Biobehavioral Survey of HIV, Syphilis, and Health Status Among Venezuelans Living in Colombia

BOGOTÁ, SOACHA, BARRANQUILLA, AND SOLEDAD

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Y PROTECCIÓN SOCIAL

RED SOMOS

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Citation and study team

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Acronyms

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ARV	Antiretroviral
CBO	Community-based Organization
CDC	United States Centers for Disease Control and Prevention
ETP	*Estatuto Temporal de Protección para Migrantes Venezolanos* (Temporary Protection Statute)
GAM	Global AIDS Monitoring
HIV	Human Immunodeficiency Virus
IQR	Interquartile Range
nPEP	Non-occupational Post-exposure Prophylaxis to prevent HIV
OR	Odds Ratio
PEP	*Permiso Especial de Permanencia* (Special Stay Permit)
PrEP	Pre-exposure Prophylaxis to prevent HIV
PLHIV	People Living with HIV
RDS	Respondent Driven Sampling
RPR	Syphilis Rapid Plasma Reagin
SIVIGILA	*Sistema Nacional de Vigilancia en Salud Pública* (National Public Health Surveillance System)
STI	Sexually Transmitted Infection
UNCR	United Nations Refugee Agency
WHO	World Health Organization
95% CI	95% Confidence Interval

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Preface

There are over 100 million forcibly displaced persons globally, including refugees, asylum seekers, and internally displaced persons as of May 2022.[1] These people fled their homes for a variety of reasons, including persecution, conflict, violence, human rights violations, discriminatory environments, and economic hardship. Included amongst these displaced persons are those from Venezuela, who have left their country to escape some of these difficulties for better horizons. Currently, there are over 7.1 million Venezuelan refugees, asylum seekers and migrants worldwide, most residing in Latin America and the Caribbean countries.[2] This displacement of Venezuelans has become one of the largest external displacement crises globally.[3] Colombia has been the largest host of Venezuelans nationals, offering approximately 2.5 million migrants and refugees permanent residence in Colombia, as well as offering services to all displaced persons in Colombian territory in a transitory situation.[2,4]

Despite the unprecedented dimensions of the crisis in the region, the response has also been unprecedented and, although there remains much to cover, HIV has been present in the humanitarian response agenda, not only from the viewpoint of people living with HIV (PLHIV), but also with growing commitment to reduce risk of HIV for migrants. The difficult conditions of migratory processes may increase susceptibility to infections and clinical complications. Familial separation, interruption of support networks and livelihoods, lack of food security and barriers to healthcare or education increase migrants' vulnerability to HIV; conversely, a migrant soliciting asylum has a higher likelihood of preventing HIV if their host country has options which facilitate social and laboral integration, such as access to essential medical services.

Public health responses to HIV imply addressing inequalities in such a way that vulnerable populations such as migrants are guaranteed human rights, social protection, and socio-economic and cultural integration, which are well-known determinants of health. The provision of culturally appropriate HIV services depends upon a myriad of information and data, including a population's HIV prevalence, as well as vulnerability and risk factors. Measuring HIV prevalence amongst displaced persons who reside outside of camps is a major challenge that has rarely been undertaken successfully.

The authors of this important report, entitled "*Behavioral survey of HIV, syphilis, and health status among Venezuelans living in Colombia*" have adapted respondent-driven sampling (RDS), a method employed for populations without sampling frames, for use among Venezuelan refugees, asylum seekers and migrants living in Bogotá, Soacha, Barranquilla, and Soledad, Colombia. The RDS methodology allowed for estimation

of population estimates and overcomes limitations associated with other convenience sampling approaches and HIV estimates generated through data from testing programs. RDS is particularly well-suited to measure HIV and other disease prevalences amongst displaced populations in non-camp-like settings. The primary objective of the study was to estimate HIV prevalence among adult Venezuelans who have arrived and have resided in Colombia since 2015. Together with other important data such as overall livelihood, health, and displacement experiences, as well as experiences of discrimination and violence, these findings will inform local health and humanitarian services for Venezuelans living in Colombia. This study also provided an opportunity to validate the importance of the principle of "greater involvement of the affected populations" (GIPA),[5] given the involvement of the community since the initial design of the study. A lesson learned is the advantage of involving community-based organizations across all phases of the investigation, building on their expertise and relationships to inform the methodology and understand results, as pillars of evidence-based advocacy.

We will not repeat the results of the study in this preface. Rather, we wish to highlight some of the key aspects that we believe this study has undertaken successfully, in the hope that the results will improve the quality of lives and reduce morbidity and mortality amongst Venezuelans living in Colombia. The study points to clear interventions that can reduce HIV vulnerability and risk amongst Venezuelans residing in Colombia, including the improvement of food security, reduction of discrimination and violence, and programs to address intimate partner violence. Context matters, and the study noted disparities across migration status and geographic residence. Contrary to stereotypes, behavioral risks for HIV were relatively low amongst migrants and refugees, but history of HIV testing and access to HIV services were also low. Low engagement across the HIV care continuum shows a need to increase uptake of HIV testing and support long-term and consistent engagement in care for Venezuelans in Colombia. Because location of HIV acquisition was mixed, i.e., some people living with HIV came to Colombia knowing they were living with HIV and others acquired HIV while living in Colombia, programmatic planning must take into consideration both the transnational continuity of care and local prevention and testing services. Finally, Venezuelans with irregular migration status were significantly less likely to have suppressed viral loads, demonstrating a clear link between legal status and HIV outcomes of clinical and public health significance. Collectively, this study provides valuable data to inform local and regional human rights-based HIV responses[6] that include supporting enabling laws and policies, such as the Temporary Protection Status,[7] alongside expanded HIV service provision.

Finally, we hope that other HIV studies with different displaced populations around the world will be conducted with the same rigor and innovation as this study to improve the lives of the over 100 million persons who are currently displaced globally; only then will we have quality results to improve response strategies and leave nobody behind.

Sincerely,

Luisa Cabal
Director
Regional Office for Latin America and the Caribbean
UNAIDS

BIENVENIR By the Numbers | STUDY PERIOD: JULY 2021 – FEBRUARY 2022

80%
had a secondary education or higher

47%
experienced stigma/ discrimination a few times per year or more while in Colombia

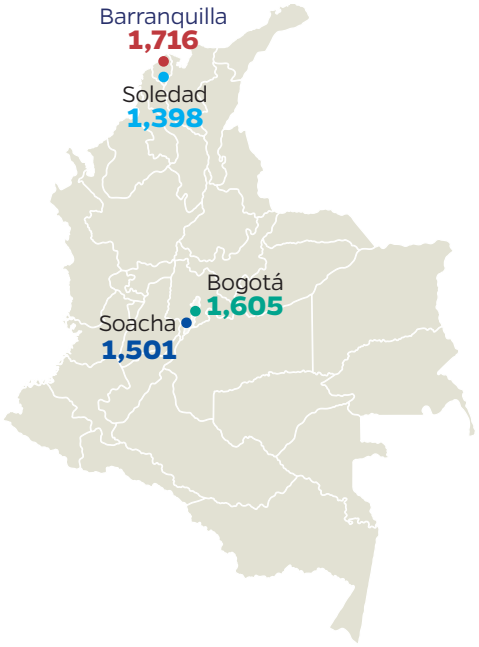
8%
were food secure

21%
reported hazardous or active alcohol use

6%
experienced psychological, physical, and/or sexual violence victimization in the past 12 months

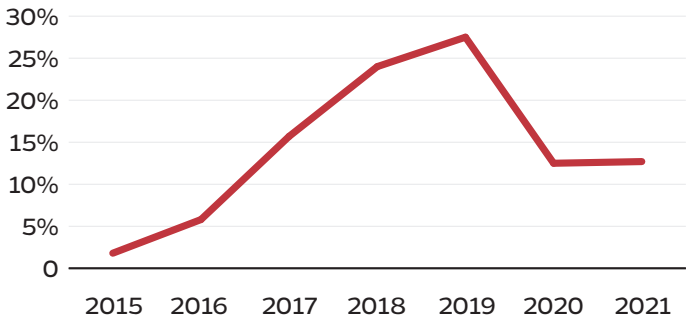
21%
had moderate to severe anxiety or depression

PARTICIPANTS BY CITY

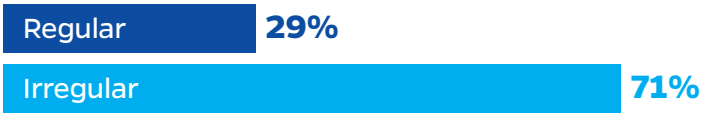


PRIMARY MOTIVATION FOR LEAVING VENEZUELA

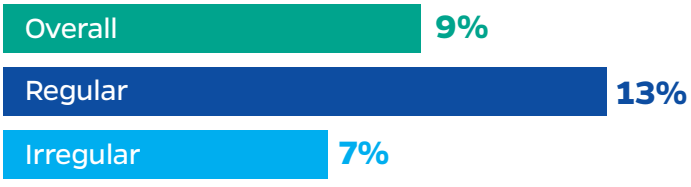
MIGRANTS YEAR OF ARRIVAL



MIGRATION STATUS



FULL-TIME WORK PER MIGRATION STATUS



SYPHILIS PREVALENCE

Overall
5.0% (95%CI: 4.1-6.0)

Bogotá/Soacha
5.0% (95%CI: 4.0-6.4)

Barranquilla/Soledad
4.9% (95%CI:3.6-6.5)

HIV PREVALENCE

Overall
0.9% (95%CI: 0.6-1.4%)

Bogotá/Soacha
0.8% (95%CI: 0.4-1.5)

Barranquilla/Soledad
1.2% (95%CI: 0.7-2.0)

HIV CARE CONTINUUM AMONG PEOPLE LIVING WITH HIV

Previously diagnosed	**48%**
On treatment	**38%**
Suppressed HIV viral loads	**35%**

↓70%
People with an **irregular migration status** had a **70% lower odds** of HIV viral suppression than people with a **regular migration status**

76%
described their health overall as 'good' to 'excellent'

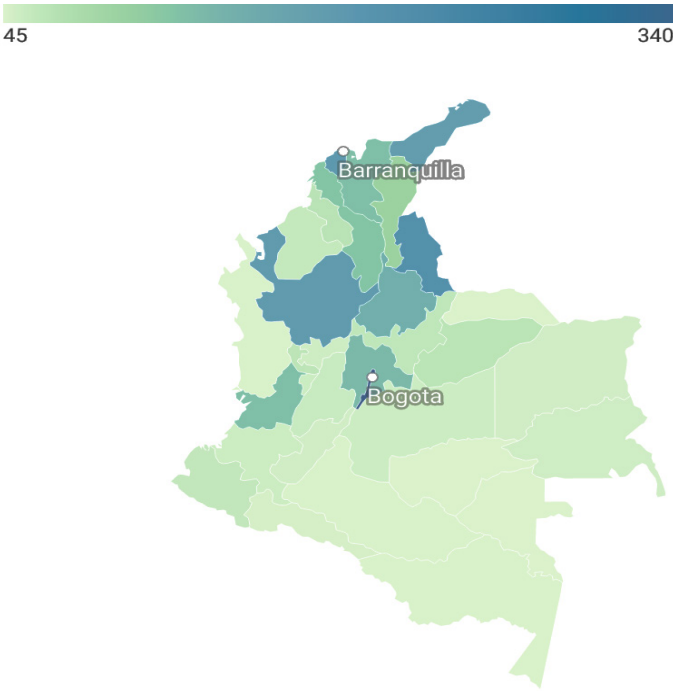
Executive Summary

Executive Summary

INTRODUCTION

The economic crisis and political instability in the Bolivarian Republic of Venezuela has led to mass migration and displacement in the Americas, displacing over 7.1 million Venezuelans as of September 2022.[2] The humanitarian emergency has been associated with deteriorating healthcare infrastructure and worsening health outcomes among Venezuelans living in the country, as well as among those displaced to neighboring countries.[8] Colombia currently receives the largest number of displaced Venezuelans in the region. As of September 2022, approximately 2.5 million were living in multiple departments across Colombia (Figure 1).[2] Few population-based estimates are available to assess the experiences and health of Venezuelans living in Colombia.

Figure 1 Population distribution of Venezuelan migrants and refugees[1] in Colombia as of 2021



(Source: Department of Migration)

Access to health services, as well as employment, education, health care, and banking, in Colombia is largely dependent on one's immigration status. People with regular migration status, defined as entering the country through regular pathways that are consistent with the laws and regulations governing exit from, entry, and stay in the destination country, or who have gone through the process of obtaining documentation after entry, are able to gain formal employment and thus enroll in the contributory system or receive services under the national subsidized system for uninsured people.[9,10] However, as of March 2021 (prior to the beginning of this study), 56% of the 1.7 million Venezuelans residing in Colombia at that time had irregular migration status,[11] i.e., lacked legal status in Colombia. These individuals are not able to access formal employment, and are thus unable to access the contributory insurance system, and are ineligible for the subsidized system.[9,10] This also includes access to HIV treatment for people living with HIV, some of whom may have migrated to Colombia due to ART (anti retroviral treatment) and other HIV care related supply shortages in Venezuela.[12]

[1] Note; The term refugees and migrants is used throughout this report in recognition of the complexity of their displacement and for consistency with terminology used by regional agencies involved in coordinating the humanitarian response. Refer to reference 2 for further details.

Donations of HIV medications have made treatment available regardless of migration status in Cúcuta, a border city in Colombia with many Venezuelans living there or crossing the border temporarily to access treatment, and more recently in Bogotá.[13,14] In other areas of the country, treatment options for migrants and refugees with irregular migration status are limited, though several organizations provide HIV testing and other health and support services for Venezuelan migrants and refugees. Most recently, the Temporary Protection Permit for Venezuelans (*Estatuto Temporal de Protección para Migrantes Venezolanos* or ETP), which came into effect in 2021, was expected to provide legal protection and, therefore, access to health and other social services for an estimated 800,000 Venezuelans with irregular migration status in Colombia.[7] Population-based estimates of health indicators and HIV are absent but needed to inform public health programming and humanitarian response. Estimates of the burden of HIV and other health indicators are needed to inform treatment distribution plans for future drug donations,[15] HIV programming, and public health policies.

The biobehavioral survey, known as *Bienestar de Venezolanos quienes son Inmigrantes y Refugiados* (*Proyecto BIENVENIR*) ("Wellbeing of Venezuelans who are Immigrants and Refugees"), was conducted among adult Venezuelan migrants and refugees in four urban cities of Colombia. The primary objective of this study was to estimate HIV prevalence among adult Venezuelans in two sites (which cover two neighboring cities per site) who have arrived and reside in Colombia since 2015. Given lack of information on the overall livelihood, health, displacement experiences, and experiences of discrimination and violence, additional information was collected in these domains noting their relationship to HIV as social and structural determinants of health as well as to inform local health and humanitarian services.

METHODS

This study was designed and implemented using a community-academic-policy partnership model, which provided comprehensive expertise across all aspects of the study. Collaborators included Red Somos, a community-based organization that provided HIV support and legal services for Venezuelan migrants and refugees in Colombia, the Colombian Ministry of Health and Social Protection, and academic research institution, Johns Hopkins University Bloomberg School of Public Health.

Venezuelan adults who migrated since 2015 and resided in the Bogotá, Soacha, Barranquilla, or Soledad metropolitan areas were sampled using respondent-driven sampling (RDS), a non-probability chain referral sampling method.[16] The target sample size for RDS enrollment was 6,200 participants, which was powered to detect HIV prevalence in each site with a 0.005 margin of error. Eligibility was restricted to one member per household as well as to people with no immediate plan to leave Colombia (i.e., *caminantes,* being those passing through Colombia to another country, and *pendulares*, being Venezuelans residing in Venezuela and traveling to Colombia daily or regularly, were not eligible for participation).

Participants completed socio-behavioral surveys and rapid, dual HIV/syphilis screening tests. The SD BIOLINE HIV/Syphilis Duo has a reported sensitivity of 99.8% and specificity of 100% for anti-HIV antibody detection and a reported sensitivity of 90% and specificity of 99.9% for anti-*Treponema pallidum* antibody detection.[17] Laboratory-based confirmatory testing via Western Blot, CD4 count, and viral load measures were conducted for participants with a reactive HIV test following national HIV testing guidelines.[18] Participants with a rapid treponemal test were provided laboratory-based rapid plasma reagin (RPR) test and titer to confirm syphilis infection. Participants diagnosed with HIV or syphilis were provided post-test counseling with integrated medicolegal services to provide legal assistance for sustained access to treatment through the national health system and were linked to care. Study implementation was led by Red Somos. Data collection launched on July 28, 2021 in Bogotá, July 31, 2021 in Soacha, August 10, 2021 in Barranquilla, and August 18, 2021 in Soledad. Participants were enrolled through February 2022, with final follow-up of participants with HIV and/or syphilis diagnosis completed by end of March 2022.

Data were regularly reviewed to minimize bias and missingness, as well as to verify that assumptions underlying RDS estimation were achieved. Descriptive statistics were used to describe sample characteristics and generate population-based (RDS-weighted) estimates using the Volz-Heckathorn estimator.[16] Multivariable logistic regression models were used to identify correlates of HIV infection. Among participants

living with HIV infection (previously diagnosed or undiagnosed), we conducted further descriptive analysis to estimate the proportion previously diagnosed, engaged in HIV care, currently on ARV treatment, and virally suppressed to construct HIV care continuum estimates of Venezuelans living with HIV in Colombia. Penalized logistic regression models were used to identify correlates of viral suppression (HIV RNA <1,000 copies/mL) among people living with HIV. Population estimates that were not stratified by site, as well as multivariable regression models, incorporated complex survey design to account for clustering within site strata.

This section of Excutive Summary provides a brief summary of study results, while detailed tables and study results are presented in full in the following chapters.

RESULTS

In total, 6,506 people were recruited through RDS, 6,221 of whom were eligible and consented to participate and compose the analytic sample. Participants were evenly distributed across the four cities. Women represented 65% of the study population and were more likely to enroll than men (34%) and trans or nonbinary participants (1%). Higher enrollment of women than men was anecdotally explained by the restriction of enrollment to one family member per household and gender norms associated with expectations of work and participation in health services (and, by extension research) within a partnership. Overall, participants were a relatively young population with a median age of 32 years, (Interquartile range [IQR]: 26-41 years).

Demographics and displacement: Migration escalated in 2017 and peaked in 2018-2019, primarily motivated by food and job insecurity. Access to health care or to give birth was not a frequently reported primary motivation for migration (Figure 2). Almost two-thirds of migrants and refugees entered Colombia via informal border crossings; half traveled with some proportion of their family, and 40% traveled alone.

The impacts of the economic disaster in Venezuela were reflected by incomplete educational attainment (20% who completed primary or less), high levels of unemployment or informal work in Colombia, and low income. While food insecurity was a primary motivation for migration, over 90% of Venezuelan refugees and migrants met classifications of low and very low food security in Colombia at the time of the study. Seventy-one percent of migrants and refugees had an irregular migration status and these individuals frequently experienced more hardships, such as food insecurity, lower educational attainment, and lower employment while in Colombia when compared to those with a regular migration status.

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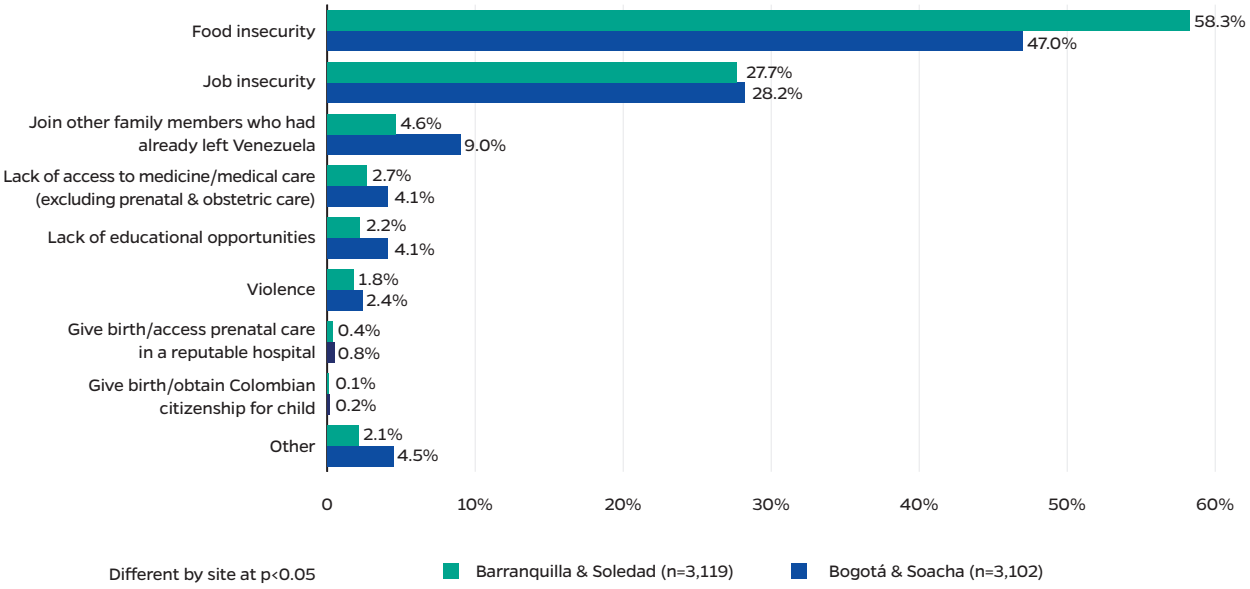
Figure 2 Reported primary motivation for migration to Colombia, stratified by site



General health: Approximately half of migrants and refugees had a BMI (body mass index) consistent with overweight or obesity (defined as >=25) based on self-reported height and weight. The prevalence of underweight body mass index (<= 18.5) was less than 10% overall, but slightly more common among people with irregular migration status. Among sexually active women, 52% reported currently using contraception and over 28% reported pregnancy since coming to Colombia. Reproductive health and prenatal care were generally not different by migration status in terms of sexual activity, number of births, or contraceptive use; however, women with regular migration status also reported marginally more prenatal care visits during their most recent pregnancy in Colombia.

Over 25% of migrants and refugees suspected they had COVID-19 infection at some point based on symptoms and exposure. This was more commonly reported by those with regular migration status, who also more frequently accessed COVID-19 testing, compared to people with irregular migration status, despite no difference in result of the test across migration status. Forty-eight percent reported having at least one vaccination for COVID-19, which was more commonly reported by migrants and refugees with regular compared to irregular status (55% vs. 44%). For irregular migrants and refugees, their migration status was the most common barrier to vaccination, while conflicts with work and inability to register for the vaccine were more frequently cited barriers to vaccination among regular migrants and refugees. Despite health concerns and social and structural challenges, migrants and refugees generally reported high levels of health status, with over three quarters of the sample reporting “good, very good, or excellent” health with no difference by migration status.

Mental and behavioral health: More than 20% of migrants and refugees reported symptoms indicative of moderate or severe anxiety and/or depression and 21% reported symptoms consistent with hazardous or active alcohol use disorder. The prevalence of anxiety/depression was different across sites with higher levels in Barranquilla and Soledad than in Bogotá and Soacha (29% vs. 16%).

Sexual behaviors and HIV infection: Almost all refugees and migrants were sexually active (96%), with a median number of one sexual partner in the past 12 months and nearly a third who reported condom use at last sex. Key populations at risk for HIV represented 7% of migrants and refugees overall. This included those who reported lifetime history of paying for sex (1%), lifetime transactional sex (2%), and lifetime injecting drug use (2%) among all migrants and refugees, as well as lifetime same-sex sexual partnerships among men (12%). Almost half did not know their sexual partner’s HIV status, which was more commonly reported by women, people residing in Barranquilla and Soledad, and people with irregular migration status, compared to their counterparts. Only half of migrants and refugees reported any lifetime HIV test, which was higher among

people residing in Bogotá and Soacha (56%) compared to Barranquilla and Soledad (47%). History of HIV testing was more commonly reported among women and likely attributed to testing during prenatal care. Use of both post-exposure prophylaxis (PEP) and pre-exposure prophylaxis (PrEP) were low.

Laboratory confirmed HIV prevalence among migrants and refugees was 0.9% (95%CI: 0.6-1.4) overall and ranged from 0.8% in Bogotá and Soacha (95%CI: 0.4-1.5) to 1.2% (95%CI: 0.7-2.0) in Barranquilla & Soledad (Table 1). Prevalence was marginally higher among men (1.6%; 95%CI: 0.9-2.6) than women (0.6%; 95%CI: 0.2-1.2), though with overlapping confidence intervals. Assuming stable HIV prevalence among migrants and refugees and a population size of 2,477,588 refugees and migrants in Colombia, based on September 2022 migration estimates that includes all migration statuses,[2] this would equate to 22,298 (95%CI: 14,865 - 34,686) migrants and refugees living with HIV in Colombia and requiring ongoing access to treatment.

Table 1 HIV prevalence estimates

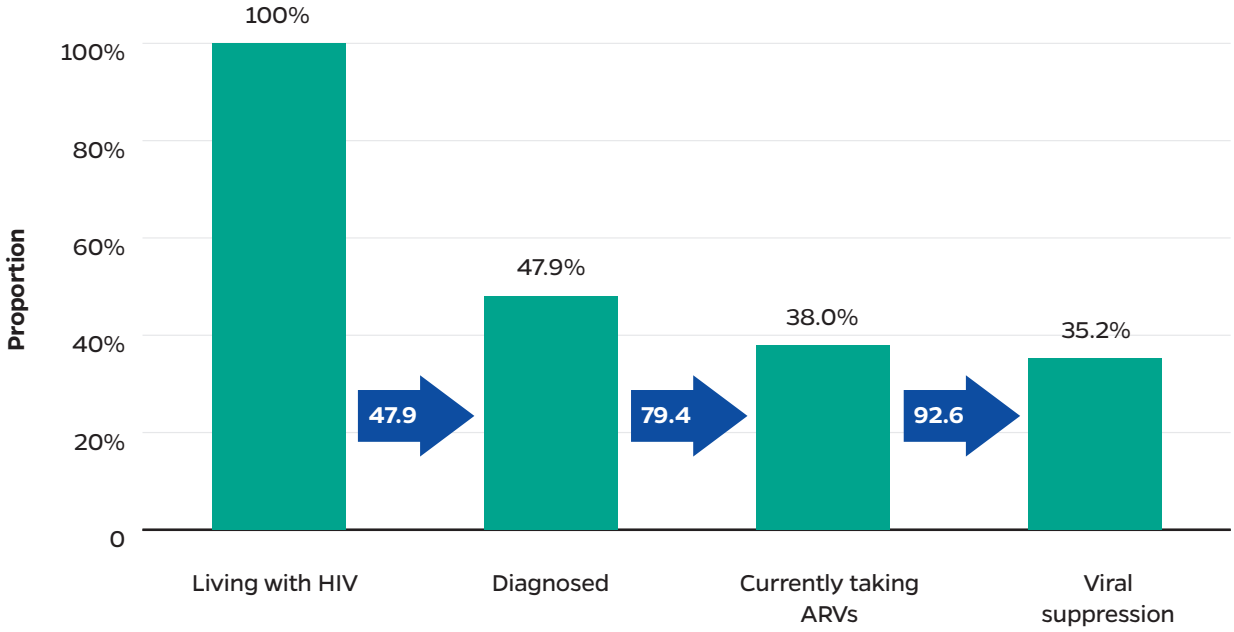
	Sample	Proportion	Population estimate	
	n	%	%	95%CI:
HIV prevalence full sample (N=6220)	71	1.1	**0.9**	**(0.6-1.4)**
Site**				
Bogotá & Soacha (n=3102)	28	0.9	**0.8**	**(0.4-1.5)**
Barranquilla & Soledad (n=3118)	43	1.4	**1.2**	**(0.7-2.0)**
Age				
18 to 29 (n=2,470)	29	1.2	**0.8**	**(0.5-1.4)**
30 to 39 (n=1,978)	26	1.3	**1.1**	**(0.6-2.2)**
40 to 49 (n=1,024)	9	0.9	**0.4**	**(0.2-0.9)**
50+ (n=748)	7	0.9	**1.5**	**(0.3-6.6)**
Gender *				
Man (n=2,123)	41	1.9	**1.6**	**(0.9-2.6)**
Woman (n=4,046)	26	0.6	**0.6**	**(0.2-1.2)**
Transgender or Nonbinary (n=47)	4	8.5		
Migration status				
Regular	26	1.5	**1.4**	**(0.8-2.5)**
Irregular	45	1.0	**0.7**	**(0.4-1.4)**
Man who has sex with men (n=207)*	23	11.1	**9.5**	**(4.9-17.7)**
Ever paid for sex * (n=82)	3	3.7	**2.2**	**(0.6-7.7)**
Lifetime transactional sex * (n=106)	7	6.6	**3.2**	**(1.3-7.4)**
Lifetime injecting drug use (n=130)	3	2.3	**0.8**	**(0.2-2.7)**
Key Population * (n=407)	27	6.7	**6.4**	**(3.5-11.5)**

Notes: n: denominator for subgroup; N: total study population; 95%CI: 95% Confidence Interval; *Significantly different from reference group or across categories at *p<0.05 or **p<0.10 in chi² tests; Ref: reference group not displayed; Key population defined as individuals who identify as transgender or nonbinary who have sex with men, are men who have sex with men, report lifetime transactional sex, or report lifetime injecting drug use.

Population HIV prevalence was not calculated for transgender and non-binary identified participants due to the small number (n=47); however, the burden of HIV was high among this group with 8.5% (4/47) identified with HIV infection. HIV prevalence was estimated at 6% among key populations, inclusive of migrants and refugees who reported lifetime transactional sex, injecting drug use, trangender people who have sex with men, and men who have sex with men. Notably, all key populations with HIV were men who have sex with men or transgender/non-binary people, though several also reported other HIV acquisition risk behaviors such as injecting drug use or transactional sex. There was no difference in HIV status by migration status nor year of migration.

In terms of HIV outcomes, the most significant drop in the HIV care continuum is observed with diagnosis, wherein only 48% of people living with HIV had been previously diagnosed (Figure 3). Lack of awareness of one's status then impacts all subsequent stages of the continuum. Sevent-nine percent of those ever diagnosed were currently on treatment and 92.6% of those on treatment were virally suppressed (HIV-1 RNA <1,000 copies/mL). Overall, however, this represents 35.2% of people living with HIV who were virally suppressed. Twenty-nine percent of people living with HIV had an undetectable viral load (HIV-1 RNA <50 copies/mL).

Figure 3 HIV care continuum among participants with laboratory-confirmed HIV infection (n=71)



Penalized multivariable logistic regression modeling was used to identify correlates of viral suppression (HIV-1 RNA <1,000 copies/mL) among participants living with HIV (n=71; Table 2). In the multivariable model, having an irregular migration status compared to a regular status was associated with a 70% reduced odds of viral suppression (adjusted odds ratio [aOR]: 0.3; 95%CI: 0.1-0.9), while having a last HIV test in Colombia, compared to Venezuela, was associated with a 90% reduced odds of viral suppression (aOR: 0.1; 95%CI: 0.0-0.5). Likewise, those who were never tested for HIV had 80% reduced odds of viral suppression, compared to those last tested in Venezuela. Reporting behaviors or identity associated with a key population and use of humanitarian services in Colombia were associated with viral suppression at the bivariate level but were no longer associated in the multivariable models. Gender, time since migration, site, age, income, food security, and BMI were not associated with viral suppression in bivariate or multivariable models.

Table 2 Correlates of viral suppression

	OR	95%CI	p-value	aOR	95%CI	p-value
Irregular migration status (Ref: Regular)	0.2	(0.1-0.6)	0.004	0.3	0.1-0.9)	0.026
Key Population (Ref: General population	3.0	(1.1-7.9)	0.029			
Country of last HIV tests (Ref: Venezuela)						
Colombia	0.2	(0.0-0.7)	0.015	0.1	(0.0-0.5)	0.008
Never tested	0.2	(0.1-0.5)	0.003	0.2	(0.1-0.8)	0.018
Used humanitarian services (Ref: No use)	2.7	(0.9-7.6)	0.063			

Note: OR: odds ratio; aOR: adjusted odds ratio calculated via a penalized multivariable logistic regression model for small denominators; final models are fit based on goodness of fit statistics and tested for collinearity;

History of STI and current syphilis infection: Overall, 3% of migrants and refugees reported a lifetime diagnosis of STI, among whom 81% received treatment either in Colombia or Venezuela.

Laboratory-confirmed syphilis infection, determined by rapid treponemal test and laboratory-based RPR, among migrants and refugees was 5.0% (95%CI: 4.1-6.0) and was not different by site nor migration status. Syphilis was slightly higher among men (6.5%), relative to women (4.1%). Among the sample of transgender and non-binary identified participants, 14.9% (unweighted) were identified with syphilis infection. Syphilis prevalence was estimated at 15.2% among key populations overall and as high as 18.2% among men who have sex with men.

Discrimination and violence victimization: Utilizing the Everyday Discrimination scale,[19] almost 50% of migrants and refugees reported experiencing at least one form of discrimination a few times per year or more frequently. Ninety-percent attributed these experiences to their migration status.

Overall, 12% of migrants and refugees experienced violence while living in Colombia, which most commonly included psychological abuse, followed by physical violence, sexual exploitation, and sexual violence. The prevalence estimates of violence were different across sites and genders, as were the individuals reported to perpetrate violence. Generally, women more commonly reported that intimate partners had perpetrated violence, while men more commonly reported perpetration by police, armed groups, and strangers. Employers were more commonly reported by those with regular migrant status to perpetrate all forms of violence, compared to those with irregular status.

Hardships and use of humanitarian services: The vast majority of migrants and refugees (95%) reported some form of material hardship while living in Colombia, which predominantly included financial hardship (50%), food insecurity (20%), and housing instability (16%). Despite these challenges, only 17% of migrants and refugees reported utilizing humanitarian services. Among those who utilized services, these services often included food assistance (60%), support for accessing national health services (33%), healthcare (28%), and legal assistance (18%). There was no difference in overall utilization of humanitarian services across sites, though the type and provider of services differed across locations.

Migrants and refugees with regular status were more likely to have reported the use of humanitarian services compared to those with irregular status, though still fewer than one in five reported utilizing such services. Compared to irregular migrants and refugees, regular migrants and refugees were more likely to have reported use of legal or registration assistance, as well as assistance with accessing national health services, as well as services provided by UNHCR, which collectively may explain their successful obtainment of regular migration status.

CONCLUSIONS AND RECOMMENDATIONS:

This study successfully enrolled over 6,200 migrants and refugees residing in two urban settings of Colombia within eight months. The successful implementation is attributed to the community trust in the organization implementing field research, support for legal process to ensure linkage and sustained access to care for people diagnosed with HIV or syphilis regardless of migration status, and the use of RDS-methodology that leverages social networks within populations that lack sampling frames. The RDS methodology provides an added benefit of producing theoretically unbiased estimates that approximate population estimates and overcome limitations associated with other convenience sampling approaches and HIV estimates generated through testing programs.

Age distribution and timing of arrival reported here generally reflect what is reported by migration agencies for Venezuelans living in Colombia.[20] Our findings, however, also highlight social and structural vulnerabilities, including low educational attainment, low levels of formal employment and, thus, material hardships including low income, food insecurity, and housing instability. These likely reflect the long-term impacts of the financial crisis in Venezuela, but also immediate challenges facing Venezuelans in Colombia. For example, food insecurity was the most common reason for migration from Venezuela, however, food insecurity was the second most common reported hardship in Colombia, after financial difficulties.

