and in Perú around 48% were willing to get vaccinated.[11] The percentage is larger in Colombia (57,7% in October 2020), and Dominican Republic (68%).[13]

Other studies that have analyzed the propensity to get vaccinated against COVID-19 either do not focus on early adopters and/or gather data from other countries or regions.[12, 14] Our study is especially relevant to the context of Latin America, as the underlying factors associated with the choice to be vaccinated vary significantly by location and with individual-level factors. This variance can be attributed to complex socio-environmental, psychological and cultural influences,[15] and indicates the importance of information about vaccination propensity by region/country in order to design policies that target specific populations. Without this information, differences in vaccine coverage between and within countries could potentially delay global control of the pandemic and subsequent recovery. Although data about vaccine coverage is widely collected, no similarly robust monitoring system exists for vaccine confidence.

[1] Vaccine refusal describes a firm decision not to be vaccinated, while vaccine hesitancy describes individuals who are unsure whether they will be vaccinated or not.[10]

[2] Willingness to be vaccinated implies acceptance of vaccination policy as well as readiness to be vaccinated.

Study Data and Methods

Data

Data was collected through the Latinwell survey, an instrument developed by Florida International University and Universidad de Chile to assess the effects of COVID-19 on the subjective wellbeing of residents of Latin American cities and their willingness to get a COVID-19 vaccine[3]. The Latinwell survey was implemented online and distributed to residents aged 25 to 60 from six large cities of Latin America: Buenos Aires (Argentina), Bogota (Colombia), Guayaquil (Ecuador), Lima (Peru), Santiago (Chile), and Santo Domingo (Dominican Republic). The cities were selected based on size (largest cities), language (Spanish speaking), and similar government response to the COVID-19 pandemic[4] (Mexico and Venezuela were excluded). The Latinwell survey focused on large cities rather than countries because of accessibility constraints associated to access to internet that is usually more limited in smaller, rural areas. A non-probability sampling design was implemented through two web-based recruitment platforms. A total of 1,689 respondents were recruited from September 11th to November 8th, 2020 using Facebook's advertising model to construct samples by age and city of residence. Facebook is a promising platform for survey sampling and recruitment in social science,[17] but its use is still limited in the Latin American region. Additionally, 5,252 respondents were recruited from December 4th to December 13th using the Offerwise opt-in online panel. The Offerwise panel in the Latin American region covers the six countries included in the study with over 1.3 million panelists.[18] Of all respondents, 2,155 completed the survey and were used for the analysis. The final sample included 460 (21.3%) respondents recruited from Facebook, and 1,695 (78.7%) respondents recruited from Offerwise.

The study was approved by the Scientific Ethics Evaluation Committee of the University of Chile, and the Florida International University Office of Research Integrity, IRB protocol 20-0553.

Measures

[3] Access to the Latinwell instrument and public data is available at https://doi.org/10.34691/FK2/A0UMWX

[4] Mexico was excluded because of its delayed government response to the pandemic emergency. Federal states such as Mexico and Brazil, left the emergency response to state governments and policy responses were, as a result, implemented considerably later.[16] Venezuela was excluded due to its deteriorated health system and immigration crisis that could affect the statistical analysis.

Our dependent variable is willingness to get a COVID-19 vaccine. Before any vaccination campaign was rolled out in Latin America, the Latinwell survey asked respondents whether they would be vaccinated if a vaccine against COVID-19 were approved and provided free of charge by the government. Response options were recorded on a 4-point Likert scale, ranging from "*I will definitely not get the vaccine*" to "*I will definitely get it.*"

Our variables of interest were chosen based on the WHO Strategic Advisory Group of Experts (SAGE) on vaccine hesitance. These experts grouped vaccine hesitance determinants into three key domains:[19, 20] i) individual and group influences driven by personal perception of the vaccine or influences of the social/peer environment; ii) contextual influences driven by historic, socio-cultural, environmental, health system/institutional, economic or political factors; and iii) specific issues directly related to the vaccine or vaccination process.

In particular, we focused on two of the three domains of the SAGE working group's model of determinants of vaccine hesitancy:[20] i) individual and group influences, and ii) contextual influences. We did not include specific issues of the vaccine and vaccination process because the survey took place before the vaccines arrived to the cities under analysis. We included 10 types of variables in our analysis following SAGE's framework (see details in Table 1). Four types of variables fell in the individual and group influence domain: 1) variables that capture the health and economic impact of COVID-19 on individuals or members of their household and, therefore, have the potential to promote vaccination by creating more awareness and perceived need of the vaccine. 2) Knowledge about vaccines, and 3) trust in government and science, as well as beliefs about COVID-19 4) Perceived compliance with COVID-19 public health policies relative to others, which is expected to capture the role of social norms on immunization.[14, 20] The remaining 6 variables are part of the contextual influence domain: 5) access to COVID-19 public assistance programs, such as monetary support from the government, which can increase trust and awareness and promote immunization. 6) Socioeconomic and demographic characteristics such as, for instance, income and education that are known to have a significant role on vaccine hesitancy.[20] 7) Pre-existing medical conditions, which can create a perceived need for getting vaccinated. 8) Personality trait dimensions, which may help to understand the psychology of vaccine hesitancy[5].[22] 9) Because country and health system characteristics are mostly unobserved, we used city fixed effects to capture those factors that are common to all individuals from the same city. 10) Because contextual influences can vary over time, we capture

[5] We follow the Big-Five personality dimensions developed by Gosling[21] (these dimensions are shown in Table 1). The Big-Five framework is a hierarchical model of personality traits with five factors that represent personality at the broadest level of abstraction.

those that are common to all individuals using a weekly time trend (week at which the respondent took the survey) and the weekly number of COVID-19 cases reported in each city (as reported by the Ministry of Health of each country). In this way we are able to determine how changes in willingness to get vaccinated are associated with changes in the magnitude of the epidemic over time. Details of all the variables included in the analysis are provided in Table 1.

