

The International Sexual Health And Reproductive Health Survey (I-SHARE-1): A Multi-Country Analysis of Adults from 30 Countries Prior to and During the Initial COVID-19 Wave

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Abstract

Background: The COVID-19 pandemic forced billions of people to shelter in place, altering social and sexual relationships worldwide. In many settings, COVID-19 threatened already precarious health services. However, there is limited evidence to date about changes to sexual and reproductive health (SRH) during the initial wave of COVID-19 disease. To address this

gap, our team organized a multi-country, cross-sectional online survey as part of a global consortium.

Methods: Consortium research teams conducted online surveys in 30 countries. Sampling methods included convenience, online panels, and population-representative. Primary outcomes included sexual behaviors, partner violence, and SRH service utilization, and we compared three months prior to and three months after policy measures to mitigate COVID-19. We used established indicators and analyses pre-specified in our protocol. We conducted meta-analyses for primary outcomes and graded the certainty of the evidence using Cochrane methods. Descriptive analyses included 22,724 individuals in 25 countries. Five additional countries with sample sizes <200 were included in descriptive meta-analyses.

Results: Respondents were mean age 34 years; most identified as women (15160; 66.7%), cis-gender (19432; 86.6%) and heterosexual (16592; 77.9%). Among 4546 respondents with casual partners, condom use stayed the same for 3374 (74.4%) people and 640 (14.1%) people reported a decline. Fewer respondents reported physical or sexual partner violence during COVID-19 measures (1063/15144, 7.0%) compared to the period before COVID-19 measures (1469/15887, 9.3%). COVID-19 measures impeded access to condoms (933/10790, 8.7%), contraceptives (610/8175, 7.5%), and HIV/STI testing (750/1965, 30.7%). Pooled estimates from meta-analysis indicate during COVID-19 measures, 32.3% (95% CI 23.9-42.1) of people needing HIV/STI testing had hindered access, 4.4% (95% CI 3.4-5.4) experienced partner violence, and 5.8% (95% CI 5.4-8.2) decreased casual partner condom use (moderate certainty of evidence for each outcome). Meta-analysis findings were robust in sensitivity analyses that examined country income level, sample size, and sampling strategy.

Conclusion: Open science methods are feasible to organize research studies as part of emergency responses. The initial COVID-19 wave impacted SRH behaviors and access to services across diverse global settings.

Introduction

The COVID-19 pandemic has profoundly disrupted social relationships and health services that are fundamental to sexual and reproductive health.¹ The initial wave of SARS-CoV-2 infections (COVID-19 disease) forced billions of people worldwide to shelter in place, transforming social and sexual relationships. Entrenched gender inequalities that existed prior to COVID-19 may have been exacerbated during the emergency response,² placing people at increased risk for intimate partner violence (IPV). At the same time, a wide range of essential sexual and reproductive health services were stopped or re-oriented because of the pandemic.³ These trends suggest an important question: How have COVID-19 measures impacted sexual and reproductive health outcomes in different settings? Here we define COVID-19 mitigation measures as responses (e.g., non-pharmacological interventions) to slow or halt the spread of the virus within a population, including shelter in place, test and trace, quarantine, and travel restrictions.⁴

Although cities, nations, regions, and the entire world have moved together in altering social lives during the COVID-19 pandemic, there has been substantial variation in COVID-19 disease incidence and responses at the national level. Some countries have imposed less stringent lockdown measures, allowing greater movement between and within cities, while others have instituted more unyielding measures.⁵ Several countries already had infrastructure in place for decentralized sexual and reproductive health services (e.g., HIV self-testing, telemedicine abortion) which compensated for pandemic-related closures of facility-based services during COVID-19.⁶ However, in most countries, COVID-19 further undermined already fragile health infrastructure and health service provision.⁷

Despite the importance of sexual and reproductive health during the initial wave of the COVID-19 pandemic, research in this area is limited.^{8,9} Modeling and other research studies have noted the lack of detailed information about sexual and reproductive health during this period.^{10,11} The lack of standardized survey instruments makes cross-country comparisons more difficult. Most of the sexual and reproductive health research on initial COVID-19 waves has focused on high-income countries,⁸ rather than examining broader regional and global trends. Few studies to date have included low and middle-income countries.⁹ At the same time, the global pandemic has accelerated open science and spurred new forms of collaboration.

Our team organized a cross-sectional multi-country study called “International Sexual Health And REproductive Health during COVID-19” (I-SHARE-1).¹² The I-SHARE project convened a group of sexual and reproductive health researchers to administer a common survey instrument in respective countries as an online survey.¹³ Any research team could join and teams were identified through an earlier UNDP/UNFPA/UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP) crowdsourcing open call¹² and a related open call through affiliates of the Academic Network for Sexual and Reproductive Health and Rights (ANSER). The purpose of this multi-country study was to better understand sexual and reproductive health prior to and during the first wave of the COVID-19 pandemic in respective countries.

Methods

A more detailed description of survey methods can be found in the protocol.¹² The primary aims of the study were to examine changes in sexual behaviors (sex frequency and condomless sex), intimate partner violence, and utilization of sexual and reproductive health services during COVID-19 measures using a cross-sectional survey. Secondary study aims were to examine changes in HIV/STI testing, harmful cultural practices (e.g., female genital mutilation/cutting and child marriage), mental health, and food security. Each country adjusted the questionnaire based on country-level priorities, opportunities, and needs. The consortium recommended a sample size of at least 200, but precise sample size calculations were made by each country's research team. We used an open science approach in organizing this study. This approach included allowing any interested research team to join the project, facilitating collaboration between sites, leveraging open-access software, and prioritizing open access outputs.

Recruitment and Participants

Participants were recruited through an online survey link that was distributed through local, regional, and national networks. Recruitment used social media (26 studies), partner organizations (20 studies), paid social media advertising (11 studies), university websites (10 studies), telephone interviews (4 studies), television or newspapers (3 studies). Thirty countries implemented the study, including Argentina, Australia, Botswana, Canada, China, Colombia, Czech Republic, Denmark, Egypt, France, Germany, Italy, Kenya, Latvia, Lebanon, Luxembourg, Malaysia, Mexico, Moldova, Mozambique, Nigeria, Panama, Portugal, Singapore, South Africa, Sweden, Spain, Uganda, United States, and Uruguay (Supplemental Table 1). A total of twenty-three studies used convenience sampling (Australia, Canada, Colombia, China, Czech Republic, Egypt, France, Germany, Italy, Latvia, Panama, Portugal, Luxembourg,

Mexico, Malaysia, Moldova, Mozambique, Nigeria, Singapore, South Africa, Spain, Uruguay, USA), six studies used online panels (Sweden, Botswana, Uganda, Lebanon, Kenya, Argentina), and two used population-based methods (Czech Republic, Denmark). Consortium members in the Czech Republic conducted two separate studies (one using a convenience sample and one using a population-based sample), and thus a total of 31 studies among 30 countries were reported. Eligible participants were age 18 years or older (or younger if the country's Institutional Review Board and ethical regulation permitted it and the in-country lead ensured appropriate procedures), resided in the respective participating country, were capable of reading and understanding the survey language, could access an online survey, and were willing to provide informed consent.

Survey development

The partners collaboratively developed the survey instrument based on existing items from a recent WHO survey instrument intended for global use,¹⁴ other existing tools, and items adapted for COVID-19. The survey included the following sections: sociodemographic characteristics; compliance with COVID-19 measures; couple and family relationships; sexual behavior; contraceptive use and barriers to access; access to reproductive healthcare; abortion; sexual violence and IPV; HIV/STI testing and treatment; female genital mutilation/cutting and early/forced marriage (optional); mental health (optional); and food insecurity (optional) (Supplemental Tables 2 and 3). The time periods for pre-COVID-19 and during initial COVID-19 measures were specified for each of the studies based on the in-country team.

The lead organization in each country selected networks to disseminate the survey link, and it was primarily distributed through email lists, local partner organizations affiliated with ANSER, other sexual and reproductive health networks, and social media links. The survey took most participants 20-30 minutes to complete.

Each country had a research team that led the country's ethical review, translation and survey administration while providing support and organization for the multinational study. The survey was available in the official language of the country and other relevant languages. In total, the survey was translated into 21 languages. In most participating countries, CAPTCHA or other fraud protection methods were included to prevent more than one response from a single IP address.

The survey included several potentially sensitive questions including items about sexuality, gender identity, sexual behavior, abortion, and IPV. Participants could stop the survey at any point or leave out questions they did not want to answer. Participating country institutions signed data sharing agreements for cross-country analysis. Resources on country-specific referral pathways for IPV, sexual health services, and reproductive health services were provided at the end of the survey. All data were de-identified before multi-country analyses.

Data analysis

Multi-country analysis was undertaken for countries that met specific pre-specified criteria. Each country was required to have obtained Institutional Review Board approval from a local ethics authority, locally translated and field-tested the instrument, described the sampling methodology,

and obtained responses from at least 200 participants. A minimum threshold of 200 participants was used because small samples may be more likely to be biased and have higher heterogeneity. We examined the effect of including all data empirically using a sensitivity analysis. We did not weight our estimates because most countries did not use a probability sample. We conducted descriptive meta-analysis to assess the effect of study characteristics and setting and more accurately estimate the prevalence of our key outcomes across multiple countries.

First, we ran descriptive statistics on using the main data set of 25 countries to assess patterns in respondent sociodemographic characteristics and to assess the primary outcomes prior to and during COVID-19 measures. We used the Oxford indices to assess the stringency of COVID-19 measures in each country, based on the mean value across the days when the survey was open. We used the Appraisal Tool for Cross-Sectional Studies (AXIS) to assess risk of bias.¹⁵ Second, we conducted a meta-analysis for all 30 countries on the prevalence of reported hindered access to HIV/STI testing, IPV during COVID-19 measures, and decreased condom use with casual partners. We used meta-analysis because this provided a mechanism to assess risk of bias of individual studies and consider the strength of the evidence. Tests for heterogeneity were applied using I^2 statistics.¹⁶ We also adopted the GRADE (Grading of Recommendations, Assessment, Development and Evaluations) framework to rate the quality of evidence presented in our meta-analysis.¹⁷ Furthermore, we conducted sensitivity analyses that separated primary outcomes based on country income level (low and middle-income countries compared to high-income countries), sample size (less than 200 or more), and sampling strategy (convenience compared to online panel or population-representative). All analyses were carried out using Stata version 14, and missing data were treated by pairwise deletion (available-case analysis).

Results

Results of descriptive analysis

Twenty-five of the 30 countries that joined the I-SHARE study (Figure 1) met all study criteria, including recruiting a minimum of 200 participants. Five countries (Mozambique, Canada, Egypt, Lebanon, and South Africa) had fewer than 200 participants and were excluded from descriptive analyses. The majority of countries across all four geographic regions implemented all survey components, except FGM and early marriage (Supplemental Table 2). Abortion and mental health components were excluded in 2 and 3 countries, respectively.

Among the 25 included countries, 14 were high-income countries, eight were upper-middle-income, two were lower-middle-income, and one was low-income (see Supplemental Table 1). There was a wide geographic distribution, with eleven countries in Europe, six in the Americas, four in Asia and Oceania, and four in Africa. In terms of severity of COVID-19 measures, twelve countries were moderate or “middle stringency” on the Oxford Stringency Index and 13 were high stringency. There was variation in the total sample size recruited from each country, with eight countries having more than 1000 participants, eight having 500-999 participants and nine having between 200 and 499 participants.

As shown in Table 1, two-thirds (66.7%) of participants were women, and over 8 in 10 participants (86.6%) were cis-gender. About 78% of participants were heterosexual. Most participants (44.6%) were 18-29 years old, followed by those 30-39 (26.9%) and 40-49 (14.4%) years old. Few participants (2.9%) were 70 years or older. More than half (55.9%) of participants reported having completed a college degree. There was diversity in reported socioeconomic

position of the household relative to others in their country, with most participants (38.4%) indicating that their household was in the 5th or 6th highest income group out of 10 in their country. Nearly three-quarters (74.0%) of participants reported living in an urban or semi-urban area.

The lower panel of Table 1 presents relationship status and sexual frequency, and sexual satisfaction in the three months before and during COVID-19 measures. There were a variety of relationship types reported, with 43.4% in a cohabiting relationship. Among sexually experienced participants, most (75.2%) were not pregnant and not trying to become pregnant. Among those with a steady partner, 37.6% reported having sex with that partner 2-4 times a month, and another 29.9% reported 2-3 times a week. Among those with a casual partner, the most commonly reported frequency of sex with that partner was monthly or less (15.4%). Most participants (75.6%) reported being somewhat satisfied or very satisfied with their sex life before COVID-19, but this proportion had fallen (to 59.4%) during COVID-19 in the same participants.

In terms of compliance with COVID-19 measures (Supplemental Table 5), 58.9% of participants reported they had followed measures a lot. The majority (76.6%) had never been in isolation due to their own symptoms or close contact with someone with COVID-19, and two-thirds (66.2%) had never been tested for COVID-19. Although 62.2% of participants said that their household socioeconomic status stayed the same during the COVID-19 pandemic, about one-third (32.0%) reported their household economic situation worsened.

Table 2 shows our key study outcomes before and during COVID-19. Condom use “always” or “most of the time” with steady partners (62.5%) and with casual partners (63.8%) was relatively high prior to COVID-19 measures. Although most participants perceived their condom use stayed the same during COVID-19 measures (74.4% with casual partners and 86.9% with steady partners), 14.1% of participants with casual partners (and 10.4% of those with steady partners) reported their condom use with those types of partners decreased during COVID-19 measures. Regarding physical or sexual violence, 9.3% reported experiencing one or more types of violence prior to COVID-19, and a slightly lower proportion (7.0%) reported experiencing these types of violence during COVID-19 measures. Additional analyses showed that among those reporting no prior physical or sexual violence from a partner, 1.4% reported experiencing violence during COVID-19 measures; among those who did report prior physical or sexual violence from a partner, 67.9% reported experiencing violence during COVID-19 measures.

For sexual and reproductive health care access, we first examined condom access. About 9% of participants indicated that COVID-19 measures made it more difficult to access condoms. A slightly smaller proportion (7.5%) reported that COVID-19 measures stopped or hindered contraceptive access. Nearly one-third (30.7%) of participants who reported needing abortion services during COVID-19 reported that COVID-19 measures stopped or hindered them from seeking or obtaining this service. In addition, 38.2% of participants that needed HIV/STI testing reported that COVID-19 measures stopped or hindered them from accessing HIV or STI testing.

Results of meta-analyses

Meta-analyses using data from all 30 countries indicated substantial heterogeneity at the country level for all outcomes, including hindered access to HIV/STI testing ($P=.000$, $I^2=89.9\%$), IPV experienced during COVID-19 measures ($P=.000$, $I^2=95.5\%$), and condom use during COVID-19 measures ($P=.000$, $I^2=95.5\%$). Pooled estimates suggest that 32.3% (95% CI 23.9 – 42.1%) of people needing HIV/STI testing had hindered access to HIV/STI testing (Supplemental Figures 1-3). Approximately 4.4% (95% CI 3.4 - 5.4%) of people experienced physical or sexual violence (Supplemental Figures 4-6) during COVID-19 measure. Finally, 5.8% (95% CI 5.4 – 8.2%) of people reported a decrease in condom use with sexual partners during COVID-19 measures (Supplemental Figures 7-9).