To our knowledge, there are no estimates of discrimination and violence reported for Venezuelan refugees or migrants nor for adults of all genders in Colombia. We found that 50% of Venezuelans experienced discrimination and 12% experienced some form of psychological, physical, or sexual violence while residing in Colombia, which may suggest the existence of social tensions between the host and migrant community as well as the stress of displacement within families and intimate relationships. Given social vulnerabilities of migrant populations' vulnerabilities, in general, our estimates may be lower than expected but may be explained by the country's reputation for welcoming Venezuelans. Our formative, qualitative research found evidence of more recent tensions associated with the COVID-19 pandemic and economic impacts, however, and may reflect a change in public sentiment towards Venezuelans, which may translate to increased discrimination and/or violence in the near future. Ten percent of women refugees and migrants reported experiences of violence while living in Colombia; though not directly comparable, this is similar to national estimates of life-time and past 12 month intimate partner violence reported for ever-partnered women in Venezuela (19% and 8%, respectively) and Colombia in 2018 (20% and 12%, respectively).[21] It is possible that separation of partners and families during migration may result lower reports of intimate and intrafamilial violence. These forms of violence may also be under-reported due to stigma or misclassification of less severe forms of violence.

In terms of health indicators, self-reported health status among migrants and refugees was generally high and may reflect the hypothesis known as the 'healthy migrant effect', in which migrants are often healthier than host communities in a number of health indicators.[22] Other studies have supported that hypothesis, though have also shown that health tends to decline with length of stay, typically as a result of low living and working conditions.[22] Indeed, mental and behavioral health indicators for Venezuelan migrants and refugees in this study were remarkable. Mean mental health scores on the PHQ-4 among migrants and refugees were considerably higher than previously reported for the Colombian population in 2014 (3.3 vs. 1.3),[23] with one-fifth of migrants and refugees reporting symptoms of anxiety or depression. Uptake of COVID-19 testing and vaccination was low, particularly among irregular migrants and refugees. Notably, this difference by migration status may reflect COVID-19 vaccination eligibility that was interpreted to be restricted to Colombian citizens and migrants/refugees with regular status; public health messaging changed in October 2021 to clarify that vaccinations were available for migrants and refugees with an irregular status. Finally, 5% of migrants and refugees had laboratory-confirmed syphilis infection. These estimates are far higher than 0.7% estimated prevalence among Colombian adults in 2016,[24] though cases of syphilis have increased in the country and regionally since that time.[25] The high prevalence of syphilis raises concerns for risks associated with untreated syphilis, congenital syphilis among other risks for neonates, and onward transmission of infection.

The prevalence of HIV was also noteworthy. Population HIV estimates bordered 1% (overall population prevalence: 0.9%; 95%CI: 0.6-1.4) and were higher in Barranquilla and Soledad (1.2%) than in Bogotá and Soacha (0.8%). HIV prevalence was 5% among key populations. Population prevalence of HIV was higher than

reported for Venezuela (0.5%)[26] and observed in Colombia (0.5%).[27] Low engagement across the HIV care continuum, beginning with low HIV diagnosis and ultimately low levels of viral suppression, signals a need to increase uptake of HIV testing and support long-term and consistent engagement in care for improved individual health outcomes as well as to prevent onward transmission of infection. The estimates reported here for Venezuelan migrants and refugees are close to those long defined by UNAIDS and WHO as a generalized epidemic[28] and highlight the importance of improving access to and uptake of HIV prevention and care among Venezuelan migrants and refugees in Colombia. These findings highlight and support prior guidance that migrants and refugees are not key populations and services for migrants and refugees should not be provided through key populations programs but incorporated through programs for the host population and via humanitarian programming.[29] Given that HIV burden was highest among key populations, programs serving key populations should continue to be supported, if not enhanced, to provide services to key populations regardless of nationality or migration status.

This study also identified notable disparities across migration status and geographic residence. Health history and services use suggested lower availability or access in Barranquilla and Soledad. Financial hardship was the most commonly reported hardship across both sites but was more common in Barranquilla and Soledad, while food and housing insecurity were more commonly reported hardships in Bogotá and Soacha. Differences speak broadly to the higher cost of living associated with Bogotá but also lower availability of services available in Barranquilla and Soledad, compared to Bogotá and Soacha. The differences across sites may also reflect differences in migration status among Venezuelans living in the two sites.

Venezuelan refugees and migrants with irregular migration status faced a number of social, structural and health vulnerabilities, compared to those with a regular migration status. Irregular migration status was associated with lower educational attainment, employment, income, food security, BMI, and higher levels of depression and anxiety, which collectively may reflect legal access to employment and other basic services. Low levels of condom use, awareness of partner status, diagnosed HIV infection, and viral suppression among people with irregular migration status reflect lack of access to insurance coverage for health and HIV services that are tied to legal migration status. Prenatal care is available regardless of migration status, but we observed a lower number of prenatal visits among women with irregular status, which likely reflects other barriers that may be associated with education or discrimination. Inexplicably, people with irregular migration status were also less likely to access humanitarian services. Despite these differences, health, social, and structural indicators were poor among Venezuelan refugees and migrants, overall. These findings highlight a need for improved access to services in addition to support migrants and refugees to understanding rights and services, particularly for those with lower literacy and education. For those with irregular status, methods to facilitate registration for the Temporary Protection Permit would improve access to health and other social services for an estimated 800,000 Venezuelans in Colombia.[7]

Study findings suggest multiple opportunities for intervention. This report concludes with recommendations for public health programming and policy to support improved health and well-being of Venezuelans living in Colombia.

Background

Background

CONTEXT OF MIGRATION AND HEALTH OUTCOMES AMONG VENEZUELANS

The economic crisis and political instability in the Bolivarian Republic of Venezuela has led to mass migration within the Americas. Over 7 million Venezuelan migrants and refugees have been displaced globally, with almost 6 million remaining in the Latin American and Caribbean region, as of September 2022.[2] This represented the largest external human displacement experienced in the Americas and was the second largest globally as of 2021.[3,4] Colombia currently receives the largest number of Venezuelans refugees and migrants in the region. As of September 2022, approximately 2.5 million were living in Colombia.[2,4,20,30,31]

The humanitarian emergency has been associated with deteriorating healthcare infrastructure and worsening health outcomes among Venezuelans living in the country, as well as among those displaced to neighboring countries.[8] Contexts of high human mobility, especially when it is mostly outside of formal migration or humanitarian channels, may (or may not) change infectious disease transmission dynamics both for the receiving communities and for the migrants themselves, depending upon numerous factors. The COVID-19 pandemic has exacerbated public health concerns and strained the capacity of receiving countries to meet the healthcare needs of Venezuelan migrants and refugees.[32,33]

ACCESS TO HIV SERVICES IN VENEZUELA AND FOR MIGRANTS AND REFUGEES IN COLOMBIA

The HIV epidemiology and health status of Venezuelans living in neighboring host countries is largely unknown. Gaps in HIV diagnostics and treatment in Venezuela since 2015 have limited the availability of reliable estimates of HIV burden. In 2018, the Pan-American Health Organization (PAHO) estimated that 69,308 people living with HIV, 87% of whom were registered to receive antiretrovirals (ARVs), were not receiving them due to nationwide drug shortages.[12] A coordinated response led by PAHO has improved ART coverage,[34] although diagnosis, treatment and suppression remain suboptimal. UNAIDS estimates that 100,000 people were living with HIV in Venezuela in 2020, with 71% of people living with HIV (PLHIV) diagnosed, and 55% of those diagnosed receiving ART.[26] No data on virologic suppression rates are available.[26] Less than one-third (30%) of pregnant women living with HIV had received ARVs for prevention of maternal-to-child transmission.[26]

Access to HIV treatment for displaced Venezuelans in receiving countries is variable and depends on national health programs and policies of the host country. Data from other studies show that migrant populations, regardless of the situation or motivation for migration, often face delays in care and have higher risk of AIDS-defining events than non-migrant populations.[35] Treatment interruptions, including partial or intermittent treatment can lead to virologic rebound and increase the risk of onward transmission and acquired resistance.[8] Diagnostic delays or other delays in access to treatment can also lead to ongoing transmission. These concerns, coupled with an estimated 25,000 Venezuelans crossing the Colombian border per day at the exodus' peak,[36,37] underscore the importance of implementing appropriate surveillance methods coupled with access to HIV diagnosis, treatment, and care for migrant populations.

Access to health services, as well as employment, education, health care, and banking, in Colombia is largely dependent on one's immigration status. People with regular migration status, defined as entering the country through regular pathways that are consistent with the laws and regulations governing exit from, entry and stay in the destination country, or who have gone through the process of obtaining documentation after entry, are able to gain formal employment and thus enroll in the contributory system or receive services under the subsidized system for uninsured people.[9,10] Fifty-six percent of the 1.7 million Venezuelans in Colombia as of March 2021 (prior to the beginning of this study),[4,11] however, had irregular migration status, i.e. lack legal status in Colombia. These individuals are not able to access formal employment, and thus unable to access the contributory system, nor are they eligible for the subsidized system.[9,10] They can, however, access emergency services and prenatal care. HIV treatment for Venezuelans with irregular migration status is not available

through the national health system, though drug donations have made treatment available in Cúcuta, a border city in Colombia where many Venezuelans reside or cross the border temporarily to access treatment, and more recently in Bogotá.[13,14] In other areas of the country, treatment options for migrants and refugees with irregular migration status are limited, though several organizations provide HIV testing, support services, and prevention for Venezuelan migrants and refugees. Population-based estimates of HIV are absent, but needed to inform treatment distribution plans for future drug donations[15] and national health programming.

EPIDEMIOLOGIC TRENDS

UNAIDS estimates from Venezuela in 2020 suggest the population prevalence of HIV among adults aged 15-49 in Venezuela is 0.5% (95%CI: 0.4% - 0.6%) and similar by gender[26]. Prevalence estimates for adults in Colombia are similar and estimated at 0.5% (95%CI: 0.4% -0.7%) in 2021, though different by gender (women: 0.2%, 95%CI: 0.2-0.2%; men: 0.9%, 95%CI: 0.7%-1.1%).[27] There is no population-based estimate for migrants and refugees living with HIV in Colombia, though anecdotal evidence from antenatal care (ANC) services and local providers suggested a range of 0.5% to 1.5% test positivity and as high as 24% for key populations. Notably, positivity rates from HIV testing and ANC services are known to be higher than general population estimates due to inclusion of people with greater opportunities acquisition risk or seeking testing due to concern of exposure. Thus, population-level estimates are needed to estimate the overall burden of HIV among migrants and refugees in Colombia and neighboring countries to inform local and national treatment distribution and prevention plans.

RESEARCH OBJECTIVES

The primary objective of this study was to estimate HIV prevalence among recently arrived adult Venezuelans in urban host settings of Colombia. The study was designed to identify correlates of infection as well as provide qualitative estimates of engagement along the HIV care continuum among Venezuelan PLHIV. Given lack of information on the overall livelihood, health, displacement experiences, and experiences of discrimination and violence, additional information was collected in these domains noting their relationship to HIV as social and structural determinants of health as well as to inform local health and humanitarian services. Complex migration pathways across Latin America as well as the intense global migration and displacement trends currently witnessed suggest that study results may have regional generalizability and methods may inform global research and surveillance for migrants and refugees, respectively.

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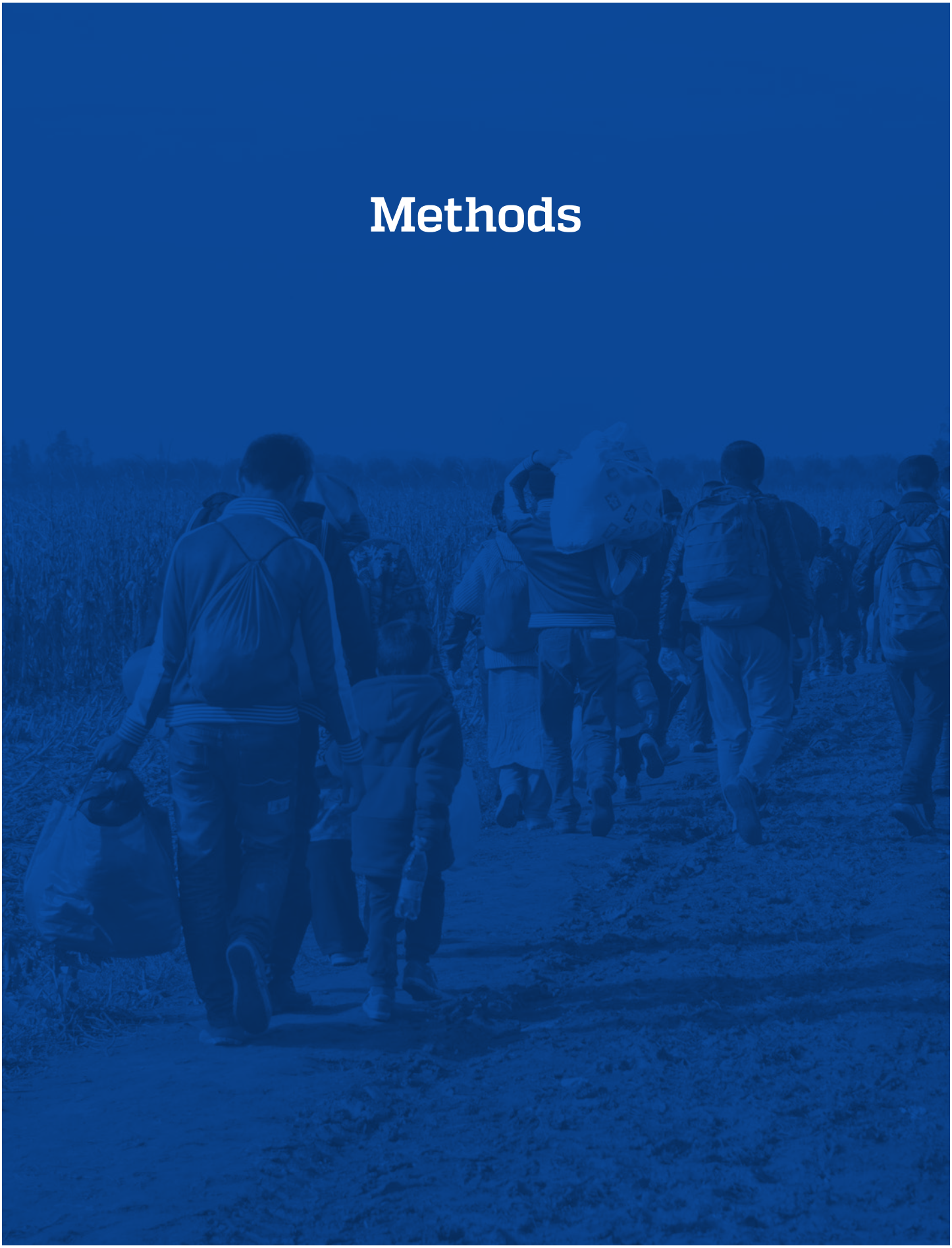
Methods



Methods

This study, known locally as *Bienestar de Venezolanos quienes son Inmigrantes y Refugiados* (*Proyecto BIENVENIR*) ("Wellbeing of Venezuelans who are Immigrants and Refugees") was a cross-sectional sociobehavioral survey to capture experiences regarding displacement history, migration history, healthcare access, health history, mental health, experiences of discrimination and violence, humanitarian service access, and engagement with the HIV care continuum among PLHIV.[38] The study also used a hybrid sampling and case finding approach, coupled with medicolegal services to link individuals with HIV diagnosis to HIV treatment and care, regardless of migration status. A qualitative, formative research phase was conducted to assess barriers to HIV care and health services in Colombia and to inform the quantitative research methods.

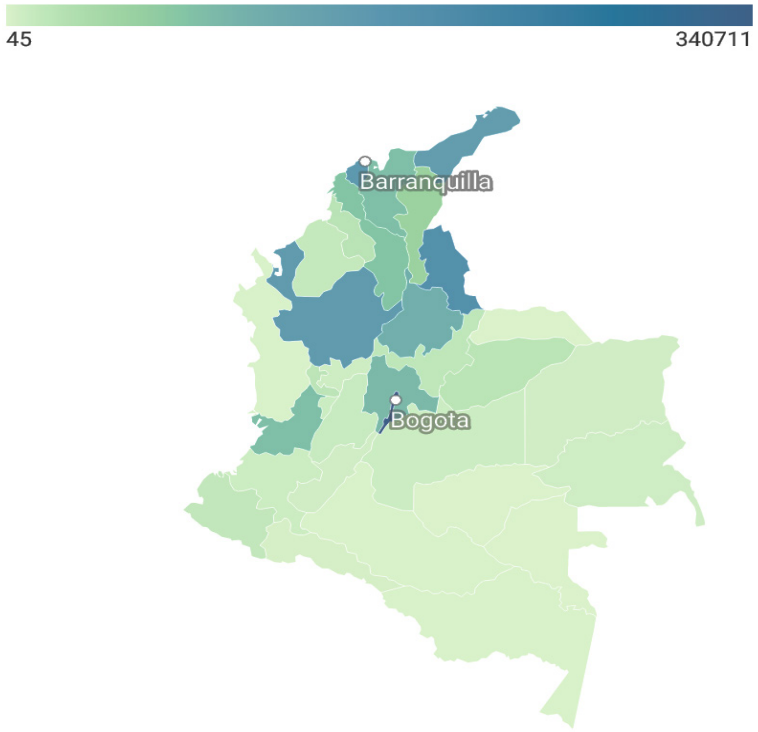
SETTING AND SAMPLE

Data collection activities were conducted in two sites, encompassing the neighboring cities of 1) Bogotá and Soacha Cundinamarca Department, and 2) Barranquilla and Soledad, Atlántico Department (Figure 4). Locations were selected for the distribution and heterogeneous profiles of Venezuelan migrants and refugees, accessibility to humanitarian and health programs, plans for treatment distribution, and lower presence of *pendulares*, Venezuelans who live in Venezuela but who cross to Colombia regularly to access services, and *caminantes,* Venezuelans who are transiting through Colombia to another country. We made an intentional decision not to sample in Cúcuta, given the existing extensive provision of services and treatment for migrants living with HIV and high presences of *pendulares*, which would bias estimates for migrants and refugees who continue to reside long-term in Colombia.

In the design of the study and analysis of data, the selected cities were coupled to create 'sites' for two reasons. First, the close proximity between coupled cities (e.g. Bogotá and Soacha) leads to regular movement of residents across the cities for a variety of reasons. This facilitated convenience for participants by allowing them to participate in a city where they may work or access services (e.g. Bogotá) even when residing in the other city (e.g. Soacha). Second, the sample size was powered to detect HIV prevalence within a specific margin of error within each site. Sample and population estimates reported throughout the manuscript are stratified by site, however, we include sample estimates stratified by city of residence in the Appendix of this report.

CREDIT: ADOBE STOCK

Figure 4 Population distribution of Venezuelan migrants and refugees in Colombia as of 2021



(Source: Department of Migration)

All adult Venezuelan nationals who recently migrated to Colombia were eligible to participate. To ensure recruitment depth in the network of Venezuelans, only one member in an immediate family was eligible to participate. Inclusion criteria were as follows: Venezuelan national based on self-report (proof/documentation of nationality was not requested); born in Venezuela based on self-report; aged 18 and over; migrated to Colombia as of 2015 or later; currently residing (i.e., spends most of their nights) in a study city; and brings a valid study coupon to enrollment (except seeds). Participants with any of the following characteristics were excluded from participation: previously participated; had an immediate family member in the same household who participated; resided outside of Colombia; reported being in transit through Colombia (i.e., reports an immediate destination outside of Colombia); and/or lacked capacity to consent. Dual Colombian citizenship or other dual citizenship did not impact eligibility of those meeting criterion of Venezuelan nationality.

RECRUITMENT

Respondent-driven sampling (RDS), a chain referral sampling method that employs limited referrals within peer networks to achieve target sample sizes, was used to accrue the study sample.[39] Recruitment started with 20 "seeds" (~10 per territory), well-networked individuals who were selected from the target population. Seeds were purposively selected based on being well-respected and influential among peers, socially networked (knew at least 10 Venezuelans outside of their household), and were diverse in characteristics (e.g., age, gender, geographic residence within each city). Seeds participated in all study activities and were asked to invite up to four adult Venezuelan peers (recruits) to participate in study activities, which was the first sampling wave. Eligible and participating recruits were then asked to refer up to four more peer Venezuelans living in the study cities. Participants could refer peers who lived in any of the four study cities, regardless of whether it was different from the city in which the referring peer resided. At the end of each study visit, participants underwent a brief training on how to distribute coupons and refer peers to the study. Participants had the option to use paper and/or e-coupons via SMS or WhatsApp to refer peers. Integration of the data management system allowed for automated reminders to be sent via SMS or WhatsApp, depending on preference, to participants to remind them to distribute coupons and of upcoming study visits.

Participants received $30,000 Colombian pesos (approximately $9 USD) compensation for completing study activities. Payment was in the form of a $5,000 transport card and a $25,000 market card. Additionally, participants received $10,000 pesos (roughly $3 USD) for recruitment of each eligible peer, up to four peers (maximum secondary incentive: $40,000 pesos or roughly $12 USD). This compensation was in the form of a transport card.

SURVEY MEASURES

Survey measures included individual, social, and structural domains, drawing upon previously developed measures, as applicable.[19,39-53] Survey modules included the following domains and drew on previously developed and validated measures, where possible and relevant to the population: demographics; displacement experiences; food security;[54] health history including depression symptoms measured by the Patient Health Questionnaire for Depression and Anxiety (PHQ-4),[23,49,50,54] hazardous alcohol use, measured by AUDIT-C,[45,46] and drug use;[51] COVID-19 symptoms and testing history; reproductive health; sexual behaviors;[51] healthcare; HIV testing, prevention and care;[41,42,51,52] experiences of violence victimization, based on the ASIST-GBV screening tool developed by the research team at Johns Hopkins University;[44] discrimination measured using the Everyday Discrimination Scale;[19] use of humanitarian services; and social network size questions used for RDS weighting procedures.[39] Other health indicators beyond HIV prevention and care measures were included for the purposes of assessing overall health status, identifying other health concerns that may particularly affect those who are living with HIV (e.g., malnutrition), and/or identifying correlates of HIV infection.

BIOLOGIC TESTING

Biologic measures included rapid HIV and syphilis screening using Standard Diagnostics (SD) BIOLINE HIV/Syphilis Duo with finger prick blood specimen.[17] SD BIOLINE HIV/Syphilis Duo has a reported sensitivity of 99.8% and specificity of 100% for anti-HIV antibody detection and a reported sensitivity of 90% and specificity of 99.9% for anti-*Treponema pallidum* antibody detection.[17] Rapid test results were available to participants within 20 minutes.

Participants with a reactive result on either or both tests were asked to provide an additional venous specimen for laboratory-based confirmatory testing. Preliminary positive rapid HIV test results were confirmed via Western Blot testing performed with MP Bio HIV BLOT 2.2, following national HIV testing guidelines.[18] CD4 and viral load quantification were also performed. HIV infection reported here is based on laboratory confirmed results.

Confirmatory syphilis testing was performed using HUMAN Diagnostics Syphilis RPR Test with titer. Syphilis infection was defined as reactive treponemal test, RPR titer >1:8, and participant report of either no prior diagnosis or previously diagnosed and treated syphilis infection.

Rapid testing and biological specimen collection were conducted in accordance with Colombian national requirements. All staff who completed biological specimen collection were auxiliary nurse technicians with training in laboratory specimen collection, phlebotomy, rapid test administration, post-test counseling for HIV and syphilis, and specimen management and transport. HIV and syphilis confirmatory testing, as well as CD4 and viral load quantification were performed by laboratories at the Instituto de Diagnóstico Médico in Bogotá and Barranquilla.

MEDICOLEGAL SERVICES AND LINKAGE TO CARE

All participants identified with HIV (previously or newly diagnosed) and/or with syphilis infection were referred to Red Somos staff to complete a legal triage in which their legal status in Colombia was reviewed by the assigned lawyer who provided support for any needed registration and appropriate pathways to care were identified. Red Somos also offered care navigation to these participants.

SAMPLE SIZE

The study sample size was powered to estimate HIV prevalence in each study site. Assuming a 1% HIV prevalence among general population, based on reports from local providers that suggested a range of 0.5% prevalence to 1.5%, alpha 0.05, 0.005 margin of error, and design effect of two that has been suggested for RDS,[55-57] we estimated that a sample size of 3,043 per site was needed to estimate population HIV prevalence in each site (combined cities). This sample size provides a sufficiently small sampling fraction required by most of the RDS estimators,[58] given that the Venezuelan migrant populations are estimated to exceed 115,000 persons in both sites. To accommodate any over-enrollment during RDS, our target sample size was 6,200 across two sites.

ANALYSES

Data management and RDS diagnostic techniques were performed using RDS-Analyst platform[59] and RDSAT throughout the course of the study to maximize data quality as well as ensure that RDS assumptions were met and bias was minimized in sampling and estimation procedures.[60] Techniques included: assessment of recruitment depth, bottlenecks, homophily, and convergence across select variables such as HIV, age, gender, migration status, and other variables that may affect recruitment.[60]

Descriptive analyses were performed to estimate prevalence of key demographic and health characteristics of the population. All estimates were also stratified by site and, where relevant, by other characteristics such as gender or migration status. All descriptive analyses included unweighted sample and RDS-weighted population-based estimates for the general adult Venezuelan population and were calculated separately for each study site or other characteristic of interest (e.g., gender, migration status).[16] RDS-weighted analysis was performed using Stata Statistical software and the RDS-II (Volz-Heckathorn) estimator.[61] Population estimates were calculated by incorporating RDS survey weights, based on self-reported network size, to calculate population prevalence and bootstrapping procedures to calculate associated 95% confidence intervals. For overall estimates (i.e., aggregated across sites), we incorporated complex survey design to account for clustering within sites. We conducted a sensitivity analysis by estimating overall population prevalence using both RDS-II weights and additional weighting to account for the proportion of refugees and in each site estimates; differences were negible with this additional weighting by population size, thus we utilized only RDS-II weights for aggregated estimates. Given interest in city-specific estimates, we calculated sample proportions for all study findings, which are reported in the Appendix. We did not calculate population estimates with RDS-weighting given that the study was not powered to provide estimates at the city-level. Both sample and population-based estimates are provided throughout the report, with 95% confidence intervals (95%CI) provided for population estimates. We calculated sample estimates only for variables in which denominators were too small due to skip patterns, subgroup analysis, or a result of many categorical options.

Our primary analysis focused on estimation of laboratory-confirmed HIV prevalence among the general population of Venezuelans residing in each of the two sampling areas (i.e., powered to produce HIV prevalence estimates separately for each site). We further estimated HIV prevalence by age group, gender, risk group (men who have sex with men, transgender people, people who report transactional sex, and injecting drug use), and among the general or key population overall. Similar analyses were repeated to estimate the prevalence of laboratory-confirmed syphilis infection. Bivariate and multivariable logistic regression models were used to identify and estimate correlates and the magnitude of association with HIV infection.

Among participants living with HIV infection (previously diagnosed or undiagnosed), we conducted further descriptive analysis to estimate the proportion previously diagnosed, engaged in HIV care, currently on ARV treatment, and virally suppressed to construct HIV care continuum estimates of recently immigrated Venezuelans living with HIV in Colombia. Status of diagnosis was defined as: Diagnosed, based on self-report or HIV-1 RNA less than 1,000 copies/mL, or Undiagnosed, as no self-reported diagnosis and supported by viral load (HIV-1 RNA >1,000 copies/mL). Penalized logistic regression models were used to identify correlates of viral suppression (HIV RNA <1,000 copies/mL) among people living with HIV. Penalized multivariable logistic regression methods reduce the risk of bias associated with small samples.[62]

RDS-weights were not incorporated into the analytic models given that such weighting is not recommended for multivariable regression analysis. Multivariable models incorporated complex survey design to account for clustering within site strata. Final models were evaluated for goodness-of-fit and collinearity.

ETHICS

Study activities were reviewed and approved by the Ethical Review Committee at the Universidad El Bosque in Bogotá, Colombia, and the Institutional Review Board at Johns Hopkins Bloomberg School of Public Health. The protocol was also reviewed in accordance with CDC human research protection procedures.

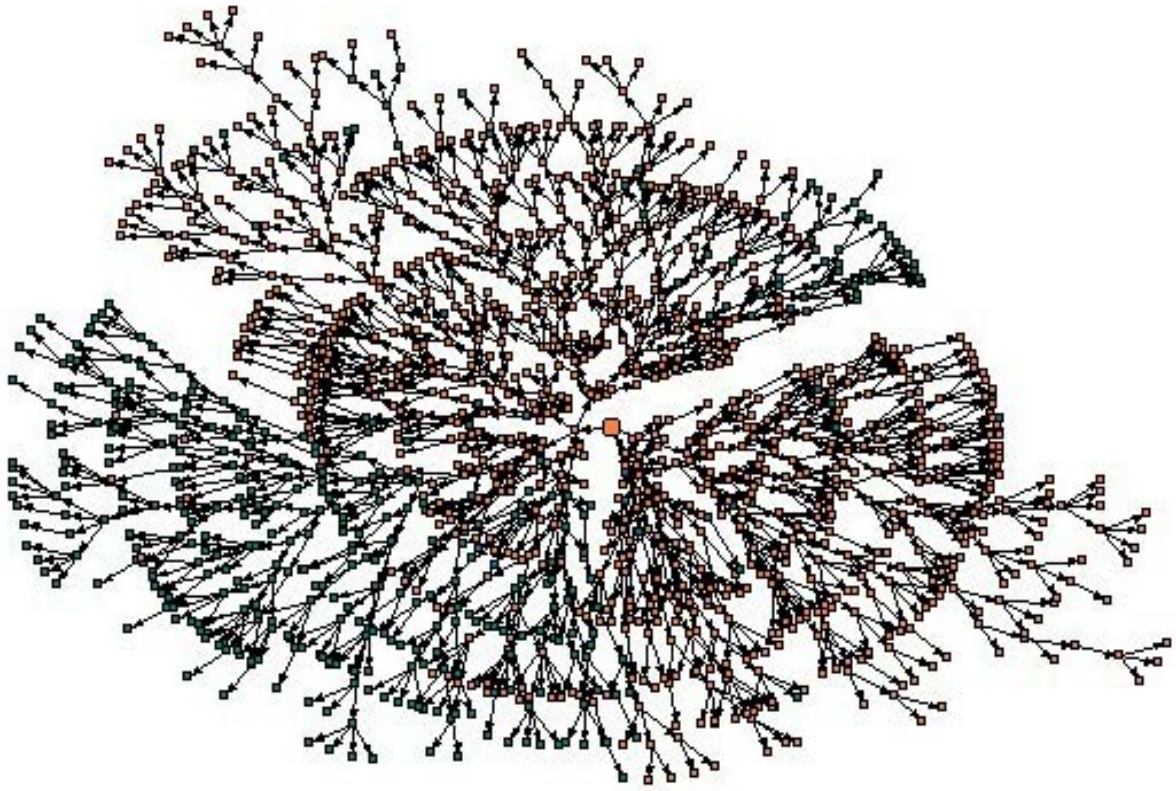
Results

Results

Data collection launched on July 28th 2021 in Bogotá, July 31st 2021 in Soacha, August 10th 2021 in Barranquilla, and August 18th in Soledad. Participants were enrolled through February 2022, with final follow-up of participants with HIV and/or syphilis diagnosis completed by end of March 2022.

RDS sampling was initiated by 21 seeds (10 in Bogotá and Soacha and 11 in Barranquilla and Soledad). Seeds were launched in a phased manner to ensure that distancing could be maintained within study sites. Of those initial seeds, all but one successfully referred eligible and participating peers. This produced a median and maximum recruitment depth of 9 and 17 waves, respectively. Convergence was met for key variables of interest (gender, migration status, HIV, and syphilis). Figure 5 displays an enhanced view of a single RDS network from one study seed in Bogotá and Soacha. Appendix Figure 17 and 18 display full RDS network graphs for each site. Each node in the graph represents a seed or recruited participants. Lines within the graphs display referral connections between participants.

Figure 5 Example RDS network from single seed, Bogotá and Soacha



Note: The seed is represented by the large central node. City of residence is represented by color: green, Bogotá, and orange, Soacha. This seed had a recruitment depth of 14 waves and was the source of referrals for 1,459 recruited participants.

STUDY POPULATION

In total, 6,506 individuals were recruited through RDS, 6,221 of whom were eligible and consented to participate and compose the analytic sample. Participants were relatively evenly split between study sites, with 26% reporting Bogotá as their city of residence, 24% residing in Soacha, 28% residing in Barranquilla, and 23% residing in Soledad. Four participants resided in Soacha but participated in the Barranquilla or Soledad sites while visiting. Women represented 65% of the study population and were more likely to enroll than men (34%) and trans or nonbinary participants (0.8%). Higher enrollment of women than men was anecdotally explained by the restriction of enrollment to one family member per household and gender norms associated with expectations of work and participation in health services (and, by extension research) within a partnership. A slightly higher proportion of men participated in Bogotá and Soacha than Barranquilla and Soledad ($p<0.05$).

DEMOGRAPHICS

Table 3 presents demographic characteristics of Venezuelan migrants and refugees in each site and overall. Participants were a median age of 32 years (IQR: 26-41 years). Over half had completed secondary education while approximately 22% had no education or completed only primary school. Another 22.3% had completed higher than secondary education with slight differences across sites. Employment was limited: 41.2% reported informal or under-the-table employment, which was slightly higher among participants in Barranquilla and Soledad than in Bogotá and Soacha. Over 40% were unemployed at the time of the study. However, a higher proportion of migrants and refugees in Bogotá and Soacha also reported full-time, formal employment though this was 11% or lower across sites.

Income and food insecurity reflected employment status. The majority reported income less than minimum wage, which was more common in Barranquilla and Soledad. Less than 10% overall were food secure, as measured by the USDA Food Security scale.[54] Food security was more common in Bogotá and Soacha than Barranquilla and Soledad (9.9% vs. 4.3%, respectively). The remainder had low (26.5%) or very low food security (65.7%) overall.

