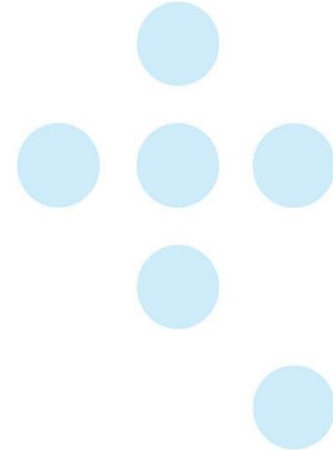




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REPORT



ON BIOLOGICAL AND BEHAVIORAL SURVEY AMONG MEN WHO HAVE SEX WITH MEN IN UKRAINE (2021)

MARIUPOL – KYIV, UKRAINE, 2023

**REPORT ON BIOLOGICAL AND
BEHAVIORAL SURVEY AMONG MEN WHO
HAVE SEX WITH MEN IN UKRAINE (2021)**

Mariupol – Kyiv, Ukraine, 2023

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EXECUTIVE SUMMARY

This report presents the key results of the biological and behavioral survey (BBS) among men who have sex with men (MSM) in Ukraine conducted in 2021. The primary objectives of the BBS among MSM were to estimate the prevalence of HIV and other sexually transmitted infections (STIs), their correlates, HIV service coverage, and population size (calculations will be presented later in a separate report). The BBS utilized respondent-driven sampling (RDS) to recruit participants. The survey included 6,632 respondents from 16 cities: Vinnytsia, Dnipro, Mariupol (Donetsk oblast), Zhytomyr, Zaporizhzhia, Ivano-Frankivsk, Kyiv, Kropyvnytskyi, Lviv, Mykolaiv, Odesa, Poltava, Kharkiv, Kherson, Cherkasy, and Chernihiv. Persons who are 14 years or older, male, have had one oral or anal sexual contact with a male within the last 6 months, and had been living/working/studying in the survey area for a period of at least 3 months, were eligible to be enrolled in the survey. Written informed consent was obtained for all participants. The survey included administration of a structured questionnaire by means of a face-to-face interview, pre/post-test counselling, and collection of specimens for rapid HIV and recency LAg-Avidity (LAg) testing, laboratory-based viral load testing and other tests (HCV antibody and syphilis).

According to the BBS MSM 2021:

- Mobile apps have become the most popular way to find male partners.
- 63% of participants are aware about existence of the Pre-Exposure Prophylaxis; 19% (among those who are aware of PrEP) reported having taken PrEP within the last 12 months.
- A quarter of the study participants have the experience of self-testing for HIV infection.
- The survey participants did not notice any significant impact of the Coronavirus disease 2019 (COVID-19) pandemic on their access to prevention services.
- HIV prevalence is 3.9%.

Findings of the survey will help guiding future prevention activities and public health care programming; as well as providing information for monitoring HIV prevention, care and treatment programs among MSM.

FUNDING SOURCE

The survey “Biological and Behavioral Surveillance among Men who have Sex with Men in Ukraine (2021)” was conducted as a component of a SILab Project “Support for the Ministry of Health of Ukraine in HIV epidemiological surveillance and laboratory QM/QI, improvement of strategic information use and public health capacity building within the framework of the US President’s Emergency Plan for AIDS Relief (PEPFAR)”, being implemented by the State Institution “Public Health Center of the Ministry of Health of Ukraine” (PHC) with support from PEPFAR through the US Centers for Disease Control and Prevention (CDC) under the terms of Cooperative agreement number - NU2GGH002168.

The survey was implemented in accordance with the Strategic Plan to ensure sustainability of bio-behavioral surveys in Ukraine (2018-2021) (*THE STRATEGIC PLAN TO ENSURE SUSTAINABILITY OF BIO-BEHAVIORAL SURVEYS IN UKRAINE (2018-2021)*, 2018).

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ACRONYMS AND ABBREVIATIONS

AIDS – acquired immunodeficiency syndrome – a chronic, potentially life-threatening condition caused by the human immunodeficiency virus

ART – antiretroviral therapy – the use of HIV medicines to treat HIV infection

AUDIT-C – Alcohol Use Disorders Identification Test-Concise

CDC – Centers for Disease Control and Prevention

CI – Confidence Interval

COVID-19 – Coronavirus disease 2019, caused by a virus, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

CS – control sample

CSEP – Center for Social Expertises named after Yu. Saenko

DBS – dry blood spot

EDTA – ethylenediaminetetraacetic acid

EECA – Eastern Europe and Central Asia region

EMIS – European MSM Internet Survey

EQC – external quality control

GAM – UNAIDS Global AIDS Monitoring

HCF – health care facility

HCV – Hepatitis C – an infectious disease caused by the Hepatitis C virus that primarily affects the liver

HIV – human immunodeficiency virus infection

HTS – HIV testing services – medical and psychological counseling of a person in regards to HIV/AIDS and counseling-associated voluntary medical testing of this person for the presence of HIV antibodies

BBS – Integrated Biological and Behavioral Surveillance – cross-sectional behavioral and biological survey connected in time and location with the same respondent

KI – key informants – representatives of non-governmental organizations or private persons who have expert knowledge about the surveyed target group, including representatives of this target group

KP – key populations - key populations at high risk of HIV infection

LA_g (LA_g-Avidity) – limiting antigen avidity. LA_g Avidity Test is in vitro enzyme immunoassay that measures the increasing avidity of HIV antibodies from liquid serum/plasma of DBS after the seroconversion. It is being used to estimate population-level HIV incidence.

LGBT – Lesbian, Gay, Bisexual, and Transgender

MOH of Ukraine – Ministry of health of Ukraine

MSM – men who have sexual intercourses with male partners. In this study we are focusing on the men who were practicing male-to-male sexual relations in the past 6 months. The MSM who are practicing bisexual behavior also could be included in the sample

NGO – non-governmental (public) organization legalized or registered according to the legislation of Ukraine

PHC – Public Health Center of the MOH of Ukraine

PHQ – Patient Health Questionnaire

PLHIV – people living with HIV

PrEP – pre-exposure prophylaxis – an HIV prevention strategy where HIV-negative individuals take anti-HIV medications before coming into contact with HIV to reduce their risk of becoming infected

PWID – people who inject drugs

QC – quality control

RDS – respondent-driven sampling – sampling, which is driven and implemented by the respondents themselves

RT – rapid test or rapid testing

SARS-CoV-2 – Severe acute respiratory syndrome coronavirus 2

SD – Standard Deviation – alternatively: root-mean-square deviation (RMSD) – in statistics, a measure that indicates to what extent observed values of the attribute deviate

SIHS – Short Internalized Homonegativity Scale

SOP – Standard Operating Procedures

SPSS – Statistical Package for the Social Sciences

STIs – Sexually Transmitted Infections

SW – sex workers – persons who provide sexual services for remuneration

TB – tuberculosis

TP – Treponema pallidum

UNAIDS – Joint United Nations Program on HIV/AIDS

WHO – World Health Organization

GLOSSARY OF TERMS

Bio-behavioral survey – linked biological and behavioral survey of the same respondent

Behavioral component (of Bio-behavioral survey) – survey of HIV infection-associated risk behavior and knowledge of the respondent's HIV-status by means of a face-to-face interview method – direct communication between the interviewer and the respondent

Biological component (of Bio-behavioral survey) – testing of respondents with rapid tests for HIV infection, anti HCV antibody and syphilis, as well as pre-test and post-test counseling

Discrimination – difference in attitude toward people on the basis of their real or alleged membership in a particular social group or particular inherent biological, physical or social attributes of a person.

Participants – MSM who enrolled in the survey (they completed consent, answered the questionnaire and gave biological sample)

Primary respondents (“seeds”, in RDS) – survey participants, recruited by the NGOs according to the set criteria. Seeds are the initiators of the chain recruitment process of RDS

Recruit – person, recruited by a recruiter, but has not yet enrolled in the survey (participant)

Recruiter – survey participant recruiting other potential responders among the representatives of the survey target group. A person who, after being interviewed, received coupons by which other respondents of the same target group can be recruited

Sampling population – part of a larger source population, entities of which act as main observed entities. This part of the source population is sampled using defined rules so that its properties reflect the properties of the source population

Secondary respondents (in RDS) – survey participants invited by their peers who have participated in all components of the survey

Sexual orientation – orientation of a person's psycho-emotional sphere and sexual needs towards people of a particular sex: exclusively opposite sex (heterosexual orientation), the same sex (homosexual) or both (bisexual).

Stigma – attributing to an individual as a real or alleged member of a particular community a specific range of socially negative characteristics, which are perceived as humiliating

Transgender person – a person whose gender identity does not align with the sex assigned at birth

Wave – Degree or distance from the seed in terms of recruitment. MSM recruited directly by a seed are in wave one

INTRODUCTION

BACKGROUND: HIV PREVALENCE AMONG MSM IN UKRAINE AS OF 2021

The HIV epidemic is ongoing in the countries of Eastern Europe and Central Asia region (EECA) (*UNAIDS Data 2018*, 2018). Additionally, the armed conflict in the East of Ukraine (Donetsk and Luhansk oblasts) affected the territory with the high human immunodeficiency virus infection (HIV) and tuberculosis (TB) burden (Kuzin et al., 2019). According to the 2018 population size estimation, there were 179,400 men who have sex with men (MSM) in Ukraine (2018) (Sazonova et al., 2019), but other authors estimated the minimum number of MSM to be 242,670 (Baral et al., 2018).

HIV prevalence in 2018 among MSM in Ukraine was 7.5% (95% Confidence Interval (CI): 6.8-8.2%), which does not differ statistically from the prevalence in 2016 — 8.5% (95% CI: 7.7-9.4%). The highest prevalence of HIV among MSM was in Donetsk (22.8%), Cherkasy (14.3%), Odesa (13%), Mykolaiv (7.3%) and Kyiv (7.1%). 59% of HIV positive MSM know their HIV positive status; 46% of HIV positive MSM, who know their status, receive antiretroviral therapy (ART) (Sazonova Dukach, 2019). HIV prevalence has increased among MSM under 24 y. o. (years old) — from 5% (95% CI: 3.8-6.0%) in 2016 to 6.7% (95% CI: 5.7-7.8%) in 2018. However, comparing older and younger MSM, HIV prevalence is higher among MSM above 25 y. o. — 8% (95% CI: 7.1-8.9%) in 2018.

Prevalence of anti HCV antibody and STIs. According to self-reporting during BBS MSM 2017-2018, prevalence of Hepatitis C — 1.5% (Sazonova & Dukach, 2019). According to the data of BBS 2015, when MSM were tested, 4.2% had anti-Hepatitis C antibodies, and 3% syphilis (Kuzin et al., 2019). Data from the European MSM Internet Survey (EMIS 2017, self-reporting) revealed that 2% of respondents in Ukraine had cases of syphilis, 2% — gonorrhea, 2% — chlamydia and 4% — human papillomavirus during last year (Shestakovskiy et al., 2019).

SURVEY METHODOLOGY

SURVEY GOALS AND OBJECTIVES

Bio-behavioral surveys are indispensable instrument to monitor HIV epidemic (*Global AIDS Monitoring 2020 : Guidance : Indicators for Monitoring the 2016 Political Declaration on Ending AIDS*, 2020). According to the guidance, regular implementation of BBS is recommended every 3-4 years, to detect HIV prevalence among key populations (KPs), determine behavioral characteristics contributing to the spread of HIV-infection, assess efficiency of interventions and state programs aimed at containing HIV-infection in relevant populations.

Since the previous round of biological and behavioral surveillance (BBS) among MSM was implemented in 2017 (Kasianchuk et al., 2017), the next round was planned for 2021.

The overall goal of the BBS among MSM in Ukraine conducted in 2021 (hereinafter – BBS MSM 2021) was to estimate the burden of HIV-related disease, service utilization, population size and assess progress towards reaching 95-95-95 Joint United Nations Program on HIV/AIDS (UNAIDS) targets.

The objectives of the BBS were

- To estimate the prevalence of HIV among MSM in survey sites
- To estimate the proportion of viral load suppression (viral load <1,000 copies/mL) among MSM HIV-infected in survey sites
- To estimate the MSM population size in survey sites
- To estimate the prevalence of sexually transmitted infections (STIs) and anti-Hepatitis C (anti-HCV) antibodies in survey sites
- To identify risk factors associated with HIV infection in survey sites
- To examine HIV service uptake (prevention, treatment) and serostatus knowledge in survey sites.

Results on the population size estimation will be published in a separate report.

SURVEY METHODS

Survey design

The survey was conducted using a cross-sectional design. Behavioral data were collected using individual structured interviews. The biological data were collected using capillary blood with ethylenediaminetetraacetic acid (EDTA) K3 blood micro containers (microtainers) for further rapid testing for HIV, anti HCV antibody and syphilis¹ and dry

¹ Anti- TP / First Response® Syphilis Anti-TP Card Test: sens 99,6% (95%CI 98.0-100) spec 100% (95% CI 98.4-100)

Rapid Anti-HCV Test (InTec Product Inc): sens 100% (95%CI 97.6-100) spec 99.7 (95% CI 98.8-100)
Algorithm HIV testing:

blood spot (DBS) preparation. DBS were prepared at BBS sites, then sent by mail to the Public Health Center (PHC) of the Ministry of health (MOH) of Ukraine Reference Laboratory for HIV/AIDS (acquired immunodeficiency syndrome) Diagnostics, where they were checked for quality, entered into a journal, stored in deep freeze refrigerators, and later tested for viral load level and recent infection).

All HIV-positive rapid test results were confirmed using second and third HIV rapid tests, according to the National HIV testing algorithm.

Sampling approach

Participants were sampled using Respondent Driven Sampling (RDS). The theoretical background of RDS has been well established in published literature [Abdul-Quader et al., 2006]. RDS reduces biases commonly found in other chain-referral methods by using a restricted peer-to-peer recruitment system. Furthermore, RDS assumes sampling from a network rather than from a population. Analysis involves weighting data by network sizes so that those with larger networks are given less weight and those with smaller networks are given more weight. Assessment of each participant's social network is included in the survey questionnaire.

Based on pre-existing contact and in consultation with local non-governmental organizations (NGOs) providing services to MSM, survey staff recruited a handful of diverse and well-networked members of the MSM population who served as seeds in each city. Participants were provided with up to three RDS coupons to use in recruiting peers. RDS coupons provided non-stigmatizing information about the survey location, hours of enrolment and contacts of the survey site. Seeds and subsequent recruited peers who enrolled at the survey site, completed a screening for eligibility, underwent consent (a detailed explanation of the survey's purpose, possible risks and benefits from participation and anonymity and confidentiality), a behavioral interview, and biological testing with pre-test counselling. Once these steps had been completed, each participant (except for those in the last wave) received up to three coupons to use in recruiting peers. Recruitment progressed until both the sample size was reached and stability of the sample composition was achieved. Data collection was performed using tablets and monitored in real time by PHC experts.

Inclusion criteria:

- Male sex
- At least one oral or anal sexual contact with a male within the last 6 month
- Aged 14 years old and older as of the survey period

1st test: RT for Antibody to HIV (Colloidal Gold Devise), Wantai: sens 100% (95%CI 99.2-100) spec 99.9% (95% CI 99.2-100)

If 1st + - 2nd test; if - -Final

2nd test First Response HIV 1-2-0 Card Test, Premier Medical Corp. Privet Limited):

sens 99.6% (95%CI 98-100) spec 100% (95% CI 98.4-100)

If 2nd + - 3rd test; if - -repeat 1st test. If 1st test is + - inconclusive result; If 1st test is -, final negative result of testing.

3rd test BioLine HIV 1/2 3.0, Abbott: sens 100% (95%CI 99.2-100) spec 99.9% (95% CI 99.2-100)

If 3rd + - final reactive result of testing (HIV status confirmed); if 3rd - inconclusive result.

- Not less than 3 months of residence/work/study in the area where survey is conducted
- Informed consent to participate in all survey components, namely: behavioral component (interview), and biological component (capillary blood collection with EDTA K3 blood micro containers (microtainers) for further rapid testing for HIV, anti HCV antibody and syphilis; second and third HIV diagnostic rapid testing in case of positive results; dry blood spot (DBS) for further testing to detect recent HIV infection and viral load level).

Eligibility was assessed using inclusion criteria and verified by means of the respondent's self-declaration, visual confirmation by coupon-manager, and test questions (if additional ones were required), as well as a signed informed consent.

Exclusion criteria:

- Age under 14 years
- Previous participation in one survey round
- Refusal to participate in one or several survey components
- State of alcohol or drugs intoxication.

Exclusion criteria were verified by means of the respondent's self-declaration, visual confirmation and test questions of the coupon manager, and/or interviewer by coupon-manager and/or interviewer, as well as the absence of signed informed consent. If a recruit met at least one exclusion criterion, he was excluded from the survey, his coupon was taken away, and recruiter did not receive a secondary incentive for this recruit.

Incentives

All the survey participants received primary incentives of 250 UAH (approx. \$9 USD) for enrollment into the study. Participants who recruited their peers who enrolled and completed the survey received a secondary incentive 120 UAH (approx. \$4 USD) for each recruited participant.

Geography and sample size

According to the "Strategic plan to ensure sustainability of BBS in Ukraine (2018-2021)" [*THE STRATEGIC PLAN TO ENSURE SUSTAINABILITY OF BIO-BEHAVIORAL SURVEYS IN UKRAINE (2018-2021)*, 2018], the general approach to calculation of the MSM sampling size has been changed from previous BBS MSM rounds. Thus, unlike the previous practice of the calculation of the sample size based on the HIV prevalence, the sample size of the BBS MSM 2021 was calculated based on the Viral Load Suppression. (<https://www.who.int/publications/i/item/978-92-4-151301-2> (Appendix 22)).

However, this approach of the sample size calculation based on the Viral Load Suppression, resulted for several cities in too large and unrealistic sample size, thus, the decision was made to select several strata of regions (oblasts of Ukraine), for which to

calculate the sample based on the viral load suppression and to do the same for the overall sample.

The places where BBS were conducted were limited only to the oblast centers, Kyiv and the cities of oblast significance, due to the large population and possibility to recruit a sufficient number of representatives of the target group. Donetsk oblast is represented by Mariupol as the biggest city under the government control and the seat of oblast state administrations. The administrative centers - Donetsk and Luhansk, as well as Simferopol and Sevastopol in Crimea, were excluded from the list of survey cities due to location on the territory not controlled by the government of Ukraine as of the survey period.

Table B.1. Distribution of cities by clusters before sample calculation

City*	HIV among MSM, % (2017)	Proportion of MSM population, % (2017)	Cities with general population over 700,000 inhabitants	Macro-region	Strata
Donetsk	23	4.4	yes	east	1
Cherkasy	14	2.2	no	south	1
Odesa	13	7	yes	south	1
Mariupol	9	1.7	no	east	1
Kyiv	7	37	yes	north	2
Mykolaiv	7	3.1	no	south	3
Zaporizhzhia	6	4.3	yes	south	2
Lviv	6	5.7	yes	west	2
Kherson	6	1.6	no	south	3
Vinnitsia	5	2.4	no	center	3
Dnipro	5	5.2	yes	center	2
Zhytomyr	5	0.9	no	north	3
Ivano-Frankivsk	4	1.5	no	west	3
Kropyvnytskyi	4	1.2	no	center	3
Lutsk	3	0.7	no	west	3
Rivne	3	1.7	no	west	3
Poltava	2	2.7	no	center	3
Kharkiv	2	9.2	yes	east	2
Chernivtsi	2	2	no	west	3
Ternopil	1	0.9	no	west	3
Uzhhorod	1	0.7	no	west	3
Khmelnytskyi	1	1.5	no	west	3
Chernihiv	1	1	no	north	3
Sumy	0	1.2	no	north	3

* Cities selected for BBS MSM 2021 are in bold

There were three main criteria to classify cities between strata (Table B.1):

- HIV prevalence among MSM population according to the last BBS MSM (2017);

- general population size of the cities (with additional considerations as to whether the city is a significant economic and/or cultural center and/or is a point of attraction for internally displaced persons);
- city's proportion of national MSM population according to the last population size estimation (2017).

HIV prevalence trend, from 2009 to 2017, was considered as additional reason for the selection between the cities within a cluster.

This reasoning resulted in having chosen the following 16 cities for BBS MSM 2021 (see Table B.2).

Table B.2. Cities included in the BBS MSM 2021

Strata	Explanation	Cities chosen
1	Cities with the highest HIV prevalence in the previous rounds of BBS MSM	Cherkasy, Odesa, Mariupol
2	Cities with the largest general population (over 700,000 of inhabitants) and a large proportion of the MSM population, large economic and cultural centers, and areas of attraction for internally displaced persons	Kyiv, Kharkiv, Dnipro, Lviv, Zaporizhzhia
3	Cities with the lower HIV-prevalence and smaller proportion of the MSM population	Vinnytsia, Zhytomyr, Ivano-Frankivsk, Kropyvnytskyi, Mykolaiv, Kherson, Poltava, Chernihiv

The overall planned sample size amounted to 6,900 participants (the calculation is detailed in Annex A.1). Given that for individual cities (primarily in Strata 1 and Strata 3) the recommended sample size represented a significant proportion of the total group size, the feasibility of reaching the planned sample size was discussed with experts of the National Working Group on BBS, in particular, representatives of MSM community, regional data collection teams, while being systematically monitored throughout the field stage of the survey.

Selection of survey locations

Survey location (survey site) in each city was selected based on the following criteria:

- geographically separated from the HIV-treatment or key populations (KP) prevention service provision places
- geographical convenience for respondents (respondents can quickly and easily find the place, without any obstacles for respondents to get to the place);
- provide for confidentiality of information as well as respondents' comfort;
- enough space to interview participants, pre-test and post-test counseling, blood collections;
- only one participant can be present at the survey site at one time interval.

Formative assessment, questionnaire piloting

The questionnaire was based on the previous round's version to ensure comparable results. The questionnaire was piloted to ensure understanding of questions, appropriate level of sensitivity, and acceptable duration of interview with five MSM representatives in Kyiv region and another 10 in Mykolaiv and Ivano-Frankivsk. Selection of the pilot questionnaire respondents followed the same approach and criteria as selection of RDS seeds.

Formation of regional data collection team

Field stage of the survey was implemented by the Center for Social Expertises named after Yu. Saenko (CSEP).

A regional team for data collection was formed in each chosen city. It was led by the regional research coordinator. (Table B.3).

Table B.3. Functional roles of the members of the regional data collection team

Member	Responsibilities
Regional coordinator	Supervision of the daily work at the site, communication with the principal investigator, submitting region reporting on the progress of the field stage
Biological component coordinator	Ensure the biological component of the survey, communication with the health care institutions providing medical care for HIV infection
Coupon-manager	Ensuring management and screening of the recruits
Interviewer	Clarifying questionnaire items to the respondent, if and when needed
Medical specialist	Collection of capillary blood samples, rapid tests, preparation of DBS samples, referral to health care institutions providing medical care for HIV infection
Social worker, psychologist*	Recruitment and selection of primary respondents, control over the queue at the site and provision of social support

* *If available*

In order to collect reliable data, all data collection team members and independent quality monitoring specialists were trained on methods, procedures and features of conducting bio-behavioral survey among MSM KP.

Each member of the survey team completed a training in the ethical standards of the survey and received a confirmatory certificate. For the national group, it was required to complete the online course - Human Research - Group 2 Social & Behavioral Research Investigators from the CITI Program or Protecting Human Research Participants from the National Institute of Health (Ukrainian or Russian version of the course "Protecting Research Participants" on the online platform ProfiHealth).

Ethical considerations

The survey report was approved by the expert review of the Ethics Commission of the Public Health Center of the Ministry of Health of Ukraine (Kyiv, Ukraine; FWA00026980,

Expiry date: 20.06.2023) as to observance of human rights. The conclusions of the local Ethics Commission are in line with: the provisions on medical ethics of the Ministry of Health of Ukraine No. 281 of 01.11.2002; the provisions and principles of the Declaration of Helsinki adopted by the General Assembly of the World Medical Association (1964-2000); International Code of Medical Ethics (1983); The Council of Europe Convention on Human Rights and Biomedicine (1997); relevant provisions of the World Health Organization (WHO) and the International Council for Medical Scientific Societies.

This project was reviewed in accordance with CDC human research protection procedures and was determined to be research, but CDC investigators did not interact with human subjects or have access to identifiable data or specimens for research purposes.

Duration of the field stage of data collection

The field stage of the survey lasted from the end of August through the middle of November 2021 (20.08.2021 – 23.11.2021).

Actual size of sample population

The size of actual sample (i.e., the number of participants who took part in the survey) in each of 16 cities of the BBS MSM 2021 is presented in Table B.4.

Table B.4. Planned and actual sample population size of BBS MSM 2021

City	Planned sample population size	Actual sample population size (number of participants who took part in the survey)
Lviv	500	500
Poltava	350	350
Kherson	400	400
Chernihiv	400	400
Vinnitsia	350	350
Zhytomyr	450	450
Zaporizhzhia	450	450
Cherkasy	400	400
Dnipro	400	400
Kharkiv	450	451
Ivano-Frankivsk	350	350
Kropyvnytskyi	400	400
Kyiv	600	600
Mykolaiv	400	400
Mariupol	400	131*
Odesa	600	600
Total	6,900	6,632 (6,501**)

* Data were not included in the final dataset of the survey

** Without participants who took part in the survey conducted in the city of Mariupol

In general, despite numerous obstacles, in particular due to the impact of the COVID-19 pandemic, the survey managed to reach the planned sample size in all cities where the survey was conducted, except for Mariupol. Though the biggest challenges had been anticipated in reaching the planned sample in the cities with the highest ratio between the planned sample size and estimated number of MSM in the city surveyed, namely, in Zhytomyr, Chernihiv, and Kropyvnytskyi, in practice, the planned sample size was hardest to achieve in big cities, primarily, in Kyiv and Odesa. It could be partially explained by the fatigue and emotional burnout of team members and, to a significant extent, by the fact that the amount of compensation paid to the participants for their participation in the survey was considered as not incentivizing enough (at the same time, participants in the big cities had higher absolute expenditures of time and money, related to travel to the survey site).

In Mariupol, a monitoring visit revealed that the survey methodology was considerably compromised: there was an attempt to perform the survey not in compliance with RDS methodology by recruiting unknown individuals, including non MSM, via social media networks and promising to pay incentives to those who would enroll. A representative of the regional data collection team was involved in this attempt. That was followed by the immediate halt of the operations of the survey site in Mariupol and joint investigation conducted by PHC and CSEP, that resulted in dismissal of the regional team member who had violated the survey methodology and removal of questionnaire forms of those participants who had been taken part in the survey in the period of confirmed violations of the RDS methodology from the overall dataset, followed by swift resumption of the survey site operations. Despite all above measures taken, the recruitment process was considerably slowed down², and the planned sample size was not achieved. Given limited time left to complete the survey field stage, the national research team, having recruited 131 participants in Mariupol, decided to discontinue recruiting new participants in this city. As the actual sample size in Mariupol is significantly lower than the size required to draw statistically meaningful conclusions, the final BBS MSM dataset did not include the data collected in Mariupol. Thus, the overall actual size of the sample population (without Mariupol) accounts for 6,501 participants.