[INSERT TABLE 1 HERE]

Analytical Strategy

We followed two estimation strategies to assess the association between the respondent's willingness to get a COVID-19 vaccine and our 10 variables. First, we estimated an ordered logit model using the 4-point Likert scale of our dependent variable. While this is the best specification for our data because it captures the full categorical dimension of the dependent variable, the interpretation of coefficient estimates is not straightforward. To facilitate interpretation, we estimate a linear probability model, and we present and discuss our findings in the results and discussion sections, while we report the results of the ordered logit model in the appendix. For the linear probability model, we transformed our dependent variable into a binary outcome V_{ic} that equals 1 if individual i living in city c will definitely or likely get the vaccine and equals 0 otherwise. Then, we assessed the association between each of the 10 variable groups X^g with the probability of getting the vaccine based on the following specification:

$$V_{ic} = \beta_1 X_{ic}^1 + \beta_2 X_{ic}^2 + \beta_3 X_{ic}^3 + \beta_4 X_{ic}^4 + \beta_5 X_{ic}^5 + \beta_6 X_{ic}^6 + \beta_7 X_{ic}^7 + \beta_8 X_{ic}^8 + \beta_9 X_c^9 + \beta_{10} X_c^{10} + \varepsilon_{ic} \quad (1)$$

Where the coefficient β_g represents the percentage point increase in the probability of getting the vaccine associated to a 1-unit change in variable X^g. Notice that X_c^9 and X_c^{10} are common to all individuals residing in city c. X_c^9 is a set of binary variables capturing city fixed effects, using Santo Domingo as city of reference. X_c^{10} includes a weekly trend common to all cities and the weekly number of COVID-19 cases reported in each city. Inference was based on robust (heteroskedasticity-consistent) standard errors[23] using the default option in Stata. All estimations were performed in StataMP v.17.

Limitations

It must be kept in mind that all public surveys of the type reported here are snapshots taken at a particular time. This particular survey was conducted in the context of a highly dynamic and changing landscape, with daily variations in perceived disease threat and COVID-19 vaccine development. Further, reporting

one's willingness to be vaccinated might not be a good predictor of acceptance, as vaccine decisions are multifactorial and can change over time. Finally, the Latinwell survey is an observational study whose design imposes some caveats. First, the survey was implemented in large cities, and generalizations to the whole country could be misleading since it did not include rural populations. Second, the survey may introduce biases related to the use Facebook as tool to recruit participants. [17] To reduce this effect, we recruited more participants via the Offerwise opt-in online panel. Third, because the Latinwell survey used a non-probability sample design, it may not represent the population of each city. Overall, the Latinwell sample tends to overrepresent females, older adults, higher educated individuals, and dependent workers, as compared to the Latinobarometer sample.[24] The Latinobarometer is a survey performed annually in multiple countries of Latin America, with a good representation of the large cities populations. A table testing for differences in means for common demographic variables between the Latinobarometer and Latinwell surveys is presented in the appendix. Despite the limitations, the Latinwell survey allowed us to reach out individuals quickly and with timely and relevant questions for our research (just before the arrival of vaccines to LAC), as opposed to the Latinobarometer that has a rigid schedule.

Results

Descriptive statistics of the Latinwell data are presented in Table 2 by city. The willingness to get the vaccine, which range from 1 to 4 (highest willingness), is similar across cities, with Santo Domingo and Guayaquil having the lowest levels among the cities studied.

[INSERT TABLE 2 HERE]

It is worth highlighting that Lima and Guayaquil are the cities with the largest fraction of individuals with COVID-19 diagnosis (see Table 2). In addition, in most of the analyzed cities, about one-third of individuals lost their employment due to the pandemic, and one-half had salary cuts. Monetary assistance from governments was received by around 20% of individuals on average with a large variation between cities. Nearly 37% of Santiago residents who responded to the survey received monetary assistance compared to only 5.7% of residents of Guayaquil.

Table 3 presents the results of our linear probability model. The significance levels and the direction of the associations of most variables with the willingness to accept the vaccine are similar to those obtained using the ordered logistic regression analysis (see appendix for results of the ordered logistic model and its comparison with the linear probability model). The first model assesses the association between willingness to get the vaccine and all 10 variable groups as specified in equation (1). The second and third models add

interaction effects to explore the association of education and vaccine knowledge, and agreeableness and trust on government respectively.

[INSERT TABLE 3 HERE]

Results from the first model shows that within the category of individual and group influences, vaccine knowledge and trust in government and science were the variables more associated with COVID-19 vaccine hesitancy. General knowledge about vaccination is associated with a 5 to 7 percentage-point (ppt) increase in willingness to accept the COVID-19 vaccine. Trust in government and science are associated with an increase of 5 ppt in willingness. Among different types of cases of COVID-19, only the death of a close person had a statistically significant association with an increase of 5 ppt in willingness. Social comparison of compliance with COVID-19 public health policies did not show a significant association with vaccination, except when people perceived that their compliance with physical distancing was higher than others in their community (associated with a 9 ppt increase in willingness).