Risk of bias assessment for the studies in I-SHARE indicated that, in general, study procedures of all studies were largely justified, appropriate, and adequately described (Supplemental Table 5). The convenience sampling methods used by most countries introduced bias. In addition, response rates raised concerns about non-response bias and information about non-responders was not available.

The GRADE framework was used to assess the quality of evidence for each of the three meta-analysis outcomes (Supplemental Table 6). Each of the three main findings was associated with a moderate certainty of evidence. Observational studies in general begin at a low quality of evidence; while there were risks of bias due to convenience sampling, we rated the quality of our evidence upwards due to the large effect size for the outcome of hindered access to HIV/STI testing, and the large sample size of the study across all outcomes.

Discussion

Our study findings provide important insights into sexual and reproductive health during the initial COVID-19 wave in diverse global settings. Our data suggest that condomless sex with casual partners did not substantially change with the introduction of COVID-19 measures. Experiences of intimate partner violence may have decreased during COVID-19 measures compared to prior to the pandemic. Among the health services we examined, there were marked decreases in access to HIV/STI testing and abortion services.

We found that condomless sex was similar during COVID-19 measures compared to the pre-COVID-19 period for many respondents. Approximately 74-87% of people reported that condom use with a steady and/or casual partner stayed the same during these two periods. Maintenance of pre-COVID-19 condom use behavior is consistent with observational studies from sex workers and ethnic and racial minority groups.^{18,19} Given that COVID-19 introduced many new infectious disease risks, some individuals may have been less likely to engage in risky sexual behaviors.²⁰ Only 8.7% of the sample noted problems accessing condoms. The COVID-19 environment did not appear to substantially alter individual decisions about whether to use a condom.

Our results suggest a modest decrease in sexual and physical partner violence during COVID-19 measures compared to the pre-COVID period. Although there was concern about COVID-19 exacerbating intimate partner violence,² data on intimate partner violence during the pandemic have been mixed. Some studies suggest increased intimate partner violence during COVID-19 measures,^{21, 22} while others found decreases.²³ Other research has shown that IPV may increase

after a natural disaster,²⁴ indicating a need for follow up studies to see if IPV worsened as the COVID-19 pandemic continued beyond the initial wave that we examined in this study.

Our study also indicates that COVID-19 measures interrupted access to HIV/STI testing and abortion services. This finding is consistent with other studies observing interruptions in HIV/STI testing^{25,26} and abortion services.²⁷ Decentralized testing approaches using STI self-collection and HIV self-testing²⁸ have alleviated some of the gaps in diagnostic service provision during COVID-19. However, despite strong evidence that telemedicine is safe and effective for providing medical abortion services, several countries further restricted abortion services during the initial wave of the COVID-19 pandemic.²⁹ More research and advocacy are needed to support abortion services during pandemics and similar circumstances.

Our study has several limitations. First, this was an online survey organized during COVID-19 measures, introducing risk for selection bias. Although there is no guideline for conducting online surveys, we used several strategies to limit bias, including the use of online panels, partnerships with organizations for sample recruitment, review of analytics, and prespecified analysis plans.¹³ Second, although we were able to capture data from different times during the COVID-19 epidemic, this was a series of retrospective cross-sectional studies, and we did not capture how sexual behaviors and access evolved over the course of the pandemic. A follow-up survey in selected countries is now underway. Third, our sample included more women, people with higher education, and people living in high-income countries compared to populations in respective countries. At the same time, data from one of the convenience samples included in this analysis suggested that the convenience sample included similar proportions of adults within

subnational geographic areas compared to census data.³⁰ Fourth, our study had fewer studies from low-income countries which may have been due to later COVID-19 initial waves and less capacity for research alongside the pandemic. At the same time, our main findings were robust when stratifying based on country income level.

Although COVID-19 measures made it more difficult to obtain population-representative samples, we organized a multi-country analysis of data from 30 countries. Several studies have noted that online surveys may be particularly useful for collecting information about sensitive sexual behaviors compared to in-person survey methods.¹³ Strengths of this study include the inclusive open science approach, the harmonization of key sexual health variables across countries, and the geographic diversity.

The use of meta-analysis methods was a key factor in mitigating risks of bias in our study. Pooled estimates of key outcomes reported in this study generated through meta-analysis provided more conservative estimates of our key study outcomes than our descriptive findings, thus mitigating bias in the varying sampling strategies across countries. Sensitivity analyses revealed differences in proportions based on country income level and sample size for experiencing IPV during the COVID-19 measures, while differences in proportions based on country income level and sampling strategy were observed for decreased condom use during COVID-19 measures. Differences in country-level income and sampling strategies do not have any bearing on the presentation of our descriptive findings but offer insight into country-level variations for these outcomes. However, because we omitted countries with sample sizes of less than 200 in our descriptive sample, and those countries omitted had a generally lower level of

IPV experienced during COVID-19 measures compared to other countries in the sample, our pooled estimate for the proportion of individuals experiencing IPV may overestimate this outcome.

This study has implications for research and policy. From a research perspective, this underscores the need for sexual behavior, IPV, and reproductive health service access research in emergency settings. Given the heterogeneity in study outcomes, multi-national studies should consider using methods that account for clustering (e.g., multilevel modeling). From a policy perspective, our data suggest the need for expanded use of decentralized sexual and reproductive health interventions that could be implemented in emergency settings (e.g., self-testing, self-collection, telemedicine abortion). The results from country-level data have already helped to inform COVID-19 related sexual and reproductive health policies in several countries, including Latvia, Czech Republic, Panama, Singapore, Uruguay, and Portugal.

Finally, the open science methods used in this study point towards new frameworks for global health collaboration. We organized a survey in thirty diverse settings during a pandemic, despite not having a central funding source or a COVID-19-specific organizational remit. This suggests the feasibility of grounds-up organized multi-country studies focused on sexual and reproductive health.

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Author Contributions

RT, JTE, KM, and JT developed the initial idea. RT and JTE led the data analysis with the data analysis subgroup who included MU, KM, EW, TH, SS, MM, JT, WHZ, AM and JF. TH, PK, SS, LC, EB, LR were part of the digital working group that programmed surveys. KK, KM, AG, SB, DH, SS, JS, TE, CM, SE, WL, LP, GL, AO, and CM were all country leads on surveys and led field testing, translation, ethical review applications, and survey implementation at the country level. KM and JT were coordinators for multi-country analysis. All authors read and approved the final version that was submitted.

Declarations of Interest

The authors declare no potential conflicts of interest.

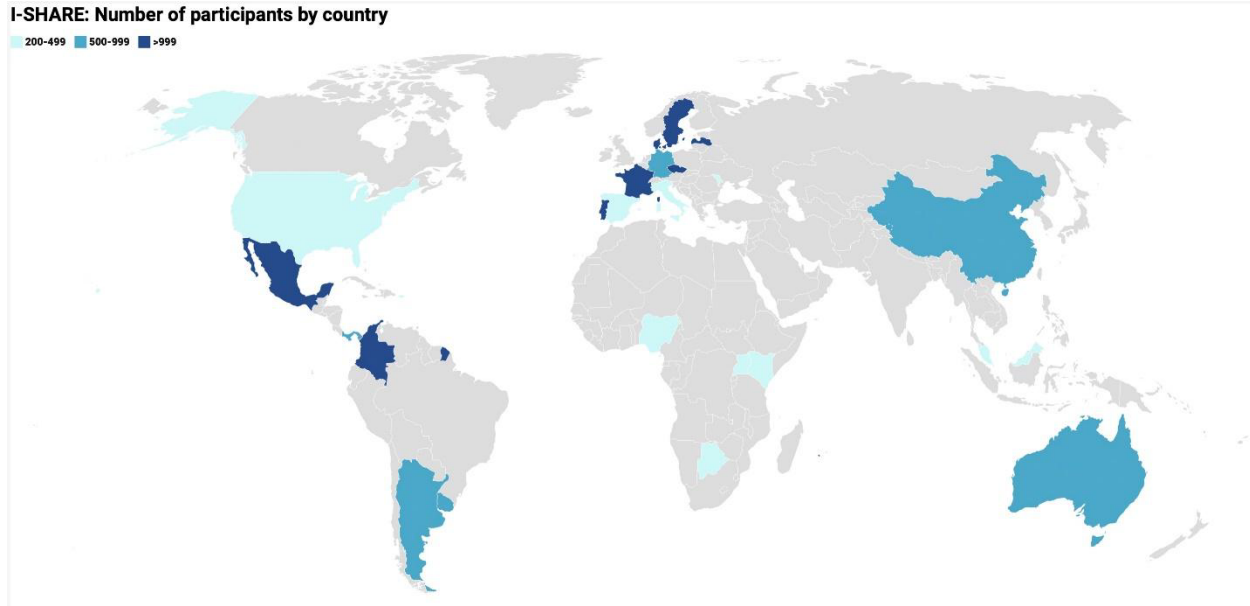


Figure 1. World map with 25 countries included in ISHARE-1 highlighted.

Table 1. Sociodemographic characteristics of participants in the I-SHARE multi-country survey, 2020-2021 (n = 22,724).

<i>Variable</i>	<i>Level</i>	n	%
<i>Sex assigned at birth</i>	Female	15160	66.7
	Male	7505	33.0
	Another sex*	52	0.2
	Total	22717	100
<i>Gender</i>	Cisgender	19432	86.6
	Non-cisgender	2672	11.9
	Another gender	338	1.5
	Total	22442	100
<i>Sexual Orientation</i>	Heterosexual	16592	77.9
	Bisexual	1823	8.6
	Gay	818	3.8
	Asexual	629	3.0
	Questioning or unsure	446	2.1
	Other	351	1.7
	Lesbian	315	1.5
	Pansexual	315	1.5
	Total	21289	100
	<i>Age group in years</i>	18-29	10135
30-39		6109	26.9
40-49		3268	14.4
50-59		1644	7.2
60-69		916	4.0
70+		652	2.9
Total		22724	100
<i>Education</i>	No formal education	102	0.5
	Some or completed primary school	944	4.2
	Some or completed secondary school	4717	20.8
	Some college or university	3457	15.3
	Completed college or university	12619	55.7
	Other	803	3.6
	Total	22,642	100
<i>Relative household socioeconomic position (1-10)**</i>	Lower position (1-2)	2227	11.1
	3-4	4319	21.5
	5-6	7712	38.4
	7-8	4327	21.6
	Higher position (9-10)	1486	7.4
	Total	20071	100
<i>Urban/Rural</i>	Urban or semi-urban	15722	74.0
	Rural or semi-rural	4710	22.2
	Other	809	3.8
	Total	21241	100
<i>Relationship Status</i>	Single, never had partner	2113	9.3
	Single, ever had partner	4268	18.8
	In a relationship, not cohabiting	4354	19.2
	Not married, cohabiting	4349	19.1
	Legally married, cohabiting	5753	25.3
	Legally married, not cohabiting	1083	4.8
	Separated or divorced	894	3.9
	Widowed	178	0.8

	Other	285	1.3
	Total	22724	100
<i>Current pregnancy situation</i>	Currently pregnant	514	3.7
	Currently trying to become pregnant	835	6.1
	Recently had a baby	432	3.1
	Not trying	10377	75.2
	Cannot have children	1584	11.5
	Other	60	0.4
	Total	13802	100
<i>Sexual Activity Frequency (Steady Partner)</i>	Never	811	5.3
	Monthly or less	2366	15.4
	2-4 times a month	5758	37.6
	2-3 times a week	4583	29.9
	4 or more times a week	1802	11.8
	Total	15320	100
<i>Sexual Activity Frequency (Casual Partner)</i>	Never	15655	75.9
	Monthly or less	3181	15.4
	2-4 times a month	1375	6.7
	2-3 times a week	316	1.5
	4 or more times a week	96	0.5
	Total	20623	100
<i>Sex Life Satisfaction (Before COVID-19)</i>	Very satisfied	7535	36.6
	Somewhat satisfied	8026	39.0
	Neutral	216	1.1
	Not very satisfied	3431	16.7
	Not at all satisfied	1382	6.7
	Total	20590	100
<i>Sex Life Satisfaction (During COVID-19)</i>	Very satisfied	5484	26.7
	Somewhat satisfied	6738	32.8
	Neutral	202	1.0
	Not very satisfied	4788	23.3
	Not at all satisfied	3353	16.3
	Total	20565	100

*This included individuals whose sex at birth was not a male or female.** Oxford Stringency Index: a measure to record the strictness of lockdown policies based on indicators such as school and workplace closure, and travel bans, rescaled to a value from 0 to 100 (100 = strictest).

Note: Household socioeconomic status and relationship status were not mutually exclusive and participants could choose more than one.

Table 2. Key outcomes 3 months before and during COVID-19 social distancing measures in the 25 I-SHARE countries with ≥ 200 respondents, 2020

		N	%	95% CI
Condom Use with Steady Partners (Before)		N=3,282		
	Always or Most of the Time	2,050	62.46	(60.78-64.12)
	Sometimes/Rarely/Never	1,232	37.54	(35.88-39.22)
Condom Use with Casual Partners (Before)		N=4,383		
	Always or Most of the Time	2,795	63.77	(62.33-65.19)
	Sometimes/Rarely/Never	1,588	36.23	(34.81-37.67)
Perceived Changes to Condom Use with Steady Partners (During)		N=12,183		
	Decreased	1,262	10.36	(9.82-10.91)
	Stayed the same	10,588	86.91	(86.29-87.50)
	Increased	333	2.73	(2.45-3.04)
Perceived Changes to Condom Use with Casual Partners (During)		N=4,546		
	Decreased	640	14.08	(13.08-15.12)
	Stayed the same	3,374	74.22	(72.92-75.49)
	Increased	532	11.70	(10.78-12.67)
Any Physical or Sexual Violence from Partner (Before)		N=15,887		
	No	14,418	90.75	(90.29-91.20)
	Yes	1,469	9.25	(8.80-9.71)
Any Physical or Sexual Violence from Partner (During)		N=15,144		
	No	14,081	92.98	(92.56-93.38)
	Yes	1,063	7.02	(6.62-7.44)
Among those reporting no prior physical or sexual violence from a partner, 1.4% reported experiencing violence during COVID-19 measures. Among those who did report prior physical or sexual violence from a partner, 67.9% reported also experiencing violence during COVID-19 measures.				
COVID-19 measures made it more difficult to access condoms		N=10,790		
	No	9,857	91.35	(90.80-91.87)
	Yes	933	8.65	(8.12-9.19)
COVID-19 measures stopped or hindered you from seeking contraceptives		N=8,175		
	No	7,565	92.54	(91.95-93.10)
	Yes	610	7.46	(6.90-8.05)
COVID-19 measures stopped or hindered you from seeking or obtaining an abortion* * among those reporting being in need of abortion during COVID-19		N=150		
	No	104	69.33	(61.29-76.59)
	Yes	46	30.67	(23.41-38.71)
COVID-19 measures stopped or hindered you from accessing a test for HIV or STIs*		N=1,965		

* among those reporting wanting an HIV or STI test				
	No	1,215	61.83	(59.64-63.99)
	Yes	750	38.17	(36.01-40.35)