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Table 3 Demographic characteristics of Venezuelan migrants and refugees by site

	Site											
	Bogotá & Soacha (n=3,102)				Barranquilla & Soledad (n=3,119)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Median age (IQR)	32	(26-41)			33	(26-41)			32	(26-41)		
Gender (n=6217)*												
Man	1216	39.3	**37.8**	**(35.0-40.6)**	908	29.1	**27.1**	**(24.2-30.1)**	2124	34.2	**33.9**	**(31.8-36.0)**
Woman	1858	60.0	**61.8**	**(58.9-64.5)**	2188	70.2	**72.3**	**(69.2-75.1)**	4046	65.1	**65.6**	**(63.5-67.7)**
Transgender/Nonbinary	24	0.8			23	0.7			47	0.8		
City												
Bogotá	1605	51.7			0	0.0			1605	25.8		
Soacha	1497	48.3			4	0.1			1501	24.1		
Barranquilla	0	0.0			1716	55.0			1716	27.6		
Soledad	0	0.0			1398	44.8			1398	22.5		
Educational attainment (n=6218)*												
No formal education	58	1.9	**1.6**	**(1.1-2.4)**	69	2.2	**3.4**	**(2.1-5.4)**	127	2.0	**2.3**	**(1.7-3.1)**
Primary	494	15.9	**17.2**	**(15.0-19.5)**	762	24.4	**24.1**	**(21.3-27.0)**	1256	20.2	**19.7**	**(18.8-21.5)**
Secondary	1693	54.6	**54.7**	**(51.8-57.6)**	1736	55.7	**53.7**	**(50.2-57.0)**	3429	55.1	**54.3**	**(52.0-56.5)**
Higher	821	26.5	**24.6**	**(22.2-27.1)**	531	17.0	**18.3**	**(15.7-21.1)**	1352	21.7	**22.3**	**(20.5-24.2)**
Other	33	1.1	**1.9**	**(1.1-3.1)**	21	0.7	**0.7**	**(0.3-1.4)**	54	0.9	**1.4**	**(0.9-2.2)**
High literacy (n=6114; ref: low)*	2801	91.1	**90.8**	**(89.0-92.3)**	2204	72.5	**72.9**	**(68.6-75.0)**	5005	81.9	**84.0**	**(82.3-85.6)**
Employment (n=6219)*												
Formal full-time	335	10.8	**11.3**	**(9.5-13.3)**	130	4.2	**4.6**	**(3.2-6.7)**	465	7.5	**8.8**	**(7.6-10.3)**
Formal part-time	210	6.8	**6.4**	**(5.1-7.92)**	74	2.4	**2.4**	**(1.7-3.3)**	284	4.6	**4.9**	**(4.1-5.9)**
Informal/under the table	1245	40.2	**34.9**	**(32.3-37.7)**	1783	57.2	**52.1**	**(48.7-55.5)**	3028	48.7	**41.2**	**(39.0-43.4)**
Full-time student	11	0.4	**0.5**	**(0.2-1.3)**	17	0.5	**0.6**	**(0.3-1.1)**	28	0.5	**0.5**	**(0.3-1.0)**
Retired	20	0.6	**0.8**	**(0.4-1.6)**	15	0.5	**0.5**	**(0.2-0.9)**	35	0.6	**0.7**	**(0.4-1.1)**
Unemployed	1213	39.1	**43.8**	**(41.0-46.8)**	1070	34.3	**38.6**	**(35.2-42.0)**	2283	36.7	**41.9**	**(39.7-44.2)**
Other	66	2.1	**2.4**	**(1.6-3.7)**	30	1.0	**1.3**	**(0.6-3.0)**	96	1.5	**2.0**	**(1.4-2.9)**
Income *												
Less than min wage (908,526 pesos)	2212	71.3	**71.7**	**(69.0-74.3)**	2693	86.3	**84.2**	**(81.3-86.6)**	4905	78.9	**76.3**	**(74.3-78.1)**
Min wage (908,526 pesos)	684	22.1	**22.3**	**(19.9-24.8)**	304	9.7	**11.2**	**(9.1-13.8)**	988	15.9	**18.2**	**(16.5-20.1)**
Between 908,526 - 1,817,052 pesos	181	5.8	**5.1**	**(3.9-6.5)**	107	3.4	**4.1**	**(2.9-5.8)**	288	4.6	**4.7**	**(3.8-5.8)**
More than 1,817,052 pesos	24	0.8	**1.0**	**(0.5-1.8)**	15	0.5	**0.6**	**(0.3-1.0)**	39	0.6	**0.8**	**(0.5-1.3)**
Relationship status*												
Never married	1240	40.0	**44.9**	**(42.—47.8)**	1047	33.6	**37.6**	**(34.3-41.1)**	2287	36.8	**42.2**	**(40.0-44.5)**
Married or cohabitating	1405	45.3	**41.9**	**(39.1-44.8)**	1586	50.8	**49.0**	**(45.6-52.5)**	2991	48.1	**44.5**	**(42.3-46.7)**
Divorced or separated	385	12.4	**11.1**	**(9.5-13.0)**	427	13.7	**11.4**	**(9.6-13.5)**	812	13.1	**11.2**	**(10.0-12.6)**
Widowed	71	2.3	**2.0**	**(1.5-2.9)**	59	1.9	**1.9**	**(1.2-2.9)**	130	2.1	**2.0**	**(1.5-2.6)**
Median number of dependents (IQR)	4	(3-5)			4	(3-5)			4	(3-5)		
Current residence (n=6218)*												
Home/apartment/room I rent or own	2886	93.1	**92.7**	**(91.1-94.1)**	2732	87.6	**86.0**	**(83.2-88.4)**	5618	90.4	**90.3**	**(88.8-91.5)**
Staying at someone else's place	162	5.2	**5.6**	**(4.4-7.1)**	251	8.0	**8.1**	**(6.4-10.3)**	413	6.6	**6.5**	**(5.5-7.7)**
Camp	7	0.2	**0.2**	**(0.1-0.5)**	37	1.2	**1.7**	**(0.9-3.0)**	44	0.7	**0.7**	**(0.4-1.2)**
Other (shelter, abandoned building, car, other)	28	0.9	**1.0**	**(0.5-1.7)**	73	2.3	**3.4**	**(2.1-5.4)**	101	1.6	**1.8**	**(1.3-2.7)**

Table 3 Demographic characteristics of Venezuelan migrants and refugees by site, continued

	Site											
	Bogotá & Soacha (n=3,102)				Barranquilla & Soledad (n=3,119)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
No current residence	16	0.5	**0.5**	**(0.2-1.4)**	26	0.8	**0.8**	**(0.4-1.5)**	42	0.7	**0.6**	**(0.4-1.1)**
Number of unsafe sleep nights												
None	2640	85.1	**86.4**	**(84.4-88.2)**	2735	87.7	**86.1**	**(83.5-88.4)**	5375	86.4	**86.3**	**(84.7-87.8)**
1-10	316	10.2	**9.6**	**(8.1-11.4)**	249	8.0	**8.7**	**(6.9-10.8)**	565	9.1	**9.3**	**(8.1-10.6)**
11-30	85	2.7	**2.5**	**(1.7-3.6)**	76	2.4	**2.8**	**(1.8-4.3)**	161	2.6	**2.6**	**(1.9-3.4)**
31-60	28	0.9	**0.6**	**(0.4-1.0)**	18	0.6	**0.6**	**(0.3-1.3)**	46	0.7	**0.6**	**(0.4-0.9)**
More than 60	32	1.0	**0.8**	**(0.5-1.5)**	41	1.3	**1.9**	**(1.0-3.5)**	73	1.2	**1.2**	**(0.8-1.9)**
Food security (USDA measure; past 12mo)*												
Secure	279	9.0	**9.9**	**(8.2-11.9)**	135	4.3	**4.3**	**(3.2-5.9)**	414	6.7	**7.9**	**(6.7-9.2)**
Low food security	876	28.2	**29.9**	**(27.2-32.6)**	531	17.0	**20.6**	**(17.8-23.6)**	1407	22.6	**26.5**	**(24.5-28.5)**
Very low food security	1947	62.8	**60.3**	**(57.4-63.1)**	2453	78.6	**75.1**	**(71.9-78.1)**	4400	70.7	**65.7**	**(63.5-67.8)**

Notes: n: denominator for subgroup; N: total study population; 95%CI: 95% Confidence Interval; IQR: interquartile range; Sample difference at *p<0.05 or **p<0.10 on chi^2 tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

DEMOGRAPHICS BY MIGRATION STATUS

Overall, 29.3% of migrants and refugees reported regular migration status and 70.7% irregular migration status. Those with regular status were more likely to be men (38.9% vs. 31.8%) and less likely to be women (60.9% vs. 67.6%) compared to people with irregular status (Table 4). People with regular migration status were also more likely to have completed higher education (31.7% vs. 18.4%) and to have high literacy (88.7% vs. 82.0%), compared to people with irregular migration status. Those with regular migration status were more likely to have formal full-time employment (12.8% vs. 7.2%), while people with irregular migration status were more likely to be unemployed (43.9% vs. 37.0%). Differences in income by migration status reflected differences in employment status. Food security was also lower for migrants and refugees with irregular status compared to those with regular status (6.6% vs. 10.9%).

Table 4 Demographic characteristics among Venezuelans with regular and irregular migration status

	Migration Status											
	Regular Status (n=1,779)				Irregular Status (n=4,442)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Gender* (n=6,217)												
Man	715	40.2	**38.9**	**(35.0-43.0)**	1409	31.7	**31.8**	**(29.4-34.3)**	2124	34.2	**33.9**	**(31.8-36.0)**
Woman	1053	59.2	**60.9**	**(56.9-64.8)**	2993	67.4	**67.6**	**(65.0-70.0)**	4046	65.1	**65.6**	**(63.5-67.7)**
Transgender or nonbinary	10	0.6			37	0.8			47	0.8		
City of residence* (n=6,220)												
Bogotá	568	31.9			1037	23.3			1605	25.8		
Soacha	470	26.4			1031	23.2			1501	24.1		
Barranquilla	428	24.1			1288	29.0			1716	27.6		
Soledad	312	17.5			1086	24.4			1398	22.5		
Educational attainment* (n=6218)												
No formal education	17	1.0	**1.3**	**(0.6-2.9)**	110	2.5	**2.7**	**(1.9-3.8)**	127	2.0	**2.3**	**(1.7-3.1)**
Primary	261	14.7	**13.9**	**(11.4-16.9)**	995	22.4	**22.1**	**(20.0-24.4)**	1256	20.2	**19.7**	**(18.8-21.5)**
Secondary	937	52.7	**50.9**	**(46.7-55.1)**	2492	56.1	**55.8**	**(53.1-58.4)**	3429	55.1	**54.3**	**(52.0-56.5)**
Higher	547	30.7	**31.7**	**(27.9-35.7)**	805	18.1	**18.4**	**(16.4-20.5)**	1352	21.7	**22.3**	**(20.5-24.2)**
Other	17	1.0	**2.2**	**(1.1-4.5)**	37	0.8	**1.0**	**(0.6-2.0)**	54	0.9	**1.4**	**(0.9-2.2)**
High literacy* (n=6114; ref: low)	1525	86.8	**88.7**	**(85.8-91.0)**	3480	79.9w	**82.0**	**(79.9-84.0)**	5005	81.9	**84.0**	**(82.3-85.6)**
Employment (n=6219)*												
Formal full-time	177	9.9	**12.8**	**(10.1-16.2)**	288	6.5	**7.2**	**(5.9-8.7)**	465	7.5	**8.8**	**(7.6-10.3)**
Formal part-time	100	5.6	**5.2**	**(3.8-7.1)**	184	4.1	**4.8**	**(3.8-6.4)**	284	4.6	**4.9**	**(4.1-5.9)**
Informal/under the table	864	48.6	**41.5**	**(37.5-45.6)**	2164	48.7	**41.1**	**(38.6-43.6)**	3028	48.7	**41.2**	**(39.0-43.4)**
Full-time student	12	0.7	**0.5**	**(0.3-2.7)**	16	0.4	**0.5**	**(0.2-1.2)**	28	0.5	**0.5**	**(0.3-1.0)**
Retired	8	0.4	**0.8**	**(0.3-2.7)**	27	0.6	**0.6**	**(0.4-1.0)**	35	0.6	**0.7**	**(0.4-1.1)**
Unemployed	587	33.0	**37.0**	**(33.0-41.2)**	1696	38.2	**43.9**	**(41.3-46.5)**	2283	36.7	**41.9**	**(39.7-44.2)**
Other	31	1.7	**2.0**	**(1.0-4.0)**	65	1.5	**2.0**	**(1.2-3.1)**	96	1.5	**2.0**	**(1.4-2.9)**
Income*												
Less than min wage (908,526 pesos)	1299	73.0	**70.4**	**(66.4-74.1)**	3606	81.2	**78.7**	**(76.4-80.8)**	4905	78.9	**76.3**	**(74.3-78.1)**
Min wage (908,526 pesos)	357	20.1	**22.5**	**(19.1-26.2)**	631	14.2	**16.5**	**(14.5-18.6)**	988	15.9	**18.2**	**(16.5-20.1)**
Between 908,526 - 1,817,052 pesos	111	6.2	**6.6**	**(4.7-9.2)**	177	4.0	**3.9**	**(3.1-5.0)**	288	4.6	**4.7**	**(3.8-5.8)**
More than 1,817,052 pesos	12	0.7	**0.5**	**(0.3-1.1)**	27	0.6	**0.9**	**(0.5-1.6)**	39	0.6	**0.8**	**(0.5-1.3)**
Relationship Status												
Never married	642	36.1	**40.2**	**(36.1-44.4)**	1645	37.0	**43.1**	**(40.5-45.8)**	2287	36.8	**42.2**	**(40.0-44.5)**
Married or cohabitating	877	49.3	**45.9**	**(41.8-50.1)**	2114	47.6	**43.9**	**(41.4-46.6)**	2991	48.1	**44.5**	**(42.3-46.7)**
Divorced or separated	225	12.6	**12.0**	**9.5-15.0)**	587	13.2	**10.9**	**(9.5-12.5)**	812	13.1	**11.2**	**(10.0-12.6)**
Widowed	35	2.0	**1.9**	**(1.2-3.1)**	95	2.1	**2.1**	**(1.5-2.8)**	130	2.1	**2.0**	**(1.5-2.6)**
Current Residence* (n=6,218)												
Home/apartment/ room I rent or own	1650	92.8	**92.2**	**(89.4-94.3)**	3968	89.4	**89.5**	**(87.7-91.0)**	5618	90.4	**90.3**	**(88.8-91.5)**
Staying at someone else's place	86	4.8	**4.4**	**(3.1-6.3)**	327	7.4	**7.4**	**(6.1-8.9)**	413	6.6	**6.5**	**(5.5-7.7)**
Camp	5	0.3	**0.3**	**(0.1-0.9)**	39	0.9	**0.9**	**(0.5-1.6)**	44	0.7	**0.7**	**(0.4-1.2)**
Other (shelter, abandoned building, car, other)	24	1.3	**2.4**	**(1.2-4.8)**	77	1.7	**1.6**	**(1.1-2.4)**	101	1.6	**1.8**	**(1.3-2.7)**
No current residence	13	0.7	**0.8**	**(0.2-2.6)**	29	0.7	**0.6**	**(0.3-1.0)**	42	0.7	**0.6**	**(0.4-1.1)**

Table 4 Demographic characteristics among Venezuelans with regular and irregular migration status, continued

	Migration Status											
	Regular Status (n=1,779)				Irregular Status (n=4,442)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Number of unsafe nights**												
None	1568	88.1	**89.0**	**(85.9-91.45)**	3807	85.7	**85.2**	**(83.3-86.9)**	5375	86.4	**86.3**	**(84.7-87.8)**
1-10	148	8.3	**8.2**	**(6.1-11.1)**	417	9.4	**9.7**	**(8.4-11.3)**	565	9.1	**9.3**	**(8.1-10.6)**
11-30	32	1.8	**1.4**	**(0.8-2.4)**	129	2.9	**3.0**	**(2.2-4.2)**	161	2.6	**2.6**	**(1.9-3.4)**
31-60	13	0.7	**0.5**	**(0.2-1.1)**	33	0.7	**0.7**	**(0.4-1.1)**	46	0.7	**0.6**	**(0.4-0.9)**
More than 60	18	1.0	**0.9**	**(0.3-2.6)**	55	1.2	**1.4**	**(0.8-2.2)**	73	1.2	**1.2**	**(0.8-1.9)**
Food security* (USDA measure; past 12mo)												
Secure	141	7.9	**10.9**	**(8.2-14.3)**	273	6.1	**6.6**	**(5.4-8.0)**	414	6.7	**7.9**	**(6.7-9.2)**
Low food security	458	25.7	**26.1**	**(22.7-29.7)**	949	21.4	**26.6**	**(24.3-29.2)**	1407	22.6	**26.5**	**(24.5-28.5)**
Very low food security	1180	66.3	**63.1**	**(58.9-67.0)**	3220	72.5	**66.8**	**(64.2-69.3)**	4400	70.7	**65.7**	**(63.5-67.8)**

Notes: n: denominator for subgroup; N: total study population; 95%CI: 95% Confidence Interval; IQR: interquartile range; Sample difference at *p<0.05 or **p<0.10 on chi² tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

DISPLACEMENT HISTORY AND EXPERIENCES

Overall, 29.3% of migrants and refugees reported a regular migration status and 70.7% irregular migration status. Irregular migration status was slightly higher in Barranquilla and Soledad (Table 5). As described above, regular migration status refers to the possession of any unexpired document permitting stay in Colombia, the implications of which include access to formal employment and access to health insurance in Colombia. Thus, irregular status refers to the absence of such documents and complications to accessing healthcare and maintaining a livelihood. Individuals in the process of obtaining documents may report irregular status.

Over half of migrants and refugees arrived between 2018 and 2019 with over two-thirds arriving via informal border crossings. Migrants and refugees living in Barranquilla and Soledad were also more likely to report arriving through a *trocha* or informal border crossing compared to those living in Bogotá and Soacha (74.0% vs 54.3%) and likely explains, in part, the difference in migration status across these two sites. Forty percent of migrants and refugees traveled alone to Colombia with the remainder traveling with some combination of family, friends or other group. Overall, slightly more than half of refugees and migrants reported traveling with family members, with no difference across sites; however, those residing in Barranquilla and Soledad were more likely to have traveled with all immediate family members than those in Bogotá and Soacha (67.0% vs. 49.9%). This may be explained by the geographic distance between study site cities and Venezuela and the high cost of living in Bogotá.

Table 5 Displacement history and experiences among migrants and refugees, stratified by site

	Sites											
	Bogotá & Soacha (n=3,102)				Barranquilla & Soledad (n=3,119)				Total (N=6221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Migration Status *												
Regular	1037	33.4	**31.4**	**(28.7-34.1)**	742	23.8	**25.8**	**(22.9-29.0)**	1779	28.6	**29.3**	**(27.3-31.4)**
Irregular	2065	66.6	**68.7**	**(65.9-71.3)**	2377	76.2	**74.2**	**(71.0-77.1)**	4442	71.4	**70.7**	**(68.6-72.7)**
Country of citizenship (select all)												
Venezuelan Citizen	3102	100.0	**100.0**		3119	100.0	**100.0**		6221	100.0	**100.0**	
Colombian Citizen	59	1.9	**2.4**	**(1.5-3.7)**	59	1.9	**1.1**	**(0.8-1.7)**	118	1.9	**1.9**	**(1.3-2.7)**
Other Citizenship **	7	0.2			2	0.1			9	0.1		
Year of Migration*												
2015	27	0.9	**0.7**	**(0.4-1.4)**	114	3.7	**3.8**	**(2.8-5.27)**	141	2.3	**1.8**	**(1.4-2.5)**
2016	144	4.6	**3.9**	**(2.9-5.2)**	338	10.8	**9.1**	**(7.5-11.0)**	482	7.7	**5.8**	**(4.9-6.9)**
2017	415	13.4	**12.4**	**(10.6-14.7)**	712	22.8	**21.4**	**(18.7-24.3)**	1127	18.1	**15.7**	**(14.1-17.4)**
2018	781	25.2	**22.2**	**(20.0-24.7)**	917	29.4	**27.1**	**(24.2-30.1)**	1698	27.3	**24.0**	**(22.0-25.9)**
2019	883	28.5	**28.7**	**(26.2-24.7)**	718	23.0	**25.4**	**(22.4-28.6)**	1601	25.7	**27.5**	**(25.5-29.5)**
2020	444	14.3	**15.7**	**(13.7-17.9)**	172	5.5	**6.8**	**(5.2-8.8)**	616	9.9	**12.5**	**(11.1-14.0)**
2021	408	13.2	**16.3**	**(14.2-18.7)**	148	4.7	**6.5**	**(4.9-8.5)**	556	8.9	**12.7**	**(11.2-14.4)**
Arrival Method *												
Formal border crossing	1347	43.4	**44.3**	**(41.4-47.2)**	731	23.4	**25.1**	**(22.2-28.3)**	2078	33.4	**37.3**	**(35.1-39.5)**
Trocha or informal border crossing	1714	55.3	**54.3**	**(51.4-57.2)**	2362	75.7	**74.0**	**(70.8-77.0)**	4076	65.5	**61.5**	**(59.3-63.7)**
Other	41	1.3	**1.4**	**(0.8-2.4)**	26	0.8	**0.9**	**(0.5-1.5)**	67	1.1	**1.2**	**(0.8-1.8)**
Traveled to Colombia with (n=6213; select all):												
Alone *	1293	41.8	**42.4**	**(39.6-45.3)**	1219	39.1	**37.7**	**(34.5-41.1)**	2512	40.4	**40.7**	**(38.5-42.9)**
With family	1558	50.3	**51.0**	**(48.0-53.9)**	1607	51.5	**52.4**	**(49.0-55.8)**	3165	50.9	**51.5**	**(49.2-53.7)**
With extended family	473	15.3	**13.7**	**(11.9-15.6)**	404	13.0	**12.7**	**(10.6-15.1)**	877	14.1	**13.3**	**(12.0-14.8)**
With friends *	559	18.1	**16.7**	**(14.6-18.8)**	305	9.8	**10.8**	**(8.8-13.3)**	864	13.9	**14.5**	**(13.0-16.1)**
Traveled to Colombia with group did not know well *	428	13.8	**12.7**	**(10.9-14.8)**	231	7.4	**8.1**	**(6.4-10.3)**	659	10.6	**11.0**	**(9.7-12.5)**
All family members travel with* (If travelled with family; n=3202)	780	49.7	**49.9**	**(45.8-54.0)**	1134	69.5	**67.0**	**(62.3-71.5)**	1914	59.8	**56.3**	**(53.2-59.4)**
Immediate family members joined at different time (ref: no; n=4320)*	976	42.2	**38.8**	**(35.7-42.1)**	1093	54.4	**56.0**	**(51.7-60.3)**	2069	47.9	**44.6**	**(42.0-47.3)**
Plan to remain in current city (ref: no)*	2940	94.8	**94.6**	**(93.0-95.8)**	3029	97.1	**96.1**	**(94.2-97.4)**	5969	96.0	**95.2**	**(94.0-96.1)**
Time plan to remain in city before leaving * (n=276)												
Less than 1 month	6	3.5			9	8.7			15	5.4		
1 month - 6 months	30	17.4			31	29.8			61	22.1		
7 months-1 year	47	27.3			12	11.5			59	21.4		
More than 1 year	89	51.7			52	50.0			141	51.1		
Destination City if planning to leave (n=276)*												
Bogotá	82	49.1			7	7.8			89	34.6		
Barranquilla	1	0.6			31	34.4			32	12.5		
Nariño	64	38.3			45	50.0			109	42.4		
Medellín, Cali, Cartagena, Cúcuta, Bucaramanga, other	20	12.0			7	7.8			27	10.5		
Ever detained in Colombia because of migration status (ref: no)	207	6.7	**5.5**	**(4.4-6.9)**	178	5.7	**5.4**	**(4.2-7.1)**	385	6.2	**5.5**	**(4.6-6.5)**

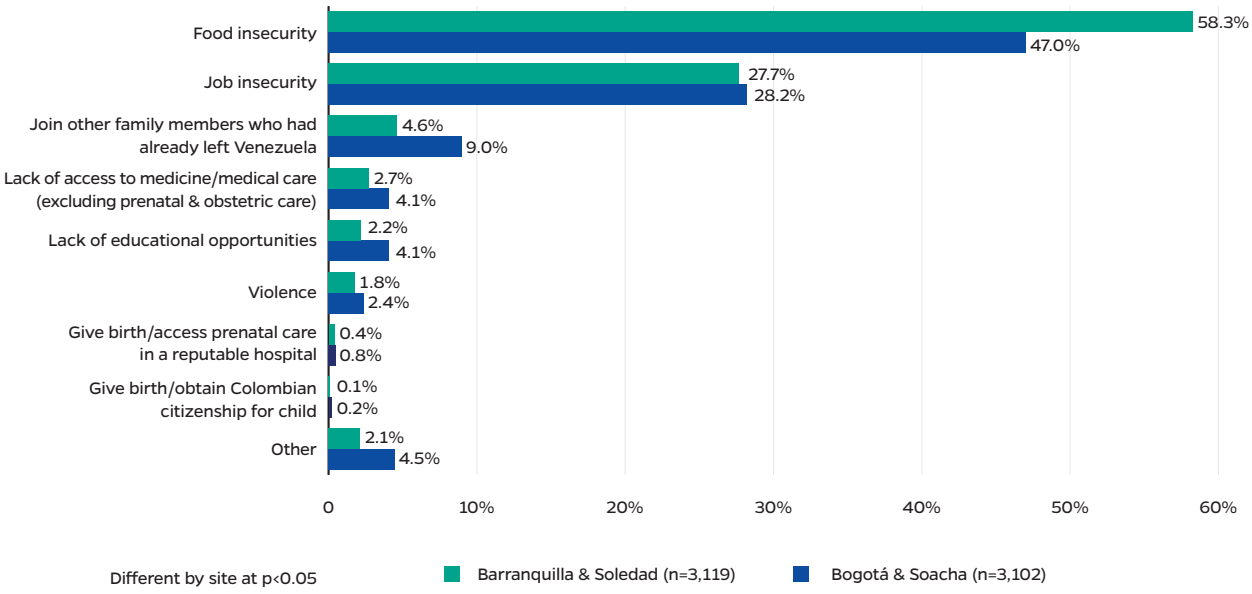
Table 5 Displacement history and experiences among migrants and refugees, stratified by site, continued

	Sites											
	Bogotá & Soacha (n=3,102)				Barranquilla & Soledad (n=3,119)				Total (N=6221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Current documentation in possession or in process (select all)												
PEP*	793	25.6	**22.8**	**(20.5-25.2)**	598	19.2	**20.2**	**(17.6-23.3)**	1391	22.4	**21.9**	**(20.1-23.8)**
Estatuto Temporal de Protección (ETP) para Migrantes Venezolanos*	392	12.6	**12.4**	**(10.6-14.5)**	282	9.0	**9.9**	**(8.0-12.3)**	674	10.8	**11.5**	**(10.2-13.0)**
Visa Tipo M	14	0.5			12	0.4			26	0.4	**0.5**	**(0.2-1.0)**
Refugee Status*	69	2.2	**1.9**	**(1.3-2.8)**	27	0.9	**0.8**	**(0.4-1.53)**	96	1.5	**1.5**	**(1.1-2.1)**
Salvoconducto*	73	2.4	**2.1**	**(1.4-3.3)**	12	0.4	**0.5**	**(0.2-1.1)**	85	1.4	**1.5**	**(1.0-2.3)**
Permitted Stay Stamp*	538	17.3	**15.3**	**(13.4-17.4)**	150	4.8	**4.8**	**(3.6-6.5)**	688	11.1	**11.5**	**(10.2-12.9)**
No Registration in Colombia	788	25.4	**24.4**	**(22.0-27.0)**	768	24.6	**25.9**	**(23.0-29.0)**	1556	25.0	**25.0**	**(23.1-26.9)**
Possessed the following before ETPs were available (of those with ETP; n=674, select all)												
PEP	188	47.2	**45.3**	**(37.4-53.4)**	125	43.6	**43.9**	**(33.2-55.2)**	313	45.7	**44.8**	**(38.4-51.4)**
Visa Tipo M	10	2.5			4	1.4			14	2.0		
Salvoconducto before ETP	17	4.3			7	2.4			24	3.5		
Permitted stay stamp before ETPs*	112	28.2	**22.3**	**(16.8-28.9)**	48	16.8	**15.5**	**(9.1-25.4)**	160	23.5	**20.1**	**(15.7-25.4)**
Had none before ETP	95	24.0	**26.6**	**(19.4-35.2)**	73	25.5	**30.5**	**(20.5-42.7)**	168	24.6	**27.8**	**(21.8-34.7)**
Type of salvoconducto (n=91; select all)												
Visa Tipo M	4	5.3			0	0.0			4	4.4		
Salvoconducto for refugee status *	62	83.8			9	50.0			71	77.2		
Possesses a tarjeta de movilidad fronteriza*												
No	2520	81.2	**82.3**	**(79.9-84.4)**	3023	97.0	**97.1**	**(95.6-98.1)**	5543	89.1	**87.7**	**(86.1-89.1)**
Yes	293	9.4	**9.2**	**(7.7-11.1)**	67	2.1	**2.0**	**(1.2-3.2)**	360	5.8	**6.6**	**(5.5-7.8)**
Yes, but I have stayed in country longer than 7 days or it has expired	289	9.3	**8.5**	**(7.0-10.3)**	27	0.9	**0.9**	**(0.4-2.2)**	316	5.1	**5.7**	**(4.8-6.9)**

Notes: n: denominator for subgroup; N: total study population; 95%CI: 95% Confidence Interval; IQR: interquartile range; Sample difference at *p<0.05 or **p<0.10 on chi²tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

Primary motivations for migration to Colombia were different by site ($p<0.05$), with more migrants and refugees in Barranquilla and Soledad reporting food insecurity, though this was by far the most common motive for migration across both sites (Figure 6).

Figure 6 Reported primary motivation for migration to Colombia, stratified by site



DISPLACEMENT HISTORY AND EXPERIENCE BY MIGRATION STATUS

While more than half of migrants and refugees arrived between 2018 – 2019, migrants and refugees with a regular status tended to report arriving earlier, whereas an additional 30% of irregular migrants and refugees arrived in 2020 and 2021, compared to 13% of regular migrants and refugees who arrived at the same time (Table 6). Consistent with one's migration status, it was more common for regular migrants and refugees to cross at formal border crossings and irregular migrants and refugees to use informal passages.

Within the category of regular migration status, 6.5% had both Venezuelan and Colombian citizenship. Some migrants and refugees with irregular status had initiated the process of documentation; some of this can be attributed to participants who had begun the application process for an ETP, which had begun to accept applications in May of 2021 but did not begin distribution of documents until 2022.

Table 6 Displacement history and experiences among migrants and refugees, stratified by migration status

	Migration Status											
	Regular Status (n=1,779)				Irregular Status (n=4,442)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Country of citizenship (select all)												
Venezuelan Citizen	1779	100.0	**100.0**		4442	100.0	**100.0**		6221	100.0	**100.0**	
Colombian Citizen *	118	6.6	**6.5**	**(4.6-9.2)**	0	0.0	**0.0**	**0.0**	118	1.9	**1.9**	**(1.3-2.7)**
Other Citizenship **	5	0.3			4	0.1			9	0.1		
Year of Migration*												
2015	50	2.8	**1.8**	**(1.2-2.6)**	91	2.0	**1.9**	**(1.3-2.7)**	141	2.3	**1.8**	**(1.4-2.5)**
2016	206	11.6	**9.6**	**(7.5-12.2)**	276	6.2	**4.3**	**(3.4-5.3)**	482	7.7	**5.8**	**(4.9-6.9)**
2017	461	25.9	**23.5**	**(20.2-27.1)**	666	15.0	**12.5**	**(10.8-14.4)**	1127	18.1	**15.7**	**(14.1-17.4)**
2018	542	30.5	**30.2**	**(26.5-34.1)**	1156	26.0	**21.4**	**(19.5-23.5)**	1698	27.3	**24.0**	**(22.0-25.9)**
2019	359	20.2	**22.3**	**(18.9-26.1)**	1242	28.0	**29.7**	**(27.3-32.1)**	1601	25.7	**27.5**	**(25.5-29.5)**
2020	91	5.1	**6.4**	**(4.6-8.8)**	525	11.8	**15.0**	**(13.2-17.0)**	616	9.9	**12.5**	**(11.1-14.0)**
2021	70	3.9	**6.4**	**(4.4-9.0)**	486	10.9	**15.4**	**(13.4-17.5)**	556	8.9	**12.7**	**(11.2-14.4)**
Arrival Method *												
Formal border crossing	999	56.2	**59.0**	**(54.8-63.0)**	1079	24.3	**28.3**	**(25.9-30.8)**	2078	33.4	**37.3**	**(35.1-39.5)**
Trocha or informal border crossing	754	42.4	**39.7**	**(35.7-43.8)**	3322	74.8	**70.6**	**(68.0-73.0)**	4076	65.5	**61.5**	**(59.3-63.7)**
Other	26	1.5	**1.3**	**(0.6-2.9)**	41	0.9	**1.2**	**(0.7-1.9)**	67	1.1	**1.2**	**(0.8-1.8)**
Traveled to Colombia with (n=6213; select all):												
Alone	768	43.2	**42.4**	**(38.3-46.5)**	1744	39.3	**40.0**	**(37.4-42.6)**	2512	40.4	**40.7**	**(38.5-42.9)**
With immediate family	858	48.3	**48.5**	**(44.4-52.7)**	2307	52.0	**52.7**	**(50.1-55.3)**	3165	50.9	**51.5**	**(49.2-53.7)**
With extended family	253	14.3	**12.6**	**(10.4-15.3)**	624	14.1	**13.6**	**(12.0-15.4)**	877	14.1	**13.3**	**(12.0-14.8)**
With friends	284	16.0	**16.5**	**(13.6-19.8)**	580	13.1	**13.7**	**(11.9-15.6)**	864	13.9	**14.5**	**(13.0-16.1)**
With group did not know well	206	11.6	**11.2**	**(8.9-14.1)**	453	10.2	**11.0**	**(9.4-12.8)**	659	10.6	**11.0**	**(9.7-12.5)**
All family members travel with participant (If travelled with family; n=3202)	490	56.7	**53.8**	**(47.8-59.8)**	1424	60.9	**57.2**	**(53.6-60.8)**	1914	59.8	**56.3**	**(53.2-59.4)**
Immediate family members joined at different time (ref: no; n=4320)	588	45.6	**41.2**	**(36.6-46.0)**	1481	48.9	**46.1**	**(43.0-49.3)**	2069	47.9	**44.6**	**(42.0-47.3)**
Plan to remain in current city (ref: no)**	1719	96.6	**97.1**	**(95.6-98.1)**	4250	95.7	**94.3**	**(92.8-95.5)**	5969	96.0	**95.2**	**(94.0-96.1)**
Expected time to remain in city												
Less than 1 month	7	10.8			8	3.8			15	5.4		
1 month - 6 months	14	21.5			47	22.3			61	22.1		
7 months-1 year	10	15.4			49	23.2			59	21.4		
More than 1 year	34	52.3			107	50.7			141	51.1		
Destination city if planning to leave (n=276)												
Bogotá	20	32.3			69	35.4			89	34.6		
Barranquilla	10	16.1			22	11.3			32	12.5		
Medellín	3	4.8			8	4.1			11	4.3		
Cali	1	1.6			7	3.6			8	3.1		
Cartagena	0	0.0			2	1.0			2	0.8		
Cúcuta	1	1.6			4	2.1			5	1.9		
Bucaramanga	0	0.0			1	0.5			1	0.4		
Nariño	27	43.5			82	42.1			109	42.4		
Ever detained in Colombia because of migration status (ref: no)**	94	5.3	**4.2**	**(3.0-5.9)**	291	6.6	**6.0**	**4.9-7.4)**	385	6.2	**5.5**	**(4.6-6.5)**

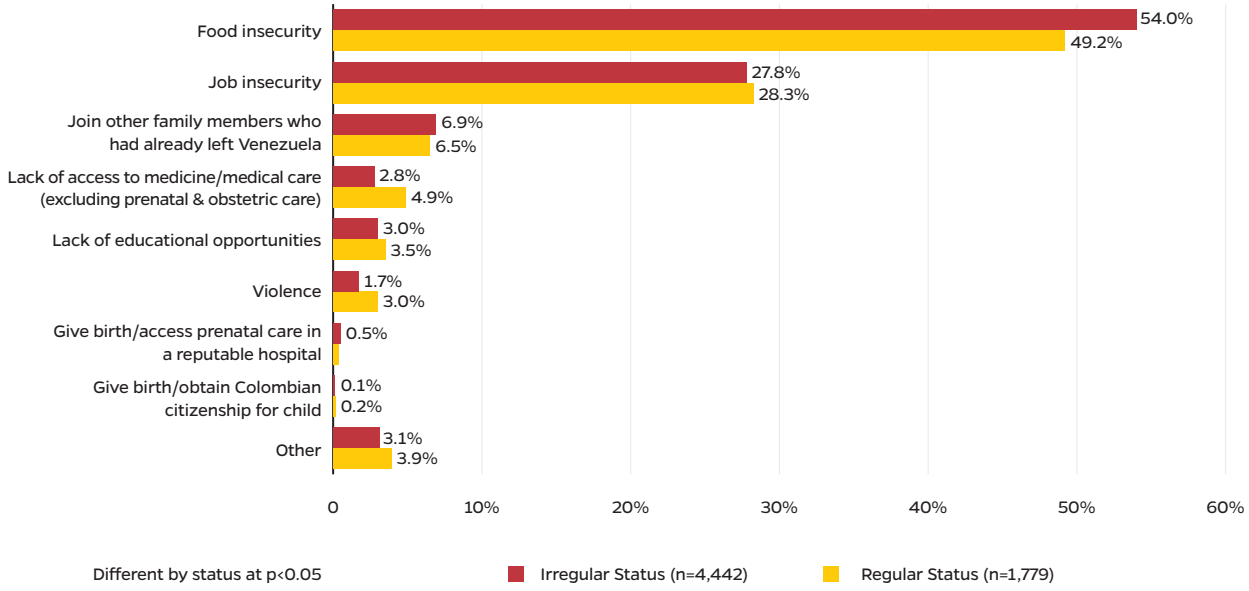
Table 6 Displacement history and experiences among migrants and refugees, stratified by migration status, continued