Model 1 also assesses the association of contextual influences on vaccination. Here sociocultural and health system characteristics common to all individuals residing in a city, and captured by city fixed effects, are the most relevant. Interviewed individuals from Bogotá have 23 ppt greater probability to accept the vaccine than respondents from Santo Domingo (city of reference), followed by Santiago (13 ppt more), Lima (13 ppt more), Guayaquil (12 ppt), and Buenos Aires (9 ppt, but not statistically significant). Having received public assistance related to COVID-19 is not statistically associated with willingness to get the vaccine. Having a medical condition is not associated with vaccination except for obesity, where having the disease is associated to a 5 ppt increase in willingness. Among multiple individual characteristics, only gender, education and living alone showed to be statistically significant, being females 5 ppt more hesitant to get the vaccine and those living alone 7 ppt more willing to get it. Our results also show that more education is negatively associated with vaccination. Model 2 (see second column in Table 3) provides a more in-depth analyses of the role of education and its interaction with general knowledge about vaccines. Model 2 shows that respondents with more education are less likely to accept a COVID-19 vaccine when their general knowledge about vaccines is more limited. Regarding personality traits, we also found that extraverts have a 2 ppt higher probability of accepting the vaccine, but, contrary to what we expect, those who are more agreeable and those more open to experiences are more hesitant. A more in-depth analysis to explore the interaction of being agreeable with trust in the information provided by the government about COVID-19 is presented in model 3 (see third column in Table 3). We found that those who are more agreeable are less likely to accept the vaccine when their trust in the government is lower. This is not the case, however, when the agreeable people trust the government. When these interaction effects are included, the significant effect

of openness to experiences vanishes. Finally, neither model was able to find a statistical association between willingness to get the vaccine and trends in either the number of COVID-19 cases or the week of the year.

Results from the linear probability model are fairly similar to the results from the ordered logit model. In the Appendix we highlight the differences in the results obtained from the estimation of both models. We also explore whether those differences are due to the model specification (logistic estimation) or the transformation of the outcome variable from 4 to 2 categories. We observe that six variables (lost employment due to COVID, other members received monetary assistance, age, female, retired and student) are not statistically significant when using the Linear Probability Model, and that these differences are mostly driven by the transformation of the outcome variable (see notes for Table A2).

[INSERT TABLE 4 HERE]

Discussion and Policy Implications

This study explores the willingness to be vaccinated against COVID-19 in a sample of population from six main cities of Latin America (LAC). The survey was made during the fall of 2020, before vaccines were available, with the purpose of identifying potential groups of early adopters who might help to promote willingness to vaccinate among the wider population. Because individuals learn about social norms in part by observing others, early adopters of the COVID-19 vaccine can be given badges or ribbons that display their pro-vaccination choice.[25] In addition, the survey also allows us to identify which population groups can hinder vaccination now that vaccination is taking off in LAC.

We find, for instance, that, after controlling for multiple factors, individuals with an agreeable personality who do not trust the government are less likely to be vaccinated against COVID-19, probably because they are more likely to trust unreliable sources of information. Arguably, trust is an essential component of a successful vaccination campaign, but fortunately it is also potentially modifiable. For instance, after early stumbles in the management of the pandemic caused the British government to lose the trust of the population, this trust was recovered thanks to the effective design and deployment of an anti-COVID-19 vaccination strategy.[28] Our findings show that trust in government is strongly associated with vaccine acceptance and can contribute to public compliance with recommended actions. Trust in government has been consistently shown as a factor that can lead to higher rates of vaccination.[29] Lessons learned from previous infectious disease outbreaks and public health emergencies, including HIV, H1N1, SARS, MERS and Ebola, remind us that trusted sources of information and guidance are fundamental to disease control.[30]

In addition, our study shows that trust in science also leads to higher willingness to be vaccinated. Unfortunately, it seems that distrust in science and politics has grown during the current pandemic.[31] As the relationship between science and politics continues to break down, it is clear that evidence-based arguments are not enough.[31] In the face of this challenge, it is important to evaluate the effectiveness of communication strategies and other interventions. For instance, the communication strategy for publicizing the safety of Astrazeneca vaccine is an example of a bad communication strategy. Hesitancy against this vaccine has increased, which delayed the vaccination process in European countries and might be delaying it in Latin American countries where this vaccine is also being distributed and offered. What is evident is that a substantial number of health officials, national governments, news organizations, non-governmental organizations, and social media platforms are propagating confusing and contradictory messages about COVID-19 and available vaccines. This global "infodemic" undermines the public trust on which successful public health programs depend. Insofar as effective communication strategies are essential to building public trust, governments need to find alternative ways to communicate, providing information that is clear, objective, and understandable by different target groups. For instance, in the past celebrities and respected public figures have proved successful in improving public attitudes, trust, and uptake of health interventions, including vaccines.[3]

In addition to trust, citizens need to access to reliable sources of information. Our results indicate that, after controlling for multiple factors, higher levels of accurate knowledge about vaccination are linked to increased willingness to be vaccinated, while those who believe that COVID-19 pandemic is just a conspiracy are less likely get vaccinated. It is worrisome to find that 54% of the surveyed population believe the conspiration theory is definitively true or probable, even if among these only 10.6% think it is definitively true. And although having more or less years of education is relevant, we find that those individuals with higher levels of education but whose general knowledge of vaccine effectiveness is low are still reluctant to be vaccinated. This does not happen for those with higher levels of education and accurate general knowledge about vaccines. This result is aligned with previous findings in the literature (see 18 and 19) that indicate that education and socio-economic status do not influence vaccine hesitancy in only one direction (as is generally the case with education and health outcomes). That is to say, our results confirm that higher education can be associated with both lower and higher levels of vaccine acceptance. By including this interaction effect between education and vaccine knowledge we contribute to this literature.

Other demographic variables are relevant too. Women seem to be less inclined to be vaccinated than men. This is interesting because this result is also found in the US[29] while in other countries such as France, Germany, Russia and Sweden the trend is reversed: women are more likely to accept a COVID-19 vaccine

than men.[12] This finding has special importance because women are often the primary healthcare decision-makers for their families. Accordingly, to lower overall levels of vaccine hesitancy an effective strategy may be to design and disseminate messages that target the more hesitant female audience in these countries of Latin America. In the US, famous scientists such as Kissmekia Corbett (lead developer of the Moderna vaccine) are helping to combat vaccine hesitancy by talking about COVID-19 science in communities of color.[32] Corbett is one of many black scientists and doctors who are engaged in outreach activities, often virtually, in their free time. Researchers say that outreach is necessary to make scientific knowledge more accessible to the public and to ease health disparities, including varying attitudes toward vaccination, among minorities. Although we do not find race disparities in our sample, the example of Corbett indicates a promising strategy for influencing women in Latin America: using women scientists and other trusted women as messengers who promote the importance of vaccination. The inspiring example of Dolly Parton in the US getting her first shot of Moderna while singing an adapted version of her famous song "Jolene" ("vaccine, vaccine, vaccine, vaccine, I am begging of you, please, do not hesitate") could be reproduced in LAC with famous singers or artists of the region.[33]

