

Executive Summary

Ecuador COVID-19 Mobile Phone Survey 2020

1. Overview

Ecuador has been hit hard by COVID-19, on February 29th the Ministry of Health reported the first case of COVID-19 in Ecuador. A national health emergency was declared on March 11th followed by a State of Exception on March 16th. Mitigation strategies were quickly implemented. The Ministry of Health leveraged existing frameworks to implement a COVID-19 national survey to collect data regarding testing, practices, and symptomology. This report summarizes results from the Ecuador COVID-19 Mobile Phone Survey implemented in June, 2020. COVID-19 has altered the way that survey data are currently collected to protect the health and safety of those conducting surveys as well as stop potential disease transmission. However, effective and rapid decision making during all stages of the pandemic still require data not only about infections, but also about human behavior. Mobile phone surveys can offer the opportunity to collect real time data on behavior, exposure, knowledge and perceptions as well as care, treatment and resource allocation. To understand how Ecuadorians are coping with the spread of COVID-19, a nationwide survey was conducted to understand people's attitudes toward and experiences during the pandemic.

In the survey, 1,185 individuals subscribed to CNT, Claro, and Movistar mobile phone networks anonymously participated using mobile telephony interactive voice response (IVR).

This survey used the infrastructure that was built to conduct the Bloomberg Philanthropies Data for Health Initiative Non-Communicable Diseases Mobile Phone Survey. The COVID-19 Survey was the culmination of significant work by Ecuador's Ministry of Health, including but not limited to telecommunications approval from the Telecommunications Regulatory and Control Agency of Ecuador, agreements with mobile network operators, and data hosting. The Ministry of Health led questionnaire development, sampling and data collection. Technical assistance was provided by the US Centers for Disease Control and Prevention, RTI International, and InSTEDD. Bloomberg Philanthropies Data for Health Initiative provided financial support through the CDC Foundation.

This report is structured as follows:

- Goals (Section 2)
- Design and Implementation (Section 3)
- Results (Section 4)
- Conclusions (Section 5)

2. Goals

The goal of the Ecuador COVID-19 Mobile Phone Survey was to provide nationally representative estimates of knowledge, attitudes and practices, symptomology and access and barriers to testing to improve and enhance the COVID-19 pandemic response in Ecuador. The results may be used to help shape the federal and local governments' response to the pandemic and indicate whether the current strategies are effective.

The NCD Mobile Phone Survey included 31 questions on the following topics:

- Demographics
- COVID-19 exposure
- Illness and symptomology
- Testing and diagnosis and barriers to testing
- Practices

3. Design and Implementation

3.1 Design

The design parameters used for the COVID-19 Mobile Phone Survey are shown below in Table 1.

Table 1. Mobile Phone Survey Design	
Component	Design
Mode	IVR
Sample	The sample employed a two-phase sample design. In the first phase a sample of mobile phone numbers from an explicit frame of mobile phone numbers for CNT, Claro, and Movistar subscribers was generated via random digit dialing. In the second phase, respondents were stratified to the general population distribution.
Number of Interviews	1,185 interviews, allocated proportionally across strata to the general population distribution.
Strata	2 strata: male, female
Questionnaire	The COVID-19 Mobile Phone Survey questionnaire consisted of 31 questions and was administered in Spanish.
Contact times	All 7 days of the week, between 8am and 8pm each day
Contact attempts	<ul style="list-style-type: none"> • Contact #1: IVR • Contact #2: IVR, 26 hours after Contact #1 • Contact #3: IVR, 26 hours after Contact #2
Cost to Respondents	None.
Incentives	\$1 USD.
Tool and Hosting	Surveda, with data hosted at the Ecuador Ministry of Health

3.2 Implementation

The Ecuador COVID-19 Mobile Phone Survey implementation process consisted of four stages: Planning and Pre-Test, Full-scale Data Collection, Data Management and Analysis, and Data Release and Use.

Full-scale data collection commenced on June 11th, 2020 and ended on June 25th, 2020. A total of 1,185 adults aged 18 years and older completed or partially completed (defined as completing at least one topic area) the survey through one of the three mobile network operators.

4. Results

This section presents the following results:

- Demographics and Response Rates (section 4.1)
- COVID-19 Exposure (section 4.2)
- Illness and Symptomology (section 4.3)
- Testing, Diagnosis and Treatment (section 4.4)
- Practices (section 4.5)

4.1 Demographics and Response Rates

The Ecuador COVID-19 Mobile Phone Survey included 1,185 interviews across two strata. Table 2 shows the Mobile Phone demographic distribution compared to the UN population national statistics for sex.