Data quality assurance

To ensure high quality data obtained within the field stage of the survey, a number of procedures have been performed.

First, multi-step monitoring of the work of regional data collection teams was performed by several autonomous subjects, those being: a) National Research Team; b) external monitoring consultants; c) representatives of the study's sponsor (CDC Country Office in Ukraine).

During the field stage, the National Research Team carried out 17 monitoring visits, external consultants — 19 visits (Table B.5.), the study's sponsor representatives — 2 visits. Representatives of CSEP also performed monitoring visits.

² Can be possibly explained by the negative publicity of the survey among the community and/or efforts of the stakeholders to undermine implementation of the survey.

During monitoring visits, the following aspects were assessed: compliance of regional data collection teams with the Protocol and the Standard Operating Procedures (SOPs), in particular, with regard to informed consent, pre-test and post-test counselling, filling out questionnaire form, rapid testing, DBS collection and storage.

Table B.5. Monitoring visits of the National Research Team and external monitoring consultants to the survey sites.

Cherkasy	Odesa	Mariupol	Kyiv	Kharkiv	Dnipro	Lviv	Zaporizhzhia	Vinnytsia	Zhytomyr	Ivano-Frankivsk	Kropyvnytskyi	Mykolaiv	Kherson	Poltava	Chernihiv	Visits total
<i>Monitoring visits by the National Research team:</i>																
1	1	1	1	2	0	2	1	1	1	2	1	1	1	1	0	17
<i>Monitoring visits by the contracted external consultants:</i>																
0	2	0	2	2	1	1	2	2	1	1	0	2	0	1	2	19

Except the incident in Mariupol, described above, no severe deviations from the methodology that could have compromised the quality of the data obtained were identified. Minor deviations detected during the monitoring visits were timely informed to the regional data collection teams and promptly addressed.

The most common type of the survey's protocol and procedure non-observance revealed in monitoring visits were insufficient compliance of the survey sites with the requirements (i.e., with regard to ensuring confidentiality during administration of questionnaire for two participants at a time, documents storage etc.).

Moreover, experts of the PHC Reference Laboratory for HIV/AIDS Diagnostics participated in the independent program of external quality control (EQC) of the biological component of the survey field stage using rapid tests (RTs) (only for the HIV testing). All healthcare workers engaged in the biological component of the BBS field stage at 16 survey sites were included in the EQC program. The participants of EQC program received the panel comprising 3 Dried Tube Specimen control samples (hereinafter – dry control sample, or CSs) containing and not containing HIV serological markers. Characteristics of the dry CSs on the panel: CS-1 — negative; CS-2 — positive; CS-3 — positive. All participants performed tests of the control panel using three brands of RTs for HIV1/2 antibodies detection.

Based on the program results, all participants correctly identified samples of the control panel. According to EQC results, the overall accuracy level was 100%.

During the field stage of the BBS MSM 2021 each survey site underwent quality control (hereinafter – QC) using dry CSs on a monthly basis. Healthcare workers were instructed on the procedures of the results' interpretation and implementation of corrective measures in case incorrect results were obtained. No incorrect results were reported within the field stage of the survey.

Besides, healthcare workers were provided with consulting and methodological support by the experts of the PHC Reference Laboratory for HIV/AIDS Diagnostics, namely:

- training on collecting of biological data with further assessment of the level of competence in theoretical knowledge and practical skills;
- consulting on preparation, storage and transportation of DBS samples, collected in the framework of the survey;
- consulting on the algorithm of HIV testing approved by the Study Protocol;
- consulting on the results of HIV testing using RT
- preparation of control material to carry out quality control and external quality assessment;
- conducting the procedure of quality control of HIV rapid testing;
- consulting on participation in the EQC procedure;
- review of the QC and EQC results etc.

Third, during the field stage of the survey, weekly monitoring and control of the survey results were performed; the survey results were transferred from tablets to the PHC server, where they were combined and transformed into the survey results dataset (both on the platform PHC-Research, and in *.sav format to be further analyzed in Statistical Package for the Social Sciences (SPSS).

All non-compliances identified during verification were swiftly informed to the national manager of the research organization and informed to regional coordinators who made respective adjustments to the work of regional data collection teams. Each data processing administrator, in particular, interviewer or a healthcare worker, had personal login or password allowing to identify the team member who made mistakes when entering data via tablet.

Besides, compliance with the expected rate and size of sampling process was monitored alongside with compliance of the collected data with the criteria of RDS-diagnostics. If needed, the appropriate decisions were introduced, in particular, implementation of new seeds in the survey. Results were promptly discussed between the members of the National Team and Sponsor's representatives, including the representatives of CSEP.

Main results of RDS-diagnostics

During the field stage of the survey and after its completion, quality control of the recruiting process was performed in compliance with the RDS methodology. It was monitored whether the convergence was achieved and the uniformity of recruiting the participants following the seeds was reached (i.e., recruiting homophily) in the context of main socio-demographical and other characteristics, as well as the dynamics of participants' enrollment in the waves of recruitment, waves generated by each seed etc. Main characteristics subject to RDS-recruitment quality control were: HIV status, age groups, sexual orientation, status of the client of prevention programs.

Convergence based on all main characteristics was achieved in all 16 cities prior to completion of the data collection stage. Recruiting homophily for HIV status did not exceed 1.3; in several cities the value was exceeded with regard to age of participants and sexual orientation.

DATA ANALYSIS

To perform data analysis, the method of descriptive statistics was applied – one dimensional and two-dimensional distributions. Main indicators are listed with the breakdown into socio-demographic characteristics, sexual orientation, client status in prevention programs etc. When calculating the percentage, data were weighted according to RDS methodology using the size of the participant's network calculated on the basis of his "visibility" (so-called «imputed visibility») as the weight that substitutes the size of self-declared individual network of the participant. This weight was calculated in the RDS-Analyst (v. 0.71) statistical package and imported to the IBM SPSS (v.26) statistical package. Frequencies are unweighted. Indicators on the city level are calculated in RDS-Analyst, while averages — in SPSS. No additional weighting was performed to account for different sample sizes and the size of the MSM population in the city.

The report provides percentages calculated of the total of the respondents who answered the questions. Percentages provided in the report were calculated of the total number of the survey participants, unless otherwise specified.

In case the question was posed not to all respondents (filter questions were used), the analysis was based on the number of persons who had to answer relevant questions.

The significance of differences between groups (in percent) was defined using chi-square test.

DATA ACCESS

To get access to additional calculations from the dataset that are not reflected in this report, one can submit a relevant request to the Public Health Center, in form of a letter addressed to the Director General of the PHC, and e-mail it to: info@phc.org.ua. The survey Protocol and the tools together with the form of access request will be placed on the official site of the PHC in «Surveys» Section: <https://phc.org.ua/naukova-diyalnist/doslidzhennya>.

MAIN RESULTS

1. Socio-demographic characteristics of the survey participants

Table 1.1. shows socio-demographic characteristics of the participants of BBS MSM 2021, averaged at the level of 15 cities (Mariupol excluded).

Table 1.1. Socio-demographic characteristics of the survey participants

Variable	n	% or mean
<i>Age</i>		
Under 25 years	2,468	38
25 years and older	4,033	62
<i>Person/s with whom the participant lives and keeps household</i>		
With parents/relatives	2,059	31
Alone (including roommates, e.g., in a shared room of a hostel/dormitory or in a rented apartment with other tenants)	2,948	45
With a male partner	1,126	19
With a female partner	257	4
Other	11	<1
<i>Legal marital status</i>		
Never been married	5,519	85
Married (in official marriage with a woman or a man)	270	4
Divorced	674	10
Widowed	38	1
<i>Education level</i>		
Elementary (incomplete 9 grades)	41	1
Junior high school (complete 9 grades)	311	5
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	2,138	32
Vocational school (higher education institution of I-II levels of accreditation, technical school)	1,639	25
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	2,322	37
Academic degree (PhD/Doctorate)	40	1
<i>Self-assessment of his financial status</i>		
Often, I don't have enough money and food, occasionally I resort to begging	25	<1
I don't have enough means to buy food products, but I don't resort to begging	106	1
My means can cover only food products	813	12
Generally, I have enough means to live on	2,609	39
I have enough means to cover essential needs, but I don't do any savings	1,761	28
I have enough means to cover essentials needs, plus I do savings	912	15
I live in prosperity	245	4
Other	20	<1
I don't know / No answer	10	<1

The average age of the survey participants is 29 years. Almost four of ten participants (38%) are under 25 years old. The prevailing majority (85%) of the survey participants have never been married, almost half of them (45%) were living alone at the time the survey was conducted, while 19% declared they were living with a male partner. One-third (32%) of the surveyed had completed senior high school, while 39% of participants had full higher education (i.e., bachelor's, specialist's and master's degree or PhDs). Approximately one-fifth (19%) of MSM reported financial status that allows them to make at least some savings, while financial status of the rest of respondents allow them, at best, to sustain life.

2. Sexual orientation and gender identity

Distribution of MSM sexual orientation and gender identity is reflected in Table 2.1.

Table 2.1. MSM sexual orientation and gender identity

Variable	n	% or mean
<i>Who sexually attracts you?</i>		
Exclusively men	4,503	70
Predominantly men, however, occasionally women	1,111	18
Both men and women, approximately to the same extent	698	10
Predominantly women, however, occasionally men	169	2
Exclusively women	2	<1
I haven't decided yet	15	<1
Other	3	<1
<i>Sexual orientation</i>		
Homosexual	4,665	72
Bisexual	1,762	27
Heterosexual or straight	22	<1
Own version	40	1
Don't know / not responded	12	<1
<i>Gender identity</i>		
Transgender person	62	1
Non-binary person	141	2
Cisgender person	6,291	97
Other	7	<1

Over two-thirds (70%) of the survey participants stated they are sexually attracted to men exclusively. Approximately the same number (72%) defined their sexual orientation as homosexual. Over one quarter (27%) of participants called themselves bisexual. 3% of the interviewed MSM declared they considered themselves transgender or non-binary persons.

Table 2.2. Correlation between declared sexual orientation and who the respondents consider sexually attractive, % by column, $p < 0.001$, $N = 6,501$

	Exclusively men	Predominantly men, occasionally women	Both men and women, approximately to the same extent	Predominantly women, occasionally	Exclusively women	I haven't decided yet	Other	Among all
Homosexual	98	19	1	<1	-	17	42	72
Bisexual	1	79	97	88	-	53	27	27
Heterosexual or straight	0	<1	<1	10	100	0	0	<1

Statistically significant differences in sexual orientation are observed depending on the main socio-demographic characteristics, i.e., age, marital status, education level and financial status. Thus, in the age group 25 years and older, the proportion of those declaring bisexual orientation is one and a half times as high as in the group under 25 y. o. While the proportion of those declaring homosexual orientation is lower in 25+ age group. MSM declaring homosexual orientation prevail among those who have never been married (80%), while bisexual MSM prevail among married (in official marriage with a woman or a man, 83%) as well as among divorced (66%) and the widowed (77%).

Table 2.3. Sexual orientation, breakdown by socio-demographic characteristics, %, $N = 6,501$

	Homosexual	Bisexual	Heterosexual or straight
<i>Age, $p < 0.001$</i>			
Under 25 years	78	21	<1
25 years and older	69	31	<1
<i>Legal marital status, $p < 0.001$</i>			
Never been married	80	19	<1
Married (in official marriage with a woman or a man)	14	83	3
Divorced	33	66	1
Widowed	23	77	0
<i>Education level, $p < 0.001$</i>			
Elementary (incomplete 9 grades)	77	21	0
Junior high school (complete 9 grades)	78	20	1
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	72	26	<1
Vocational school (higher education institution of I-II levels of accreditation, technical school)	70	29	<1
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	73	27	<1
Academic degree (PhD/Doctorate)	72	24	0

Continued Table 2.3. Sexual orientation, breakdown by socio-demographic characteristics, %

	Homosexual	Bisexual	Heterosexual or straight
<i>Person/s with whom the participant lives and keeps household, p < 0.001</i>			
With parents/relatives	74	24	<1
Alone (including roommates...)	71	28	<1
With a male partner	85	16	<1
With a female partner	3	93	3
Other	59	41	0
<i>Self-assessment of his financial status, p < 0.001</i>			
Often, I don't have enough money and food, occasionally I resort to begging	71	22	5
I don't have enough means to buy food products, but I don't resort to begging	73	25	1
My means can cover only food products	75	24	<1
Generally, I have enough means to live on	74	25	<1
I have enough means to cover essential needs, but I don't do any savings	69	30	<1
I have enough means to cover essentials needs, plus I do savings	71	28	<1
I live in prosperity	65	32	1
Other	86	14	0

3. Methods to find male partners

The survey revealed that the most common methods to find male partners popular among MSM are Internet-based, i.e., special mobile applications (being used by 54% of the participants), Internet-based dating sites (being used by 39%) and Internet-based social media networks (36%). “Live” dating is less popular: via friends and acquaintances (38%); clubs, bars and discos etc. (22%); at the so called “public bold spots” (slang name for popular public places such as parks, central squares etc.) or private parties (11% and 10%, respectively). (Table 3.1).

Table 3.1. Methods to find male partners

Variable	n	% or mean
<i>Where have you been looking for new acquaintances over the past 6 months (the sum may be different from 100% as the respondent could have selected several answer options)</i>		
Via special mobile applications	3,456	54
Via Internet-based dating sites	2,525	39
Via friends, acquaintances	2,432	38
Via Internet-based social media	2,282	36
In clubs, cafes, bars, discos and saunas	1,322	22
At “public bold spots” (e.g., in parks, on the beach, and in other popular public places)	699	11
At private parties for gays	653	10
In Lesbian, Gay, Bisexual, and Transgender (LGBT) organizations	318	5
Other methods	101	2
HAS NOT been looking for male partners over the last 6 months	899	14
<i>Use of Internet or mobile application to find other MSM</i>		
I use	4,772	74
I don't use	1,729	26
<i>Whether the respondent has an active profile on Internet-based dating websites or dating mobile applications</i>		
I have a profile	4,555	69
No profile	2,046	31
<i>Indicate the Internet-based dating sites or mobile applications, where the respondent has registered his profile? (The sum may be different from 100% as the respondent could have selected several answer options)</i>		
Hornet mobile app	3,655	57
Bluesystem website	1,536	23
BADOO mobile app	1,272	20
mamba family of sites (mamba.ru, love.gay.ru, facelink.ru, love.mail.ru etc.)	797	13
Tinder mobile app	620	10
Grindr mobile app	546	9
qguys website	192	3
planetromeo website	174	3
loveplanet website	125	2
4-Guyder mobile app*	71	1
RainbowCupid website*	26	<1
Other dating sites or dating apps	713	11

* Inexistent mobile application and website, included in the questionnaire to check sincerity of the participants' answers

Almost three-quarters (74%) of MSM stated they had been using Internet or mobile applications to find male partners within 6 months prior to the survey. Over two-thirds (69%) have an active profile on such websites or mobile applications. The survey findings show the most popular of such online dating platforms. Hornet mobile app is the leader by coverage rate (57% participants have an active profile on this app), followed by bluesystem website (23%) and, finally, Badoo mobile app (20%). To check sincerity of the participants we listed two false options (fictional RainbowCupid website and 4-Guyder application). Less than 1% of respondents selected these two fake website/app.

There is a statistically significant correlation between attempts to find male sexual partners and main socio-demographic characteristics as well as status of the client of prevention programs. Thus, MSM under 25 y. o. compared to the age group 25 y. o. and older use Internet more frequently, specifically dating mobile apps (63%) OR online social media (43%) to find partners and are less likely to look for new contacts at the “popular public spots” (8% versus 12%, respectively). Besides, Internet/online social media or mobile applications are more frequently used by MSM living alone or with parents/relatives compared to MSM living with a male or female partner. MSM that declared living with a male partner, in general, have not been frequently looking for new dates over the past 6 months as compared to other MSM. Heterosexuals compared to homosexuals and bisexuals are more inclined to search new partners via friends and acquaintances as well as resort to alternative search options. At the same time, this group is less frequently looking for new contacts in “popular public spots” and via online social media. MSM with difficult financial situation were more frequently looking for new partners in “popular public spots” or among friends and acquaintances. Wealthier MSM preferred to search new partners via online social media, dating websites, and private parties.

Table 3.2. Methods to find male partners, breakdown by socio-demographic characteristics, %, N = 6,501

	1. In clubs, cafes, bars, discos and saunas	2. via friend, acquaintances	3. At “bold spots” (in parks, on the beach, and in public places)	4. at private LGBT parties	5. In LGBT organizations	6. via special mobile apps	7. via internet dating sites	8. Via internet-based social media	9. other methods (specify)	10. HAS NOT been looking for male partner in the past 6 months
<i>Age</i>	(p < 0.001)	(p = 0.006)	(p < 0.001)	(p = 0.02)	(p < 0.001)	(p < 0.001)	(p = 0.782)	(p < 0.001)	(p = 0.014)	(p < 0.001)
Under 25 years	24	39	8	11	7	63	39	43	2	9
25 years and older	21	38	12	10	4	48	39	31	2	18
<i>Legal marital status</i>	(p < 0.001)	(p < 0.001)	(p < 0.001)	(p < 0.001)	(p < 0.001)	(p < 0.001)	(p < 0.001)	(p < 0.001)	(p < 0.001)	(p = 0.007)
Never been married	23	37	10	11	6	56	39	37	2	15
Married (in official marriage with a woman or a man)	15	42	16	5	1	39	39	21	2	12
Divorced	15	41	17	8	4	39	42	28	1	14

Continued Table 3.2. Methods to find male partners, breakdown by socio-demographic characteristics, %

	1. In clubs, cafes, bars, discos and saunas	2. via friend, acquaintances	3. At "bold spots" (in parks, on the beach, and in public places)	4. at private LGBT parties	5. In LGBT organizations	6. via special mobile apps	7. via internet dating sites	8. Via internet-based social media	9. other methods (specify)	10. HAS NOT been looking for male partner in the past 6 months
Widowed	10	43	36	3		35	22	8	1	14
<i>Person/s with whom he lives and keeps household</i>	(p < 0.001)									
With parents/relatives	22	41	9	10	7	61	42	41	1	6
Alone (including roommates...)	26	42	13	12	5	60	45	41	2	6
With a male partner	12	22	7	7	3	29	20	17	2	51
With a female partner	16	44	17	6	1	42	44	21	1	5
Other	39	49				63	35	51	10	8
<i>Education level</i>	(p < 0.001)									
Elementary (incomplete 9 grades)	9	50	5	2	5	38	19	24		16
Junior high school (complete 9 grades)	18	40	12	7	6	49	31	37	3	10
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	22	39	11	10	6	53	39	36	2	11
Vocational school (higher education institution of I-II levels of accreditation, technical school)	23	41	13	13	4	58	46	35	1	11
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	22	34	9	10	5	51	36	36	2	20
Academic degree (PhD/Doctorate)	21	36	18	7	6	54	27	24	9	22
<i>Self-assessment of his financial status</i>	(p < 0.001)									
Often, I don't have enough money and food, occasionally I resort to begging	14	42	23	7	3	38	32	33	3	6

Continued Table 3.2. Methods to find male partners, breakdown by socio-demographic characteristics, %

	1. In clubs, cafes, bars, discos and saunas	2. Via friend, acquaintances	3. At "bold spots" (in parks, on the beach, and in public places)	4. at private LGBT parties	5. In LGBT organizations	6. via special mobile apps	7. via internet dating sites	8. Via internet-based social media	9. other methods (specify)	10. HAS NOT been looking for male partner in the past 6 months
I don't have enough means to buy food products, but I don't resort to begging	22	46	11	7	14	66	39	24	2	3
My means can cover only food products	25	41	16	9	8	53	39	31	1	7
Generally, I have enough means to live on	21	38	9	10	5	53	37	35	2	13
I have enough means to cover essential needs, but I don't do any savings	21	37	10	11	4	53	43	37	1	16
I have enough means to cover essentials needs, plus I do savings	23	37	11	11	5	54	38	39	2	22
I live in prosperity	28	41	12	16	4	57	41	39	6	12
Other	17	35			7	77	16	34	10	7
Don't know / no answer	6	23				38		21		46
<i>Sexual orientation</i>	(p < 0.001)									
Homosexual	22	36	10	11	6	55	38	35	2	17
Bisexual	20	43	12	8	3	51	43	36	1	8
Heterosexual or straight	20	50	5			25	38	11	6	3
Your option	28	43		27	17	65	25	63	5	3
Don't know / refused to answer	15	21	23	4	4	34	14	38		6
<i>Client status in prevention programs</i>	(p < 0.001)	(p = 0.197)	(p < 0.001)							
Clients	20	39	10	12	10	61	40	41	2	14
Non-clients	22	38	11	9	3	51	39	34	1	14
Refused to answer	31	39	15	12	13	37	29	22	5	27
Among all	22	38	11	10	5	54	39	36	2	14

It is quite predictable that Internet and mobile applications are more popular among younger MSM, who have active profiles on such websites and apps, while MSM with incomplete education, heterosexuals, and those living with partner are using these methods less frequently (Table 3.3.).

Table 3.3. Using Internet or mobile applications to find male partners and having active profiles on the websites and mobile apps, breakdown by socio-demographic characteristics, %, N = 6,501

	Do you use Internet or mobile apps to find male partners?		Do you currently have active profiles (personal pages) on the websites or mobile apps?		
	Yes	No	Yes	No	Do not use Internet or mobile apps to find male partners
<i>Age</i>	(p < 0.001)				
Under 25 years	82	18	76	6	18
25 years and older	68	32	65	4	32
<i>Legal marital status</i>	(p < 0.001)				
Never been married	76	25	71	5	25
Married (in official marriage with a woman or a man)	60	40	56	5	40
Divorced	64	36	61	3	36
Widowed	48	53	46	2	53
<i>With whom do you live and keep household?</i>	(p < 0.001)				
With parents/relatives	83	17	78	5	17
Alone (including roommates...)	80	20	76	5	20
With a male partner	43	57	39	4	57
With a female partner	66	34	62	4	34
Other	86	14	70	16	14
<i>Education level</i>	(p < 0.001)				
Elementary (incomplete 9 grades)	43	57	43		57
Junior high school (complete 9 grades)	74	27	67	6	27
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	76	24	71	5	24
Vocational school (higher education institution of I-II levels of accreditation, technical school)	77	23	73	3	23
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	71	30	66	5	30
Academic degree (PhD/Doctorate)	55	45	54	1	45

Continued Table 3.3. Using Internet or mobile applications to find male partners and having active profiles on the websites and mobile apps, breakdown by socio-demographic characteristics, %

	Do you use Internet or mobile apps to find male partners?		Do you currently have active profiles (personal pages) on the websites or mobile apps?		
	Yes	No	Yes	No	Do not use Internet or mobile apps to find male partners
<i>Self-assessment of his financial status</i>	(p < 0.001)				
Often, I don't have enough money and food, occasionally I resort to begging	56	44	49	7	44
I don't have enough means to buy food products, but I don't resort to begging	84	16	83	1	16
My means can cover only food products	78	22	73	5	22
Generally, I have enough means to live on	74	26	69	5	26
I have enough means to cover essential needs, but I don't do any savings	73	28	69	4	28
I have enough means to cover essentials needs, plus I do savings	70	30	66	4	30
I live in prosperity	75	25	69	6	25
Other	80	20	80		20
Don't know / no answer	38	62	30	8	62
<i>Sexual orientation</i>	(p < 0.001)				
Homosexual	74	26	69	4	26
Bisexual	74	27	69	5	27
Heterosexual or straight	56	44	56		44
Your option	83	17	72	11	17
Don't know / Refused to answer	72	28	40	32	28
<i>Client status in prevention programs</i>	(p < 0.001)				
Clients	78	22	73	5	22
Non-clients	72	28	68	4	28
Refused to answer	58	42	52	6	42
Among all	74	26	69	5	26

4. Homophobia, stigma, discrimination and experience of violence

Internalized homophobia. According to the findings of the studies, the level of internalized homophobia can be associated with both MSM mental health and their readiness to use the services of organizations that provide assistance to MSM (Shestakovskiy & Kasianchuk, 2018). On the other hand, the level of internalized homophobia considerably depends on the legal and social environment with regard to homophobia-related issues, as well as the individual's personal experience.

To detect the markers of internalized homophobia, we proposed the respondents to assess to what extent they agree with the statements listed in the Short Internalized Homonegativity Scale (SIHS) (Tran et al., 2018; Shestakovskiy & Kasianchuk, 2018). Each statement of the scale scores from 1 to 7, where 1 means completely disagree with the statement, 7 – completely agree. The survey results show that the participants mostly accept their homosexuality. The respondents marked the level of their feeling of awkwardness in the presence of gays and effeminate homosexual men from 2 to 3 on the scale. (See Table 4.1) In general, the participants of the BBS MSM 2021 have relatively low (under 3.5) level of internalized homophobia.

Table 4.1. Indicators of internalized homophobia in MSM assessed by means of the Short Internalized Homonegativity Scale (SIHS)

Variable	n	mean
I feel awkward in the presence of gays	6,478	2.3
Effeminate homosexual men make me feel awkward	6,467	3.1
I feel comfortable being seen in the company of overt homosexual person*	6,469	5.4
I feel comfortable in LGBT clubs*	5,988	5.6
I feel comfortable when I overtly discuss homosexuality*	6,472	5.7
I feel comfortable in the places where gays frequently gather*	6,366	5.9
Even if I could have changed my sexuality, I would NOT have done that*	6,468	6.0
I feel comfortable being a homosexual man*	6,375	6.1
Homosexuality is morally unacceptable for me*	6,437	6.3
<i>Mean value on the SIHS scale (ranging from 1- complete self-acceptance of one's homosexuality, to 7 – complete denial of one's homosexuality)</i>	5,864	2.3 (95% CI: 1.2 – 3.4)

* When calculating the mean based on the SIHS scale, scores of questions were reversed

External homophobia. As for the ways homophobia is manifested in the society, the respondents most frequently reported being insulted because they had sex with men; over one-third of respondents reported this (see Table 4.2.). One in four men stated they were shunned by their friends and faced homonegative behavior in the family environment, while 14% reported their family did not invite them to attend traditional family events. One in five respondents had experienced physical abuse due to their sexual preferences. One in nine participants were hesitant to seek medical care in health facilities. 8% of respondents stated they were forced to sexual intercourse because they had sex with other men.