Another relevant factor is the perceived risk of illness related to COVID-19. Those who have a condition (e.g., obesity) that increases the risk of a severe case of COVID-19 or who know someone within their circle of close family and friends who has died from COVID-19 are likely to be more willing to be vaccinated. This finding is consistent with studies in other countries: in Italy, for example, the perceived risk of contagion increased during the lockdown (in comparison to before lockdown) as did the willingness to be vaccinated.[34] Related to perceived risk, we find that individuals who perceive that their compliance with the rules is higher than the general level of compliance in their environment or society have a higher willingness to get vaccinated. Also, previous studies of barriers to vaccination in Latin America indicate that other environmental factors such as individual/group influences and contextual influences are relevant.[35] Moreover, a recent study finds that vaccine hesitancy can be reduced by encouraging individuals to believe that they could be part of a successful collective effort to achieve herd immunity and harnessing the expected reputational benefits of vaccination.[14] Communication strategies that take these social factors into account may be more successful in promoting vaccination, but governments can go even further by offering incentives or "nudges" that facilitate the decision to be vaccinated. For instance, in the US now that willingness to be vaccinated is dropping, free baseball tickets or drinks are being offered at vaccine locations. Similar strategies are being fine-tuned to target specific groups in rural and conservative populations at county fairs and rodeos.[15] In Israel, bars offer a free drink or pizza along with vaccination to attract younger populations.[36, 37] In previous studies, onsite vaccination in the workplace has also been identified as a key lever.[28]

This study represents an initial effort to delineate the diversity and extent of the challenges to vaccination in six Latin American big cities. It would be interesting to study not only urban population willingness to get vaccination but also rural population. The results we find in our study are not transferable to the rural populations of the countries where those big cities are located. Regarding basic vaccination (for children), rural populations of many countries in Latin America do not get vaccinated due to barriers of access of different nature: cultural barriers, long distances, absenteeism of health care providers among other factors. The situation in rural areas regarding basic vaccination is completely different to the situation of urban population. This extends to the vaccination related to COVID-19, but obviously it would be very interesting that future research analyzes the attitude of rural populations regarding COVID-19 vaccination as well as what has happened with the coverage of regular vaccines in these areas.

Results from our study underscores that "one size will not fit all" when it comes to building public trust in a COVID-19 vaccine. The recently discovered side effects of certain COVID-19 vaccines[6-8] have increased vaccine hesitancy even among those who believe in the value of vaccination and would normally follow the early adopters.[38] Our survey did not include questions about different types of vaccines as these issues had not emerged at the time of the survey. However, it would be interesting to explore how willingness to be vaccinated varies according to the types of vaccine available in each country. This would also offer lessons on how different communication strategies about different vaccines are reaching different segments of the population.

References

[1] Sharot T. To quell misinformation use carrots-not just sticks. Nature. 2021;591.
[2] Organization WH. Improving vaccination demand and addressing hesitancy. Geneva: WHO. 2020.
[3] Weintraub RL, Subramanian L, Karlage A, Ahmad I, Rosenberg J. Covid-19 Vaccine to Vaccination: Why Leaders Must invest In Delivery Strategies now. Health Affairs 2021;40.
[4] Rogers EM. Diffusion of innovations. Free Press, London. 2003.
[5] De-Figueired A, Simas C, Karafillakis E, Paterson P, Larsonl HJ. Mapping global trends in vaccine confidence and investigating barriers to vaccine uptake: a large scale retrospective temporal modelling study. Lancet. 2020;396:898-908.
[6] Menni C, Klaser K, May A, Polidori L, Capdevila J, Louca P, et al. Vaccine side-effects and SARS-CoV-2 infection after vaccination in users of the COVID Symptom Study app in the UK: a prospective observational study. The Lancet Infectious Diseases. 2021.
[7] Voysey M, Clemens SAC, Madhi SA, Weckx LY, Folegatti PM, Aley PK, et al. Safety and efficacy of the ChAdOx1 nCoV-19 vaccine (AZD1222) against SARS-CoV-2: an interim analysis of four randomised controlled trials in Brazil, South Africa, and the UK. The Lancet. 2021;397:99-111.