References

1. Hall KS, Samari G, Garbers S, et al. Centring sexual and reproductive health and justice in the global COVID-19 response. *Lancet* 2020; **395**(10231): 1175-7.
2. Hall B, Tucker JD. Surviving in place: The coronavirus domestic violence syndemic. *Asian Journal of Psychiatry* 2020.
3. WHO. Disruption in HIV, Hepatitis and STI services due to COVID-19, 2020.
4. Anderson RM, Heesterbeek H, Klinkenberg D, Hollingsworth TD. How will country-based mitigation measures influence the course of the COVID-19 epidemic? *The Lancet* 2020; **395**(10228): 931-4.
5. Hale T, Petherick A, Phillips T, Webster S. Variation in government responses to COVID-19. Blavatnik school of government working paper 2020; 31: 2020-11.
6. Jiang H, Xie Y, Xiong Y, et al. HIV self-testing partially filled the HIV testing gap among men who have sex with men in China during the COVID-19 pandemic: results from an online survey. *J Int AIDS Soc* 2021; **24**(5): e25737.
7. Lal A, Erondy NA, Heymann DL, Gitahi G, Yates R. Fragmented health systems in COVID-19: rectifying the misalignment between global health security and universal health coverage. *The Lancet* 2021; **397**(10268): 61-7.
8. Kumar N, Janmohamed K, Nyhan K, et al. Sexual health (excluding reproductive health, intimate partner violence and gender-based violence) and COVID-19: a scoping review. *Sex Transm Infect* 2021.
9. Wood SN, Karp C, OlaOlorun F, et al. Need for and use of contraception by women before and during COVID-19 in four sub-Saharan African geographies: results from population-based national or regional cohort surveys. *Lancet Glob Health* 2021; **9**(6): e793-e801.
10. Frost I, Craig J, Osen G, et al. Modelling COVID-19 transmission in Africa: countrywise projections of total and severe infections under different lockdown scenarios. *BMJ Open* 2021; **11**(3): e044149.
11. Riley T, Sully E, Ahmed Z, Biddlecom A. Estimates of the Potential Impact of the COVID-19 Pandemic on Sexual and Reproductive Health In Low- and Middle-Income Countries. *Int Perspect Sex Reprod Health* 2020; **46**: 73-6.
12. Michielsen K, Larrson EC, Kagesten A, et al. International Sexual Health And REproductive health (I-SHARE) survey during COVID-19: study protocol for online national surveys and global comparative analyses. *Sex Transm Infect* 2020.
13. Hlatshwako TG, Shah SJ, Kosana P, et al. Online health survey research during COVID-19. *Lancet Digit Health* 2021; **3**(2): e76-e7.
14. Kpokiri E, Wu D, Srinivas M, et al. Using a crowdsourcing open call, hackathon and a modified Delphi method to develop a consensus statement and sexual health survey instrument. *Sex Transm Infect* 2021: 2020.10.02.20205542.
15. Downes MJ, Brennan ML, Williams HC, Dean RS. Development of a critical appraisal tool to assess the quality of cross-sectional studies (AXIS). *BMJ Open* 2016; **6**(12): e011458.
16. Higgins JP, Thompson SG, Deeks JJ, Altman DG. Measuring inconsistency in meta-analyses. *BMJ*. 2003;327(7414):557-560. doi:10.1136/bmj.327.7414.557
17. Atkins D, Best D, Briss PA, et al. Grading quality of evidence and strength of recommendations. *BMJ*. 2004;328(7454):1490. doi:10.1136/bmj.328.7454.1490
18. Machingura F, Chabata S, Busza J, et al. Potential reduction in female sex workers' risk of contracting HIV during Covid-19. *Aids* 2021.

19. Craig-Kuhn MC, Schmidt N, Scott G, Jr., et al. Changes in sexual behavior related to the COVID-19 stay-at-home orders among young Black men who have sex with women in New Orleans, LA. *Sex Transm Dis* 2021.
20. Bowling J, Montanaro E, Gattuso J, Gioia D, Guerrero Ordonez S. "Everything feels risky now": Perceived "risky" sexual behavior during COVID-19 pandemic. *J Health Psychol* 2021; 13591053211004684.
21. Walsh AR, Sullivan S, Stephenson R. Intimate Partner Violence Experiences During COVID-19 Among Male Couples. *J Interpers Violence* 2021; 8862605211005135.
22. Fawole OI, Okedare OO, Reed E. Home was not a safe haven: women's experiences of intimate partner violence during the COVID-19 lockdown in Nigeria. *BMC Womens Health* 2021; **21**(1): 32.
23. Ojeahere MI, Kumswa SK, Adiukwu F, Plang JP, Taiwo YF. Intimate Partner Violence and its Mental Health Implications Amid COVID-19 Lockdown: Findings Among Nigerian Couples. *J Interpers Violence* 2021; 8862605211015213.
24. Bell SA, Folkerth LA. Women's Mental Health and Intimate Partner Violence Following Natural Disaster: A Scoping Review. *Prehosp Disaster Med* 2016; **31**(6): 648-57.
25. Rao A, Rucinski K, Jarrett BA, et al. Perceived Interruptions to HIV Prevention and Treatment Services Associated With COVID-19 for Gay, Bisexual, and Other Men Who Have Sex With Men in 20 Countries. *J Acquir Immune Defic Syndr* 2021; **87**(1): 644-51.
26. Mbithi I, Thekkur P, Chakaya JM, et al. Assessing the Real-Time Impact of COVID-19 on TB and HIV Services: The Experience and Response from Selected Health Facilities in Nairobi, Kenya. *Trop Med Infect Dis* 2021; **6**(2).
27. Jones RK, Lindberg L, Witwer E. COVID-19 Abortion Bans and Their Implications for Public Health. *Perspect Sex Reprod Health* 2020; **52**(2): 65-8.
28. Kpokiri EE, Marley G, Tang W, et al. Diagnostic Infectious Diseases Testing Outside Clinics: A Global Systematic Review and Meta-analysis. *Open Forum Infect Dis* 2020; **7**(10): ofaa360.
29. Bojovic N, Stanisljevic J, Giunti G. The impact of COVID-19 on abortion access: Insights from the European Union and the United Kingdom. *Health Policy* 2021; **125**(7): 841-58.
30. Gabster A, Erausquin JT, Michielsen K, et al. How did COVID-19 measures impact sexual behaviour and access to HIV/STI services in Panama? Results from a national cross-sectional online survey [published online ahead of print, 2021 Aug 16]. *Sex Transm Infect.* 2021;sextrans-2021-054985. doi:10.1136/sextrans-2021-054985

Supplemental Tables

Supplemental Table 1. I-SHARE Countries with greater than 200 participants (n = 25) in 2020-2021.

<i>Country Income Group</i> ¹	Low-income countries	1	Uganda
	Lower middle-income countries	2	Kenya, Nigeria
	Upper middle-income countries	8	Argentina, Botswana, China, Colombia, Malaysia, Mexico, Moldova (Republic of), Panama
	High income countries	14	Australia, Czech Republic, Denmark, France, Germany, Italy, Latvia, Luxembourg, Portugal, Singapore, Spain, Sweden, United States, Uruguay
<i>Region</i>	Americas	6	Argentina, Colombia, Mexico, Panama, United States, Uruguay
	Africa	4	Botswana, Kenya, Nigeria, Uganda
	Asia/Oceania	4	Australia, China, Malaysia, Singapore
	Europe	11	Czech Republic, Denmark, France, Germany, Italy, Latvia, Luxembourg, Moldova (Republic of), Portugal, Spain, Sweden
<i>Median Stringency index</i> ¹	Low Stringency (0-35)	0	
	Middle Stringency (36-65)	12	Australia, Czech Republic, Denmark, Germany, Latvia, Luxembourg, Mexico, Portugal, Singapore, Sweden, United States, Uruguay
	High Stringency (66-100)	13	Argentina, Botswana, China, Colombia, France, Italy, Kenya, Malaysia, Moldova (Republic of), Nigeria, Panama, Spain, Uganda
<i>Number of Participants</i>	200- 499 participants	9	Botswana, Italy, Kenya, Malaysia, Moldova (Republic of), Nigeria, Spain, Uganda, United States
	500 – 999 participants	8	Argentina, Australia, China, Germany, Luxembourg, Panama, Singapore, Uruguay
	>999 participants	8	Colombia, Czech Republic, Denmark, France, Latvia, Mexico, Portugal, Sweden

¹Oxford Stringency Index: a measure to record the strictness of lockdown policies based on indicators such as school and workplace closure, and travel bans, rescaled to a value from 0 to 100 (100 = strictest). We measured the median during the period when the survey was open in each country.

Supplemental Table 2. I-SHARE survey instrument components

Region	Total Number of Countries	Number of countries that included domain in the survey											
		Demographics	Compliance with social distancing	Couple and family relationships	Sexual behavior	Access to contraceptives	Access to RH services	Abortion	Sexual and gender-based violence	FGM/EM	HIV/STI	Mental Health	Food
Americas	7	7	7	7	7	7	7	7	7	1	7	7	6
Africa	7	7	7	7	7	7	7	6	6	4	7	5	7
Asia/Oceania	5	5	5	5	5	4	4	4	5	5	4	5	5
Europe	11	11	11	11	11	11	11	11	11	6	11	10	10

Supplemental Table 3. Survey instrument used in I-SHARE (Singapore Version)

1. Selection			
Min 3 – Max 4			
1.1.	Choose your language	List of survey languages	
1.2	Do you live in Singapore?	1 Yes 2 No	If 1, go to 1.3
1.2a	Do you live in any of the following countries:	List countries	If in none of the countries, end survey
1.3.	How old are you? (in years)	(number)	If <18: end survey. “Unfortunately, the survey is only for adults aged 18 year of more” If 18 or older, go to informed consent form
1.4	What is your residence status in Singapore?	1 Singapore citizen 2 Singapore permanent resident 3 Non-Singaporean	If 3, end survey.

2. Socio-demographics			
Min 12 – Max 16/19			
2.1.	What is your biological sex?	1 Woman 2 Man 3 Other (Please specify: _____)	
2.1.a	On a scale of 1 to 5, where 1 is completely as a man and 5 is completely as a woman, with what gender do you identify:	1 Completely as a man 2 Mostly as a man 3 Equally man and woman 4 Mostly as a woman 5 Completely as a woman 6 Other (please specify: _____)	
2.2.	What best describes your relationship status? (multiple responses possible)	1 Single, and never had a partner 2 Single, but had a partner previously or currently dating 3 In a relationship but not living together 4 Not legally married but living with a partner 5 Legally married and living together 6 Legally married and not living together 7 Legally married but separated 8 Widowed 9 Divorced 10 Other	
2.3.	How many children do you have, if any? Respond 0 if you don't have children.	(number)	
2.4.	What is your highest degree of schooling?	1 No formal education 2 Some primary school 3 Complete primary school 4 Some secondary school 5 GCE 'O' Levels 6 GCE 'N' Levels 7 GCE 'A' Levels 8 Polytechnic diploma 9 ITE diploma/ NITEC 10 Some university 11 Complete university 12 Postgraduate studies 13 Other	
2.5.	What is your religion?	1 No religion 2 Buddhism 3 Islam 4 Hinduism 5 Christianity 6 Taoism 7 Sikhism 8 Agnostic 9 Atheist 10 Others (please specify): _____	
2.6.	What is your race, as reflected on your identity card?	1 Chinese 2 Malay 3 Indian 4 Others (please specify): _____	

Introduction: Since 7 April 2020 the government has issued several circuit breaker measures aimed at social distancing to contain the spread of COVID-19 in Singapore. In this survey we will refer to these measures as the COVID-19 circuit breaker measures.

3. Compliance with COVID-19 social distancing measures			
Min/Max 4			
3.1.	How much would you say that you're following COVID-19 circuit breaker measures?	1 not at all 2 a little bit 3 a lot 4 very strictly	
3.2.	Were you ever on a leave of absence, stay-home notice, or quarantine order because of symptoms or because you were in close contact with someone with COVID-19 or because you returned from overseas?	1 No 2 Yes	
3.3.	Were you ever tested for COVID-19?	1 No 2 Yes, I tested positive at least once 3 Yes, I have always tested negative	
3.4.	How many people lived in your house in the three months before the COVID-19 circuit breaker? A household member is someone who has slept under the SAME roof as you for at least 4 nights per week during the past month	1 Number of adults >18 years 2 Number of children 0-9 years 3 Number of teenagers 10-18 years	
3.5.	Was your family composition different during the COVID-19 circuit breaker?	1 No, the composition of my family was the same 2 The composition of my family was different	If 1, go to 3.7
3.6.	How many people lived/ live in your house during the COVID-19 circuit breaker?	1 Number of adults >18 years 2 Number of children 0-9 years 3 Number of teenagers 10-18 years	
3.7.	What was your employment status the month before the COVID-19 circuit breaker?	1 Full time employee (30 hours a week or more) 2 Part time employee (less than 30 hours a week) 3 Self-employed/ business owner 4 Unemployed 5 Informal/ piecemeal work 6 Retired/ pensioned 7 Student 8 Other	
3.8.	Since the COVID-19 circuit breaker, has your employment status changed?	1 No change: I continue doing the same work and going to the usual job site 2 I keep doing the same work, but from home 3 I keep doing the same work, but partly work from home 4 I am employed and paid but unable to attend or do	

		work 5 work on reduced time 6 lost my job/ work/ business 7 am temporarily unemployed 8 changed work/jobs	
3.9.	Below is an income scale on which 1 indicates the lowest income group and 10 the highest income group in your country. We would like to know in what group your household was in the year before the COVID-19 crisis? Please specify the appropriate number, counting all wages, salaries, pensions and other incomes	1 Lowest group 2 3 4 5 6 7 8 9 10 Highest group	
3.9a	What is your housing type?	1 1-room HDB Flat 2 2-room HDB Flat 3 3-room HDB Flat 4 4-room HDB Flat 5 5-room HDB Flat 6 Executive HDB Flat/ Maisonette 7 Condominium 8 Terrace, Bungalow or other private landed property 9 Other: _____	
3.9b	On average, what is your gross personal monthly income (before CPF and tax deductions, if any)?	1 not earning an income 2 SGD <1000 3 SGD 1000-SGD 1999 4 SGD 2000 – SGD 2999 5 SGD 3000- SGD 3999 6 SGD 4000- SGD 4999 7 SGD 5000-SGD 5999 8 SGD 6000- SGD6999 9 SGD 7000 – SGD 7999 10 SGD 8000 – SGD 8999 11 SGD 9000- SGD 9999 12 SGD 10000 and above	
3.10	Since the COVID-19 pandemic, the economic situation of many households has changed. Has this been the case for you?	1 Yes the economic situation of my household became worse 2 No, the economic situation of my household stayed the same 3 Yes, the economic situation of my household improved	
3.11	Have you personally experienced a loss of income?	1 Yes, a total loss of income 2 Yes, a partial loss of income 3 No loss of income 4 had no personal income before COVID-19	
		Before the COVID-19 circuit breaker	During the COVID-19 circuit breaker, did this increase or decrease?