Table 4.2. Prevalence of stigma and discrimination against MSM, %, N = 6,501

Variable	%
Reported being insulted because they have sex with men	36
Friends of respondents avoided them because they have sex with men	27
Respondents' family members made discriminatory remarks or rumored about respondents because they have sex with men	25
MSM who were abused physically (being pushed, beaten up, strangled, etc.) because they have sex with men	20
MSM who were blackmailed because they have sex with men	19
MSM who were afraid to visit public places because they have sex with men	14
MSM who were not invited to the events, where their family traditionally gathered	14
MSM who were hesitant to seek care in healthcare facilities because someone could find out that they have sex with men	12
MSM who heard healthcare workers discussing them because they have sex with men	9
MSM who're forced to sexual intercourse against their will because they have sex with men	8
MSM who reported the police refused to protect them because they have sex with men	6
MSM who supposed they have not been provided quality medical care because the care providers were aware of the fact, they have sex with men	5

5. Sexual intercourse with men

In the last 6 months, the prevailing majority (87%) of MSM had anal sexual intercourses with men (Table 5.1). The average number of male partners was approximately 4 persons.

The first sexual intercourse with a male partner happened when the participants' average age was about 18 y. o., and their sex partners' average age was 23 y. o.

Condom use during anal intercourse with a male partner is a key indicator characterizing the level of risk sexual behaviors in MSM. Over three-quarters (77%) of the participants who had anal intercourse with male partners in the past 6 months reported condom use at the last contact of this kind.

Table 5.1. Characteristics of MSM sexual experience

Variable	n	% or mean
<i>Average age of the first oral or anal contact with another man, y. o.</i>	6,421	18.2 (95% CI: 18.1 – 18.3)
<i>Average age of a male partner with whom the respondent had the first oral or anal contact, y. o.</i>	6,211	22.7 (95% CI: 22.5 – 22.9)
<i>In the past 6 months, the respondent had anal intercourse with a man</i>	5,662	87
<i>Average number of male partners, with whom the respondent had anal intercourse in the past 6 months</i>	5,662	3.9 (95% CI: 3.7 – 4.1)
<i>Condom use at the last anal intercourse with a male partner in the past 6 months</i>		
Condom used	4,357	77
Condom not used	1,257	22
Hard to answer	48	<1
<i>Type of a partner in the last anal intercourse with a male partner in the past 6 months</i>		
Permanent sex partner	3,079	55
Casual sex partner	2,312	40
Person being paid for sex by the respondent	30	<1
Person, who paid the respondent for sex	101	2
Last sex with several partners (group sex)	140	3

The highest level of protected sex was declared among MSM having heterosexual orientation – nine in ten representatives of this group reported practicing protected sex (Table 5.2.). Besides, adhering to this safe sexual practice was more frequently reported by MSM living with a female partner, 88% compared to 56% of MSM living with a male partner.

Table 5.2. Condom use at the last anal intercourse with a male partner, %, N = 6,501

	Used	Not
<i>Sexual orientation, p < 0.001</i>		
Homosexual	75	24
Bisexual	83	17
Heterosexual or straight	91	9
<i>Age, p < 0.001</i>		
Under 25 years	79	20
25 years and older	76	23
<i>Legal marital status, p < 0.001</i>		
Never been married	76	23
Married (in official marriage with a woman or a man)	81	19
Divorced	81	18
Widowed	74	26
<i>Living with..., p < 0.001</i>		
With parents/relatives	79	20
Alone (including roommates...)	84	15
With a male partner	56	43
With a female partner	88	11
<i>Education level, p < 0.001</i>		
Elementary (incomplete 9 grades)	53	47
Junior high school (complete 9 grades)	71	29
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	79	20
Vocational school (higher education institution of I-II levels of accreditation, technical	82	17
Higher education (bachelor, specialist or master's degree, graduated from university or institute	73	26
Academic degree (PhD/Doctorate)	73	27
<i>Self-assessment of his financial status, p < 0.001</i>		
Often, I don't have enough money and food, occasionally I resort to begging	67	33
I don't have enough means to buy food products, but I don't resort to begging	75	23
My means can cover only food products	82	17
Generally, I have enough means to live on	78	21
I have enough means to cover essential needs, but I don't do any savings	77	23
I have enough means to cover essentials needs, plus I do savings	71	27
I live in prosperity	79	21
<i>Client status in prevention programs, p < 0.001</i>		
Clients	75	24
Non-clients	78	22

Within a month prior to the survey, 6 in 10 (61%) of the participants, who had sexual contacts with men in the 6-month period, had anal sex with permanent partner; half of them (50%) – with casual partner; with person who received money for sex or paid for sex – each 30th or 20th participant (3% and 5%, respectively) (Table 5.3. – 5.6).

Consistency of condom use varied depending on the type of sexual partners in the past 30 days. Thus, 68% of participants reported consistent condom use with permanent partner, 79% - with casual partner; 80% - with commercial ones. The indicator of condom use at the last sexual intercourse with permanent partner (Table 5.3) is the lowest compared to other types of partners (Table 5.4., Table 5.5., Table 5.6). Thus, 66% of respondents practiced condom sex with permanent partner, 88% - with casual partner; and slightly over 80% - with commercial ones. Therefore, the riskiest behavior is common among MSM having sex with permanent partner.

Table 5.3. Characteristics of MSM sexual intercourse with permanent partner/partners

Variable	n	% or mean
<i>Anal intercourse with a permanent partner in the past 30 days*</i>		
Yes, I had	3,437	61
No, I didn't have	2,217	39
Hard to answer	8	<1
<i>Average number of permanent male partners in the past 30 days</i>	3,437	1,3
<i>Condom used at the last anal intercourse with a permanent male partner</i>	2,277	66
<i>Frequency of condom use at anal intercourses with a permanent partner in the past 30 days</i>		
All times	1,584	68
In the majority of cases (approx. 75%)	496	23
In half the cases	134	6
Occasionally (approx. 25%)	31	1
Rarely (less than 10%)	13	1
Never	15	1
Hard to answer	4	<1

**Among the participants who had anal intercourse with male partners in the past 6 months*

Table 5.4. Characteristics of MSM sexual intercourses with casual partner/partners

Variable	n	% or mean
<i>Anal intercourse with a casual partner in the past 30 days*</i>		
Yes, I had	2,821	50
No, I didn't have	2,828	50
Hard to answer	13	<1
<i>Average number of casual male partners in the past 30 days</i>	2,821	3.0 (95% CI: 2.3 – 3.9)
<i>Condom used at the last anal intercourse with a casual male partner</i>	2,426	88
<i>Frequency of condom use at anal intercourses with a casual partner in the past 30 days</i>		
All times	1,931	79
In the majority of cases (approx. 75%)	410	18
In half the cases	65	3
Occasionally (approx. 25%)	10	<1
Rarely (less than 10%)	1	<1
Never	7	<1
Hard to answer	2	<1

**Among participants who had anal intercourse with male partners in the past 6 months*

Table 5.5. Characteristics of MSM sexual intercourses with partner/partners being paid for sex by the respondent

Variable	n	% or mean
<i>Anal intercourse with a partner being paid for sex by the respondent, in the past 30 days*</i>		
Yes, I had	155	3
No, I didn't have	5,502	97
Hard to answer	5	<1
<i>Average number of male partners being paid for sex by the respondent, in the past 30 days</i>	155	2.4 (95% CI: 1.4 – 3.7)
<i>Condom use at the last anal intercourse with a partner being paid for sex by the respondent</i>	125	82
<i>Frequency of condom use at anal intercourses with a partner being paid for sex by the respondent, in the past 30 days</i>		
All times	97	80
In the majority of cases (approx. 75%)	17	12
In half the cases	4	3
Occasionally (approx. 25%)	2	1
Rarely (less than 10%)	0	0
Never	4	4
Hard to answer	1	<1

* Among participants who had anal intercourse with male partners in the past 6 months

Table 5.6. Characteristics of MSM sexual intercourses with partner/partners who paid the respondent for sex

Variable	n	% or mean
<i>Lifetime experience of providing commercial sex services to men</i>	870	16
<i>Sexual intercourse with a partner who paid the respondent for sex, in the past 30 days*</i>		
Yes, I had	306	5
No, I didn't have	5,350	94
Hard to answer	6	<1
<i>Average number of male partners who paid the respondent for sex, in the past 30 days</i>	306	3.0 (95% CI: 2.4 – 3.9)
<i>Condom used in the last anal intercourse with a partner who paid the respondent for sex</i>	241	80
<i>Frequency of condom use at anal intercourses with a partner who paid the respondent for sex, in the past 30 days</i>		
All times	194	79
In the majority of cases (approx. 75%)	35	16
In half the cases	8	4
Occasionally (approx. 25%)	3	1
Rarely (less than 10%)	0	0
Never	0	0
Hard to answer	1	<1

* Among participants who had anal intercourse with male partners in the past 6 months

Use of special lubricant allows MSM to further reduce risks they are exposed to during sexual intercourse. The survey proves that most of MSM use lubricants, however, the consistency of this practice is not strictly observed by MSM (Table 5.7). According to the survey findings, about two-thirds of participants (68%) used lubricant during their last anal sexual intercourse with a man, while only 59% used it at all times during anal sexual intercourses in the past 30 days.

Table 5.7. Use of special lubricant during MSM sexual intercourses with partner/partners in the past 6 months

Variable	n	%
<i>Special lubricant used at the last anal intercourse with a man</i>	1,534	66
<i>Frequency of use of special lubricant with all men during sexual intercourses with a male partner, in the past 30 days</i>		
At all times	3,304	59
In the majority of cases (approx. 75%)	874	16
In half the cases	358	6
Occasionally (approx. 25%)	175	3
Rarely (less than 10%)	88	1
Never	282	5
Hard to answer	17	<1
No sexual intercourses within the past 30 days	534	9

The most common reason of lubricant's non-use (Table 5.8) was the absence of the lubricant at hand when needed, the lack of need for its use, and that it did not come to the respondent's mind.

Table 5.8. Reasons of non-use of special lubricant at the last sexual intercourse with a partner or partners (the sum may be different from 100%, as the respondent could have selected several options of answers), N = 824

Reason	n	%
Lubricant wasn't at hand / wasn't available	333	40
I didn't consider the need to use lubricant	183	22
Never thought about it	168	20
Lubricants are too expensive	57	7
I was impaired by alcohol	59	7
I don't know where to get one	41	5
Other	30	4
Hard to answer	19	2
I was impaired by drugs	11	1

6. Sexual intercourse with women

Slightly over four in ten MSM who took part in the BBS MSM 2021 survey had heterosexual experience throughout life (see Table 6.1).

The average age of the participants first sexual intercourse with a woman was 17 years. The average number of female partners in the past 6 months among MSM having heterosexual experience accounted to one (four times less than the average number of male partners within the same period of time).

During the last insertive heterosexual intercourse, almost three-quarters (73%) of respective respondents used condoms.

Only 7% reported condom use with female sex workers in the past 6 months. The prevailing number (90%) of these respondents stated they used condoms during commercial heterosexual intercourse.

Table 6.1. Characteristics of MSM sexual intercourses with females

Variable	n	% or mean
<i>Lifetime experience of sexual intercourse with a woman</i>	2,833	43
<i>Respondent's average age at the first oral, vaginal or anal intercourse with a woman, y. o.</i>	2,731	17.4 (95% CI: 17.3 – 17.5)
<i>Female partner average age at the respondent's first sexual intercourse, y. o.</i>	2,731	18.8 (95% CI: 18.6 – 19.0)
<i>Average number of female partners in the past 6 months</i>	2,731	1
<i>Condom use at the last vaginal or anal intercourse with a female partner, N = 1045</i>		
Used	756	73
Not used	285	27
Hard to answer	4	<1
<i>Did the respondent use services of female sex workers in the past 6 months, N = 1045</i>		
Yes	81	7
No	964	93
<i>Did the respondent use condom at the last (vaginal or anal) intercourse with a female sex worker, N = 81</i>		
Yes	71	90
No	10	10

The highest rate of condom use at the last anal intercourse with a woman was reported by the participants who identify themselves as heterosexuals or straight (90%) (Table 6.2.). This indicator correlates with the level of education, thus, only six in ten MSM having elementary education (incomplete 9 grades) use condoms. This indicator is higher in the group of young participants living with a female partner or alone (88% and 86%, respectively).

Table 6.2. Condom use at the last anal intercourse with a female partner, %, N = 2,833

	Used	Not used
<i>Sexual orientation, p < 0.001</i>		
Homosexual	77	22
Bisexual	84	15
Heterosexual or straight	90	10
<i>Age, p < 0.001</i>		
Under 25 years	85	14
25 years and older	80	19
<i>Legal marital status, p < 0.001</i>		
Never been married	81	18
Married (in official marriage with a woman or a man)	85	15
Divorced	81	19
Widowed	72	28
<i>Living with..., p < 0.001</i>		
With parents/relatives	81	19
Alone (including roommates...)	87	13
With a male partner	68	32
With a female partner	88	12
<i>Education level, p < 0.001</i>		
Elementary (incomplete 9 grades)	60	40
Junior high school (complete 9 grades)	69	31
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	85	14
Vocational school (higher education institution of I-II levels of accreditation, technical school)	85	15
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	77	22
Academic degree (PhD/Doctorate)	87	13
<i>Self-assessment of his financial status, p < 0.001</i>		
Often, I don't have enough money and food, occasionally I resort to begging	74	26
I don't have enough means to buy food products, but I don't resort to begging	68	32
My means can cover only food products	85	15
Generally, I have enough means to live on	84	15
I have enough means to cover essential needs, but I don't do any savings	80	19
I have enough means to cover essentials needs, plus I do savings	76	23
I live in prosperity	84	16
<i>Client status in prevention programs, p < 0.001</i>		
Clients	79	20
Non-clients	82	17

7. Use of alcohol, narcotic substances and sexual stimulants

Alcohol. Table 7.1 shows that the majority of participants consume (as per self-reports) alcohol drinks from one to three times per month; alcohol consumers are approximately evenly distributed between the respective subgroups of those who prefer high-, medium- and low-alcohol drinks.

In the survey, the level of alcohol consumption was measured by means of the scale Alcohol Use Disorders Identification Test-Concise (AUDIT-C) (Frank et al., 2008) that contains questions on the frequency of alcohol consumption, the number of standard alcohol drinks being consumed during a party (one day when alcohol was consumed) and the frequency of cases when six and more standard alcohol drinks were consumed during a party (one day when alcohol was consumed). Based on the answers to each question, the respondent scores from 0 to 4. Total score of three questions ranges from 0 to 12. All the respondents who scored from 0 to 3 were categorized as having low alcohol consumption risk; those with total score from 4 to 5 – as having moderate alcohol consumption risk, and those who have scored from 6 and higher – as having high alcohol consumption risk.

According to the survey results, only one quarter of MSM have high alcohol consumption risk.

Table 7.1. Characteristics of alcohol consumption among MSM

Variable	n	%
<i>How often does the respondent consume alcohol-containing drinks?</i>		
Never	1,287	19
Once a month or less	1,574	24
2-4 times a month	2,140	33
2-3 times a week	1,397	22
Don't know / don't remember	66	1
Hard to answer	37	1
<i>What alcohol drinks does he consume most often?</i>		
Does not consume alcohol drinks	1,287	19
Low-alcohol drink (i.e., beer or gin-tonic)	1,871	29
Medium-alcohol drinks (i.e., liquor or wine)	1,798	28
Strong alcohol drinks (i.e., vodka, cognac etc.)	1,545	24
<i>Alcohol consumption risk (scale AUDIT-C), N = 4,643</i>		
Low risk	1,946	41
Moderate risk	1,517	33
High risk	1,180	26

The survey results demonstrate statistically significant differences in the risk of alcohol consumption, varying by the main characteristic. Among the MSM age group 25 years and older, the proportion of those having high and moderate risk of alcohol consumption is higher than among younger group. Widowed MSM have the highest rate of high risk of alcohol consumption. Among homosexuals there is a larger proportion of those with low risk of alcohol consumption. As far as the financial status is concerned, men with high risk of alcohol consumption prevail among respondents with low income.

Table 7.2. Risk of alcohol consumption among MSM, depending on their sexual orientation and socio-demographic characteristics, %, N = 4,634

	Low risk	Moderate risk	High risk
<i>Age, p < 0.001</i>			
Under 25 years	47	30	23
25 years and older	38	35	27
<i>Sexual orientation, p < 0.001</i>			
Homosexual	42	32	26
Bisexual	39	35	26
Heterosexual or straight	32	45	23
<i>Legal marital status, p < 0.001</i>			
Never been married	42	32	26
Married (in official marriage with a woman or a man)	35	39	26
Divorced	37	38	25
Widowed	42	20	39
<i>Living with..., p < 0.001</i>			
With parents/relatives	46	30	24
Alone (including roommates...)	38	33	29
With a male partner	42	37	21
With a female partner	32	41	27
<i>Education level, p < 0.001</i>			
Elementary (incomplete 9 grades)	49	23	28
Junior high school (complete 9 grades)	52	23	26
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	43	30	26
Vocational school (higher education institution of I-II levels of accreditation, technical school)	36	37	27
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	42	34	24
Academic degree (PhD/Doctorate)	42	25	33
<i>Self-assessment of his financial status, p < 0.001</i>			
Often, I don't have enough money and food, occasionally I resort to begging	44	32	24
I don't have enough means to buy food products, but I don't resort to begging	39	24	37
My means can cover only food products	41	33	26
Generally, I have enough means to live on	40	33	27
I have enough means to cover essential needs, but I don't do any savings	41	34	25
I have enough means to cover essentials needs, plus I do savings	44	33	23
I live in prosperity	45	32	23
<i>Client status in prevention programs, p < 0.001</i>			
Clients	44	32	24
Non-clients	40	34	26

Narcotic substances. Unlike alcohol, drugs, in particular, injectable ones, are not popular among MSM (Table 7.3). In total, one quarter of MSM reported a lifetime experience of non-injectable drugs use; 1% of respondents – of injectable ones. Among MSM with drug use experience, 29% had used non-injectable drugs and 15% - injectable ones in the past month. Only three MSM had experienced overdose caused by injectable drugs in the last year.

As for sexual intercourses under the influence of non-injectable narcotic substances, (among those respondents who had used such substances in the past month) one-third (31%) of participants hadn't practiced such risky behavior with male partners and two-thirds hadn't practiced this with female partners in the past month. The prevailing majority (89%) of respondents hadn't practiced sexual intercourse under influence of any (injectable or non-injectable) drugs over the last month.

Two-thirds of MSM did not use sexual stimulants. The most popular stimulant among the rest of participants is poppers (18%). In the last month, only a few respondents practiced sexual intercourse under the influence of both pure sexual stimulants and combined with other narcotic substances.

Thus, we can state that the phenomenon of chemsex (sexual activity, while taking primarily stimulant drugs, often involving multiple participants and over a prolonged period) is quite uncommon among MSM in Ukraine; at the same time, we cannot reject the assumption that chemsex is more popular in the groups of wealthy MSM that are difficult to cover with the survey.

Table 7.3. Characteristics of narcotic substances use among MSM

Variable	n	%
<i>Experience of non-injectable narcotic substances use</i>		
I have such experience	1,561	25
I don't have such experience	4,865	74
I don't know	42	1
Refused to answer	33	<1
<i>The last time of use of non-injectable narcotic substances, N = 1,561</i>		
In the past 30 days	455	29
In the past 12 months	486	31
Over one year ago	551	35
I don't remember	65	5
Refused to answer	4	<1
<i>Frequency of sexual intercourses with men under influence of non-injectable narcotic substances in the past month (30 days), N = 455</i>		
At all times	17	4
In the majority of cases (approx. 75%)	44	10
In half the cases	78	17
Occasionally (approx. 25%)	84	19
Rarely (less than 10%)	58	13
Never	142	31
No sex with men within the last month	28	6
Hard to answer	4	1

Continued Table 7.3. Characteristics of narcotic substances use among MSM

Variable	n	%
<i>Frequency of sexual intercourses with women under the influence of non-injectable narcotic substances in the past month (30 days), N = 455</i>		
At all times	8	2
In the majority of cases (approx. 75%)	11	2
In half the cases	11	2
Occasionally (approx. 25%)	17	3
Rarely (less than 10%)	20	5
Never	284	64
No sex with women within the last month	101	21
Hard to answer	3	1
<i>Experience of injectable narcotic substances use</i>		
I have such experience	73	1
I don't have such experience	6,371	98
I don't know	35	1
Refused to answer	22	<1
<i>The last time of use of injectable narcotic substances, N = 73</i>		
In the past 30 days	13	15
In the past 12 months	13	13
Over one year ago	40	60
I don't remember	6	9
Refused to answer	1	3
<i>Did you have cases of overdosing narcotic substances in the past 12 months, N = 13</i>		
Yes	3	28
No	10	72
<i>Experience of sexual stimulants use (the sum may be different from 100%, as the respondent could select several answers or, alternatively, select only "never")</i>		
Poppers	1,133	18
Viagra, Cialis, Levitra	429	7
Other sexual stimulants	61	1
Didn't use stimulants in the past 12 months	145	2
Don't know / don't remember	45	1
Refused to answer	39	1
Never	4,903	74
<i>Frequency of sexual intercourses under the influence of drugs, in the past month (30 days)</i>		
At all times	27	1
In the majority of cases (approx. 75%)	35	1
In half the cases	93	1
Occasionally (approx. 25%)	121	2
Rarely (less than 10%)	171	3
Never	5,819	89
Had no sex in the last month	186	3
Hard to answer or refused to answer	49	1

Continued Table 7.3. Characteristics of narcotic substances use among MSM

<i>Frequency of sexual intercourses under the influence of sexual stimulants, in the past month (30 days)</i>		
Variable	n	%
At all times	44	1
In the majority of cases (approx. 75%)	72	1
In half the cases	169	3
Occasionally (approx. 25%)	246	4
Rarely (less than 10%)	295	5
Never	5,316	82
Didn't use in the past month	126	2
Had no sex in the past month	186	3
Hard to answer or refused to answer	37	1
<i>Frequency of sexual intercourses under the influence of sexual stimulants mixed with narcotic substances, in the past month (30 days)</i>		
At all times	13	<1
In the majority of cases (approx. 75%)	14	<1
In half the cases	29	1
Occasionally (approx. 25%)	56	1
Rarely (less than 10%)	102	2
Never	6,028	93
Didn't use in the past month	39	1
Had no sex in the past month	186	2
Hard to answer or refused to answer	34	1
<i>Frequency of condom use at sexual intercourses under the influence of narcotic drugs and/or sexual stimulants, N = 287</i>		
At all times	64	23
In the majority of cases (approx. 75%)	53	19
In half the cases	33	11
Occasionally (approx. 25%)	21	7
Rarely (less than 10%)	33	11
Never	29	9
Didn't use in the past month	17	6
Hard to answer or refused to answer	37	14

Among different socio-demographic groups, drug use experience is not evenly distributed (Table 7.4). Young participants are more likely to have experience of non-injecting drugs use (primarily, club drugs) compared to older MSM. The same is true for single and married MSM compared to divorced or widowed MSM and for clients of prevention programs compared to non-clients. Low-income MSM, as well as bisexual, married, divorced and MSM living with a woman, were slightly more likely to report injection drug use.

Table 7.4. Substance use experiences among MSM depending on sexual orientation and socio-demographic characteristics, %, N = 6,501

	MSM with a non-injecting drug use experience	MSM with injecting drug use experience
<i>Age</i>	<i>p < 0.001</i>	<i>p = 0.9</i>
Under 25 years	27	1
25 years and older	23	1
<i>Sexual orientation</i>	<i>p = 0.16</i>	<i>p < 0.001</i>
Homosexual	23	1
Bisexual	26	2
Heterosexual or straight	27	0
<i>Legal marital status</i>	<i>p = 0.003</i>	<i>p < 0.001</i>
Never been married	25	1
Married (in official marriage with a woman or a man)	22	2
Divorced	18	3
Widowed	16	0
<i>Living with...</i>	<i>p = 0.12</i>	<i>p = 0.007</i>
With parents/relatives	24	1
Alone (including roommates...)	25	1
With a male partner	22	1
With a female partner	22	3
<i>Education level</i>	<i>p = 0.022</i>	<i>p < 0.001</i>
Elementary (incomplete 9 grades)	10	0
Junior high school (complete 9 grades)	21	2
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	25	2
Vocational school (higher education institution of I-II levels of accreditation, technical school)	22	1
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	25	1
Academic degree (PhD/Doctorate)	17	0
<i>Self-assessment of his financial status</i>	<i>p = 0.1</i>	<i>p = 0.013</i>
Often, I don't have enough money and food, occasionally I resort to begging	28	8
I don't have enough means to buy food products, but I don't resort to begging	25	3
My means can cover only food products	23	1
Generally, I have enough means to live on	22	1
I have enough means to cover essential needs, but I don't do any savings	25	1
I have enough means to cover essentials needs, plus I do savings	26	1
I live in prosperity	28	<1
<i>Client status in prevention programs</i>	<i>p < 0.001</i>	<i>p = 0.9</i>
Clients	30	1
Non-clients	22	1

8. Coverage with care, treatment and social services

8.1. Receiving HIV prevention services

HIV prevention services available in Ukraine provide free distribution of condoms and lubricants among MSM. The survey results revealed that, over the last year, four in ten interviewed MSM have received free condoms at the level of NGO; free condoms were provided by healthcare personnel (Table 8.1). Slightly less (36%) MSM reported they have received lubricants within the last year. Over one quarter of MSM interviewed have been provided with free condoms within the last 3 months, and almost one in five MSM interviewed received this service in the past 30 days (28% and 18%, respectively).

Status of a client of NGOs that provide prevention services logically correlates with receiving these services: four in five clients of such organizations have been receiving free condoms and/or lubricants during the year, while, among non-clients, the actual coverage with such programs was four times lower.

Table 8.1. Receiving free condom and lubricants, % affirmative answers, N = 6,501

Client status in prevention programs	Over the past 12 months, have you received condoms FREE OF CHARGE (e.g., via NGO representative, health worker, in night clubs, at parties, etc.)	Have you received condoms FREE OF CHARGE via NON-GOVERNMENTAL organizations in the last 3 months?	Have you received condoms FREE OF CHARGE via NON-GOVERNMENTAL organizations in the last month (30 days)?	Over the past 12 months, have you received lubricants free of charge (e.g., via NGO representative, health worker, in night clubs, at parties, etc.)
Clients	85	68	43	82
Non-clients	22	12	7	18
Refused to answer	55	47	34	49
Among all	40	28	18	36

In accordance with the standards of international monitoring (*Global AIDS Monitoring 2020: Guidance: Indicators for Monitoring the 2016 Political Declaration on Ending AIDS*, 2020), an individual is considered to be covered with HIV-prevention services, if the individual has been receiving free condoms in the previous months and knows where HIV-testing site is located. This indicator is calculated as percentage of covered respondents in total sample. Data in Table 8.2 indicate that less than a half of respondents (39%) are covered with prevention services, two-thirds (70%) have been receiving free condoms in three-month period, while even lesser amount – during one month period. Nevertheless, the average quantity of free condoms received during the past month amounts to over 20 pieces, and the respondent contacted NGO to receive HIV-prevention services, on the average, twice a month.