[8] Kremsner PG, Guerrero RAA, Arana-Arri E, Martinez GJA, Bonten M, Chandler R, et al. Efficacy and safety of the CVnCoV SARS-CoV-2 mRNA vaccine candidate in ten countries in Europe and Latin America (HERALD): a randomised, observer-blinded, placebo-controlled, phase 2b/3 trial. The Lancet Infectious Diseases. 2021.
[9] Gentile A, Paget, J., Bellei, N., Torres, JP., Vazquez, C., Laguna-Torres, V., & Potkin, S. Influenza in Latin America: A report from the Global Influenza Initiative. Vaccine 2019;37:2670-8.
[10] Muhajarine N, Adeyinka DA, McCutcheon J, Green KL, Fahlman M, Kallio N. COVID-19 vaccine hesitancy and refusal and associated factors in an adult population in Saskatchewan, Canada: Evidence from predictive modelling. PloS one. 2021;16:e0259513.
[11] Tamara Ansons, Colin Strong, Lucy Bennett, Chandler H. Vaccine hesitancy: understanding belief formation. 2020.
[12] Lazarus J, Wyka K, Rauh L, Rabin K, Ratzan, Scott , Gostin LO, et al. Hesitant or not? Association of Age, Gender, and Education with Potential acceptance of a COVID-19 Vaccine. Journal of Health Communication. 2021;25:799-807.
[13] IPSOS. COVID-19 vaccination intent is decreasing globally. France2020.
[14] Argote P, Barham E, Daly S, Gerez JE, Marshall J, Pocasangre O. Messages that increase COVID-19 vaccine acceptance: Evidence from online experiments in six Latin American countries. PloS one. 2021;16:e0259059.
[15] Berstein S, Erman M. Free booze, baseball tickets offered as U.S. demand for Covid-19 vaccine drops. Yahoo; 2021.
[16] OECD. COVID-19 in Latin America and the Caribbean: an overview of government responses to the crisis. OECD Paris, France; 2020.
[17] Schneider D, Harknett K. What's to like? Facebook as a tool for survey data collection. Sociological Methods & Research. 2019.
[18] Offerwise. Offerwise market research solutions. 2021.
[19] MacDonald NE. Vaccine hesitancy: Definition, scope and determinants. Vaccine. 2015;33:4161-4.
[20] Larson HJ, Jarrett C, Eckersberger E, Smith DM, Paterson P. Understanding vaccine hesitancy around vaccines and vaccination from a global perspective: a systematic review of published literature, 2007–2012. Vaccine. 2014;32:2150-9.
[21] Gosling SD, Rentfrow PJ, Swann Jr WB. A very brief measure of the Big-Five personality domains. Journal of Research in Personality. 2003;37:504-28.
[22] Murphy J, Vallières F, Bentall RP, Shevlin M, McBride O, Hartman TK, et al. Psychological characteristics associated with COVID-19 vaccine hesitancy and resistance in Ireland and the United Kingdom. Nature communications. 2021;12:1-15.
[23] MacKinnon JG, White H. Some heteroskedasticity-consistent covariance matrix estimators with improved finite sample properties. Journal of econometrics. 1985;29:305-25.
[24] Latinobarometro. Methodological Report. Latinobarometro Corporation; 2018.
[25] Chevalier C, Hacquin A, Mercier H. COVID-19 Vaccine Hesitancy: Shortening the Last Mile. Trends in Cognitive Sciences. 2021;25:331-3.
[26] Park S, Fisher C, Flew T, Dulleck U. Global mistrust in news: The impact of social media on trust. International Journal on Media Management. 2020;22:83-96.
[27] Guess AM, Barberá P, Munzert S, Yang J. The consequences of online partisan media. Proceedings of the National Academy of Sciences. 2021;118.
[28] McGee L. Boris Johnson´s vaccine strategy gets another boost while Europe confronts fresh problems. CNN2021.
[29] Callaghan T, Moghtaderi A, Lueck JA, Hotez P, Strych U, Dor A, et al. Correlates and disparities of intention to vaccinate against COVID-19. Social Science and Medicine. 2021;271:113638.

[30] Chua A, Al Knawy B, Grant B, Legido-Quigley H, Lee W-C, Leung GM, et al. How lessons from previous epidemics helped successful countries to fight Covid-19. BMJ. 2021;372.
[31] Horton R. Offline: Science and politics in the era of Covid-19. Lancet.396:1319.
[32] Subbaraman N. This COVID-vaccine designer is tackling vaccine hesitancy — in churches and on Twitter. Nature 2021;590:377.
[33] Belam M. Dolly Parton gets first dose of Covid vaccine she helped fund. The Guardian2021.
[34] Caserotti M, Girardi P, Rubaltelli E, Tasso A, Lotto L, Gavaruzzi T. Associations of COVID-19 risk perception with vaccine hesitancy over time for Italian residents. Social Science and Medicine. 2021;272:113688.
[35] Guzman-Holst A, DeAntonio R, Prado-Cohrs D, Juliao P. Barriers to vaccination in Latin America: A systematic literature review. Vaccine. 2020;38:470-81.
[36] Amichay R, Heller J. A slice and a shot: Tel Aviv pushes COVID-19 vaccine with free food. Reuters2021.
[37] Williams D. Shots bar: Israelis offered drinks on the house with their vaccine. Reuters2021.
[38] Boucher J-C, Cornelson K, Benham JL, Fullerton MM, Tang T, Constantinescu C, et al. Analyzing social media to explore the attitudes and behaviors following the announcement of successful COVID-19 vaccine trials: infodemiology study. JMIR infodemiology. 2021;1:e28800.
[39] PublicHealth.org. Vaccine myths debunked. 2021.

Table 1. Dependent and independent variables grouped by topics

Dependent variable: Willingness to get a COVID-19 vaccine
4-point Likert scale from (1) "*will definitely not get the vaccine*" to (4) "*will definitely get the vaccine*". Binary outcome: (Yes) "*will definitely get the vaccine*" and "*will likely get the vaccine*", (No) "*will definitely not get the vaccine*" and "*will likely not get the vaccine*"
Individual and group influences of vaccine hesitancy
1) COVID-19 impact Binary variables indicating the health and economic impact of COVID-19 on individuals and other members of their household: • Diagnosed with COVID-19 (respondent reports having been diagnosed with COVID-19, compared to negative diagnosis, unknown or waiting for test results) • Death of a close person (respondent reports that somebody close to him/her—family member or close friend—died in the last 6 months due to COVID-19 or other cause) • Lost employment due to COVID-19 (respondent reports having been fired or lost employment due to the COVID-19 pandemic.) • Other member lost employment due to COVID-19 (respondent reports that somebody from the same household was fired or lost employment due to the COVID-19 pandemic) • Lost income due to COVID-19 (respondent reports having been affected with loss of income due to unpaid leave, reduced work hours or reduced salary due to the COVID-19 pandemic) • Other member lost income due to COVID-19 (respondent reports that somebody from the same household was affected with loss of income due to unpaid leave, reduced work hours or reduced salary due to the COVID-19 pandemic).