3.12	How often did you have a drink containing alcohol?	1 Never 2 Monthly or less 3 2-4 times a month 4 2-3 times a week 5 4 or more times a week	1 Decreased a lot 2 Decreased a bit 3 Stayed the same 4 Increased a bit 5 Increased a lot
3.13	How many standard drinks containing alcohol do you have on a typical day when you are drinking? A standard drink is typically equivalent to one can of beer OR one glass of wine OR one shot of hard liquor	1 1-2 2 3-4 3 5-6 4 7-9 5 10+	1 Decreased a lot 2 Decreased a bit 3 Stayed the same 4 Increased a bit 5 Increased a lot
3.14	How often do you have six or more drinks on one occasion?	1 Never 2 Monthly or less 3 2-4 times a month 4 2-3 times a week 5 4 or more times a week	1 Decreased a lot 2 Decreased a bit 3 Stayed the same 4 Increased a bit 5 Increased a lot
3.15	How often do you use cannabis (marijuana, hash, grass)?	1 Never 2 Monthly or less 3 2-4 times a month 4 2-3 times a week 5 4 or more times a week	1 Decreased a lot 2 Decreased a bit 3 Stayed the same 4 Increased a bit 5 Increased a lot
3.15a	How often do you use prescription medication to help with sleep or relaxation? (e.g. opiate or benzodiazepam-containing medications like cough syrup, muscle relaxants etc.)	1 Never 2 Monthly or less 3 2-4 times a month 4 2-3 times a week 5 4 or more times a week	1 Decreased a lot 2 Decreased a bit 3 Stayed the same 4 Increased a bit 5 Increased a lot
3.15b	If you are currently a smoker, what is the average number of cigarettes you smoke daily?	Open ended	Open ended
3.15c	How often do you use other recreational substances not covered above?	1 Never 2 Monthly or less 3 2-4 times a month 4 2-3 times a week 5 4 or more times a week	1 Decreased a lot 2 Decreased a bit 3 Stayed the same 4 Increased a bit 5 Increased a lot

4. Couple and family relationships			
Min 0 – Max 6			
4.1.	Did you have a steady partner in the three months before the COVID-19 circuit breaker?	1 No 2 Yes	
4.2.	Are you currently still in this relationship?	1 No 2 Yes	
4.3.	Did your relationship end before, during, or after COVID-19 circuit breaker?	1 Before 2 During 3 After	
4.4.	Would you say the end of your relationship was precipitated by COVID-19 circuit breaker?	1 No 2 Yes 3 Not sure	
4.5.	Have you had a new steady partner since COVID-19 circuit breaker?	1 No 2 Yes	
4.6.	What is your sexual orientation?	1 Asexual 2 Bisexual 3 Gay 4 Heterosexual (straight) 5 Lesbian 6 Pansexual 7 Queer 8 Questioning or unsure 9 Other (specify)	
4.7.	During the COVID-19 circuit breaker, is/was your steady partner living with you in the same place? (only those responding 2 to 4.2 or 2 to 4.5)	1 No, s/he stays elsewhere 2 Yes, the whole time 3 Yes, part of the time	
4.8.	In the three months before the COVID-19 circuit breaker, how often did you experience tension in your relationship to your partner/spouse? (Only for those responding 2 to 4.2)	1 Never 2 Monthly or less 3 2-4 times a month 4 2-3 times a week 5 4 or more times a week	
4.9.	How has this changed since the COVID-19 circuit breaker? Only for those responding 2 to 4.2)	1 Much less tension than before 2 A bit less tension than before 3 About the same amount of tension 4 A bit more tension than before 5 A lot more tension than before	
4.10.	In the three months before the COVID-19 circuit breaker measures, how often did you experience tension in your relationship to your children? Only for those living with children (2.5)	1 Never 2 Monthly or less 3 2-4 times a month 4 2-3 times a week 5 4 or more times a week	
4.11.	How has this changed since the COVID-19 circuit breaker measures? Only for those living with children (2.5)	1 Much less tension than before 2 A bit less tension than before 3 About the same amount of tension 4 A bit more tension than before 5 A lot more tension than before	
4.12.	In the three months before the COVID-19 circuit breaker, how much would you say your partner provided you with emotional support? Only for those responding 2 to 4.2	1 A lot 2 Some support 3 little support 4 No support	

4.13.	How has this changed during the COVID-19 circuit breaker? Only for those responding 2 to 4.2		1 Much less support than before 2 A bit less support than before 3 About the same amount of support than before 4 A bit more support than before 5 A lot more support than before	
		<i>Before</i> the COVID-19 social distancing measures	<i>During</i> the COVID-19 social distancing measures	
4.14.	Who is doing most of the household work in your household? (<i>Only for those living with a cohabiting partner/spouse (i.e. those responding 3 or 4 to 4.3)</i>)	1 I was doing most of the household work 2 My partner did most of the household work 3 My partner and I equally contributed to the household work 4 Most members of the household contributed equally 5 Someone else did most of the household work	1 I am doing most of the household work 2 My partner is doing most of the household work 3 My partner and I equally contribute to the household work 4 Most members of the household contribute equally 5 Someone else is doing most of the household work	
4.15.	In your household, who was most in control of household spending? <i>Only for those living with a cohabiting partner/ spouse (i.e. those responding 3 or 4 to 4.6)</i>		1 I had most control 2 My partner had most control 3 My partner and I had equal control 4 Someone else than my partner and I had most control	
4.16.	Has your power to control household spending changed because of the COVID-measures relative to your partner/spouse? <i>Only for those living with a cohabiting partner/ spouse (i.e. those responding 3 or 4 to 4.6)</i>		1 Yes, I now have more control 2 Yes, I now have less control 3 No, I have the same control	

5. Sexual behavior			
Min 1 – Max 18			
5.1.	Have you ever had a sexual experience? By 'sexual experience' we mean any kind of experience that you felt was sexually arousing. It could be kissing, touching, intercourse, masturbation, watching sexually explicit images, or any other form of sex.	1 No 2 Yes	If 1, go to section 9
		In the three months before the COVID-19 circuit breaker	During the COVID-19 circuit breaker
5.2.	How satisfied were you with your sex life..	1 Very satisfied 2 Somewhat satisfied 3 Not very satisfied 4 Not at all satisfied	1 Very satisfied 2 Somewhat satisfied 3 Not very satisfied 4 Not at all satisfied
5.3.	How often have you or your partner experienced sexual problems (problems getting an erection, or loss of sexual interest, arousal, orgasm, sexual satisfaction)? (Only those responding 2 to 4.2 or 2 to 4.5)	1 Never 2 Once 3 Sometimes 4 Often 5 Not applicable	1 Never 2 Once 3 Sometimes 4 Often 5 Not applicable

	The next questions will ask about sexual behaviours in the three months before and during the COVID-19 circuit breaker. How many times have you...	In the three months before the COVID-19 circuit breaker	<i>During</i> the COVID-19 circuit breaker measures
5.4.	Hugged, kissed, held hands with or cuddled with your steady partner? (only for those responding 2 to 4.2 or 2 to 4.5)	1 Never 2 Monthly or less 3 2-4 times a month 4 2-3 times a week 5 4 or more times a week	1 Decreased a lot 2 Decreased a bit 3 Stayed the same 4 Increased a bit 5 Increased a lot
5.5.	Engaged in sexual activities with your steady partner? By sexual activities we mean oral, vaginal, anal intercourse or touching. (only for those responding 2 to 4.2 or 2 to 4.5)	1 Never 2 Monthly or less 3 2-4 times a month 4 2-3 times a week 5 4 or more times a week	1 Decreased a lot 2 Decreased a bit 3 Stayed the same 4 Increased a bit 5 Increased a lot
5.5a	Used a condom when you had sex with your steady partner? (only those who responded 2,3,4,5 to 5.5)	1 Never 2 Rarely 3 Sometimes 4 Most of the time 5 Always	1 Decreased a lot 2 Decreased a bit 3 Stayed the same 4 Increased a bit 5 Increased a lot
5.6.	Masturbated?	1 Never 2 Monthly or less 3 2-4 times a month 4 2-3 times a week 5 4 or more times a week	1 Decreased a lot 2 Decreased a bit 3 Stayed the same 4 Increased a bit 5 Increased a lot
5.7.	Had sex with someone who you are not in a long-term relationship with (a casual partner)?	1 Never 2 Monthly or less 3 2-4 times a month	1 Decreased a lot 2 Decreased a bit 3 Stayed the same

		4 2-3 times a week 5 4 or more times a week	4 Increased a bit 5 Increased a lot
5.7a	Used a condom when you had sex with a casual partner?	1 Never 2 Rarely 3 Sometimes 4 Most of the time 5 Always	1 Decreased a lot 2 Decreased a bit 3 Stayed the same 4 Increased a bit 5 Increased a lot
5.8.	Sent or received naked/semi-naked pictures or videos?	1 Never 2 Monthly or less 3 2-4 times a month 4 2-3 times a week 5 4 or more times a week	1 Decreased a lot 2 Decreased a bit 3 Stayed the same 4 Increased a bit 5 Increased a lot
5.9.	Had sex in exchange for money, material goods, favors, drugs, or shelter? By material goods, we mean things like food, rent, clothes/shoes/cell phones, cosmetics, transport, good marks in school or school fees, or items for your children, your family, or yourself	1 Never 2 Monthly or less 3 2-4 times a month 4 2-3 times a week 5 4 or more times a week	1 Decreased a lot 2 Decreased a bit 3 Stayed the same 4 Increased a bit 5 Increased a lot
5.10.	Watched sexually explicit videos (pornography)?	1 Never 2 Monthly or less 3 2-4 times a month 4 2-3 times a week 5 4 or more times a week	1 Decreased a lot 2 Decreased a bit 3 Stayed the same 4 Increased a bit 5 Increased a lot
5.11.	Performed/watched sexual acts before a webcam?	1 Never 2 Monthly or less 3 2-4 times a month 4 2-3 times a week 5 4 or more times a week	1 Decreased a lot 2 Decreased a bit 3 Stayed the same 4 Increased a bit 5 Increased a lot
5.12.	If some of your sexual behaviors have changed due to COVID-19 social distancing measures, why do you think this happened?	Open answer	

Access to condoms			
5.17.	Did the COVID-19 circuit breaker measure make it more difficult to access condoms?	1 No 2 Yes 3 Not applicable - I don't normally use condoms	If 1 or 3, go to section 6 (women) or 9 (men)
5.18.	If yes, what made it difficult to access condoms?	1 No transport available 2 I am afraid I might acquire COVID-19 and therefore do not want to go to the doctor/health centre/shop 3 Shops are closed 4 Condoms were not in stock in my store 5 I am not able/allowed to leave the house 6 Pharmacy/dispensary closed 7 health centre/clinic has long queues or are not accessible at this time 8 I can no longer afford it 9 I can no longer access free condoms 10 Other...	All men, go to section 9

6. Access to contraceptives			
Women only - Min 1 – Max 11			
For women			
6.1.	Have you ever been pregnant?	1 No 2 Yes	If 1, go to 6.3
6.2.	How many times have you been pregnant in your life?	(number)	
6.3.	What best describes your current situation?	1 Currently pregnant or probably pregnant 2 Currently trying to become pregnant 3 Recently had a baby (during the COVID-19 social distancing measures) 4 Not currently pregnant and don't wish to be in the near future 5 Cannot have children (fertility issue/ medical issue/ menopause)	If 1, go to section 7 If 2, go to section 9 If 3, go to 7.9 If 4, continue If 5, go to section 9
6.4.	Have you recently changed your mind about having a child soon because of COVID-19 (only for those who respond 2 or 4 on 6.3)	1 yes, I have decided to postpone my decision to have a child in the near future 2 Yes, I have decided I want a child sooner 3 No, I have not changed my plans	
6.5.	Are you or your partner currently doing something to avoid or delay a pregnancy, including condoms, contraceptive methods, traditional methods, etc.?	1 No 2 Yes, all the time 3 Yes, most of the time 4 Yes, sometimes	If 2, 3 or 4 go to 6.7
	Are you currently pregnant?	1 No 2 Yes 3 I don't know	If 2, go to section 7.
	Did you give birth during the COVID-19 circuit breaker measures?	1 No 2 Yes 3 Partially	If 2, go to 7.9.
	Do you currently use a contraceptive method?	1 No 2 Yes, all the time 3 Yes, most of the time 4 Yes, sometimes	If 2, 3 or 4 go to 6.7.
6.6.	What is the main reason you are not using contraception?	1 I want to get pregnant in the near future 1 I am not regularly sexually active and don't need contraceptives 3 I am in menopause / I can't get pregnant 2 I don't know what is the best method to use 3 I am scared of the side-effects 4 My partner objects 5 Other	Continue to section 8.
6.7.	What contraceptive method are you currently using? (<i>multiple answers possible</i>)	1 Male/female condom 2 Diaphragm 3 Pills 4 Patch/ring 5 Copper IUD 6 Hormonal IUD 7 Implant 8 Injectables 9 Self or partner sterilization	

		<ul style="list-style-type: none"> 10 Withdrawal 11 Natural methods (rhythm method) 12 Birth control apps 13 Other... 	
6.8.	Have the COVID-19 circuit breaker measures stopped or hindered you from seeking or obtaining contraception?	<ul style="list-style-type: none"> 1 No 2 Yes 	If no, go to 6.10
6.9.	What stopped or hindered you from seeking or obtaining contraception? (<i>multiple answers possible</i>)	<ul style="list-style-type: none"> 1 No transport available 2 I am too afraid I will get COVID-19 if I would go to the doctor/health centre to get contraceptives 3 I am not able/allowed to leave the house 4 Method not in stock 5 Doctor/health professional not available 6 Pharmacy/dispensary closed 7 I can no longer afford it 8 Health centre/clinic has long queues or is not accessible at this time 9 I did not want anyone to know that I am sexually active in general 10 I did not want anyone to know that I am having sex during the circuit breaker period 9 Other 	
6.10.	What services were you using to seek or obtain contraceptive services <i>before</i> the COVID-19 social distancing measures? (<i>multiple responses possible</i>)	<ul style="list-style-type: none"> 1 General practitioner 2 Other private specialist clinics 3 Polyclinic 4 Government hospital 5 Online services 6 Telephone services 7 Over the counter services (pharmacy) 8 Other 	
6.11.	What services did you use to seek or obtain contraceptive services <i>during</i> the period when the COVID-19 circuit breaker measures were in place? (multiple responses possible)?	<ul style="list-style-type: none"> 1 General practitioner 2 Other private specialist clinics 3 Polyclinic 4 Government hospital 5 Online services 6 Telephone services 7 Over the counter services (pharmacy) 8 Other 9 I did not need to seek or obtain contraceptive services during the COVID-19 social distancing measures 	
6.12.	How do you describe your use of contraceptions during the COVID-19 circuit breaker measures?	<ul style="list-style-type: none"> 1 The same as normal 2 More difficult to use the contraceptives as prescribed (e.g. unable to stick to medication routine or adherence) 3 Easier to use the contraceptives as prescribed (e.g. better able to stick to medication routine or adherence) 	Go to section 8

7. Access to Reproductive Health services, antenatal care, pregnancy and maternal and child health (only women responding yes to 6.3.)			
Women only - Min 0 – Max 8			
7.1.	How many months have you been pregnant?	1-9	
7.1a	When you found out you were pregnant, what was your reaction?	1 Very unhappy 2 Somewhat unhappy 3 A little happy 4 Very happy	
7.1b	Had you planned to become pregnant?	1 yes 2 Yes, but it was sooner than we planned 3 Yes, but it was later than we planned 4 No	
7.1c	Did you getting pregnant, in your opinion, have anything to do with the COVID-19 situation?	1 No 2 Yes, I could not access contraceptives because of COVID-19 3 Yes, I could not access emergency contraceptives because of COVID-19 4 Yes, I needed the money/gifts from a sexual relationship 5 Yes, there is more idling about in the community because schools and companies are closed 6 Yes, there is more violence and rape in the community 7 Other (specify)	
7.2.	Have you missed or delayed pregnancy health care appointments <i>during</i> the COVID-19 social distancing measures? (Some providers have been seeing their patients by phone or by video conferencing. We are NOT counting those types of visits as missed.)	1 No 2 Yes, because I am afraid I may acquire COVID-19 in the hospital/health care centre 3 Yes, because the doctor/nurse cancelled or rescheduled the appointment because of COVID-19 4 Yes, other reason	
7.3.	How satisfied are/were you with your pregnancy health care during the COVID-19 social distancing measures?	1 not at all satisfied 2 not satisfied 3 neutral 4 a bit satisfied 5 very satisfied	
7.4.	Because of COVID-19, did you feel anxious or depressed during your pregnancy?	1 No 2 Yes, a bit 3 Yes, a lot	
7.5.	Did you receive information on acquiring COVID-19 during pregnancy? (multiple answers possible)	1 No 2 Yes, from my doctor/midwife 3 Yes, from the media 4 Yes, from other sources	
7.6.	Do you have any concerns regarding your delivery in the following weeks/months?	1 No 2 Yes, I am afraid I may acquire COVID-19 in the hospital/health care centre 3 Yes, I am afraid I might not know how to get to the hospital 4 Yes, other reason	
7.7.	Where you do plan to deliver your baby?	1 In the health care centre or hospital 2 At home with a health care worker 3 At home with a traditional birth attendant 4 At home alone	If 1 or 5, go to section 9