Lubricants are typically distributed alongside with condoms. 36% MSM have received free lubricants during the year, that approaches the indicator of HIV-services coverage (39%). On average, the respondents have received 45 tubes of lubricants over the year.

38% of MSM bought condoms in the past month; the prevailing majority (93%) of respondents stated they had no problems buying condoms, if needed.

Table 8.2. MSM coverage with HIV prevention programs

Variable	n	% or mean
<i>GAM.1.6 Indicator «Coverage of HIV prevention programs among MSM», %</i>	2,489	39.2
<i>Has the respondent received free condoms via non-governmental organizations, over the past 3 months? N = 2,544</i>		
Yes	1,782	70
No	725	29
Don't know / Don't remember	27	1
Hard to answer	10	<1
<i>Has the respondent received free condoms via non-governmental organizations, over the past month (30 days)? N = 1,782</i>		
Yes	1,091	63
No	678	37
Don't know / Don't remember	8	<1
Hard to answer	5	<1
<i>Average quantity of condoms received via non-governmental organizations in the past month (30 days), pieces</i>	812	22.5 (95% CI: 19.9 – 25.7)
<i>Average frequency of contacts of non-governmental organizations to receive condoms in the past months, specify how many times</i>	812	2.2 (95% CI: 1.9 – 2.6)
<i>Has the respondent received free lubricants over the past 12 months? E.g., via non-governmental organizations, healthcare workers, in night clubs, at parties, etc.</i>		
Yes	2,286	36
No	4,215	64
<i>Average quantity of free lubricants received in the past 12 months, pieces</i>	812	44.9 (95% CI: 38.8 – 52.0)
<i>Client status in prevention programs</i>		
Clients	1,802	28
Non-clients	4,600	70
Refused to answer	99	2
<i>Did the respondent buy condoms in the past month?</i>		
Yes	2,462	38
No	3,967	61
Don't know / Don't remember	65	1
Hard to answer	7	<1
<i>In the past 30 days, have there been any cases when the respondent could not buy condoms when needed?</i>		
Yes	431	7
No	6,070	93

Coverage of services among different sub-groups differs significantly (Table 8.3). It is significantly lower among non-clients of HIV services, people with low levels of education, people living with a partner, and married and widowed MSM.

Table 8.3. HIV prevention coverage among MSM subgroups of different sexual orientation and socio-demographic characteristics, N = 6,501

	% of MSM covered by prevention services
<i>Age, p = 0.23</i>	
Under 25 years	39
25 years and older	38
<i>Sexual orientation, p = 0.62</i>	
Homosexual	39
Bisexual	37
Heterosexual or straight	36
<i>Legal marital status, p < 0.001</i>	
Never been married	39
Married (in official marriage with a woman or a man)	27
Divorced	38
Widowed	26
<i>Living with..., p < 0.001</i>	
With parents/relatives	36
Alone (including roommates...)	42
With a male partner	37
With a female partner	25
<i>Education level, p < 0.001</i>	
Elementary (incomplete 9 grades)	22
Junior high school (complete 9 grades)	27
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	37
Vocational school (higher education institution of I-II levels of accreditation, technical school)	37
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	42
Academic degree (PhD/Doctorate)	33
<i>Self-assessment of his financial status, p < 0.001</i>	
Often, I don't have enough money and food, occasionally I resort to begging	44
I don't have enough means to buy food products, but I don't resort to begging	39
My means can cover only food products	39
Generally, I have enough means to live on	36
I have enough means to cover essential needs, but I don't do any savings	41
I have enough means to cover essentials needs, plus I do savings	43
I live in prosperity	33
<i>Client status in prevention programs, p < 0.001</i>	
Clients	85
Non-clients	20

8.2. Pre-Exposure Prophylaxis (PrEP)

Another important modern method of HIV prevention service is *Pre-Exposure Prophylaxis* (PrEP). Currently, PrEP is the most effective HIV prevention measure, in particular, for MSM. However, this program has not been introduced until recently in Ukraine (the pilot program was launched at the end of 2017, and at the national level the program has been operating since 2019), and it is still waiting for full-scale deployment.

The survey revealed that about two-thirds (63%) of the participants had heard about PrEP existence, while slightly over one-third (35%) were not aware of it (Table 8.4.).

MSM who are NGOs clients, representatives of the age group 25 years and older, and participants with higher education or academic degree, having a higher assessment of their financial status and identifying as homosexual more frequently declared they are aware of PrEP services. MSM having junior high school education (complete 9 grades), identifying as heterosexual and assessing their financial situation worse are less aware of PrEP services.

Table 8.4. Awareness of Pre-Exposure Prophylaxis (PrEP), %, N = 6,501

	Have you ever heard about Pre-Exposure Prophylaxis (PrEP)?			
	Yes	No	Don't know / don't remember	Refused to answer
<i>Age, p < 0.001</i>				
Under 25 years	59	40	2	<1
25 years and older	65	32	2	1
<i>Legal marital status, p < 0.001</i>				
Never been married	64	34	2	1
Married (in official marriage with a woman or a man)	44	54	2	-
Divorced	59	39	2	<1
Widowed	42	58	-	-
<i>Person/s with whom he lives and keeps household, p < 0.001</i>				
With parents/relatives	53	45	2	<1
Alone (including roommates...)	68	31	2	<1
With a male partner	72	26	2	1
With a female partner	37	60	3	-
Other	59	41	-	-
<i>Education level, p < 0.001</i>				
Elementary (incomplete 9 grades)	31	69	-	-
Junior high school (complete 9 grades)	34	65	2	
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	55	44	2	<1
Vocational school (higher education institution of I-II levels of accreditation, technical school)	64	34	2	1
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	73	25	2	1
Academic degree (PhD/Doctorate)	84	15	1	-
<i>Self-assessment of his financial status, p < 0.001</i>				
Often, I don't have enough money and food, occasionally I resort to begging	33	67	-	-

Continued Table 8.4. Awareness of Pre-Exposure Prophylaxis (PrEP), %

	Have you ever heard about Pre-Exposure Prophylaxis (PrEP)?			
	Yes	No	Don't know / don't remember	Refused to answer
I don't have enough means to buy food products, but I don't resort to begging	48	50	2	-
My means can cover only food products	51	47	2	<1
Generally, I have enough means to live on	59	39	2	1
I have enough means to cover essential needs, but I don't do any savings	68	31	1	<1
I have enough means to cover essentials needs, plus I do savings	76	22	2	<1
I live in prosperity	65	33	2	1
Other	13	79	9	-
Don't know / no answer	44	41	15	-
<i>Sexual orientation, p < 0.001</i>				
Homosexual	66	32	2	1
Bisexual	55	43	2	<1
Heterosexual or straight	35	65	-	-
Your option	79	21	-	-
Don't know / refused to answer	41	55	4	-
<i>Client status in prevention programs, p < 0.001</i>				
Clients	90	10	1	<1
Non-clients	52	46	2	1
Refused to answer	66	18	10	6
Among all	63	35	2	<1

About one-fifth (19%) of the survey participants who are aware of PrEP reported having used PrEP in the past 12 months. At the same time, only one in nine MSM reported current use of PrEP (at the moment the survey was conducted). Less than a tenth (8%) of participants reported they had ever used PrEP, but were not taking it at the time the survey was conducted. Four in five MSM declared they had never used PrEP (Table 8.5) Higher proportion of MSM reporting they had never used PrEP is observed among participants with lower income, as well as among MSM living in official marriage with a woman or a man.

Table 8.5. Experience of Pre-Exposure Prophylaxis use (PrEP), %, N = 3,969*

	Have you used Pre-Exposure Prophylaxis (PrEP) medicines within the previous 12 months or not?				
	Yes, I have taken used PrEP and continue to use it at the moment	Yes, I have taken PrEP, but I don't take it at the moment	No, I haven't	Hard to answer	Don't know / Don't remember
<i>Age, p < 0.001</i>					
Under 25 years	12	7	82	<1	<1
25 years and older	11	8	80	<1	<1
<i>Legal marital status, p < 0.001</i>					
Never been married	11	8	81	<1	<1
Married (in official marriage with a woman or a man)	13	2	85	-	-
Divorced	12	6	81	-	<1
Widowed	2	12	86	-	-
<i>Person/s with whom he lives and keeps a household, p < 0.001</i>					
With parents/relatives	9	6	85	-	<1
Alone (including roommates...)	12	9	78	<1	<1
With a male partner	13	7	80	<1	<1
With a female partner	9	2	89	-	-
Other	21	-	79	-	-
<i>Education level, p < 0.001</i>					
Elementary (incomplete 9 grades)	11	-	89	-	-
Junior high school (complete 9 grades)	16	1	83	-	1
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	11	6	82	<1	<1
Vocational school (higher education institution of I-II levels of accreditation, technical school)	10	6	84	<1	<1
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	13	10	78	-	<1
Academic degree (PhD/Doctorate)	19	7	74	-	-
<i>Self-assessment of his financial status, p < 0.001</i>					
Often, I don't have enough money and food, occasionally I resort to begging	16		85	-	-
I don't have enough means to buy food products, but I don't resort to begging	6	9	85	-	-
My means can cover only food products	9	5	86	-	<1

<i>Continued Table 8.5. Experience of Pre-Exposure Prophylaxis use (PrEP), %</i>	Have you used Pre-Exposure Prophylaxis (PrEP) medicines within the previous 12 months or not?				
	Yes, I have taken used PeEP and continue to use it at the moment	Yes, I have taken PrEP, but I don't take it at the moment	No, I haven't	Hard to answer	Don't know / Don't remember
Generally, I have enough means to live on	12	6	82	<1	<1
I have enough means to cover essential needs, but I don't do any savings	12	8	80	<1	<1
I have enough means to cover essentials needs, plus I do savings	11	11	78	<1	-
I live in prosperity	15	10	75	-	-
Other			100	-	-
Don't know / no answer	33	29	39	-	-
<i>Sexual orientation, p < 0.001</i>					
Homosexual	13	8	80	<1	<1
Bisexual	8	7	84	<1	<1
Heterosexual or straight		13	87	-	-
You option	10	19	72	-	-
Don't know/ Refused to answer			100	-	-
<i>Client status in prevention programs, p < 0.001</i>					
Clients	13	10	77	<1	<1
Non-clients	10	6	84	<1	<1
Refused to answer	17	5	76	-	2
<i>HIV-status based on rapid test result, self-reporting taking ART and data provided by a healthcare worker on ART use, p < 0.001</i>					
HIV-positive	5	3	91	-	-
Negative	12	8	80	<1	<1
<i>Self-declared HIV-status, p < 0.001</i>					
HIV-positive	5	2	93	-	-
HIV-negative	13	8	79	<1	<1
Don't want to answer	10	2	87	-	-
Among all	11	8	81	<1	<1

**Among participants who are aware of PrEP services.*

The survey participants who declared they did not take PrEP at the moment when the survey is conducted, were asked a question to specify the reasons of non-use of PrEP (Table 8.6). The most common reason stated by almost half of all participants (48%) was that they did not feel the risk of being HIV-infected. The second popular reason declared by over one quarter (27%) of relevant participants – the fear of side effects that may be caused by taking PrEP medicines. The curious thing is that this reason was relevantly often indicated by representatives of the age group 25 years and older. The third common reason (stated by 6% of relevant participants) – lack of knowledge on the location where

they can receive PrEP medicines. It is noticeable that representatives from younger age group mentioned this reason twice as often as the older age group (8% versus 4%).

Table 8.6. Reasons for not using Pre-Exposure Prophylaxis (PrEP), %, N = 3523*

	Age		Among all
	Under 25 years	25 years and older	
I don't feel the risk of being HIV-infected	48	47	48
I am afraid of side effects of PrEP	23	29	27
I don't know where to receive medicines	8	4	6
I am ashamed to discuss it with my doctor	2	1	1
It's not available in the place of my residence	<1	1	1
Other	11	7	9
I take ART	1	4	3
Don't know / Don't remember	5	5	5
Refused to answer	2	2	2

**Among participants who did not take PrEP.*

8.3. Coverage with HIV/STIs testing

Another HIV-prevention service among MSM is testing for HIV and STIs (supporting pre-test and post-test counseling can be listed among these services).

Based on the survey results, the majority (92%) of MSM declared they know where they can be tested for HIV infection, the most frequently mentioned sites were AIDS centers, NGOs and general practice outpatient clinics (Table 8.7).

The majority (83%) of the survey participants stated they have experience of being HIV-tested. Thus, 40% have been HIV-tested in the past 6 months, and 20% – within a period from 6 months to one year.

Two-thirds (63%) of the tested received pre-test counseling during their last HIV-testing, and three-quarters (76%) – received both pre-test and post-test counseling. Almost all (99%) respondents tested for HIV received results of their last test. Besides, 36% of HIV-tested respondents were tested in NGOs in 2020, 40% – in 2021. On average, respondents have performed two tests in NGOs within a year. One quarter of respondents have been self-tested; oral HIV-test was used by two-thirds of self-tested respondents. In the majority of cases (90%) these respondents did not experience any difficulties in using HIV self-test kit.

Table 8.7. MSM coverage with HIV-testing

Variable	n	%
<i>Does the respondent know the place where he can be tested for HIV (the sum may be different from 100% as the respondent could have chosen several options of answers or only "don't know" answer)</i>		
In AIDS Centers	3,690	58
In drop-in centers Dovira	1,300	20
In civil organization/ mobile outpatient clinic/ at the syringes exchange site	2,630	41
Outdoors or at home setting, assisted by a social worker or outreach worker	293	5
In mobile outpatient clinic, assisted by a healthcare, social or outreach worker	586	10
In the testing site using a coupon given by my colleague/friend/partner	274	4
In outpatient clinic of general practice	2,357	35
In private clinic	1,628	26
In private laboratory	1,822	29
In prison	59	1
Bought a test and tested myself	872	15
Other	89	1
No, don't know	536	8
<i>How long ago was the test performed/ Indicate the time period of the last test</i>		
Tested in the past 6 months	2,583	40
Tested in the last year (but not more than 6 months ago)	1,295	20
Tested more than one year ago	1,498	23
Never been tested	1,125	17
<i>Was pre-test counseling provided prior to the last testing, N = 5,376</i>		
Yes	4,118	63
No	904	13
Don't know / don't remember	354	6
<i>Did the respondent receive the result of the last test? N = 5,376</i>		
Yes	5,299	99
No	77	1
<i>Was post-test counseling provided after the last test, N = 5,376</i>		
Yes	4,052	76
No	971	17
Don't know / don't remember	341	7
Refused to answer	12	<1
<i>Was the respondent tested for HIV using rapid tests, assisted by a social worker from non-governmental organization in the years 2020 and 2021? N = 5,376</i>		
In 2020, yes	1,810	36
In 2021, yes	2,048	40
Average quantity of rapid tests, assisted by social worker from NGO, performed in 2020	1,806	2.5
Average quantity of rapid tests, assisted by social worker from NGO, performed in 2021	2,044	2.0
<i>Did the respondent perform rapid test for HIV individually (self-testing), without assistance of a healthcare or social worker? N = 5,376</i>		
Yes	1,283	24
No	4,041	75
Don't know / don't remember	37	1
Refused to answer	15	<1
<i>The number of months, on average, after the last self-testing for HIV</i>	1,240	5.8 (95% CI: 5.6 – 6.0)

Continued Table 8.7. MSM coverage with HIV-testing

Variable	n	%
<i>Where did the respondents get HIV self-testing kits? (the sum may vary from 100% as the respondent could have chosen several options of answers), N = 1,283</i>		
On the community level: via non-governmental organization, social worker, in the mobile outpatient clinic	460	35
In healthcare facility	30	2
Ordered HIV test online	345	26
Test was given at the place of work	11	1
Purchased in the pharmacy	242	19
Received test during they were distributed at the community events	38	3
Bought in a vending machine	5	<1
Received from a partner / friend / peer	204	16
Other	13	1
<i>Type of test used for the last self-testing (the sum may vary from 100% as the respondent could have chosen several options of answers), N = 1,283</i>		
Oral	849	63
Blood test	488	41
Don't know / don't remember	3	<1
Refused to answer	0	0
<i>Difficulties encountered during the last self-testing for HIV. (The sum may vary from 100% as the respondent could have chosen several options of answers or only "don't know" answer), N = 1,283</i>		
No	1,154	90
Yes, it was difficult to understand the user's instruction guide/algorithm	48	3
Yes, it was difficult to collect a sample [of biological material]	63	5
Yes, it was difficult to interpret test results	15	1
Yes, it was difficult to understand next steps after obtaining a negative test result	8	1
Yes, it was difficult to understand next steps after obtaining a positive test result	7	<1
Yes, it was difficult to understand next steps after obtaining an inconclusive test result	5	<1
Don't know or don't remember	4	<1
Refused to answer	3	<1

HIV testing coverage conducted during the previous year varies significantly among different sub-groups of MSM (Table 8.8). Coverage is lower among MSM with low levels of education and poor financial situation, non-clients of prevention programs, hetero- and bisexual men living with a partner, as well as young MSM.

Table 8.8. Coverage of MSM with HIV testing in the past 12 months among subgroups of different sexual orientation and socio-demographic characteristics, N = 6,501

	% of MSM covered by testing
<i>Age, p = 0.007</i>	
Under 25 years	58
25 years and older	61
<i>Sexual orientation, p < 0.001</i>	
Homosexual	62
Bisexual	54
Heterosexual or straight	41
<i>Legal marital status, p < 0.001</i>	
Never been married	60
Married (in official marriage with a woman or a man)	47
Divorced	37
Widowed	47
<i>Living with..., p < 0.001</i>	
With parents/relatives	53
Alone (including roommates...)	64
With a male partner	64
With a female partner	44
<i>Education level, p < 0.001</i>	
Elementary (incomplete 9 grades)	27
Junior high school (complete 9 grades)	41
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	56
Vocational school (higher education institution of I-II levels of accreditation, technical school)	59
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	66
Academic degree (PhD/Doctorate)	63
<i>Self-assessment of his financial status, p < 0.001</i>	
Often, I don't have enough money and food, occasionally I resort to begging	32
I don't have enough means to buy food products, but I don't resort to begging	43
My means can cover only food products	55
Generally, I have enough means to live on	58
I have enough means to cover essential needs, but I don't do any savings	61
I have enough means to cover essentials needs, plus I do savings	68
I live in prosperity	64
<i>Client status in prevention programs, p < 0.001</i>	
Clients	84
Non-clients	50
<i>HIV-status based on rapid test result, self-reporting taking ART and data provided by a healthcare worker on ART use, p < 0.001</i>	
HIV-positive	47
Negative	60

<i>Continued Table 8.8. Coverage of MSM with HIV testing in the past 12 months among subgroups of different sexual orientation and socio-demographic characteristics</i>	% of MSM covered by testing
<i>Self-declared HIV-status, p < 0.001</i>	
HIV-positive	49
HIV-negative	60
Don't want to answer	72

8.4. Impact of COVID-19 epidemic

The majority (six in ten) of survey participants did not observe any changes in receiving main prevention services caused by the COVID-19 pandemic (Table 8.9.). Significant part of the participants, ranging from one quarter to one-third, could not provide definite answer on to which extent the COVID-19 pandemic had affected their access to prevention services (however, the indicator of PrEP access stands out compared to other types of services). Thus, at least on the level of self-reports, COVID-19 has not considerably affected MSM access to prevention services.

Only a small proportion, about one in ten participants, reported worsening or improving their access to prevention services during the pandemic. The biggest declared worsening (5%) was of the access to hepatitis B testing. 8% of participants, in their turn, mentioned that their access to informational materials has been improved during the pandemic.

Table 8.9. COVID-1- related changes in access to prevention services, %*

Access to prevention services, how has it changed due to the COVID-19 quarantine restrictions over the last year? — Access to...	Worsened	No changes	Improved	Don't know/ Don't remember
Hepatitis B testing services, N=4,896	5	63	4	29
Hepatitis C testing services, N=4,884	4	63	4	29
Syphilis testing services, N=4,885	4	64	3	28
Receiving free lubricants, N=4,695	4	61	4	31
Receiving free condoms, N=4,710	4	61	4	30
Social worker counseling, N=4,737	4	62	5	29
TB screening (questionnaire on symptoms, N=4,719)	3	59	3	34
HIV testing services (HTS), N=5,007	3	68	6	23
Receiving PrEP, N=4,441	2	50	4	44
Informational materials, N=4,828	2	62	8	28

* Among those having relevant experience

9. Awareness of HIV prevention and treatment

In this round of survey, an updated awareness scale was used (previous scale was used in Ukraine in waves of BBS among MSM in 2017-18, 2015, 2013, 2011, 2009, 2007 (an 11-item version in 2007-2015 and an abbreviated 7-item version in 2017-18). This scale better reflects modern approaches to prevention of HIV infection. It contains seven main questions regarding routes of transmission of HIV infection and HIV treatment (Table 9.1).

Table 9.1. Disaggregation of the participants answers to the question “Indicate to which extent you agree with the below statements on HIV-infection?”, %, N = 6,501

	Provided correct answer	Completely disagree	Rather disagree	Neutral	Rather agree	Completely agree	Don't know / Don't remember
Getting HIV can be avoided if you properly use condoms at each sexual intercourse	85	4	3	7	24	62	2
Getting HIV can be avoided if a HIV-positive individual has undetectable level of viral load	58	4	6	16	25	33	16
Risks of getting HIV-infection are very low if a HIV-negative individual takes Pre-Exposure Prophylaxis (PrEP)	64	2	4	16	30	34	15
Risks of getting HIV-infection are very low if an individual takes Post-Exposure Prophylaxis (PEP) immediately after exposure (<72 hours)	57	2	4	17	29	29	20
After being diagnosed HIV-positive, an individual shall immediately initiate ART	81	2	3	7	22	60	8
ART can be postponed if a HIV-positive individual feels healthy	72	49	23	9	6	4	9
HIV-positive individual can stop ART if he feels healthy	76	55	21	9	5	3	9

**Correct answers are highlighted grey*

The majority of participants provided correct answers to the proposed statements. The biggest part of correct answers, six in seven (85%), was given on the statement on whether it is possible to avoid getting HIV infection by consistent and proper use of condoms at each sexual intercourse. 81% of participants correctly indicated that a HIV-positive individual, having been diagnosed, shall immediately initiate ART. Three in four

participants made wrong assumption that a HIV-positive individual can stop ART if he feels healthy, and 72% - selected similar statement regarding ART postponing. The lowest level of awareness was observed in statements regarding the importance of Post-Exposure Prophylaxis (57%), undetectable viral load (58%), and Pre-Exposure Prophylaxis (64%). Moreover, it is noteworthy that one in five participants could not provide a clear answer to the statement on the role of Post-Exposure Prophylaxis in reducing the risks of getting HIV infection.

30% MSM answered correctly to all seven questions, thus, they have appropriate knowledge on how to avoid getting HIV infection and how to properly act in case they are diagnosed HIV-positive. Higher proportion of well-informed MSM is observed in participants with higher level of education, individuals with better financial status and clients of NGOs providing prevention services (Table 9.2.).

Table 9.2. Level of awareness of HIV prevention and treatment, %, N = 6,501

	Knowledge of all points of the scale on HIV prevention and treatment	
	Not informed	Informed
<i>Age, p < 0.001</i>		
Under 25 years	73	27
25 years and older	69	31
<i>Legal marital status, p < 0.001</i>		
Never been married	71	29
Married (in official marriage with a woman or a man)	75	25
Divorced	68	32
Widowed	58	42
<i>Person/s with whom he lives and keeps a household, p < 0.001</i>		
With parents/relatives	75	25
Alone (including roommates...)	68	32
With a male partner	67	33
With a female partner	78	23
Other	77	23
<i>Education level, p < 0.001</i>		
Elementary (incomplete 9 grades)	92	8
Junior high school (complete 9 grades)	86	14
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	76	24
Vocational school (higher education institution of I-II levels of accreditation, technical school)	68	32
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	65	35
Academic degree (PhD/Doctorate)	58	43
<i>Self-assessment of his financial status, p < 0.001</i>		
Often, I don't have enough money and food, occasionally I resort to begging	89	11
I don't have enough means to buy food products, but I don't resort to begging	81	19
My means can cover only food products	76	24

Continued Table 9.2. Level of awareness of HIV prevention and treatment, %

	Knowledge of all points of the scale on HIV prevention and treatment	
	Not informed	Informed
Generally, I have enough means to live on	71	29
I have enough means to cover essential needs, but I don't do any savings	68	32
I have enough means to cover essentials needs, plus I do savings	67	33
I live in prosperity	76	24
Other	90	10
Don't know / no answer	86	14
<i>Sexual orientation, p < 0.001</i>		
Homosexual	70	30
Bisexual	73	27
Heterosexual or straight	73	27
Your option	59	41
Don't know / Refused to answer	90	10
<i>Client status in prevention programs, p < 0.001</i>		
Clients	55	45
Non-clients	77	24
Refused to answer	78	22
<i>HIV-status based on rapid test result, self-reporting taking ART and data provided by a healthcare worker on ART use, p < 0.001</i>		
HIV-positive	63	37
HIV-negative	71	29
Among all	71	30

10. HIV status and ART therapy

10.1. HIV prevalence

HIV testing was a mandatory component of the survey, it was performed for all participants after the main questionnaire was completed. Based on test results obtained by rapid testing (as well as self-reporting and obtaining data from a healthcare worker on a participant's use of ART), 3.9% (95% CI: 3.8-4.1%) of survey participants were tested positive (Table 10.1.).

Higher proportion of HIV-infected participants was recorded among those who indicated that they lack money and food to the extent they have to resort to begging (17%); and among those who stated they had been tested more than 12 months prior to the survey (8%).

Table 10.1. Prevalence of HIV infection, %, N = 6,501

	HIV prevalence (proportion of HIV- positive participants)
<i>Age, p < 0.001</i>	
Under 25 years	2
25 years and older	5
<i>Legal marital status, p < 0.001</i>	
Never been married	4
Married (in official marriage with a woman or a man)	7
Divorced	4
Widowed	-
<i>Person/s with whom he lives and keeps a household, p < 0.001</i>	
With parents/relatives	3
Alone (including roommates...)	4
With a male partner	4
With a female partner	4
Other	25
<i>Education level, p < 0.001</i>	
Elementary (incomplete 9 grades)	1
Junior high school (complete 9 grades)	2
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	4
Vocational school (higher education institution of I-II levels of accreditation, technical school)	4
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	4
Academic degree (PhD/Doctorate)	5
<i>Self-assessment of his financial status, p < 0.001</i>	
Often, I don't have enough money and food, occasionally I resort to begging	17
I don't have enough means to buy food products, but I don't resort to begging	-
My means can cover only food products	4
Generally, I have enough means to live on	4
I have enough means to cover essential needs, but I don't do any savings	4
I have enough means to cover essentials needs, plus I do savings	4
I live in prosperity	5
Other	-
Don't know / no answer	-

<i>Continued Table 10.1. Prevalence of HIV infection, %</i>	HIV prevalence (proportion of HIV-positive participants)
<i>Sexual orientation, p < 0.001</i>	
Homosexual	4
Bisexual	4
Heterosexual or straight	3
Your option	1
Don't know / Refused to answer	7
<i>Client status in prevention programs, p < 0.001</i>	
Clients	6
Non-clients	3
Refused to answer	5
<i>Were you tested for HIV in the past 12 months? p < 0.001</i>	
Yes, in the past 6 months	3
Yes, in the past year (but not more than 6 months ago)	2
No, more than 12 months ago	8
No, never been tested for HIV	2
Among all	4

Nine in ten (91%) MSM who reported their HIV-positive status confirmed this status, with the results of the rapid tests (Table 10.2.). With regard to the rest of participants – due to the use of ART treatment, their HIV-positive status could not be confirmed by the RT.