	<i>Mobile Phone Sample</i>	<i>National</i>
Sex	1,185	11,274,187
Male	46.0%	48.6%
Female	54.0%	51.4%

To achieve the 1,185 interviews, we sent invitations to 14,421 mobile phone numbers over the course of the full-scale survey. Out of these, 3,552 provided a response and 2,471 consented and provided the age and sex information necessary to be eligible to participate. Of these, 194 were ineligible due to age, and 1,003 respondents of eligible age were rejected due to stratum sample size being full. The result was 1,274 eligible respondents, of which 1,185 provided interviews (completed or partial). Completed interviews were defined as answering all survey questions. Partial interviews were defined as completing at least one topic area and not finishing the survey. The interview rate was 93.0% and the overall response rate was 15.9%, which is described in detail below.

The final disposition codes for this sample are shown in Table 3.

<i>Disposition</i>	<i>Definition</i>	<i>N</i>	<i>Percent</i>
1. Complete	Answered all survey questions	1,009	7.00%
2. Partial	Answered at least one topic area but did not complete the survey	176	1.22%
3. Breakoff: Eligible	Answered age and sex questions but did not answer any additional questions	89	0.59%
4. Ineligible: Age	Under age 18	194	1.35%
5. Ineligible: Quotas	Answered age and sex questions but quotas were full	1,003	0.41%

6. Refused	Refused consent	722	5.01%
7. Breakoff: unknown eligibility	Answered some questions but stopped before completing eligibility	359	9.06%
8. No answer	No answer, possibly nonworking number	10,869	75.37%
<i>Total</i>		14,421	

In this project, the sampling design involved two Phases. Each phase had a response rate. The final response rate was the product of Phase I and Phase II response rates. For pre-test and full-scale surveys, we used a filtered sample of MPNs provided by the Dutch company Sample Solutions.

For Phase I, the response rate was the proportion of MPNs screened out of those dialed.

$$\text{Phase I Response Rate} = \frac{\text{Number MPNs screened}}{\text{Number MPNs dialed}}$$

Or,

$$\text{Phase I Response Rate} = \frac{2,471}{14,421} = 0.171$$

For Phase II, we used RR6 from AAPOR.

$$\text{Phase II Response Rate } RR6_s = \frac{IP_s}{IP_s + O_s}, \text{ for stratum } s.$$

RR₆ was derived from the 2018 Standard Definitions of the [American Association for Public Opinion Research \(AAPOR\)](#). Phase II stratum-specific response rates (RR #6) are presented Table 4:

<i>Males</i>	<i>Females</i>
0.9222	0.9370

The overall response rate is the product of Phase I and Phase II response rates, resulting in an overall response rate for the entire COVID-19 Mobile Phone Survey in Ecuador:

$$RR_{\text{overall}} = \frac{IP_{\text{overall}}}{IP_{\text{overall}} + O_{\text{overall}}} * RR_{\text{Phase I}} = \frac{1185}{1185 + 89} * 0.171 = 0.1594$$

4.2 COVID-19 Exposure

More than one third (38.8%) of Ecuadorian adults aged 18 years and older reported that they live in an area where there are cases in the community. In addition, overall 17.9% of Ecuadorians visited a place

with cases in the community. Overall, a small percentage (1.8%) reported international travel in the previous two weeks. Overall, 12.3% reported caring for a suspected or confirmed case in the previous two weeks. There were no differences in exposure to COVID-19 between men and women.

Table 5 shows key outcomes overall and by sex from the COVID-19 Mobile Phone Survey on exposure.

	Overall	Males	Females
	% (95% CI)	% (95% CI)	% (95% CI)
Living in a place with cases in the community	38.8 (35.6 , 42.0)	36.9 (32.5 , 41.3)	40.6 (36.1 , 45.1)
Visiting a place with cases in the community	17.9 (15.4 , 20.5)	20.0 (16.3 , 23.8)	15.9 (12.5 , 19.3)
Traveled internationally in the last two weeks	1.8 (1.0 , 2.7)	2.6 (1.1 , 4.0)	1.2 (0.2 , 2.1)
Caring for a suspected or confirmed case	12.3 (10.2 , 14.5)	11.9 (9.0 , 14.9)	12.8 (9.6 , 16.0)

4.3 Illness and Symptomology

Tracking the symptoms of sick people has been important during this pandemic to understand the presentation of COVID-19. People with COVID-19 have had a wide range of symptoms reported. When asked if they were ill, approximately one in ten adult Ecuadorians reported feeling ill (9.5%). For men, the most common symptoms reported were muscle or body aches (24.4%), sore throat (17.8%) and dry cough (16.2%). For women, the most common symptoms reported were muscle or body aches (36.8%), fever (18.4%) and shortness of breath (15.7%). Men and women reported the same mean number of symptoms (.9 symptoms vs. 1.0, respectively). Overall, 26.5% of adult Ecuadorians reported experiencing either fever, dry cough or shortness of breath when ill.