	Migration Status											
	Regular Status (n=1,779)				Irregular Status (n=4,442)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Current documentation in possession or in process (select all)												
PEP*	1391	78.2	**74.5**	**(70.6-78.1)**	0	0.0	**0.0**	**0.0**	1391	22.4	**21.9**	**(20.1-23.8)**
Estatuto Temporal de Protección (ETP) para Migrantes Venezolanos*	360	20.2	**20.3**	**(17.2-23.8)**	314	7.1	**7.9**	**(6.5-9.5)**	674	10.8	**11.5**	**(10.2-13.0)**
Visa Tipo M*	16	0.9			10	0.2			26	0.4	**0.5**	**(0.2-1.0)**
Refugee Status*	54	3.0	**2.5**	**(1.7-3.6)**	42	0.9	**1.1**	**(0.7-1.8)**	96	1.5	**1.5**	**(1.1-2.1)**
Salvoconducto	51	2.9	**2.8**	**(1.8-4.6)**	34	0.8	**1.0**	**(0.5-1.8)**	85	1.4	**1.5**	**(1.0-2.3)**
Permitted Stay Stamp*	594	33.4	**33.9**	**(30.1-37.9)**	94	2.1	**2.2**	**(1.6-3.0)**	688	11.1	**11.5**	**(10.2-12.9)**
No Registration in Colombia *	338	19.0	**21.6**	**(18.3-25.3)**	1218	27.4	**26.3**	**(24.1-28.7)**	1556	25.0	**25.0**	**(23.1-26.9)**
Possessed the following before ETPs were available (of those with ETP; n=674, select all)												
PEP before ETP*	294	81.0	**79.1**	**(69.9-86.0)**	19	5.9			313	45.7	**44.8**	**(38.4-51.4)**
Visa Tipo M before	8	2.2			6	1.9			14	2.0		
Salvoconducto before	16	4.4			8	2.5			24	3.5		
Permitted stay stamp before ETP	147	40.6	**37.7**	**(29.7-46.5)**	13	4.1			160	23.5	**20.1**	**(15.7-25.4)**
None before ETP	93	25.7	**31.3**	**(22.9-41.1)**	75	23.4	**24.1**	**(16.3-34.2)**	168	24.6	**27.8**	**(21.8-34.7)**
Type of salvoconducto (n=91; select all)												
Visa Tipo M	3	5.6			1	2.7			4	4.4		
Salvoconducto for refugee status	43	76.8			28	77.8			71	77.2		
Possesses a Tarjeta de Movilidad Fronteriza*												
No	1538	86.5	**86.1**	**(82.9-88.8)**	4005	90.2	**88.3**	**(86.5-90.0)**	5543	89.1	**87.7**	**(86.1-89.1)**
Yes	138	7.8	**8.3**	**(6.2-11.1)**	222	5.0	**5.8**	**(4.7-7.3)**	360	5.8	**6.6**	**(5.5-7.8)**
Yes, but I have stayed in country longer than 7 days or it has expired	102	5.7	**5.7**	**(4.1-7.8)**	214	4.8	**5.8**	**(4.6-7.3)**	316	5.1	**5.7**	**(4.8-6.9)**

Notes: n: denominator for subgroup; N: total study population; 95%CI: 95% Confidence Interval; IQR: interquartile range; Sample difference at *p<0.05 or **p<0.10 on chi2 tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

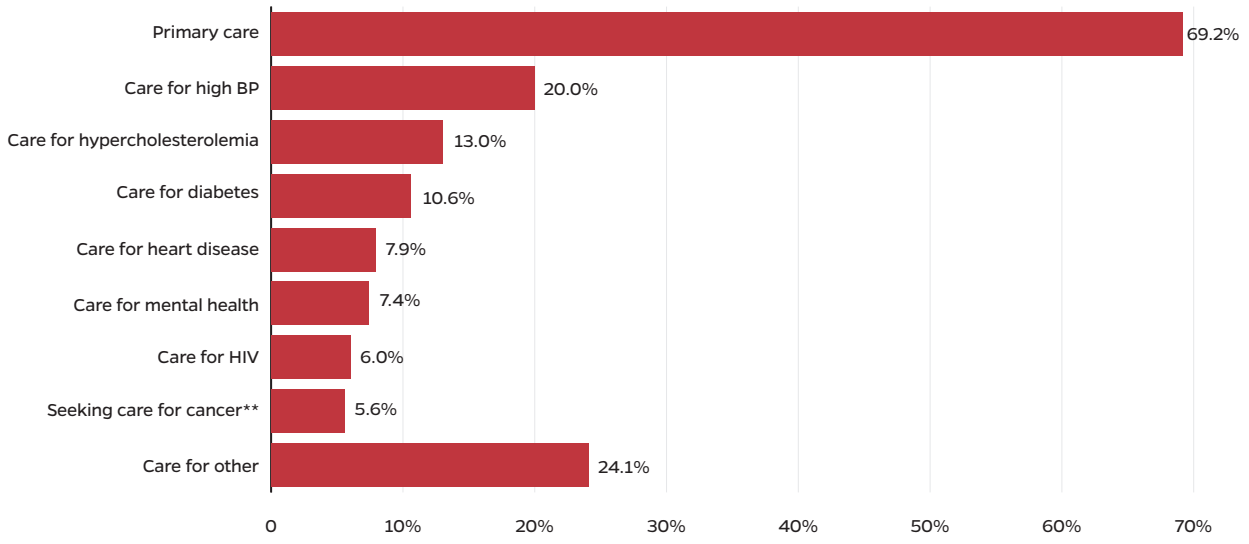
The primary motivation for migration did not vary meaningfully by migration status, with food insecurity leading, followed by job insecurity, and followed by other reasons (Figure 7). Notably, migrants and refugees with irregular migrant status more commonly reported food insecurity as their primary motivation, compared to those with regular migration status (54.0 vs. 49.2%). Migrants and refugees with regular status more commonly reported a lack of access to medicine (4.9 vs. 2.8) and violence (3.0 vs 1.7), as primary motivations for migration.

Figure 7 Primary motivation for migration, stratified by migration status



Among those who reported health as a primary motivation for migration (n=212), the majority were seeking primary healthcare (Figure 8). There was no difference by site or migration status in stated health motivations.

Figure 8 Primary health motive for migration among those reporting health as primary factor



HEALTH HISTORY

Venezuelan refugees and migrants reported generally high levels of health, with over three quarters reporting "good, very good, or excellent" health (Table 7). Roughly half had a self-reported body mass index (BMI) of overweight or obese, with this proportion being slightly higher in Barranquilla and Soledad.

Mean scores for anxiety/depression were 3.3 (SD: 3.13) with 20.7% screening positive for probable moderate or severe anxiety and/or depression on the PHQ-4 scale. This was different across sites, with 29.1% of migrants and refugees in Barranquilla and Soledad reporting symptoms compared to 15.9% in Bogotá and Soacha. Similarly, 21.1% screened for hazardous or active alcohol use disorder. Two percent reported a lifetime history of injection drug use. Among those with a history of lifetime injecting drug use, however, only 13% had injected drugs within the last year.

Table 7 Health characteristics of migrants and refugees in study sites

	Site											
	Bogotá & Soacha (n=3,102)				Barranquilla & Soledad (n=3,119				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Health Self-report * (n=6219)												
Excellent	549	17.7	**18.4**	**(16.2-20.8)**	666	21.4	**24.0**	**(21.0-27.2)**	1215	19.5	**20.4**	**(18.6-22.3)**
Very good	455	14.7	**14.1**	**(12.2-16.2)**	411	13.2	**13.0**	**(10.7-15.5)**	866	13.9	**13.7**	**(12.2-15.3)**
Good	1302	42.0	**42.3**	**(39.4-45.2)**	1367	43.9	**42.5**	**(39.2-45.9)**	2669	42.9	**42.3**	**(40.2-44.6)**
Fair	698	22.5	**21.9**	**(19.7-24.4)**	613	19.7	**18.2**	**(15.9-20.9)**	1311	21.1	**20.6**	**(18.9-22.4)**
Poor	98	3.2	**3.3**	**(2.4-4.6)**	60	1.9	**2.4**	**(1.4-4.0)**	158	2.5	**3.0**	**(2.3-3.9)**
BMI*												
Underweight (<18.5)	177	5.7	**7.2**	**(5.8-9.0)**	117	3.8	**5.0**	**(3.5-7.2)**	294	4.7	**6.4**	**(5.3-7.7)**
Healthy (18.5-24.9)	1379	44.5	**47.0**	**(44.1-50.0)**	1250	40.1	**38.4**	**(35.3-41.6)**	2629	42.3	**43.9**	**(41.7-46.1)**
Overweight (25.0-29.9)	923	29.8	**28.6**	**(26.1-31.3)**	996	31.9	**31.3**	**(28.2-34.6)**	1919	30.9	**29.6**	**(27.6-31.7)**
Obese (>=30)	623	20.1	**17.1**	**(15.2-19.3)**	755	24.2	**25.3**	**(22.3-28.6)**	1378	22.2	**20.1**	**(18.4-21.9)**
Moderate or severe anxiety and/or depression (PHQ4>=6)*	538	17.3	**15.9**	**(13.9-18.1)**	835	26.8	**29.1**	**(26.0-32.4)**	1373	22.1	**20.7**	**(19.0-22.6)**
Hazardous use or active alcohol use disorders (AUDITC>4 for male and AUDITC>3 female)*	644	20.8	**19.8**	**(17.6-22.2)**	731	23.4	**23.4**	**(20.7-26.5)**	1375	22.1	**21.1**	**(19.4-23.0)**
Ever used drugs (ref: no)	148	4.8	**4.4**	**(3.4-5.8)**	89	2.9	**2.4**	**(1.6-3.7)**	237	3.8	**3.7**	**(2.9-4.6)**
Drug use in past 12 months	9	5.4			8	8.0			17	6.4		
Ever Injected Drugs * (ref: no)	85	2.7	**2.1**	**(1.5-2.9)**	45	1.4	**1.5**	**(0.8-2.6)**	130	2.1	**1.9**	**(1.4-2.5)**
Injected in past 12 months ** (among lifetime)	8	9.3			10	19.6			18	13.1		
Ever Blood Transfusion in Venezuela *	307	9.9	**9.0**	**(7.6-10.7)**	253	8.1	**7.6**	**(6.2-9.4)**	560	9.0	**8.5**	**(7.4-9.8)**
Ever surgery in Venezuela *	1289	41.6	**40.1**	**(37.3-43.0)**	1107	35.5	**36.1**	**(32.9-39.5)**	2396	38.5	**38.6**	**(36.5-40.8)**
Ever TB Test * (n=6219)	134	4.3	**3.9**	**(3.0-5.1)**	76	2.4	**3.2**	**(2.1-4.7)**	210	3.4	**3.6**	**(2.9-4.5)**
Ever diagnosed with TB (n=210, among tested)	12	8.7			10	12.3			22	10.0		
Country of diagnosis (select all, n=22)												
Venezuela	10	83.3			3	30.0			13	59.1		
Colombia	2	16.7			7	70.0			9	40.9		
Other country	0	0.0			1	10.0			1	4.5		
Ever treated for TB (n=22)	11	91.7			8	80.0			19	86.4		

Table 7 Health characteristics of migrants and refugees in study sites, continued

	Site											
	Bogotá & Soacha (n=3,102)				Barranquilla & Soledad (n=3,119				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Finished TB treatment (n=19)	10	90.9			8	100.0			18	94.7		
Treated for TB in Venezuelaa*	10	90.9			3	37.5			13	68.4		
Treated for TB in Colombia	2	18.2			5	62.5			7	36.8		
COVID-19												
Believe had COVID-19 based on symptoms (ref: no)	810	26.1	**26.6**	**(24.1-29.3)**	793	25.4	**26.9**	**(24.0-30.1)**	1603	25.8	**26.7**	**(24.8-28.8)**
Tested for COVID-19 (n=1603, among those believed to have had COVID-19)*	229	28.2	**25.7**	**(21.0-30.9**	174	21.9	**25.0**	**(19.2-31.9)**	403	25.1	**25.4**	**(21.7-29.5)**
Results of COVID-19 test (n=403, among tested)*												
Negative	110	48.0	**40.3**	**(30.5-50.9)**	91	52.3	**49.1**	**(34.1-64.3)**	201	49.9	**43.5**	**(35.0-52.3)**
Positive	107	46.7	**57.6**	**(46.9-67.6)**	79	45.4	**47.1**	**(32.2-62.5)**	186	46.2	**53.8**	**(44.9-62.4)**
Unsure	12	5.2	**2.2**	**(1.1-4.3)**	4	2.3	**3.8**	**(0.8-15.9)**	16	4.0	**2.8**	**(1.2-6.2)**
Vaccinated against COVID-19 (ref: no, n=6218)*	1224	39.5	**41.3**	**(38.5-44.2)**	1770	56.8	**58.2**	**(54.9-61.5)**	2994	48.2	**47.5**	**(45.3-49.7)**
Country where vaccinated against COVID-19 (among vaccinated, n=2994)*												
Venezuela	162	13.1			70	3.9			232	7.7		
Colombia	1058	85.3			1708	95.8			2766	91.5		
Peru	7	0.6			2	0.1			9	0.3		
Ecuador	8	0.6			2	0.1			10	0.3		
Other	5	0.4			1	0.1			6	0.2		
Received Second Dose of COVID-19 vaccine												
No	618	50.4	**50.2**	**(45.6-54.8)**	712	40.2	**39.6**	**(35.3-44.2)**	1330	44.4	**45.5**	**(42.3-48.7)**
Yes	384	31.3	**31.2**	**(27.1-35.6)**	697	39.4	**41.2**	**(36.7-45.9)**	1081	36.1	**35.7**	**(32.6-38.9)**
N/A	224	18.3	**18.6**	**(15.2-22.6)**	361	20.4	**19.1**	**(15.9-22.9)**	585	19.5	**18.9**	**(16.4-21.6)**
Interested in COVID-19 vaccine (among unvaccinated, ref: no)	1531	80.7	**80.6**	**(77.4-83.5)**	1129	81.0	**80.6**	**(76.4-84.2)**	2660	80.9	**80.6**	**(78.1-82.9)**

Notes: n: denominator for subgroup; N: total study population; 95%CI: 95% Confidence Interval; IQR: interquartile range; Sample difference at *p<0.05 or **p<0.10 on chi2 tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

Prevalence and differences in health indicators by migration status

General self-reported health was high and similar across migration status (Table 8). There were no differences by migration status in terms of BMI, self-reported symptoms indicative of moderate or severe anxiety and/or depression, or alcohol use.

Over 25% of migrants and refugees reported believing that they had a COVID-19 infection at some point based on symptoms and/or exposure. This was more commonly reported by those with regular migration status, compared to people with irregular migration status; however, there was no difference in diagnosis of COVID-19 by migration status. Almost half of the population reported having at least one vaccination for COVID-19, which was more commonly reported by migrants and refugees with a regular migration status than those with an irregular status (55.2% vs. 44.3%).

Table 8 Health characteristics of migrants and refugees with regular and irregular migration status

	Migration Status											
	Regular Status (n=1,779)				Irregular Status (n=4,442)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Health Self-report * (n=6219)												
Excellent	353	19.8	**21.0**	**(17.7-24.7)**	862	19.4	**20.2**	**(18.1-22.4)**	1215	19.5	**20.4**	**(18.6-22.3)**
Very good	274	15.4	**16.2**	**(13.4-19.5)**	592	13.3	**12.6**	**(11.0-14.5)**	866	13.9	**13.7**	**(12.2-15.3)**
Good	742	41.7	**40.9**	**(36.9-45.1)**	1927	43.4	**42.9**	**(40.4-45.6)**	2669	42.9	**42.3**	**(40.2-44.6)**
Fair	360	20.2	**18.5**	**(15.6-21.8)**	951	21.4	**21.5**	**(19.4-23.7)**	1311	21.1	**20.6**	**(18.9-22.4)**
Poor	50	2.8	**3.5**	**(2.1-5.8)**	108	2.4	**2.8**	**(2.0-3.8)**	158	2.5	**3.0**	**(2.3-3.9)**
BMI*												
Underweight (<18.5)	55	3.1	**4.5**	**(3.0-6.7)**	239	5.4	**7.2**	**(5.8-8.9)**	294	4.7	**6.4**	**(5.3-7.7)**
Healthy (18.5-24.9)	697	39.2	**44.3**	**(40.2-48.5)**	1932	43.5	**43.7**	**(41.1-46.3)**	2629	42.3	**43.9**	**(41.7-46.1)**
Overweight (25.0-29.9)	609	34.2	**34.2**	**(30.4-38.3)**	1310	29.5	**27.7**	**(25.4-30.1)**	1919	30.9	**29.6**	**(27.6-31.7)**
Obese (>=30)	418	23.5	**16.9**	**(14.3-19.9)**	960	21.6	**21.4**	**(19.3-23.7)**	1378	22.2	**20.1**	**(18.4-21.9)**
Moderate or severe anxiety and/or depression (PHQ4>=6)*	345	19.4	**19.1**	**(16.0-22.6)**	1028	23.1	**21.4**	**(19.3-23.6)**	1373	22.1	**20.7**	**(19.0-22.6)**
Hazardous use or active alcohol use disorders (AUDITC>4 for male and AUDITC>3 female)*	387	21.8	**21.6**	**(18.4-25.3)**	988	22.3	**20.9**	**(18.9-23.1)**	1375	22.1	**21.1**	**(19.4-23.0)**
Ever used drugs (ref: no)	69	3.9	**4.0**	**(2.5-6.2)**	168	3.8	**3.6**	**(2.8-4.6)**	237	3.8	**3.7**	**(2.9-4.6)**
Drug use in past 12 months	7	8.9			10	5.3			17	6.4		
Ever Injected Drugs * (ref: no)	37	2.1	**1.4**	**(0.9-2.1)**	93	2.1	**2.1**	**(1.4-2.9)**	130	2.1	**1.9**	**(1.4-2.5)**
Injected in past 12 months ** (among lifetime)	4	10.0			14	14.4			18	13.1		
Ever Blood Transfusion in Venezuela *	172	9.7	**8.2**	**(6.4-10.5)**	388	8.7	**8.7**	**(7.3-10.2)**	560	9.0	**8.5**	**(7.4-9.8)**
Ever surgery in Venezuela *	747	42.0	**41.7**	**(37.6-45.8)**	1649	37.1	**37.4**	**(34.9-40.0)**	2396	38.5	**38.6**	**(36.5-40.8)**
Ever TB Test * (n=6219)	87	4.9	**5.1**	**(3.6-7.1)**	123	2.8	**3.1**	**(2.3-4.0)**	210	3.4	**3.6**	**(2.9-4.5)**
Ever diagnosed with TB (n=210, among tested)	6	6.9			16	12.1			22	10.0		
Country of diagnosis (select all, n=22)												
Venezuela	4	66.7			9	56.3			13	59.1		
Colombia	3	50.0			6	37.5			9	40.9		
Other country	0	0.0			1	6.3			1	4.5		
Ever treated for TB (n=22)	5	83.3			14	87.5			19	86.4		
Finished TB treatment (n=19)	4	80.0			14	100.0			18	94.7		
Treated for TB in Venezuelaa*	4	80.0			9	64.3			13	68.4		
Treated for TB in Colombia	2	40.0			5	35.7			7	36.8		
COVID-19												
Believe had COVID-19 based on symptoms (ref: no)	529	29.7	**32.0**	**(28.1-36.1)**	1074	24.2	**24.5**	**(22.3-26.9)**	1603	25.8	**26.7**	**(24.8-28.8)**
Tested for COVID-19 (n=1603, among those believed to have had COVID-19)*	158	29.9	**26.1**	**(20.0-33.2)**	245							
Results of COVID-19 test (n=403, among tested)*												
Negative	81	50.0	**49.4**	**(35.2-63.7)**	134	51.7	**42.9**	**(32.6-53.9)**	215	51.1	**43.5**	**(35.0-52.3)**
Positive	74	45.7	**48.6**	**(34.4-63.0)**	115	44.4	**54.1**	**(43.1-64.7)**	189	44.9	**53.8**	**(44.9-62.4)**
Don't know	7	4.3	**2.1**	**(0.8-5.0)**	10	3.9	**3.0**	**(1.0-8.7)**	17	4.0	**2.8**	**(1.2-6.2)**

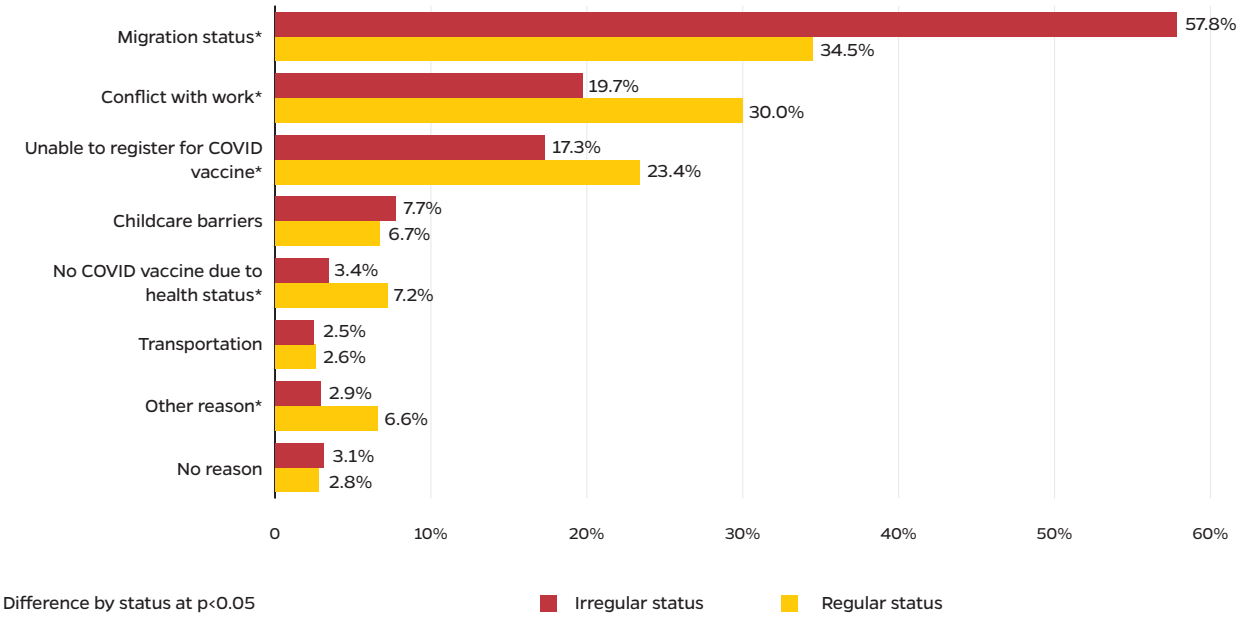
Table 8 Health characteristics of migrants and refugees with regular and irregular migration status, continued

	Migration Status											
	Regular Status (n=1,779)				Irregular Status (n=4,442)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
At least one vaccine against COVID-19 (ref: no, n=6218)*	984	55.3	**55.2**	**(51.0-59.3)**	2010	45.3	**44.3**	**(41.7-46.9)**	2994	48.2	**47.5**	**(45.3-49.7)**
Country where vaccinated against COVID-19 (among vaccinated, n=2994)*												
Venezuela	33	3.3			199	9.8			232	7.7		
Colombia	952	96.0			1814	89.3			2766	91.5		
Peru	3	0.3			6	0.3			9	0.3		
Ecuador	2	0.2			8	0.4			10	0.3		
Other	2	0.2			4	0.2			6	0.2		
Received Second Dose of COVID-19 vaccine												
No	422	42.8	**43.4**	**(38.0-49.0)**	908	45.2	**46.5**	**(42.5-50.6)**	1330	44.4	**45.5**	**(42.3-48.7)**
Yes	384	39.0	**39.6**	**(34.1-45.4)**	697	34.7	**33.7**	**(30.0-37.5)**	1081	36.1	**35.7**	**(32.6-38.9)**
N/A	179	18.2	**17.0**	**(13.1-21.7)**	406	20.2	**19.8**	**(16.8-23.3)**	585	19.5	**18.9**	**(16.4-21.6)**
Interested in COVID-19 vaccine (among unvaccinated, ref: no)	653	80.6	**78.9**	**(72.9-83.8)**	2007	81.0	**81.2**	**(78.4-83.7)**	2660	80.9	**80.6**	**(78.1-82.9)**

Notes: n: denominator for subgroup; N: total study population; 95%CI: 95% Confidence Interval; IQR: interquartile range; Sample difference at *p<0.05 or **p<0.10 on chi2 tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

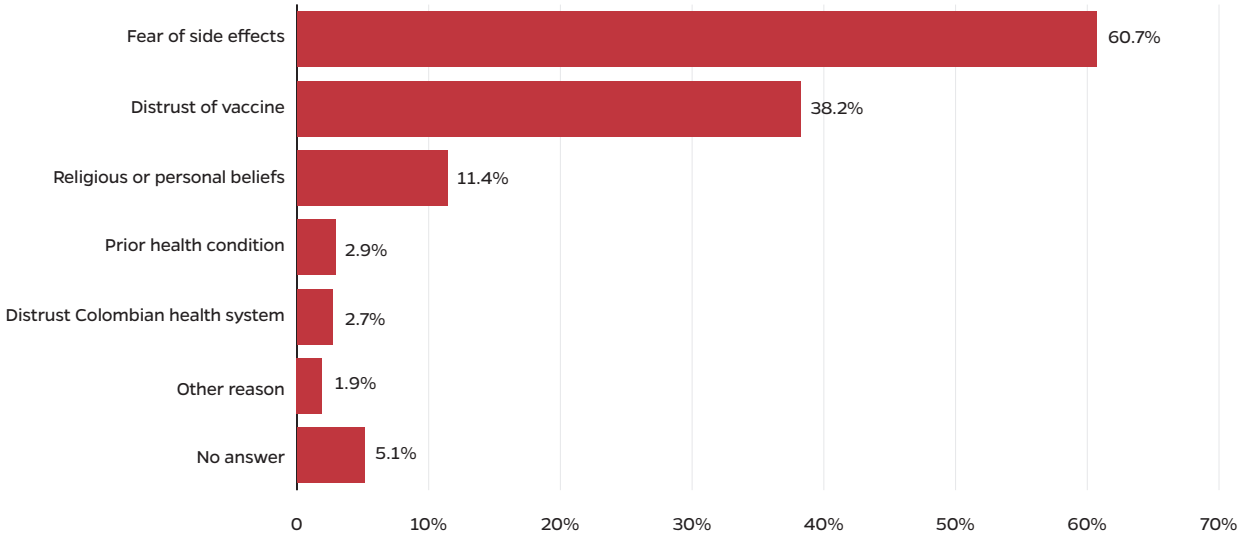
Among those with irregular migration status, migration status was the most common barrier to vaccination, while conflicts with work and inability to register for the vaccine were more frequently cited barriers to vaccination among regular migrants and refugees (Figure 9). Regular migrants and refugees were eligible for free vaccination at same time as Colombian nationals, while eligibility for irregular migrants and refugees occurred after October 2021. The high proportion of irregular migrants and refugees reporting no vaccine due to migration status is likely because of this policy as well as a lack of awareness when vaccines became available for those with irregular status.

Figure 9 Self-reported reasons for no COVID-19 vaccination among migrants and refugees with regular and irregular status



Overall, 80% of migrants and refugees who were not vaccinated reported interest in vaccination with no difference by site or migration status. For participants reporting disinterest in vaccination (n=584), the two most common reasons were concerns about side effects (60.7%) and distrust of the vaccine (38.2%; Figure 10).

Figure 10 Reason for disinterest in COVID-19 vaccination among those unvaccinated and reporting no interest



No difference by site or migration status

PRENATAL CARE

Among sexually active women, over half reported currently using contraception, which was marginally higher in Bogotá and Soacha, compared to Barranquilla and Soledad. Over 28% reported pregnancy at some point since arriving in Colombia, with no difference by site. Receipt of prenatal care, however, was less common in Bogotá and Soacha, than in Barranquilla and Soledad, as were number of prenatal care visits (Table 9).

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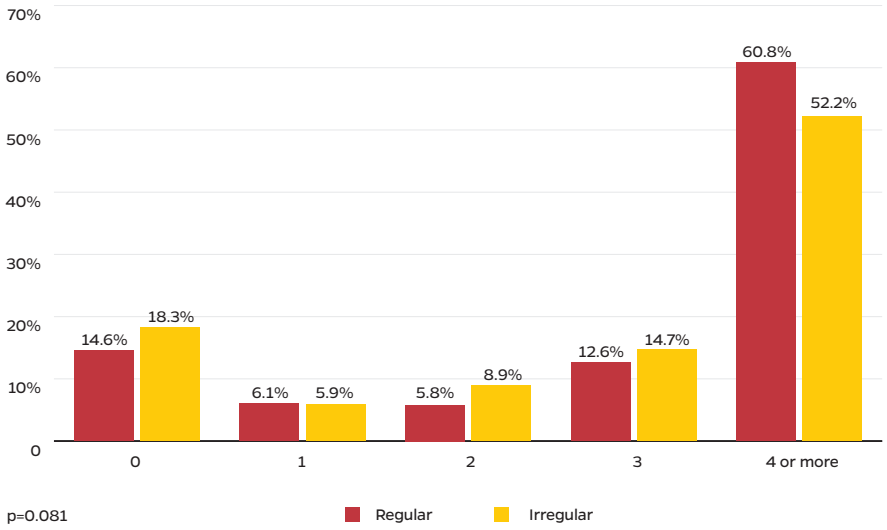
Table 9 Access to and use of reproductive health and prenatal care among women in study sites

	Site											
	Bogotá & Soacha (n=1,858)				Barranquilla & Soledad (n=2,188)				Total (N=4,046)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Ever sexually active (ref: no)	1811	97.5	**97.5**	**(95.8-98.5)**	2127	97.2	**97.3**	**(95.6-98.3)**	3938	97.3	**97.4**	**(96.3-98.2)**
Currently using contraception (n=3893)*	988	55.3	**54.2**	**(50.4-58.0)**	1057	50.2	**48.2**	**(44.0-52.4)**	2045	52.5	**51.8**	**(48.9-54.6)**
Pregnant since arriving in Colombia (ref: no)*	501	27.0	**28.8**	**(25.5-32.5)**	655	29.9	**28.1**	**(24.7-31.8)**	1156	28.6	**28.6**	**(26.1-31.2)**
Currently pregnant* (among those who report any pregnancy after arrival)*	82	16.1	**16.1**	**(11.4-22.2)**	68	10.2	**9.2**	**(6.4-13.2)**	150	12.8	**13.3**	**(10.2-17.2)**
Number of births in Colombia (among those who report pregnancy since arrival)*												
0	107	21.2			87	13.2			194	16.7		
1	360	71.4			482	73.0			842	72.3		
2	24	4.8			72	10.9			96	8.2		
3	8	1.6			13	2.0			21	1.8		
4 or more	5	1.0			6	0.9			11	0.9		
Received prenatal care (among those reporting live births, n=976)*	288	72.4	**68.5**	**(59.9-76.0)**	523	90.5	**85.4**	**(76.9-91.1)**	811	83.1	**75.4**	**(69.4-80.6)**
Number of prenatal visits at last pregnancy * (among those pregnant since arrival)*												
0	115	22.9			86	13.1			201	17.3		
1	36	7.2			33	5.0			69	5.9		
2	53	10.5			41	6.2			94	8.1		
3	75	14.9			89	13.5			164	14.1		
4 or more	224	44.5			409	62.2			633	54.5		

Notes: n: denominator for subgroup; N: total study population; 95%CI: 95% Confidence Interval; IQR: interquartile range; Sample difference at *p<0.05 or **p<0.10 on chi^2 tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

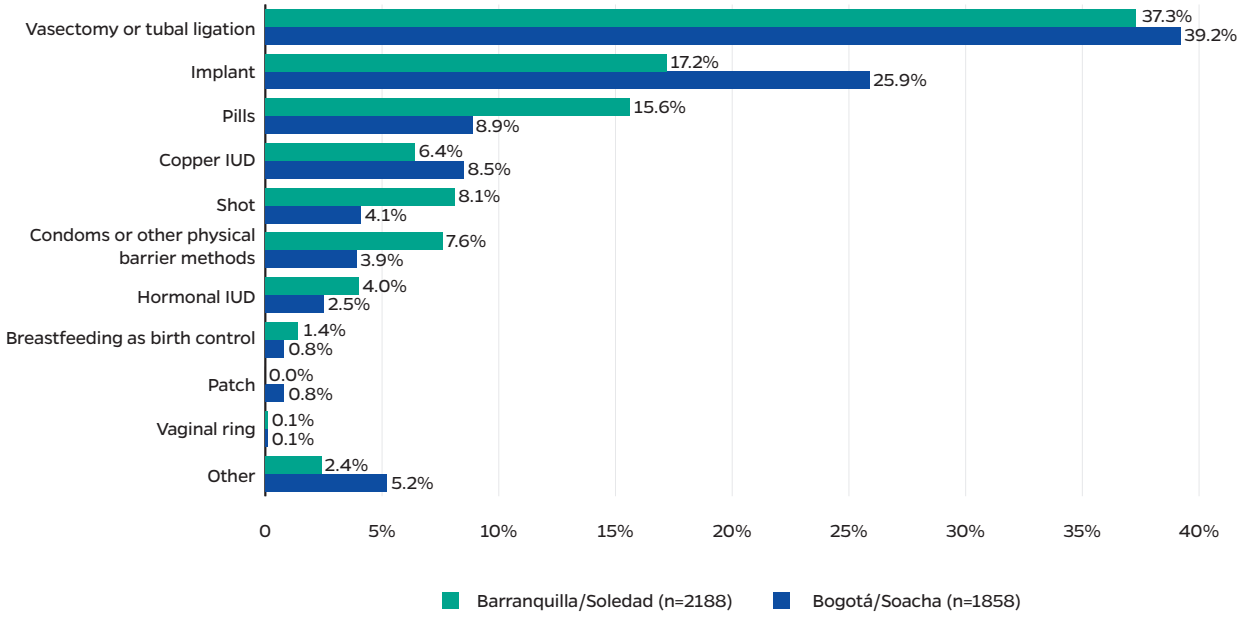
Reproductive health and prenatal care were generally not different by migration status in terms of sexual activity, number of births, or contraceptive use (not displayed). Notably, however, among women who were pregnant while living in Colombia (n=1,156), 14.3% of women with irregular status and 8.7% of those with regular status were pregnant at the time of the study (not displayed). Current pregnancy was not different by year of arrival. Women with regular migration status also reported marginally more prenatal care visits during their last pregnancy in Colombia (Figure 11).