Table 10.2. Knowledge of HIV-status, %, p < 0.01, N=5,376

		Self-declared HIV-status			Among all
		HIV-negative	HIV-positive	Don't want to answer	
HIV-status based on rapid test result, self-reporting taking ART and data provided by a healthcare worker on ART use.	HIV-positive	1	91	14	4
	HIV-negative	99	8	86	96
Total		100	100	100	100

Table 10.3. shows the data that reflects the proportion of undiagnosed HIV-positive cases among MSM (i.e., MSM who did not know their HIV-positive status or, at least, did not report it) – both among all participants and specifically among HIV-positive participants. It is noteworthy that undiagnosed cases of HIV infection are more spread in MSM who did not want or could not define their sexual orientation, as well as in heterosexual MSM.

Table 10.3. Undiagnosed HIV cases, %

	Undiagnosed HIV-positive participants	
	Among all participants, N = 6501	Among HIV-infected participants, N=273
<i>Age, p < 0.001</i>		
Under 25 years	1	37
25 years and older	2	42
<i>Legal marital status, p < 0.001</i>		
Never been married	2	43
Married (in official marriage with a woman or a man)	3	48
Divorced	1	22
Widowed	-	-
<i>Person/s with whom he lives and keeps a household, p < 0.001</i>		
With parents/relatives	1	43
Alone (including roommates...)	2	39
With a male partner	2	41
With a female partner	2	63
Other	11	41
<i>Education level, p < 0.001</i>		
Elementary (incomplete 9 grades)	-	-
Junior high school (complete 9 grades)	1	27
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	2	42
Vocational school (higher education institution of I-II levels of accreditation, technical school)	2	48
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	2	39
Academic degree (PhD/Doctorate)	-	-
<i>Self-assessment of his financial status, p < 0.001</i>		
Often, I don't have enough money and food, occasionally I resort to begging	3	20
I don't have enough means to buy food products, but I don't resort to begging	-	-
My means can cover only food products	2	48
Generally, I have enough means to live on	2	42
I have enough means to cover essential needs, but I don't do any savings	2	51
I have enough means to cover essentials needs, plus I do savings	1	23
I live in prosperity	1	26
Other	-	-
Don't know / no answer	-	-
<i>Sexual orientation, p < 0.001</i>		
Homosexual	2	41
Bisexual	2	40
Heterosexual or straight	3	100
Your option	-	-
Don't know / Refused to answer	7	100

Continued Table 10.3. Undiagnosed HIV cases, %

	Undiagnosed HIV-positive participants	
	Among all participants	Among HIV-infected participants
<i>Client status in prevention programs, p = 0.093</i>		
Clients	2	52
Non-clients	2	50
Refused to answer	3	41
<i>Were you tested for HIV in the past 12 months? p < 0.001</i>		
Yes, in the past 6 months	1	35
Yes, in the past year (but not more than 6 months)	1	52
No, more than 12 months ago	3	36
No, never been tested for HIV	2	100
Among all	2	41

10.2. Viral load and recent HIV- infection

Samples of DBS were collected from HIV-positive participants, those samples were transferred to Kyiv and tested by the experts of the PHC Reference Laboratory for HIV/AIDS Diagnostics for viral load and recent HIV infection. The instruments and tests used are presented in Table 10.4.

Table 10.4. Instruments and tests used for the analysis of DBS samples by PHC's HIV/AIDS Reference Laboratory

Test name	Instruments	Name of reagents/tests
Viral load	Sample preparation system Abbott m2000 sp, Amplifier Abbott m2000rt	Abbott Real Time HIV-1 Test Reagent Kit for DBS, which is compatible with Abbott instruments
Recent infection	SUNRISE absorbance microplate reader; Thermal microplate shaker PST-60HL-4, BIOSAN, Latvia; PW 40 Microplate Washer, BioRad, Austria Refrigerated incubator SR13-2, SHEL LAB, USA	Maxim HIV-1 Limiting Antigen Avidity EIA for Dry Blood Spot - Cat. No. 92003, Maxim Biomedical, Inc., USA

Viral load. Based on laboratory test results, over two-thirds (77%) of HIV-positive participants had viral load lower than 1,000 copies/ml (Table 10.5).

Table 10.5. Viral load test results among HIV-positive participants, %

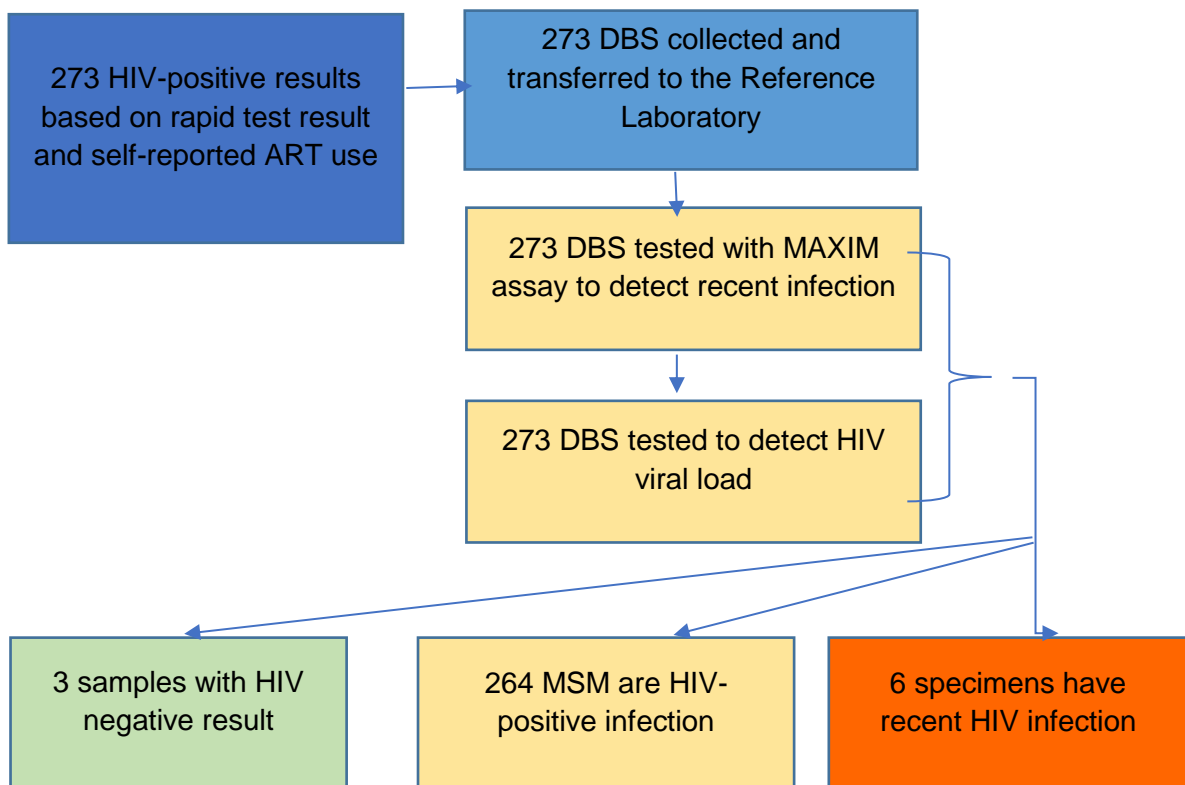
	Viral load results among HIV-positive participants	
	< 1000 copies/ml	≥ 1000 copies/ml
<i>Age, p < 0.001, N = 273</i>		
Under 25 years	86	14
25 years and older	75	25
<i>Self-declared HIV-status, p < 0.001, N = 256</i>		
HIV-negative	53	47
HIV-positive	89	11
Don't want to answer	91	9
<i>Take ART (as they reported to the interviewer), p < 0.001, N = 167</i>		
Yes	94	6
No	17	83
No, but I have already been prescribed	0	100
I was taking it, but stopped	0	100
Among all	77	23

Recent HIV infection. Recent HIV infection means that a person is newly infected with HIV during a specified time period (e.g., a year). People with recent HIV infection have high amounts of HIV in their blood. This, in turn, means that the infection can be passed on more easily to other people.

All stages and results of recent infection testing are represented on Figure 10.2.1. Liquid serum/plasma extracted from DBS was used in the testing. A key element of testing for recent infection was the MAXIM HIV-1 LAg-Avidity enzyme immunoassay, which relied on the property of recently acquired infection to generally have lower IgG avidity compared to long-term infection.

Taking into account weighting, 2% of HIV-positive participants have recent HIV infection (based on the RT results, self-reported ART use and data provided by a healthcare worker about ART taking).

Figure 10.2.1. Stages and results of recent HIV infection testing



10.3. Annual HIV incidence

Incidence is the likelihood that new cases of disease will occur in a population over time. In contrast to previous waves of biobehavioral studies, a new method for calculating annual incidence proposed in (Kassanjee et al. (2012)) was used. The corresponding method was implemented in the package "inctools" (version 1.0.15) for R. When calculating the values presented in Table 10.6 were set.

Table 10.6. Value of variables set when calculating annual HIV incidence among MSM

Variable name	Meaning	Value
PrevH	Prevalence of HIV	0.039
RSE_PrevH	Relative Standard Error (RSE) of estimate for population prevalence of HIV	0.25
PrevR	Proportion of persons found to be 'recent' by biomarker assay among total persons found positive for HIV	0.02
RSE_PrevR	Relative Standard Error (RSE) of estimate for population proportion of those testing positive for HIV who have been infected recently	0.15
Boot	True/False variable indicating whether variance of point estimates is to be calculated by Empirical Bootstrapping (TRUE) or Delta Method (FALSE), the default setting.	TRUE
BS_Count	Specifies number of bootstrap samples for bootstrapped confidence intervals of incidence	1000
MDRI	mean duration of recent infection [days]	161
RSE_MDRI	Relative standard error of MDRI [days]	0.0412
FRR	False recent rate	0.009
RSE_FRR	Relative standard error of FRR	0.09
BigT	Post-infection time cut-off true vs false recent [days] default 730 days	730

As a result, the calculated value of the annual HIV incidence among MSM, based on the results of the BBS MSM 2021, was 0.11% (95% CI: 0.04%-0.20%).

10.4. HIV treatment cascade

The HIV treatment cascade is a group of indicators where each subsequent indicator is calculated as a percentage of the previous one; each indicator shall be achieved at the level of 95% (*HIV Cascade Framework for Key Populations, 2015*).

Table 10.7. HIV treatment cascade, % based on NGO client status, %*

	Prevalence of HIV-infection**		Know their HIV status		Registered at the healthcare facility		Take ART (as they reported to the interviewer)		Virally suppressed (<1,000 copies/ml)	
	%	n	%	n	%	n	%	n	%	n
Among all	4	273	63	168	98	164	95	156	94	145
<i>Client status in prevention programs, p < 0.01</i>										
Clients	6	118	73	89	100	88	96	85	97	82
Non-clients	3	150	54	76	96	73	94	68	90	60
Refused to answer	5	5	50	3	100	3	100	3	100	3

*Data in each column represent percentage of the previous one

** Based on rapid test results

Table 10.7 shows that the target indicators of HIV treatment cascade for MSM who took part in the survey, are achieved or almost achieved (equal 94-95%) for all indicators, except knowledge of one's HIV-status (63%), which remains the biggest "gap" in the cascade.

There is a significant discrepancy in the level of knowledge of one's HIV-status between clients and non-clients of NGOs providing relevant services: thus, while almost three-quarters (73%) of the former know their HIV status, among the latter this proportion slightly exceeds a half – 54%.

11. Prevalence and treatment of viral hepatitis B and C, STIs, tuberculosis

The survey participants were asked a number of questions regarding their experience of viral hepatitis B and C, STIs, tuberculosis (Table 11.1). According to self-reports, the prevailing majority (almost nine in ten participants) consider they have never been infected with the mentioned infections. As declared in their self-reports, the most common diseases they had were: herpes (cases reported by each sixth participant), gonorrhea (7%), and chlamydia (7%). 6% had human papillomavirus, and 5% of them - syphilis.

Table 11.1. Experience of viral hepatitis B and C, STIs, tuberculosis, %, N= 6,501

Reported having been infected with...	Yes	No	Don't know / Don't remember
Herpes	15	84	1
Gonorrhea	7	92	<1
Chlamydia	7	92	1
Human papillomavirus	6	92	2
Syphilis	5	95	<1
Hepatitis B	2	96	2
Tuberculosis	1	98	<1
Hepatitis C	1	97	1

The prevailing majority of participants who reported having experienced any of the listed infections, declared they received treatment and recovered (Table 11.2). At the same time, percentage of participants who have never previously received any treatment and did not take it at the moment comprises: 18% - among MSM infected with Hepatitis C, 15% - among MSM with herpes and 12% of the respondents who reported being infected with human papillomavirus.

Table 11.2. Treatment success rate for viral hepatitis B and C, STIs, tuberculosis, % of those who reported having been infected with a relevant infection

Among those who reported being infected and having received treatment for ...	Yes, I completed the full treatment course and recovered	Yes, I completed the full treatment course, but haven't recovered	Yes, I started a treatment course, but haven't completed it	Yes, I am taking the treatment now	No, I don't take any treatment now	Don't know/ Don't remember
Gonorrhea, N = 435	97	2	<1	1	<1	-
Tuberculosis, N = 91	97	2	-	-	1	-
Chlamydia, N = 401	95	3	<1	1	1	<1
Syphilis, N = 293	93	<1	1	4	1	-
Hepatitis B, N = 119	88	5	1	1	3	2
Hepatitis C, N = 89	71	5	2	4	18	1
Herpes, N = 985	68	8	3	3	15	2
Human papillomavirus, N = 381	66	9	6	7	12	1

Each sixth of the interviewed MSM declared they had been vaccinated against Hepatitis B (Table 11.3.).

Table 11.3. Viral Hepatitis B vaccination coverage rate, %, N = 6,501

	Yes	No	Don't know / Don't remember
Were vaccinated against Hepatitis B	17	76	7

During the survey the participants were tested on the presence of anti HCV antibodies. According to the rapid test results, one in fifty (1.8% (CI: 1.7%-1.9%)) participants has relevant antibodies.

Slightly more than four in ten (44%) participants, who were positively tested for anti-HCV antibodies, confirmed that they had the disease in the past or currently have it. However, almost half of participants did not know or did not report having such experience. (Table 11.4).

Table 11.4. Awareness of the presence of anti HCV antibodies, %, N=6,501

		Have you ever had Hepatitis C?				Total
		Yes	No	Don't know / Don't remember	Refused to answer	
HCV test result	Positive	44	49	6	1	100
	Negative	<1	98	1	<1	100
Among all		1	97	1	<1	100

Biological component of the survey also included testing for syphilis antibodies using RT. It should be noted that the presence of antibodies to syphilis pathogen does not necessarily indicate that a person experienced the disease (there could exposure to the pathogen that had not resulted in the development of the disease; alternatively – positive result may occur due to cross-reaction to another pathogen). The absence of G-antibodies to syphilis pathogen does not necessarily indicate the absence of the disease (e.g., if an individual has been recently infected and the antibodies have not been developed yet). This test is usually used for screening purposes; additional tests can be performed to get final diagnosis. However, it gives a general understanding of whether an individual is in the risk group of those with current or previous chronic syphilis. Based on RT results, 3.2% (CI: 3.1%-3.4%) of participants had syphilis antibodies (IgG). Among those who were positively tested for syphilis antibodies using RTs, 57% confirmed they were infected with syphilis in their lifetime; 41% - did not confirm³ having such experience during their life, that puts them in the risk group for syphilis (Table 11.5).

³ This category may include those who: a) were not aware of having chronic syphilis, b) were aware of the previous experience of syphilis but did not want to openly admit it; c) had been exposed to the syphilis pathogen but it did not result in the development of syphilis; r) have syphilis positive result due to cross-reaction to another pathogen.

Table 11.5. Awareness of the presence of syphilis antibodies, %, N=6,501

		Have you ever had syphilis?				Total
		Yes	No	Don't know / Don't remember	Refused to answer	
Syphilis test results	Positive	57	41	<1	1	100
	Negative	3	97	<1	<1	100
Among all		5	95	<1	<1	100

12. Mental health

Mental health of the participants was assessed by evaluation of symptoms of depression by means of the Patient Health Questionnaire (PHQ-9) (Kroenke et al., 2001).

Statistical analysis has shown that PHQ-9 scale proved to be sufficiently reliable tool (Cronbach's Alpha equals 0.863), and its results can be interpreted as averages. PHQ-9 is interpreted as a sum of values assigned to the participants' answers to all questions. PHQ-9 scores correspond to: 0-4 - minimum level of depression, 5-9 – mild depression, 10-14 – moderate depression, 15-19 – moderately severe depression, 20-27 – severe depression.

Mean value of the PHQ-9 scale for all participants accounts to 3.6 that corresponds to the minimum level of depression (Table 12.1.). Signs of depression are more pronounced in MSM in difficult financial state and also in widowed MSM.

Table 12.1. Presence of depression symptoms (as per the PHQ-9 scale), N=6,501

	Mean	SD
<i>Age</i>		
Under 25 years	4,0	4,4
25 years and older	3,4	3,9
<i>Legal marital status</i>		
Never been married	3,7	4,2
Married (in official marriage with a woman or a man)	3,2	3,7
Divorced	3,0	3,1
Widowed	4,6	4,1
<i>Person/s with whom he lives and keeps a household</i>		
With parents/relatives	3,8	4,3
Alone (including roommates...)	3,6	4,1
With a male partner	3,3	3,9
With a female partner	3,1	3,5
Other	4,2	5,0
<i>Education level</i>		
Elementary (incomplete 9 grades)	4,8	5,5
Junior high school (complete 9 grades)	4,3	4,8
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	3,9	4,4
Vocational school (higher education institution of I-II levels of accreditation, technical school)	3,6	3,9
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	3,2	3,7
Academic degree (PhD/Doctorate)	4,9	6,2
<i>Self-assessment of his financial status</i>		
Often, I don't have enough money and food, occasionally I resort to begging	7.1	6.7
I don't have enough means to buy food products, but I don't resort to begging	5.4	5.5
My means can cover only food products	4.4	4.4
Generally, I have enough means to live on	3.6	4.2
I have enough means to cover essential needs, but I don't do any savings	3.2	3.7
I have enough means to cover essentials needs, plus I do savings	3.4	3.9
I live in prosperity	3.5	3.9

<i>Continued Table 12.1. Presence of depression symptoms (as per the PHQ-9 scale)</i>	Mean	SD
<i>Age</i>		
Other	4,8	3,5
Don't know / no answer	3,0	6,5
<i>Sexual orientation</i>		
Homosexual	3,6	4,1
Bisexual	3,6	4,0
Heterosexual or straight	4,0	5,5
Your option	8,4	6,3
Don't know / refused to answer	4,2	3,8
<i>Status of client of prevention programs</i>		
Clients	4.1	4.2
Non-clients	3.4	4.0
Refused to answer	3.5	3.9
Among all	3.6	4.1

According to the PHQ-9 scale, the prevailing majority of MSM (seven in ten) have minimum level of depression, slightly more than one in five (22%) – have mild depression (Table 12.2). 6% of the respondents have symptoms of moderately severe and severe depression. Severe manifestations of depression are more frequently observed in those who selected their own variant answering the question about sexual orientation, in heterosexuals, and in MSM is difficult financial situation.

Table 12.2. Presence of depression symptoms, % breakdown by socio-demographic characteristics, N=6.501

	Scale of manifestations of depression PHQ-9 –intervals				
	Minimum level of depression	Mild depression	Moderate depression	Moderately severe depression	Severe depression
<i>Age, p < 0.01</i>					
Under 25 years	66	23	7	2	1
25 years and older	71	22	5	2	1
<i>Legal marital status, p < 0.01</i>					
Never been married	69	22	6	2	1
Married (in official marriage with a woman or a man)	75	19	4	1	1
Divorced	71	26	3	0	0
Widowed	48	43	7		2
<i>Person/s with whom he lives and keeps a household, p < 0.01</i>					
With parents/relatives	68	22	7	2	1
Alone (including roommates...)	69	23	6	2	1
With a male partner	72	21	4	2	1
With a female partner	78	16	4	1	1
Other	79		21		

<i>Continued Table 12.2. Presence of depression symptoms, % breakdown by socio-demographic characteristics</i>	Scale of manifestations of depression PHQ-9 –intervals				
	Minimum level of depression	Mild depression	Moderate depression	Moderately severe depression	Severe depression
<i>Education level, p < 0.01</i>					
Elementary (incomplete 9 grades)	55	26	12	8	
Junior high school (complete 9 grades)	64	23	9	5	1
Senior high school or vocational education (11 grades, vocational school) or incomplete higher education	67	23	7	2	1
Vocational school (higher education institution of I-II levels of accreditation, technical school)	69	24	5	2	1
Higher education (bachelor, specialist or master's degree, graduated from university or institute)	74	20	4	1	0
Academic degree (PhD/Doctorate)	64	19	8	2	7
<i>Self-assessment of his financial status, p < 0.01</i>					
Often, I don't have enough money and food, occasionally I resort to begging	46	28	17		9
I don't have enough means to buy food products, but I don't resort to begging	52	34	9	3	3
My means can cover only food products	61	27	9	3	1
Generally, I have enough means to live on	70	22	6	2	1
I have enough means to cover essential needs, but I don't do any savings	72	22	4	1	1
I have enough means to cover essentials needs, plus I do savings	74	19	4	2	1
I live in prosperity	68	25	5	0	1
Other	51	40	9		
Don't know / no answer	76	15			9
<i>Sexual orientation, p < 0.01</i>					
Homosexual	70	22	6	2	1
Bisexual	69	24	6	1	1
Heterosexual or straight	74	11	5	5	5
Your option	32	34	13	15	6
Don't know / refused to answer	52	33	15		
<i>Client status of prevention programs, p < 0.01</i>					
Clients	64	26	6	2	1
Non-clients	72	21	6	2	1
Refused to answer	70	24	2	2	1
Among all	70	22	6	2	1

LIMITATIONS TO SURVEY

Due to the specifics of the sampling process, the survey results are not representative for the whole KP of MSM in Ukraine. The survey results reflect only urban population of the regions included in the sample, first of all population of oblast centers.

Furthermore, the planned sample population size in Mariupol was not reached, and the survey data from this region were excluded from the general dataset of survey results.

Much of the data (on socio-demographic characteristics, sexual orientation, experience of receiving prevention services, behavior, etc.) was obtained through self-declaration, which could lead to social desirability bias or lead to errors or misreporting due to incorrect recall.

The RDS recruitment quality indicators (recruitment and population homophily, convergence, and bottleneck analysis) were tested only for key variables such as age, sexual orientation, client status in prevention programs, and HIV test results.

SURVEY IMPLEMENTATION CHALLENGES

The main challenges faced during the implementation of the BBS MSM 2021 survey can be grouped in three main areas:

- persistence of stigma and discrimination against MSM in Ukrainian society
- Impact of the COVID-19 pandemic
- Difficulties in determining HIV-status of individuals with low level of viral load resulted from their ART use

Persistence of stigma and discrimination against MSM in the Ukrainian society

Services needed to conduct the field stage of the survey were procured through the government procurement platform Prozzoro⁴. Given significant cost of such survey, lack of understanding of its funding sources, and its overall applied value for everyone, including general population, as well as persistence of stigma and discrimination against MSM, the procurement gained wide media coverage and provoked unprecedented negative reaction from both political actors and civil society. Being initially quite outraged and condemning, these reactions have gradually softened to neutral, even supportive ones. That was made possible by communications and explanations provided by the PHC, partner organizations and public health experts.

The biggest threat, though having non-public character, was the response of certain state agencies: these agencies attempted to reduce the uproar caused by the bidding, which could have impacted the level of support of the political elites. To do so, they tried to make the PHC cancel the bidding and postpone it. Given the specifics of the project funding with sponsor's funds, such delay of procurement would have rendered impossible the implementation of the survey in 2021 and even 2022. As a result, the PHC together with partner organizations had to withstand both political and media pressure, answering comments on the Prozzoro website and launching the advocacy and awareness-raising campaign. In the end, all these efforts ensured successful resolution of the situation with the procurement. However, the issue itself is very indicative of the level of stigma and discrimination prevalence in the Ukrainian society. For comparison, there was a bio-behavioral survey among people who inject drugs in 2020 (IBBS PWID 2020) which did not trigger such reaction or media publicity.

Impact of COVID-19 pandemic

Pandemic of the coronavirus disease COVID-19 caused by Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) required special measures to ensure safety of the participants, team members, as well as continuity of the field stage of the survey:

- All survey sites were provided with the required quantity of disinfectants and protective masks for both site personnel and participants;
- In case of illness of a regional team member working as interviewer or coupon-manager, his/her duties were distributed among other team members

⁴ <https://prozorro.gov.ua/tender/UA-2021-02-01-008093-a>

- In case of illness of a healthcare worker, another healthcare professional continued working on the site, since each survey site was provided with two healthcare professionals trained to conduct survey-related activities.

Despite the considerable impact of COVID-19 and related restrictions that affected lives of Ukrainians, and particularly MSM; regardless of all local outbursts and the status of “red zones” being assigned to certain regions of the survey, the sites ensured smooth operations, so the overall situation did not affect the implementation of the field stage of survey.

The COVID-19 pandemic had much greater impact on international logistics, in particular, logistics of pharmaceuticals. The manufacturers were overloaded and forced to shift their operations to production of RTs to detect SARS-CoV-2. That resulted in delay of supplies of RTs for viral Hepatitis C and syphilis intended for the survey. The research team received RTs for viral Hepatitis C during implementation of the second stage of the survey, i.e., the stage of conducting trainings for regional teams. The estimated delivery date of tests to detect syphilis antibodies was the mid of September, while the field stage had to be launched in the second half of August. The research team, having consulted with partners, decided to launch the field stage of the survey in compliance with the project timeline using tests for syphilis available in the PHC after completion of the IBBS PWID 2020. Test kits to detect syphilis antibodies were delivered to Ukraine at the beginning of September, promptly handed over to CSEP and further transferred to regional teams.