		5 Other,...	
7.8.	Why do you plan to give birth at home?	1 I am concerned about the risk of COVID-19 in health facilities 2 The facility is closed or cannot provide services 3 I have no access to a facility 4 I prefer to deliver at home	Go to section 9
7.9.	Where did you give birth?	1 At a hospital or health centre 2 At home with a skilled birth attendant 3 At home alone 4 At home with a traditional birth attendant 5 Other	If 1 or 5, go to 7.11
7.10.	Why did you give birth at home?	1 I was concerned about the risk of COVID-19 in health facilities 2 The facility is closed or cannot provide services 3 I have no access to a facility 4 I planned to deliver at home	
7.11.	Have you missed or delayed post-natal care appointments as a result of the COVID-measures? (Some providers have been seeing their patients by phone or by video conferencing. We are NOT counting those types of visits as missed.)	1 No 2 Yes, because I was afraid to go to the health services 3 Yes, because the doctor/nurse cancelled or rescheduled the appointment 4 Yes, other reason	

8. Abortion (only women) – POSSIBLY OPTIONAL FOR COUNTRIES WHERE ABORTION IS FOREBIDDEN, THOUGH PREFERRED THAT THIS IS ASKED ANYWAY TO ASSESS UNSAFE ABORTIONS			
Women only - Min 1 - Max 6			
8.1.	During the COVID-19 circuit breaker measures have you been in need of a termination of pregnancy (abortion)?	1 No 2 Yes	If no, go to section 9.
8.2.	Did you have an abortion during the COVID-19 circuit breaker measures?	1 No 2 Yes, a medical abortion (taking pills, e.g. misoprostol, or herbs) 3 Yes, a surgical abortion 4 Yes, with other methods	
8.3.	Has the COVID-19 situation stopped or hindered you from seeking or obtaining an abortion?	1 No 2 Yes	If 1 on 8.2 and 8.3., go to 8.5.
8.4.	How did the COVID-19 circuit breaker measures stop or hinder you from seeking or obtaining an abortion? (multiple answers possible)	1 No transport available 2 I am too afraid I will acquire COVID-19 if I would go to the doctor/health centre to get contraceptives 3 I am not able/allowed to leave the house 4 Method not in stock 5 Doctor/health professional not available 6 Pharmacy/dispensary closed 7 I can no longer afford it 8 Health centre/clinic has long queues or is not accessible at this time 9 Other	Go to section 9.
8.5.	What services would you use to obtain an abortion before the COVID-19 circuit breaker measures? (multiple responses possible)?	1 I never had an abortion before the COVID-19 social distancing measures 2 General practitioner 3 Other private specialist clinics 4 Polyclinic 5 Government hospital 6 Online services 7 Telephone services 8 Over the counter services (pharmacy) 9 Traditional healer 10 Self-medication 11 Abortion clinic 12 Through a non-governmental organization or civil society organization for abortion 11 Other	
8.6.	What services did you use to obtain an abortion during the COVID-19 circuit breaker measures? (multiple responses possible)?	1 General practitioner 2 Other private specialist clinics 3 Polyclinic 4 Government hospital 5 Online services 6 Telephone services 7 Over the counter services (pharmacy) 8 Traditional healer 9 Self-medication 10 Abortion clinic 11 Through a non-governmental organization or civil society organization for abortion 12 Other	

8.7.	Did you experience any delays in obtaining abortion care?	1 No 2 Yes, a few days 3 Yes, 1-2 weeks 4 Yes, 3-4 weeks 5 Yes, more than 4 weeks	
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9. Sexual and gender-based violence				
Min 10 – max 14				
9.1	In your everyday life, in the three months before the COVID-19 situation, how vulnerable did you feel for sexual harassment or sexual, physical, or emotional assault by someone who does not live in your house?		1 Not vulnerable at all 2 Little vulnerable 3 Neutral 4 Quite vulnerable 5 Very vulnerable	
9.2	In your everyday life, during the COVID-19 situation, how vulnerable did you feel for sexual harassment or sexual, physical or emotional assault by someone who does not live in your house?		1 Not vulnerable at all 2 Little vulnerable 3 Neutral 4 Quite vulnerable 5 Very vulnerable	
		<i>In the three months before</i> the COVID-19 social distancing measures	<i>During</i> the COVID-19 social distancing measures	
9.3	Has a partner tried to restrict (online or phone) contact with your family?	1 No 2 Yes, once 3 Yes, multiple times 4 Not applicable	1 No 2 Yes, once 3 Yes, multiple times 4 Not applicable	
9.4	Has a partner insulted you or made you feel bad about yourself?	1 No 2 Yes, once 3 Yes, multiple times 4 Not applicable	1 No 2 Yes, once 3 Yes, multiple times 4 Not applicable	
9.5	Has a partner not provided money to run the house or look after the children, though they had money for other things?	1 No 2 Yes, once 3 Yes, multiple times 4 Not applicable	1 No 2 Yes, once 3 Yes, multiple times 4 Not applicable	
9.6	Has a partner slapped, pushed, hit, kicked or choked you or thrown something at you that could hurt you?	1 No 2 Yes, once 3 Yes, multiple times 4 Not applicable	1 No 2 Yes, once 3 Yes, multiple times 4 Not applicable	
9.7	Has a partner physically forced you to have perform sexual acts when you did not want to?	1 No 2 Yes, once 3 Yes, multiple times 4 Not applicable	1 No 2 Yes, once 3 Yes, multiple times 4 Not applicable	
9.8	Have you ever performed sexual acts when you did not want to because you were afraid of what your partner might do?	1 No 2 Yes, once 3 Yes, multiple times 4 Not applicable	1 No 2 Yes, once 3 Yes, multiple times 4 Not applicable	
9.9	If yes on any of the before COVID-19 questions: Did you ever talk to someone about the violence experiences you had before the COVID-19 circuit breaker measures? <i>(multiple responses possible)</i>		1 No 2 Yes, to a relative 3 Yes, to a friend 4 Yes, to a phone or online helpline 5 Yes, to the social services 6 Yes, to the police 7 Yes, to an association 8 Yes, other...	
9.1.	Did you ever officially report (i.e. file a complaint) any violence experiences you had before the COVID-19 circuit breaker measures?		1 No 2 Yes	

9.2.	If yes on any of the during/after COVID-19 questions: Did you ever talk to someone about the violence experiences you had during the COVID-19 circuit breaker measures? (multiple responses possible)	1 No 2 Yes, to a relative 3 Yes, to a friend 4 Yes, to a phone or online helpline 5 Yes, to the social services 6 Yes, to the police 7 Yes, to an association 8 Yes, other...	
9.3.	Did you ever officially report (i.e. file a complaint) any violence experiences you had during the COVID-19 circuit breaker measures?	1 No 2 Yes	

10. Optional: Female genital mutilation/cutting and early/forced marriage			
Min 2 – Max 10			
10.1.	Does early marriage (marriage before the age of 18 years) happen in your community?	1 No 2 Yes 3 I don't know	If no, go to 10.6
10.2.	Do you have a child between 10 and 18 years old?	1 No 2 Yes, one 3 Yes, more than one	If no, go to 10.5
10.3.	Before the COVID-19 circuit breaker measures, did you intend to arrange a marriage for your child(ren) that are between 10 and 18 years old?	1 No 2 Yes	
10.4.	Did the COVID-19 situation change your plans to arrange a marriage for your adolescent child(ren)? (multiple responses possible)	1 No 2 Yes, I will arrange the marriage(s) sooner than planned 3 Yes, I will arrange the marriage(s) later than planned 4 Yes, I have cancelled the marriage plans	
10.5.	In general, do you feel that because of COVID-19, girls and boys are at a higher risk of early marriage?	1 No 2 Yes, somewhat higher risk 3 Yes, much higher risk 4 I don't know	
10.6.	Is female circumcision practiced in your community?	1 No 2 Yes 3 I don't know	If no, go to section 11
10.7.	Do you have a daughter who is at the age that circumcision is generally done?	1 No 2 Yes	If no, go to 10.10
10.8.	Before the COVID-19 circuit breaker measures, did you intend to circumcise your daughter?	1 No 2 Yes	
10.9.	Did the COVID-19 situation change your plans to circumcise your daughter?	1 No 2 Yes, I decide to do the circumcision sooner than planned 3 Yes, I decide to do the circumcision later than planned 4 Yes, I have cancelled the circumcision plans	
10.10.	In general, do you feel that because of COVID-19, girls are at a higher risk of circumcision?	1 No 2 Yes, somewhat higher risk 3 Yes, much higher risk 4 I don't know	

11. HIV/STI			
Min 2 – Max 10			
11.1.	During the COVID-19 circuit breaker measures have you wanted a test for HIV or another sexually transmitted infection?	1 No 2 Yes	If 1, skip to 11.5.
11.2.	Has the COVID-19 situation stopped or hindered you from accessing a test for HIV or another sexually transmitted infection?	1 No 2 Yes	If 1, go to 11.4.
11.3.	How did the COVID-19 circuit breaker measures stop or hinder you from accessing a test for HIV or another sexually transmitted infection?	1 No transport available 2 Postal services not functioning 3 Pharmacy closed 4 I can no longer afford it 5 Health centre/clinic has long queues or is not accessible at this time 6 Not able/allowed to leave house 7 Health workers not offering/providing HIV/STI testing services anymore 8 Other (Please specify)	
11.4.	What services would/did you use to obtain a test for HIV or another sexually transmitted infection? (multiple responses possible)?	Before the COVID-19 social distancing measures	During the COVID-19 social distancing measures
		0 Never needed a test before COVID-19 1 GP 2 Polyclinic 3 Government Sexual health specialist clinic (DSC) 4 Private Hospital 5 Public Hospital 6 Anonymous test site 7 Online services 8 Telephone services 9 Over the counter services (pharmacy) 10 Traditional healer 11 Self-medication 12 Other, specify	1 GP 2 Polyclinic 3 Government Sexual health specialist clinic (DSC) 4 Private Hospital 5 Public Hospital 6 Anonymous test site 7 Online services 8 Telephone services 9 Over the counter services (pharmacy) 10 Traditional healer 11 Self-medication 12 Other, specify
11.5.	In your life, have you ever tested positive for HIV?	1 No 2 Yes 3 Prefer not to answer	If 1 or 3, go to section 12
11.6.	During the COVID-19 circuit breaker measures, were any appointments at your clinic/health centre for HIV treatment or care cancelled?	1 No 2 Yes	
11.7.	During the COVID-19 circuit breaker measures, have you missed or delayed an appointment at your clinic/health centre for HIV treatment or care?	1 No 2 Yes	If 1, go to 11.9.
11.8.	What was the main reason for missing or delaying an appointment at your clinic/health centre for HIV treatment or care?	1 No transport available 2 I was too afraid I will acquire COVID-19 if I would go to the doctor/health centre for my HIV treatment or care	

		<ul style="list-style-type: none"> 3 I am not able/allowed to leave the house 4 Doctor/health professional not available 5 Pharmacy/dispensary closed 6 I can no longer afford it 7 Health centre/clinic has long queues or is not accessible at this time 8 Other 	
11.9.	How did the COVID-19 circuit breaker measures affect your adherence to medication for HIV (on a scale from 1 to 5)?	<ul style="list-style-type: none"> 1 made adherence to ART impossible 2 made adherence more difficult 3 didn't affect my adherence to ART 4 made adherence somewhat easier 5 made adherence to ART much easier 6 I am not taking medication for HIV at this point 	
11.10.	During the COVID-19 circuit breaker measures, have you been worried that you will run out of ART tablets/your HIV medication because of the lockdown?	<ul style="list-style-type: none"> 1 Very worried 2 A bit worried 3 Not worried 	
11.11.	Have the COVID-19 circuit breaker measures prompted you to disclose your HIV status?	<ul style="list-style-type: none"> 0 no, I continued to keep my status private 1 no, I had already disclosed my status 2 yes, it forced me to disclose my status 3 yes, although I was planning on disclosing anyway 	

12. Optional: Mental health			
	Since the last week:		
12.2.	I get angry frequently with slight provocation.	Totally agree Agree Agree nor disagree Disagree Totally disagree	
12.3.	Does this happen more or less since the start of the COVID-19 circuit breaker?	A lot more More About the same Less A lot less	
12.4.	I have felt frustrated with things in general.	Totally agree Agree Agree nor disagree Disagree Totally disagree	
12.5.	Does this happen more or less since the start of the COVID-19 circuit breaker?	A lot more More About the same Less A lot less	
12.6.	I have felt bored.	Totally agree Agree Agree nor disagree Disagree Totally disagree	
12.7.	Does this happen more or less since the start of the COVID-19 circuit breaker?	A lot more More About the same Less A lot less	
12.8.	I have worried about my financial situation.	Totally agree Agree Agree nor disagree Disagree Totally disagree	
12.9.	Does this happen more or less since the start of the COVID-19 circuit breaker?	A lot more More About the same Less A lot less	
	General:		
12.10.	I feel frustrated because of the COVID-19 restrictions	Totally agree Agree Agree nor disagree Disagree Totally disagree	
12.11.	I am confused about what I can or cannot do due to COVID-19.	Totally agree Agree Agree nor disagree Disagree Totally disagree	
12.12.	I am afraid to acquire COVID-19.	Totally agree Agree Agree nor disagree	

		Disagree Totally disagree	
12.13.	I experience obsessive or compulsive behaviors with regards to hand washing.	Totally agree Agree Agree nor disagree Disagree Totally disagree	
12.14.	I am afraid of touching items outside my house.	A lot more More About the same Less A lot less	
12.15.	I cannot stop thinking about the COVID-19 epidemic.	Totally agree Agree Agree nor disagree Disagree Totally disagree	
12.16.	I have nightmares about the current situation.	Totally agree Agree Agree nor disagree Disagree Totally disagree	
12.17.	I feel that there is enough protective gear (gloves, mouth masks, sterilizing alcohol) available for me.	Totally agree Agree Agree nor disagree Disagree Totally disagree	
12.18.	I feel the Government fails to provide enough, adequate and true information concerning the COVID-19 outbreak.	Totally agree Agree Agree nor disagree Disagree Totally disagree	
12.19.	If I have to sneeze or cough in my household, I try to hide this from the people around me.	Totally agree Agree Agree nor disagree Disagree Totally disagree	
12.20.	If I would be outside and I would have to sneeze or cough, I would try to hide this from the people around me.	Totally agree Agree Agree nor disagree Disagree Totally disagree	
12.21.	How would you rate your overall mental health right now?	Poor Fair Good Very good Excellent	
	In the past two weeks, how often have you been bothered by...		
12.22.	...feeling down, depressed or hopeless?	Totally agree Agree Agree nor disagree Disagree Totally disagree	

12.23.	Does this happen more or less since the start of the lockdown?	A lot more More About the same Less A lot less	
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13. Optional: Nutrition		
Min/Max 4		
13.1.	During the COVID-measures, did you worry that your household would not have enough food?	1 No 2 Yes, but less than before 3 Yes, but not more than before 4 Yes, more than before
13.2.	During the COVID-measures, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	1 No 2 Yes, but less than before 3 Yes, but not more than before 4 Yes, more than before
13.3.	During the COVID-measures, did you or any household member eat less in either the morning or evening meal than you felt you needed because there was not enough food?	1 No 2 Yes, but less than before 3 Yes, but not more than before 4 Yes, more than before
13.4.	During the COVID-measures, were your household food stores ever completely empty and there was no way of getting more?	1 No 2 Yes, but less than before 3 Yes, but not more than before 4 Yes, more than before
13.5.	During the COVID measures, did you increase your consumption of foods of low nutritional value (e.g. fast food)?	1 No 2 Yes, a bit 3 Yes, a lot
13.6.	During the COVID measures, did you increase your food consumption in general?	1 No 2 Yes, a bit 3 Yes, a lot

Supplemental Table 4. COVID-19 variables in the I-SHARE multi-country survey, 2020-2021.