Figure 11 Number of prenatal visits during last pregnancy in Colombia by migration status



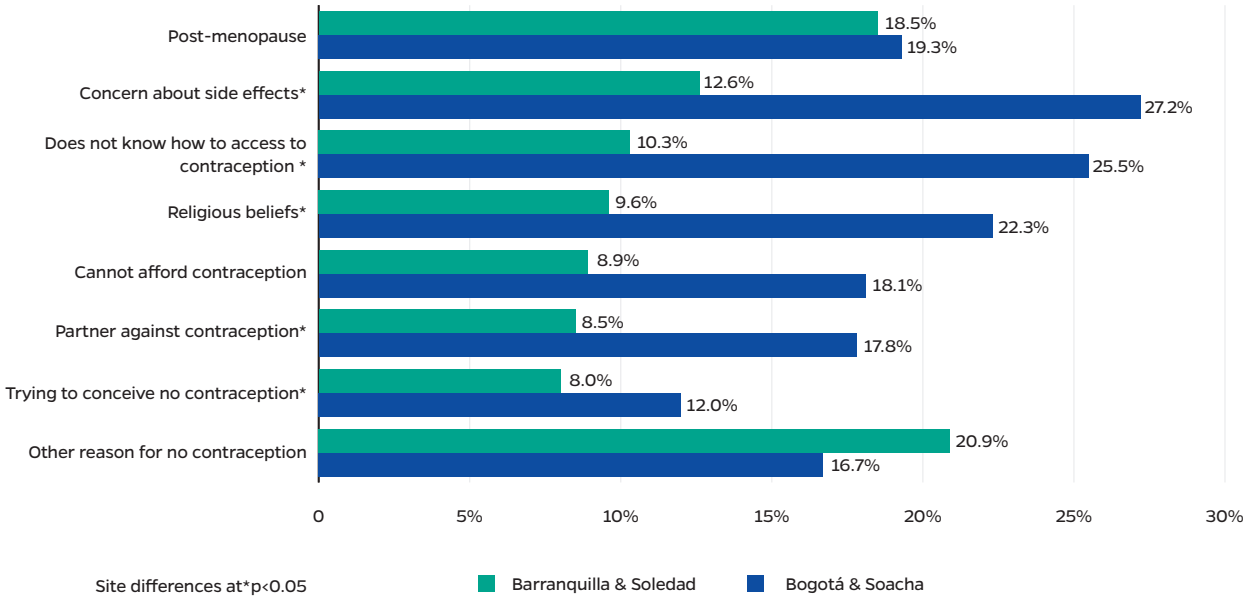
Among the 50% of women who reported current contraceptive use, vasectomy or tubal ligation were the most common, followed by implant (Figure 12). Use and method were different across sites, however, with implants being a more commonly reported method in Bogotá and Soacha, compared to Barranquilla and Soledad. In the latter site, use of oral contraceptives was almost as common as implant methods.

Figure 12 Contraceptive methods used by migrant women in study sites



Among women reporting no contraceptive use (n=1,933), almost 20% reported post-menopause as the reason for non-use. Other reasons included concerns about side effects, lack of awareness on how to access contraceptives, religion, and cost, and were different across sites (Figure 13).

Figure 13 Reasons for no contraceptive use among women not using contraceptives, by site



HIV & SYPHILIS INFECTION

Almost all Venezuelan refugees and migrants reported being sexually active, with a median number of 1 sexual partner in the past 12 months (Table 10). Three-percent reported ever being diagnosed with an STI in Venezuela or Colombia; of these, 81.3% had been treated.

SEXUAL BEHAVIORS AND BEHAVIORAL RISKS, STRATIFIED BY SITE

Among those who were sexually active, nearly a third of the population reported condom use at last sex, with more participants reporting condom use in Bogotá and Soacha than Barranquilla and Soledad (Table 10). Only 1.1% of migrants and refugees reported having a partner who was living with HIV; however, 36.9% in Bogotá and Soacha and 67.7% in Barranquilla and Soledad did not know their current or most recent sexual partner's HIV status.

Key populations represented a small fraction of participants overall (6.8%), including those who reported lifetime history of paying for sex (1.2%), providing sex for transactional purposes (1.2%), injecting drugs (1.9%, Table 7), and men who reported sexual partnerships with men (12.0% of men).

Table 10 Sexual behaviors and behavioral risks for HIV, stratified by study site

	Site											
	Bogotá & Soacha (n=3,102)				Barranquilla & Soledad (n=3,119)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Ever Sexually Active (ref: no)	2996	96.6	**96.2**	**(94.8-97.2)**	3032	97.2	**96.5**	**(94.7-97.7)**	6028	96.9	**96.3**	**(95.2-97.1)**
Median # of sexual partners past 12mo (IQR) range 0-750	1	(1-1)			1	(1-1)			1	(1-1)		
Condom use at last sex (ref: no; n=6028, among those sexually active regardless of partner gender, does not include sex work)*	985	32.9	**34.8**	**(32.0-37.8)**	742	24.5	**24.8**	**(21.9-27.9)**	1727	28.6	**31.2**	**(29.1-33.3)**
Man who has sex with men (among men, n=2124; ref: no)	128	10.5	**12.4**	**(9.5-16.1)**	79	8.7	**11.1**	**(7.3-16.5)**	207	9.8	**12.0**	**(9.6-15.0)**
Ever paid for Sex (ref: no)	40	1.3	**1.0**	**(0.6-1.8)**	42	1.3	**1.4**	**(0.8-2.7)**	82	1.3	**1.2**	**(0.8-1.8)**
Sex work (ref: no; n=6219)	61	2.0	**1.6**	**(1.0-2.6)**	45	1.4	**1.5**	**(0.8-2.7)**	106	1.7	**1.5**	**(1.1-2.2)**
Sex Work (past 7 days; ref: no)	27	0.9	**1.1**	**(0.6-2.1)**	19	0.6	**0.5**	**(0.3-1.1)**	46	0.7	**0.9**	**(0.6-1.5)**
Key Population*(ref: no)	252	8.1	**7.6**	**(6.2-9.2)**	155	5.0	**5.4**	**(4.0-7.2)**	407	6.5	**6.8**	**(5.7-8.0)**
Partner's HIV status (n=6028)*												
HIV-negative	1850	61.7	**63.0**	**(59.0-64.8)**	1028	33.9	**31.2**	**(28.1-34.6)**	2878	47.7	**50.7**	**(48.5-53.0)**
HIV-positive	34	1.1	**1.1**	**(0.6-2.1)**	20	0.7	**1.1**	**(0.4-2.5)**	54	0.9	**1.1**	**(0.7-1.8)**
Unknown	1112	37.1	**36.9**	**(34.1-39.8)**	1984	65.4	**67.7**	**(64.3-70.9)**	3096	51.4	**48.2**	**(45.9-50.5)**
Ever diagnosed with STI (ref: no; n=6171)	94	3.1	**3.5**	**(2.4-5.0)**	97	3.1	**2.7**	**(1.8-4.1)**	191	3.1	**3.2**	**(2.4-4.3)**
Ever treated for an STI of those diagnosed (ref: no; in Venezuela or Colombia)	65	77.4	**84.4**	**(62.2-92.1)**	69	77.5	**80.9**	**(67.2-89.7)**	134	77.5	**81.3**	**(68.1-89.8)**

Notes: n: denominator for subgroup; N: total study population; 95%CI: 95% Confidence Interval; IQR: interquartile range; Sample difference at *p<0.05 or **p<0.10 on chi^2 tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

SEXUAL BEHAVIORS AND BEHAVIORAL RISKS BY GENDER

There was little meaningful difference in sexual activity and number of sexual partnerships across gender, though condom use at last sex was different (Table 11). Almost 60% of transgender and nonbinary participants reported condom use at last sex, whereas 38.6% of men and 27.4% of women reported use of a condom at last sex. Overall, 14.9% of men and 2.4% of women reported a behavior or identity that aligns with a key population. Sexual partnership with someone known to be living with HIV was more common among men than women (2.4 vs. 0.4, respectively). There was no difference in lifetime STI diagnosis by gender.

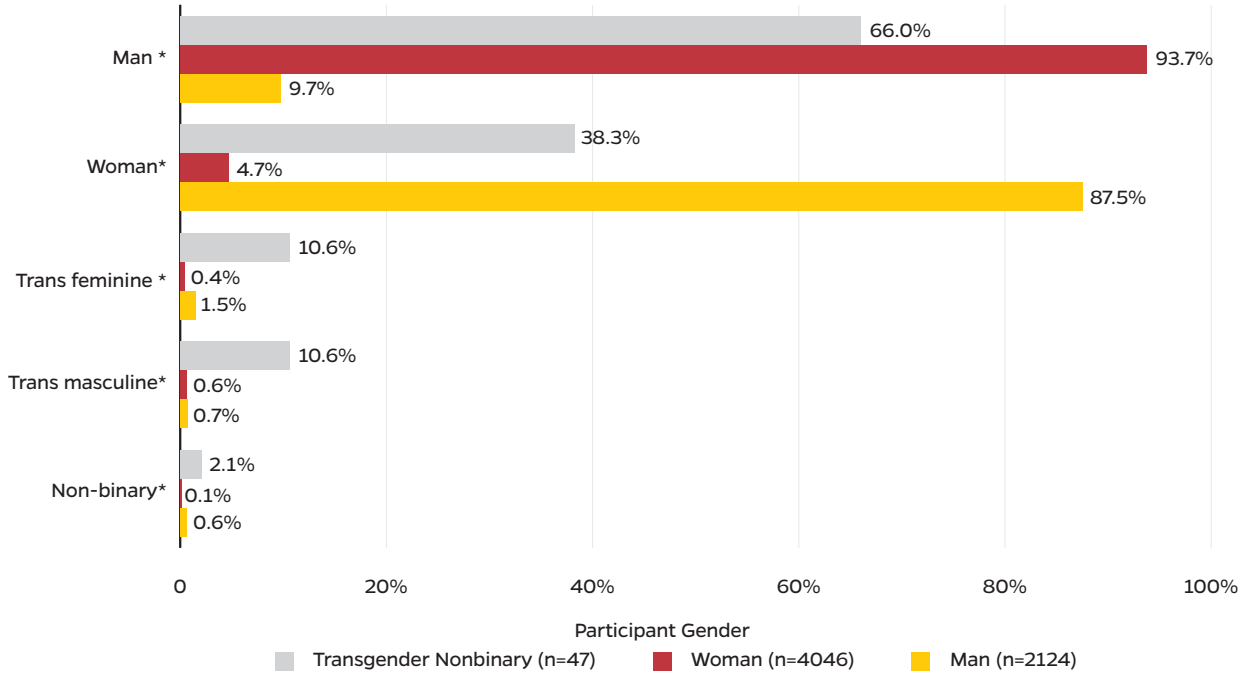
Table 11 Sexual behaviors and behavioral risks among migrants and refugees, stratified by gender

	Gender															
	Man (n=2,124)				Woman (n=4,046)				Transgender or Nonbinary (n=47)				Total (N=6,217)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Ever Sexually Active (ref: no, n=6216)*	2040	96.1	**94.3**	**(91.9-95.9)**	3938	97.3	**97.4**	**(96.3-98.2)**	46	97.9			6024	96.9	**96.3**	**(95.2-97.1)**
Median # of sexual partners past 12mo (IQR) range 0-750	1	(1-2)			1	(1-1)			1	(1-2)			1	(1-1)		
Condom use at last sex (ref: no; n=6024, regardless of partner gender, does not include sex work)*	759	37.2	**38.6**	**(34.9-42.4)**	942	23.9	**27.4**	**(24.9-30.1)**	26	56.5			1727	28.7	**31.2**	**(29.1-33.3)**
Man who has sex with men (ref: no) *	207	9.7	**12.0**	**(9.6-15.0)**									207	9.7	**12.0**	**(9.6-15.0)**
Ever paid for Sex (ref: no)*	53	2.5	**1.9**	**(1.3-2.8)**	27	0.7	**0.8**	**(0.4-1.7)**	2	4.3			82	1.3	**1.2**	**(0.8-1.8)**
Sex work (ref: no; n-6215)*	38	1.8	**1.6**	**(0.8-3.3)**	64	1.6	**1.5**	**(0.9-2.2)**	4	8.5			106	1.7	**1.5**	**(1.1-2.2)**
Sex Work (past 7 days) (ref: no; n=6215)	11	0.5	**0.7**	**(0.2-2.3)**	32	0.8	**0.9**	**(0.5-1.7)**	3	6.4			46	0.7	**0.9**	**(0.6-1.5)**
Key Population*	299	14.1	**14.9**	**(12.3-17.8)**	94	2.3	**2.4**	**(1.7-3.4)**	47	100.0			407	6.5	**6.8**	**(5.7-8.0)**
Partner's HIV Status (n=6,024)*																
HIV-negative	1015	49.8	**52.9**	**(49.1-56.8)**	1843	46.8	**49.7**	**(46.9-52.5)**	17	37.0			2875	47.7	**50.7**	**(48.5-53.0)**
HIV-positive	35	1.7	**2.4**	**(1.4-4.3)**	18	0.5	**0.4**	**(0.2-1.2)**	1	2.2			54	0.9	**1.1**	**(0.7-1.8)**
Unknown	990	48.5	**44.6**	**(40.9-48.5)**	2077	52.7	**49.9**	**(47.1-52.7)**	28	60.9			3095	51.4	**48.2**	**(45.9-50.5)**
Ever diagnosed with STI (ref: no; n=6167)	57	2.7	**3.0**	**(1.8-5.1)**	133	3.3	**3.3**	**(2.4-4.6)**	1	2.2			191	3.1	**3.2**	**(2.4-4.3)**
Ever treated for an STI of those diagnosed (ref: no; in Venezuela or Colombia; n=173)	40	75.5	**89.2**	**(75.8-95.6)**	94	78.3	**76.6**	**(58.1-88.5)**	0	0.0			134	77.5	**81.3**	**(68.1-89.8)**

Notes: n: denominator for subgroup; N: total study population; 95%CI: 95% Confidence Interval; IQR: interquartile range; Sample difference at *p<0.05 or **p<0.10 on chi^{2}tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates; Key population defined as individuals who identify as transgender or nonbinary who have sex with men, are men who have sex with men, report lifetime transactional sex, or report lifetime injecting drug use; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

Figure 14 displays the gender of sexual partners. Almost 90% of men reported sexual partnerships with women, though over 10% reported partnerships with men and/or with transgender or nonbinary partners. Relationships reported by women were predominantly heterosexual, though 5% reported partnerships with women. Transgender and nonbinary participants reported more diverse genders in sexual partnerships.

Figure 14 Gender of sexual partners (select all)



SEXUAL BEHAVIORS AMONG VENEZUELANS WITH REGULAR AND IRREGULAR MIGRATION STATUS

Venezuelans with regular and irregular migration status were generally similar in terms of sexual behavior and behavioral risks for HIV and STI (Table 12). Specifically, there was no difference in terms of sexual activity, number of sex partners, or history of transactional sex or purchasing sex. Notably, however, condom use at last sex was marginally lower among those with irregular status compared to regular migration status (29.7% vs. 34.7%). People with irregular migration status were marginally more likely to report not knowing their sexual partner's HIV status (50.0% vs 43.9%) compared to those with regular migration status.

Table 12 Sexual behavior and behavioral risks by migration status

	Migration Status											
	Regular Status (n=1,779				Irregular Status (n=4,442)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Ever Sexually Active (ref: no, n=6220)	1726	97.0	**96.4**	**(94.2-97.8)**	4302	96.9	**96.3**	**(95.0-97.2)**	6028	96.9	**96.3**	**(95.2-97.1)**
Median # of sexual partners past 12mo (IQR) range 0-750	1	(1-1)			1	(1-1)			1	(1-1)		
Condom use at last sex (ref: no; n=6024, among sexually active people regardless of partner gender, does not include sex work)**	532	30.8	**34.7**	**(30.7-38.9)**	1195	27.8	**29.7**	**(27.3-32.3)**	1727	28.6	**31.2**	**(29.1-33.3)**
Men who have sex with men	82	11.5	**12.9**	**(9.3-17.7)**	125	8.9	**11.6**	**(8.5-15.5)**	207	9.7	**12.0**	**(9.6-15.0)**
Ever paid for sex (ref: no)	24	1.3	**0.9**	**(0.5-1.5)**	58	1.3	**1.3**	**(0.8-2.1)**	82	1.3	**1.2**	**(0.8-1.8)**
Sex work (ref: no; n=6219)	29	1.6	**1.3**	**(0.7-2.3)**	77	1.7	**1.7**	**(1.0-2.6)**	106	1.7	**1.5**	**(1.1-2.2)**
Sex work (past 7 days; ref: no; n=6219)	11	0.6	**0.5**	**(0.2-1.1)**	35	0.8	**1.0**	**(0.6-1.9)**	46	0.7	**0.9**	**(0.6-1.5)**
Key Population *	136	7.6	**7.3**	**(5.6-9.4)**	271	6.1	**6.5**	**(5.3-8.1)**	407	6.5	**6.8**	**(5.7-8.0)**
Partner's HIV Status * (n=6,028)												
HIV-negative	895	51.9	**54.5**	**(50.3-58.7)**	1983	46.1	**50.0**	**(46.5-51.8)**	2878	47.7	**50.7**	**(48.5-53.0)**
HIV-positive	19	1.1	**1.6**	**(0.7-3.8)**	35	0.8	**0.9**	**(0.5-1.6)**	54	0.9	**1.1**	**(0.7-1.8)**
Unknown	812	47.0	**43.9**	**(39.8-48.1)**	2284	53.1	**50.0**	**(47.3-52.7)**	3096	51.4	**48.2**	**(45.9-50.5)**
Ever diagnosed with STI (ref: no; n=6171)	63	3.6	**4.2**	**(2.6-6.8)**	128	2.9	**2.8**	**(2.0-3.9)**	191	3.1	**3.2**	**(2.4-4.3)**
Ever treated for an STI (Venezuela or Colombia; n=191)	43	75.4	**88.0**	**(73.8-95.0)**	91	78.4	**75.9**	**(56.3-88.6)**	134	77.5	**81.3**	**(68.1-89.8)**

Notes: n: denominator for subgroup; N: total study population; 95%CI: 95% Confidence Interval; IQR: interquartile range; Sample difference at *p<0.05 or **p<0.10 on chi²tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates; Key population defined as individuals who identify as transgender or nonbinary who have sex with men, are men who have sex with men, report lifetime transactional sex, or report lifetime injecting drug use; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

HISTORY OF HIV TESTING AND PREVENTION

Overall, a little over half of refugees and migrants had ever been tested for HIV, which was more common in Bogotá and Soacha (56.2%) compared to Barranquilla and Soledad (46.9%; Table 13). Among those who had ever been tested, the majority had been tested more than one year ago. Among those with a lifetime history of HIV testing, 59.0% had been tested for HIV in Colombia and 40.2% had been tested while in Venezuela. Most (98.1%) reported a negative HIV result at their last test. Awareness and use of PrEP and nPEP were low. Only 12 participants in Bogotá and Soacha and 5 in Barranquilla and Soledad reported nPEP use in Colombia. PrEP use in Colombia was reported by 9 participants in Bogotá and Soacha and 5 in Barranquilla and Soledad.

Table 13 HIV testing and prevention among migrants and refugees in study sites

	Site											
	Bogotá & Soacha (n=3,102)				Barranquilla & Soledad (n=3,119)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Ever HIV test * (n=6219)												
No	1311	42.3	**43.1**	**(40.2-46.0)**	1613	51.7	**52.6**	**(49.2-56.0)**	2924	47.0	**46.5**	**(44.3-48.8)**
Yes	1768	57.0	**56.2**	**(53.3-59.1)**	1488	47.7	**46.9**	**(43.5-50.3)**	3256	52.4	**52.8**	**(50.6-55.1)**
Don't know	23	0.7	**0.7**	**(0.4-1.2)**	16	0.5	**0.5**	**(0.3-0.9)**	39	0.6	**0.6**	**(0.4-1.0)**
Time since last HIV test * (among those tested)												
Within the past 12 months	404	22.8	**22.3**	**(19.3-25.6)**	292	19.5	**18.9**	**(15.5-22.9)**	696	21.3	**21.2**	**(18.8-23.8)**
More than 1 yr. ago and less than 5 yrs.	683	38.5	**39.4**	**(35.6-43.3)**	648	43.3	**45.0**	**(40.3-49.8)**	1331	40.7	**41.2**	**(38.2-44.3)**
More than 5 yrs. ago and less than 10 yrs.	369	20.8	**21.2**	**(18.3-24.5)**	363	24.3	**21.3**	**(17.8-25.3)**	732	22.4	**21.3**	**(18.9-23.8)**
More than 10 yrs. ago	292	16.5	**15.7**	**(13.1-18.7)**	182	12.2	**13.4**	**(10.1-17.5)**	474	14.5	**15.0**	**(12.9-17.4)**
Don't know	24	1.4	**1.5**	**(0.7-2.8)**	10	0.7	**1.4**	**(0.4-4.5)**	34	1.0	**1.4**	**(0.8-2.6)**
Country of last HIV test *												
Colombia	1081	61.0	**61.1**	**(57.2-64.8)**	829	55.5	**54.8**	**(49.9-59.5)**	1910	58.5	**59.0**	**(56.0-62.0)**
Venezuela	667	37.6	**37.9**	**(34.2-41.8)**	659	44.1	**45.0**	**(40.2-49.8)**	1326	40.6	**40.2**	**(37.2-43.2)**
Peru	10	0.6			1	0.1			11	0.3		
Brazil	0	0.0			1	0.1			1	0.0		
Panama	1	0.1			0	0.0			1	0.0		
Ecuador	8	0.5			0	0.0			8	0.2		
Other	5	0.3			3	0.2			8	0.2		
Results of last HIV test **												
HIV negative	1749	98.9	**98.9**	**(97.5-99.5)**	1462	98.0	**96.3**	**(92.8-98.2)**	3211	98.5	**98.1**	**(96.7-98.9)**
HIV positive	9	0.5	**0.3**	**(0.1-0.7)**	20	1.3	**2.3**	**(1.0-5.4)**	29	0.9	**0.9**	**(0.5-1.9)**
Indeterminate	0	0.0	**0.0**	**0.0**	1	0.1	**0.1**	**(0.0-0.6)**	1	0.0	**0.0**	**(0.0-0.2)**
Unknown	11	0.6	**1.3**	**(0.6-2.7)**	9	0.6	**1.3**	**(0.3-4.6)**	20	0.6	**1.0**	**(0.4-2.2**
Used nPEP in Colombia (among those with negative or unknown last test, n=3234))	12	0.7	**0.4**	**(0.2-0.8)**	5	0.3	**0.2**	**(0.1-0.5)**	17	0.5	**0.3**	**(0.2-0.6)**
Location where nPEP obtained (select all, n=17)												
ER	2	16.7			0	0.0			2	11.8		
Hospital	4	33.3			3	60.0			7	41.2		
Private clinic	1	8.3			0	0.0			1	5.9		
Humanitarian org	1	8.3			1	20.0			2	11.8		
From family	2	16.7			0	0.0			2	11.8		
Used PrEP in Colombia												
No	1723	97.8	97.5	(95.8-98.5)	1458	99.0	99.2	(98.6-99.6)	3181	98.4	98.4	(97.5-99.0)
Yes	9	0.5	0.8	(0.3-2.3)	5	0.3	0.3	(0.1-0.9)	14	0.4	0.3	(0.2-0.6)
Don't know	29	1.6	1.7	(0.9-3.1)	10	0.7	0.5	(0.2-1.0)	39	1.2	1.3	(0.7-2.2)
Location where PrEP obtained												
ER	1	12.5			2	40.0			3	23.1		
Hospital	5	62.5			4	80.0			9	69.2		
Humanitarian org	0	0.0			1	20.0			1	7.7		
Community-based org	1	12.5			0	0.0			1	7.7		
Family	1	14.3			2	40.0			3	25.0		
Other	2	28.6			0	0.0			2	16.7		
Currently taking PrEP (n=13; ref: no)	0	0.0			0	0.0			0	0.0		

Notes: n: denominator for subgroup; N: total study population; 95%CI: 95% Confidence Interval; IQR: interquartile range; Sample difference at *p<0.05 or **p<0.10 on chi2 tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

PREVALENCE OF HIV INFECTION

A total of 71 participants were identified with laboratory confirmed HIV infection; all were informed of their test results, underwent legal triage, and were linked to HIV care during the study. Laboratory confirmed HIV prevalence among migrants and refugees across the two sites was 0.9% (95%CI: 0.6-1.4) and ranged from 0.8% in Bogotá and Soacha (95%CI: 0.4-1.5) to 1.2% (95%CI: 0.7-2.0) in Barranquilla and Soledad (Table 14). Assuming stable HIV prevalence among migrants and refugees and a population size of 2,477,588 refugees and migrants in Colombia, based on September 2022 migration estimates that includes all migration statuses,[2] this would equate to 22,298 (95%CI: 14,865 - 34,686) migrants and refugees living with HIV in Colombia and requiring ongoing access to treatment.

HIV prevalence was also higher among men (1.6%) relative to women (0.6%). Population HIV prevalence was not calculated for transgender and non-binary identified participants due to the small number (n=47); however, the burden of HIV was high among this group with 8.5% (4/47) identified with HIV infection. HIV prevalence was estimated at 6% among key populations, inclusive of migrants and refugees who reported lifetime transactional sex, injecting drug use, trangender people who have sex with men, and men who have sex with men. Notably, all key populations with HIV were men who have sex with men or transgender/non-binary people, though several also reported other HIV acquisition risk behaviors such as injecting drug use or transactional sex. There was no difference in HIV status by migration status nor year of migration.

Table 14 HIV prevalence estimates overall and within select subpopulations

	Sample	Proportion	Population estimate	
	n	%	%	95%CI:
HIV prevalence full sample (N=6220)	71	1.1	**0.9**	**(0.6-1.4)**
Site**				
Bogotá & Soacha (n=3102)	28	0.9	**0.8**	**(0.4-1.5)**
Barranquilla & Soledad (n=3118)	43	1.4	**1.2**	**(0.7-2.0)**
Age				
18 to 29 (n=2,470)	29	1.2	**0.8**	**(0.5-1.4)**
30 to 39 (n=1,978)	26	1.3	**1.1**	**(0.6-2.2)**
40 to 49 (n=1,024)	9	0.9	**0.4**	**(0.2-0.9)**
50+ (n=748)	7	0.9	**1.5**	**(0.3-6.6)**
Gender *				
Man (n=2,123)	41	1.9	**1.6**	**(0.9-2.6)**
Woman (n=4,046)	26	0.6	**0.6**	**(0.2-1.2)**
Transgender/Nonbinary (n=47)	4	8.5		
Migration status				
Regular	26	1.5	**1.4**	**(0.8-2.5)**
Irregular	45	1.0	**0.7**	**(0.4-1.4)**
Man who has sex with men (n=207)*	23	11.1	**9.5**	**(4.9-17.7)**
Ever paid for sex * (n=82)	3	3.7	**2.2**	**(0.6-7.7)**
Lifetime transactional sex * (n=106)	7	6.6	**3.2**	**(1.3-7.4)**
Lifetime injecting drug use (n=130)	3	2.3	**0.8**	**(0.2-2.7)**
Key Population * (n=407)	27	6.7	**6.4**	**(3.5-11.5)**

Notes: n: denominator for subgroup; N: total study population; 95%CI: 95% Confidence Interval; *Significantly different from reference group or across categories at *p<0.05 or **p<0.10 in chi^2 tests; Ref: reference group not displayed; Key population defined as individuals who identify as transgender or nonbinary who have sex with men, are men who have sex with men, report lifetime transactional sex, or report lifetime injecting drug use; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

DIAGNOSED AND UNDIAGNOSED HIV INFECTION

Among 71 participants with laboratory confirmed HIV infection, 34 (48%) were believed to be previously diagnosed based on self-report of positive last HIV test or HIV-1 RNA <1,000 copies/mL. Among participants with undiagnosed HIV infection, irregular migration status was more commonly reported than regular (75.7% vs. 24.3%). Only 43.2% of those with undiagnosed HIV infection had ever been tested for HIV. Ninety percent of those with a past diagnosis had been last tested or diagnosed in Venezuela. Forty percent of those with a past diagnosis still had detectable viral loads based on the Colombian guidelines above 50 copies per mL (Table 15).

Table 15 Characteristics of participants with past and new HIV diagnoses

	HIV diagnosis					
	Diagnosed (n=34)		Undiagnosed (n=37)		Total (n=71)	
	n	Col%	n	Col%	n	Col%
Site						
Bogotá/Soacha	11	32.4	17	45.9	28	39.4
Barranquilla/Soledad	23	67.6	20	54.1	43	60.6
Age						
18 to 30	11	32.4	18	48.6	29	40.8
30 to39	13	38.2	13	35.1	26	36.6
40 to 49	5	14.7	4	10.8	9	12.7
50+	5	14.7	2	5.4	7	9.9
Gender						
Man	21	61.8	20	54.1	41	57.7
Woman	11	32.4	15	40.5	26	36.6
Transgender/Nonbinary	2	5.9	2	5.4	4	5.6
Migration Status*						
Regular	17	50.0	9	24.3	26	36.6
Irregular	17	50.0	28	75.7	45	63.4
Man who has sex with men (ref: no; among men LHIV, n=45)	14	66.7	9	45.0	23	56.1
Ever paid for sex (ref: no)	2	5.9	1	2.7	3	4.2
Transactional sex (ref: no)	4	11.8	3	8.1	7	9.9
Ever injected drugs (ref: no)	2	5.9	1	2.7	3	4.2
Key Population	16	47.1	11	29.7	27	38.0
Lifetime HIV test *						
No	5	14.7	21	56.8	26	36.6
Yes	29	85.3	16	43.2	45	63.4
Country of last HIV Test *						
Colombia	3	10.3	10	62.5	13	28.9
Venezuela	26	89.7	6	37.5	32	71.1
Syphilis infection	9	26.5	8	21.6	17	23.9
Laboratory Results:						
CD4 Count (cells/mm3, n=70)						
Less than 200	7	21.2	6	16.2	13	18.6
200 to 499	8	24.2	17	45.9	25	35.7
500 and above	18	54.5	14	37.8	32	45.7
Viral Load * (n=70)						
<=50	20	60.6	0	0.0	20	28.6
51 - 1000	5	15.2	0	0.0	5	7.1
>1000	8	24.2	37	100.0	45	64.3

Notes: n: denominator for subgroup; N: total study population; Sample difference at *p<0.05 or **p<0.10 on chi² tests; ref: reference group not displayed; CD4 and viral load data are missing for one participant who had previously been diagnosed and declined further laboratory testing. Sample estimates are provided given small number of events.

CORRELATES OF HIV INFECTION

Multivariable regression models were used to identify correlates of HIV infection among migrants and refugees overall (Table 16), as well as within each gender category (Table 17). Women were 50% less likely to have HIV infection (aOR 0.5; 95%CI: 0.3-0.8), relative to men, while transgender or nonbinary identified participants had four times the odds of infection (aOR:4.1; 95%CI: 1.5-11.2). Likewise, reporting a behavior or identity of a key population at risk for HIV was associated with almost four times the odds of infection, compared to those identified as the general population (aOR: 3.8; 95%CI: 2.1-6.6). Migrants and refugees who reported experiences of sexual exploitation for resources while in Colombia (aOR: 3.1; 95%CI: 1.1-9.1) or who reported a lifetime STI diagnosis (aOR: 11.3; 95%CI: 6.4-20.1) were more likely to have laboratory confirmed HIV infection. Finally, partnership with someone known to be living with HIV was associated with a 15-fold increase in HIV infection (aOR: 15.3; 95%CI: 6.6-35.6). Current or former marriage, food insecurity, transactional sex, and condom use at last sex were associated with HIV infection in bivariate analyses but were no longer associated with infection in multivariable models. Migration status, history of injecting drug use, and number of sexual partners were not associated with infection status.

Table 16 Correlates of HIV infection among full study population

	OR	95%CI	p-value	aOR	95%CI	p-value
Gender (Reference: man)						
Woman	0.3	(0.2-0.5)	p<0.001	0.5	(0.3-0.8)	0.008
Transgender or nonbinary	4.7	(1.6-13.8)	0.004	4.1	(1.5-11.2)	0.007
Key population (Reference: general population)	9.3	(5.7-15.2)	p<0.001	3.8	(2.1-6.6)	p<0.001
Sexual exploitation (Reference: no)	8.4	(3.9-18.1)	p<0.001	3.1	(1.1-9.1)	0.038
Lifetime STI diagnosis (self-reported; Reference: no)	16.1	(9.5-27.3)	p<0.001	11.3	(6.4-20.1)	p<0.001
Partner HIV status (Reference: negative)						
Positive	41.1	(19.4-87.3)	p<0.001	15.3	(6.6-35.6)	p<0.001
Unknown	1.5	(0.9-2.5)	0.149	1.4	(0.8-2.4)	0.214

Note: OR: unadjusted odds ratio; aOR: adjusted odds ratio calculated via a multivariable regression model; model is adjusted for age and incorporates complex survey design to account for clustering within site strata; final model is fit based on goodness of fit statistics and tested for collinearity; final model sample size is 5,972.

Correlates of HIV infection were unique within each gender category (Table 17). Among men, infection was independently associated with same sex relationships (aOR: 7.5; 95%CI: 3.4-16.9), lifetime STI diagnosis (aOR: 10.6; 95%CI: 4.5-24.8), and sexual relationship with someone known to be living with HIV (aOR: 9.7; 95%CI: 2.7-35.2). Infection was marginally associated with sexual exploitation in Colombia (aOR: 4.2; 95%CI: 1.0-17.7).

Among women, infection was associated with lifetime STI diagnosis (aOR: 10.0; 95%CI: 4.3-22.9) and a relationship with someone known to be living with HIV (aOR: 31.4; 95%CI: 10.4-94.8). Multivariable regression was not modeled for transgender or nonbinary identified participants given the small number of participants. In bivariate analysis, laboratory confirmed syphilis infection was associated with laboratory confirmed HIV infection (aOR: 7.6; 95%CI: 0.8-73.6).