Difficulties in determining HIV status of individuals having low viral load level due to ART use

Considerable part of HIV-positive MSM received ART that suppressed viral load to the level that was lower than the sensitivity threshold of test-systems used in the survey: of both RTs and when DBS samples were tested by the PHC Reference Laboratory for HIV/AIDS Diagnostics. This challenge is fundamental one, as, with the gradual increase of ART coverage among MSM and other KPs, we expect this challenge to continue. Future BBS among KPs could benefit from a closer investigation and resolution of this challenge.

CONCLUSIONS

The bio-behavioral survey among men who have sex with men conducted in 2021 covered 16 cities and 6,632 participants. The final version of the survey results include data from 15 cities and 6,501 participants.

The participants average age was 29 years. Over two-thirds of the participants reported being homosexual, while slightly over one-quarter — bisexual.

As of 2021, the most popular methods to find male partners were Internet-based: including special mobile applications and dating websites. Three-quarters of MSM that participated in the survey use these methods. Seven in ten participants have at least one active profile on such websites or mobile apps. The most popular mobile application for male partners search is Hornet (57% of the respondents have an active profile on this dating application). Mobile applications for dating are more popular among younger MSM. The survey registered relatively low level of the internalized homophobia among participants. However, over one-third of the participants had personal experience of insults due to their sexual orientation, one in five — face physical abuse.

Sexual intercourse with men in the 6 months prior to the survey were reported by 87% of participants. The average number of partners during the given period of time is 3.9.

Among the survey participants who had anal intercourse with male partners in the past 6 months, over three-quarters (77%) reported condom use at the last anal intercourse. Unprotected sex (without condom) was more frequently reported among homosexual men, in particular those who live with a male partner.

26% of participants have high risk of alcohol consumption. The same proportion of participants had experience of using non-injectable drugs during the lifetime (less of one-third of participants — within the last month). 1% of participants declared having experience of using injectable drugs. Three-quarters of participants have never used sex stimulants. Less than one in ten MSM in survey practiced sex under the influence of drugs in the last month.

Four in ten participants have been receiving free condoms, 36% - free lubricants. Among the participants who are clients of prevention programs the respective percentage are twice as high.

83% of the survey participants were tested for HIV in their lifetime. 40% of them have been tested within the last 6 months, another 20% — within the last year. Self-testing has become more prevalent. One-quarter of participants said they did the HIV tests themselves, and 15% said they bought the appropriate tests.

63% of participants are aware about existence of the Pre-Exposure Prophylaxis (PrEP). MSM who reported their awareness of the PrEP existence were found more often among the clients of NGOs, representatives of 25+ age group, individuals with higher education or academic degree, as well as wealthier MSM and homosexuals. Participants having junior high school education, heterosexuals and MSM with low income are less informed about PrEP.

19% of participant (among those who are aware of PrEP) reported having taken PrEP within the last 12 months. However, only one in nine participants reported that he took PrEP at the moment the survey was conducted. 8% declared having previously used PrEP, but not at the time the survey was conducted.

The most common declared reason for PrEP non-use — the participants feel no risk of being HIV-infected. The second most common reason – fears of possible side effects from PrEP medicines.

The survey participants did not report any significant impact of the COVID-19 pandemic on their access to prevention services.

According to the survey results, HIV prevalence among MSM accounts to 3.9%. The highest prevalence level was recorded in the least wealthy MSM, and in those who have not been tested over a long time.

The bottleneck of HIV treatment cascade among MSM remains the level of knowledge of one's HIV status (63%). The rest of cascade components achieve or nearly achieve the target indicators.

ANNEXES

A.1. Sample size calculation

	HIV prevalence (%), 2017	Proportion of HIV-positive with VLS (%), 2017	LB	UB	Target Confidence Interval of ½ Width (%) for VLS	Design Effect Calculated*	Non-response NR/ Missing Data (%)	Confidence Interval	Calculated proportion of HIV-positive MSM in sample, unadjusted	Calculated proportion of HIV-positive MSM in sample, adjusted for DE/ NR	Calculated total sample	Rounded city level sample *
All cities included	7	36	31	41	5	1.34	5	95	356	502	6,877	6,900
Strata 1	13	27	17	37	10	2.07	5	95	76	165	1,279	1,400
Cherkasy												400
Odesa												600
Mariupol												400
Strata 2	7	47	37	57	10	1.23	5	95	96	124	1,797	2,400
Kyiv												600
Kharkiv												450
Dnipro												400
Lviv												500
Zaporizhzhia												450
Strata 3	5	17	7	27	10	1.14	5	95	54	64	1,280	3,100
Vinnitsia												350
Zhytomyr												450
Ivano-Frankivsk												350
Kropyvnytskyi												400
Mykolaiv												400
Kherson												400
Poltava												350
Chernihiv												400

* At the city level, sample size was calculated taking into account HIV prevalence, so that the total sample for the cities (per cluster) is equal to or greater than the sample according to the viral load.

A.2. National indicators

Table A.2.1. Cities where bio-behavioral surveys among MSM were conducted, 2007-2021

	IBBS MSM 2007	IBBS MSM 2009	IBBS MSM 2011	IBBS MSM 2013	IBBS MSM 2015	IBBS MSM 2018	BBS MSM 2021
Bila Tserkva				X	X	X	
Cherkasy	X	X	X	X	X	X	X
Chernihiv			X	X	X	X	X
Chernivtsi			X	X	X	X	
Dnipro	X	X	X	X	X	X	X
Donetsk	X	X	X	X	X	X	
Ivano-Frankivsk	X	X	X	X	X	X	X
Kharkiv		X	X	X	X	X	X
Kherson	X	X	X	X	X	X	X
Khmelnyskyi			X	X	X	X	
Kropyvnytskyi			X	X	X	X	X
Kryvyi Rih	X		X	X			
Kyiv	X	X	X	X	X	X	X
Luhansk	X	X	X	X			
Lutsk			X	X	X	X	
Lviv		X	X	X	X	X	X
Mariupol						X	*
Mykolaiv	X	X	X	X	X	X	X
Odesa	X	X	X	X	X	X	X
Poltava		X	X	X	X	X	X
Rivne			X	X	X	X	
Sevastopol			X	X	X	X	
Simferopol	X	X	X	X	X	X	
Sumy			X	X	X	X	
Ternopil			X	X	X	X	
Uzhhorod		X	X	X	X	X	
Vinnytsia			X	X	X	X	X
Yalta	X						
Zaporizhzhia			X	X	X	X	X
Zhytomyr			X	X	X	X	X

* The survey was conducted, but the required sample size was not reached

Table A.2.2. Dynamics of MSM socio-demographic profile (2007–2021), %

	2007	2009	2011	2013	2016	2018	2021
	N = 1,764	N = 2,302	N = 5,960	N = 8,100	N = 4,550	N = 5,971	N = 6,501
<i>Age</i>							
Under 20 years	12	10	10	10	10	18	16
20-29 years	53	55	56	49	49	43	41
30-39 years	26	27	27	28	28	23	26
40-49 years	7	6	6	10	10	12	12
50 years and older	2	2	1	3	3	4	4
<i>Official marital status</i>							
Never been married	-	79	83	79	83	81	85
In official marriage	-	6	5	8	5	5	4
Divorced	-	14	11	12	11	13	10
Widowed	-	1	1	1	1	1	1
<i>Actual family status</i>							
Lives along	-	34	35	41	42	40	45
Lives with parents/relatives	-	40	43	34	36	39	31
Lives with a female partner	-	6	6	17	5	5	4
Lives with a male partner	-	20	17	8	17	16	19
<i>Education level</i>							
Elementary (incomplete 9 grades)	8	2	3	2	3	8	6
Senior high school (complete 11 grades)	65	61	63	65	61	60	57
Vocational school (technical school)							-
Incomplete higher education (bachelor's degree)							-
Higher education (masters' degree, specialist) and academic degree	27	37	34	33	35	32	38

Notes:

**in 2007, multiple answers about the family status were worded in significantly different was compared to the present ones, thus, direct comparison can be performed only with the data of 2009.*

***in 2007, senior high school, vocational school and incomplete higher education were listed as one tier in the educational levels ranking.*

Table A.2.3. Dynamics of MSM sexual preferences (2007–2021), %

	2007	2009	2011	2013	2016	2018	2021
	N = 1,764	N = 2,302	N = 5,960	N = 8,100	N = 4,550	N = 5,971	N = 6,501
<i>You are sexually attracted to ... ?» *</i>							
Exclusively men	-	63	60	65	65	60	70
Predominantly men, however, occasionally women	-	23	23	16	21	21	18
Both men and women, approximately to the same extent	-	11	12	10	11	14	10
Predominantly women, however, occasionally men	-	3	5	8	3	4	2
Exclusively women	-	0	<1	-	-	0.1	<1
I haven't decided yet	-	<1	<1	1	-	0.6	<1
<i>«Which term among the listed below best defines your sexual orientation? » **</i>							
Homosexual	-	70	66	69	70	64	72
Bisexual	-	28	31	27	28	34	27
Heterosexual	-	1	2	2	1	1	<1
Transsexual	-	<1	<1	-	-**	-**	1
Hard to answer	-	1	1	2	1	2	<1

Notes:

**in 2007, no questions about sexual orientation and gender identity were included in the questionnaire, besides, client's cards or individual participants IDs were not introduced, thus, client's status was defined in a radically different way. In 2013, "transsexual" answer option was excluded from the list of answers' options*

***in 2016 and 2018, a question about sexual identification did not contain the category of "transgender/transsexual", whereas, the question about identifying oneself as a transgender person was provided as a separate statement with the following wording "Do you consider yourself transgender? Yes/No"*

Table A.2.4. Dynamics of main indicators of sexual behavior, years 2011–2021

	2011	2013	2016	2018	2021
	N = 5,960	N = 8,100	N = 4,550	N = 5,971	N = 5,662
Condom use at the last anal intercourse with a male partner, %*	71	72	71	78	77
<i>Type of partner, with whom the respondent had the last anal intercourse, %*:</i>					
Permanent	51	53	52	55	55
Casual	46	42	43	41	40
Commercial (who was paid for sex)	1	2	1	1	<1
Commercial (who paid for sex)	2	2	2	2	2
Group sex	-	1	2	1	3
<i>Condom use in the past 30 days, %:</i>					
Reported having a permanent sexual partner/partners	60	57	57	54	61
Used condom at the last sexual intercourse with a sexual partner /partners **	62	63	67	71	68
Reported having a casual sexual partner/partners	54	58	50	45	50
Used condom at the last sexual intercourse with a casual partner/ partners***	80	83	88	87	79
Reported having a commercial partner/ partners who were paid for sex by the respondent	3	5	3	3	3
Used condom at the last sexual intercourse with a commercial partner/ partners, who were paid by the respondent§	86	93	89	83	80
Reported having a commercial sexual partner/ partners who paid for sex	4	5	5	4	5
Used condom at the last sexual intercourse with a commercial partner/ partners who paid for sex §§	78	93	89	83	79
Had sexual intercourse with a woman, %	58	5	5	4	44
Used condom at the last sexual intercourse with a woman (among those who had such contacts in the past 6 months), %§§§	65	66	62	67	73

Notes:

* Among those who practiced anal intercourse, in the past 6 months.

** Among those who reported having a permanent sexual partner, in the past 30 days.

*** Among those who reported having a casual sexual partner, in the past 30 days.

§ Among those who reported having a commercial sexual partner who was paid for sex by the respondent, in the past 30 days

§§ Among those who reported having a commercial sexual partner who paid for sex, in the past 30 days.

§§§ Among those who reported having sexual intercourses with a woman, in the past 6 months.

Table A.2.5. Dynamics of HIV-testing and HIV prevalence, %

	2011	2013	2016	2018	2021
HIV prevalence in MSM	6	6	9	8	4
HIV prevalence in MSM under 25 y.o.(inclusive)	4	3	5	7	2
HIV prevalence in MSM aged 25 and older	8	8	10	8	5
MSM who were tested for HIV in the past 12 months and know their test result	38	38	55	43	59

Table A.2.6. Dynamics of annual HIV incidence, %

Year of survey	Indicator	CI 95%
2013 p.	0.91	0.54–1.29
2015 p.	1.39	0.76–2.02
2017 p.	0.56	0.27–0.85
2021 p.	0.11	0.04–0.20

Table A.2.7. Dynamics of HIV treatment cascade indicators, 2015–2021,

	2015	2017	2021
Know their HIV+ status	28	58	63
Registered in the healthcare facility (HCF) for outpatient monitoring	26	56	58
Take ART	7	46	55

* Data in each column are percentage of the previous column.

A. 3. Main indicators, breakdown by regions

Table A.3.1. Age (BBS MSM 2021)

	< 25			25-34			35-44			45+		
	%	95% CI		%	95% CI		%	95% CI		%	95% CI	
Cherkasy	34	30	38	27	23	32	21	17	24	18	14	22
Chernihiv	19	15	23	44	39	48	27	23	31	10	7	14
Dnipro	32	27	37	44	39	49	19	14	22	6	3	8
Ivano-Frankivsk	39	32	46	30	24	35	18	14	23	13	8	19
Kharkiv	36	31	42	31	27	36	25	20	30	7	5	10
Kherson	42	37	46	32	27	36	17	14	21	9	6	12
Kropyvnytskyi	32	29	36	42	38	46	20	16	23	6	4	8
Kyiv	48	44	52	31	27	35	16	13	19	5	4	7
Lviv	42	37	46	36	32	41	15	12	19	7	5	9
Mykolaiv	32	27	36	37	32	42	23	18	27	9	6	11
Odesa	50	45	54	35	30	40	12	9	15	3	2	4
Poltava	26	22	30	36	31	40	27	23	32	11	8	15
Vinnytsia	41	36	47	31	26	36	15	11	18	13	9	17
Zaporizhzhia	45	39	51	39	33	44	11	7	14	6	2	9
Zhytomyr	34	25	43	29	25	33	20	15	25	17	12	23

Table A.3.2. Education level (BBS MSM 2021)

	Elementary (incomplete 9 grades)			Junior high school (complete 9 grades)			Senior high school or vocational education (11 grades, vocational school) or incomplete higher education			Vocational school (higher education institution of I-II levels of accreditation, technical school)			Higher education (bachelor, specialist or master's degree, graduated from university or institute)			Academic degree (PhD/Doctorate)		
	%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI	
Cherkasy	1	0	2	6	3	8	23	20	27	26	22	30	43	38	48	1	0	2
Chernihiv				1	0	2	31	27	35	10	8	13	58	54	62	0	0	0
Dnipro	0	0	1	2	1	3	16	13	20	33	29	38	48	43	53	-	-	-
Ivano-Frankivsk	1	0	1	3	1	6	52	47	57	19	15	23	25	21	30	-	-	-
Kharkiv				2	1	3	25	20	30	17	14	21	54	49	59	2	1	3
Kherson	1	0	2	6	4	8	25	21	29	27	23	31	40	35	44	1	0	1
Kropyvnytskyi				3	2	4	29	25	33	44	40	48	25	21	29	-	-	-
Kyiv	1	0	2	7	5	9	26	23	30	17	14	20	46	42	50	2	1	3
Lviv	1	0	2	4	2	6	21	18	25	33	28	38	40	35	45	0	0	1
Mykolaiv	2	0	3	11	8	14	40	35	45	26	22	30	21	17	25	0	0	1
Odesa	0	0	1	7	5	10	39	35	42	13	11	16	40	36	44	0	0	1
Poltava	1	0	1	3	1	4	59	54	64	32	28	37	6	4	8	-	-	-
Vinnytsia				1	0	3	36	30	41	39	34	45	24	19	28	-	-	-
Zaporizhzhia	0	0	1	4	2	6	39	35	44	21	17	25	34	29	39	1	0	2
Zhytomyr	1	1	2	8	5	10	42	38	46	25	22	28	23	20	26	1	0	1

Table A.3.3. Self-assessment of the financial status (BBS MSM 2021)

	Often, I don't have enough money and food, occasionally I resort to begging			I don't have enough means to buy food products, but I don't resort to begging			My means can cover only food products			Generally, I have enough means to live on			I have enough means to cover essential needs, but I don't do any savings			I have enough means to cover essentials needs, plus I do savings			I live in prosperity			Other		
	%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI	
Cherkasy	2	0	3	3	1	4	17	14	20	47	42	52	19	16	23	6	4	9	5	2	7	1	0	2
Chernihiv	-	-	-	2	1	3	4	3	6	37	33	41	38	34	42	15	12	18	4	2	5	0	0	1
Dnipro	-	-	-	1	0	3	24	20	29	49	43	54	17	13	20	7	4	10	2	1	3	-	-	-
Ivano-Frankivsk	1	0	2	4	2	5	29	24	33	35	30	39	20	15	24	9	6	12	3	1	5	-	-	-
Kharkiv	-	-	-	2	1	3	7	5	9	34	30	39	26	22	31	22	18	27	7	4	9	1	0	2
Kherson	0	0	1	1	0	2	13	10	16	46	41	50	21	17	24	16	13	20	3	1	5	-	-	-
Kropyvnytskyi	0	0	1	5	3	6	11	9	13	44	39	48	22	19	26	13	10	15	4	2	5	1	0	3
Kyiv	-	-	-	1	0	2	9	7	12	36	32	39	27	23	31	23	20	27	3	2	5	0	0	1
Lviv	-	-	-	1	0	1	10	8	13	21	17	24	39	35	44	21	18	25	7	5	10	-	-	-
Mykolaiv	1	0	1	4	1	7	19	15	23	40	35	44	20	15	24	11	8	15	6	3	8	0	0	1
Odesa	1	0	1	0	0	1	12	9	15	34	30	38	35	31	39	16	12	19	2	1	3	-	-	-
Poltava	0	0	1	0	0	1	7	4	9	64	59	68	25	21	29	3	2	5	0	0	1	-	-	-
Vinnytsia	0	0	1	0	0	1	5	3	7	46	41	50	42	38	47	6	4	9	0	0	1	-	-	-
Zaporizhzhia	0	0	1	2	1	4	9	6	12	41	37	46	26	22	30	19	16	23	2	1	3	-	-	-
Zhytomyr	1	0	1	2	1	3	15	12	17	41	38	44	24	22	27	12	10	14	6	4	7	-	-	-

Table A.3.4. Most popular methods to find male partners (BBS MSM 2021)

	Via special mobile applications			Via Internet-based dating sites			Via friends, acquaintances			Via Internet-based social media			In clubs, cafes, bars, discos and saunas			At "public bold spots" (e.g., in parks, on the beach, and in other popular public places)		
	%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI	
Cherkasy	62	58	67	30	25	34	37	33	41	38	33	42	11	8	14	16	13	19
Chernihiv	45	40	50	38	34	42	33	29	38	41	37	45	23	19	26	4	2	5
Dnipro	49	44	54	24	19	29	20	16	24	13	9	16	29	24	33	11	7	14
Ivano-Frankivsk	66	60	73	53	47	58	51	46	57	32	27	37	10	7	13	11	8	15
Kharkiv	54	49	59	42	38	47	40	35	46	47	42	52	26	22	30	13	9	16
Kherson	63	58	67	29	25	33	50	45	55	34	29	39	24	20	27	8	5	11
Kropyvnytskyi	57	52	62	51	46	56	19	15	22	25	21	29	12	9	15	4	2	5
Kyiv	50	46	55	16	13	19	29	25	33	33	29	37	36	32	41	5	3	7
Lviv	60	55	64	74	70	78	69	65	73	46	42	50	48	44	53	28	25	32
Mykolaiv	30	25	35	53	47	58	47	42	52	37	31	42	18	15	22	27	22	31
Odesa	54	50	59	26	23	30	29	25	33	49	45	53	11	8	13	4	2	5
Poltava	36	31	42	28	23	33	40	34	45	14	10	18	19	16	23	14	10	17
Vinnytsia	63	56	69	55	50	61	28	23	33	50	45	56	2	1	3	6	4	8
Zaporizhzhia	44	38	49	38	34	42	27	23	31	35	31	40	7	4	10	1	0	1
Zhytomyr	59	56	62	35	32	38	44	40	47	21	19	23	17	15	20	13	10	15

Table A.3.5. Sexual orientation (BBS MSM 2021)

	Homosexual			Bisexual			Heterosexual or straight			Don't know / not responded			Own version	
	%	95% CI		%	95% CI		%	95% CI		%	95% CI		%	95% CI
Cherkasy	78	74	82	21	17	25	-	-	-	0	0	1	-	-
Chernihiv	55	50	60	45	40	50	-	-	-	-	-	-	-	-
Dnipro	80	76	84	17	14	21	2	0	3	-	-	-	1	1
Ivano-Frankivsk	51	46	56	49	43	54	0	0	1	-	-	-	-	-
Kharkiv	77	73	81	22	18	26	-	-	-	0	0	1	0	0
Kherson	58	54	63	40	35	44	0	0	1	0	0	1	2	0
Kropyvnytskyi	81	77	84	20	16	23	-	-	-	-	-	-	-	-
Kyiv	89	86	92	10	7	13	-	-	-	0	0	1	1	0
Lviv	83	80	86	17	14	20	0	0	0	-	-	-	-	-
Mykolaiv	59	54	64	40	35	45	0	0	1	0	0	1	0	0
Odesa	82	79	86	15	12	19	0	0	1	-	-	-	2	1
Poltava	81	77	86	19	14	23	-	-	-	-	-	-	-	-
Vinnytsia	38	33	43	62	57	67	-	-	-	-	-	-	0	0
Zaporizhzhia	68	64	73	27	23	31	1	0	2	1	0	2	2	1
Zhytomyr	64	61	68	34	31	38	1	0	1	1	0	1	0	0

Table A.3.6. MSM reporting using a condom the last time they had anal sex with a male partner and aware of one's current HIV status (BBS MSM 2021)

	Condom use during the last anal sex with a male partner (UNAIDS Global AIDS Monitoring (GAM.1.5))			Awareness of one's current HIV status (GAM.1.4)		
	%	95% CI		%	95% CI	
Cherkasy	74	70	78	50	45	54
Chernihiv	83	79	86	77	72	81
Dnipro	63	57	68	70	66	74
Ivano-Frankivsk	82	77	87	37	32	42
Kharkiv	74	70	79	48	43	54
Kherson	73	69	77	56	52	60
Kropyvnytskyi	93	91	95	76	72	80
Kyiv	72	68	76	77	73	80
Lviv	92	89	95	62	57	66
Mykolaiv	82	79	86	66	61	71
Odesa	72	67	76	68	64	72
Poltava	56	50	62	41	36	46
Vinnytsia	85	81	89	66	61	71
Zaporizhzhia	72	67	77	37	31	43
Zhytomyr	73	70	77	45	42	49

Table A.3.7. HIV prevalence (BBS MSM 2021)

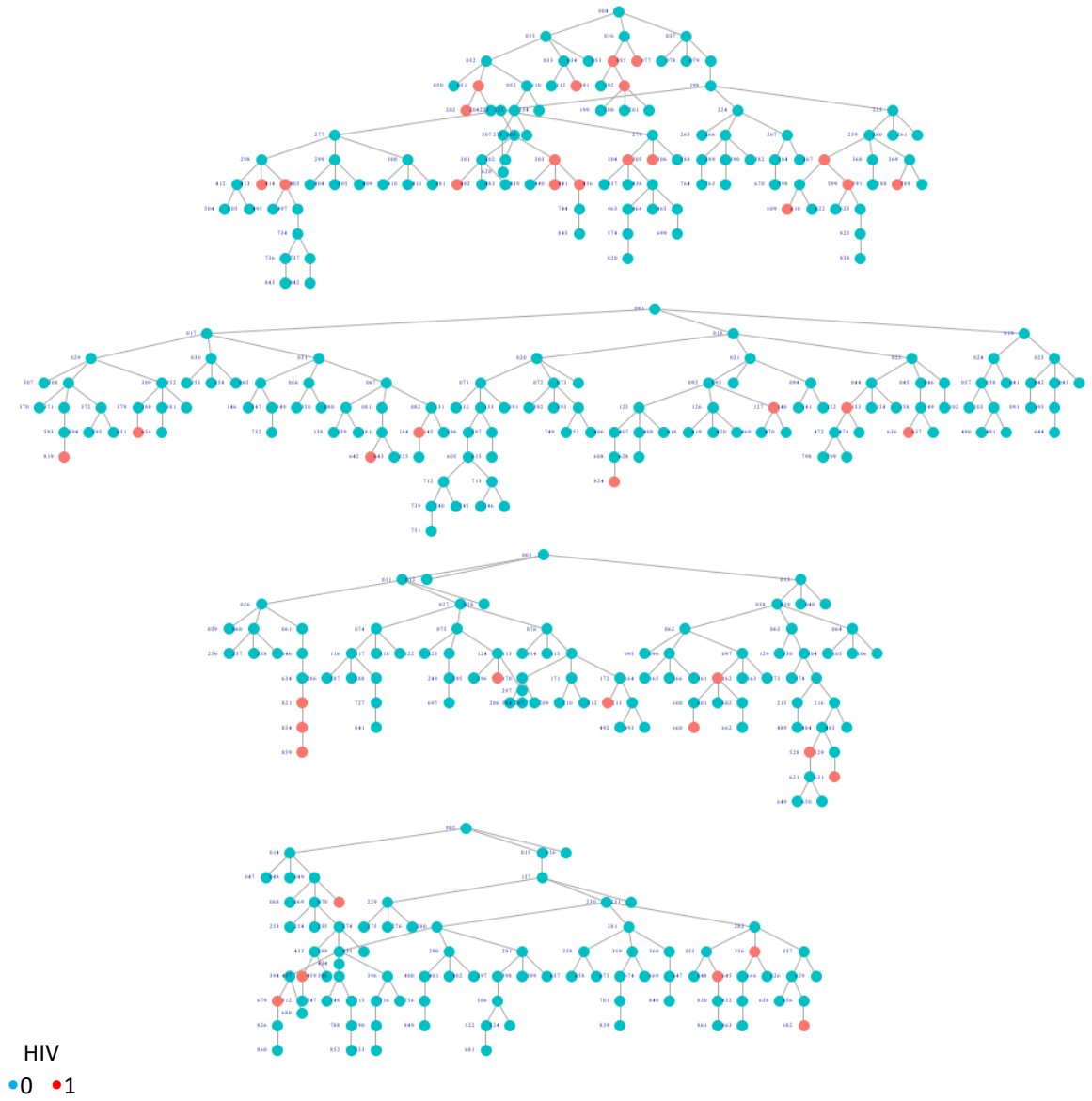
	HIV prevalence		
	%	95% CI	
Cherkasy	10	7	14
Chernihiv	4	2	6
Dnipro	6	3	9
Ivano-Frankivsk	4	2	5
Kharkiv	6	3	8
Kherson	4	2	7
Kropyvnytskyi	2	1	4
Kyiv	2	1	3
Lviv	2	1	3
Mykolaiv	5	2	8
Odesa	5	3	8
Poltava	0	0	1
Vinnitsia	6	3	9
Zaporizhzhia	4	1	6
Zhytomyr	5	4	7