Table 6 shows reported illness and symptomology overall and by sex from the COVID-19 Mobile Phone Survey.

	Overall	Males	Females
	% or mean (95% CI)	% or mean (95% CI)	% or mean (95% CI)
Feeling ill	9.5 (7.5 , 11.6)	10.7 (7.7 , 13.7)	8.5 (5.7 , 11.2)
Fever	13.5 (5.4 , 21.6)	9.5 (1.0 , 17.9)	18.4 (3.9 , 32.9)
Dry cough	10.7 (3.8 , 17.7)	16.2 (4.4 , 28.0)	4.3 (0.0 , 9.3)
Shortness of breath	10.6 (3.3 , 17.9)	6.2 (0.0 , 13.7)	15.7 (2.7 , 28.7)
Muscle aches or body aches	30.1 (19.1 , 41.4)	24.4 (10.9 , 37.8)	36.8 (19.3 , 54.3)
Sore throat	12.2 (5.0 , 19.4)	17.8 (5.7 , 29.9)	5.5 (0.0 , 11.1)
Vomiting or diarrhea	7.5 (1.2 , 13.9)	6.2 (0.2 , 12.2)	9.0 (0.0 , 20.8)
Loss of taste or smell	7.5 (2.1 , 12.9)	9.6 (1.0 , 18.3)	4.9 (0.0 , 10.6)

Mean number of symptoms	0.9 (0.6 , 1.2)	0.9 (0.5 , 1.3)	1.0 (0.5 , 1.4)
Experienced fever, dry cough or shortness of breath	26.5 (16.3 , 36.7)	25.6 (12.1 , 39.2)	27.6 (12.1 , 43.0)

4.4 Testing, Diagnosis and Treatment

Testing is an important component of the COVID-19 pandemic response. Overall, 19.7% of adult Ecuadorians tried to get a test for COVID-19; males tried to get tested more than females (24% vs. 15.7% respectively). Overall, 12.8% received a COVID-19 test. Of those who received a test, 12.9% tested positive and of those positive cases, 25.9% received treatment. Men reported higher rates of testing (16.% vs. 9.7%, respectively), diagnosis (15.2% vs. 9.3%, respectively) and treatment (27.3% vs. 22.5%, respectively) compared to women. Treatment for COVID-19 among the entire adult Ecuadorian population was less than 1%. Among individuals who tried to get a test for COVID-19 but were not able to, almost half reported that the test was too expensive (47.5%). Of those individuals who were not tested and did not try to get a test, a third (32.1%) thought that they would be able to get a test if they needed one.

Less than one-fifth (16.4%) of adult Ecuadorians reported that a close family member had been diagnosed with COVID-19. Almost three in ten (29.0%) reported that a friend had been diagnosed and one-fifth (20.8%) reported that a neighbor had been diagnosed with COVID-19.

Table 7 shows reported testing, diagnosis and treatment overall and by sex from the COVID-19 Mobile Phone Survey.

	Overall	Males	Females
	% (95% CI)	% (95% CI)	% (95% CI)
Tried to get a test for COVID-19	19.7 (17.1 , 22.3)	24.0 (20.0 , 27.9)	15.7 (12.2 , 19.1)
Tested for COVID-19	12.8 (10.5 , 15.0)	16.0 (12.6 , 19.4)	9.7 (6.8 , 12.6)
COVID-19 diagnosis	12.9 (7.5 , 18.2)	15.2 (7.4 , 23.0)	9.3 (2.8 , 15.8)
Treatment	25.9 (7.4 , 44.4)	27.3 (3.9 , 50.7)	22.5 (0.0 , 50.5)
Treatment among the population	0.5 (0.1 , 0.9)	0.8 (0.0 , 1.5)	0.2 (0.0 , 0.5)
Reason for not getting tested: Not available	25.7 (15.1 , 36.3)	25.7 (12.3 , 39.1)	25.7 (8.7 , 42.8)
Reason for not getting tested: Not eligible	26.8 (16.4 , 37.1)	26.6 (13.0 , 40.2)	27.0 (11.0 , 42.9)
Reason for not getting tested: Too expensive	47.5 (35.3 , 59.8)	47.7 (31.9 , 63.5)	47.3 (28.1 , 66.6)
Think they would be able to get a test among those	32.1 (28.7 , 35.5)	36.5 (31.3 , 41.8)	28.4 (23.9 , 32.9)

who have not tried to get a test			
Close family member diagnosed	16.4 (13.9 , 18.9)	14.9 (11.5 , 18.2)	17.9 (14.2 , 21.5)
Friend diagnosed	29.0 (26.0 , 32.0)	28.9 (24.6 , 33.2)	29.1 (24.9 , 32.3)
Neighbor diagnosed	20.8 (18.2 , 23.4)	18.0 (14.5 , 21.5)	23.4 (19.6 , 27.2)