Table 17 Correlates of HIV infection in each gender category

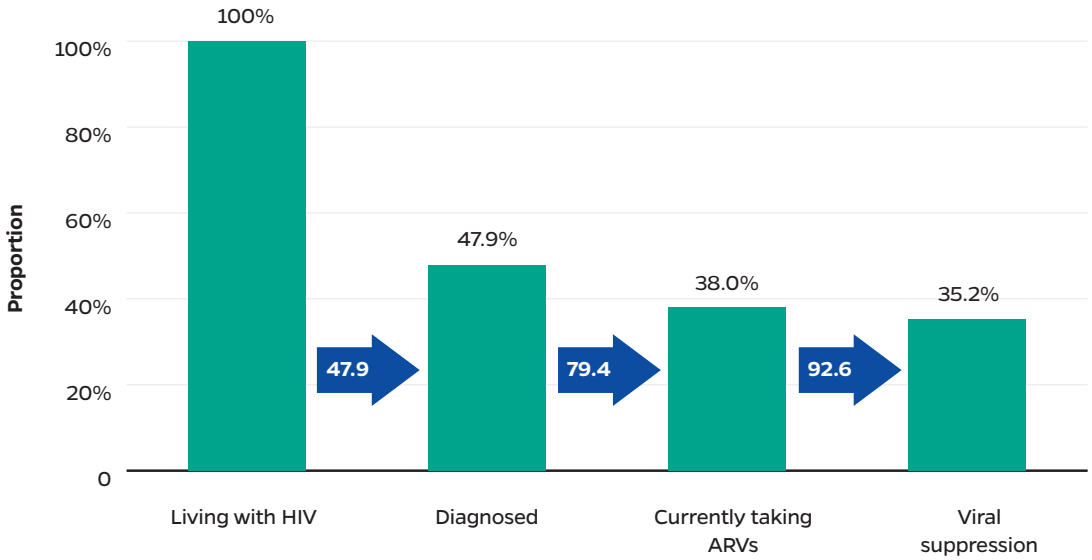
	Men						Women						Transgender or nonbinary		
	OR	95%CI	p-value	aOR	95%CI	p-value	OR	95%CI	p-value	aOR	95%CI	p-value	OR	95%CI	p-value
Key population (Reference: general population)															
MSM (reference: no)	13.2	(7.0-24.9)	p<0.001	7.5	(3.4-16.9)	p<0.001									
Sexual exploitation (Reference: no)	21.2	(8.4-53.5)	p<0.001	4.2	(1.0-17.7)	0.050									
Lifetime STI (self-reported; Reference: no)	25.2	(12.3-51.5)	p<0.001	10.6	(4.5-24.8)	p<0.001	11.3	(4.7-27.5)	p<0.001	10.0	(4.3-22.9)	p<0.001			
Laboratory confirmed syphilis infection (Reference: negative)													7.6	(0.8-73.6)	0.079
Partner HIV status (Reference: negative)															
Positive	28.9	(11.2-74.6)	p<0.001	9.7	(2.7-35.2)	p<0.001	45.9	(11.1-190.0)	p<0.001	31.4	(10.4-94.8)	p<0.001			
Unknown	1.7	(0.8-3.5)	0.140	1.8	(0.8-3.9)	0.147	1.6	(0.7-3.7)	0.319	1.5	(0.6-3.7)	0.331			

Note: OR: odds ratio; aOR: adjusted odds ratio calculated via a multivariable regression model; multivariable models were not fit for transgender or nonbinary identified participants based on the small number identifying as such; all models are adjusted for age and incorporate complex survey design to account for clustering within site strata; final models are fit based on goodness of fit statistics and tested for collinearity; final model sample size are: 2,008 among men, n=3,921 among women, and n=47 among transgender or nonbinary participants; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

ACCESS TO HIV TREATMENT AND CARE FOR PEOPLE LIVING WITH HIV

Figure 15 displays the HIV care continuum for participants living with HIV. The most significant drop in the HIV care continuum was observed with diagnosis, wherein only 47.9% of people living with HIV had been aware of their infection. Lack of awareness of one's status then impacts all subsequent stages of the continuum. Sevent-nine percent of those ever diagnosed were currently on treatment and 92.6% of those on treatment were virally suppressed (HIV-1 RNA <1,000 copies/mL). Overall, however, this represents 35.2% of people living with HIV who were virally suppressed. Twenty-nine percent of people living with HIV had an undetectable viral load (HIV-1 RNA <50 copies/mL).

Figure 15 HIV care continuum among participants with laboratory-confirmed HIV infection (n=71)



Among 26 participants who reported ever receiving ARV treatment, 35% (9/26) and 73% (19/26) had received ARVs in Venezuela and Colombia, respectively. Among 19 participants who received ARVs in Colombia, 68% (13/19) had received through the national insurance, 26% (5/19) through humanitarian permits, and 21% (4/19) from community-based organizations (not displayed). Several also reported receiving treatment from other sources including private providers and informal redistribution of medications. Information about sources of treatment should be viewed with caution due to small numbers who report lifetime ARV use.

CORRELATES OF VIRAL SUPPRESSION

Penalized multivariable logistic regression modeling was used to identify correlates of viral suppression among participants living with HIV (n=71), in which viral suppression was defined as HIV-1 RNA <1,000 copies/mL (Table 18). Penalized multivariable logistic regression methods reduce the risk of bias associated with small samples. In the adjusted model, having an irregular migration status compared to a regular status was associated with 70% reduced odds of viral suppression (aOR: 0.3; 95%CI: 0.1-0.9), while having a last HIV test or diagnosis in Colombia, compared to Venezuela, was associated with 90% reduced odds of viral suppression (aOR: 0.1; 95%CI: 0.0-0.5). Likewise, those who were never tested for HIV had 80% reduced odds of viral suppression, compared to those last tested in Venezuela. Reporting behaviors or identity associated with a key population and use of humanitarian services in Colombia were associated with viral suppression at the bivariate level but were no longer associated in the multivariable models. Gender, time since migration, site, age, income, food security, and BMI were not associated with viral suppression in bivariate or multivariable models. In sensitivity analysis, using undetectable viral load (HIV RNA <50 copies/mL) as the outcome, there was no meaningful difference in identified correlates (results not displayed).

Table 18 Correlates of viral suppression among migrants and refugees living with HIV

	OR	95%CI	p-value	aOR	95%CI	p-value
Irregular migration status (Ref: Regular)	0.2	(0.1-0.6)	0.004	0.3	(0.1-0.9)	0.026
Key Population (Ref: General population)	3	(1.1-7.9)	0.029			
Country of last HIV tests (Ref: Venezuela)						
Colombia	0.2	(0.0-0.7)	0.015	0.1	(0.0-0.5)	0.008
Never tested	0.2	(0.1-0.5)	0.003	0.2	(0.1-0.8)	0.021
Used humanitarian services (Ref: No use)	2.7	(0.9-7.6)	0.063			

Note: OR: odds ratio; aOR: adjusted odds ratio calculated via a penalized multivariable logistic regression model for small denominators; final models are fit based on goodness of fit statistics and tested for collinearity; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

PREVALENCE OF SYPHILIS INFECTION

Prevalence of laboratory-confirmed syphilis infection migrants and refugees was 5.0% (95%CI: 4.1-6.0; Table 19) with no difference across sites, age, or migration status. Notably, 9.2% of women who were pregnant at the time of the study had syphilis infection, though the estimates for those who were ever pregnant while living in Colombia were similar to those for all women (4.1%, 95%CI: 3.2-5.4, not included on table). Among the sample of transgender and non-binary identified participants, 14.9% (unweighted) were identified with syphilis infection. Syphilis prevalence was estimated at 15.2% among key populations overall and as high as 18.2% among men who have sex with men. Almost one-quarter (23.9%) of participants with a laboratory-confirmed HIV infection had a syphilis co-infection.

Table 19 Syphilis prevalence estimates

	Sample	Proportion	Population estimate	
	n	%	%	95%CI:
Syphilis Prevalence (overall)	324	5.2	**5.0**	**(4.1-6.0)**
Site				
Bogotá/Soacha (n=3,102)	158	5.1	**5.0**	**(4.0-6.4)**
Barranquilla/Soledad (n=3,116)	166	5.3	**4.9**	**(3.6-6.5)**
Age				
18 to 29 (n=2470)	124	5.0	**4.6**	**(3.4-6.2)**
30 to 39 (n=1,978)	101	5.1	**4.8**	**(3.4-6.7)**
40 to 49 (n=1,022)	58	5.7	**5.5**	**(3.5-8.6)**
50+ (n=748)	41	5.5	**6.0**	**(3.6-9.9)**
Gender*				
Man (n=2,123)	127	6.0	**6.5**	**(5.0-8.4)**
Woman (n=4,044)	189	4.7	**4.1**	**(3.1-5.3)**
Transgender or Nonbinary (n=47)	7	14.9		
Pregnant women (pregnant at time of study; n=150)	14	9.3	**9.2**	**(2.9-25.4)**
Migration status				
Regular	82	4.6	**5.0**	**(3.4-7.2)**
Irregular	242	5.5	**5.0**	**(4.0-6.1)**
Man who has sex with men* (n=207)	35	17.0	**18.2**	**(11.4-28.0)**
Ever paid for sex* (n=82)	9	11.0	**8.4**	**(3.3-19.6)**
Lifetime transactional sex* (n=105)	13	12.4	**10.2**	**(4.6-21.0)**
Lifetime injecting drug use* (n=130)	15	11.5	**9.1**	**(4.6-17.2)**
Key Population* (n=406)	60	14.8	**15.2**	**(10.5-21.5)**
People living with HIV* (based on laboratory confirmed results; n=71)	17	23.9		

Notes: n: denominator for subgroup; N: total study population; Sample difference at *p<0.05 or **p<0.10 on chi²tests; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

EXPERIENCES OF DISCRIMINATION AND VIOLENCE VICTIMIZATION

Participants were asked a series of questions about experiences of discrimination while in Colombia, based on the 5-item Everyday Discrimination (Short) scale.[19] Almost half (46.7%) of migrants and refugees reported experiencing at least one form of discrimination a few times per year or more frequently. Of these, 90.0% believed stigma and discrimination were targeted on the basis of their migration status (Table 20).

Participants were also asked a series of questions about experiences of psychological, physical, and sexual violence victimization and sexual exploitation while living in Colombia. Participants who reported any experience of violence were asked additional questions about who perpetrated violence and if violence occurred in the last 12 months. Overall, 12.2% of participants reported experiencing violence while living in Colombia, which most commonly included psychological abuse (8.3%), physical violence (7.0%), sexual exploitation (2.0%) and sexual violence (1.4%). Estimates of violence while living in Colombia *should not* be compared to national estimates of lifetime violence given that enrollment was restricted to Venezuelans who arrived since 2015; thus, the estimates presented here represent experiences within a maximum of six years. Overall, 6.2% of migrants and refugees reported violence victimization in the last 12 months (Table 20).

PREVALENCE AND DIFFERENCES IN DISCRIMINATION AND VIOLENCE VICTIMIZATION ACROSS SITES

Experiences of discrimination was more commonly reported among migrants and refugees in Bogotá and Soacha than Barranquilla and Soledad (50.7% vs 42.3%, $p<0.05$; Table 20). Figures 16 and 17 display the scale responses to experiences of discrimination within each site.

Figure 16 Frequency of stigma and discrimination reported by migrants and refugees in Bogotá and Soacha

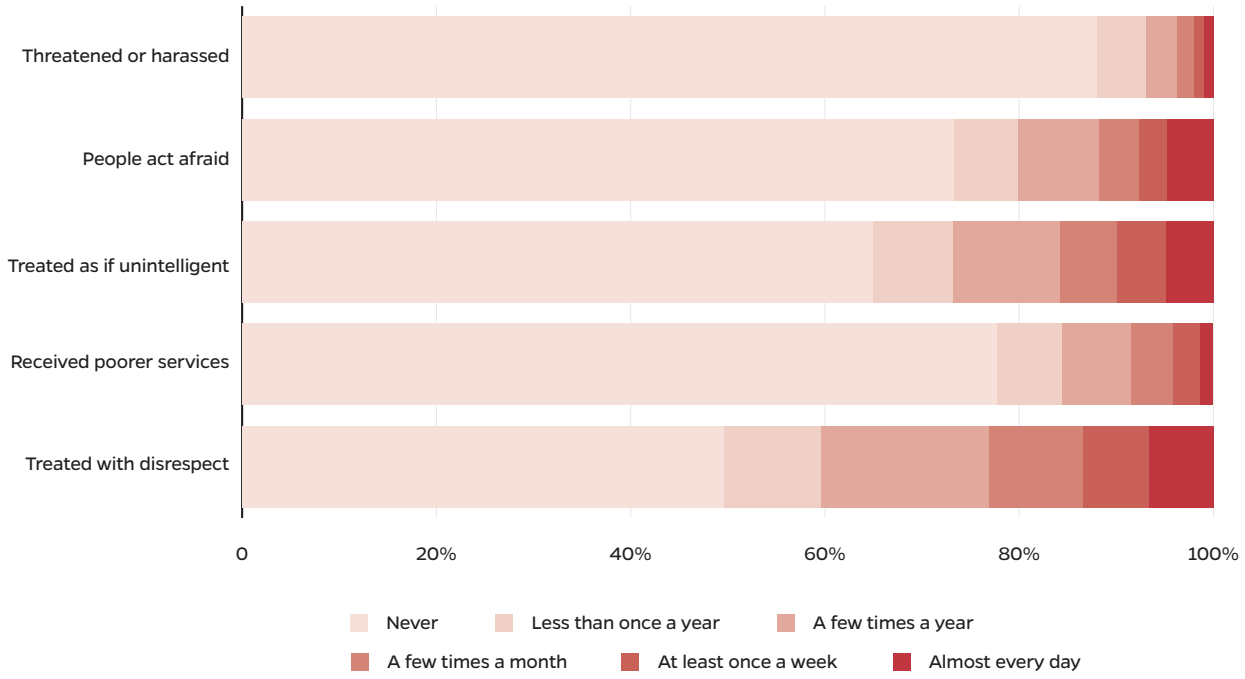
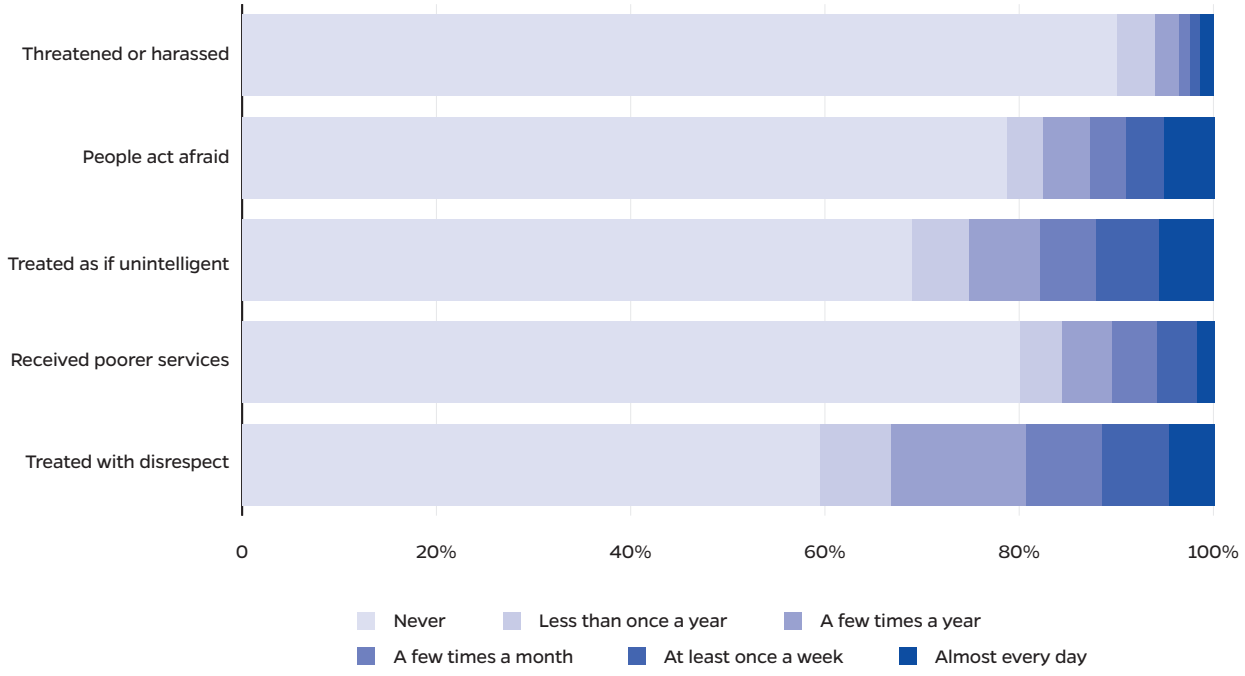


Figure 17 Frequency of stigma and discrimination reported by migrants and refugees in Barranquilla and Soledad



Overall, 12% of participants reported experiencing violence while living in Colombia. Any violence victimization was marginally higher in Bogotá and Soacha than Barranquilla and Soledad (13.6 vs. 9.8% reporting any form of violence victimization while in Colombia, respectively; Table 20). Notably, individuals reported to perpetrate violence were different across sites. In Bogotá and Soacha, strangers, employers, police, armed groups, were more likely to be identified as perpetrators across all forms of violence than reported in Barranquilla and Soledad. Conversely, intimate partners and family members were more commonly reported to perpetrate violence in Barranquilla and Soledad than reported in Bogotá and Soacha.

Table 20 Experiences of discrimination and violence victimization among migrants and refugees, stratified by site

	Site											
	Bogotá & Soacha (n=3,102)				Barranquilla & Soledad (n=3,119)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
STIGMA & DISCRIMINATION												
Any experience of stigma or discrimination*	1574	50.7	**48.9**	**(46.0-51.8)**	1318	42.3	**42.8**	**(39.5-46.3)**	2892	46.5	**46.7**	**(44.5-48.9)**
Due to migration status* (n=2892)	1431	91.0	**88.4**	**(85.2-91.0)**	1241	94.0	**93.3**	**(90.3-95.4)**	2672	92.4	**90.0**	**(87.7-92.0)**
EXPERIENCES OF VIOLENCE AT ANY TIME WHILE LIVING IN COLOMBIA												
Psychological violence in Colombia*	294	9.5	**9.2**	**(7.7-11.1)**	159	5.1	**6.7**	**(4.9-9.0)**	453	7.3	**8.3**	**(7.1-9.7)**
Psychological violence perpetrated by: (select all; n=453)												
Partner **	39	13.3			37	22.7			76	16.6		
Family	16	5.4			11	6.8			27	5.9		
Religious leader	8	2.7			5	3.1			13	2.9		
Police	50	17.0			8	5.0			58	12.7		
Armed groups*	46	15.7			11	6.8			57	12.6		
NGO worker	8	2.7			3	1.9			11	2.4		
Employer *	55	18.7			14	8.7			69	15.2		
Stranger *	225	76.5			100	62.1			325	71.4		
Sex work client	9	3.1			2	1.2			11	2.4		
Other	18	6.1			11	6.8			29	6.4		
Physical violence in Colombia *	280	9.0	**8.1**	**(6.6-9.8)**	128	4.1	**5.2**	**(3.7-7.4)**	408	6.6	**7.0**	**(5.9-8.3)**
Physical violence perpetrated by (select all; n=408)												
Partner *	49	17.4			35	27.1			84	20.5		
Family	20	7.1			9	7.0			29	7.1		
Religious leader	6	2.1			2	1.6			8	2.0		
Police *	34	12.1			6	4.7			40	9.8		
Armed groups*	42	15.0			8	6.2			50	12.2		
NGO worker	4	1.4			1	0.8			5	1.2		
Employer	20	7.1			6	4.7			26	6.4		
Stranger *	192	68.6			72	55.8			264	64.5		
Sex work client	3	1.1			1	0.8			4	1.0		
Other *	6	2.1			9	7.0			15	3.7		
Forced sex in Colombia *	39	1.3	**1.9**	**(1.2-3.1)**	19	0.6	**0.6**	**(0.3-1.0)**	58	0.9	**1.4**	**(0.9-2.2)**

Table 20 Experiences of discrimination and violence victimization among migrants and refugees, stratified by site, continued

	Site											
	Bogotá & Soacha (n=3,102)				Barranquilla & Soledad (n=3,119)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Sexual violence perpetrated by: (select all; n=58)												
Partner	9	23.1			8	42.1			17	29.3		
Family	1	2.6			2	10.5			3	5.2		
Religious leader	0	0.0			0	0.0			0	0.0		
Police	2	5.1			0	0.0			2	3.4		
Armed groups	0	0.0			1	5.6			1	1.8		
NGO worker	1	2.6			0	0.0			1	1.8		
Employer	6	15.4			1	5.6			7	12.3		
Stranger	26	66.7			8	44.4			34	59.6		
Sex work client	4	10.3			0	0.0			4	7.0		
Other	3	7.7			2	11.1			5	8.8		
Sexual exploitation for resource	55	1.8	**2.2**	**(1.5-3.3)**	44	1.4	**1.5**	**(0.8-2.8)**	99	1.6	**2.0**	**(1.4-2.7)**
Sexual exploitation perpetrated by (select all; n=99)												
Partner	10	17.9			9	19.1			19	18.4		
Family	1	1.8			2	4.3			3	2.9		
Religious leader	1	1.8			1	2.2			2	2.0		
Police	1	1.8			1	2.2			2	2.0		
Armed groups	1	1.8			0	0.0			1	1.0		
NGO worker	0	0.0			0	0.0			0	0.0		
Employer **	12	21.8			4	8.9			16	16.0		
Stranger *	39	70.9			23	51.1			62	62.0		
Sex work client**	7	12.7			12	26.7			19	19.0		
Other	5	9.1			1	2.2			6	6.0		
Any violence victimization while in Colombia*	462	14.9	**13.6**	**(11.7-15.7)**	264	8.5	**9.8**	**(7.7-12.3)**	726	11.7	**12.2**	**(10.8-13.8)**
EXPERIENCES OF VIOLENCE IN PAST 12 MONTHS												
Psychological violence last 12 months* (n=6,219; ref: no)	135	4.4	**4.4**	**(3.3-5.8)**	70	2.2	**2.7**	**(1.7-4.3)**	205	3.3	**3.8**	**(3.0-4.8)**
Physical violence last 12 months * (ref: no; n=6,218)	128	4.1	**4.4**	**(3.3-5.8)**	51	1.6	**2.7**	**(1.6-4.5)**	179	2.9	**3.8**	**(2.9-4.8)**
Forced sex last 12 months (ref: no; n=6,215)	13	0.4	**0.6**	**(0.3-1.5)**	7	0.2	**0.2**	**(0.1-0.5)**	20	0.3	**0.5**	**(0.2-1.0)**
Sexually exploited for resources last 12 months * (ref: no; n=6,217)	22	0.7	**1.2**	**(0.6-2.2)**	10	0.3	**0.6**	**(0.2-2.2)**	32	0.5	**1.0**	**(0.6-1.7)**
Any recent (past 12 months) victimization* (ref: no; n=6,219)*	222	7.2	**7.2**	**(5.8-8.9)**	105	3.4	**4.3**	**(3.0-6.3)**	327	5.3	**6.2**	**(5.1-7.4)**

Notes: n: denominator for subgroup; N: total study population; Sample difference at *p<0.05 or **p<0.10 on chi2 tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

PREVALENCE AND DIFFERENCES IN DISCRIMINATION AND VIOLENCE VICTIMIZATION ACROSS GENDER

Experiences of discrimination and violence victimization while living in Colombia appeared to be slightly higher among men than women, though with overlapping confidence intervals (Table 21). Overall, 14.9% of men and 10.8% of women reported at least one form of violence victimization while residing in Colombia. Generally, women more commonly reported that intimate partners had perpetrated violence, while men more commonly reported perpetration by police, armed groups, and strangers. Intimate partner and intrafamilial violence may be lower than anticipated either due directly to lower experiences of violence due to family separation during migration or due to under-reporting of these experiences.

More than half of transgender and nonbinary participants reported higher levels of discrimination (sample estimate: 57.5%) while 12.8% reported experiencing any form of violence while living in Colombia. Experiences of sexual violence and sexual exploitation were exceptionally high among transgender and nonbinary identified migrants and refugees. These estimates may be limited by the small number of migrants and refugees identifying as transgender or nonbinary, though they mirror global and national reports of experiences of discrimination and violence experienced by transgender people.[63]

Table 21 Experiences of discrimination and violence victimization among migrants and refugees, stratified by gender

	Gender															
	Man (n=2,124)				Woman (n=4,046)				Transgender or Nonbinary (n=47)				Total (N=6,217)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Any experience of stigma or discrimination (n=6,216)**	1018	48.0	**47.9**	**(44.1-51.7)**	1847	45.7	**46.1**	**(43.4-48.9)**	27	57.5			2892	46.5	**46.7**	**(44.5-48.9)**
Discrimination due to Migration Status ** (n=2893)	926	90.9	**87.4**	**(82.7-90.9)**	1721	93.2	**91.4**	**(88.7-93.5)**	25	92.6			2672	92.4	**90.0**	**(87.7-92.0)**
EXPERIENCES OF VIOLENCE AT ANY TIME WHILE LIVING IN COLOMBIA																
Psychological violence in Colombia (ref: no; n=6,215)	180	8.5	**10.3**	**(7.8-12.8)**	270	6.7	**7.4**	**(6.0-9.0)**	3	6.4			453	7.3	**8.3**	**(7.1-9.7)**
Psychological violence perpetrated by: (select all; n=453)																
Partner *	15	8.3			60	21.9			1	33.3			76	16.6		
Family	10	5.6			17	6.2			0	0.0			27	5.9		
Religious leader	7	3.9			6	2.2			0	0.0			13	2.9		
Police *	39	21.7			19	7.0			0	0.0			58	12.7		
Armed groups *	38	21.1			18	6.6			1	33.3			57	12.6		
NGO worker	7	3.9			4	1.5			0	0.0			11	2.4		
Employer	32	17.8			37	13.6			0	0.0			69	15.2		
Stranger *	143	79.4			180	66.2			2	66.7			325	71.4		
Sex work client	4	2.2			7	2.6			0	0.0			11	2.4		
Other	13	7.2			15	5.5			1	33.3			29	6.4		
Physical violence in Colombia (ref: no; n=6,214)*	196	9.2	**9.3**	**(7.3-11.9)**	210	5.2	**5.9**	**(4.6-7.5)**	2	4.3			408	6.6	**7.0**	**(5.9-8.3)**
Physical violence perpetrated by (select all; n=408)																
Partner *	14	7.1			70	33.2			0	0.0			84	20.5		
Family	9	4.6			20	9.5			0	0.0			29	7.1		
Religious leader	6	3.1			2	0.9			0	0.0			8	2.0		
Police *	31	15.8			9	4.3			0	0.0			40	9.8		
Armed groups *	36	18.4			13	6.2			1	50.0			50	12.2		
NGO worker	3	1.5			2	0.9			0	0.0			5	1.2		
Employer	16	8.2			10	4.7			0	0.0			26	6.4		
Stranger *	156	79.6			106	50.2			2	100.0			264	64.5		
Sex work client	1	0.5			3	1.4			0	0.0			4	1.0		
Other*	3	1.5			12	5.7			0	0.0			15	3.7		

Table 21 Experiences of discrimination and violence victimization among migrants and refugees, stratified by gender, continued

	Gender															
	Man (n=2,124)				Woman (n=4,046)				Transgender or Nonbinary (n=47)				Total (N=6,217)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Forced sex in Colombia * (ref: no)	13	0.6	**1.2**	**(0.4-3.1)**	42	1.0	**1.5**	**(1.0-2.4)**	3	6.4			58	0.9	**1.4**	**(0.9-2.2)**
Sexual violence perpetrated by: (select all; n=58)																
Partner	3	23.1			14	33.3			0	0.0			17	29.3		
Family	1	7.7			2	4.8			0	0.0			3	5.2		
Religious leader	0	0.0			0	0.0			0	0.0			0	0.0		
Police *	2	15.4			0	0.0			0	0.0			2	3.4		
Armed groups	1	8.3			0	0.0			0	0.0			1	1.8		
NGO worker	1	8.3			0	0.0			0	0.0			1	1.8		
Employer	2	16.7			5	11.9			0	0.0			7	12.3		
Stranger	8	66.7			25	59.5			1	33.3			34	59.6		
Sex work client	1	8.3			2	4.8			1	33.3			4	7.0		
Other	2	16.7			2	4.8			1	33.3			5	8.8		
Sexual exploitation for resources* (ref: no; n=6,214)	27	1.3	**2.0**	**(1.0-4.0)**	68	1.7	**1.9**	**(1.3-2.7)**	4	8.5			99	1.6	**2.0**	**(1.4-2.7)**
Sexual exploitation perpetrated by (select all; n=99)																
Partner	6	21.4			13	18.3			0	0.0			19	18.4		
Family	0	0.0			3	4.3			0	0.0			3	2.9		
Religious leader	1	3.6			1	1.4			0	0.0			2	2.0		
Police	1	3.6			1	1.4			0	0.0			2	2.0		
Armed groups	1	3.6			0	0.0			0	0.0			1	1.0		
NGO worker	0	0.0			0	0.0			0	0.0			0	0.0		
Employer	3	10.7			13	19.1			0	0.0			16	16.0		
Stranger	21	75.0			39	57.4			2	50.0			62	62.0		
Sex work client*	3	10.7			13	19.1			3	75.0			19	19.0		
Other	1	3.6			5	7.4			0	0.0			6	6.0		
Any violence victimization while in Colombia* (n=6,215)	309	14.6	**14.9**	**(12.3-17.9)**	411	10.2	**10.8**	**(9.2-12.7)**	6	12.8			726	11.7	**12.2**	**(10.8-13.8)**
EXPERIENCES OF VIOLENCE IN PAST 12 MONTHS																
Psychological violence last 12 months * (ref: no; n=6,215)	90	4.2	**5.3**	**(3.7-7.6)**	113	2.8	**3.0**	**(2.2-4.19)**	2	4.3			205	3.3	**3.8**	**(3.0-4.8)**
Physical violence last 12 months * (ref: no; n=6,214)	84	4.0	**4.6**	**(3.2-6.6)**	94	2.3	**3.4**	**(2.4-4.7)**	1	2.1			179	2.9	**3.8**	**(2.9-4.8)**
Forced sex last 12 months * (ref: no; n=6,211)	4	0.2	**0.5**	**(0.1-2.5)**	13	0.3	**0.4**	**(0.2-0.9)**	3	6.4			20	0.3	**0.5**	**(0.2-1.0)**
Sexual exploitation for resources last 12 months * (ref: no; n=6,213)	9	0.4	**1.1**	**(0.4-3.1)**	21	0.5	**0.9**	**(0.5-1.7)**	2	4.3			32	0.5	**1.0**	**(0.6-1.7)**
Any recent (past 12 months) victimization* (ref: no; n=6,215)	147	6.9	**8.3**	**(6.2-10.9)**	177	4.4	**5.1**	**(4.0-6.5)**	3	6.4			327	5.3	**6.2**	**(5.1-7.4)**

Notes: n: denominator for subgroup; N: total study population; Sample difference at *p<0.05 or **p<0.10 on chi² tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

PREVALENCE AND DIFFERENCES IN DISCRIMINATION AND VIOLENCE VICTIMIZATION ACROSS MIGRATION STATUS

Experiences of discrimination and violence were generally similar across migration status (Table 22). Refugees and migrants with regular migration status were slightly more likely to report experiences of discrimination (48.1% vs. 46.2%) and any violence victimization (13.1% vs 10.9%) while living in Colombia, compared to those with irregular migration status. Differences in any violence victimization were largely driven by slight differences in psychological abuse, physical violence and marginally by sexual violence. Strangers and partners remained the most commonly reported group to perpetrate violence, with no difference by migration status. Employers were more commonly reported by those with regular migrant status to perpetrate all forms of violence, compared to those with irregular status. Those with irregular migration status were more likely to report that NGO workers had perpetrated psychological abuse and physical violence, compared to those with regular migration status.

Table 22 Experiences of discrimination and violence victimization among by migration status

	Regular Status (n=1,779)				Irregular Status (n=4,442)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Any discrimination in Colombia*	868	48.8	**48.1**	**(43.9-52.2)**	2024	45.6	**46.2**	**(43.5-48.8)**	2892	46.5	**46.7**	**(44.5-48.9)**
Discrimination due to migration status (among those experiencing discrimination; n=2,892)	808	93.1	**88.8**	**(84.1-92.2)**	1864	92.0	**90.6**	**(87.8-92.8)**	2672	92.4	**90.0**	**(87.7-92.0)**
EXPERIENCES OF VIOLENCE AT ANY TIME WHILE LIVING IN COLOMBIA												
Psychological violence in Colombia* (n=6,219)	161	9.1	**8.7**	**(6.7-11.2)**	292	6.6	**8.1**	**(6.7-10.0)**	453	7.3	**8.3**	**(7.1-9.7)**
Psychological violence perpetrated by: (select all; n=453)												
Partner	30	18.6			46	15.5			76	16.6		
Family member	11	6.8			16	5.4			27	5.9		
Religious leader	4	2.5			9	3.1			13	2.9		
Police	20	12.4			38	12.9			58	12.7		
Armed group	22	13.7			35	11.9			57	12.6		
NGO worker**	1	0.6			10	3.4			11	2.4		
Employer**	31	19.3			38	12.9			69	15.2		
Stranger	118	73.3			207	70.4			325	71.4		
Sex work client	4	2.5			7	2.4			11	2.4		
Other	12	7.5			17	5.8			29	6.4		
Physical violence in Colombia* (n=6,218)	143	8.0	**8.0**	**(6.0-10.7)**	265	6.0	**6.6**	**(5.3-8.2)**	408	6.6	**7.0**	**(5.9-8.3)**
Physical violence perpetrated by (select all; n=408)												
Partner	34	23.8			50	18.7			84	20.5		
Family member	12	8.4			17	6.4			29	7.1		
Religious leader	2	1.4			6	2.3			8	2.0		
Police	10	7.0			30	11.3			40	9.8		
Armed group	17	11.9			33	12.4			50	12.2		
NGO worker**	0	0.0			5	1.9			5	1.2		
Employer	9	6.3			17	6.4			26	6.4		
Stranger	90	62.9			174	65.4			264	64.5		
Sex work client	1	0.7			3	1.1			4	1.0		
Other	5	3.5			10	3.8			15	3.7		
Forced sex in Colombia (n=6,216)**	23	1.3	**1.8**	**(0.9-3.5)**	35	0.8	**1.3**	**(0.8-2.2)**	58	0.9	**1.4**	**(0.9-2.2)**

Table 22 Experiences of discrimination and violence victimization among by migration status, continued

	Regular Status (n=1,779)				Irregular Status (n=4,442)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Sexual violence perpetrated by: (select all; n=58)												
Partner	7	30.4			10	28.6			17	29.3		
Family member	1	4.3			2	5.7			3	5.2		
Religious leader	0	0.0			0	0.0			0	0.0		
Police	0	0.0			2	5.7			2	3.4		
Armed group	1	4.5			0	0.0			1	1.8		
NGO worker	0	0.0			1	2.9			1	1.8		
Employer**	5	22.7			2	5.7			7	12.3		
Stranger	12	54.5			22	62.9			34	59.6		
Sex work client	1	4.5			3	8.6			4	7.0		
Other	2	9.1			3	8.6			5	8.8		
Sexual exploitation for resources (ref: no; n=6,218)	29	1.6	**1.9**	**(1.1-3.2)**	70	1.6	**2.0**	**(1.3-3.0)**	99	1.6	**2.0**	**(1.4-2.7)**
Sexual exploitation perpetrated by (select all; n=99)												
Partner	8	26.7			11	15.1			19	18.4		
Family	0	0.0			3	4.2			3	2.9		
Religious leader	1	3.3			1	1.4			2	2.0		
Police	1	3.3			1	1.4			2	2.0		
Armed groups	0	0.0			1	1.4			1	1.0		
NGO worker	0	0.0			0	0.0			0	0.0		
Employer*	8	27.6			8	11.3			16	16.0		
Stranger	18	62.1			44	62.0			62	62.0		
Sex work client*	1	3.4			18	25.4			19	19.0		
Other	3	10.3			3	4.2			6	6.0		
Any violence victimization while in Colombia* (n=6,219)	244	13.7	**13.1**	**(10.6-16.2)**	482	10.9	**11.8**	**(10.1-13.7)**	726	11.7	**12.2**	**(10.8-13.8)**
EXPERIENCES OF VIOLENCE IN PAST 12 MONTHS												
Psychological violence last 12 months (n=6,219)**	71	4.0	**4.2**	**(2.8-6.3)**	134	3.0	**3.6**	**(2.7-4.8)**	205	3.3	**3.8**	**(3.0-4.8)**
Physical violence last 12 months (ref: no; n=6,218)	60	3.4	**4.6**	**(3.0-7.0)**	119	2.7	**3.4**	**(2.5-4.7)**	179	2.9	**3.8**	**(2.9-4.8)**
Forced sex last 12 months (ref: no; n=6,215)	8	0.5	**0.5**	**(0.2-1.6)**	12	0.3	**0.4**	**(0.2-1.2)**	20	0.3	**0.5**	**(0.2-1.0)**
Sexual exploitation for resources last 12 months* (ref: no; n=6,217)	4	0.2	**0.5**	**(0.2-1.6)**	28	0.6	**1.2**	**(0.6-2.2)**	32	0.5	**1.0**	**(0.6-1.7)**
Any recent (past 12 months) victimization (ref: no; n=6,219)**	108	6.1	**6.6**	**(4.8-9.1)**	219	4.9	**6.0**	**(4.8-7.5)**	327	5.3	**6.2**	**(5.1-7.4)**

Notes: n: denominator for subgroup; N: total study population; Sample difference at *p<0.05 or **p<0.10 on chi² tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates..