Table A.3.8. Client status in prevention programs (BBS MSM 2021)

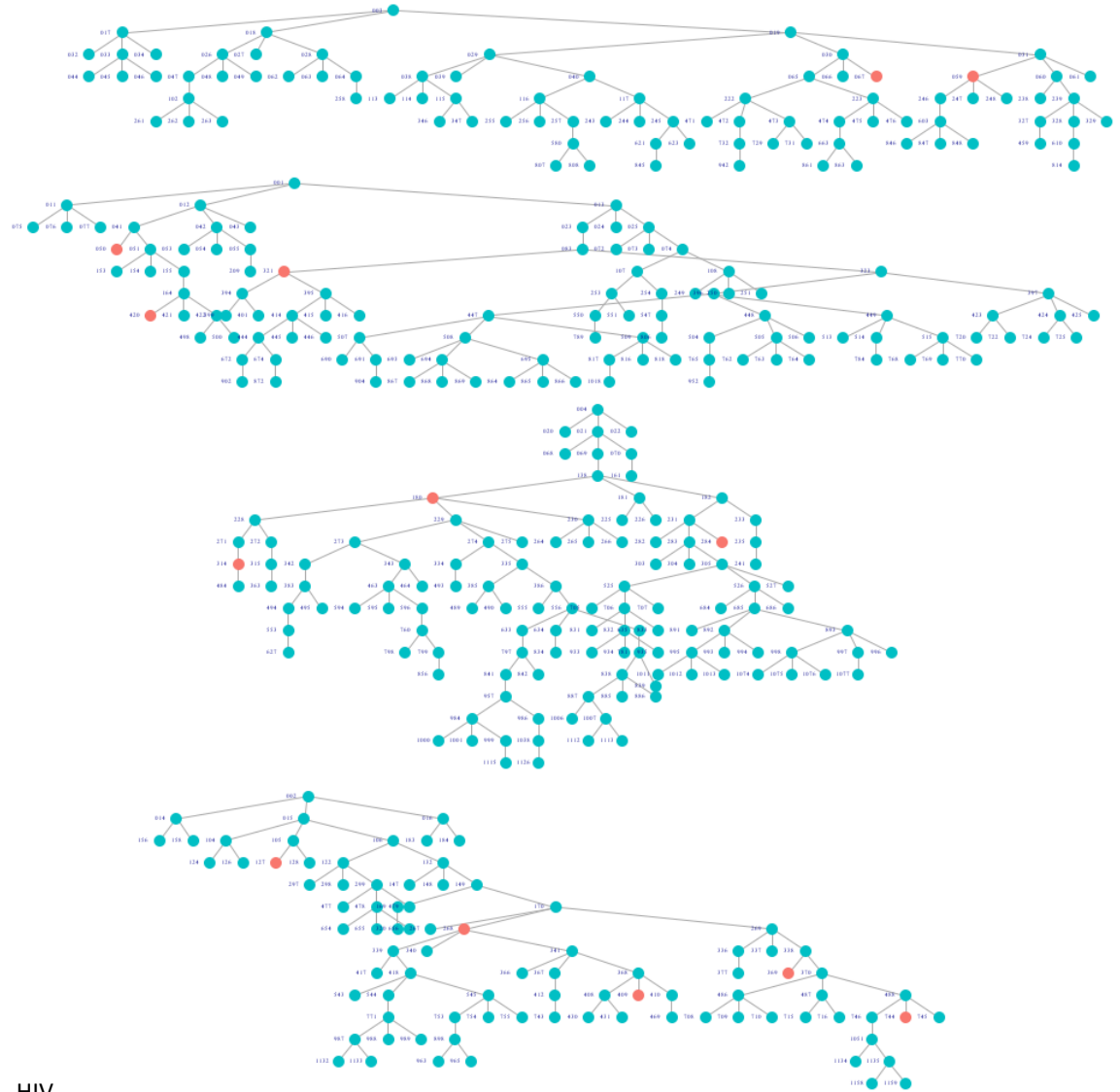
	Prevention programs' clients		
	%	95% CI	
Cherkasy	27	23	32
Chernihiv	5	3	6
Dnipro	22	17	26
Ivano-Frankivsk	30	25	34
Kharkiv	25	21	29
Kherson	47	43	52
Kropyvnytskyi	5	3	6
Kyiv	35	31	39
Lviv	11	8	14
Mykolaiv	36	30	41
Odesa	44	39	48
Poltava	3	1	5
Vinnitsia	48	43	53
Zaporizhzhia	33	28	38
Zhytomyr	33	30	37