How much would you say that you're following COVID-19 social distancing measures?	n	%
Not at all	316	1.4
A little bit	3558	15.7
A lot	13336	58.9
Very strictly	5432	24.0
Total	22642	100.0
Were you ever in (self-)isolation because of symptoms or because you were in close contact with someone with COVID-19 or because you returned from a country that had a large number of cases?		
	n	%
No	17327	76.6
Yes	5303	23.4
Total	22630	100.0
Were you ever tested for COVID-19?		
No	14996	66.2
Yes, I have always tested negative	6421	28.4
Yes, I have not received the results	49	0.2
Yes, I tested positive at least once	1175	5.2
Total	22641	100.0
Since the COVID-pandemic, the economic situation of many households has changed. Has this been the case for you?		
Yes, the economic situation of my household became worse	7235	32.0
No, the economic situation of my household stayed the same	14046	62.2
Yes, the economic situation of my household became improved	1302	5.8
Total	22583	100.0
Have you personally experienced a loss of income?		
Yes, a total loss of income	1634	7.6
Yes, a partial loss of income	5495	25.5
No loss of income	11807	54.8
I have no personal income before COVID-19	2607	12.1
Total	21543	100.0

Supplemental Table 5. AXIS Risk of Bias Assessment for I-SHARE country surveys (n=25)

The Appraisal of the I-SHARE country specific surveys (1 of 3)

Components	Country							
	Argentina	Australia	Botswana	China	Colombia	Czech Republic	Denmark	France
Introduction								
1. Were the aims/objectives of the study clear?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Methods								
2. Was the study design appropriate for the stated aim(s)?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. Was the sample size justified?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4. Was the target/reference population clearly defined? (Is it clear who the research was about?)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. Was the sample frame taken from an appropriate population base so that it closely represented the target/reference population under investigation?	No	No	No	No	No	Yes	Yes	No
6. Was the selection process likely to select subjects/participants that were representative of the target/reference population under investigation?	No	No	No	No	No	Yes	Yes	No
7. Were measures undertaken to address and categorise non-responders?	No	No	No	No	No	Yes	Yes	No
8. Were the risk factor and outcome variables measured appropriate to the aims of the study?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9. Were the risk factor and outcome variables measured correctly using instruments/measurements that had been trialled, piloted or published previously?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10. Is it clear what was used to determine statistical significance and/or precision estimates? (e.g., p-values, CIs)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11. Were the methods (including statistical methods) sufficiently described to enable them to be repeated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Results								
12. Were the basic data adequately described?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13. Does the response rate raise concerns about non-response bias?	DNK	DNK	DNK	DNK	DNK	Yes	Yes	DNK
14. If appropriate, was information about non-responders described?	NA	NA	NA	NA	NA	No	No	NA
15. Were the results internally consistent?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16. Were the results for the analyses described in the methods, presented?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

DNK (Do not know), NA (Not Applicable)

The Appraisal of the I-SHARE country specific surveys (2 of 3)

Components	Germany	Italy	Kenya	Latvia	Luxembourg	Malaysia	Mexico	Moldova
Introduction								
1. Were the aims/objectives of the study clear?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Methods								
2. Was the study design appropriate for the stated aim(s)?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. Was the sample size justified?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4. Was the target/reference population clearly defined? (Is it clear who the research was about?)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. Was the sample frame taken from an appropriate population base so that it closely represented the target/reference population under investigation?	No	No	No	No	No	No	No	No
6. Was the selection process likely to select subjects/participants that were representative of the target/reference population under investigation?	No	No	No	No	No	No	No	No
7. Were measures undertaken to address and categorize non-responders?	No	No	No	No	No	No	No	No
8. Were the risk factor and outcome variables measured appropriate to the aims of the study?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9. Were the risk factor and outcome variables measured correctly using instruments/ measurements that had been trialled, piloted, or published previously?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10. Is it clear what was used to determined statistical significance and/or precision estimates? (eg, p values, CIs)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11. Were the methods (including statistical methods) sufficiently described to enable them to be repeated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Results								
12. Were the basic data adequately described?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13. Does the response rate raise concerns about non-response bias?	DNK	DNK	DNK	DNK	DNK	DNK	DNK	DNK
14. If appropriate, was information about non-responders described?	NA	NA	NA	NA	NA	NA	NA	NA
15. Were the results internally consistent?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16. Were the results for the analyses described in the methods, presented?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

DNK (Do not know), NA (Not Applicable)

The Appraisal of the I-SHARE country specific surveys (3 of 3)

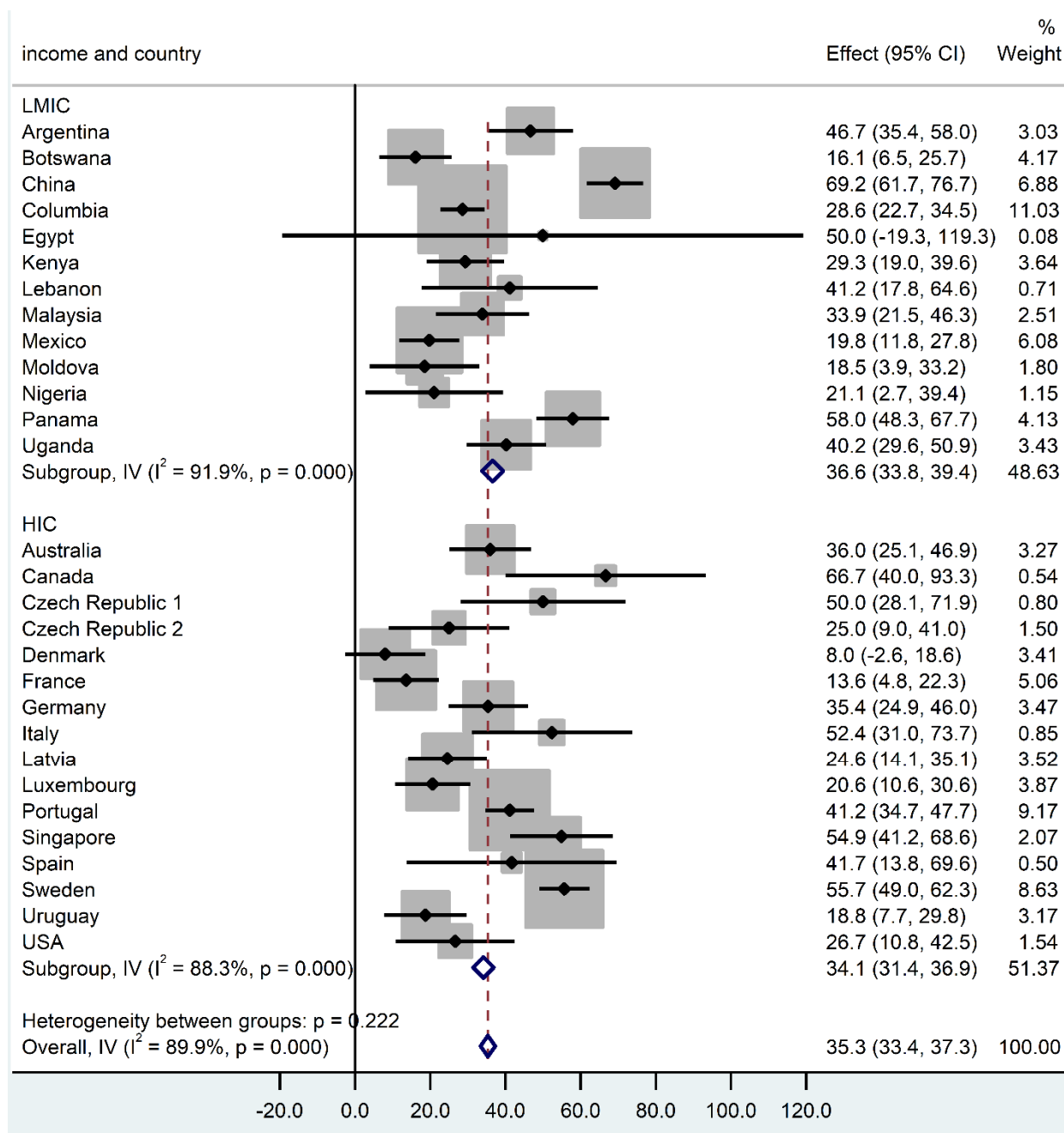
Components	Nigeria	Panama	Portugal	Singapore	Spain	Sweden	Uganda	Uruguay	USA
Introduction									
1. Were the aims/objectives of the study clear?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Methods									
2. Was the study design appropriate for the stated aim(s)?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. Was the sample size justified?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4. Was the target/reference population clearly defined? (Is it clear who the research was about?)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. Was the sample frame taken from an appropriate population base so that it closely represented the target/reference population under investigation?	No	No	No	No	No	No	No	No	No
6. Was the selection process likely to select subjects/participants that were representative of the target/reference population under investigation?	No	No	No	No	No	No	No	No	No
7. Were measures undertaken to address and categorise non-responders?	No	No	No	No	No	No	No	No	No
8. Were the risk factor and outcome variables measured appropriate to the aims of the study?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9. Were the risk factor and outcome variables measured correctly using instruments/measurements that had been trialled, piloted, or published previously?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10. Is it clear what was used to determined statistical significance and/or precision estimates? (e.g., p-values, CIs)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11. Were the methods (including statistical methods) sufficiently described to enable them to be repeated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Results									
12. Were the basic data adequately described?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13. Does the response rate raise concerns about non-response bias?	DNK	DNK	DNK	DNK	DNK	DNK	DNK	DNK	DNK
14. If appropriate, was information about non-responders described?	NA	NA	NA	NA	NA	NA	NA	NA	NA
15. Were the results internally consistent?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16. Were the results for the analyses described in the methods, presented?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

DNK (Do not know), NA (Not Applicable)

Supplemental Table 7. GRADE Framework to assess quality of evidence for meta-analysis outcomes

Outcomes	Effect Estimate (95%CI)	Certainty in Effect Estimates	Notes on Quality
Hindered access to HIV/STI testing during COVID-19 measures	32.3% (23.9 – 42.1%)	Moderate	Observational studies start at low quality. While risk of bias due to largely convenience sampling may further negatively impact certainty, quality of evidence was rated upwards due to large magnitude of effect, and a large sample size.
Experiencing physical and sexual violence during COVID-19 measures	4.4% (3.4 – 5.4%)	Moderate	Observational studies start at low quality. While risk of bias due to largely convenience sampling may further negatively impact certainty, quality of evidence was rated upwards due to a large sample size
Decreased condom use with casual partners during COVID-19 measures	5.8% (5.4 – 8.2%)	Moderate	Observational studies start at low quality. While risk of bias due to largely convenience sampling may further negatively impact certainty, quality of evidence was rated upwards due to a large sample size

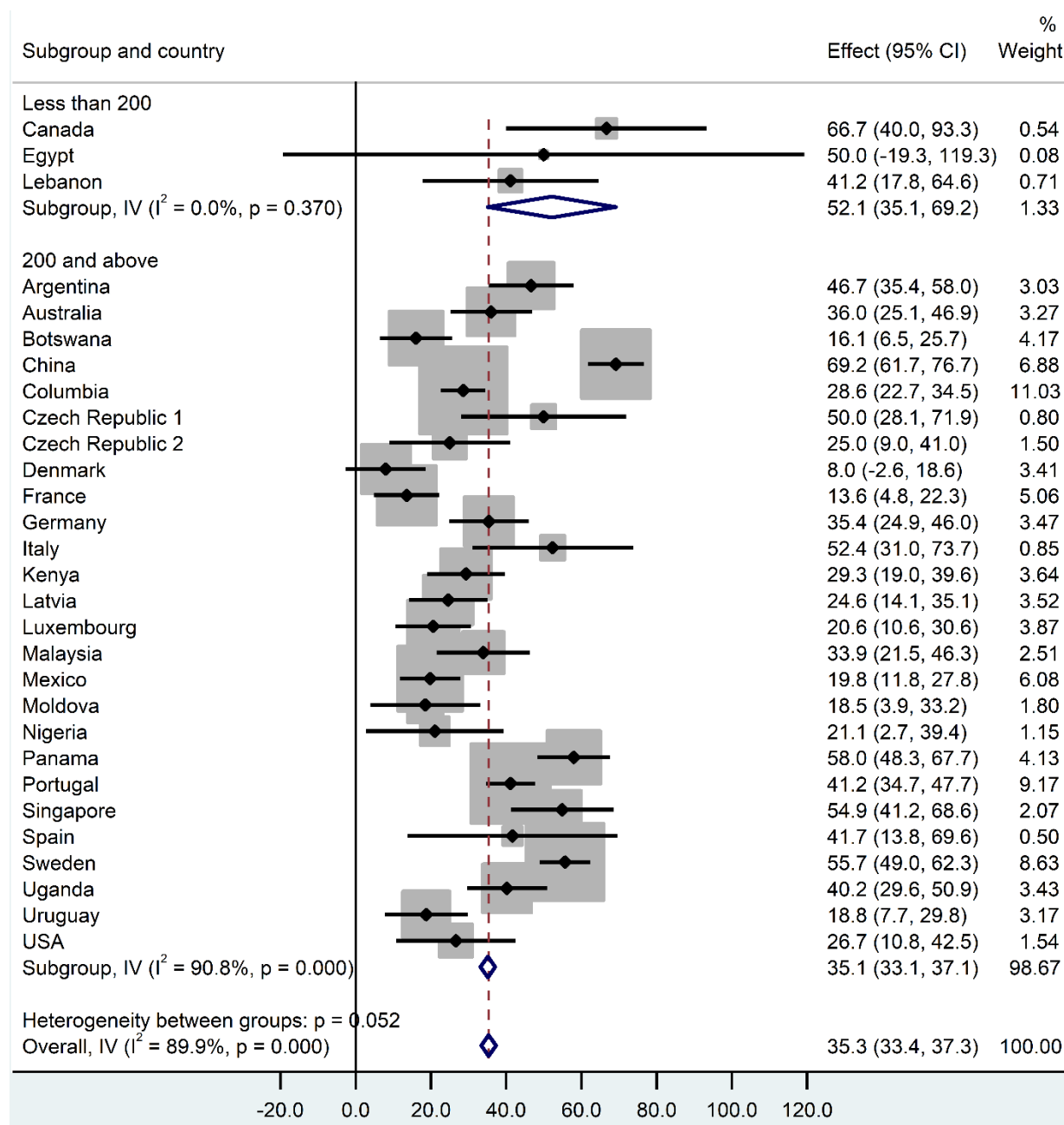
Supplemental Figure 1. Forest plot for random-effects meta-analysis of the association between country income level and access to HIV/STI testing during COVID-19 measures.