4.5 Practices

The pandemic has led to a massive global public health campaign to slow the spread of the virus by encouraging significant shifts in behavior, including avoiding crowded places, practicing physical distancing and wearing masks in public. Overall, about half (51.8%) of adult Ecuadorians reported that they are avoiding public places. More than half (62.6) of men and women in Ecuador reported avoiding public transportation. In addition, over three-quarters (79.0%) reported avoiding social contact, with women reporting a higher rate (80.3%) than men (77.6%). 9 out of 10 (90.8%) adult Ecuadorians reported that they had left their home in the previous seven days to shop or perform permitted activities. Of those who reported leaving their home, half (52.4%) left one or two days, 20.3% left three or four days and only 18.1% left five or more days in the previous seven days. Overall, 96.5% of adult Ecuadorians reported that they wore a face mask or face covering when leaving the home.

Table 8 presents key findings on practices overall and by sex.

	<i>Overall</i>		<i>Males</i>		<i>Females</i>	
	%	(95% CI)	%	(95% CI)	%	(95% CI)
Avoided public places	51.8	(48.5 , 55.0)	50.2	(45.6 , 54.8)	53.3	(48.7 , 57.8)
Avoided public transportation	62.6	(59.4 , 65.8)	63.3	(58.9 , 67.8)	61.9	(57.4 , 66.4)
Avoided social contact	79.0	(76.2 , 81.7)	77.6	(73.6 , 81.5)	80.3	(76.5 , 84.0)
Left home in the last 7 days	90.8	(88.8 , 92.8)	93.9	(91.6 , 96.2)	87.9	(84.7 , 91.1)
Left home 1-2 days	52.4	(49.1 , 55.7)	48.7	(43.9 , 53.4)	56.0	(51.4 , 60.6)
Left home 3-4 days	20.3	(17.6 , 23.0)	23.1	(19.1 , 27.1)	17.7	(14.2 , 21.2)
Left home ≥ 5 days	18.1	(15.6 , 20.6)	22.2	(18.3 , 26.0)	14.2	(11.0 , 17.4)
Wore face mask/covering when leaving the home	96.5	(95.3 , 97.7)	96.1	(94.3 , 98.0)	96.9	(95.4 , 98.3)

5. Conclusions

Effective and rapid decision making during the pandemic require data not only about infections, but also about human behavior in Ecuador. The data presented in the Ecuador COVID-19 Mobile Phone Survey provide a strong foundation for the development of response strategies in Ecuador. Some key outcomes included:

- Overall, more than one third (38.8%) of Ecuadorian adults aged 18 years and older reported that they live in an area where there are cases in the community.
- When asked if they were ill, approximately one in ten adult Ecuadorians reported feeling ill (9.5%).
- For men, the most common symptoms reported were muscle or body aches (24.4%), sore throat (17.8%) and dry cough (16.2%). For women, the most common symptoms reported were muscle or body aches (36.8%), fever (18.4%) and shortness of breath (15.7%).
- Overall, 26.5% of adult Ecuadorians reporting experiencing either fever, dry cough or shortness of breath when ill.
- Overall, 19.7% of adult Ecuadorians tried to get a test for COVID-19.
- Overall, 12.8% of those who reported feeling ill received a COVID-19 test. Of those who received a test, 12.9% tested positive and of those positive cases, 25.9% received treatment. Men reported higher rates of testing (16.% vs. 9.7%, respectively), diagnosis (15.2% vs. 9.3%, respectively) and treatment (27.3% vs. 22.5%, respectively) compared to women.
- Among individuals who tried to get a test for COVID-19 but were not able to, almost half reported that the test was too expensive (47.5%).
- Of those individuals who were not tested and did not try to get a test, a third (32.1%) thought that they would be able to get a test if they needed one.
- Overall, about half (51.8%) of adult Ecuadorians reported that they are avoiding public places. In addition, over three-quarters (79.0%) reported avoiding social contact, with women reporting a higher rate (80.3%) than men (77.6%). 9 out of 10 (90.8%) adult Ecuadorians reported that they had left their home in the previous seven days to shop or perform permitted activities. Of those who reported leaving their home, half (52.4%) left one or two days, 20.3% left three or four days and only 18.1% left five or more days in the previous seven days. Overall, 96.5% of adult Ecuadorians reported that they wore a face mask or face covering when leaving the home.

Conclusions:

Findings from this survey help provide a national baseline on select COVID-19 KAPs for Ecuadorian adults aged 18 years and older. Results will inform the Ministry of Health in Ecuador as they improve and enhance COVID-19 response efforts.

Limitations:

The main limitation of any mobile phone survey includes the population's access to a mobile phone. Therefore, the population who do not have access to mobile phones was not represented in this survey. The results of the mobile phone survey were based on self-reports and may be influenced by recall or social desirability bias.