HARDSHIPS AND UPTAKE OF HUMANITARIAN SERVICES

Overall, the majority of migrants and refugees reported experiencing some hardship while living in Colombia (Table 23). These most commonly included financial hardship (50.2%), food insecurity (19.7%), and housing (16.4%). Despite these challenges, only 17.3% of migrants and refugees reported utilizing humanitarian services. Among those who utilized services, these services often included food assistance (59.5%), support for accessing national health services (32.6%), healthcare (27.7%), and legal assistance (17.9%).

PREVALENCE AND DIFFERENCES IN UPTAKE OF HUMANITARIAN SERVICES BY SITE

Financial hardship was the most common form of hardship across sites, though it was slightly higher in Barranquilla and Soledad, while food insecurity was marginally more common in Bogotá and Soacha (Table 23). There was no difference in overall utilization of humanitarian services across sites, though the type and provider of services differed across locations. This likely reflects the location in which agencies are based and type of services associated with those agencies.

Table 23 Utilization of humanitarian services across sites

	Site											
	Bogotá & Soacha (n=3,102)				Barranquilla & Soledad (n=3,119)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Greatest hardship as a migrant in Colombia * (n=6,218)												
Finances	1551	50.0	**48.1**	**(45.2-51.0)**	1815	58.2	**53.8**	**(50.3-57.2)**	3366	54.1	**50.2**	**(47.9-52.4)**
Housing	564	18.2	**16.0**	**(14.1-18.1)**	484	15.5	**17.1**	**(14.5-20.0)**	1048	16.9	**16.4**	**(14.8-18.1)**
Food	612	19.7	**21.1**	**(18.8-23.6)**	553	17.7	**17.4**	**(15.1-19.9)**	1165	18.7	**19.7**	**(18.0-21.6)**
Security	66	2.1	**2.0**	**(1.4-2.9)**	31	1.0	**1.4**	**(0.7-2.6)**	97	1.6	**1.8**	**(1.3-2.4)**
Education	91	2.9	**3.4**	**(2.4-4.8)**	92	3.0	**3.7**	**(2.4-5.5)**	183	2.9	**3.5**	**(2.7-4.6)**
Other	92	3.0	**3.7**	**(2.6-5.1)**	60	1.9	**2.7**	**(1.5-4.7)**	152	2.4	**3.3**	**(2.5-4.4)**
No hardship in Colombia	126	4.1	**5.7**	**(4.4-7.5)**	81	2.6	**4.1**	**(2.7-6.4)**	207	3.3	**5.2**	**(4.1-6.5)**
Used humanitarian resources (ref: no; n=6,218)	598	19.3	**16.9**	**(14.9-19.0)**	605	19.4	**17.1**	**(15.9-18.4)**	1203	19.3	**17.3**	**(15.8-18.9)**
Type of service utilized (select all, of those reporting service use, n=1,203)												
Legal/registration assistance*	159	25.9	**21.5**	**(16.5-27.6)**	76	12.2	**11.9**	**(8.4-16.5)**	235	19.0	**17.9**	**(14.4-22.0)**
Assistance accessing national health services*	222	36.3	**36.3**	**(30.1-42.9)**	191	30.9	**34.6**	**(27.8-42.0)**	413	33.6	**32.6**	**(30.9-40.6)**
Healthcare	162	26.5	**29.4**	**(23.9-35.6)**	152	24.6	**24.9**	**(19.2-31.6)**	314	25.5	**27.7**	**(23.6-32.2)**
Support for gender-based violence*	33	5.4	**4.7**	**(2.8-7.6)**	13	2.1	**2.0**	**(0.9-4.3)**	46	3.7	**3.6**	**(2.4-5.6)**
Psychosocial support*	71	11.6	**12.1**	**(8.0-17.9)**	43	7.0	**7.3**	**(4.6-11.3)**	114	9.3	**10.3**	**(7.4-14.1)**
Housing assistance*	108	17.7	**16.8**	**(13.1-21.2)**	52	8.5	**7.4**	**(5.1-10.5)**	160	13.1	**13.2**	**(10.7-16.2)**
Food assistance*	400	65.8	**62.7**	**(56.2-68.8)**	344	56	**54.3**	**(46.7-61.6)**	744	60.9	**59.5**	**(54.5-64.3)**
Security*	41	6.8	**6.5**	**(4.3-9.8)**	22	3.6	**4.8**	**(2.4-9.5)**	63	5.2	**5.9**	**(4.1-8.3)**
Organization that provided service (select all, of those utilizing service; n=1,203)												
UNHCR *	196	32.6	**31.1**	**(25.4-37.4)**	44	7.2	**8.7**	**(4.9-14.9)**	240	19.8	**22.6**	**(18.6-27.1)**
AIDS Healthcare Foundation (AHF)	15	2.5	**1.4**	**(0.8-2.8)**	13	2.1	**2.0**	**(0.8-4.6)**	28	2.3	**1.6**	**(1.0-2.8)**
Red Somos*	169	28.1	**27.9**	**(22.3-34.2)**	42	6.9	**8.5**	**(4.7-14.7)**	211	17.4	**20.5**	**(16.6-25.0)**
Profamilia*	67	11.1	**9.0**	**(6.0-13.4)**	44	7.2	**7.0**	**(4.3-11.2)**	111	9.1	**8.2**	**(6.0-11.2)**
Red Cross	146	24.3	**23.7**	**(18.9-29.4)**	139	22.7	**22.5**	**(17.1-28.9)**	285	23.5	**23.2**	**(19.5-27.4)**
FUVADIS*	6	1.0	**0.5**	**(0.2-1.3)**	36	5.9	**7.3**	**(4.3-12.3)**	42	3.5	**3.1**	**(1.9-5.1)**
Venezolanos en Barranquilla*	4	0.7	**0.7**	**(0.2-2.6)**	25	4.1	**4.1**	**(2.1-7.9)**	29	2.4	**2.0**	**(1.1-3.6)**

Table 23 Utilization of humanitarian services across sites, continued

	Site											
	Bogotá & Soacha (n=3,102)				Barranquilla & Soledad (n=3,119)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Venezolanos Unidos en Barranquilla*	3	0.5	**0.5**	**(0.1-2.7)**	11	1.8	**2.7**	**(1.1-6.6)**	14	1.2	**1.4**	**(0.6-3.0)**
De Pana Que Si*	3	0.5	**0.2**	**(0.1-0.8)**	47	7.7	**8.3**	**(4.7-14.1)**	50	4.1	**3.3**	**(1.9-5.7)**
Caribe Afirmativo	3	0.5	**0.1**	**(0.0-0.4)**	4	0.7	**0.8**	**(0.3-2.6)**	7	0.6	**0.4**	**(0.1-1.0)**
Fundacion Eudes*	20	3.3	**3.0**	**(1.6-5.7)**	4	0.7	**0.8**	**(0.3-2.3)**	24	2.0	**2.2**	**(1.2-3.8)**
Fundacion Censurados	5	0.8	**0.5**	**(0.2-1.2)**	3	0.5	**0.3**	**(0.1-0.9)**	8	0.7	**0.4**	**(0.2-0.8)**
Americares*	4	0.7	**0.5**	**(0.1-1.6)**	143	23.5	**23.3**	**(17.7-30.0)**	147	12.2	**9.2**	**(6.9-12.1)**
International Rescue Committee (IRC)*	81	13.5	**10.6**	**(7.4-15.0)**	1	0.2	**0.1**	**(0.0-0.8)**	82	6.8	**6.6**	**(4.6-9.4)**
Medicos sin Fronteras (MSF)*	17	2.8	**1.4**	**(0.7-2.8)**	6	1.0	**1.1**	**(0.4-2.7)**	23	1.9	**1.3**	**(0.8-2.2)**
AID*	5	0.8	**0.4**	**(0.1-1.1)**	15	2.5	**2.7**	**(1.1-6.3)**	20	1.7	**1.3**	**(0.6-2.6)**
Other	204	33.9	**34.7**	**(28.5-41.5)**	279	45.8	**41.9**	**(34.8-49.3)**	483	39.9	**37.4**	**(32.7-42.4)**

Notes: n: denominator for subgroup; N: total study population; Sample difference at *p<0.05 or **p<0.10 on chi² tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

PREVALENCE AND DIFFERENCES IN UPTAKE OF HUMANITARIAN SERVICES BY MIGRATION STATUS

When asked about the greatest hardship, financial hardship remained the most commonly reported hardship across migration status, though it was slightly higher among those with regular migration status compared to irregular status (54.5% vs. 48.4%; Table 24). Migrants and refugees with irregular status were marginally more likely to experience hardships related to housing (17.4% vs 14.0%) and education (4.3 vs 1.7%) than migrants and refugees with regular migration status. No differences were observed for hardships related to food security, the second most commonly reported hardship, or security concerns.

Migrants and refugees with regular status were more likely to have reported the use of humanitarian services compared to those with irregular status (21.9% vs. 15.4%), though still fewer than one in five reported utilization of such services. Compared to irregular migrants and refugees, regular migrants and refugees were more likely to have used legal or registration assistance, assistance with accessing national health services, and psychosocial support, as well as services provided by UNHCR, which collectively may explain achievement of regular migration status.

Table 24 Utilization of humanitarian services by migration status

	Migration Status											
	Regular Status (n=1,779)				Irregular Status (n=4,442)				Total (N=6,221)			
	Sample proportion		Population estimate		Sample proportion		Population estimate		Sample proportion		Population estimate	
	n	%	%	95%CI	n	%	%	95%CI	n	%	%	95%CI
Greatest hardship in Colombia * (n=6,218)												
Finances	1039	58.4	**54.5**	**(50.3-58.7)**	2327	52.4	**48.4**	**(45.7-51.0)**	3366	54.1	**50.2**	**(47.9-52.4)**
Housing	260	14.6	**14.0**	**(11.3-17.2)**	788	17.8	**17.4**	**(15.5-19.4)**	1048	16.9	**16.4**	**(14.8-18.1)**
Food	318	17.9	**18.8**	**(15.8-22.3)**	847	19.1	**20.1**	**(18.1-22.3)**	1165	18.7	**19.7**	**(18.0-21.6)**
Security	31	1.7	**1.8**	**(1.1-2.9)**	66	1.5	**1.7**	**(1.2-2.6)**	97	1.6	**1.8**	**(1.3-2.4)**
Education	37	2.1	**1.7**	**(0.9-3.2)**	146	3.3	**4.3**	**(3.2-5.7)**	183	2.9	**3.5**	**(2.7-4.6)**
Other	33	1.9	**2.5**	**(1.3-4.5)**	119	2.7	**3.6**	**(2.6-5.1)**	152	2.4	**3.3**	**(2.5-4.4)**
No challenges in Colombia	61	3.4	**6.7**	**(4.5-9.9)**	146	3.3	**4.5**	**(3.4-5.9)**	207	3.3	**5.2**	**(4.1-6.5)**
Used humanitarian resources * (ref:no; n=6,218)	405	22.8	**21.9**	**(18.6-25.7)**	798	18.0	**15.4**	**(13.8-17.1)**	1203	19.3	**17.3**	**(15.8-18.9)**
Type of service utilized (select all, of those reporting service use, n=1,203)												
Legal/registration assistance*	113	27.1	**24.5**	**(17.5-33.2)**	122	14.9	**13.9**	**(10.6-18.2)**	235	19.0	**17.9**	**(14.4-22.0)**
Assistance accessing national health services*	163	39.2	**44.9**	**(35.9-54.3)**	250	30.7	**30.1**	**(25.4-35.3)**	413	33.6	**32.6**	**(30.9-40.6)**
Healthcare	106	25.5	**25.8**	**(18.8-34.2)**	208	25.6	**28.8**	**(23.9-34.2)**	314	25.5	**27.7**	**(23.6-32.2)**
Support for gender-based violence	19	4.6	**3.4**	**(1.5-7.2)**	27	3.3	**3.8**	**(2.3-6.3)**	46	3.7	**3.6**	**(2.4-5.6)**
Psychosocial support*	53	12.8	**16.7**	**(10.3-25.7)**	61	7.5	**6.5**	**(4.5-9.4)**	114	9.3	**10.3**	**(7.4-14.1)**
Housing assistance	55	13.3	**10.1**	**(7.0-14.4)**	105	12.9	**15.0**	**(11.7-19.1)**	160	13.1	**13.2**	**(10.7-16.2)**
Food assistance**	264	64.4	**60.2**	**(50.7-69.0)**	480	59.1	**59.1**	**(53.5-64.5)**	744	60.9	**59.5**	**(54.5-64.3)**
Security	26	6.3	**7.0**	**(4.0-11.9)**	37	4.6	**5.2**	**(3.3-8.3)**	63	5.2	**5.9**	**(4.1-8.3)**
Organization that provided service (select all, of those utilizing service; n=1,203)												
UNHCR*	110	26.9	**29.2**	**(21.4-38.4)**	130	16.2	**18.6**	**(14.6-23.5)**	240	19.8	**22.6**	**(18.6-27.1)**
AIDS Healthcare Foundation (AHF)**	14	3.4	**2.1**	**(1.1-4.3)**	14	1.7	**1.4**	**(0.6-3.0)**	28	2.3	**1.6**	**(1.0-2.8)**
Red Somos**	83	20.3	**25.0**	**(17.4-34.5)**	128	15.9	**17.9**	**(14.0-22.5)**	211	17.4	**20.5**	**(16.6-25.0)**
Profamilia	40	9.8	**6.9**	**(3.9-11.7)**	71	8.8	**9.0**	**(6.1-13.2)**	111	9.1	**8.2**	**(6.0-11.2)**
Red Cross	103	25.2	**26.8**	**(19.8-35.1)**	182	22.6	**21.2**	**(17.1-25.9)**	285	23.5	**23.2**	**(19.5-27.4)**
FUVADIS	14	3.4	**2.4**	**(0.9-6.1)**	28	3.5	**3.6**	**(2.0-6.3)**	42	3.5	**3.1**	**(1.9-5.1)**
Venezolanos en Barranquilla*	15	3.7	**3.0**	**(1.4-6.2)**	14	1.7	**1.4**	**(0.5-3.6)**	29	2.4	**2.0**	**(1.1-3.6)**
Venezolanos Unidos en Barranquilla	5	1.2			9	1.1			14	1.2	**1.4**	**(0.6-3.0)**
De Pana Que Si*	25	6.1	**5.7**	**(2.5-12.3)**	25	3.1	**1.9**	**(1.1-3.1)**	50	4.1	**3.3**	**(1.9-5.7)**
Caribe Afirmativo	4	1.0			3	0.4			7	0.6	**0.4**	**(0.1-1.0)**
Fundacion Eudes*	15	3.7	**3.7**	**(1.7-7.9)**	9	1.1			24	2.0	**2.2**	**(1.2-3.8)**
Fundacion Censurados**	5	1.2			3	0.4			8	0.7	**0.4**	**(0.2-0.8)**
Americares*	38	9.4	**7.6**	**(3.9-14.3)**	109	13.6	**10.1**	**(7.6-13.3)**	147	12.2	**9.2**	**(6.9-12.1)**
International Rescue Committee (IRC)	25	6.1	**5.5**	**(2.4-12.2)**	57	7.1	**7.3**	**(5.0-10.4)**	82	6.8	**6.6**	**(4.6-9.4)**
Medicos sin Fronteras (MSF)	10	2.5	**0.6**	**(0.3-1.4)**	13	1.6	**1.7**	**(0.9-3.2)**	23	1.9	**1.3**	**(0.8-2.2)**
AID	7	1.7	**1.8**	**(0.5-6.1)**	13	1.6	**0.9**	**(0.4-1.9)**	20	1.7	**1.3**	**(0.6-2.6)**
Other	167	41.1	**39.4**	**(30.7-48.7)**	316	39.3	**36.3**	**(30.9-42.0)**	483	39.9	**37.4**	**(32.7-42.4)**

Notes: n: denominator for subgroup; N: total study population; Sample difference at *p<0.05 or **p<0.10 on chi^2 tests; ref: reference group not displayed; grayed out cells represent variables in which cells were too small to reliably compute population estimates; grayed out cells represent variables in which cells were too small to reliably compute population estimates.

Conclusion and Recommendations

Conclusion and Recommendations

This study successfully enrolled over 6,200 migrants and refugees residing in two urban settings of Colombia within eight months. The successful implementation is attributed to the community trust in the organization implementing field research, support for legal process to ensure linkage and sustained access to care for people diagnosed with HIV or syphilis, regardless of migration status, and the use of RDS-methodology that leverages social networks within populations that lack sampling frames. The RDS methodology provides an added benefit of producing unbiased estimates that approximate population estimates and overcome limitations associated with other convenience sampling approaches and HIV estimates generated through testing programs.

Age distribution and timing of arrival reported here generally reflect what is reported by migration agencies for Venezuelans living in Colombia.[20] Our findings, however, also highlight social and structural vulnerabilities, including low educational attainment, low levels of formal employment and, thus, material hardships including low income, food insecurity, and housing instability. These likely reflect the long-term impacts of the financial crisis in Venezuela, but also immediate challenges facing Venezuelans in Colombia. For example, food insecurity was the most common reason for migration from Venezuela, however, food insecurity was the second most common reported hardship in Colombia, after financial difficulties.

Experiences of discrimination and violence while residing in Colombia, reported by 47% and 12% of the population respectively, suggest the existence of social tensions between the host and migrant community as well as the stress of displacement within families and intimate relationships. There are no estimates of discrimination and violence for Venezuelan refugees or migrants nor for adults of all genders in Colombia for comparison. However, given general vulnerabilities of migrants and refugees, our estimates may be lower than anticipated and may be attributed to the country's reputation for welcoming Venezuelans. Our formative, qualitative research found evidence of more recent tensions during the COVID-19 pandemic and associated economic impacts, which may suggest a shift in attitudes towards Venezuelans and may translate to increased discrimination and/or violence in the near future. Ten percent of women refugees and migrants reported experience of violence while living in Colombia; though not directly comparable, this is similar to national estimates of life-time and past 12 month intimate partner violence reported for ever-partnered women in Venezuela (19% and 8%, respectively) and lower than reported in Colombia in 2018 (20% and 12%, respectively).[21] It is possible that separation of partners and families during migration may result lower reports of intimate and intrafamilial violence. These forms of violence may also be under-reported due to stigma or misclassification of less severe forms of violence.

In terms of health indicators, self-reported health status among migrants and refugees was generally high and may reflect the hypothesis known as the 'healthy migrant effect', in which migrants are often healthier than host communities across a number of health indicators.[22] Other studies have supported that hypothesis, though they have also shown that health of migrants tends to decline with length of stay, typically as a result of low living and working conditions.[22] Indeed, mental and behavioral health indicators for Venezuelan migrants and refugees in this study were remarkable. Mean mental health scores on the PHQ-4 among migrants and refugees were considerable higher in this study than previously reported for the Colombian population in 2014 (3.3 vs. 1.3),[23] with one-fifth of migrants and refugees in this study reporting symptoms of anxiety or depression, as well as alcohol use disorder. Uptake of COVID-19 testing and vaccination was low, particularly among irregular migrants and refugees, and likely reflects differences in timing of vaccine eligibility across these subpopulations but also (lack of) awareness of available services in Colombia. Finally, 5% of migrants and refugees had laboratory-confirmed syphilis infection. These estimates are far higher than 0.7% estimated prevalence among Colombian adults in 2016,[24] though cases of syphilis have increased in the country and regionally since that time.[25] The high prevalence of syphilis infection raises concerns for risks associated with untreated syphilis, congenital syphilis among other risks for neonates, and onward transmission of infection.

The prevalence of HIV was also noteworthy. Population HIV estimates bordered 1% (overall population prevalence: 0.9%; 95%CI: 0.6-1.4) and were higher in Barranquilla and Soledad (1.2%) than in Bogotá and Soacha (0.8%). HIV prevalence was 6% among key populations. Population prevalence of HIV was higher than

reported for Venezuela (0.5%)[26] and observed in Colombia (0.5%).[27] Low engagement across the HIV care continuum, beginning with low HIV diagnosis and ultimately low levels of viral suppression, signals a need to increase uptake of HIV testing and support long-term and consistent engagement in care for improved individual health outcomes as well as to prevent onward transmission of infection. The estimates reported here for Venezuelan migrants and refugees residing in Colombia are close to those long defined by UNAIDS and WHO as a generalized epidemic[28] and highlight the importance of improving access to and uptake of HIV prevention and care among Venezuelan migrants and refugees in Colombia. These findings highlight and support prior guidance that migrants and refugees are not key populations and services for migrants and refugees should not be provided through key populations programs but incorporated through programs for the host population and via humanitarian programming.[29] Given that HIV burden was highest among key populations, programs serving key populations should continue to be supported, if not enhanced, to provide services to key populations regardless of nationality or migration status.

This study also identified notable disparities across migration status and geographic residence. Health history and services use suggested lower availability or access in Barranquilla and Soledad. Financial hardship was the most commonly reported hardship across both sites but was more common in Barranquilla and Soledad, while food and housing more commonly reported hardship in Bogotá and Soacha. Differences speak broadly to the higher cost of living associated with Bogotá but also lower availability of services available in Barranquilla and Soledad, compared to Bogotá and Soacha. The differences across sites may also reflect differences in migration status among Venezuelans living in the two sites.

Venezuelan refugees and migrants with irregular migration status faced a number of social, structural and health vulnerabilities, compared to those with a regular migration status. Irregular migration status was associated with lower educational attainment, employment, income, food security, BMI, and higher levels of probable depression and anxiety, which collectively may reflect legal access to employment and other basic services. Low levels of condom use, awareness of partner status, diagnosed HIV infection, and viral suppression among people with irregular migration status reflect lack of access to insurance coverage for health and HIV services that are tied to legal migration status. Prenatal care is available regardless of migration status, but we observed a lower number of prenatal visits among women with irregular status, which likely reflects other barriers that may be associated with education or discrimination. People with irregular migration status were also less likely to access humanitarian services. Despite these differences, health, social, and structural indicators were poor among Venezuelan refugees and migrants, overall. These findings highlight a need for improved access to services in addition to support migrants and refugees to understanding rights and services, particularly for those with lower literacy and education. For those with irregular status, methods to facilitate registration for the Temporary Protection Permit would improve access to health and other social services for an estimated 800,000 Venezuelans in Colombia.[7]

Study findings suggest multiple opportunities for intervention. We recommend the following strategies for public health programming and policy to support improved health and well-being of Venezuelans living in Colombia.

RECOMMENDATIONS:

These findings highlight several opportunities to support the health, well-being, and livelihood of the Venezuelan population residing in Colombia. As efforts are underway to provide inclusive health services for the 2.5 million Venezuelan refugees and migrants in the country, it is important to ensure that laws, policies and programs respect, protect, and fulfil the rights of all refugees and migrants, including protection from discrimination based on nationality, migration status, gender, and HIV status. Further, policies and program should be designed, implemented, monitored, and evaluated with the participation of refugees and migrants.[29]

Policy and programming for HIV, sexual, and reproductive health may consider:

1. Encourage the national government and donor agencies to provide the same access to HIV care for refugees and migrants, regardless of migration status, as nationals receive.
2. Consider establishing inter-institutional alliances (governmental, territorial entities, humanitarian organizations, community-based organizations, and organizations servicing refugees and migrants) that facilitate networks for community support involving existing organizations as well as the host communities, for the diffusion of information regarding preventative health, sexual and reproductive health, and public health surveillance.
3. Promote strategies for the timely diagnosis of HIV, syphilis, and other STIs among refugees and migrants in the Territorial Health Plans (*PTS, Planes Territoriales de Salud)*[64] and Collective Interventions Plan (*PIC, Plan de Intervenciones Colectivas)* in Colombia's territories with highest populational migrant density, ensuring that uninsured refugees and migrants are classified as a vulnerable population to be included in these plans. These strategies may include actions to integrate Venezuelan migrants and refugees, regardless of migration status, in health services along with the host community and involve community-based organizations who have experiences working with these populations.
4. Implement a communication campaign and training, led by the Ministry of Health and Social Protection and territorial entities, to reduce the double stigma and discrimination faced by refugees and migrants in healthcare contexts due to their nationality and HIV status. These actions should include a specific focus on this population through an investment in human resources in healthcare and communication campaigns to the general population to improve the adoption of these changes and reduce barriers to accessing services.
5. Execute public financing programs in coordination with cooperating organizations to invest in and develop promotional health and STI prevention programs with an inclusive and multicultural focus. This should include the combination prevention package for migrants and refugees, including PrEP, PEP, ART, rapid HIV and syphilis tests, partner services, coupled with substance use and mental health services, alongside other evidence-based approaches. The development of these programs should benefit from the expertise of local organizations with backgrounds working with these populations and interorganizational cooperation.
6. Consider revising the Collective Interventions Plan (*PIC, Plan de Intervenciones Colectivas)* to guarantee diagnosis, confirmation, and immediate treatment for syphilis in persons with positive screening results via insurance provided by the national health system. Until insurance coverage is possible, free access to syphilis testing and immediate treatment should be provided to prevent transmission. Such a change and subsequent reduction of barriers to treatment would reduce the impact of syphilis on reproductive and sexual health, among both refugees and migrants and as well as members of the host community who lack insurance.
7. Support increased financing of community programs provided by civil society that target the provision of medical attention for refugees and migrants living with HIV, including psychosocial support, humanitarian aid, and medical attention as well as technical capacity building for the development of these programs as they are a direct channel to the migrant population.
8. Provide support for organizations that provide prevention and self-care in the realm of sexual and reproductive health, including the prevention of HIV and other STIs. Organizations must provides a multicultural focus on refugee and migrant populations with consideration to intersectional vulnerabilities experiences by migrant/refugee gay and bisexual men, transgender people, and people engaged in transactional sex.

9. Guarantee access to preventative methods in sexual and reproductive health, such as education, prevention activities, and free contraception and condoms to reduce the transmission of HIV, other STIs and/or unplanned pregnancies. These actions can be developed through collaboration across the Collective Interventions Plan (*PIC, Plan de Intervenciones Colectivas)* led by territorial entities, insurance health companies, humanitarian organizations, and civil society.

10. Encourage support for research related to migration patterns and HIV to establish an evidence base, monitor trends, and inform policy and programmatic decisions. This may include population-based and cohort designs to evaluate HIV, syphilis, other STIs, other infectious diseases, such as COVID-19, as well as access to healthcare, treatment, and adherence among refugees and migrants.

11. Generate appropriate mechanisms so that international organizations providing HIV care services to migrants and refugees living with HIV can report to established information systems such as Sistema Nacional de Vigilancia en Salud Pública (SIVIGILA) and the High Cost Account on a regular basis.

12. Provide appropriate governmental or international cooperation resources to undertake HIV prevalence studies that are focused on the health of the Venezuelan migrant population, expanding coverage of studies to other cities, and/or repeating them on a regular basis. These should be designed and implemented in such a way that there is comparability over time and results may serve as input for the calculation of national prevalence estimates that are reported to the Global AIDS Monitoring (GAM) and that are carried out with the support of UNAIDS, using the Spectrum tool.[27]

13. Incentivize organizations to create policies, strategies, and plans for HIV care for other target populations, thereby reducing stigma associated with HIV among migrants and refugees.

Policy and programming for general health concerns, inclusive of mental and behavioral health, may consider the following:

1. Disseminate information about routes and mechanisms to access health care for refugees and migrants to facilitate timely medical attention and eliminate situations of denial or discrimination. This should include improved knowledge of the operation of the state, migrants' rights, and the availability of existing services. This can be achieved through organizational networks, which process recently arrived migrants, who are still in the course of resettlement, as well as those who already reside in Colombia, to assist migrants with navigation of insurance and access to health services.

2. Include mental health components and clear referral pathways to mental health services in health programs offered to refugees and migrants.

Policy and programming for migration and humanitarian services may consider the following:

1. Facilitate registration for the Temporary Protection Permit (ETP) by Venezuelans with irregular migration status, thereby conferring legal protection and access to health and other social services.[7]

2. Support communication campaigns organized by the Ministry of Health and Social Protection and territorial entities directed at refugees and migrants which cement the right to insurance, access to universal, equal, and timely healthcare free of stigma and discrimination. These may include informational materials displayed and/or distributed at border crossings, as well as more detailed materials available at health centers, community centers, and other humanitarian arenas. These materials should clearly delineate the rights afforded to migrants and refugees, as well as contact information for organizations which can provide support. Accommodations should be made to aid refugees and migrants with low literacy or education in understanding these rights.

3. Support local and national humanitarian programs to provide HIV care, including community organizations, so they may provide services to refugees and migrants with irregular migration status until they can access care through the national health system.
   Capacitate governmental organizations, humanitarian organizations, and civil society to meet the needs of refugees and migrants accessing services. Capacity building can leverage the expertise of interorganizational alliances, develop processes for training with a focus on cultural sensitivity and gender-specific needs to guarantee the human rights of refugees and migrants.
4. Involve host communities in community services for refugees and migrants, including activities focused on integration through art in which individuals may reflect on themes such as migration. Risks associated with migration may be reduced through the promotion of clear and accurate information regarding human rights and available services for migrants and refugees.
5. Support collaboration of local and national governments and human rights organizations to assure compliance with laws, policies, and programs that protect and serve migrants and refugees, as well as persons living with HIV.
6. Create opportunities for migrants and refugees to join the labor force, including validation of the education titles, which allow migrants and refugees to enter the work force based on prior training, and subsequently provide access to health insurance.
7. Integrate social protection measures into the migration response with a focus on food insecurity and labor rights and their role as determinants of health. These measures should include the provision of guaranteed basic food supply.
8. Ensure programs maintain ongoing communication with Venezuelans using their services to receive feedback regarding the humanitarian supports; monitor updates regarding migration, educational, or labor status; and establish ongoing psychosocial support.

Appendix materials

Tables displaying demographic and health indicators among Venezuelan migrants and refugees in each city, Bogotá, Soacha, Barranquilla, and Soledad

Appendix Table 1 Demographic characteristics of Venezuelan migrants and refugees in each city

	City									
	Bogotá (n=1605)		Soacha (n=1501)		Barranquilla (n=1716)		Soledad (n=1398)		Total (n=6221)	
	n	%	n	%	n	%	n	%	n	%
Seed (ref: recruit)	6	0.4	4	0.3	6	0.3	5	0.4	21	0.3
Gender*										
Man	569	35.5	648	43.3	488	28.4	419	30	2124	34.2
Woman	1022	63.7	839	56	1218	71	966	69.1	4045	65.1
Transgender/Nonbinary	13	0.8	11	0.7	10	0.6	13	0.9	47	0.8
Education*										
No formal education	29	1.8	29	1.9	45	2.6	24	1.7	127	2
Primary	225	14	269	17.9	502	29.3	259	18.5	1255	20.2
Secondary	890	55.5	806	53.8	897	52.3	836	59.8	3429	55.2
Higher	446	27.8	376	25.1	264	15.4	266	19	1352	21.7
Other	14	0.9	19	1.3	8	0.5	13	0.9	54	0.9
High Literacy (ref: low literacy)*	1493	93.8	1312	88.3	1087	65.6	1112	80.6	5004	81.9
Employment*										
Formal full-time	159	9.9	176	11.7	52	3	78	5.6	465	7.5
Formal part-time	106	6.6	104	6.9	29	1.7	45	3.2	284	4.6
Informal/under the table	613	38.2	636	42.4	1060	61.8	718	51.4	3027	48.7
Full-time student	5	0.3	6	0.4	13	0.8	4	0.3	28	0.5
Retired	15	0.9	5	0.3	8	0.5	7	0.5	35	0.6
Unemployed	665	41.5	548	36.5	538	31.4	532	38.1	2283	36.7
Other	41	2.6	25	1.7	16	0.9	14	1	96	1.5
Income*										
Less than min wage (908,526 pesos)	1081	67.4	1135	75.6	1455	84.8	1233	88.2	4904	78.9
Min wage (908,526 pesos)	373	23.3	311	20.7	180	10.5	124	8.9	988	15.9
Between 908,526 - 1,817,052 pesos	133	8.3	48	3.2	72	4.2	35	2.5	288	4.6
More than 1,817,052 pesos	17	1.1	7	0.5	9	0.5	6	0.4	39	0.6
Relationship Status*										
Never married	574	35.8	670	44.6	573	33.4	470	33.6	2287	36.8
Married or cohabitating	757	47.2	648	43.2	845	49.2	740	52.9	2990	48.1
Divorced or separated	236	14.7	149	9.9	267	15.6	160	11.4	812	13.1
Widowed	37	2.3	34	2.3	31	1.8	28	2	130	2.1
Current Residence*										
Home/apartment/room I rent or own	1510	94.1	1380	92.1	1473	85.8	1254	89.7	5617	90.3
Staying at someone else's place	62	3.9	100	6.7	128	7.5	123	8.8	413	6.6
Camp	5	0.3	2	0.1	35	2	2	0.1	44	0.7
Other (shelter, abandoned building, car, other)	18	1.1	10	0.7	61	3.6	12	0.9	101	1.6
No current residence	9	0.6	7	0.5	19	1.1	7	0.5	42	0.7
Number of Unsafe Sleep Nights*										
None	1357	84.6	1286	85.7	1540	89.7	1192	85.3	5375	86.4
1-10	168	10.5	149	9.9	100	5.8	147	10.5	564	9.1
11-30	49	3.1	36	2.4	37	2.2	39	2.8	161	2.6
31-60	16	1	12	0.8	10	0.6	8	0.6	46	0.7
More than 60	14	0.9	18	1.2	29	1.7	12	0.9	73	1.2
Food security*										
Secure	134	8.3	145	9.7	89	5.2	46	3.3	414	6.7
Low food security	450	28.0	426	28.4	283	16.5	248	17.7	1407	22.6
Very low food security	1021	63.6	930	62	1344	78.3	1104	79	4399	70.7

Notes: n: *p<0.05; **p<0.10; ref: reference group not displayed; proportions are sample estimates

Appendix Table 2 Displacement history and experiences among Venezuelan migrants and refugees by each city