Proportion of hindered access to HIV/STI testing during COVID-19 measures.

Note: Effect sizes are expressed as proportions. Studies are represented by symbols whose area is proportional to the study's weight in the analysis. LMIC = low / middle income countries. HIC = high income countries. CI = confidence interval.

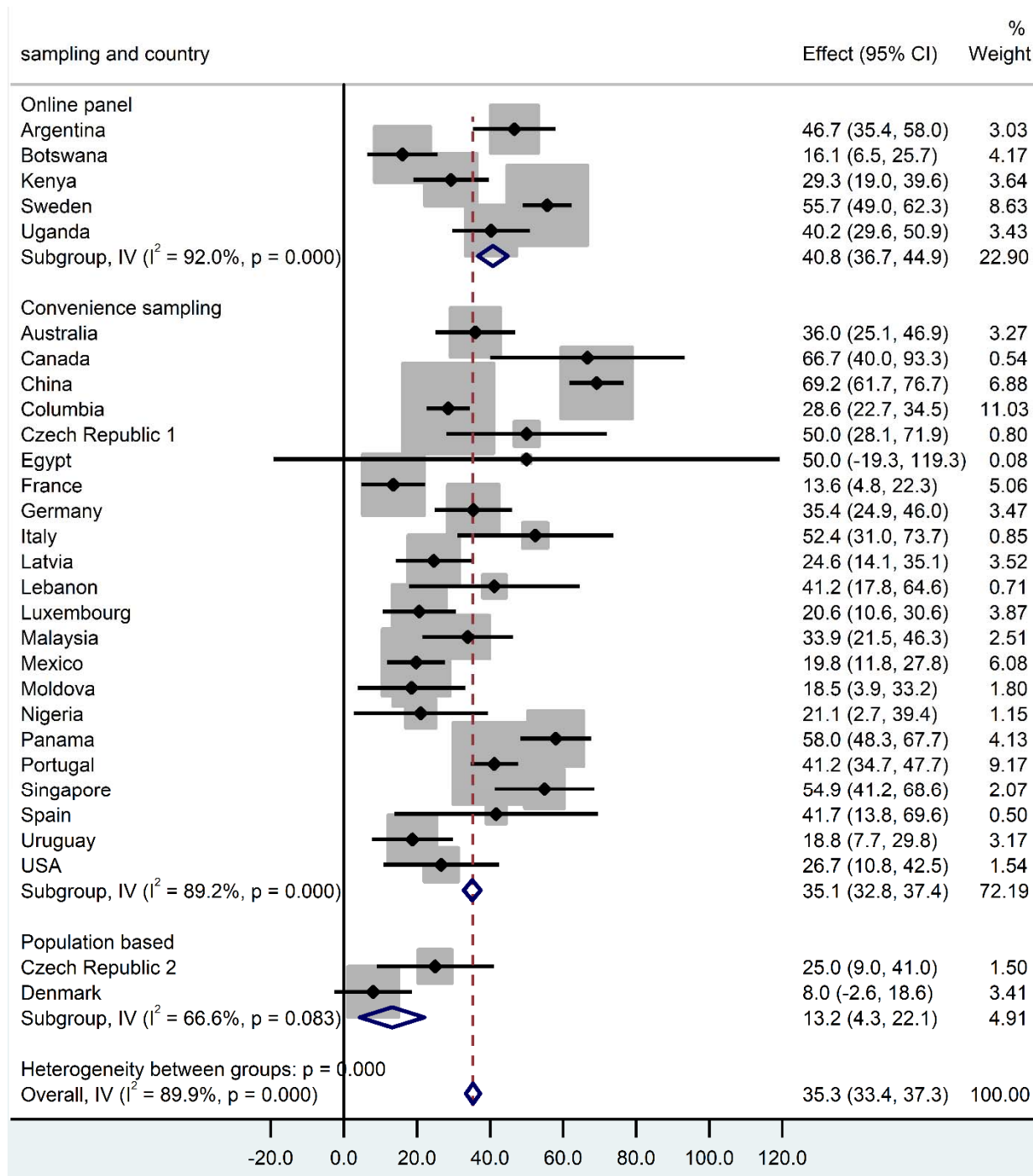
Supplemental Figure 2. Forest plot for random-effects meta-analysis of the association between sample size and access to HIV/STI testing during COVID-19 measures



Proportion of hindered access to HIV/STI testing during COVID-19 measures.

Note: Effect sizes are expressed as proportions. Studies are represented by symbols whose area is proportional to the study's weight in the analysis. CI = confidence interval.

Supplemental Figure 3. Forest plot for random-effects meta-analysis of the association between sampling method and access to HIV/STI testing during COVID-19 measures

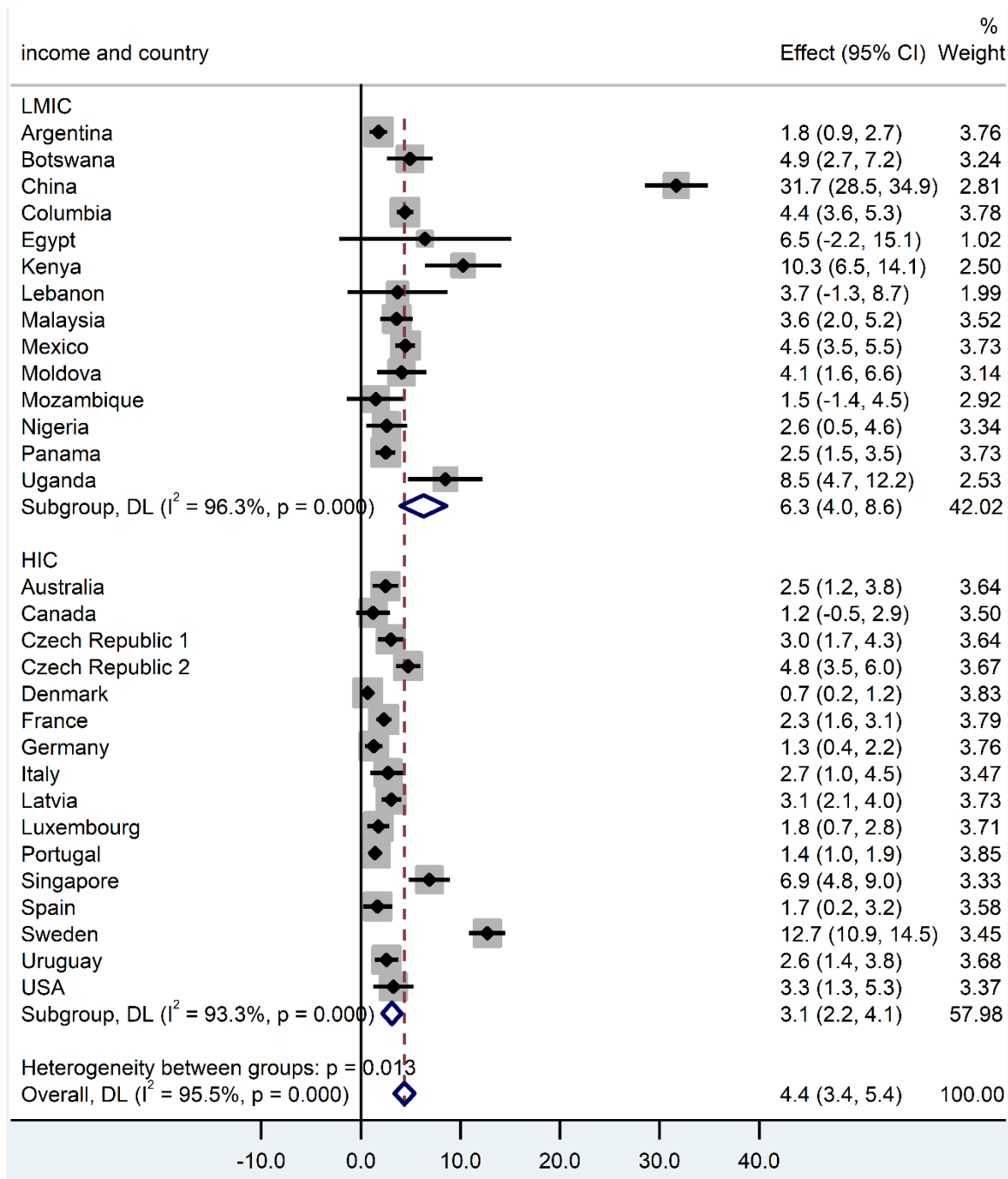


Proportion of hindered access to HIV/STI testing during COVID-19 measures.

Note: Effect sizes are expressed as proportions. Studies are represented by symbols whose area is proportional to the study's weight in the analysis. CI = confidence interval.

Fewer participants reported hindered access to HIV/STI testing during COVID-19 measures in studies that that employed population-based sampling (n=2) than those that did not (n=29) ($P=0.000$).

Supplemental Figure 4. Forest plot for random-effects meta-analysis of the association between country income level and exposure to IPV during COVID-10 measures

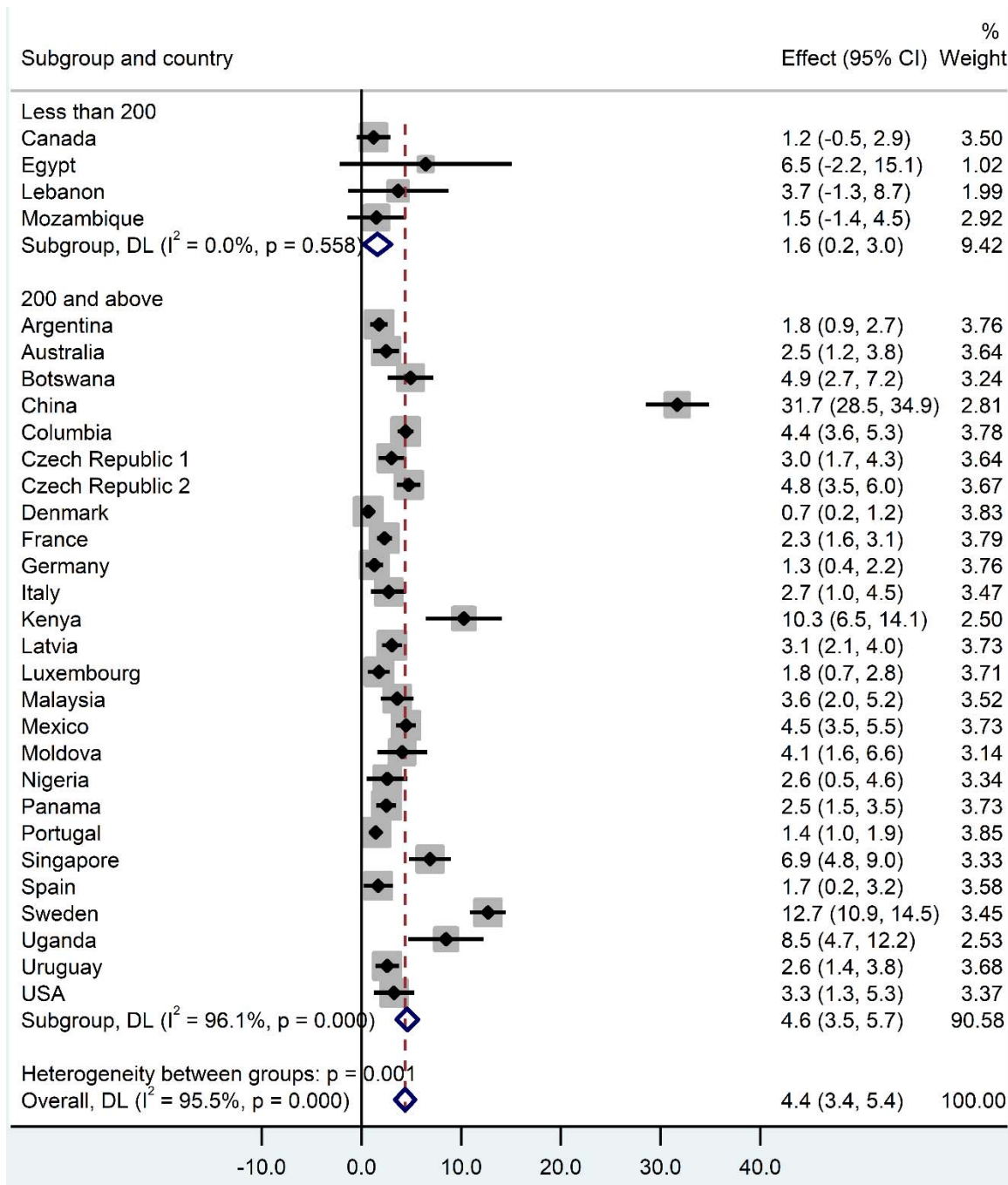


Proportion of IPV during COVID-19 measures.

Note. Effect sizes are expressed as proportions. Studies are represented by symbols whose area is proportional to the study's weight in the analysis. CI = confidence interval.

There was a difference in the proportion of respondents who reported exposure to IPV during the pandemic between studies conducted in HICs (n=16) and LMICs (n=14) ($P=0.013$).