2) Knowledge about vaccines

4-point Likert scale from (1) "*definitely false*" to (4) "*definitely true*" to different knowledge statements about vaccines [39]:

- Vaccine knowledge - general ("*Vaccines prepare your immune system to recognize and disarm harmful viruses and bacteria*")
- Vaccines vs. natural immunity ("N*atural immunity is better than vaccine-acquired immunity*"†)
- Vaccines and toxins ("*Vaccines contain unsafe toxins*"†)
- Vaccines and health risk ("*Vaccines are not worth the risk*"†)
- Vaccines and infection ("*Vaccines can infect us with the disease it is trying to prevent*"†)
- Vaccines and herd immunity ("*We do not need to vaccinate when infection rates are low*"†)

3) Trust and believes about COVID-19

7-point Likert scale from (1) "*completely disagree*" to (7) "*completely agree*" to different statements about trust and believes in conspiracy theories:

- Trust on government ("*Trust in the information provided by the government about COVID-19*")
- Trust on science ("*Trust that scientists and health experts work on the public best interes*t")
- Rejects COVID-19 conspiracy ("*Believe that COVID-19 is influenced by the self-interests of powerful and secret groups*"†).

4) Social comparison of compliance with COVID-19 public health policies

Binary variables indicating whether the respondent's compliance with specific COVID-19 public health policies was better than the community compliance as perceived by the respondent. Respondents were asked to assess their own compliance using a 4-point Likert scale from (1) always or almost always to (4) never complied to specific policies in the last 6 months. A similar question was used to assess compliance by people in the community where they live. The specific public health policies were: stay at home, washing hands, surface disinfection, mask use, physical distancing, public transportation use, social activities (restaurants/bars/theaters), and family activities (family reunions).

Contextual influences of vaccine hesitancy

5) COVID-19 public assistance

Binary variables indicating whether the respondent or other member of the household received monetary support as part of the government's COVID-19 public assistance program. We also included binary variables to indicate non-monetary assistance (food or other) from the government or private organizations.

6) Socioeconomic and demographic characteristics

- Demographic and socioeconomic characteristics including age (in years, ranging from 25 to 60 years old)
- Binary indicators for young adult (25 to 34 years old compared to older adults)
- Gender (female compared to male and other), civil status (married or divorced/separated compared to single)
- Living alone (compared to living with 1 or more person in the same household), religion (catholic, evangelic, or no-religion compared to other religions)
- Race (mestizo, black or other race compared to white)
- Employment status (independent worker, dependent worker, homemaking, retired or student compared to unemployed).
- Educational attainment ranging from incomplete elementary (level=1) to completed post-graduate (level=10), and
- Monthly income, including remittances, in U.S. dollars.

7) Medical conditions

Self-reported medical conditions: having a medical condition or illness diagnosed by the physician. List among these conditions: pregnancy, hypertension, high cholesterol, diabetes, cancer, asthma, obesity, depression, anxiety, other illness.

8) Personality dimensions
Personality dimensions were assessed using the Ten-Item Personality Inventory (TIPI), a widely accepted instrument that uses both the positive and negative poles of five personality traits at the broadest level of abstraction:[21] extraversion, agreeableness, conscientiousness, emotional stability, and openness to experiences. Each dimension is scored from (1) lowest to (7) highest in the specific personality trait.

9) City fixed effects
Binary variables indicating whether the respondent lives in Buenos Aires (Argentina), Bogota (Colombia), Guayaquil (Ecuador), Lima (Peru), Santiago (Chile), or Santo Domingo (Dominican Republic).

10) Common trend and COVID-19 cases
We included a weekly trend to capture changes in vaccination attitudes over time. Additionally, we included the reported weekly number of COVID-19 cases (in logarithms) for each city to capture the highly dynamic variations in perceived disease threat and its influence on willingness to get the COVID-19 vaccine.

† Negatively worded in the survey but reverse coded for statistical analysis.

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Table 2. Descriptive statistics by city

Variables	Buenos Aires	Santiago	Bogota	Santo Domingo	Guayaquil	Lima	All cities
Willingness to get a COVID-19 vaccine†							
4-point Likert scale (no=1 - yes=4, average)	2.9	2.9	3.0	2.6	2.6	2.9	2.9
Binary outcome (yes=1, in %)	72.3	70.5	75.1	60.2	60.5	73.8	69.5
Individual and group influences of vaccine hesitancy							
COVID-19 impact (yes=1, in %)							
Diagnosed with COVID-19	4.1	5.0	6.3	10.4	14.7	17.5	9.8
Death of a close person	25.3	29.7	30.5	48.2	46.5	48.1	38.0
Lost employment due to COVID-19	19.3	31.9	36.8	28.4	37.5	31.8	31.3
Other member lost employment due to COVID-19	7.4	12.0	18.1	18.7	16.7	16.6	15.0
Lost income due to COVID	42.9	45.6	60.7	49.5	62.5	53.2	52.5
Other member lost income due to COVID-19	10.5	16.3	15.1	16.7	19.1	18.3	16.2
Knowledge about vaccines (lowest=1 - highest=4, averages)							