	City									
	Bogotá (n=1605)		Soacha (n=1501)		Barranquilla (n=1716)		Soledad (n=1398)		Total (n=6221)	
	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %
Migration Status*										
Regular	568	35.4	470	31.3	428	24.9	312	22.3	1778	28.6
Irregular	1037	64.6	1031	68.7	1288	75.1	1086	77.7	4442	71.4
Venezuelan Citizen (ref: no)	1605	100.0	1501	100.0	1716	100.0	1398	100.0	6220	100.0
Colombian Citizen (ref: no)*	28	1.7	31	2.1	44	2.6	15	1.1	118	1.9
Other Citizenship (ref: no)	2	0.1	5	0.3	2	0.1	0	0.0	9	0.1
Migration Year*										
2015	15	0.9	12	0.8	59	3.4	55	3.9	141	2.3
2016	83	5.2	62	4.1	197	11.5	140	10.0	482	7.7
2017	218	13.6	198	13.2	412	24.0	298	21.3	1126	18.1
2018	391	24.4	390	26.0	475	27.7	442	31.6	1698	27.3
2019	448	27.9	437	29.1	403	23.5	313	22.4	1601	25.7
2020	232	14.5	212	14.1	94	5.5	78	5.6	616	9.9
2021	218	13.6	190	12.7	76	4.4	72	5.2	556	8.9
Arrival Method*										
Formal border crossing	723	45.0	624	41.6	409	23.8	322	23.0	2078	33.4
Trocha or informal border crossing	866	54.0	852	56.8	1296	75.5	1061	75.9	4075	65.5
Other	16	1.0	25	1.7	11	0.6	15	1.1	67	1.1
Migration Motive*										
Job insecurity	452	28.2	425	28.3	619	36.1	245	17.5	1741	28.0
Food insecurity	748	46.6	710	47.3	930	54.2	886	63.4	3274	52.6
Violence	38	2.4	35	2.3	21	1.2	35	2.5	129	2.1
Lack of educational opportunities	52	3.2	77	5.1	23	1.3	45	3.2	197	3.2
Lack of access to medicine/ medical care (excluding prenatal & obstetric care)	66	4.1	62	4.1	34	2.0	50	3.6	212	3.4
To give birth/access prenatal care in a reputable hospital	6	0.4	11	0.7	4	0.2	7	0.5	28	0.5
To give birth/obtain Colombian citizenship for child	3	0.2	2	0.1	1	0.1	3	0.2	9	0.1
To join other family members who had already left Venezuela	158	9.8	120	8.0	50	2.9	94	6.7	422	6.8
Other	82	5.1	59	3.9	34	2.0	33	2.4	208	3.3
For what condition(s) were you seeking medicine/medical care? (n=212)										
General primary care	52	76.5	45	68.2	19	54.3	37	71.2	153	69.2
Diabetes	7	10.4	7	10.6	5	14.7	4	8.0	23	10.6
Cancer	5	7.6	2	3.0	3	8.8	2	4.0	12	5.6
Heart disease	7	10.6	3	4.6	3	8.8	4	8.0	17	7.9
High blood pressure	14	21.2	13	20.0	7	20.6	9	18.0	43	20.0
Hypercholesterolemia**	6	9.1	5	7.7	6	17.6	11	22.0	28	13.0
HIV	4	6.1	3	4.6	3	8.8	3	6.0	13	6.0
Mental health	6	9.1	3	4.6	2	5.9	5	10.0	16	7.4
Other	21	31.8	17	25.8	7	20.6	7	14.0	52	24.1
With whom did you travel to Colombia?										
Alone*	646	40.3	649	43.3	679	39.6	538	38.5	2512	40.4
With family*	836	52.2	724	48.3	911	53.1	694	49.6	3165	50.9
With extended family*	241	15.1	232	15.5	158	9.2	245	17.5	876	14.1
With friends*	296	18.5	263	17.6	158	9.2	147	10.5	864	13.9
With a group I do not know well*	214	13.4	214	14.3	100	5.8	131	9.4	659	10.6

Appendix Table 2 Displacement history and experiences among Venezuelan migrants and refugees by each city, continued

	City									
	Bogotá (n=1605)		Soacha (n=1501)		Barranquilla (n=1716)		Soledad (n=1398)		Total (n=6221)	
	n	Col %	n	Col %	n	Col %	n	Col %	n	Col %
All family members migrated at the same time (ref: no, n=3165)	402	47.9	380	51.9	671	72.1	461	66.0	1914	59.8
Family members joined later (ref: no)*	432	36.0	545	49.0	635	59.5	456	48.6	2068	47.9
Plan to remain in Site (ref: no)*	1521	94.8	1422	94.7	1659	96.7	1366	97.8	5968	96.0
Time remain in Site*										
Less than 1 month	4	4.4	2	2.4	4	5.8	5	14.7	15	5.4
1 month - 6 months	14	15.6	16	19.3	23	33.3	8	23.5	61	22.1
7 months-1 year	25	27.8	22	26.5	5	7.2	7	20.6	59	21.4
More than 1 year	47	52.2	43	51.8	37	53.6	14	41.2	141	51.1
Destination city (among those with plans to move)*										
Bogota	0	0.0	37	45.7	5	8.6	2	6.5	89	34.6
Barranquilla	45	51.7	2	2.5	0	0.0	13	41.9	32	12.5
Nariño	35	40.2	29	35.8	32	55.2	13	41.9	109	42.4
Medellín, Cali, Cartagena, Cúcuta, Bucaramanga, Other	7	8.0	13	16.0	4	6.9	3	9.7	27	10.5
Detained while in Colombia (ref: no)*	125	7.8	82	5.5	105	6.1	73	5.2	385	6.2
Documentation Type										
PEP*	404	25.2	390	26.0	339	19.8	257	18.4	1390	22.4
ETP*	209	13.0	183	12.2	127	7.4	155	11.1	674	10.8
Type M Visa	6	0.4	8	0.5	6	0.3	6	0.4	26	0.4
Refugee Status*	32	2.0	37	2.5	11	0.6	16	1.1	96	1.5
Salvoconducto*	39	2.4	34	2.3	6	0.3	6	0.4	85	1.4
Permitted Stay Stamp*	290	18.1	248	16.5	78	4.5	72	5.2	688	11.1
No Registration in Colombia*	470	29.3	319	21.3	270	15.7	497	35.6	1556	25.0
Before ETP, what documentation did you have? (n=674)										
PEP	97	45.8	91	48.9	54	41.5	71	45.2	313	45.7
Type M Visa	5	2.4	5	2.7	3	2.3	1	0.6	14	2.0
Refugee Status	3	7.3	1	2.9	0	0.0	0	0.0	4	4.4
Salvoconducto	10	4.7	7	3.8	3	2.3	4	2.5	24	3.5
Permitted Stay Stamp	63	29.9	49	26.3	17	13.3	31	19.7	160	23.5
None	55	26.1	40	21.6	29	22.5	44	28.0	168	24.6
Has Tarjeta de Movilidad Fronteriza*										
No	1322	82.4	1202	80.1	1673	97.5	1345	96.3	5542	89.1
Yes	160	10.0	133	8.9	33	1.9	34	2.4	360	5.8
Yes, but I have stayed in country longer than 7 days or it has expired	123	7.7	166	11.1	10	0.6	17	1.2	316	5.1

Notes: n: *p<0.05; **p<0.10; ref: reference group not displayed; proportions are sample estimates

Appendix Table 3 Health characteristics and access to services among migrants and refugees in each city

	City									
	Bogotá (n=1605)		Soacha (n=1501)		Barranquilla (n=1716)		Soledad (n=1398)		Total (n=6221)	
	n	%	n	%	n	%	n	%	n	%
General health status by self-report* (n=6,218)										
Excellent	289	18.0	260	17.3	448	26.1	218	15.6	1215	19.5
Very good	221	13.8	235	15.7	181	10.5	229	16.4	866	13.9
Good	689	42.9	615	41.0	801	46.7	563	40.3	2668	42.9
Fair	349	21.7	350	23.3	262	15.3	350	25.1	1311	21.1
Poor	57	3.6	41	2.7	24	1.4	36	2.6	158	2.5
BMI*										
Underweight (<18.5)	91	5.7	86	5.7	67	3.9	50	3.6	294	4.7
Healthy (18.5-24.9)	743	46.3	638	42.5	698	40.7	550	39.4	2629	42.3
Overweight (25.0-29.9)	469	29.2	455	30.3	562	32.8	432	30.9	1918	30.8
Obese (>=30)	302	18.8	322	21.5	389	22.7	365	26.1	1378	22.2
Moderate or severe anxiety and/or depression (PHQ4>=6)*	283	17.6	256	17.1	402	23.4	432	30.9	1373	22.1
Hazardous use or active alcohol use disorders (AUDITC>4 for male and AUDITC>3 female, n=6,215)*	282	17.6	363	24.2	408	23.8	322	23.0	1375	22.1
Ever used drugs* (ref: no)	67	4.2	81	5.4	54	3.1	35	2.5	237	3.8
Used drugs in past 12 months (ref: no; n=237)	5	6.3	4	4.5	5	8.3	3	7.5	17	6.4
Ever Injected Drugs * (ref: no)	42	2.6	43	2.9	28	1.6	17	1.2	130	2.1
Injected in past 12 months (among lifetime)	6	14.0	2	4.7	6	18.2	4	22.2	18	13.1
Ever had blood transfusion in Venezuela* (ref: no)	158	9.9	149	9.9	134	7.8	118	8.4	559	9.0
Ever had surgery in Venezuela*	677	42.2	613	40.8	497	29.0	608	43.5	2395	38.5
Ever tested for TB*	64	4.0	70	4.7	37	2.2	39	2.8	210	3.4
Ever diagnosed with TB (n=210, among tested)	4	6.2	8	10.8	5	12.2	5	12.5	22	10.0
Ever treated for TB (among diagnosed; n=22)	4	100.0	7	87.5	4	80.0	4	80.0	19	86.4
COVID-19										
Believe Had COVID-19 based on symptoms* (ref: no)	416	25.9	396	26.4	316	18.4	474	33.9	1602	25.8
Ever tested for COVID-19* (among suspected; n=1602)	123	29.5	107	27.0	77	24.3	96	20.2	403	25.1
Result of COVID-19 test (among tested; n=403)										
Negative	62	48.4	56	50.0	48	59.3	49	49.0	215	51.1
Positive	58	45.3	52	46.4	30	37.0	49	49.0	189	44.9
Don't know	8	6.2	4	3.6	3	3.7	2	2.0	17	4.0
Vaccinated against COVID-19* (ref: no; n=6,217)	602	37.5	625	41.6	911	53.1	856	61.3	2994	48.2
Received second dose of COVID-19 vaccine* (among vaccinated; n=2994)										
No	311	51.6	308	49.2	371	40.7	340	39.7	1330	44.4
Yes	176	29.2	210	33.5	385	42.3	310	36.2	1081	36.1
N/A	116	19.2	108	17.3	155	17.0	206	24.1	585	19.5
Interested in COVID-19 vaccine* (ref: no; among unvaccinated; n=3288)	784	77.1	748	85.0	676	81.1	452	81.1	2660	80.9

Notes: n: *p<0.05; **p<0.10; ref: reference group not displayed; proportions are sample estimates

Appendix Table 4 Reproductive health and access to prenatal services among Venezuelan women in each city

	City									
	Bogotá (n=1605)		Soacha (n=1501)		Barranquilla (n=1716)		Soledad (n=1398)		Total (n=6221)	
	n	%	n	%	n	%	n	%	n	%
Ever Sexually Active (ref: no, n=4046)	994	97.3	819	97.6	1185	97.3	939	97.2	3937	97.3
Using Contraception (ref: no, n=3937)*	563	57.5	426	52.6	562	47.6	494	53.6	2045	52.5
Contraception Method*										
Pills	44	7.3	51	11.0	98	15.2	88	16.2	281	12.5
Patch	8	1.3	0	0.0	0	0.0	0	0.0	8	0.4
Shot	27	4.5	17	3.7	56	8.7	40	7.4	140	6.2
Vaginal ring	0	0.0	1	0.2	0	0.0	1	0.2	2	0.1
Hormonal IUD	18	3.0	9	1.9	17	2.6	30	5.5	74	3.3
Copper IUD	50	8.3	41	8.8	46	7.1	30	5.5	167	7.4
Implant	147	24.5	129	27.7	131	20.3	74	13.7	481	21.3
Condoms or other physical barrier methods	26	4.3	16	3.4	55	8.5	35	6.5	132	5.9
Breastfeeding as birth control	6	1.0	3	0.6	12	1.9	5	0.9	26	1.2
Vasectomy or tubal ligation	231	38.4	187	40.2	219	33.9	223	41.1	860	38.2
Other	44	7.3	11	2.4	12	1.9	16	3.0	83	3.7
For what reasons are you not using contraception? (n=1932, select all)										
Trying to conceive*	48	10.9	52	13.1	33	5.1	55	12.3	188	9.7
Do not know how to access*	116	26.9	94	23.8	66	10.2	46	10.3	322	16.8
Cannot afford*	88	20.5	61	15.4	59	9.2	38	8.6	246	12.9
Concerned about side effects*	130	30.4	93	23.6	61	9.5	76	17.2	360	18.9
Partner against contraception*	83	19.5	63	16.0	48	7.5	44	10.0	238	12.5
Religious beliefs*	91	21.5	91	23.2	45	7.0	59	13.5	286	15.1
Menopause	76	17.9	82	20.9	116	18.2	83	19.1	357	18.9
Other*	61	14.5	76	19.3	124	19.6	98	22.7	359	19.1
Pregnant since arriving in Colombia (n=3937)**	285	27.9	216	25.7	377	31.0	278	28.8	1156	28.6
Currently pregnant (n=1156)*	53	18.2	29	13.4	40	10.4	28	9.9	150	12.8
Number of births in Colombia (n=1156)*										
0	64	22.2	43	19.9	45	11.8	42	15.1	194	16.7
1	206	71.5	154	71.3	280	73.3	202	72.7	842	72.3
2	10	3.5	14	6.5	48	12.6	24	8.6	96	8.2
3	4	1.4	4	1.9	6	1.6	7	2.5	21	1.8
4 or more	4	1.4	1	0.5	3	0.8	3	1.1	11	0.9
Received Prenatal Care (ref: no, n=970)*	155	68.9	133	76.9	304	89.1	219	92.4	811	83.1
Number of Prenatal Visits (n=811)*										
0	67	23.3	48	22.2	48	12.6	38	13.7	201	17.3
1	19	6.6	17	7.9	18	4.7	15	5.4	69	5.9
2	37	12.9	16	7.4	24	6.3	17	6.1	94	8.1
3	39	13.6	36	16.7	55	14.4	34	12.3	164	14.1
4 or more	125	43.6	99	45.8	236	61.9	173	62.5	633	54.5

Notes: n: denominator for subgroup; *p<0.05; p<0.10; ref: reference group not displayed; proportions are sample estimates

Appendix Table 5 Sexual behaviors and behavioral risks among migrants and refugees, by city

	City									
	Bogotá (n=1605)		Soacha (n=1501)		Barranquilla (n=1716)		Soledad (n=1398)		Total (n=6221)	
	n	%	n	%	n	%	n	%	n	%
Ever Sexually Active (ref: no)	1555	96.9	1444	96.2	1674	97.6	1354	96.9	6027	96.9
Condom use at last sex (regardless of partner gender, excludes sex work) (ref: no)	498	32.0	488	33.8	400	23.9	341	25.2	1727	28.7
Man who has sex with men (among men, n=2146; ref: no)*	61	10.7	67	10.3	37	7.8	42	10.2	207	9.7
Ever paid for sex (ref: no)	25	1.6	15	1.0	19	1.1	23	1.6	82	1.3
Sex work	42	2.6	19	1.3	18	1.0	27	1.9	106	1.7
Sex Work (past 7 days) (ref: no)	17	1.1	10	0.7	4	0.2	15	1.1	46	0.7
Key Population (ref: no)	129	8.0	123	8.2	72	4.2	83	5.9	407	6.5
Partner's HIV Status (n=6027)										
HIV-negative	986	63.4	866	60.0	400	23.9	626	46.2	2878	47.8
HIV-positive	22	1.4	12	0.8	13	0.8	7	0.5	54	0.9
Unknown	547	35.2	566	39.2	1261	75.3	721	53.2	3095	51.4
Ever diagnosed with STI (ref: no)	47	3.0	47	3.2	65	3.8	32	2.3	191	3.1
Ever treated for an STI (Venezuela or Colombia) (ref: no, n=191)	33	80.5	32	74.4	48	81.4	21	70.0	134	77.5

Notes: n: denominator for subgroup; *p<0.05; p<0.10; ref: reference group not displayed; proportions are sample estimates

Appendix Table 6 HIV testing and prevention among Venezuelan migrants and refugees in each city

	City									
	Bogotá (n=1605)		Soacha (n=1501)		Barranquilla (n=1716)		Soledad (n=1398)		Total (n=6221)	
	n	%	n	%	n	%	n	%	n	%
Ever HIV test*										
No	665	41.4	649	43.2	962	56.1	648	46.4	2924	47.0
Yes	927	57.8	842	56.1	745	43.4	741	53.1	3255	52.3
Don't know	13	0.8	10	0.7	9	0.5	7	0.5	39	0.6
Time Since Last HIV Test (n=3255)*										
Within the past 1 yr.	204	22.0	200	23.7	159	21.2	133	17.9	696	21.3
More than 1 yr. ago and less than 5 yrs.	371	39.9	312	37.0	335	44.7	313	42.1	1331	40.8
More than 5 yrs. ago and less than 10 yrs.	185	19.9	185	21.9	164	21.9	197	26.5	731	22.4
More than 10 yrs. ago	159	17.1	133	15.8	87	11.6	95	12.8	474	14.5
Don't know	10	1.1	14	1.7	5	0.7	5	0.7	34	1.0
Country of HIV Test (n=3255)*										
Colombia	557	60.0	525	62.2	398	53.1	429	57.8	1909	58.5
Venezuela	356	38.3	311	36.8	349	46.6	310	41.8	1326	40.6
Peru	5	0.5	5	0.6	1	0.1	0	0.0	11	0.3
Brazil	0	0.0	0	0.0	0	0.0	1	0.1	1	0.0
Panama	1	0.1	0	0.0	0	0.0	0	0.0	1	0.0
Ecuador	5	0.5	3	0.4	0	0.0	0	0.0	8	0.2
Other	5	0.5	0	0.0	1	0.1	2	0.3	8	0.2
Results of HIV Test (n=3255)*										
HIV negative	909	98.1	841	99.8	729	97.5	731	98.5	3210	98.5
HIV positive	8	0.9	1	0.1	14	1.9	6	0.8	29	0.9
Indeterminate	0	0.0	0	0.0	1	0.1	0	0.0	1	0.0
Unknown	10	1.1	1	0.1	4	0.5	5	0.7	20	0.6
Used nPEP in Colombia (n=3255)										
No	901	97.9	828	98.3	726	98.8	723	98.2	3178	98.3
Yes	8	0.9	4	0.5	3	0.4	2	0.3	17	0.5
Don't know	11	1.2	10	1.2	6	0.8	11	1.5	38	1.2
Where did you obtain nPEP? (n=17, select all)										
ER	2	25.0	0	0.0	0	0.0	0	0.0	2	11.8
Hospital	2	25.0	2	50.0	2	66.7	1	50.0	7	41.2
Private clinic	1	12.5	0	0.0	0	0.0	0	0.0	1	5.9
Humanitarian organization	0	0.0	1	25.0	1	33.3	0	0.0	2	11.8
Community-based organization	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
From family	1	12.5	1	25.0	0	0.0	0	0.0	2	11.8
Other	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Used PrEP in Colombia (n=3255)*										
No	894	97.2	830	98.6	728	99.0	728	98.9	3180	98.4
Yes	5	0.5	4	0.5	2	0.3	3	0.4	14	0.4
Don't know	21	2.3	8	1.0	5	0.7	5	0.7	39	1.2
Where did you obtain PrEP? (n=14, select all)										
ER	1	20.0	0	0.0	1	50.0	1	33.3	3	23.1
Hospital	4	80.0	1	33.3	2	100.0	2	66.7	9	69.2
Private clinic	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Humanitarian organization	0	0.0	0	0.0	1	50.0	0	0.0	1	7.7
Community-based organization	0	0.0	1	33.3	0	0.0	0	0.0	1	7.7
From family	1	25.0	0	0.0	1	50.0	1	33.3	3	25.0
Other	1	25.0	1	33.3	0	0.0	0	0.0	2	16.7
Currently Taking PrEP (ref: no, n=14)	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Notes: n: denominator for subgroup; N: total study population; *p<0.05; **p<0.10; ref: reference group not displayed; proportions are sample estimates

Appendix Table 7 Experiences of violence and discrimination among migrants and refugees in each city

	City									
	Bogotá (n=1605)		Soacha (n=1501)		Barranquilla (n=1716)		Soledad (n=1398)		Total (n=6221)	
	n	%	n	%	n	%	n	%	n	%
Any experience of discrimination in Colombia* (ref: no)	842	52.5	736	49.0	620	36.1	693	49.6	2891	46.5
Discrimination due to Migration Status* (ref: no; n=2892)	770	91.6	665	90.4	588	94.5	648	93.5	2671	92.4
Psychological violence in Colombia (ref: no)*	158	9.8	136	9.1	88	5.1	71	5.1	453	7.3
Psychological violence perpetrated by (n=453, select all)										
Partner**	18	11.4	21	15.4	20	22.5	17	23	76	16.6
Family	8	5.1	8	5.9	5	5.6	6	8.2	27	5.9
Religious leader	5	3.2	3	2.2	3	3.4	2	2.7	13	2.9
Police*	28	17.7	22	16.2	4	4.5	4	5.6	58	12.7
Armed group**	21	13.4	25	18.4	4	4.5	7	9.7	57	12.6
NGO worker	4	2.5	4	2.9	2	2.2	1	1.4	11	2.4
Employer*	26	16.5	29	21.3	8	9	6	8.3	69	15.2
Stranger*	122	77.2	103	75.7	54	60.7	46	63.9	325	71.4
Sex work client	7	4.4	2	1.5	1	1.1	1	1.4	11	2.4
Other	11	7	7	5.1	7	7.9	4	5.6	29	6.4
Physically hurt in Colombia* (ref: no)	143	8.9	137	9.1	82	4.8	46	3.3	408	6.6
Physical violence perpetrated by (n=408, select all)										
Partner**	32	22.2	17	12.4	24	29.3	11	23.4	84	20.5
Family	9	6.3	11	8	8	9.8	1	2.1	29	7.1
Religious leader	2	1.4	4	2.9	1	1.2	1	2.1	8	2
Police**	16	11.2	18	13.1	2	2.4	4	8.5	40	9.8
Armed group*	15	10.5	27	19.7	3	3.7	5	10.6	50	12.2
NGO worker	2	1.4	2	1.5	0	0	1	2.1	5	1.2
Employer	12	8.4	8	5.8	4	4.9	2	4.3	26	6.4
Stranger*	93	65	99	72.3	43	52.4	29	61.7	264	64.5
Sex work client	3	2.1	0	0	0	0	1	2.2	4	1
Other*	4	2.8	2	1.5	5	6.1	4	8.7	15	3.7
Forced sex in Colombia (ref: no)*	25	1.6	14	0.9	7	0.4	12	0.9	58	0.9
Sexual violence perpetrated by: (n=58, select all)										
Partner	7	28	2	14.3	3	42.9	5	41.7	17	29.3
Family*	1	4	0	0	2	28.6	0	0	3	5.2
Religious leader	0	0	0	0	0	0	0	0	0	0
Police	2	8	0	0	0	0	0	0	2	3.4
Armed fringe group	0	0	0	0	0	0	1	9.1	1	1.8
NGO worker	1	4	0	0	0	0	0	0	1	1.8
Employer	4	16	2	14.3	1	14.3	0	0	7	12.3
Stranger	16	64	10	71.4	3	42.9	5	45.5	34	59.6
Sex work client	4	16	0	0	0	0	0	0	4	7
Other	3	12	0	0	0	0	2	18.2	5	8.8
Sexual exploitation for resources	34	2.1	21	1.4	24	1.4	20	1.4	99	1.6
Sexual exploitation perpetrated by (n=99, select all)										
Partner	9	25.7	1	4.8	7	25	2	10.5	19	18.4
Family	1	2.9	0	0	2	7.4	0	0	3	2.9
Religious leader	1	2.9	0	0	0	0	1	5.3	2	2
Police	1	2.9	0	0	1	3.8	0	0	2	2
Armed fringe group	1	2.9	0	0	0	0	0	0	1	1
NGO worker	0	0	0	0	0	0	0	0	0	0
Employer	5	14.7	7	33.3	4	15.4	0	0	16	16
Stranger	24	70.6	15	71.4	13	50	10	52.6	62	62
Sex work client	5	14.7	2	9.5	3	11.5	9	47.4	19	19
Other	4	11.8	1	4.8	1	3.8	0	0	6	6

Appendix Table 7 Experiences of violence and discrimination among migrants and refugees in each city. continued

	City									
	Bogotá (n=1605)		Soacha (n=1501)		Barranquilla (n=1716)		Soledad (n=1398)		Total (n=6221)	
	n	%	n	%	n	%	n	%	n	%
Lifetime violence victimization (ref: no)*	244	15.2	218	14.5	154	9	110	7.9	726	11.7
Psychological violence last 12 months* (ref: no)	62	3.9	73	4.9	36	2.1	34	2.4	205	3.3
Physically hurt last 12 months* (ref: no)	54	3.4	74	4.9	29	1.7	22	1.6	179	2.9
Forced sex last 12 months (ref: no)	10	0.6	3	0.2	4	0.2	3	0.2	20	0.3
Sexual exploitation for resources last 12 months	13	0.8	9	0.6	5	0.3	5	0.4	32	0.5
Any recent victimization (past 12 months; ref: no)*	106	6.6	116	7.7	57	3.3	48	3.4	327	5.3

Notes: n: denominator for subgroup; N: total study population; *p<0.05; p<0.10; ref: reference group not displayed; proportions are sample estimates

Appendix Table 8 Utilization of humanitarian services within each city

	City									
	Bogotá (n=1605)		Soacha (n=1501)		Barranquilla (n=1716)		Soledad (n=1398)		Total (n=6221)	
	n	%	n	%	n	%	n	%	n	%
Greatest challenge in Colombia*										
Finances	824	51.3	729	48.6	1036	60.4	777	55.7	3366	54.1
Housing	298	18.6	266	17.7	271	15.8	213	15.3	1048	16.9
Food	303	18.9	311	20.7	277	16.1	273	19.6	1164	18.7
Security	31	1.9	35	2.3	16	0.9	15	1.1	97	1.6
Education	42	2.6	49	3.3	48	2.8	44	3.2	183	2.9
Other	44	2.7	48	3.2	27	1.6	33	2.4	152	2.4
No challenges in Colombia	63	3.9	63	4.2	41	2.4	40	2.9	207	3.3
Used humanitarian resources (ref: no)	288	17.9	311	20.7	348	20.3	256	18.4	1203	19.4
Type of humanitarian services utilized (n=1203, select all)										
Legal services and/or regularization*	79	26.6	81	25.5	46	12.8	29	11.2	235	19
Support accessing national health system*	89	30.1	133	42	120	33.6	71	27.4	413	33.6
Healthcare*	72	24.3	90	28.4	66	18.5	86	33.2	314	25.5
Support for gender based violence*	15	5.1	18	5.7	6	1.7	7	2.7	46	3.7
Psychosocial support*	36	12.2	35	11	20	5.6	23	8.9	114	9.3
Housing assistance*	48	16.3	60	18.9	28	7.9	24	9.3	160	13.1
Food assistance*	187	63.8	214	67.7	203	57.3	140	54.1	744	60.9
Security*	27	9.2	14	4.5	14	4	8	3.1	63	5.2
Organization that provided these services (n=1203, select all)										
UNHCR*	87	30	109	34.8	27	7.7	17	6.6	240	19.8
AIDS Healthcare Foundation	11	3.8	4	1.3	6	1.7	7	2.7	28	2.3
Red Somos*	64	22.1	105	33.5	22	6.3	20	7.7	211	17.4
ProFamilia*	41	14.1	26	8.3	17	4.8	27	10.4	111	9.1
Red Cross*	38	13.1	108	34.5	89	25.3	50	19.3	285	23.5
FUVADIS*	6	2.1	0	0	24	6.8	12	4.6	42	3.5
Venezolanos en Barranquilla*	4	1.4	0	0	13	3.7	12	4.6	29	2.4
Venezolanos Unidos en Barranquilla	3	1	0	0	7	2	4	1.5	14	1.2
De Pana que Si*	3	1	0	0	33	9.4	14	5.4	50	4.1
Caribe Afirmativo	3	1	0	0	3	0.9	1	0.4	7	0.6
Fundación Eudes*	13	4.5	7	2.2	3	0.9	1	0.4	24	2
Fundación Censurados	3	1	2	0.6	2	0.6	1	0.4	8	0.7
Americares*	3	1	1	0.3	57	16.3	86	33.2	147	12.2
International Rescue Committee*	21	7.3	60	19.2	1	0.3	0	0	82	6.8
Doctors without Borders	9	3.1	8	2.6	4	1.1	2	0.8	23	1.9
Aid for AIDS**	4	1.4	1	0.3	10	2.9	5	1.9	20	1.7
Other*	115	39.7	90	28.8	174	49.9	104	40.2	483	39.9

Notes: n: denominator for subgroup; N: total study population; *p<0.05; **p<0.10; ref: reference group not displayed; proportions are sample estimates

Appendix RDS network graphs by site

Figure 17 Bogotá and Soacha RDS network graph, by city

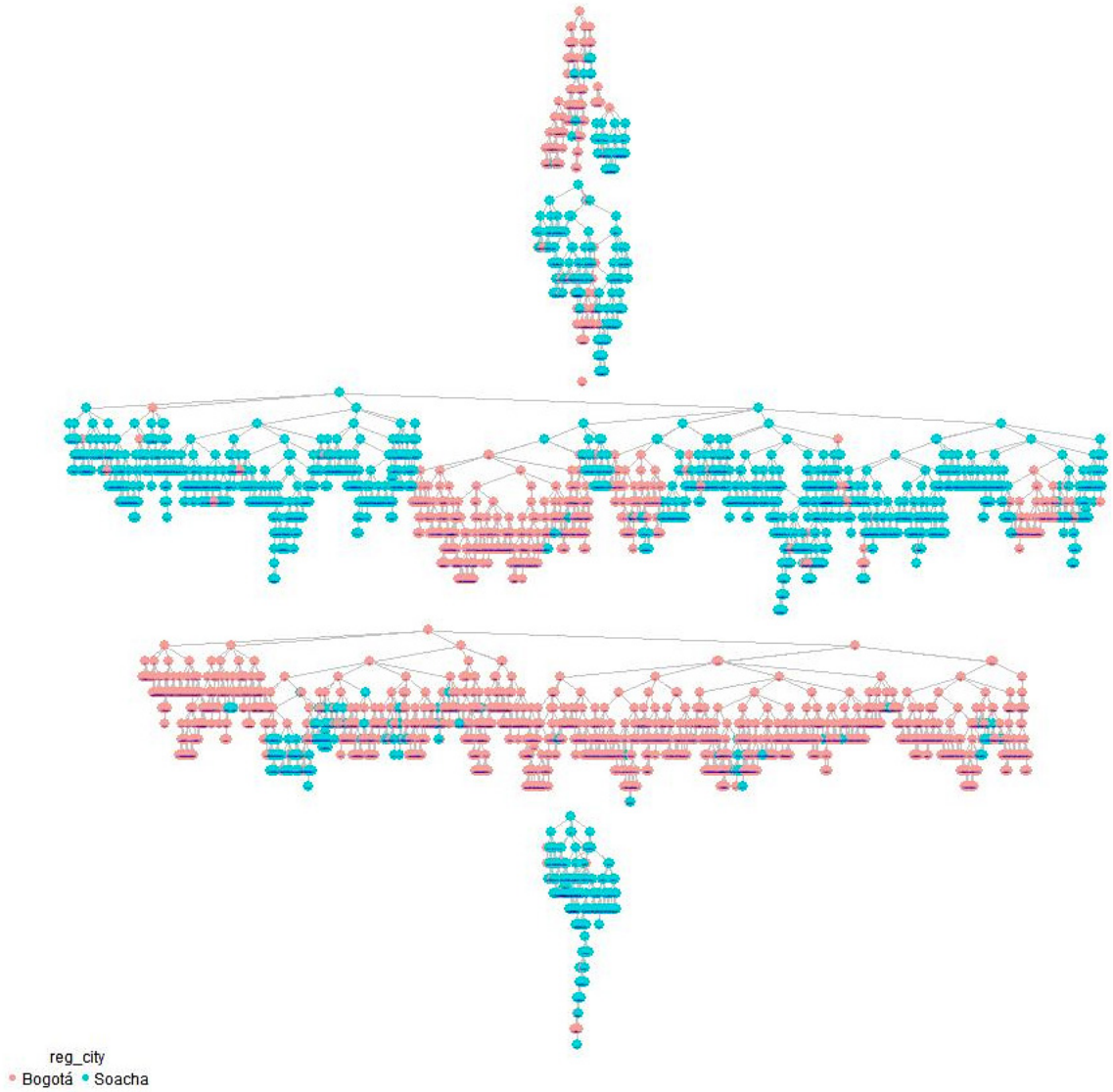
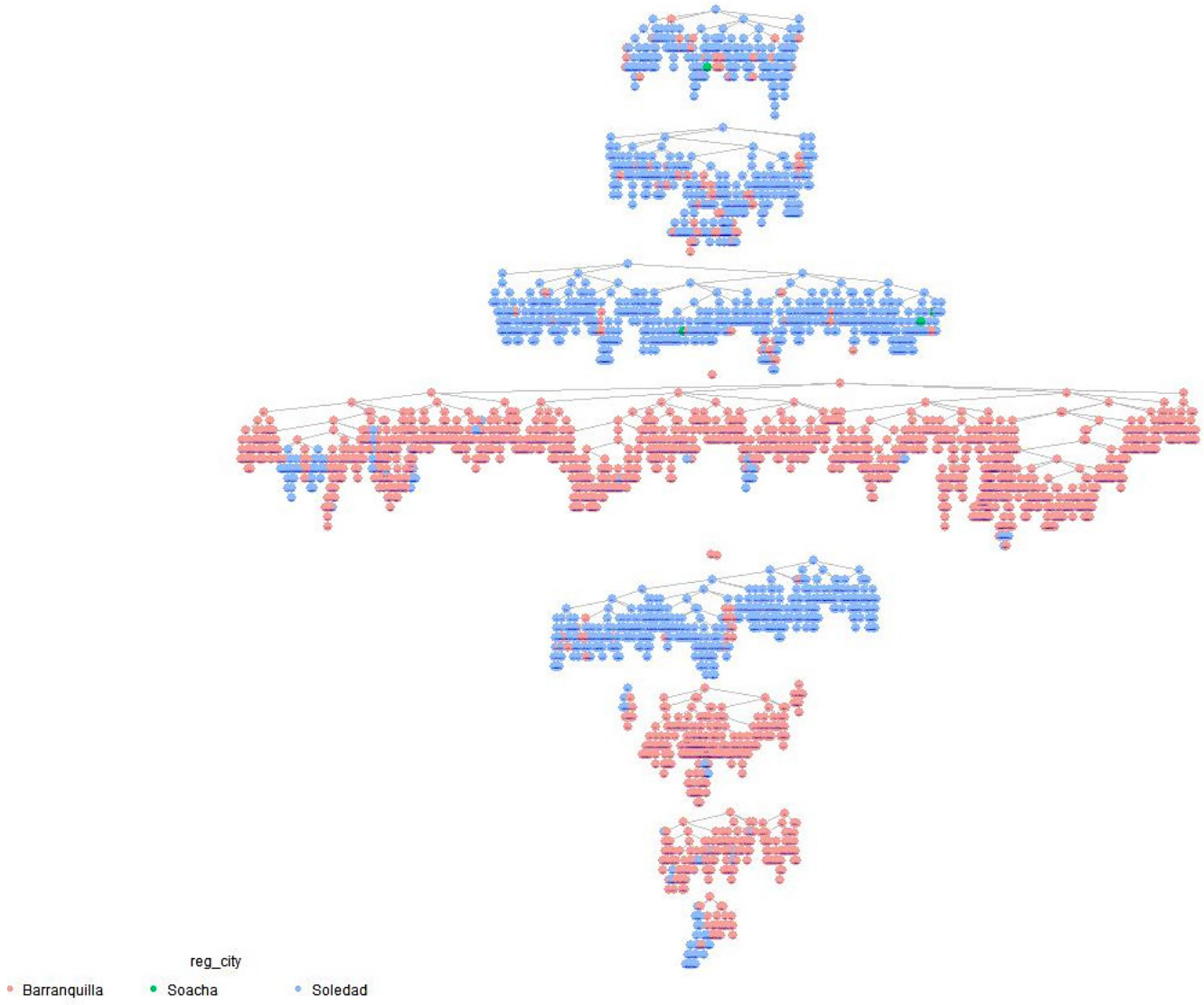


Figure 18 Barranquilla and Soledad RDS network graph



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