Supplemental Figure 5. Forest plot for random-effects meta-analysis of the association between sample size and exposure to IPV during COVID-19 measures

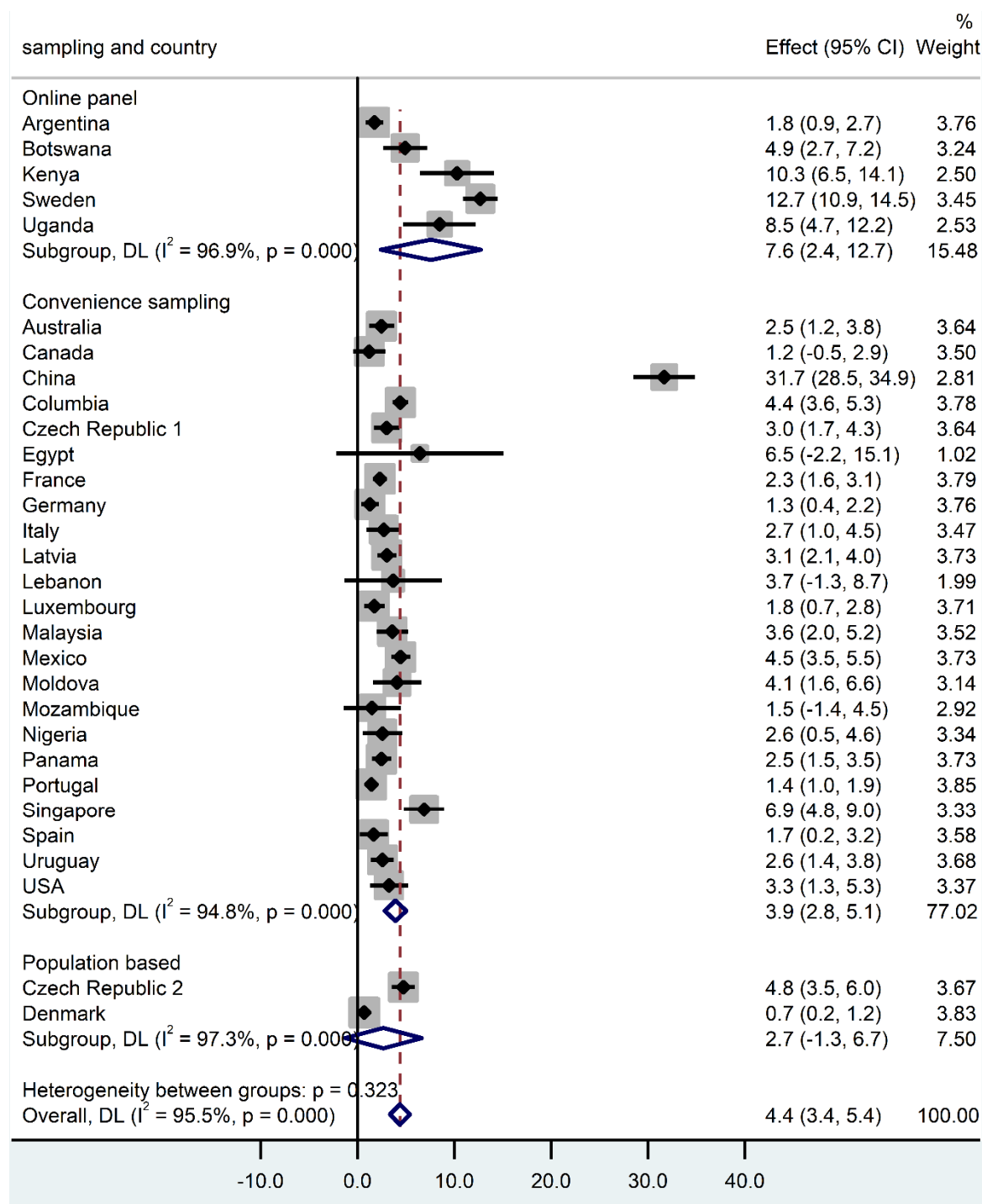


Proportion of IPV during COVID-19 measures.

Note: Effect sizes are expressed as proportions. Studies are represented by symbols whose area is proportional to the study's weight in the analysis. CI = confidence interval.

More respondents reported higher prevalence of IPV during the pandemic in studies with at least 200 participants (n=26) versus studies with fewer than 200 participants (n=4) (P=.001).

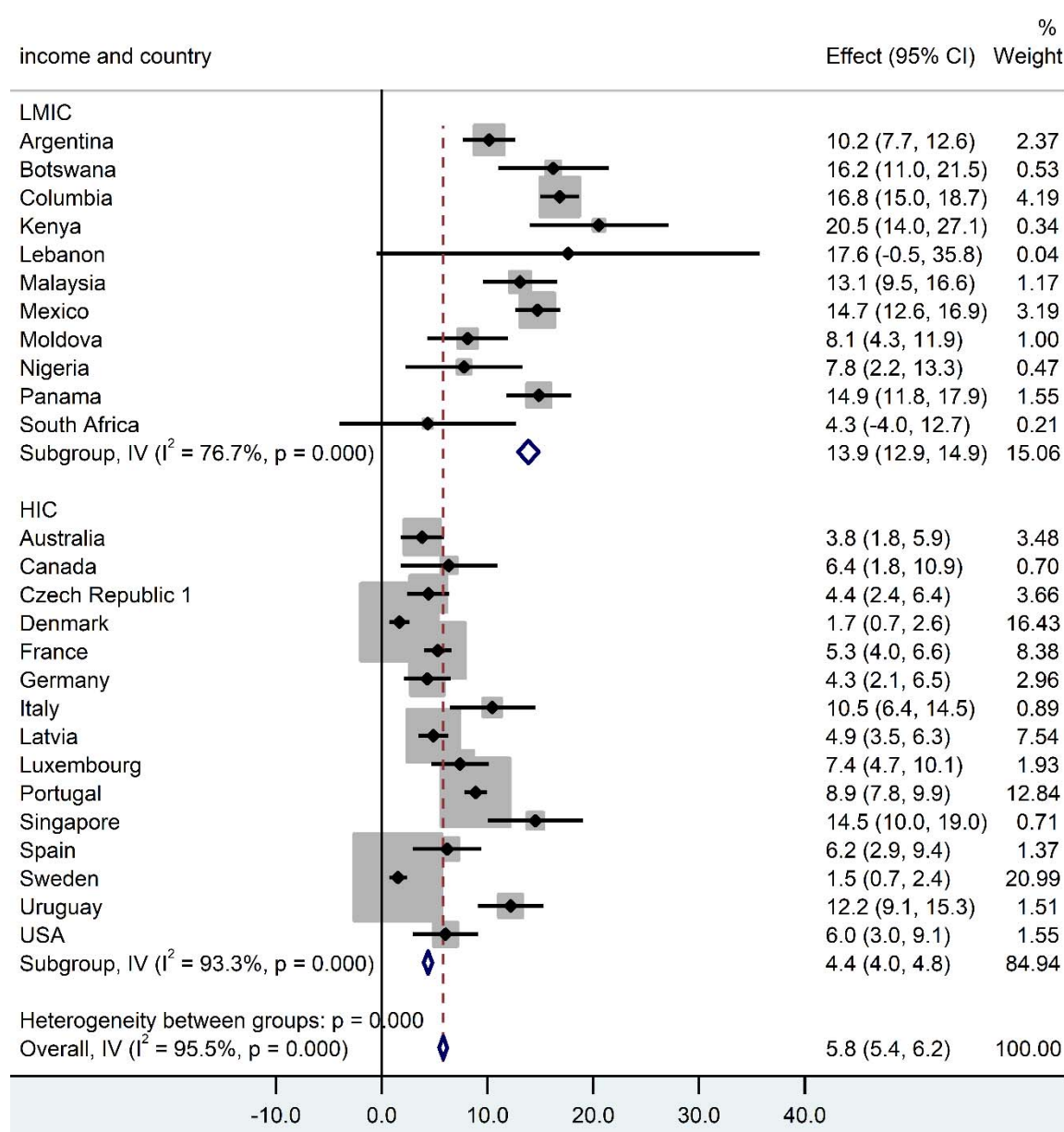
Supplemental Figure 6. Forest plot for random-effects meta-analysis of the association between sampling method and exposure to IPV during COVID-19 measures



Proportion of IPV during COVID-19 measures.

Note: Effect sizes are expressed as proportions. Studies are represented by symbols whose area is proportional to the study's weight in the analysis.

Supplemental Figure 7. Forest plot for random-effects meta-analysis of the association between country income level and decreased condom use with casual partner(s) during COVID-10 measures

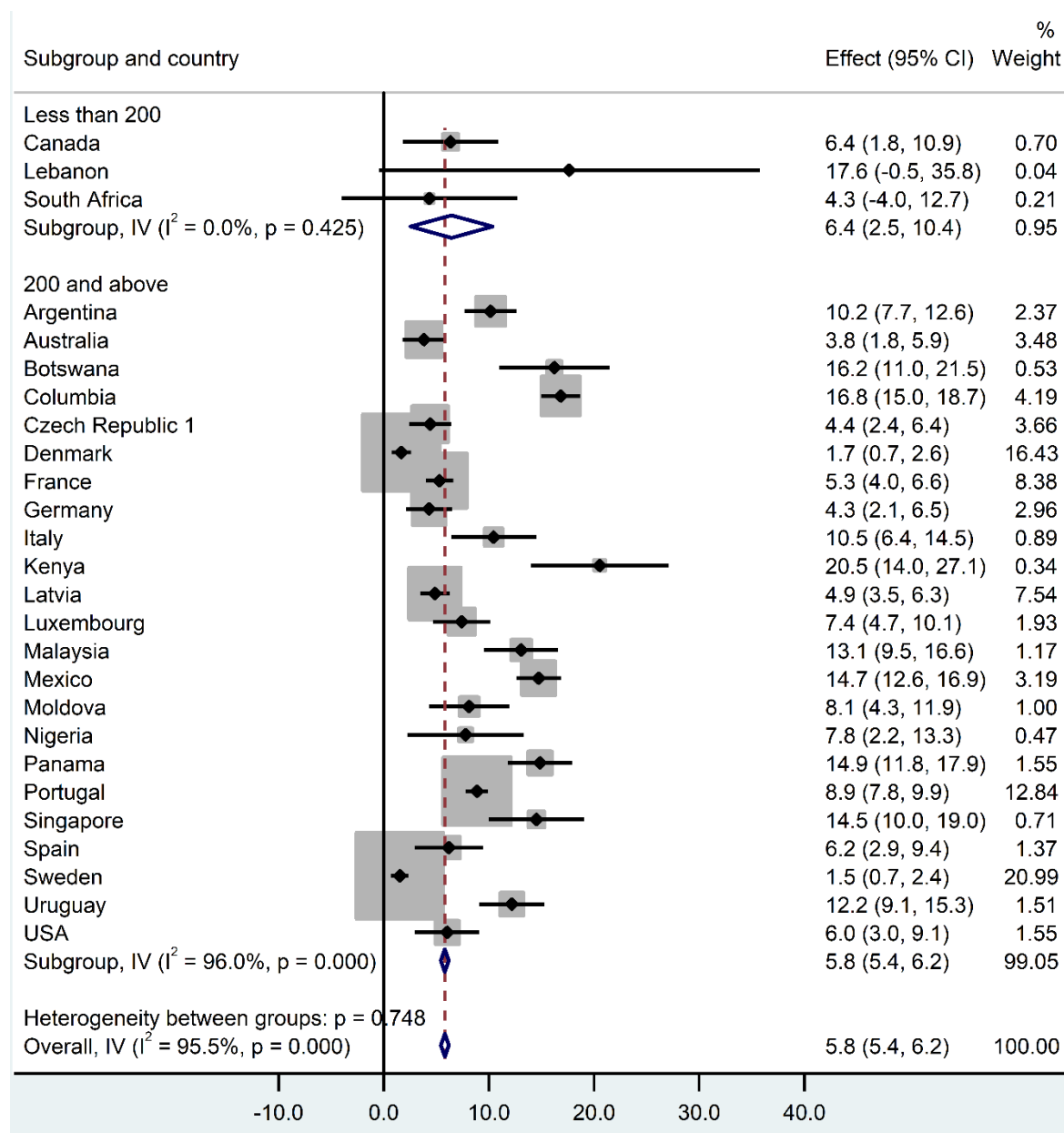


Proportion of decreased condom use with casual partner(s) during COVID-19 measures.

Note. Effect sizes are expressed as proportions. Studies are represented by symbols whose area is proportional to the study's weight in the analysis. CI = confidence interval.

There was a difference in the proportion of respondents who reported reduced condom use between studies conducted in HICs (n=16) and LMICs (n=14) ($P=0.000$).

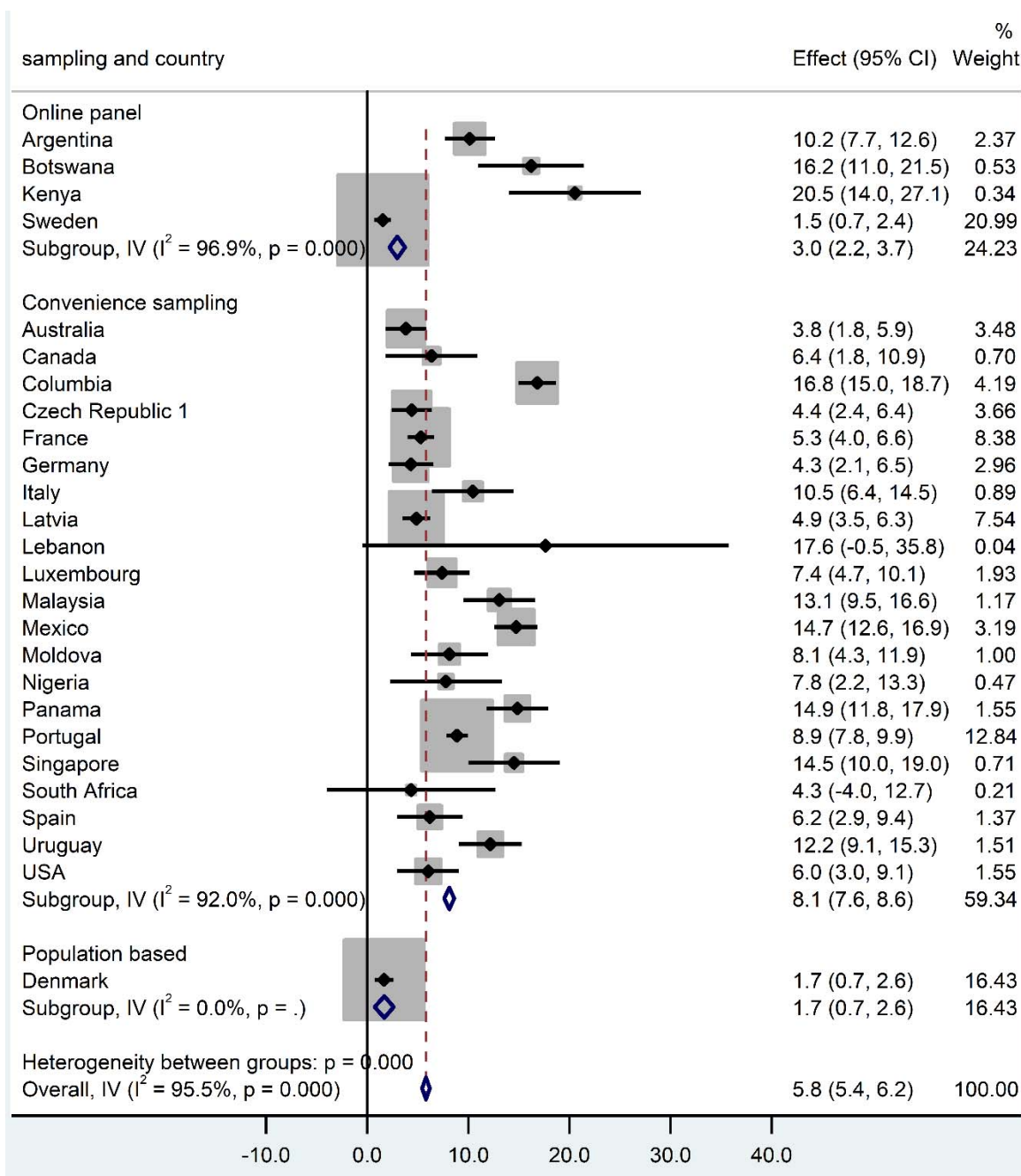
Supplemental Figure 8: Forest plot for random-effects meta-analysis of the association between sample size and decreased condom use with casual partner(s) during COVID-10 measures



Proportion of decreased condom use with casual partner(s) during COVID-19 measures.

Note: Effect sizes are expressed as proportions. Studies are represented by symbols whose area is proportional to the study's weight in the analysis. CI = confidence interval.

Supplemental Figure 9: Forest plot for random-effects meta-analysis of the association between sampling method and decreased condom use with casual partner(s) during COVID-10 measures



Proportion of decreased condom use with casual partner(s) during COVID-19 measures.

Note: Effect sizes are expressed as proportions. Studies are represented by symbols whose area is proportional to the study's weight in the analysis. CI = confidence interval.

Fewer participants reported reduced condom use in studies that did not use convenience sampling (n=4) than those that did (n=26) (P=.000).