Vaccine knowledge - general	3.5	3.3	3.3	3.2	3.0	3.3	3.3
Vaccines vs. Natural immunity	3.0	2.6	2.6	2.3	2.4	2.5	2.6
Vaccines and toxins	3.0	2.5	2.7	2.5	2.6	2.7	2.7
Vaccines and excessive health risk	3.5	3.1	3.3	3.0	3.0	3.2	3.2
Vaccines and infection	3.1	2.7	3.0	2.8	2.8	2.9	2.9
Vaccines and herd immunity	3.4	3.0	3.3	3.0	3.0	3.1	3.1
Trust and believes about COVID-19 (averages)							
Trust on government (lowest=1 - highest=7)	3.6	3.3	3.7	3.9	3.1	4.2	3.7
Trust on science (lowest=1 - highest=7)	4.4	4.4	4.6	4.6	4.0	4.6	4.5
Rejects COVID-19 conspiracy (lowest=1 - highest=4)	2.8	2.5	2.5	2.5	2.5	2.6	2.6
Social comparison of compliance with COVID-19 public health policies (individual compliance better than community compliance=1, in %)							
Stay at home	94.6	90.7	91.7	88.3	88.6	89.0	90.4
Washing hands	94.6	98.1	97.2	98.7	95.7	97.8	97.1
Surface disinfection	88.2	91.4	91.4	92.3	91.6	93.3	91.5
Mask use	96.0	98.1	98.7	99.0	99.0	96.4	97.8
Physical distancing	97.3	96.9	96.7	97.7	97.0	94.6	96.6
Public transportation use	87.5	85.4	84.9	88.0	85.0	87.7	86.4
Social activities (restaurants/bars/theaters)	97.0	89.2	90.2	91.6	85.0	86.1	89.6
Family activities (family reunions)	99.7	99.5	100.0	100.0	99.3	99.6	99.7
Contextual influences of vaccine hesitancy							
COVID-19 public assistance (received assistance=1, in %)							
Received monetary assistance	21.6	37.4	13.1	29.4	6.4	22.4	22.2
Other member received monetary assistance	5.7	7.0	6.3	9.4	2.3	6.5	6.3
Received non-monetary assistance	10.5	57.8	16.6	18.7	15.1	10.7	22.6
Other member received non-monetary assistance	3.0	8.4	6.1	8.4	6.0	3.6	5.9
Socioeconomic and demographic control variables (in % unless otherwise indicated)							
Age (in years, average)	46.4	41.7	37.3	34.5	37.7	38.6	39.3
Age 20 to 34 years old	15.9	27.1	41.6	52.8	42.1	40.9	36.8
Married	55.4	49.2	50.6	49.8	56.9	53.9	52.4
Divorced	23.3	14.4	10.8	9.0	9.0	13.9	13.4
Single (reference group)	21.3	36.5	38.5	41.1	34.1	32.2	34.2
Living alone	15.9	8.6	7.6	12.0	5.0	5.2	8.7
Female	75.3	70.0	56.4	56.9	56.2	60.2	62.5

Catholic religion	46.6	47.5	62.2	39.1	57.2	71.1	55.2
Evangelic religion	2.4	7.4	6.8	26.4	17.7	7.8	10.8
No religion	10.1	22.3	12.9	12.0	12.7	6.5	12.9
Other religions (reference group)	40.9	22.8	18.1	22.4	12.4	14.5	21.2
Education (level 1 to 10)	6.20	6.29	6.71	6.65	6.47	6.83	6.54
Mestizo race	15.5	33.6	41.8	33.1	77.6	68.0	45.8
Black race	1.7	1.9	2.5	36.8	5.0	4.7	7.8
Other race no-white	5.1	18.9	18.4	16.1	2.7	5.4	11.5
White (reference group)	77.7	45.6	37.3	14.1	14.7	21.9	34.9
Independent worker	24.7	13.4	24.4	24.8	28.1	31.5	24.4
Dependent worker	44.6	51.3	38.8	50.5	34.8	40.3	43.4
Homemaking	10.1	9.8	5.5	3.3	8.7	10.1	8.1
Retired	4.7	1.4	2.0	0.0	1.7	0.9	1.7
Student	3.0	3.4	2.8	8.7	4.4	3.1	4.0
Unemployed (reference group)	17.2	22.5	28.7	21.4	27.4	19.0	22.7
Income (in US dollars)	633.3	812.8	401.4	517.5	533.3	612.2	591.0
Medical conditions (in %)							
Pregnant	0.0	1.2	1.8	1.7	1.3	1.8	1.4
Hypertension	17.2	18.0	7.1	14.1	9.4	9.2	12.3
High cholesterol	11.8	15.1	11.3	8.4	16.4	10.1	12.2
Diabetes	7.1	8.2	3.0	6.0	5.7	4.5	5.7
Cancer	3.0	1.9	1.3	0.7	1.3	1.1	1.5
Asthma	7.1	3.6	7.3	7.4	4.7	8.3	6.4
Obesity	16.2	18.2	10.8	11.4	16.4	14.8	14.7
Depression	12.8	14.4	9.6	5.7	6.0	8.1	9.6
Anxiety	19.3	18.2	12.1	12.0	9.4	16.1	14.7
Other illness	17.6	13.0	14.4	6.7	13.0	11.2	12.6
No medical conditions or illness (reference group)	36.8	40.5	52.6	55.2	45.5	45.0	45.9
Personality dimensions (lowest=1 - highest=7, averages)							
Extraversion	3.9	3.8	3.7	3.6	3.8	3.9	3.8
Agreeableness	5.1	5.2	5.2	5.4	5.3	5.3	5.3
Conscientiousness	5.3	5.4	5.6	5.5	5.4	5.4	5.4
Emotional Stability	4.2	4.7	4.8	5.0	4.9	4.9	4.8
Openness to Experiences	5.1	5.1	5.1	5.3	5.1	5.1	5.1
COVID-19 cases (average weekly cases, in logarithms)	6.6	5.9	7.9	5.7	6.4	6.3	6.5
Sample size	296	417	397	299	299	447	2155

† The larger the scale or percentage the more willingness to get vaccinated against COVID-19.