A. 4. RDS network based on HIV status

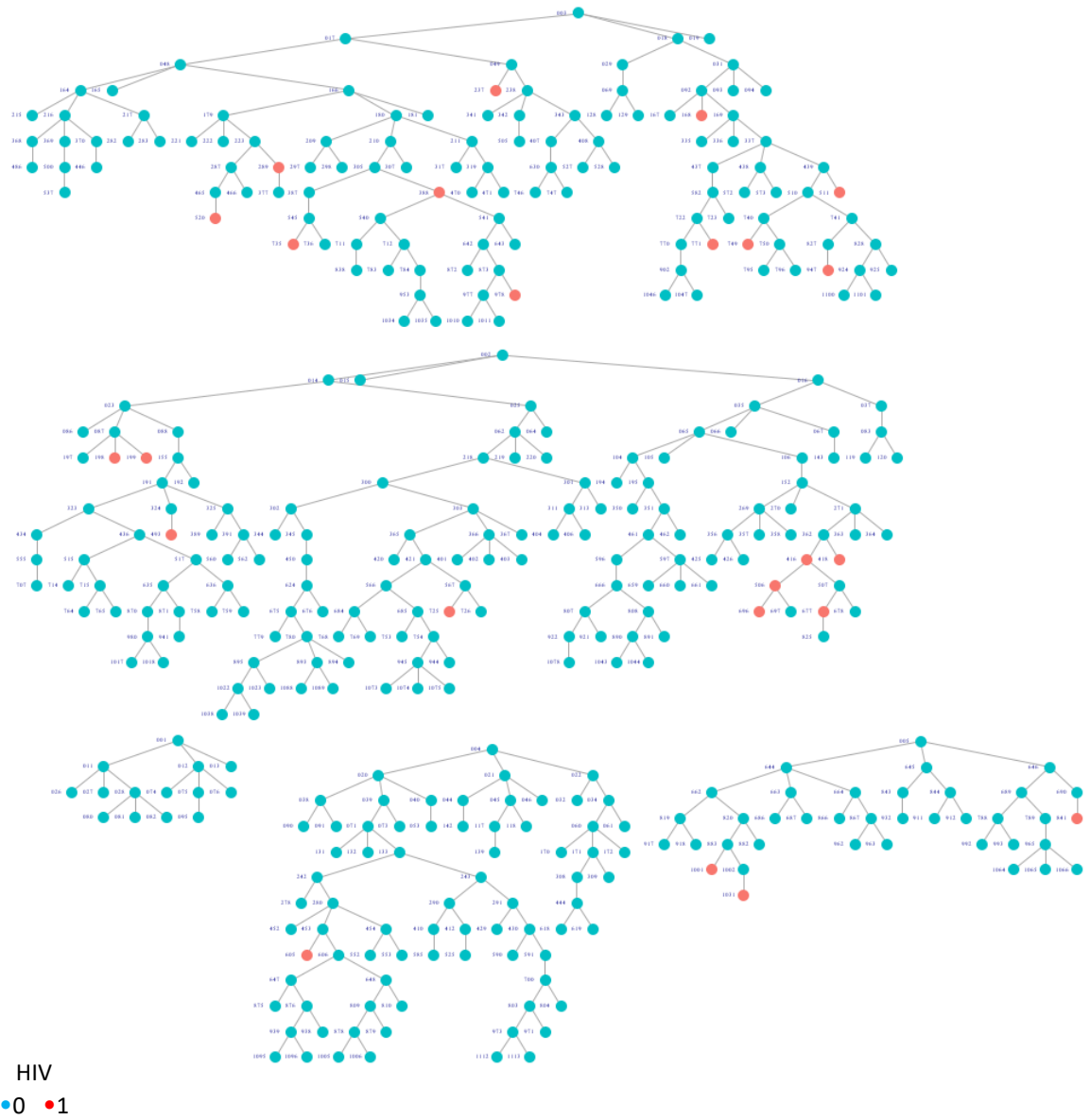
Cherkasy



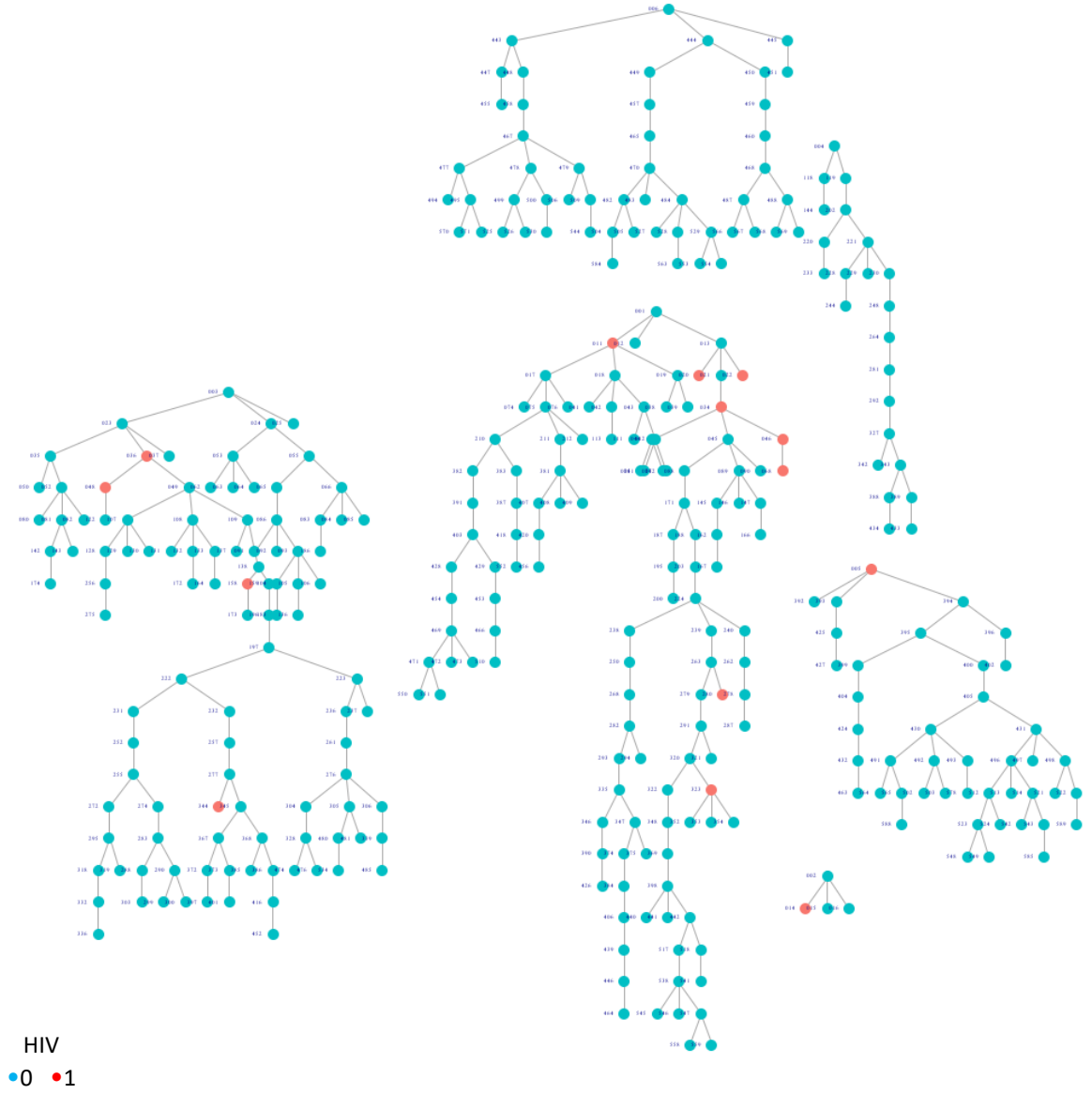
Chernihiv



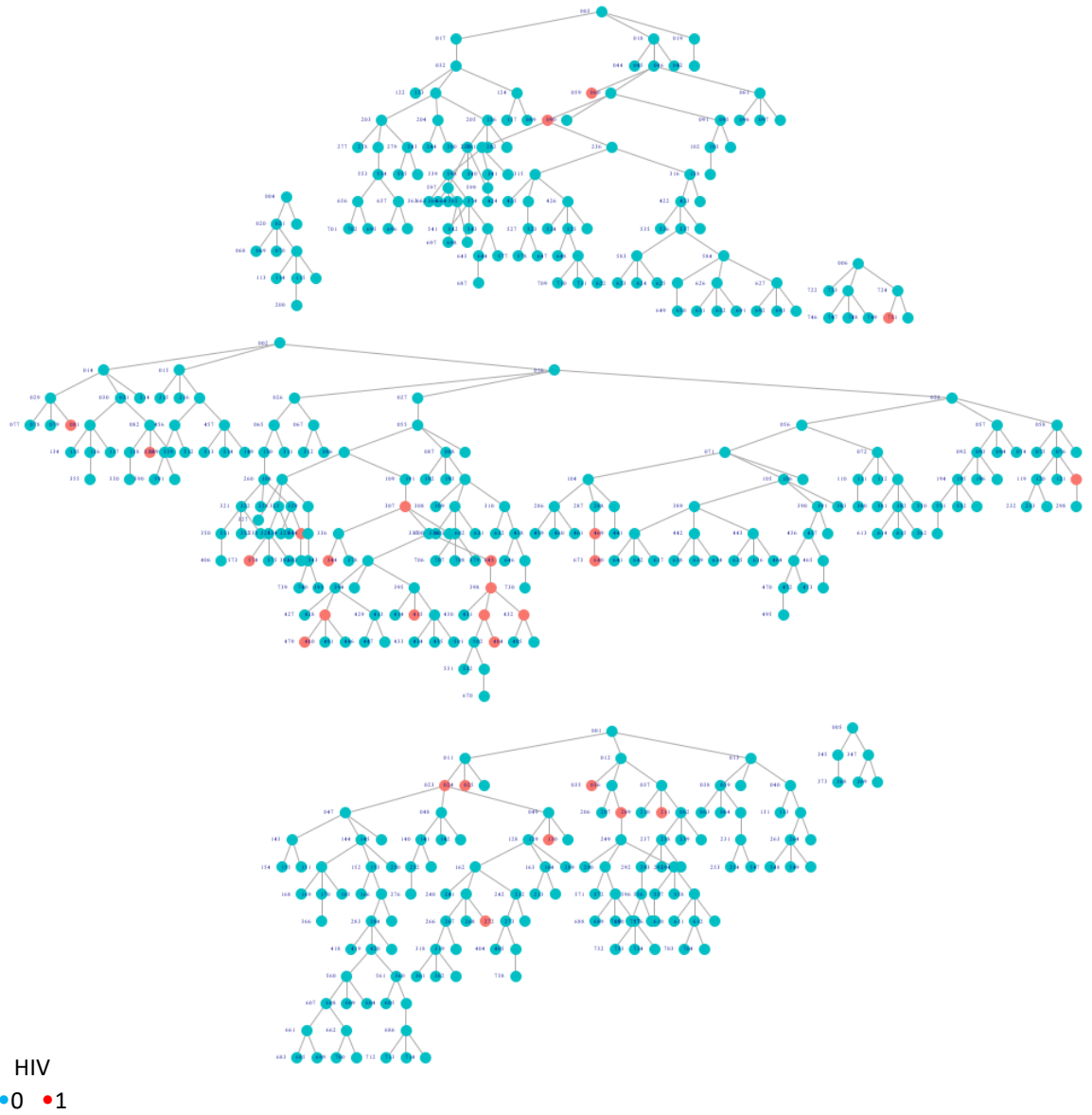
Dnipro



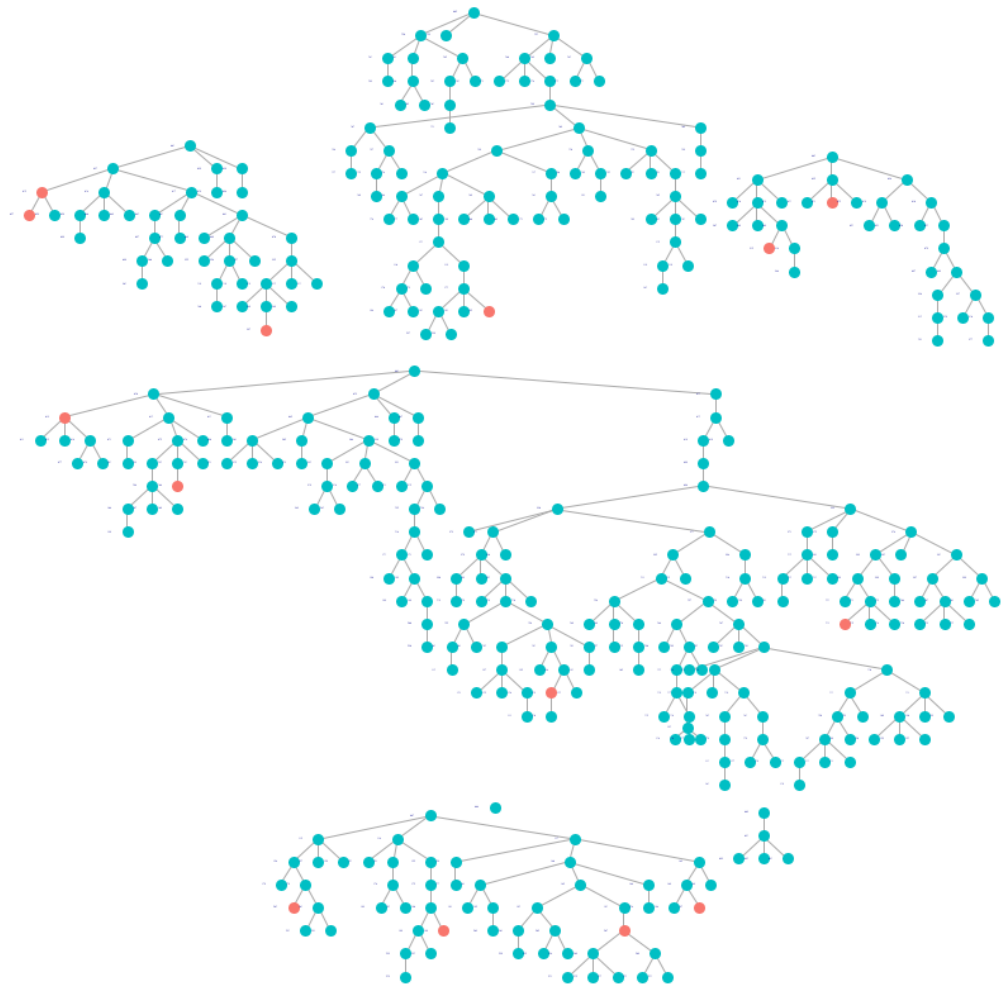
Ivano-Frankivsk



Kharkiv

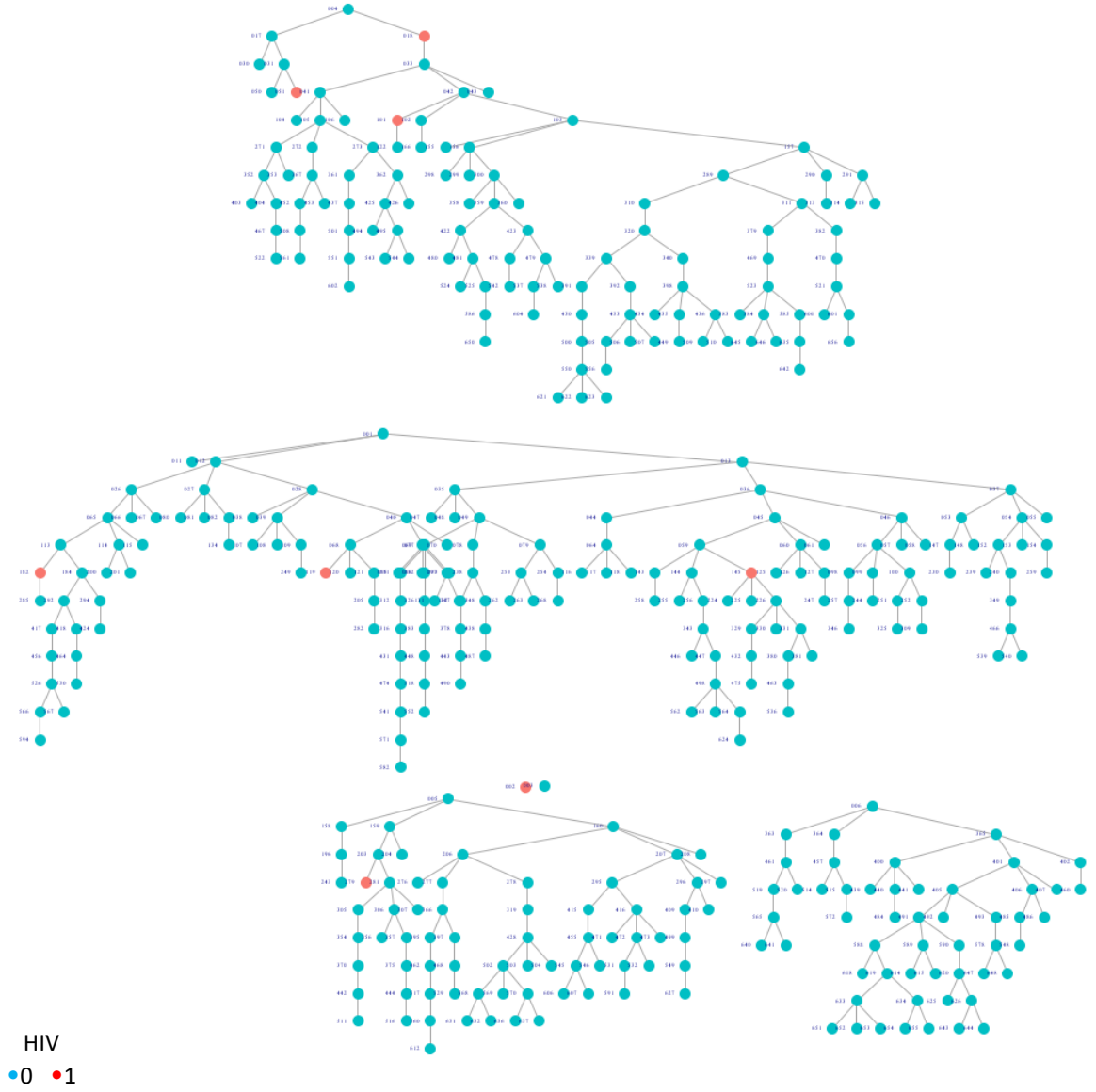


Kherson

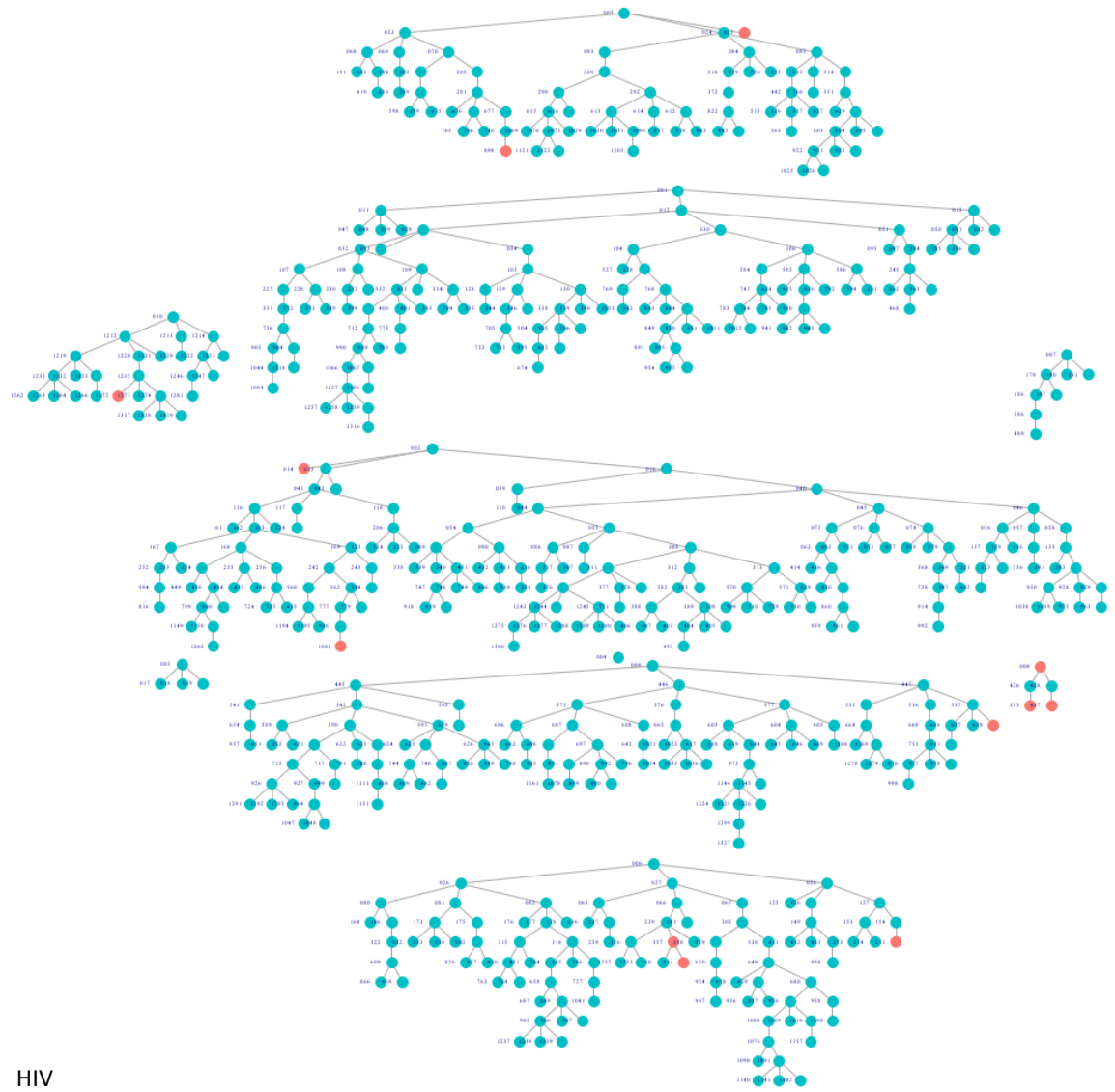


HIV
● 0 ● 1

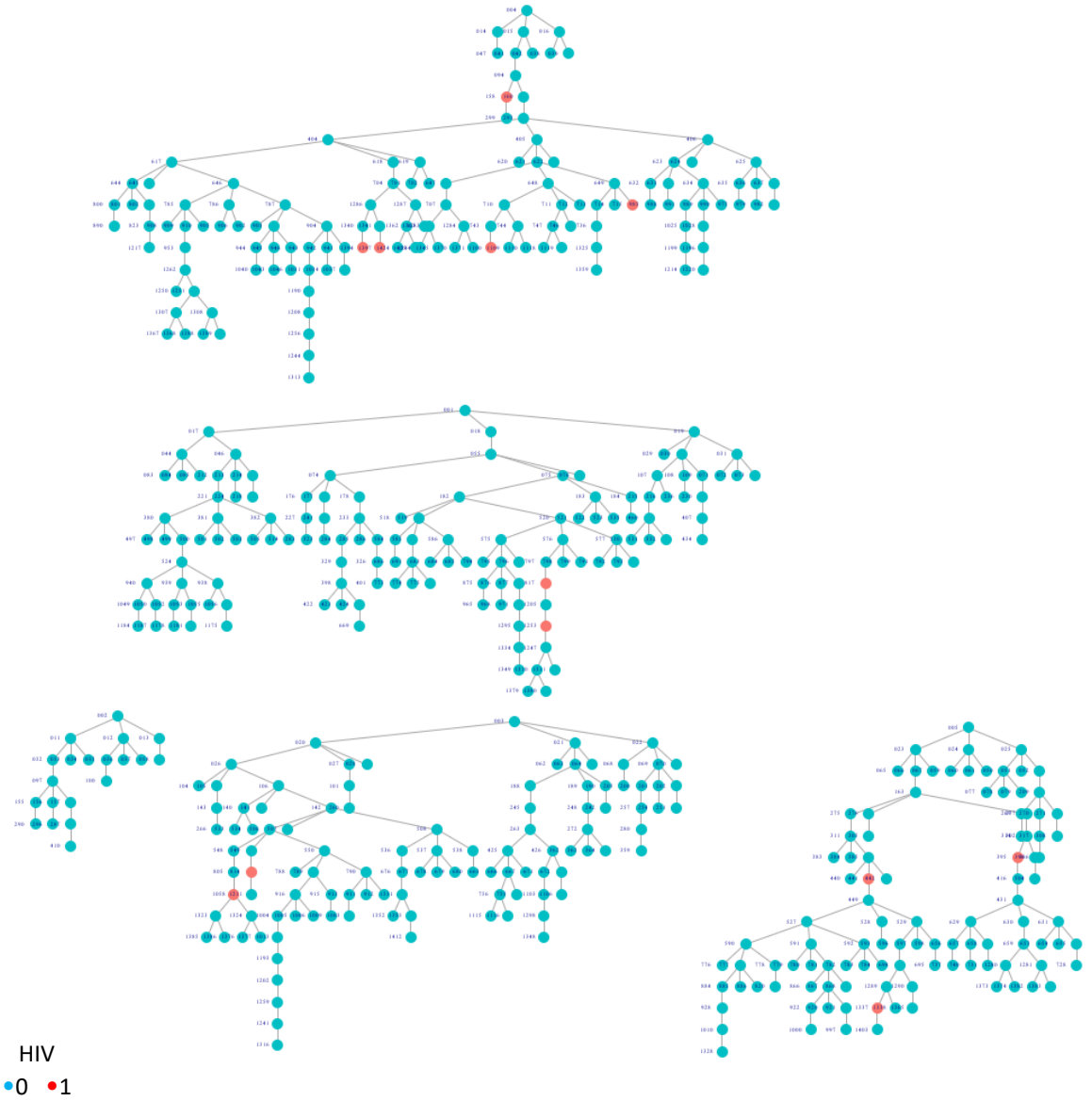
Kropyvnytskyi

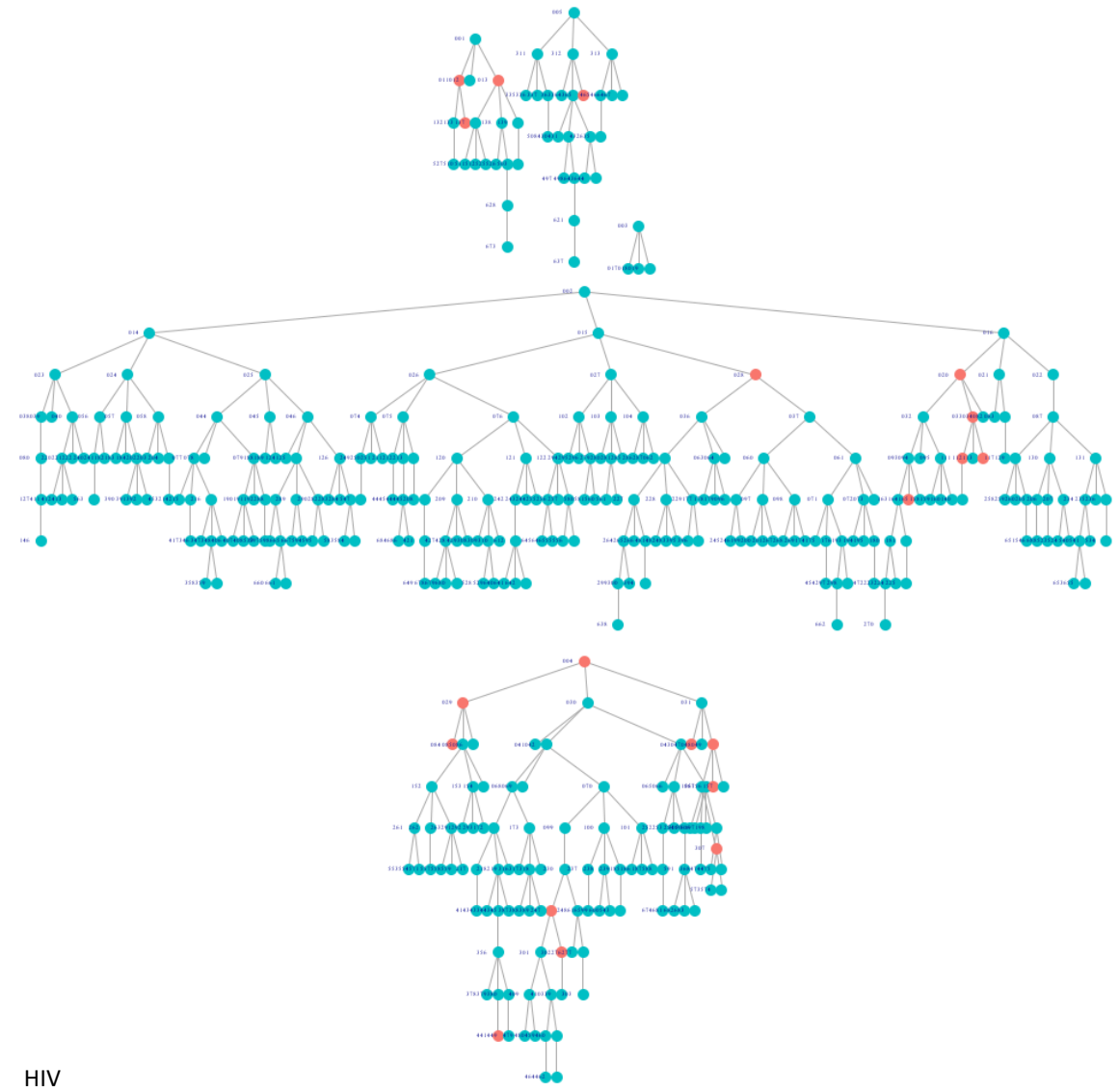


Kyiv



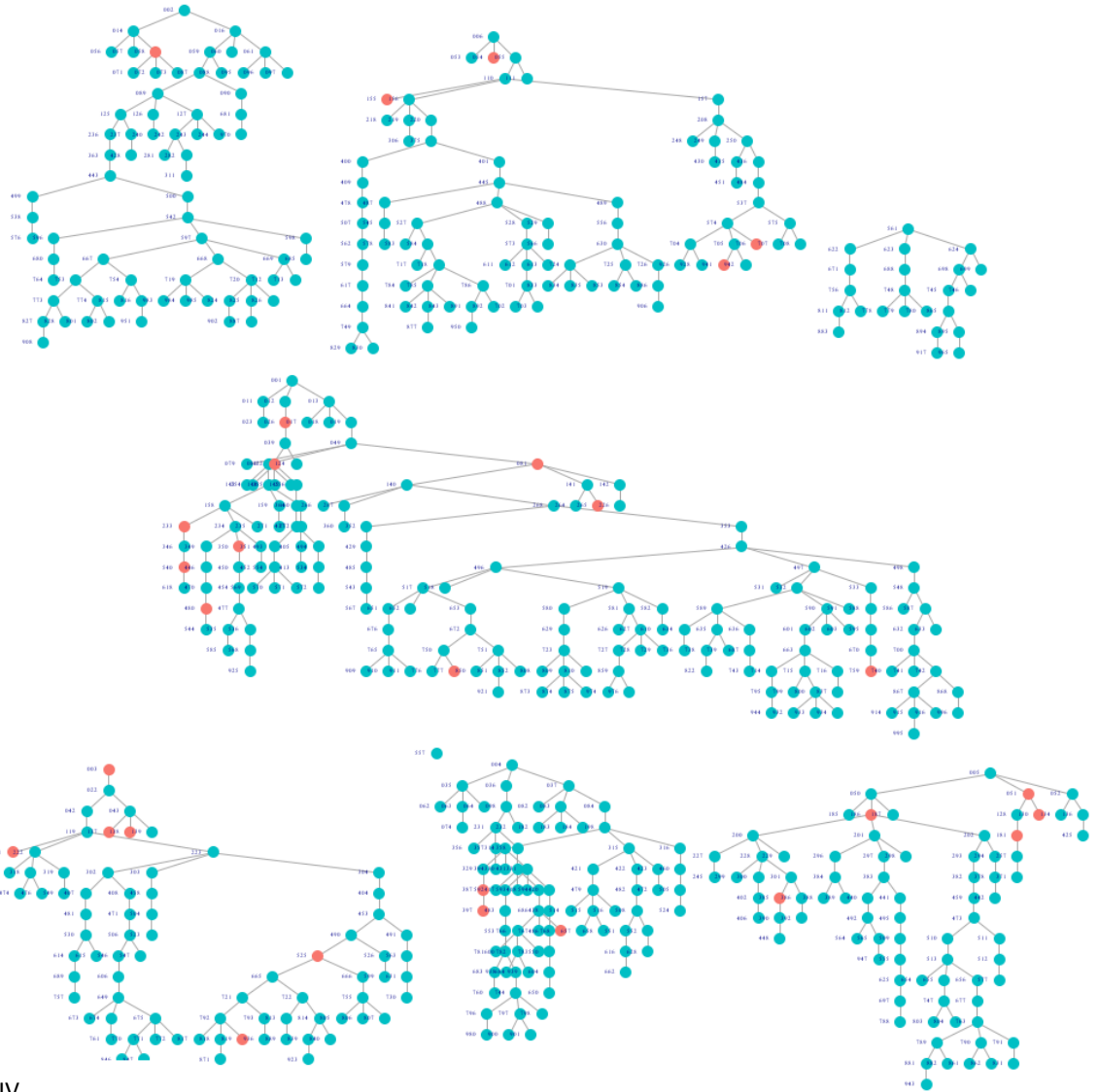
Lviv





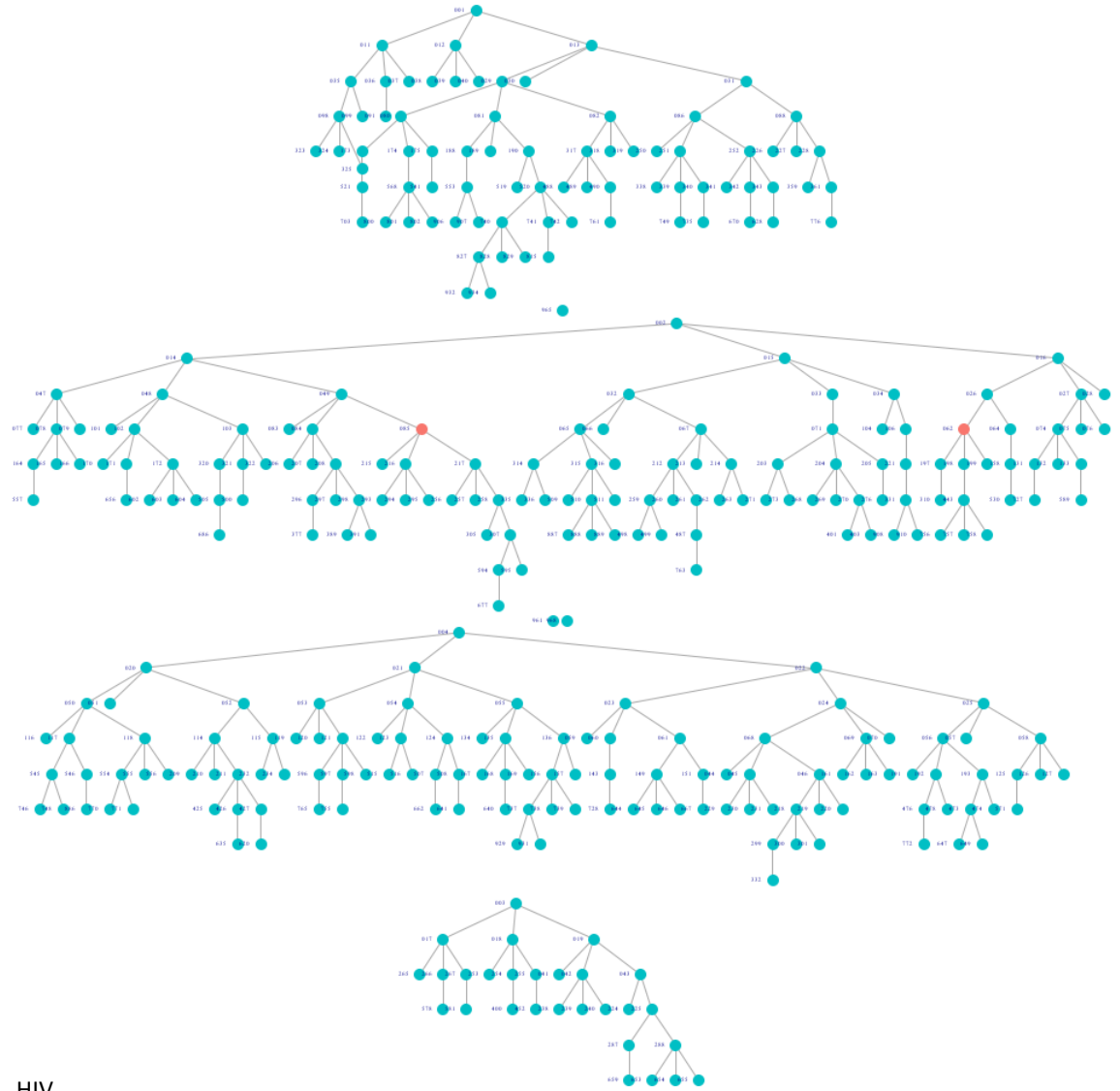
HIV
●0 ●1

Odesa



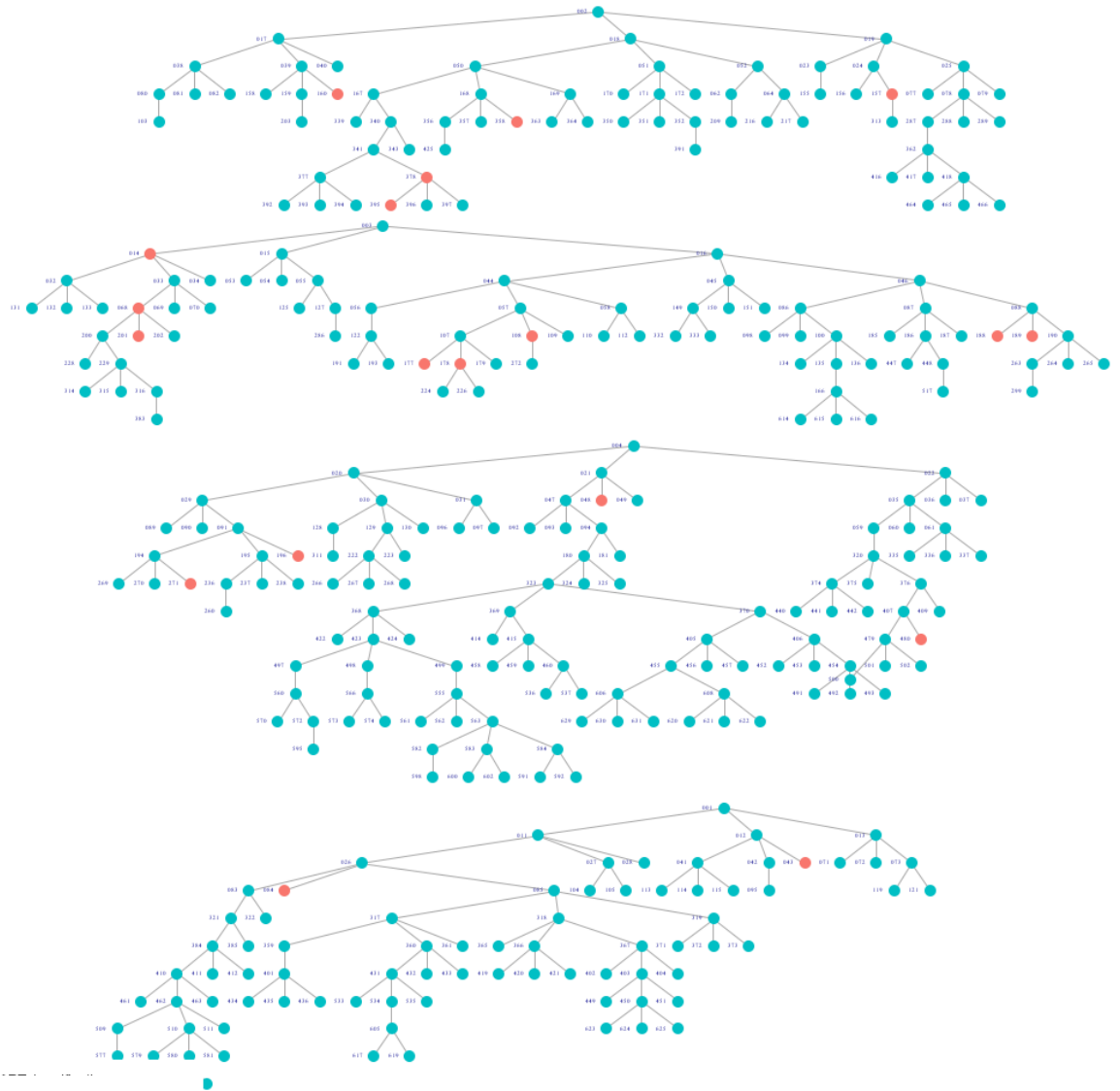
HIV
● 0 ● 1

Poltava



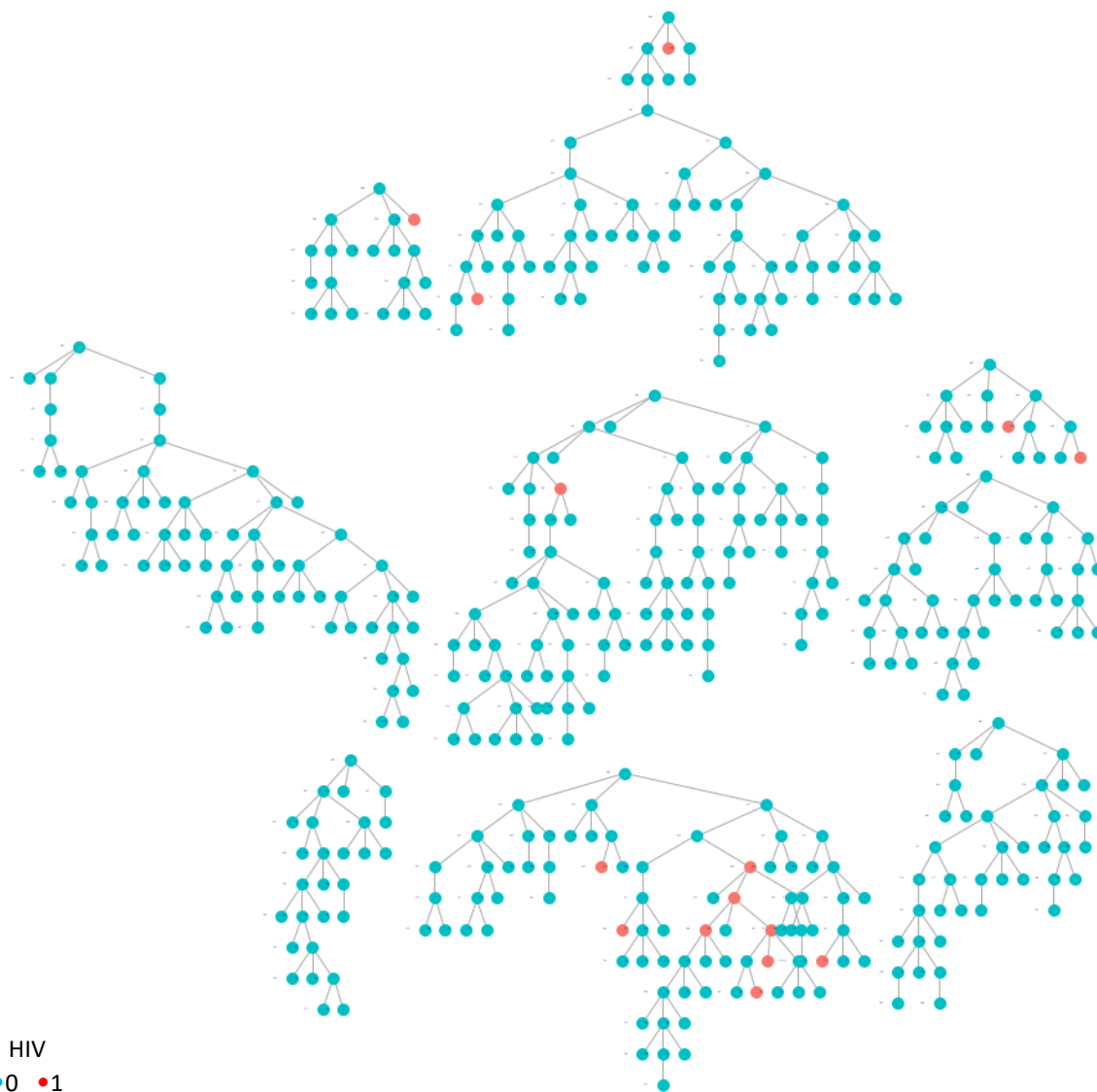
HIV
● 0 ● 1

Vinnitsia

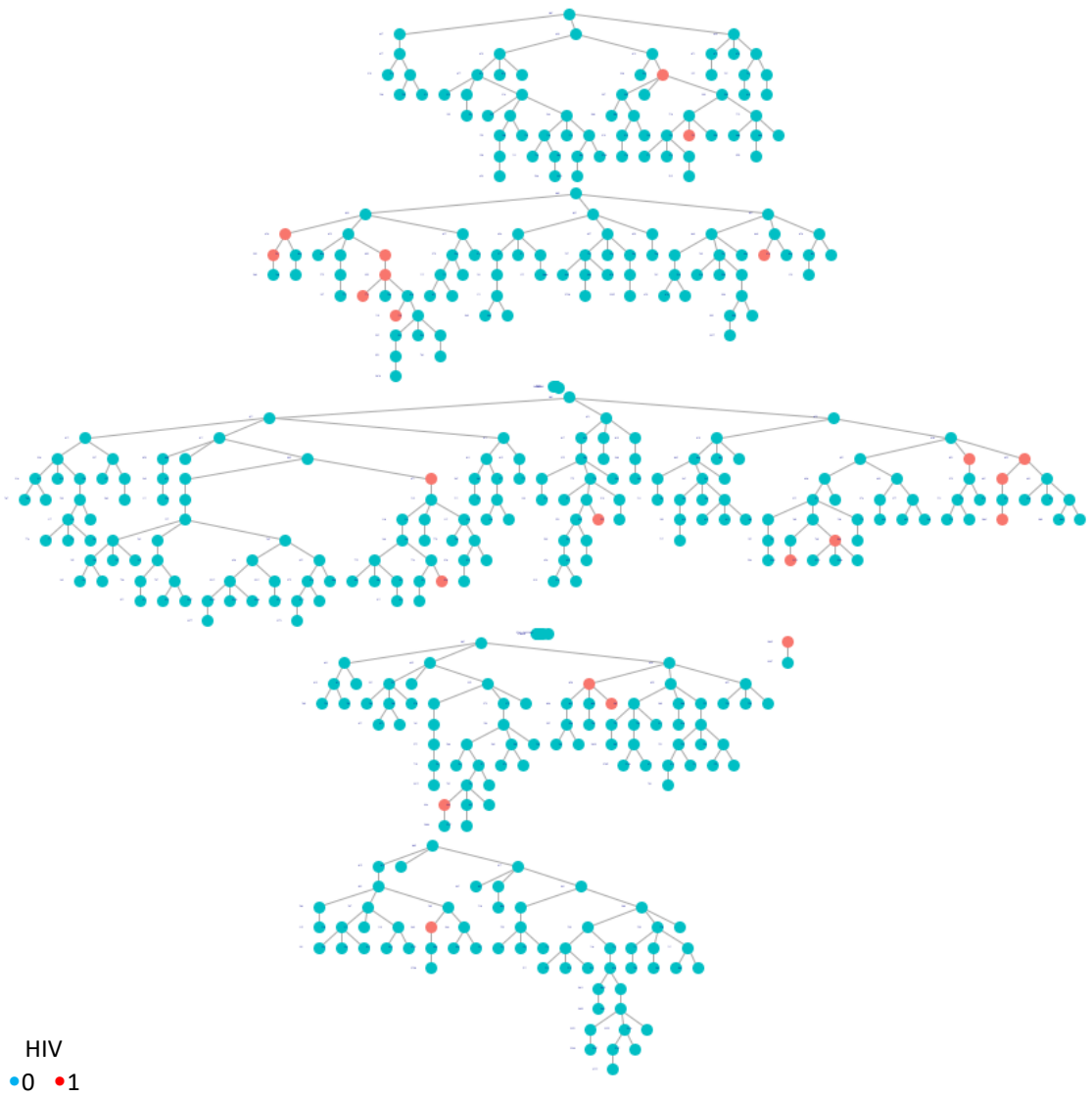


HIV
● 0 ● 1

Zaporizhzhia



Zhytomyr



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