Table 3. Factors associated with willingness to get a COVID-19 vaccine †

Variable	Model 1	Model 2	Model 3
Individual and group influences of vaccine hesitancy			
COVID-19 impact			
Diagnosed with COVID-19	-0.02	-0.02	-0.02
Death of a close person	0.05**	0.04*	0.04*
Lost employment due to COVID-19	0.02	0.02	0.03
Other member lost employment due to COVID-19	0.02	0.02	0.02
Lost income due to COVID	-0.01	-0.01	-0.01
Other member lost income due to COVID-19	0.01	0.02	0.01
Knowledge about vaccines			
Vaccine knowledge - general	0.05***		0.05***
Vaccines vs. Natural immunity	-0.01	-0.01	-0.01
Vaccines and toxins	0.02	0.02	0.02
Vaccines and excessive health risk	0.07***	0.07***	0.06***
Vaccines and infection	0.00	0.00	0.00
Vaccines and herd immunity	0.07***	0.07***	0.07***
Trust and believes about COVID-19			
Trust on government	0.05***	0.05***	
Trust on science	0.05***	0.05***	0.05***
COVID-19 conspiracy	0.00	0.01	0.01
Social comparison of compliance with COVID-19 public health policies			
Stay at home	0.04	0.03	0.03
Washing hands	-0.01	-0.01	-0.01
Surface disinfection	0.01	0.01	0.02
Mask use	0.04	0.04	0.04
Physical distancing	0.09*	0.09*	0.08
Public transportation use	0.01	0.01	0.01
Social activities (restaurants/bars/theaters)	0.04	0.04	0.03
Family activities (family reunions)	-0.01	0.01	0.00
Contextual influences of vaccine hesitancy			
COVID-19 public assistance			
Received monetary assistance	0.01	0.01	0.02
Other member received monetary assistance	0.03	0.03	0.03
Received non-monetary assistance	0.00	0.00	0.01
Other member received non-monetary assistance	0.05	0.05	0.04
Socioeconomic and demographic control variables			
Age	0.00	0.00	0.00
Age 20 to 34 years old	-0.04	-0.04	-0.03
Married[a]	-0.01	-0.01	-0.01
Divorced[a]	-0.03	-0.03	-0.03
Living alone	0.08*	0.07*	0.07*
Female	-0.05*	-0.05**	-0.05**

Catholic religion[b]	0.03	0.04	0.03
Evangelic religion[b]	0.00	0.01	0.00
No religion[b]	-0.02	-0.02	-0.02
Education	-0.01**		-0.01**
Education x Vaccine knowledge=1		-0.04***	
Education x Vaccine knowledge=2		-0.02**	
Education x Vaccine knowledge=3		-0.01	
Education x Vaccine knowledge=4		-0.01*	
Mestizo race[c]	0.00	0.00	0.00
Black race[c]	0.02	0.02	0.02
Other race no-white[c]	-0.01	-0.01	-0.01
Independent worker[d]	-0.01	-0.01	-0.01
Dependent worker[d]	0.03	0.03	0.03
Homemaking[d]	-0.02	-0.02	-0.02
Retired[d]	0.10	0.11	0.10
Student[d]	0.06	0.07	0.07
Income	0.00	0.00	0.00
Medical conditions[e]			
Pregnant	0.03	0.02	0.04
Hypertension	-0.03	-0.03	-0.03
High cholesterol	-0.01	-0.01	-0.01
Diabetes	-0.04	-0.04	-0.04
Cancer	-0.01	0.00	0.01
Asthma	-0.02	-0.02	-0.01
Obesity	0.05*	0.05*	0.06*
Depression	-0.03	-0.03	-0.03
Anxiety	0.02	0.02	0.02
Other illness	0.03	0.03	0.03
Personality dimensions			
Extraversion	0.02*	0.02*	0.02*
Agreeableness	-0.02*	-0.02**	
Agreeableness x Trust on government=1			-0.05***
Agreeableness x Trust on government=2			-0.03**
Agreeableness x Trust on government=3			-0.02*
Agreeableness x Trust on government=4			0.00
Agreeableness x Trust on government=5			0.00
Agreeableness x Trust on government=6			0.00
Agreeableness x Trust on government=7			-0.01
Conscientiousness	0.00	0.00	0.00
Emotional Stability	0.00	0.00	0.00
Openness to Experiences	-0.02*	-0.02*	-0.01
Cities[f]			
Buenos Aires	0.09	0.10*	0.11*
Santiago	0.13***	0.14***	0.13***

Bogota	0.23**	0.24**	0.23**
Guayaquil	0.12**	0.12**	0.11*
Lima	0.13**	0.13***	0.12**
Common trend and COVID-19 cases			
Trend	0.00	-0.01	-0.01
Trend2	0.00	0.00	0.00
COVID-19 cases	-0.05	-0.06	-0.06
Constant	-0.04	0.34	0.28
N	2155	2155	2155
R2	0.35	0.35	0.36
F test	25.6	25.0	25.9

† Linear Probability Model estimation. Model 1 controls for all variables. Model 2 adds to Model 1 the interaction effects of education and vaccine knowledge. Model 3 adds to Model 1 the interaction effects of agreeableness and trust on government.

[a] Reference group is single. [b] Reference group is other religion. [c] Reference group is white. [d] Reference group is unemployed. [e] Reference group is no medical condition or illness. [f] Reference group is Santo Domingo. *p<0.05; **p<0.01; ***p<0.001 Inference based on robust (heteroskedasticity-consistent) standard errors.

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Identifying early adopters of COVID-19 vaccines in Latin America

Abstract

COVID-19 vaccine hesitancy is currently one of the main obstacles to worldwide herd immunity and socioeconomic recovery. Because vaccine coverage can vary between and within countries, it is important to identify sources of variation so that policies can be tailored to different population groups. In this paper, we analyze the results from a survey designed and implemented in order to identify early adopters and laggers in six big cities located in Argentina, Colombia, Chile, Ecuador, Peru, and Dominican Republic. We find that trust in government and science, accurate knowledge about the value of vaccination and vaccine effects, and perceived risk of getting sick is associated with a higher probability to get vaccinated. We also identify potential laggers such as women and populations with high education but low knowledge about vaccines. We discuss specific strategies to promote vaccination among these populations groups as well as more general strategies designed to gain trust. These findings are specific to the context of Latin America insofar as the underlying factors associated with the choice to be vaccinated vary significantly by location and in relation to individual-level factors.

Keywords: COVID-19, Vaccines, Latin America.

Declaration of interests

☒ The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

☐ The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: