Analytical report based on 2008 survey results

MONITORING THE BEHAVIOR OF INJECTING DRUG USERS

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SPECIFIC TERMS GLOSSARY

RDS (Respondent–driven sampling) – a technique for searching for and selecting respondents from hard–to–reach populations – injection drug users, commercial sex workers. The technique is an improved version of the snowball method: non–randomly selected recruiter respondents undertake the selection of other respondents, the number of "invitations" being fixed in advance. If all the requirements are duly met, the method offers opportunities for better representation of the population, compared to other non–random selection methods.

Primary respondents (seeds) – recruiter respondents who undertake the selection of other respondents. In each surveyed city (site), HIV–service organizations help select respondents capable of contacting other representatives of a hard–to–reach population and inviting them to participate in the survey. When selecting primary respondents, certain age and gender quotas can be established; yet the method ensures that, if the task is duly performed, the demographic characteristics of the end sample will not depend on the demographic parameters of the primary respondents. Each primary respondent receives a fixed number of invitation coupons for recruiting new respondents who in their turn, after being interviewed, are offered to take up recruiting subsequent respondents. The recruiter respondents are entitled to remuneration for the interview as well as for each new respondent they recruit.

Secondary respondents – all respondents except those invited by the survey organizers, including recruiters.

"Wave" – the stage when a new group of respondents comes for the interview and invites the next ones. Respondents invited by "the primary respondents" make up the first wave; they invite the "second wave" of respondents and so on. In order to obtain a heterogeneous sample, it is recommended that all waves starting with the primary respondents be dealt with simultaneously.

"Chain" – all respondents participating in the survey as a result of having been recruited by the primary respondent in question; a long chain provides for closer adherence to the method.

RDSAT – software for analyzing data collected using the RDS technique. The main objective is to create weights for correcting response values taking account of the extent of the respondents' network of acquaintances.

Network – group of respondents interrelated through personal connections. The existence of networks in a hard–to–reach population is a necessary prerequisite for using RDS. This technique makes it possible to include in the sample respondents having extensive networks as well as those having small–sized ones.

Homophily – recruiters' inclination to invite respondents sharing a certain characteristic with them (gender, age, affiliation with an NGO). In RDSAT, it is evaluated as a parameter for each of the variables.

Sample equilibrium point – determination of the wave after which a certain statistical parameter no longer changes.

BOOT STRAP – a method for calculating confidence intervals for small–sized samples. In RDSAT, the calculation is made for local networks only.

SECTIONS I

METHODOLOGICAL INTRODUCTION

This research was conducted by the Center for Social and Political Studies "SOCIS–CSPS" with financial support from the ICF "International HIV/AIDS Alliance in Ukraine" under the program "Overcoming HIV/AIDS Epidemic in Ukraine" supported by the Global Fund to Fight AIDS, Tuberculosis and Malaria within the framework of Grant Agreement UKR–102–G04–H–00.

This report presents an analysis of the results of studying the behavior of injection drug users (IDUs) in 16 oblast–center cities of Ukraine; the research was based on the use of the RDS technique with simultaneous blood testing for HIV. [1]

1.1. Research Aim and Key Hypotheses

The aim of the research was to track trends in awareness, attitudes, behavioral practices and models among injection drug users (IDUs) in connection with HIV incidence among them. In particular the research focused on:

- awareness and behavior of injection drug users (based on indicators included in the National Indices of monitoring and evaluating the efficiency of measures to control the HIV/AIDS epidemic);
- factors resulting in injection drug users' infection with HIV;
- accessibility of HIV prevention services;
- HIV incidence among the interviewed respondents.

The research instruments are based on previous research experience as well as on experience of international organizations. The methodology, techniques and instruments of the research were agreed upon with specialists from the State Department and with the ICF "International HIV/AIDS Alliance in Ukraine" coordinator and were examined by the Sociological Association of Ukraine and the Commission on Bioethics ..... (Protocol No. 3 fated April 26. 2007).

The key hypotheses proposed by the Working Group in this research are as follows:

1. The main factors in contracting HIV are the dangerous practices of administering injection drugs, using unsterilized equipment, and having unprotected sex.
2. The likelihood of contracting HIV depends on the duration and frequency of the following dangerous practices: length of the period of administering injection drugs, frequency of using unsterilized equipment, number of partners in unprotected sex and in drug injections, and frequency of dangerous sexual contacts.
3. The share of HIV positive individuals may be higher among women, in view of a number of physiological and social factors.
4. Combining drugs with alcohol is conducive to contracting HIV.
5. Students and pupils may have a higher share of HIV positive individuals, in view of the likely high sociability of this group (living in hostels).
6. The younger IDU generation tends to incline towards using analeptics rather than opiates.
7. There is great variance among the regions of Ukraine in terms of IDUs' demographic composition, coverage by preventive measures, and share of persons tested for HIV.

The main parameters we take into account when assessing the survey results are as follows:

1) IDUs' age,
2) IDUs gender,
3) length of drug use,
4) region of IDUs' residence.

1 Previous studies of HIV/AIDS-related issues among injection drug users:
2000 – a pilot project to combat HIV/STDs at the request of the United Nations Population Fund;
2000–2001 – a UNFPA-funded project "Prevention of HIV/AIDS/STDs in the Armed Forces of Ukraine";
2002–2003 – a behavioral study among injection drug users;
2004 – the Ukrainian Institute for Social Studies (UISS) conducted a research entitled "Monitoring the Behavior of Injecting Drug Users as a Component of Second Generation HIV/AIDS Surveillance" which was requested by the ICF "International HIV/AIDS Alliance in Ukraine" under the program "Overcoming HIV/AIDS Epidemic in Ukraine" supported by the Global Fund to Fight AIDS, Tuberculosis and Malaria;
2007 – at the request of the UN, under the program "Prevention of HIV and Sexually Transmitted Infections," the UISS conducted its first-ever RDS-based study among injection drug users.

1.2. Research Method

All of the work stages were agreed upon with the Working Group on Monitoring and Evaluation.

To select the IDU sample, the RDS (respondent driven sampling) technique was used. [2] The technique requires that sample sizes be determined in the selected cities of Ukraine on the basis of an expert estimate of IDU population size and that the samples be collected with the help of "primary respondents." The number of primary respondents was linked to the local IDU population size; initially, it ranged from 6 to 8 for cities where 400 persons were interviewed and was 4 in all other cities; in the event of recruitment difficulties the number of primary respondents was increased by 1 or 2 persons. The number of invitation coupons for recruiting would-be participants was limited to three per each person. The below table presents the sizes of samples collected in the 16 oblast centers of Ukraine.

It should be noted that the need to increase the number of recruiters arose only in Kyiv, Lviv, and Khmelnytskyi. In the rest of the cities the chains were long enough to meet the goal for the technique, reaching 13–16 waves. In terms of gender and age, the point of sample equilibrium was reached at waves 2 to 4.

Table 1.2.1. Cities in which the survey was conducted, number of primary and secondary respondents

Cities	Number of primary respondents (N=86)	Number of interviewed (secondary) respondents (N=3,711)
Dnipropetrovsk	6	113
Donetsk	6	400
Kyiv	8	400
Kirovohrad	4	175
Luhansk	6	200
Lutsk	4	175
Lviv	7	175
Mykolaiv	6	260
Odesa	6	400
Poltava	4	200
Simferopol	5	265
Sumy	5	173
Kharkiv	5	175
Kherson	4	225
Khmelnytskyi	7	200
Cherkasy	3	175

1.3. Research Organization

The 2008 research was an "interrelated" one: the IDUs survey conducted by SOCIS-CSPS employees was to proceed in parallel with epidemiological surveillance performed by the Ukrainian Center for Preventing and Fighting AIDS in cooperation with oblast centers for preventing and fighting AIDS (AIDS centers). 99.5 % of those surveyed were tested for HIV, with subsequent re-testing of initially positive samples at the Ukrainian AIDS Center. Verified testing results were used in the analysis as the main variable whose variation was to be interpreted.

2 Douglas D. Heckathorn. 1997. Respondent-Driven Sampling: A New Approach to the Study of Hidden Populations. Pp. 174-199 in Social Problems, Vol. 44, No. 2.

Primary respondents were recruited with the help of employees of oblast AIDS centers and of non–governmental organizations. Interviewing and blood–testing for HIV were conducted at the premises of the AIDS centers.

Before starting the research, regional supervisors from the interviewers' network of SOCIS–CSPS and project coordinators were given training in using the RDS technique in Kyiv on April 15–16, 2008.

The field stage of the research took place between June 8 and October 15, 2008.

1.4. Ethical Principles of the Research

1. Participation in the survey was voluntary and each respondent was free to refuse to complete the questionnaire.
2. Confidentiality was guaranteed to the participants.
3. All of the data were used in generalized form only.

1.5. Report Structure and Statistical Data Interpretation

Section 2 presents the key demographic characteristics of the respondents and their networks. The RDS technique makes it possible to assess not only the structure of the sample but also the internal characteristics of the network of respondents and their recruiters. In particular it is instrumental in assessing:

– the so–called homophily of the network, i.e. the recruiter respondent's inclination to invite people sharing certain important characteristics with him/her;

– sample equilibrium point, or identification of the wave after which a certain statistical parameter no longer changes.

These characteristics are important indicators of the successfulness of the attempt to achieve a representative sample in each particular city involved in the survey. Below, we will point to situations in which a network evolved in a specific way which could result in violation of the principle of representativeness. In Section 2, which presents the demographic characteristics of the IDU sample, this analysis is of particular importance, inasmuch as age and gender are the variables which most frequently deform random selection.

Section 3 provides data on the level of IDUs' awareness of HIV/AIDS. Section 4 contains information on IDUs' sexual behavior as well as on the practice of using drugs. That section also presents a multidimensional statistical model (logistical regression) of the relative impact of a variety of factors on the likelihood of contracting HIV; it was possible to construct the model due to the results of the related research. Section 5 focuses on analyzing HIV/AIDS prevention services, in particular the experience of IDUs' testing for HIV.

The calculated National Indices of monitoring and evaluating the efficiency of measures to control the HIV/AIDS epidemic among IDUs (5 indices) are presented in the relevant sections. The distribution of the National Indices by oblast centers, with RDS–based sample and estimated characteristics, is presented in the Appendix, while the results are interpreted in the main text. The results of such an evaluation are much more accurate than the ordinary average sample values, because when calculating the estimate and the confidence intervals the RDSAT software takes account of network size and of differences in the respondent–recruiting methods. RDSAT makes it possible to construct the indices, i.e. to determine the "weight" (weightiness, importance) attached to each variable in the data array. That "weight" takes account of the size of IDU acquaintances of each respondent, and is higher for those IDUs whose network of acquaintances is small and lower for those having a large network. Such weighing is instrumental in reducing the sample error which is inherent in the snowball method and which consists in over– or underrepresentation of certain groups on account of self–recruitment of the active part of the population.

Moreover, using the RDSAT package to process data presumes work with local networks internally linked by acquaintance relationships; it is only for these networks that confidence intervals are calculated using the BOOT STRAP method. For a more accurate evaluation of the National Indices on the national level, weight (weightiness) indices calculated by RDSAT can be used. All of the percentages presented in the tables and diagrams of Sections 3–5 of the main text were calculated on the

basis of a data array weighted in relation to age, because usually assessment of age groups' sizes brings about a majority of evaluation errors. The logistical regression was constructed in the SPSS statistical package on the bass of an array weighted in relation to the HIV incidence characteristic obtained using RDSAT.

The significance of all differences in national–level parameters between different groups was verified using statistical significance criteria. The statement "the difference is significant at the level of 1 % means that the difference is statistically significant and the error probability amounts to 1 %. The statement "the difference is significant at the level of 5 %" means that the difference is statistically significant and the error probability amounts to 5 %. The statement "the difference is insignificant" is taken to mean that the difference, in spite of being apparent, may have resulted from measurement error. It should be noted that in samples whose size is about 1,000 respondents even small differences in percentages (except when the distribution pattern is close to 50x50) will be statistically significant. Therefore, we do not always comment on all of the differences, pointing only to the most essential ones without indicating their significance.

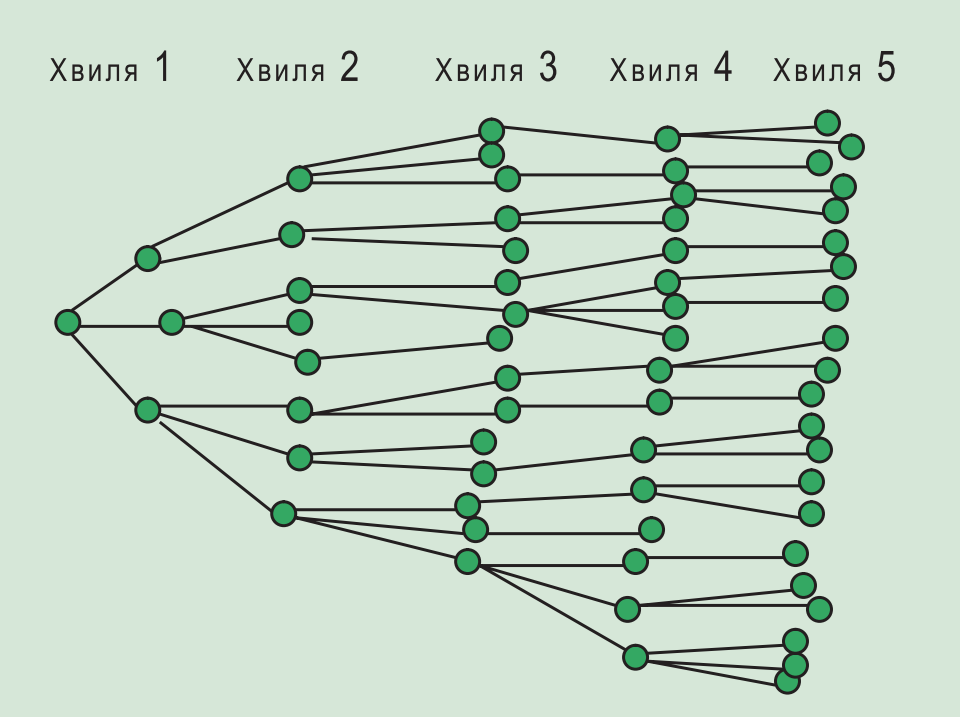


Fig. 1.5.1. How the RDS technique works when searching for respondents.

SECTIONS II

DEMOGRAPHICS OF THE RESPONDENTS AND THEIR NETWORKS

This section provides an insight into the sociodemographic characteristics of the interviewed injection drug users. Presented below is the distribution of those surveyed in the national sample which was collected in 16 oblast centers of Ukraine.

As we can see, men account for three fourths of the IDU population. The Appendix presents distributions by the same parameters in the oblast centers, along with RDS-based population size estimates (Tables 1A–6A). Proceeding from these estimates, we can say that the shares of men are highest in Luhansk (92 %), Kirovohrad (88 %), Lviv (87 %), and Cherkasy (85 %). The distance to the average statistical share of men in the entire population of Ukraine (46 %) [3] is closest in Donetsk (55 %), Kharkiv (57 %), Kyiv (63 %), and Simferopol (64 %). This might be related to the local specificity of the drug users' milieu in these cities. This can also mean, however, that in cities where the share of female IDUs was small women were less actively recruited than men and hence the recruitment period was insufficient to achieve a women's share which would be proportional to the actual size of the local female IDU population. This assumption is supported by the fact that in cities with the highest percentages of recruited women (except for Donetsk) the equilibrium point for gender was reached at the second wave, that is, there were no further changes in this parameter during the subsequent waves. In Donetsk, a high level of homophily (recruiters' inclination to recruit people who are similar to them) was observed (0.442), which implies that men tended to recruit men more readily. Yet even there the equilibrium point was achieved fairly early, at wave 4, i.e. subsequently the female share neither decreased nor increased. Anyway, it was possible to take the impact of homophily into account: the size of the men's population was estimated to be 55 % rather than 64 %.

Distribution by age reveals that the number of interviewees up to 19 years of age was rather small: 119; of these, 11 persons were under maturity age and 46 were 18 years old. Such a small number of interviewees rules out any reliable assessment of the distributions; therefore, the subgroup of respondents aged 16–19 years was analyzed at the national level only. At the level of oblasts, analysis was made for the subgroup of individuals aged 16–24 years, for otherwise the estimates would not be reliable.

An assessment of the IDU population by age indicates that the share of users under 24 years is highest in Donetsk: 46 %; in Luhansk and Kharkiv young addicts account for 43 %. In these cities, the gender equilibrium point was reached at wave 3, which fact points to considerable stability of the estimates. Quite high is the share of young IDUs in Kirovohrad, the RDS-based estimate amounting to 38 %, which is 10 points higher than the sample share. The underlying reason for the discrepancy was that the younger IDUs from Kirovohrad had much smaller networks of acquaintances, compared to the older ones.

A similar situation was observed in Poltava, where the population of young IDUs was 10 %, whereas the RDS-based estimate put it at 21.6 %, while the share of IDUs aged 35+ was overestimated by 10 %. This was also due to the fact that IDUs aged 35+ have much more extensive networks of IDU acquaintances and hence a higher chance to be included in the sample. The RDS technique, however, made it possible to allow for that error.

In Odesa, Mykolaiv, Cherkasy, Kherson, and Simferopol the shares of young IDUs ranged between 9 and 11 %. Yet the small size of this group entails a large error; according to the RDS-based estimate, the real share of young IDUs in these cities may be as high as 16–17 % of the IDU population (the upper limit of the confidence interval, according to the RDS-based estimate). Lviv is noted for the lowest share of youngest IDUs: 3 %. The homophily parameter – 1 (same as in Cherkasy) – indicates that all of the young people were recruited by some persons aged 24+. It is likely that in these two cities the youngest IDUs are an isolated group due to a high level of stigmatization.

Overall, it should be noted that the Southern region stands out for the highest share of respondents aged 35+, who account for about half of the sample there, and the Eastern region, for the highest share of respondents under 24 years of age, disregarding Dnipropetrovsk, where only 113 persons were interviewed. Kyiv has the highest share of IDUs aged between 25 and 34 years: 60 %.

The group of respondents with primary education (112) was made up of individuals completing no more than 9 forms of secondary school. Pupils and students account for a minimal share of this

3 Ukraine's Statistical Yearbook for 2006. / Edited by O. H. Osaulenko. – Kyiv: Consultant Publ., 2007. – P. 70.

group, the rest being people who have already terminated their education.

The lowest shares of IDUs with higher education were recorded in Lutsk (2 %), Sumy (5 %), Mykolaiv and Poltava (6 % in both cities). In terms of educational attainment, these cities are far behind others, where the shares of IDU respondents with higher education are close to the average for Ukraine (18 % among the adult population [4]). The shares of respondents with higher education are biggest in Kyiv (28 %) and Khmelnytskyi (27 %). In Kyiv, such a high share can be attributed to the fact that this is a city of universities with a large qualified workforce; but the same does not hold true for Khmelnytskyi. And so, for some unidentified reasons the use of injection drugs in that city has gained wider popularity among young specialists than in Kyiv.

The IDUs in Luhansk, Kherson, Lutsk, and Kirovohrad have rather high percentages of individuals completing no more than 9 secondary school forms: 33–35 %. Inasmuch as in Luhansk and Kirovohrad the shares of young people under 24 years of age among IDUs are rather high, one can conjecture that in these cities injection drugs are relatively widely used by vocational school pupils or by young people who have not attained secondary education.

Based on proportions of different education levels attained, the least educated IDUs are those in Lutsk and Mykolaiv.

Respondents who are unmarried and do not cohabitate with a sexual partner account for 50 % of the sample. 7 % reported being married but not living together with their spouse; 43 % cohabitate with a regular partner, two thirds of this group not being officially married.

In line with the high shares of young people in the Donetsk, Luhansk, and Kirovohrad IDU samples, these cities are also noted for the highest shares of single respondents who do not cohabitate with a sexual partner (68 %, 72 %, and 60 %, respectively). In Cherkasy and Lutsk the shares of single respondents are also high (70 % and 62 %, respectively). It should be noted that in other oblasts the shares of married respondents are below the statistical average for Ukraine (56 % of the adult citizens). In Poltava, however, this category accounts for 73 %, which is a very high figure, taking account of the relatively young age of the entire IDU population. The same city has the highest share of married respondents not cohabitating with their spouses or with any other partners, i.e. living separately – 14 %, whereas in the other cities the respective share ranges between 3 % and 8 %.

On the whole, the share of working IDUs (those permanently or occasionally employed) is lower than the average figure for Ukraine (about 62 % of the adults under 70 years of age)[5]; however, in Luhansk the respective share is 77 %; in Lviv, 75 %, and in Odesa, 72 %. Thus one can conclude that IDUs in Luhansk are predominantly young male workers with primary education. In Kyiv the share of working IDUs is 64 %, according to the RDS-based estimate, while in the aggregate sample it is 7 % less. The highest shares of unemployed and incapacitated IDUs were recorded in Dnipropetrovsk (51 %), Mykolaiv (48 %), Poltava (42 %), and Sumy (41 %). Thus one can conjecture that jobless families are predominant among the IDUs in Poltava and Mykolaiv, differing in that the Mykolaiv IDUs are less educated and older.

Pupils and students jointly make up a small group which nevertheless is very important for analysis; therefore, subsequently they will be dealt with as a separate group of pupils and students. Only 23 % of the interviewees are permanently employed; a further 37 % reported working on an irregular basis. Thus, the working population accounts for 60 % of those interviewed; subsequently, they will be analyzed as a single separate group. Unemployed individuals, housewives, incapacitated persons and other similar categories are analyzed as a separate group which accounts for 37 %; most of the people making up that group are unemployed.

Of utmost importance is the assessment of the share of students and pupils in the IDU population; yet it is rather problematic, in view of the low absolute values. Only in the case of Kharkiv one can say that the share of students and pupils is 15 % and can be estimated to be as high as 25 %. As to the rest of the cities, even Kyiv, the share of students and pupils is too small to allow reliable assessment of the real population.

Most of those surveyed were born in the city in which the interview took place; 18.5 % were born elsewhere, with about 10 % of them having resided in the city of interview for less than a year and a further 10 % for 1–2 years. 2 % of the interviewees were on a temporary visit to the city of interview.

4 N. V. Panina. 2006. Ukrainian Society. Sociological Monitoring 1992–2006. / Institute of Sociology of the NAS of Ukraine. – Kyiv, 2006.
5 Calculated on the basis of data from: N. V. Panina. 2006. Ukrainian Society. Sociological Monitoring 1992–2006. / Institute of Sociology of the NAS of Ukraine. – Kyiv, 2006.

The share of "non–native" respondents is highest among the Cherkasy IDUs: 37 %. The popularity of using injection drugs among newcomers to Cherkasy might be accounted for by failure to adapt to the new environment. Also rather high – 32 % – is the share of newcomers to the region among the IDUs in Odesa.

The percentage of persons coming to oblast centers for a brief period of time is relatively small: 1–5 %. The highest shares of visitors were recorded in Kherson and Kirovohrad: 9 % in both cities. Noteworthy is the homophily value, which for the visitors is close to –1.0. This means that visiting IDUs have recruited respondents almost exclusively among local IDUs, i.e. they have ties with the local IDU population and may have arrived to contact these acquaintances. Only Kherson is a certain exception, since the homophily value there is close to 0, indicating equal rates of recruitment among visitors and locals.

Table 2.1. Distribution of injection drug users by gender, age, education level, marital status, place of residence and occupation

Gender	Number in the sample	Share in the sample
Male	2,768	74.6 %
Female	943	25.4 %
Age		
16–19	112	3.0 %
20–24	634	17.1 %
25–34	1,643	44.3 %
35+	1,322	35.6 %
Education		
Primary	712	19.2 %
Secondary	2,399	64.6 %
Higher	598	16.1 %
Marital status		
Single	1,857	50.0 %
Married	1,602	43.2 %
In separation, living apart from the spouse	252	6.8 %
Occupation		
School and vocational school pupils	18	0.5 %
Higher education and technical college students	101	2.8 %
Regular employment	846	22.8 %
Random earnings	1366	36.8 %
Unemployed	1,000	26.9 %
Housewife	197	5.3 %
Incapacitated (disabled)	143	3.9 %
Other	40	1.1 %
Place of birth and residence		
Born in the city of residence	2,951	79.5 %
Temporarily resident	74	2.0 %
Born elsewhere	686	18.5 %

CONCLUSION FOR SECTION 2

- An analysis of the sociodemographic composition of IDUs has shown that use of injection drugs is practiced mostly by men. However, in large eastern cities, Kharkiv and Donetsk, the gender ratio among IDUs is close to the statistical average for Ukraine.
- In this research, youngest and underage IDUs were rather scarcely represented. One can state that their shares are highest in eastern cities of Ukraine – Kharkiv, Donetsk, and Luhansk, where IDUs under 24 years of age may account for half of the IDU population. In its turn, the Southern region is noted for a high share of IDUs aged 35+ years.
- The IDUs' level of education generally matches that of the whole population of Ukraine. In some oblast centers the share of respondents with incomplete higher education reaches one third (Lutsk, Luhansk, Kirovohrad, Kherson, and Kharkiv). We emphasize that most of these respondents have already terminated their education. By contrast, in Kyiv and Khmelnytskyi very large shares (more than a quarter) of IDUs with higher education are observed. The shares of students are highest in Donetsk and Kharkiv.
- IDUs quite frequently cohabitate with a partner in unregistered marriage. Among them, free civil status is generally encountered more frequently than among the entire population, but in Poltava and Mykolaiv the shares of married IDUs are higher than the national figure (56 %).
- Employment status accounts for the biggest difference between the IDU population and the general populace, with only 23 % of the IDUs being employed, compared to 62 % among the aggregate population of active working age. A further 37 % report having occasional earnings. In Luhansk and Lviv the joint share of the two categories is about three quarters of the IDU population, whereas in Mykolaiv and Dnipropetrovsk about half of those interviewed are totally unemployed.
- About 80 % of the IDUs are natives of their cities, which conforms quite well to the social structure of Ukraine. [6] Only in Odesa and Cherkasy visitors from other areas accounted for more than one third of those interviewed.
- Summing up, one can say that some cities may be characterized as having their own sociodemographic specificity of drug users' environment. Thus, Luhansk and Kirovohrad are noted for a masculine profile of IDUs, younger age and low education level. In Donetsk and Kharkiv, quite emphatically represented are female IDUs, young people, pupils and students. Mykolaiv and Poltava are noted for abundance of married (officially or unofficially) and unemployed respondents; Lviv, for working IDUs with secondary education. Odesa is also noted for working respondents and a rather high share of non-native population, similar to Cherkasy, where this category is made up mostly of men. Kyiv and Khmelnytskyi are distinguished by a large share of respondents with higher education. Overall, higher age makes a difference between IDUs in the Southern region and those in the Eastern region.

6 N. V. Panina. – Ibid.

SECTIONS III

LEVEL OF DRUG USERS' HIV/AIDS AWARENESS

The risk of HIV transmission in the IDU milieu is caused by dangerous models of conduct (use of narcotic substances and dangerous sexual behavior); and so, IDUs' awareness of HIV transmission modes is supposed to decrease the riskiness of their conduct. The National Index "Percentage of Injecting Drug Users Correctly Identifying HIV Transmission Modes and Knowing how HIV Cannot Be Transmitted" provides an insight into the level of IDUs' awareness.

3.1. National Index "Percentage of Injecting Drug Users Correctly Identifying HIV Transmission Modes and Knowing how HIV Cannot Be Transmitted"

In order to determine the respondents' level of awareness of the infection, they were asked to answer 10 questions about HIV transmission modes. Six of these questions are used to calculate the National Index "Percentage of injection drug users correctly identifying HIV transmission modes and knowing how HIV cannot be transmitted." These are the questions:

1. Can the risk of HIV transmission be reduced by having sex with only one faithful, uninfected partner?
2. Can the risk of HIV transmission be reduced by decreasing the number of sexual partners?
3. Can a healthy-looking person have HIV?
4. Can one contract HIV through drinking in turn from the same glass with an HIV-infected person?
5. Can one contract HIV by using the same toilet, shower-room, or sauna as a person with HIV?
6. Can one contract HIV through using an injection needle previously used by an HIV-infected person?

Each of these questions could be answered in one of three ways: "Yes," "No" and "Don't know."

An analysis of the data showed that 49.6 % of the interviewed injection drug users provided correct answers to all six basic questions, thus determining the value of the National Index. According to previous (2007) survey data, the National Index was 46.7 %. In 2008 the figure is 49.6 %. We emphasize that the survey method was different this time: in 2007 the sample included a lot more medium-sized and small towns and fewer cities from Western Ukraine.

Also noteworthy is the fact that the obtained value of the National Index of HIV awareness (49.6 %) is somewhat higher than the expected 40 %. [7]

Below we present a detailed distribution of the answers to each of these questions.

7 Universal Access Target Settings: Ukraine.

Table 3.1.1. Injecting drug users' awareness of HIV/AIDS transmission modes, percentages

Content of the questions	Content of the answers	All IDUs	Women	Men
The risk of HIV transmission can be reduced by having sex with only one faithful, uninfected partner	Yes	85.8	85.5	86.0
	No	11.8	12.2	11.6
	Don't know	2.4	2.4	2.4
	Overall	100.0	100.0	100.0
The risk of HIV transmission can be reduced by decreasing the number of sexual partners	Yes	79.0	78.3	79.2
	No	17.8	17.9	17.8
	Don't know	3.2	3.7	3.0
	Overall	100.0	100.0	100.0
A healthy-looking person can have HIV	Yes	89.2	89.6	89.1
	No	7.1	7.0	7.1
	Don't know	3.7	3.4	3.8
	Overall	100.0	100.0	100.0
One can contract HIV through drinking in turn from the same glass with an HIV-infected person	Yes	13.1	11.5	13.7
	No	82.8	85.5	81.9
	Don't know	4.1	3.0	4.4
	Overall	100.0	100.0	100.0
One can contract HIV by using the same toilet, shower-room, or sauna as a person with HIV	Yes	15.2	16.1	14.9
	No	78.4	76.5	79.1
	Don't know	6.4	7.4	6.0
	Overall	100.0	100.0	100.0
One can contract HIV through using an injection needle previously used by someone else	Yes	96.8	98.0	96.0
	No	2.5	1.6	2.8
	Don't know	0.6	0.6	0.7
	Overall	100.0	100.0	100.0

Thus, the National Index of awareness of HIV/AIDS is 49.6 %. This is the percentage of respondents correctly answering all six key questions. However, for many of the interviewees the questions varied in perceived difficulty, the first three questions being easier than the next two (about the possibility of HIV transmission through drinking from the same glass with HIV-infected individuals or from sharing a toilet, shower-room, or sauna).

An analysis of the regional cross-section revealed a highly irregular distribution of awareness: the highest awareness was observed in Mykolaiv: 81 %, whereas the Kharkiv figure was more than 4 times smaller: 17 %. Also low are the IDU awareness levels in Cherkasy (23.5 %), Poltava (33 %), and Odesa (34 %).

From the distribution of the answers to the key questions relating to the HIV awareness level we can conclude that women are more knowledgeable about some of the questions than men are. This pertains to the question about the possibility of contracting HIV through drinking in turn from the same glass with an HIV positive person (correct answers were given by almost 82 % of the men and 85.5 % of the women) and to the question about the possibility of contracting the virus from using an injection needle previously used by someone else (correct answers were given by 96 % of the men and 98 % of the women); |the difference is significant at the level of 5 % in the first case and at the level of 1 % in the second case. With the other questions, however, the pattern of distribution was reversed, men giving correct answers somewhat more often than women did; this resulted in

a higher awareness value for men (50.3 % versus 47.6 %). Below, Table 3.1.2. presents the distribution of the National Index of awareness of HIV transmission modes among men and women and among the different age groups.

Table 3.1.2. National Index of awareness of HIV/AIDS transmission modes, percentages

Gender	Male	50.3
	Female	47.6
Age	16–19	34.8
	20–24	49.4
	25–34	49.3
	35+	51.4
All IDUs		49.6

An essential difference is observed in the awareness level between the younger IDU group and any other age group (the difference being significant at the level of 1 %). Among the rest of the age groups, no statistically significant differences were observed. No statistically significant correlation was found between awareness level and marital status or education level of the interviewed IDUs.

3.2. Analysis of Questions Not Included in the National Index "Percentage of Injecting Drug Users Correctly Identifying HIV Transmission Mode through Sexual Intercourse and Knowing how HIV Cannot Be Transmitted"

Although the below questions are not required for calculation of the National Index, they contribute to wider knowledge of HIV awareness. Below we present the distribution of the answers to these questions.

Table 3.2.1. Injecting drug users' awareness of HIV transmission modes, percentages

Content of the questions	Content of the answers	All IDUs	Women	Men	16–19	20–24	25–34	35+
One can contract HIV from mosquito bites	Yes	15.5	12.7	16.4	26.2	18.5	13.9	15.2
	No	77.0	80.5	75.8	64.5	73.8	79.1	76.8
	Don't know	7.5	6.8	7.8	9.3	7.7	7.0	8.0
	Overall	100	100	100	100	100	100	100
HIV can be transmitted from an HIV-infected mother to her baby during pregnancy	Yes	87.5	89.9	86.6	81.9	83.8	87.9	89.1
	No	4.4	5.1	4.2	7.6	5.2	4.0	4.4
	Don't know	8.1	4.9	9.2	10.5	11.0	8.1	6.5
	Overall	100	100	100	100	100	100	100
HIV can be transmitted from an HIV-infected mother to her baby during childbirth	Yes	85.4	90.3	83.7	73.3	78.2	85.8	89.4
	No	4.6	4.2	4.8	11.4	6.1	4.7	3.3
	Don't know	9.9	5.4	11.5	15.2	15.7	9.5	7.3
	Overall	100	100	100	100	100	100	100
HIV can be transmitted from an HIV-infected mother to her baby during breast-feeding	Yes	77.5	86.5	74.3	73.1	74.1	77.9	78.8
	No	8.5	4.5	9.9	10.6	7.2	8.2	9.5
	Don't know	14.0	8.9	15.8	16.3	18.7	13.9	11.7
	Overall	100	100	100	100	100	100	100

The distribution of the answers to the question "Can one contract HIV from mosquito bites?" shows women to be more knowledgeable than men (the correct answer was given by 80.5 % of the women, compared to 75.8 % of the men); the difference is significant at the level of 1 %. We would also like to note that respondents aged 16 to 19 years displayed the lowest awareness, compared to respondents from other age groups (the difference being significant at the level of 5 %).

There are significant differences in the answers to the question about HIV transmission from a mother to her baby during pregnancy (women provided correct answers more frequently than men did, the difference being significant at the level of 1 %; the oldest respondents were the most knowledgeable ones, the difference from the other age groups being significant at the level of 1 %). When answering the question about HIV transmission during childbirth, women gave correct answers more frequently than men did (the difference being significant at the level of 1 %). Respondents in the two junior age groups answered this question correctly in fewer cases, compared to the older interviewees.

The question about HIV transmission during breastfeeding was among the most difficult ones. Significant differences are observed in the correctness of the answers between the interviewed women and the men (the latter correctly replied to this question in fewer instances, the difference being significant at the level of 1 %). No statistically significant differences were revealed among the age groups.

Thus, we can state that women gave correct answers to the questions about HIV transmission from mother to child in a significantly larger number of cases, compared to men. One can also say that, in general, younger respondents provided correct answers less frequently than older respondents did.

SECTIONS IV

HIV/AIDS RISK BEHAVIOR

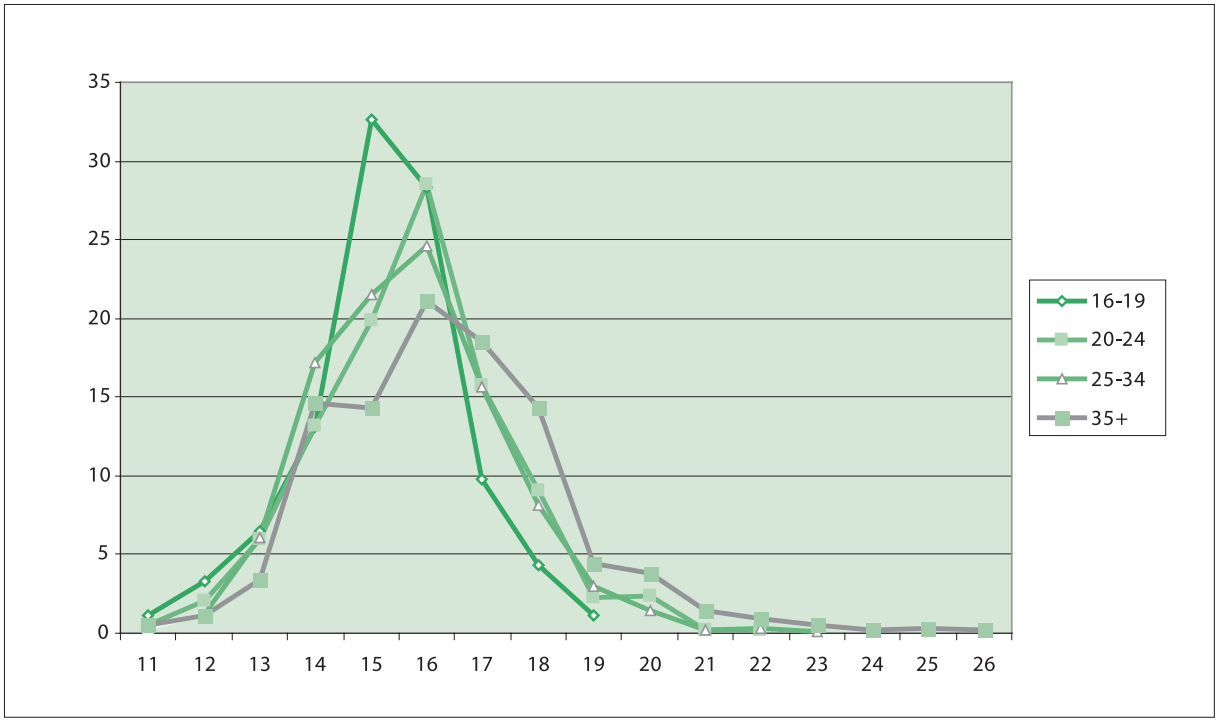
4.1. Sexual Contacts

4.1.1. IDUs' Sexual Activity

IDUs' sexual activity is worthy of particular attention, in view of the rather high HIV incidence among the representatives of this category.

The data show that a majority of injection drug users (97.9 %) had a sexual intercourse at least once in their life. 39.8 % of the interviewees had their first sexual experience at the age of 15 years or less and 48.6 % between 16 and 18 years. Presented below is the age distribution of the first sexual experience age of those respondents who had at least one sexual intercourse.

Fig. 4.1.1.1. Distribution of answers to the question "At what age did you first have sex?" in the four age groups, percentages in each group.



We can say that the youngest IDUs acquired sexual experience at an earlier age than did IDUs in the senior age groups: among the former, the modal age of starting sexual life is 15 years, whereas for the rest it is 16.5 years.

The data show that 87.7 % of the injection drug users had sex during the past 12 months and 86 % had sex during the past three months. 76.2 % of the injection drug users who had sex in the previous three months practiced it with their regular partners; 37.5 %, with casual partners; 3 %, with commercial sex workers; and 3.4 % themselves provided paid sex services.

For a more detailed analysis of sexual behavior, "pure" categories of sexual partners were singled out. This had to be done because all three groups of sexual partners (regular, casual, and commercial) have a considerable degree of intersection: 22.3 % of those who had regular partners also entered into casual relationships; about 3 % used sexual services and another 3 % themselves provided them. Singling out conventionally "pure" groups made it possible to determine more precisely the groups with the riskiest behavior.

The first category – "one regular partner" – includes IDUs who reported having had sex with one regular partner during the past three months. They can be looked upon as a category with a relatively low level of probability of contracting HIV through sex. The second category – "casual partners" (including those who have a regular partner) – is made up of IDUs who said they had sex with a casual partner while having a regular one. Having a casual partner is, in itself, a factor significantly increasing the riskiness of sexual behavior; therefore, this category can be regarded as facing a somewhat higher risk of contracting HIV. The third category includes those IDUs who had several regular partners during the past three months, i.e. a spouse and/or other persons with whom the respondent had a long-lasting relationship. Having several partners, albeit regular ones, also increases behavior riskiness. The fourth category consists of IDUs who had sex with commercial partners; in particular it includes those who had casual contacts while having a regular partner. Having sexual contacts with such different types of partners is a reason to speak of an especially high degree of sexual behavior riskiness.

Below we present the distribution of the average number of sexual partners of each type by respondents' gender and age.

Table 4.1.1.1. Number of sexual partners of each type with whom respondents had sex during the past three months (N=3,109), percentages

	One regular partner	Casual partners, including those who have a regular partner	Several regular partners	Commercial partners, including those who have a regular partner and had casual contacts	Total of partners of all types
Women	66.3	21.0	2.6	10.1	100.0
Men	51.4	37.2	3.8	7.6	100.0
16–19	38.4	51.5	3.0	7.1	100.0
20–24	48.1	41.5	2.8	7.6	100.0
25–34	55.4	31.7	3.8	9.2	100.0
35+	62.0	27.1	3.3	7.6	100.0
Married	73.8	18.0	3.0	5.2	100.0
Single	38.2	46.7	3.9	11.3	100.0
Total	55.7	32.6	3.4	8.3	100.0

According to data from Table 4.1.1.1., one third of the interviewed IDUs who practiced sex during the past three months had casual sex partners (regardless of whether or not they had a regular partner). 8.3 % paid for sex or provided sex services; 3.4 % had several regular partners; the rest had one partner.

Women had fewer casual contacts compared to men; yet they practiced commercial sex somewhat more frequently. Worthy of attention is the considerable inverse relationship between age and share of casual contacts: half of the relationships of youngsters under 20 years of age are of a casual nature. At the same time, the share of commercial partnerships and of those who had many regular partners is not smaller in this group than in the senior age groups. Relationships with irregular partners are twice as rare among married respondents as among unmarried ones.

As to the incidence of casual relations in the regional cross-section, it should be noted that they are most frequent in the East of the country: 40.1 % (the difference from other regions being statistically significant at the level of 1 %). Worthy of mention is Luhansk, where 50 % of the interviewed IDUs had a casual partner, and Sumy, where the respective share is 40.3 %.

The region of interview is also significant in terms of prevalence of paid sex. Lutsk deserves mention in this respect, for there the percentage of IDUs who had sex with commercial partners during the past three months (including those who had a regular partner and/or practiced casual sex) is as high as 42.3 %. Such a figure can be described as being somewhat unexpected, because the Western region is generally noted for strong "traditional" mindsets. By way of comparison, in Lviv the respective share is 2.6 %; in Khmelnytskyi, 4.4 %. Also rather high are the shares in Simferopol (19.9 %), Dnipropetrovsk (17.0 %), Kharkiv (15.9 %), and Kyiv (10.3 %).

As regards marital status, married interviewees have casual sex nearly twice as rarely as unmarried

ones do. We can state the existence of a statistically significant relationship between marital status and inclination towards casual sexual contacts. No impact of education on the number of such contacts was revealed.

The survey data also make it possible to track the impact of combined consumption of alcohol and drugs on sexual behavior. Below, in Table 4.1.1.2., we present the distribution of those IDUs who reported combining alcohol with various drugs during the past month by the type of their sexual partners.

Table 4.1.1.2. Combining alcohol with different drugs depending on sexual partner type, percentages

	Combined	Did not combine	
One regular partner N=1,669	8.0	92.0	100.0
Casual partners, including those who have a regular partner N=1,068	10.1	89.9	100.0
Several regular partners N= 99	12.3	87.7	100.0
Commercial partners, including those who have a regular partner and had casual contacts N=298	16.3	83.7	100.0
Total of partners of all types, N=3,134	9.5	90.5	100.0

We would like to note that IDUs who had one regular partner combined alcohol with different narcotic substances twice as rarely as did those who had sex with commercial partners. The respective share is also higher among those who had casual sex and many regular partners, but the difference is statistically insignificant.

Our analysis also revealed a relationship between the number of sexual partners of all types and gender, age, and marital status of the interviewed IDUs. Table 4.1.1.3. presents the distribution of respondents by number of sexual partners of all types.

Table 4.1.1.3. Total number of sexual partners during the past three months, N=3,134, percentages

	Not a single partner	One partner	2–5	6–12	More than 12 partners	**Total**
Women	2.0	65.4	21.1	7.5	4.1	100
Men	2.0	53.3	33.1	9.0	2.6	100
16–19	2.2	34.8	36.0	19.1	7.9	100
20–24	2.3	45.0	36.9	10.6	5.1	100
25–34	1.6	55.0	31.0	9.2	3.1	100
35+	2.4	65.9	24.7	5.8	1.2	100
Married	0.6	72.2	19.4	6.3	1.6	100
Single	3.3	41.5	40.1	10.8	4.3	100
All together	2.0	56.3	30.1	8.6	3.0	**100**

As one can see from Table 4.1.1.3., cases of a woman having one sexual partner during the past three months were, on the whole, more frequent, compared to the interviewed men. The biggest difference among the age groups in terms of having one partner was almost 10 %; the biggest share was observed among the oldest age group. Partners were most often changed by the younger IDUs, the difference between the two junior and the two senior groups being statistically significant. Nearly one third of the married IDUs had more than one sexual partner during the past three months, whereas almost equal shares of unmarried IDUs had either one or two to five partners. No relationship was found between the number of sexual partners and education of the interviewed IDUs.

According to the data, a little over 35 % of the interviewees who provided sex for pay did so once or twice during the past month; the rest, from three to fifty times.

4.1.2. Use of Condoms

For injection drug users, the value of the National Index "Percentage of IDUs using a condom during their most recent sexual intercourse" is 53.8 %; that is the share of injection drug users reporting having used a condom during their most recent sexual intercourse.

Table 4.1.2.1. National Index "Percentage IDUs using a condom during their most recent sexual intercourse," percentages

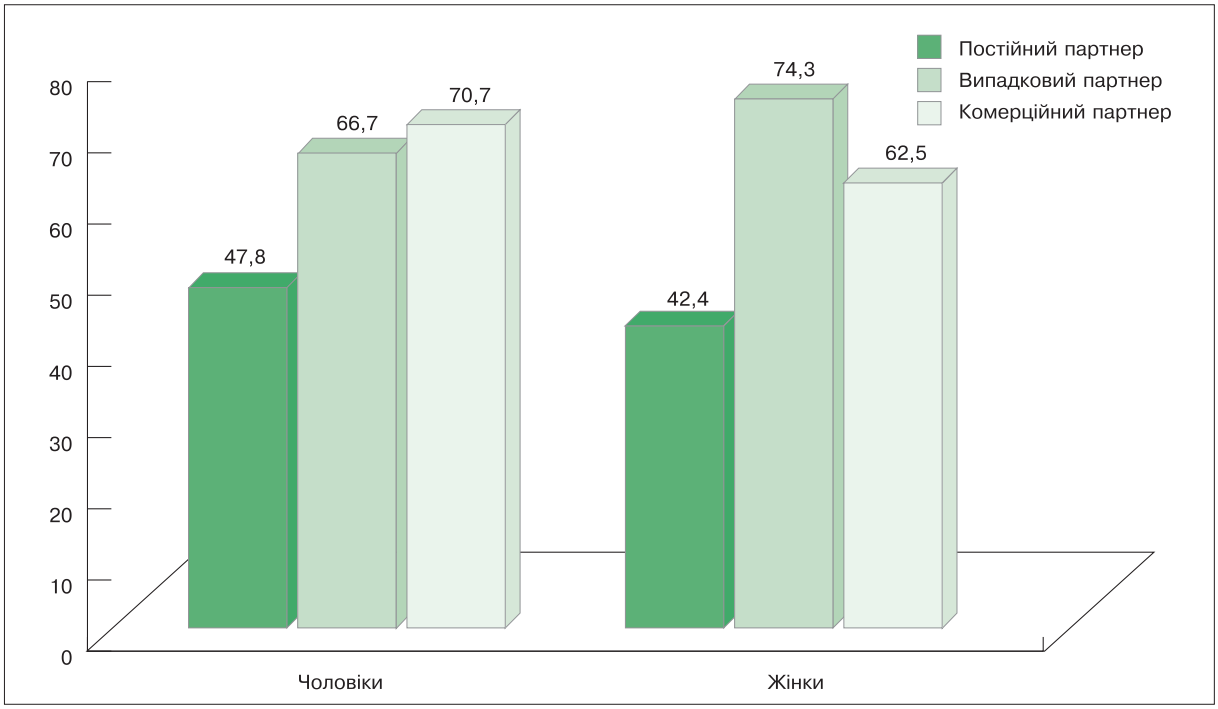
Gender	Male	55.3
	Female	49.6
Age	16–19	57.3
	20–24	58.3
	25–34	56.3
	35+	47.7
Marital status	Married	47.5
	Single	57.3
All IDUs		53.8

A certain relationship is observed between gender, age groups, marital status and sexual behavior safety. Women's behavior is somewhat less safe than men's; quite similar is the behavior of IDUs aged 35+ years. We would also like to note that married IDUs less frequently use condoms than unmarried respondents do (the difference is statistically significant at the level of 1 %).

In the regional cross–section, we can say that the safest behavior was observed among injection drug users in Poltava, Kherson (67 % each) as well as Mykolaiv and Simferopol (66 % and 64 %, respectively) (Table 8A in the Appendix). Condoms were much less frequently used by IDUs in Kirovohrad (29 %), Dnipropetrovsk, Lutsk, Kharkiv, and Lviv (about 40 % in each of these cities).

We can compare the values of the National Index "Percentage of IDUs using a condom during their most recent sexual intercourse" on the basis of the 2007 and 2008 surveys: 53.8 % (2008 data) versus 54.9 % (2007 data). The difference is not significant at the level of 5 %. Thus we can state that the level of condom use during the most recent sexual intercourse among IDUs remained almost unchanged.

Fig. 4.1.2.1. Use of a condom during the most recent sexual intercourse with various categories of sexual partners, men and women, percentages



We can state that there are differences between men and women in the level of safety of contacting different types of sexual partners. On the whole, men demonstrate relatively safer behavior with their regular as well as commercial partners: in both cases, a statistically significant difference at the level of 5 % was observed compared to women. In spite of a rather noticeable difference in the level of behavioral safety between men and women regarding contacts with casual partners, this difference is not statistically significant.

Table 4.1.2.2. Frequency of using condoms during the past year, split by sexual partner categories, percentages

	Regular partners, N=2,395	Casual partners, N=1,289	Commercial partners, N=296
Always	27.7	43.5	45.3
In more than half of the cases	12.5	18.1	21.3
In about half of the cases	7.4	9.7	6.4
In less than half of the cases	13.4	9.3	8.1
Never	36.1	12.1	6.8
Don't remember/ refused to answer	2.8	7.3	12.2
Total	100	100	100

As one can see from Table 4.1.2.2., 36.1 % of the respondents who had sex with their regular partners during the past year said that they never use a condom when contacting regular partners. At the same time, 27.7 % of the respondents said that they always use a condom. Interviewees always using a condom account for 43.5 % and 45.3 %, respectively, of those who had sex with casual and commercial partners, that is, the behavior of those who had risky contacts is more cautious compared to those who had regular partners. Yet in view of the risky nature of casual sex, one has to recognize that more than half of the IDUs who had such sexual experience demonstrate risky behavior anyway. Particular attention should be paid to the considerable share of commercial sex users who refused to or could not answer the question about condom use.

4.1.3. Reasons for Refusing to Use Condoms

Respondents who had not used a condom during their most recent sexual intercourse were asked about the reason for not doing so. There are certain differences in the reasons for refusing to use condoms depending on sexual contact type.

Table 4.1.3.1. Reasons for refusing to use a condom during the most recent sexual intercourse, percentages*

	With the regular partner (N=1,268)	With a casual partner (N=371)	With a commercial partner (N=66)
There was no condom within reach	7.5	30.2	22.7
Its use decreases sensitivity	41.2	32.1	37.9
It is too expensive	1.3	1.9	–
The partner objected to using a condom	5.3	5.1	21.2
Did not find it necessary	30.4	14.0	10.6
Did not think about it	14.2	8.9	10.6

Was under the influence of alcohol	0.9	9.7	10.6
Was under the influence of drugs	3.2	28.3	28.8
Became a victim of sexual abuse	0.4	1.6	–
Other	16.9	3.0	3.0
Hard to answer	2.8	3.8	4.5

* The sum of percentages in the column does not equal 100 because the respondents were free to choose several answer options at once.

And so, the main reason for refusing to use a condom consisted in the belief that it decreases sensitivity. This answer was given by 41.2 % of the respondents answering the question. The reason ranking second in popularity among those not using a condom with the regular partner was that the respondents found it not necessary: 30.4 %. Ranking third in terms of frequency of mention was the option "did not think about it" – 14.2 %. Those who had no condom within reach and those for whom condom use is too expensive accounted for 7.5 % and 1.3 %, respectively.

Somewhat different is the pattern of reasons for refusing to use a condom when contacting a casual or commercial partner. In the second place are those who replied, "There was no condom within reach": 30.2 % and 22.7 %, respectively. The shares of those who refused to use a condom because of being under the influence of drugs are 28.3 % and 28.8 %, respectively.

Among the respondents who refused to use a condom during their most recent commercial sexual intercourse, those whose partner objected to its use were in the fourth place: 21.2 %.

Practically none of the interviewees mentioned condom expensiveness as the reason for refusing to use it.

4.1.4. Sources for Obtaining Condoms

Survey data allow us to determine the places where IDUs most frequently purchase or obtain condoms.

Table 4.1.4.1. Distribution of answers to the question "Did you buy/obtain a condom during the past month in the below places?", percentages

Place where a condom was bought/obtained	
Pharmacy, shop, kiosk	44.9
Syringes exchange point	26.6
Center of social services for youth	4.7
Family planning center	0.3
Nongovernmental organization	4.1
During public actions	5.0
Other	–

According to the data, IDUs most frequently purchased condoms at pharmacies, in shops or kiosks. At syringes exchange points, condoms were obtained by 22.6 % of the respondents. Rather few respondents reported having obtained/purchased condoms in any of the other places included in the list.

The results of respondents' self-assessment of the shares of condoms purchased or obtained for free were as follows.

Table 4.1.4.2. Distribution of answers to the question "What are the shares of purchased condoms vs. condoms obtained for free in the total number of condoms you have acquired or obtained during the past month?", percentages

Share of purchased condoms	Share of obtained condoms	Percentages
100 %	0 %	38.6
75–99 %	1–25 %	7.5
50–74 %	26–50 %	26.1
26–51 %	51–74 %	6.8
1–25 %	75–99 %	13.1
0	100 %	7.7
–	–	–

In most cases, condoms were bought; just of quarter of the IDUs obtained about half of the condoms for free. 7.7 % obtained all condoms for free during the past month.

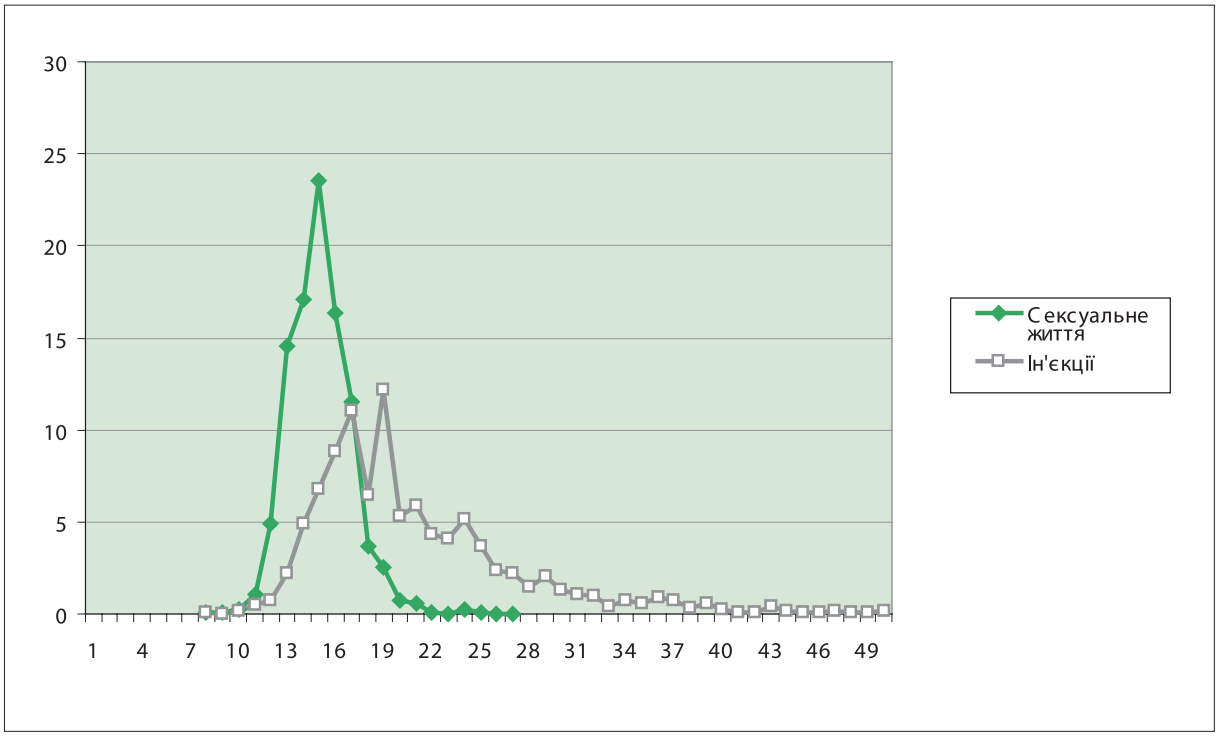
4.2. Injecting Drug Use Characterization

4.2.1. Drug Use Duration and Frequency

The data show that 46 % of the interviewees started using injection drugs before reaching the age of 20; 27 %, before they were 18; and 4 %, before they were 15. Worthy of note is the fact that 2 % of the IDUs started practicing injections after reaching the age of 40.

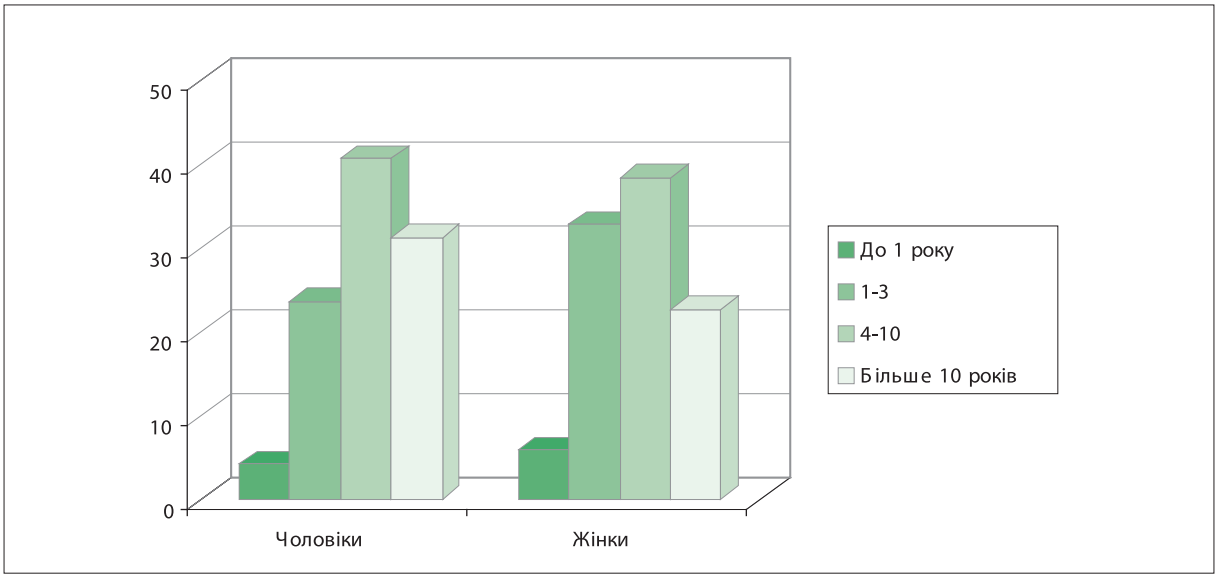
Sexual life usually begins prior to first use of an injection drug: on the average, at the age of 18 versus 23. While an absolute majority has some sexual experience prior to reaching the age of 20, injection practice can be started by people aged 40+. Therefore, it is hard to determine on the basis of our data whether new generations of IDUs start injecting drugs at an earlier age; indeed, all groups have "beginners" who inevitably increase the group's average age of starting injections.

Fig. 4.2.1.1. Distribution of answers to the question "At what age did you first try using injection drugs?" and to the question "How old were you when you first had sex?", percentages



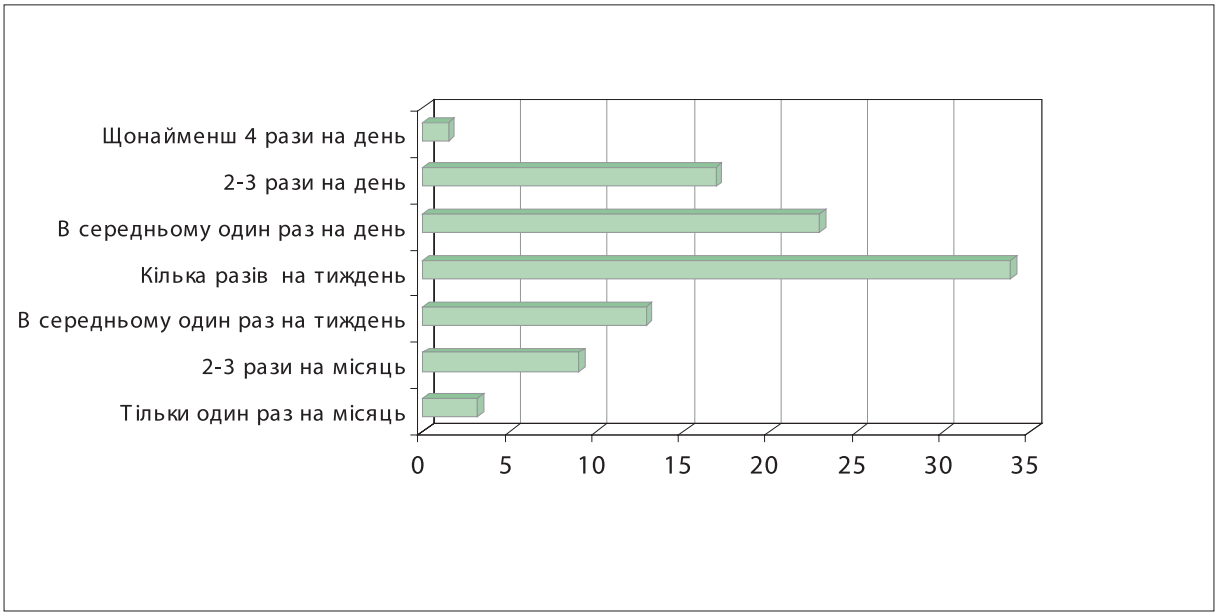
The average age of the male IDUs is two years higher than that of the female ones: 32.7 versus 30.8 years (the difference being statistically significant at the level of 1 %). Yet there is no gender–based difference in the age of first injection and so it would be reasonable to expect equality in average biological age as well. The discrepancy might be accounted for by higher mortality among female IDUs. Accordingly, male IDUs have a longer period of practicing injections: on the average, 9 years versus 7 years for women. Below (Fig. 4.2.1.2) we present the distribution of respondents by the length of using injection drugs; it shows that in the male group the share of IDUs using drugs for 10 years or more is much higher than in the female group.

Fig. 4.2.1.2. Distribution of answers to the question "For how many years (months) have you been using injection drugs?" among men and women, percentages



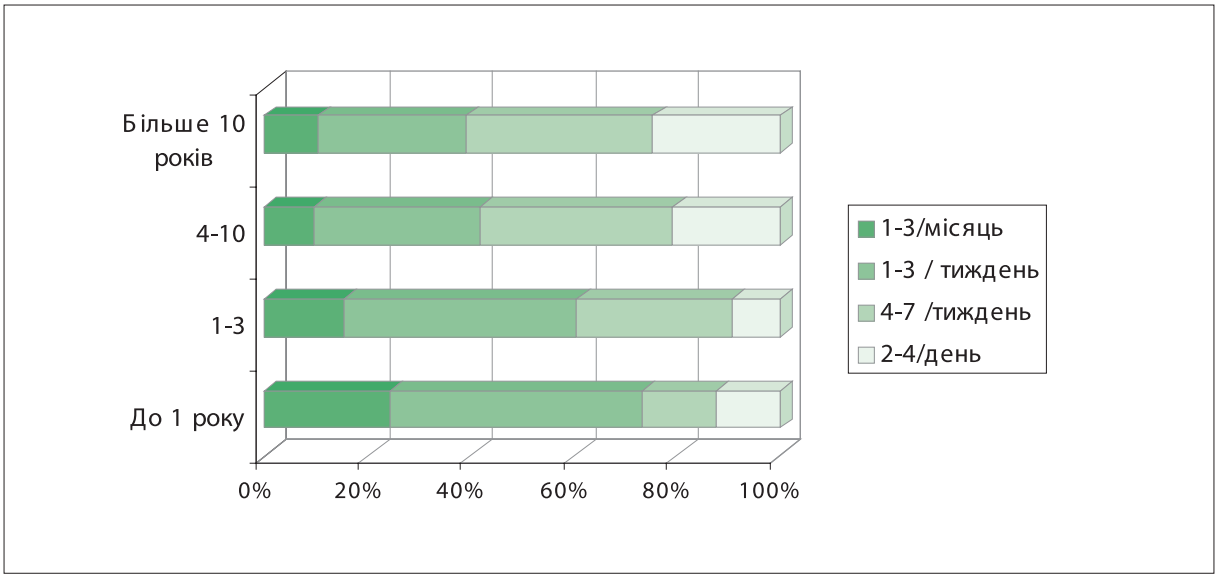
Below we present the distribution of how often respondents injected narcotic substances during the past 30 days. Three quarters of the IDUs use drugs at a rate of more than once a week and 41 % use drugs every day.

Fig. 4.2.1.3. Distribution of answers to the question "How often have you been injecting narcotic substances during the past 30 days?", percentages



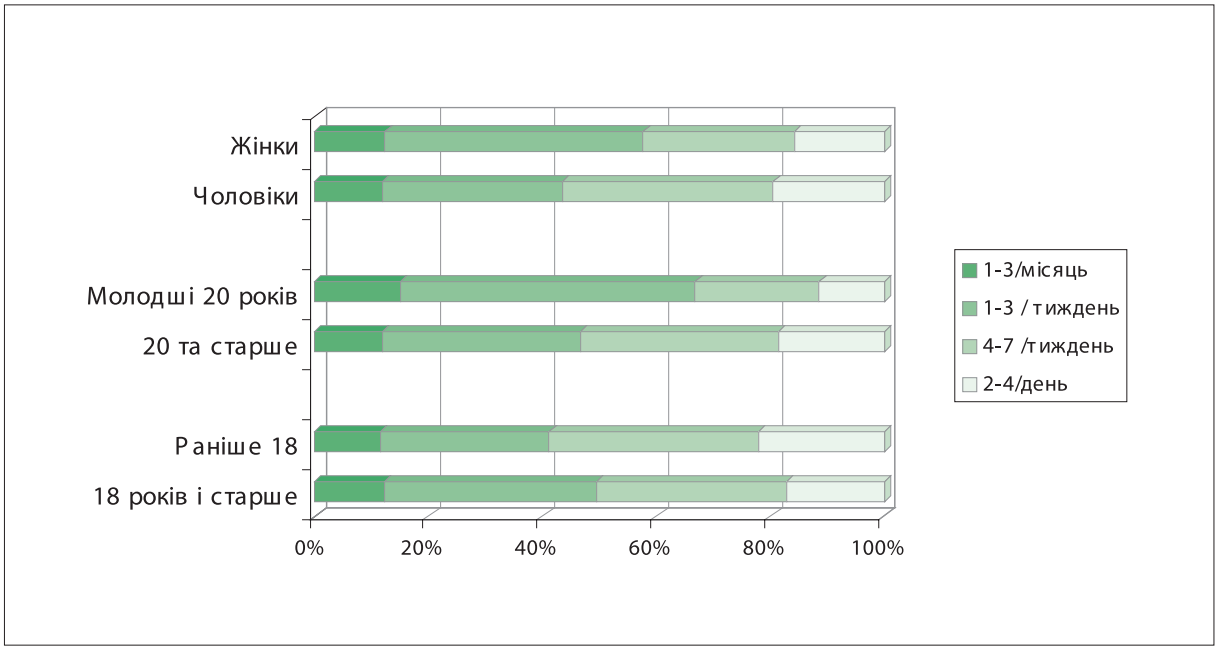
A relationship is observed between the length of using drugs and the injection frequency: by the time the injection period reaches 4 years injections become practically daily for a majority of the IDUs, whereas during the first year of injection experience drugs are injected on a practically daily basis by just 25 % of the interviewees (Fig. 4.2.1.4).

Fig. 4.2.1.4. Distribution of answers to the question "How often have you been injecting narcotic substances during the past 30 days?" by length of drug use, percentages



Relationships, albeit much weaker ones, are also observed between injection frequency and respondents' gender, age, and age of starting injections. Men proceed to a practically daily mode of injections faster than women do. Among the age groups, only the youngest group is somewhat different from all others in that its injection frequency is lower. On the other hand, earlier age of starting injections entails a somewhat higher frequency. This means that, regardless of how old an IDU is, if he/she started practicing injections before reaching the age of maturity, then he/she is more likely to reach the maximum frequency in a shorter period of time (Fig. 4.2.1.5).

Fig. 4.2.1.5. Distribution of answers to the question "How often have you been injecting narcotic substances during the past 30 days?" by gender, respondent's age, and age of starting injections, percentages



4.2.2. Incidence of Different Types of Drugs

Below (Table 4.2.2.1) we present data on the prevalence of drug types administered through injection by the IDUs during the past 30 days. Wherever the number of respondents allowed statistical generalizations, median frequency of use was also estimated.

Table 4.2.2.1. Types of drugs injected by IDUs during the past 30 days, percentages and median frequency of use

	Using during 30 days	Median frequency of use
Opiates (home-made opiates – poppy extract ("shyrevo," "chorna")/poppy straw decoction, heroin	77.5	11.5
Medical narcotic analgesics – ampuled morphine, Omnopon, Promedol, Buprenorphin, Tramadol, Methadone, Tramal, Tramalgin)	9.9	9.5
Cannabioids (cannabis-based drugs: anasha, hashish, marijuana, "plan," "travka," "drap," "shmal," "ganj")	4.4	9
Analeptics (amphetamines, Ephedrine, Effect, Coldact, Pervitin (methamphetamines), "vint")	26.5	4.5
Ecstasy	0.9	--
Cocaine	0.5	--
Inhalants (volatile solutions)	0.2	--
Sedatives (tranquilizers)	3.6	5
Hallucinogens (LSD – "the acid", "marks," barbiturates)	0.6	--
Anesthetics (Phentanyl; Calypsol, Ketamine; sodium oxybutyrate, "ksiusha," "oksik")	1.2	2.5
Combinations of various drugs (poppy extract + sedatives, poppy extract + tranquilizers, poppy extract + Dimedrol; heroin + cocaine, heroin + crack, speedball)	15.7	4.5
Combination of alcohol and various drugs (alcohol + opiates, alcohol + analeptics, alcohol + cannabioids, alcohol + Dimedrol, alcohol + Taren)	9.3	4.5

Opium alkaloid extract continues to be the most widespread drug type in Ukraine: opiates were used by three quarters of the interviewees. This drug is also used more often than are other drugs: on the average, once in every three days.

Ranking second in popularity are so-called analeptics (stimulants), Ephedrine derivatives. They were used by approximately a quarter of the interviewees. Injections are practiced two and a half times less frequently, approximately once a week. In the third place are ampuled analgesics, which were used by 10 % of the interviewees; yet they were administered through injections twice as often as were analeptics.

Worthy of attention is the rather high popularity of combined drug use, which was mentioned by 16 % of the interviewees, and of combining narcotic substances with alcohol: 9 % of the interviewees.

It should be separately noted that users of the most widespread opiates can use other drug types as well, in particular analeptics: 17 % of them also use analeptics, whereas half of the stimulants addicts use opiates. On the whole, mixed consumption accounts for 15 % of both IDU groups taken together. Opiate addicts – "pure" as well as those also using other drugs have an injection frequency which is twice higher compared to "pure" stimulants addicts.

Presented below are data on the frequency of using each of the drug types among the representatives of the youngest group of respondents (aged 16–19) as well as the other age groups.

Table 4.2.2.2. Types of drugs injected by IDUs during the past 30 days, split by two age groups, percentages

	Under 20 years	20+ years
Opiates (home–made opiates – poppy extract ("shyrevo," "chorna")/poppy straw decoction, heroin	49.9	78.5
Medical narcotic analgesics – ampuled morphine, Omnopon, Promedol, Buprenorphin, Tramadol, Methadone, Tramal, Tramalgin	11.5	9.8
Cannabioids (cannabis–based drugs: anasha, hashish, marijuana, "plan", "travka", "drap", "shmal", "ganj")	6.9	4.3
Analeptics (amphetamines, Ephedrine, Effect, Coldact, Pervitin (methamphetamines), "vint")	51.1	25.6
Ecstasy	––	0.9
Cocaine	––	0.6
Inhalants (volatile solutions)	––	0.2
Sedatives (tranquilizers)	3.0	3.6
Hallucinogens (LSD – „the acid", "marks," barbiturates)	0.3	0.6
Anesthetics (Phentanyl; Calypsol, Ketamine; sodium oxybutyrate, "ksiusha", "oksik")	0.5	1.2
Combinations of various drugs (poppy extract + sedatives, poppy extract + tranquilizers, poppy extract + Dimedrol; heroin + cocaine, heroin + crack, „speedball")	11.2	15.9
Combination of alcohol and various drugs (alcohol + opiates, alcohol + analeptics, alcohol + cannabioids, alcohol + Dimedrol, alcohol + Taren)	4.1	9.5

Quite noteworthy is the clear preference given by the youngest IDUs to analeptics over opiates: among them, the share of opiate users is one and a half times smaller than among older IDUs, whereas the share of analeptics users is two times larger. It is also important that young IDUs are less inclined towards drug mixing. For example, among the youngsters the groups of opiate addicts and of stimulants addicts have an intersection rate of just 9 %.

Compared to men, women are more inclined towards analeptics (30 % versus men's 25 %) and less inclined towards opiates (71 % versus 80 %), but the relationship is much weaker.

Table 4.2.2.3. Certain parameters of IDU groups primarily using opiates or analeptics, percentages

	Users of opiates	Users of analeptics
Share of women	25.7	32.2
Share of respondents under 19 years of age	2.3	6.9
Share of those who had more than 3 sexual partners in the past 3 months	19.1	24.7
Share of those who had more than 3 injection partners	16.2	24.9
Share of HIV–infected persons	35.4	26.6

Table 4.2.2.3. reveals certain demographic and behavioral differences between IDUs preferring opiates and those preferring analeptics. Apart from the fact that women and young IDUs more frequently prefer analeptics, we can also see that stimulants addicts are noted for higher sexual activity and larger sizes of groups within which they administered drugs using a shared syringe. Despite these factors, the share of HIV positive individuals is much lower among stimulants addicts than among IDUs preferring opiates.

4.2.3. Use of Injection Equipment

For injection drug users, the National Index "Percentage of IDUs using sterilized injection materials during their most recent injection" is 83.8 %; that is the share of injection drug users replying "No" to the question whether during the most recent drug using episode they administered drugs through a shared syringe or needle[8].

Table 4.2.3.1. National Index "Percentage of IDUs using sterilized injecting materials during their most recent injection," percentages

Gender	Male	85.1
	Female	80.2
Age	16–19	90.2
	20–24	89.4
	25–34	81.9
	35+	82.6
Length of using drugs	Under 1 year	91.5
	1–3	84.2
	4–10	84.3
	10+ years	81.3
All IDUs		83.8

A certain relationship is observed between gender– and age–based groups and use of unsterilized equipment during the most recent injection. Women's conduct is somewhat less safe, similarly to the behavior of IDUs aged 25+ years. But as far as injection period duration is concerned, the only difference being observed is between respondents with an injection period of less than one year and all others. That is, regardless of age, longer injection period implies a decrease in the number of safe injections.

The rate of sterilized equipment usage varies somewhat over the regions of the country. Sterilized instruments are most frequently used in Luhansk and Kirovohrad: 96 % and 92.5 %, respectively. The lowest rates of safe behavior are observed in Sumy (72 %), Poltava (76 %), Donetsk, Dnipropetrovsk, and Mykolaiv (79 % in each). In the rest of the cities the share ranges between 80 % and 90 %.

The National Index is 83.8 %. Yet when the question concerns the regularity of using sterilized equipment during the past month rather than the most recent drug using episode, then just 80.4 % of those interviewed say they never used shared equipment in that period (Table 4.2.3.1).

As regards the frequency of using shared equipment during the past month, the data obtained were as follows:

Table 4.2.3.2. Frequency of sharing equipment during the past month, split by gender, percentages

	Always	In more than half of the cases	In about half of the cases	In less than half of the cases	Never	Don't know
Under 1 year	1.7	2.3	1.1	4.5	90.3	0.0
1–3	2.0	3.0	5.6	7.8	80.7	0.8
4–10	1.9	3.4	4.0	9.1	80.4	1.1
10+ years	1.2	4.6	5.6	8.8	78.6	1.2
Total	1.8	3.6	4.8	8.4	80.4	1.0

8 The National Index is 83.8 %. However, when the question asks not about the most recent episode of drug injection but about administering drugs with a pre-filled syringe at least once during the past month, it is answered in the affirmative by just 55 % of the respondents. Disregarding those unable to give a definite answer, this raises the incidence of risk behavior to 44 %. In view of the wording of the question, all others did not see how the syringe had been filled, receiving one that was already filled.

According to the data, a certain small part (about 4 %) of those saying they did not use shared equipment during their most recent injection episode do not always do so.

Women display such a trend more often than men; senior respondents, more often than junior ones; yet the differences are small. The biggest differences are observed in terms of drug usage period length: respondents using drugs for more than 10 years practice at least occasional injections through shared equipment in 20 % of the cases, while those whose addiction period is less than one year do so in 10 % of the cases.

Respondents who used shared equipment at least occasionally during the past month (753 persons) were asked whether they had sterilized the syringe before the injection, and if they had, then how frequently they had done so. The answers were distributed as follows:

Table 4.2.3.3. Frequency of using sterilized injection equipment during the past month by gender (N=753), percentages

	Always	In more than half of the cases	In about half of the cases	In less than half of the cases	Never	Don't know
Men (N=519)	36.4	16.2	12.1	15.6	15.4	4.3
Women (N=234)	45.0	16.7	10.8	12.6	13.5	1.4
Total	39.2	16.4	11.7	14.6	14.8	3.4

These data show that even though women compared to men are noted for a somewhat more frequent use of shared syringes or needles, they also have a higher share of IDUs always sterilizing the syringe before the injection.

These respondents were also asked about their partners in joint injection practice. The answers were distributed as follows:

Table 4.2.3.4. Partners with whom equipment was shared during the past month (N=753), percentages

	Yes	No	No answer	Total
With your regular sexual partner	34.2	57.1	8.7	100
With an occasional sexual partner	5.7	84.9	9.5	100
With a casual sexual partner	5.3	85.0	9.7	100
With a little-known person who was not a sexual partner of yours	9.5	80.1	10.5	100
With a male/female friend or acquaintance	59.7	36.2	4.1	100
With a dealer (drug-dealer)	2.7	91.3	6.0	100
With the spouse	8.1	83.3	8.6	100

Joint injections are most frequently practiced together with well-known persons; remarkably, friends are involved twice as often as regular sexual partners are (except for members of married couples). Little-known IDUs are more frequently involved in joint injection practice, compared to irregular sexual partners and drug-dealers.

Although little-familiar partners of all types are less frequently involved in joint injection practice than are well-familiar individuals, the size of groups of little-known IDUs involved in such practice can be larger. Our dispersion analysis confirmed the existence of this pattern.

Table 4.2.3.5. Average number of partners with whom equipment was shared during the past month, category of partners (N=753), [9] average values and correlation indices.

	Average	F–statistics	ε^2
With your regular sexual partner	1.9	4.8	0.008*
With an occasional sexual partner	4.2	33.6	0.054**
With a casual sexual partner	4.6	45.0	0.071**
With a little–known person who was not a sexual partner of yours	4.4	68.4	0.105**
With a male/female friend or acquaintance	2.6	21.4	0.033**
With a dealer (drug–dealer)	5.1	28.6	0.046**
With the spouse	1.6	5	0.009*

ε^2 – an index of statistical correlation between a nominal variable (partner types) and a metric variable (group size). If ε^2 is close to "1" and the F–statistics value is high, this is indicative of an existing correlation: there are statistically significant differences in the averages among the groups (partner types).

The analysis has shown that in fact those IDUs who reported having used drugs together with little–known people indicated a larger number of partners in joint injection practice during the past 30 days. This means that joint injections with little–known individuals involve larger groups, compared to joint practice with well–familiar partners in injection; or alternatively, that IDUs who have no close partner in injection practice tend to meet more frequently with various categories of little–known partners. The particularly high correlation coefficient relating to the parameter "With a little–known person who was not a sexual partner of yours" is suggestive of the fact that groups consisting of IDUs who hardly know each other are larger than any other groups.

The analysis also showed that joint injection sessions involving a larger number of partners are conducted by those who used paid sex services during the past 90 days: 4.1 partners on the average, while for those who contacted casual sexual partners the respective figure was 2.8. Marital status has a certain, albeit small, impact on the number of partners with whom joint injections were practiced, the average number being 2.6 injection partners among single respondents versus 1.95 among married ones. Gender, age, and education have no conspicuous impact on the number of injection partners.

Respondents were also asked about the frequency of using shared utensils for preparing a drug. Below (Table 4.2.3.6) we present the joint distribution of two variables – use of shared syringes and utensils.

Table 4.2.3.6. Frequency of sharing utensils and sharing equipment during the past month, percentages

	Always	In more than half of the cases	In about half of the cases	In less than half of the cases	Never	Don't know
Needle, syringe	1.8	3.6	4.8	8.4	80.4	1.0
Tableware	30.1	8.0	9.1	9.9	41.5	1.4

It is easy to see from the distribution that, while most of the IDUs use individual equipment, twice as few respondents also never take the drug out of a shared utensil. 30 % of the IDUs regularly practice taking out of the utensil in which it was prepared during a joint injection session in which the other participants do the same.

Besides the index of using sterilized equipment, a related index is used: "Percentage of IDUs who shifted to a lower HIV risk behavior." In the 2008 survey this index is 48.5 %, which is almost twice as low as the first one. Below we present the comparative distribution of the two indices over demographic groups.

9 The question was formulated as follows: "Indicate an approximate number of injection drug users with whom you shared a syringe for injections during the past 30 days."

Table 4.2.3.7. National indices of safe behavior when using drugs: use of sterilized equipment during their most recent injection (1) and use of sterilized equipment during their most recent injection and a condom during their most recent sexual intercourse (2), percentages

		(1)	(2)
Gender	Male	85.1	49.7
	Female	80.2	45.5
Age	16–19	90.2	64.9
	20–24	89.4	54.3
	25–34	81.9	48.4
	35+	82.6	43.8
Length of using drugs	Under 1 year	91.5	51.7
	1–3	84.2	49.6
	4–10	84.3	49.4
	10+ years	81.3	45.5
All IDUs		83.8	48.5

The rate of safe behavior among the women is a bit lower than among the men. The second index falls sharply with age; this can be attributed to the fact that the group of senior IDUs has a higher share of married individuals who relatively rarely use a condom when having sex with their spouse. The index tends to go down as the length of drug use increases, but the age–induced difference is not quite considerable.

In the cross–section of oblast centers, Kherson and Cherkasy are noted for the highest rates of safe behavior (54.9 and 49.3 %, respectively), while the lowest rates are observed in Kirovohrad (16.3 %), Kharkiv (26.3 %), and Dnipropetrovsk (30.8 %).

We would also like to note that the obtained National Index "Percentage of IDUs who shifted to a lower HIV risk behavior (those using sterilized injecting materials and condoms)" is just 1.5 % lower than the forecasted 50 %. [10]

10 Universal Access Target Settings: Ukraine.

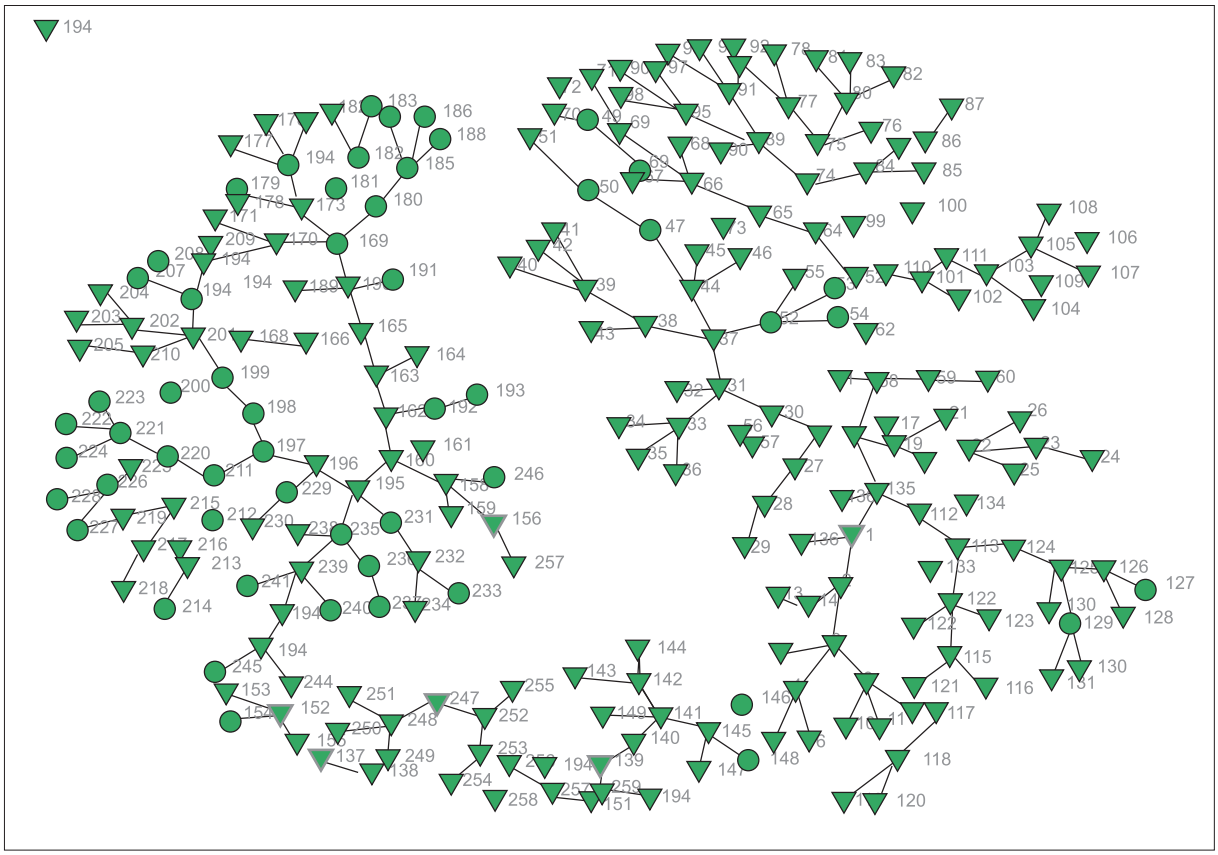
4.3. HIV Infection Level and HIV Risk Factors

4.3.1. Percentage of HIV–infected IDUs, Based on the Related Research Results

In the related IDU behavior monitoring research, the main parameter is the percentage of respondents whose HIV positive status was confirmed on the basis of analysis. In the 2008 research, 99.5 % (3,694 out of 3,711) of the interviewees were tested for HIV; 34.3 % of the unweighted sample were found to be HIV positive. Weighing the sample in relation to age reduces the HIV incidence value to 32.8 %; weighing it in relation to HIV incidence brings the value down to 32.1 %. In the below text, we present data weighted in relation to HIV incidence.

HIV incidence varies immensely among the cities of Ukraine: from 80 % in Mykolaiv to 8 % in Luhansk. The high incidence and high awareness among the Mykolaiv IDUs might indicate that the IDU network there is rather closely rallied around NGOs which are probably addressed by IDUs who have already contracted HIV, or that the coverage of IDUs in that city is really considerable and reflects the real picture of the epidemic. There, all 6 primary respondents were HIV positive, yet one of them was unaware of being infected and another one decided not to inform the researchers of his true status; in Simferopol (65.5 % of HIV positive persons) three IDUs were infected and one was not (yet that person's chain included just 6 respondents). Below we present an illustration of the Mykolaiv network (Fig. 4.3.1.1) which shows that IDU network No. 1 does indeed consist almost exclusively of HIV positive IDUs, yet the network of recruiter No. 156 (the one who did not reveal the result of previous personal testing) also includes uninfected respondents; in their turn, these recruited infected ones in subsequent waves.

Fig. 4.3.1.1. The recruiting network in Mykolaiv; red color indicates primary respondents; triangles stand for anyone with a positive HIV status in the related research; and circles, for HIV negative individuals.



The homophily value in relation to the characteristic of HIV incidence in Mykolaiv was 0.441; the homophily value in relation to this characteristic in Simferopol was 0.168, which is much lower than in Kyiv (0.273), where the share of respondents found to be HIV positive was 30.8 %, and in Sumy, where the homophily value was 0.192 with 9.3 % of HIV positive tests. That is, it is impossible to

claim that there is some pattern of relationship between IDUs' HIV status and the percentage of HIV–infected respondents.

The values observed in other cities of the Southern region, Odesa and Kherson, are two–three times lower than in Mykolaiv and Kherson. As to the rest of the cities there is one that stands out for a relatively high level of HIV incidence; it is Dnipropetrovsk: 40 %.

It should be noted that Luhansk has a very low level of safe behavior during injection sessions and a low level of infection, whereas in Sumy low HIV incidence goes in parallel with a relatively high level of behavioral safety.

The data show that the percentage of HIV positive IDUs goes up sharply with age, the threshold values being 19 and 24 years of age; subsequently, the percentage no longer increases so sharply. The HIV incidence rate among the female IDUs was by 10.6 % higher than among the men. The likelihood of contracting HIV somewhat decreases at higher education levels.

Table 4.3.1.1. Share of HIV positive IDUs in different demographic groups, percentages

Gender	Male	29.1
	Female	39.7
Age	16–19	3.8
	20–24	16.0
	25–34	35.4
	35+	38.8
Education	Primary	33.2
	Secondary	32.8
	Higher	28.1

In the separate group of IDUs using shared injection equipment (557 persons) the gap in HIV incidence between the women and the men is as high as 23 %: more than half of the female IDUs in this category are infected. However, to the maximum extent HIV incidence correlates with the drug using duration: as the length of the addiction period increases from 1 to 10 years the likelihood of contracting HIV goes up 5 times. The level of sexual riskiness is also somewhat related to HIV incidence: the share of HIV positive individuals among IDUs paying for sex services is 1.5 times higher than the respective share among those who received no sex services for pay. Also somewhat higher than average is the rate of HIV incidence among those who provided sex services for pay. Yet HIV incidence among those who had casual sex partners during the past 3 months was below the population's average.

Table 4.3.1.2. Share of HIV positive IDUs in different risk behavior groups, percentages

Sharing equipment (N=557)	Male	33.5
	Female	56.7
Length of using drugs (N=3,711)	Under 1 year	11.4
	1–3	16.4
	4–10	31.6
	10+ years	50.3
Having sexual partners during the past 3 months (N=3,166)	Regular	31.8
	Casual	25.4
	Commercial (making payment for sex)	44.3
	Commercial (receiving payment for sex)	34.3

Subsequent analysis of risky behavior showed that such factors as frequency of injection equipment sterilization, number of sexual partners and of injection partners, frequencies of injections and of sexual contacts, marital status, or level of awareness of HIV transmission modes either do not impact the rate of HIV incidence or influence it in an unforeseen way: safer behavior correlates with higher HIV incidence. One can conjecture that the situation is the way it is because the sample includes respondents who knew about their being HIV positive before the start of the survey and so their more cautious behavior in the aftermath of contracting the virus may not be regarded as an infection risk factor. After removing that group (586 persons) from the analysis, no correlation was observed between the listed types of conduct and HIV incidence. This might be accounted for by the fact that safer behavior is related to two powerful determinants of HIV infection, drug usage duration and gender. In order to test this hypothesis and reveal the differentiated effect of a number of factors on getting infected with HIV, all significant factors contributing to infection were combined in the analysis into a single model.

4.3.2. Logistical Regression Results

The logistical regression method is based on calculation, for a number of independent variables, or predictors, of the probability that some respondents will be assigned to one of two categories. That probability is calculated only in comparison with a certain group whose values are taken as points of reference. Such groups are called referential; to them we assign one group from each variable providing for more than one category of answers. For variables providing for only one category of meaningful answer (for example gender or having sexual contacts during the past year), the referential group is that part of the population which carries no particular meaning and has the "0" value. For example women are the referential group for men; individuals who did not have sex during the past year, for those who had sex, etc. Logistical regression coefficients in our model are estimates of the chance that we will find representatives of a certain group (men) among those who are HIV positive according to our related research data. An auxiliary estimate of the model's quality is a parameter known as "pseudo–R2," which shows the percentage of variance accounted for by our package of independent variables (predictors). That parameter, however, is a relative one; a more important parameter is model significance: all of the below models are statistically significant.

The specificity of interpreting the results of a logistical regression requires that all variables, including metric ones, be coded as binomial (i.e. having two values, for example, "1" and "0"). And so, below we present logistical regression models in which the dependent variable is data on the result of testing for HIV: "1," positive; "0," negative.

In our research we use logistical models in order to test hypotheses about factors contributing to infection which we have formed in the Methodological Introduction, namely:

- The likelihood of contracting HIV depends on dangerous practices: use of unsterilized equipment, unprotected sex.
- The likelihood of contracting HIV depends on the duration and frequency of the following dangerous practices: length of the period of administering injection drugs, frequency of using unsterilized equipment, number of partners in unprotected sex and in drug injections, and frequency of dangerous sexual contacts.
- The share of HIV positive individuals may be higher among women, in view of a number of physiological and social factors.
- Combining drugs with alcohol is conducive to contracting HIV.
- Students and pupils may have a higher share of HIV positive individuals, in view of the likely high sociability of this group (living in hostels).

We already used correlation tables (crosstabs) to test these hypotheses. Contrary to that type of analysis, a logistical regression reveals the impact of each predictor with regard to the mutual impact of all of the independent variables. Thus, a visible relationship between e.g. frequency of injections and HIV incidence can result from the impact of the overall length of using injection drugs, which positively correlates with injection frequency. Accordingly, we obtain coefficients corrected for that correlation. The coefficients presented in Table 4.3.2.1., so–called "Exp (B)," are above "1"

when indicating that the chance of representatives of a certain category to be included in the group of HIV positive persons is higher compared to the referential group; a coefficient below "1" indicates a lower chance.

Inherent in logistical regressions, just like in all other regression models, is a certain limitation, so–called multicolinearity: independent variables (predictors) must not be included in an equation when the pair (Pearson) correlation between them is 0.5 or higher. It is for this reason that the below models do not include the variables "age" and "age of starting injections": their correlation with the duration of using narcotic substances is rather high. The duration is an important indicator of the risk of contracting HIV; therefore it is included in the models.

Below we present a number of logistical models differing in the population selected to serve as the basis for the modeling. The first model ("general") takes account of all of the respondents who underwent blood testing for HIV and answered the question about the general risk factors: frequency of injections, use of unsterilized equipment and utensils, consumption of alcohol, and sexual experience. The second ("reduced"), third ("sexual mode") and fourth ("casual relationships") models limit the population under study to those respondents who were found to be HIV positive during the research plus those who were found to be HIV negative. The underlying logic is that the rest of the respondents were already aware of being HIV positive and so they could change their conduct to a safer one after learning of the fact. Therefore, the use of condoms cannot be regarded as a factor reducing the respondent's risk of contracting HIV.

And so, the second model differs from the first one only in sample size, not in the set of variables (predictors). The third model is additionally limited to respondents who had sex during the past year. It was instrumental in testing the impact of a number of sexual practice characteristics – use of a condom, number of sexual partners, type of sexual contacts – on the likelihood of contracting HIV. The fourth model was additionally limited to those respondents who during the past three months had sex with casual partners; this made it possible to test the impact of condom usage frequency, number of partners and frequency of contacts in the group of those practicing unsafe sex. Groups of IDUs who practice injections using shared equipment or those who practice commercial sex proved to be too small for obtaining a statistically significant model of impact of such variables as equipment sterilization frequency, use of a condom or frequency of contacts. Consequently, some hypotheses can be tested on smaller groups only, which sometimes results in decreased coefficients.

Table 4.3.2.1. Predictors of the likelihood of contracting HIV, logistical regression coefficients (exp(B))

	Model I (general) (N=3,552)	Model II (reduced) (N=2,977)	Model III (sexual mode) (N=2,546)	Model IV (casual relationships) (N=800)
Length of using injection drugs				
1. Under 1 year	Referential group			
2. 1–3 years	1.53	1.93**	1.61	1.3
3. 3 years and 3 months – 10 years	3.64***	3.76***	3.13***	3.14**
4. 10+ years	8.05***	5.80***	4.56***	3.97**
Gender (men, "1"; women, "0")	0.48***	0.50***	0.46***	0.43***
Education level				
1. Primary (9 years or less)	1.19*	1.17	1.18	1.98***
2. Secondary and incomplete higher	Referential group			
3. Complete higher	0.87	0.87	0.93	1.15
Occupation:				
Students and pupils, "1"; all others, "0"	0.31***	0.36**	0.30***	0.71
Index of awareness of HIV transmission modes				
Correct answers, "1"; incorrect, "0"	1.25***	0.97	1.03	1.41*
Consuming alcohol with drugs during the past month				
Consumed, "1"; did not consume, "0"	1.17	1.32*	1.48**	1.83**

Frequency of using drugs during the past month, assessed on a categorized scale				
1–3 times a month	1.91***	1.67***	1.51**	1.13
1–3 times a week	1.29**	1.31	1.00	0.72
4–7 times a week	1.16	1.01	0.91	0.74
Several times a day	Referential group			
Sharing needles or syringes during the past month, assessed on a categorized scale				
Always	1.12	0.41*	0.42*	1.68
Sometimes (in 50 % of the cases, somewhat less or more than 50 %)	1.22**	1.10	1.10	1.63*
Never	Referential group			
Sharing utensils for injections during the past month, assessed on a categorized scale				
Always	1.29***	1.31**	1.47***	1.60*
Sometimes (in 50 % of the cases, somewhat less or more than 50 %)	1.10	1.28**	1.38**	1.37
Never	Referential group			
Have you had sex in the past year?				
"Yes," 1; "no," "0"	0.71***	1.06	---	---
Types of sexual partners: commercial				
Those paying to commercial partners	---	---	2.12***	---
Those receiving money for sex	---	---	0.79	---
Number of sexual partners of all types during the past 3 months				
One sexual partner	Referential group			
2–3 partners	---	---	1.00	---
More than 3 partners	---	---	0.97	---
Using a condom during the most recent sexual intercourse with a partner of any type				
"Yes," 1; "no," "0"	---	---	1.97***	---
Using a condom during the most recent sexual intercourse with a casual partner				
"Yes," 1; "no," "0"	---	---	---	1.7
Frequency of using a condom when having sex with a casual partner during the past year				
Always	---	---	---	1.92**
Sometimes (in 50 % of the cases, somewhat less or more than 50 %)	Referential group			
Never	---	---	---	1.02
Number of casual partners in the past 3 months				
1 partner	Referential group			
2–3 partners	---	---	---	0.80
More than 3 partners	---	---	---	1.00
Monthly number of contacts with casual partners				
Once a month	Referential group			
2–7 times a month	---	---	---	1.38
More than 7 times a month	---	---	---	0.85
Intercept	–1.74	–2.344	–2.443	–3.177
Pseudo–R2 : Cox and Snell	0.113	0.057	0.077	0.098
Pseudo–R2 : Nagelkerke	0.158	0.089	0.120	0.161

Level of significance: *: < 0.1, **: < 0.05, ***: < 0.01.

Thus, all four models reveal an extremely strong impact of drug usage duration on the likelihood of contracting HIV: the factor of having been addicted for more than three years is the most powerful predictor of HIV infection. According to the first model based estimate, having an addiction period of

3–10 years increases the likelihood of infection 3.6 times compared to those whose usage period is under one year, while having an addiction period of 10 years results in an 8–fold increase of that likelihood. In models II–IV, however, the strength of this impact is decreased, although it continues to be quite considerable. The decrease in the coefficient in model II is due to the fact that HIV–infected persons who learned about being HIV positive prior to the survey were excluded from the sample, while half of that population was made up of IDUs with a 10–year addiction period. Education impact is revealed in the first and especially fourth models: staying at primary education level increases the likelihood of contracting HIV nearly twice compared to IDUs with secondary education. For some reasons this impact is pronounced in the subsample of respondents with risky sexual behavior.

The hypothesis about the higher likelihood of infection among students not merely failed to be confirmed; the opposite thesis held true: the likelihood of finding a student among HIV–infected persons is 30 % lower than compared to other categories of IDUs, employed as well as unemployed. Apparently, attaining an education above 9 years of secondary school has a restraining influence on HIV incidence. Yet the impact of awareness of HIV transmission modes on the HIV infection level is not obvious. It is significant in the first model only; remarkably, correct answers to the national indicator questions increase the likelihood of contracting the virus. This may be related to the fact that IDUs who have already been infected perceive, due to contacts with NGOs and medical institutions, how dangerous the different transmission modes are. Indeed, when respondents "pre–infected" with HIV were excluded from the sample (model II), the coefficient decreased to an insignificant level.

As regards sexual life in general, there is no self–evident interpretation of the impact of its specificity. Having sex during the past year actually even decreases the likelihood of contracting the virus. Having partners who provided sex services for pay (primarily among male IDUs) increases the likelihood of infection twice, compared to the group of respondents who did not practice such behavior. Yet having a partner who paid for sex (primarily among female IDUs) has no impact on infection probability.

The hypothesis about the provoking effect of combining alcohol with drugs on the infection level holds true most conspicuously in IDU groups with experience of sexual contacts and in particular of unsafe sex – in this model combining alcohol with drugs increases the likelihood of contracting HIV 1.8 times. One can speak of the formation of a certain style of conduct whereby risk factors mutually enhance one another – alcohol, drugs and uncontrolled sexual behavior.

Sharing utensils for preparing a drug is an essential predictor of infection: IDUs always using shared utensils during the past month are 29–60 % more likely to be HIV positive than those who never used it. In samples from which individuals previously known to be HIV positive were removed the likelihood of being infected is 28–38 % higher also for those who sometimes used sterilized and at other times shared utensils, compared to those who on no occasion used shared utensils.

Interpreting the remaining significant coefficients appears to be problematic: as it turned out, the impact of injection frequency, use of equipment and of condoms with a casual partner is contrary to what was expected. This means that IDUs who practice injections 1–3 times a month, use sterilized equipment at least on some occasions and used a condom during their most recent intercourse with a partner of any type, in particular with a casual partner, have a higher chance of contracting HIV than those who practice injections several times a day, always use shared equipment and did not use a condom during their most recent sexual intercourse. There are two possible ways of interpreting such a situation. The first one consists in insincerity of answers provided by respondents practicing particularly dangerous behavior which led them to contracting HIV. This assumption implies, however, that uninfected IDUs practicing risky behavior also had to be insincere; there would be no correlation in that case. The second assumption consists in that infected respondents who were unaware of being HIV positive before the survey had been leading a very dangerous lifestyle in the not too distant past, but at some point (a year ago or more) switched to a different mode of living. It should be noted that the reason for such a change in behavior cannot be closely related to addiction period length, because no relationship is observed between dangerous behavior and drug usage period, while the frequency of injections even increases with time. Influenced by aggravating health problems or by prevention programs, they indeed switched to a safer lifestyle recently, but it turned out to be too late: they were already HIV–positive.

As regards the number of sexual partners, in particular casual ones, and condom usage, we should recall the difference in behavior between opiate addicts and stimulants addicts. In spite of the fact that the latter have more partners in sex and in injections, HIV incidence among them is lower. And so, lack of impact of the number of partners and the unexpected direction of the impact of condom usage is probably die to the presence of stimulants addicts in the sample.

The differences between male and female IDUs in HIV incidence level as well as in many other behavioral characteristics lead one to suggest that the infection factors might have gender–based differences. Below (Table. 4.3.2.2.) we present models I and III involving a gender–based breakdown.

Table 4.3.2.2. Predictors of the likelihood of contracting HIV, logistical regression coefficients (exp(B), general sample, men and women (model I)

	Model I (general) (N=3,552)	Model I, men (N=2,551)	Model I, women (N=1,001)
Length of using injection drugs			
1. Under 1 year	Referential group		
2. 1–3 years	1.53	3.10**	1.01
3. 3 years and 3 months – 10 years	3.64***	8.31***	1.93**
4. 10+ years	8.05***	18.55***	3.66***
Gender (men, "1"; women, "0")	0.48***	---	---
Education level			
1. Primary (9 years or less)	1.19*	1.33**	0.87
2. Secondary and incomplete higher	Referential group		
3. Complete higher	0.87	0.94	0.69*
Occupation:			
Students and pupils, "1"; all others, "0"	0.31***	0.20**	0.43*
Index of awareness of HIV transmission modes			
Correct answers, "1"; incorrect, "0"	1.25***	1.35**	1.08
Consuming alcohol with drugs during the past month			
Consumed, "1"; did not consume, "0"	1.17	1.23	0.88
Frequency of using drugs during the past month, assessed on a categorized scale			
1–3 times a month	1.91***	2.41***	1.05
1–3 times a week	1.29**	1.53***	0.78
4–7 times a week	1.16	1.43***	0.59**
Several times a day	Referential group		
Sharing needles or syringes during the past month, assessed on a categorized scale			
Always	1.12	1.02	0.99
Sometimes (in 50 % of the cases, somewhat less or more than 50 %)	1.22**	1.12	1.57**
Never	Referential group		
Sharing utensils for injections during the past month, assessed on a categorized scale			
Always	1.29***	1.17	1.68***
Sometimes (in 50 % of the cases, somewhat less or more than 50 %)	1.10	1.08	1.07
Never	Referential group		
Have you had sex in the past year?			
"Yes," 1; "no," "0"	0.71***	0.72**	0.68*
Intercept	–1.74	–3.442	–0.575
Pseudo–R2: Cox and Snell	0.113	0.115	0.118
Pseudo–R2: Nagelkerke	0.158	0.163	0.159

Level of significance: *: < 0.1, **: < 005, ***: < 0.01.

Table 4.3.2.2. shows that addiction period length has a much higher impact on HIV incidence among male IDUs than among female IDUs: in the group of male IDUs addicted to drugs for more than 10

years the likelihood of being HIV positive is as much as 18.5 times higher than in the under one year addiction period group. It should be further noted that the share of infected persons in the group of male IDUs with the shortest addiction period is 5 % and in the similar female group, 17.5 %. In the male group with the longest addiction period, the share of HIV positive persons is 26 %; in the female group, 44 %. This means that female IDUs tend to contract HIV much faster compared to male IDUs, so for them addiction period length is much less important, because a much higher share of them get infected during the first years of practicing injection.

Among the other factors differentiating the model for men from the model for women, worthy of particular attention is education: terminating education at primary level is conducive to contracting HIV among male IDUs, whereas higher education attainment tends to prevent infection among female IDUs. The risk of contracting HIV for male IDUs practicing injections 1–3 times a month is 2.4 times higher than for males administering injection drugs several times a day. A more thorough analysis (referential group substitution) showed that statistically significant differences actually exist between these two groups only. This may mean that the group of IDUs practicing rather rare injections includes respondents with a long addiction period who can keep their drug consumption frequency steady, without increasing drug consumption. Yet for them the risk of contracting HIV is still high, due to injection practice length.

For female IDUs, significant factors in contracting HIV are irregular use of sterilized equipment (this increases the infection risk by 57 %) and regular use of shared utensils (increases the infection risk by 68 %); for male IDUs, these coefficients are insignificant.

Below we present the gender-based breakdown for model III whereby respondents who were already aware of being HIV positive at the start of the survey as well as those who did not have sex during the past year were excluded from the sample. Therefore, if IDUs did change their behavior because of learning about being HIV positive prior to the start of this research, then this will be clear from the differences between data in the two tables, 4.3.2.2 and 4.3.2.3.

Table 4.3.2.3. Predictors of the likelihood of contracting HIV, logistical regression coefficients (exp(B), respondents who had sexual contacts, disregarding those who was already aware of being HIV positive, men and women (model III)

	Model III (sexual mode) (N=2,546)	Model III, men, (N=1,849)	Model III, women (N=697)
Length of using injection drugs			
1. Under 1 year	Referential group		
2. 1–3 years	1.61	2.57*	1.00
3. 3 years and 3 months – 10 years	3.13***	5.15***	1.85
4. 10+ years	4.56***	6.89***	3.44**
Gender (men, "1"; women, "0")	0.46***	---	---
Education level			
1. Primary (9 years or less)	1.18	1.25	1.05
2. Secondary and incomplete higher	Referential group		
3. Complete higher	0.93	1.10	0.64*
Occupation:			
Students and pupils, "1"; all others, "0"	0.30***	0.23**	0.46
Index of awareness of HIV transmission modes			
Correct answers, "1"; incorrect, "0"	1.03	1.04	1.01
Consuming alcohol with drugs during the past month			
Consumed, "1"; did not consume, "0"	1.48**	1.39*	0.51
Frequency of using drugs during the past month, assessed on a categorized scale			
1–3 times a month	1.51**	2.22***	0.59
1–3 times a week	1.00	1.15	0.78

4–7 times a week	0.91	1.18	0.46***
Several times a day	Referential group		
Sharing needles or syringes during the past month, assessed on a categorized scale			
Always	0.42*	0.71	0.06**
Sometimes (in 50 % of the cases, somewhat less or more than 50 %)	1.10	1.01	1.25
Never	Referential group		
Sharing utensils for injections during the past month, assessed on a categorized scale			
Always	1.47***	1.43**	1.77**
Sometimes (in 50 % of the cases, somewhat less or more than 50 %)	1.38**	1.45**	1.23
Never	Referential group		
Types of sexual partners: commercial			
Those paying to commercial partners	2.12***	2.48***	0.50
Those receiving money for sex	0.79	1.59	0.56
Number of sexual partners of all types during the past 3 months			
One sexual partner	Referential group		
2–3 partners	1.00	0.89	0.53*
More than 3 partners	0.97	0.68**	0.95
Using a condom during the most recent sexual intercourse with a partner of any type			
"Yes," 1; "no," "0"	1.97***	1.89***	2.40***
Intercept	–2.443	–3.861	–1.604
Pseudo–R2 : Cox and Snell	0.077	0.064	0.120
Pseudo–R2 : Nagelkerke	0.120	0.105	0.173

Level of significance: *: < 0.1, **: < 0.05, ***:< 0.01.

Restriction of the basis for the model results in somewhat decreased coefficients for addiction period length and for awareness of HIV transmission modes; the reasons for this phenomenon were discussed above. The gender–based breakdown yielded approximately the same results as did the previous table. Yet an important difference was revealed: in model III the factor of utensils sharing became statistically significant for men: it increases the likelihood of contracting HIV by almost one and a half times, compared to those never using drugs from a shared utensil, whereas for women it was already significant. In fact utensils sharing emerges as a risk factor for male as well as female IDUs, while this was not so in model I, because it included men who were already aware of being HIV positive. This means that after learning about having contracted HIV men changed their behavior, reducing the rate of use of shared utensils. Among the women, no such change is observed: those who are HIV positive and who are aware of this most likely continue using shared utensils. This is confirmed by the relevant distribution of data: among those male IDUs who were tested and who learned about being HIV positive, the incidence of regular use of shared utensils is 29 %, compared to 33 % among those who learned about being HIV negative, whereas among women the respective percentages are 44 % and 35 %. This might be due to women's passive role in the process of drug preparation: probably because women are not involved in drug preparation, they obtain their share of the syringe which has already been filled. It is also possible, however, that some gender–placed specifics of responding to the shocking news of being HIV positive come into play.

In model III, new sexual behavior related variables emerge which show significant coefficients. In particular having paid–for sexual contacts increases the risk of contracting the virus 2.5 times for male IDUs. No similar impact is observed, however, for female IDUs providing sex services for pay. Quite unexpected are the values of the coefficients for condom use during the most recent sexual intercourse and for the number of partners: having a lot of female partners decreases the risk of contracting HIV for male IDUs, whereas the use of a condom increases the risk of infection for both genders. As regards condom usage one should note that it is also used to avoid pregnancy, not just to prevent HIV or STIs, so this is the reason underlying such a correlation. This might also mean that condoms are used by those IDUs who practice the most dangerous behavior or who consider their partners' behavior to be dangerous and hence use condoms. Yet most likely it is not through sex that they contract the virus.

As regards the impact of the number of partners we emphasize again the complex interrelationship among different risk factors. A likely explanation consists in a decrease in the number of sexual partners due to exhaustion of physical and material resources of long-addicted drug abusers. This might account for the lower risk faced by male IDUs who had more than three female sexual partners and for female IDUs who had 2–3 partners during the past 3 months, compared to those who had only one partner.

CONCLUSIONS FOR SECTIONS III AND IV.

- IDUs' sexual relationships are characterized by a rather high rate of contacts with their regular partners. In particular this accounts for the relatively small share of respondents using a condom during the most recent sexual intercourse. Quite often these partners also act as partners in injections. But 22 % of those having regular partners also had sexual intercourse with casual partners; furthermore, a small share received or provided paid sex services.

- Those IDUs who contacted casual or commercial partners consumed alcohol in combination with drugs relatively more frequently than others did. In that group, individuals who did not use a condom during their most recent sexual intercourse quite often attributed this to the fact that they were under the influence of drugs.

- An analysis in the cross–section of cities shows that condoms are most often used in oblast centers with prevalence of senior, married, and HIV positive IDUs. In those oblast centers, sterilized injections are less frequently practiced. Condoms are less often used in cities with prevalence of male, junior, unmarried, and less educated IDU respondents. The levels of sterilized equipment usage and of HIV incidence in such oblasts display some variance.

- Using shared utensils for preparing injections was much more frequently reported by IDUs than was needle or syringe sharing.

- About one third of the IDUs proved to be HIV positive. Length of the injection practice period is the most essential factor in contracting HIV, regardless of degree of unsafety of sexual or injection practices. Other important risk factors are being a woman (female IDUs contract HIV much more frequently and earlier than male IDUs do); using shared utensils; and combining alcoholic beverages with drugs. For women, the significant infection factors are irregular use of sterilized equipment and regular use of shared utensils; for men, length of using drugs.

- Male IDUs start using shared utensils less frequently after learning about being HIV positive. No such change in behavior is observed among the female IDUs: those women who are HIV positive and who know about it continue to use shared utensils.

- Although stimulants addicts have larger numbers of sexual and injection partners, among them the rate of HIV incidence is lower.

- The impact of awareness of HIV transmission modes, use of condoms and of sterilized syringes, number of sexual partners, and injection frequency on HIV incidence defies unambiguous interpretation. Oblast centers cross–section data throw some light on these relationships. In just a few oblast centers HIV incidence matches the level of risky practices. Thus, in Dnipropetrovsk a relatively high infection rate matches relatively low shares of IDUs using sterilized equipment and of those who used condoms, whereas in Luhansk a low infection rate goes in parallel with a high rate of using sterilized equipment and a rather high level of condom usage. In the rest of the oblasts, these parameters hardly match one another. The greatest discrepancies were observed in Mykolaiv, a city with the highest level of awareness of HIV transmission modes and the highest rate of HIV incidence; at the same time, the local level of using sterilized equipment is low; of using condoms, high. A similar situation is also observed in Poltava. A low rate of HIV incidence is recorded in Kirovohrad, despite prevalence of risky practices, and in Sumy, despite relatively popular use of shared equipment.

SECTIONS V

USE OF HIV PREVENTION SERVICES

5.1. Use of Medical Institutions' Services and Prevention Programs

Below we present data on the IDUs' frequency of seeking medical assistance.

Table 5.1.1. Seeking medical services at medical institutions during the past three months *(counseling, examinations, laboratory tests, therapy, etc).*

	Have you applied to the following institutions? (N=3,711)			How many times? (Among those whose answer was "Yes") (N=2,497)		
	Yes	No	No answer	Once	2–3 times	More than 3 times
Policlinic, paramedical station or outpatient clinic/preventive medical institution	44.6	55.3	0.1	60.8	31.4	7.8
Ambulance station	10.7	89.1	0.1	64.4	31.5	4.1
Specialized hospital (indicate specialization)	7.4	92.3	0.2	57.3	25.5	17.2
Tuberculosis dispensary	8.8	91.1	0.2	69.0	20.5	10.5
Dermatovenerological dispensary	3.5	96.2	0.3	79.6	18.9	1.5
Psychiatric and narcological dispensary	10.6	89.3	0.2	64.8	28.2	7.0
Other dispensary	0.7	98.2	1.1	51.0	26.0	23.0
AIDS center	17.0	83.0	0.0	52.8	28.9	18.3
Women's health clinic	7.2	92.4	0.5	67.5	25.0	7.5
Anonymous testing center /CS "Dovira"	4.0	95.9	0.0	55.6	33.8	10.6
Maternity hospital or department	0.2	99.5	0.3	87	13	0.0
Private hospital	1.0	99.0	0.0	82.3	16.4	1.2
Private policlinic	1.0	98.8	0.1	87.5	10.6	1.8
Private laboratory	1.7	98.3	0.0	73.3	26.7	0.0
Nongovernmental organizations	1.7	98.2	0.1	58.6	23.7	17.7
An acquaintance or a "recommended" medic	2.7	97.2	0.1	75.6	21.3	3.1
Other	0.5	0.0	99.5	53.7	46.3	0.0
Percentage of those who sought assistance of any kind				67.3		
Percentage of those who never sought assistance				32.7		

To start with, it should be noted that IDUs most frequently address policlinics and paramedical stations (44.6 %). The rates of addressing other institutions for the purpose of receiving medical assistance typically do not exceed 10 %. One exception is AIDS centers, which are addressed by 17 % of the interviewees. Also worthy of note among the listed institutions are ambulance stations and psychiatric or narcological dispensaries. These institutions are addressed, respectively, by 10.7 %

and 10.6 % of the surveyed IDUs. It should be additionally noted that the presented percentage distributions result from separate calculations for each institution type on the basis of 100 %.

Another aspect of applying to the listed institutions for medical services is the frequency of such applications. In most cases, injection drug users addressed these institutions once during the past three months. The rate of one-time application was highest for private policlinics (82.3 %) and hospitals (87.5 %). This is what was to be expected, because it is quite expensive to apply to these institutions (the cost of one visit may exceed 1,000 UAH). This is probably the reason why a mere 1 % of respondents address these institutions.

The institutions most often mentioned by the interviewed IDUs in their answers to the previous question (policlinic, AIDS center, ambulance station) were also visited just once during the past 3 months by a majority of the respondents. The respective shares are 60.8 %, 52.8 %, and 64.4 %. Speaking in general terms, the total number of a respondent's applications for medical assistance during the past three months rarely exceeds 3 times. In the main, the share of those addressing medical institutions more than three times does not exceed 10 % for any institution. Yet "other dispensaries," AIDS centers, and nongovernmental organizations were rather frequently addressed more than 3 times (23.0 %, 18.3 % and 17.7 %, respectively).

Summing up, one can say that the share of respondents seeking any kind of assistance during the past three months is 67.3 % of the entire sample. Account was taken of respondents who applied to any of the institutions in the list at least once during the past three months.

The above data can be supplemented with more detailed ones, relating to the frequency of respondents' applications for any king of medical assistance during the past 12 months.

Table 5.1.2. "How often did you apply for medical assistance of any kind during the past 12 months?", percentages

Once a year	28.9
2 times a year/once in half a year	18.2
3–4 times a year/once in a quarter	14.9
5–12 times a year /each month	6.9
Each week	0.4
Once every 2 weeks	0.5
2 times a week	0.3
Not a single time	29.9
	100

From these data one can see that a majority of the respondents either do not apply for medical assistance at all (29.9 %) or seek it no more than once in a year (28.9 %). As the number of applications increases, the numerical strength of the respective groups of respondents declines. Also quite interesting is the age structure of IDUs seeking medical assistance. While the share of those seeking medical assistance once annually is approximately the same in all age groups (about 29 %), the number of applications tends to increase with age. The percentage of those applying for medical assistance 3–4 times a year is: for respondents up to 24 years of age, 10.3 %; for those aged 25–34 years, 16.2 %; and for those aged 35+ years, 16.1 %. A similar trend is observed for the category of 5–12 applications annually. The respective shares are 3.4 %, 7.4 %, and 8.4 %.

Different approached are practiced in relation to payment for medical services. The shares of cases when respondents had to pay for medical assistance are illustrated in Table 5.1.3.

Table 5.1.3. "How often did you have to pay for medical services?", percentages

Didn't ever pay (paid in 0 % of the cases)	46.9
Paid now and then (in 25 % of the cases)	18.9
In half of the cases (in 50 % of the cases)	9.9
In most of the cases (in 75 % of the cases)	5.3
Always paid (in 100 % of the cases)	12.7
	100

These data show that nearly half (46.9 %) of the respondents never paid for the medical services they received. A rather substantial part of the interviewees (18.9 %) had to pay for medical assistance in certain situations. Also quite large is the number of respondents who regularly have to pay for medical services, their share is 12.7 %.

The data show that 34.4 % the IDUs were tested for sexually transmitted infections during the past 12 months. In this group of respondents, the rate of testing for STIs was higher among female IDUs (41.8 %) than among male IDUs (31.4 %). Most frequently tested were respondents aged 35+; their share is 38.5 %. Least often tested were respondents of junior age (under 19 years), their share being 16.7 %.

Table 5.1.4. Share of IDUs being tested for STIs during the past 12 months, percentages

Gender	Male	31.4
	Female	41.8
Age	16–19	16.7
	20–24	26.8
	25–34	35.5
	35+	38.4
HIV status	Were tested	65.3
	Were not tested/ Do not know the result	34.7
All IDUs		34.4

It is also interesting to examine the issue of testing for STIs in the light of testing for HIV. As one can see from the data obtained, 65.3 % of those tested for STIs were also tested for HIV.

The share of respondents not tested for STIs is 65.6 %. In that group, 30.5 % of the respondents were never tested for HIV or are unaware of the result of their test. Thus we can see that the general practice of testing for HIV is more widespread among IDUs tested for STIs. Some tests may have been made as part of testing for STIs.

An important result of implementing various prevention programs is the percentage of IDUs who know where they can be voluntarily tested for HIV. In the 2008 research this percentage is 87.3 %. The share of IDUs from this group who also obtained a free condom during the past 12 months makes up the National Index of coverage by prevention programs. In this research the National Index is 26.7 %.

Table 5.1.5.Index of coverage by prevention programs, percentages

Gender	Male	24.5
	Female	32.2
Age	16–19	14.4
	20–24	22.7
	25–34	30.5
	35+	25.2
All IDUs		26.7

It is obvious that women are better covered by preventive programs than men are – at least in terms of being informed where they can be tested for HIV and obtain condoms. The youngest group is the least covered one, its coverage index being twice as low as in the 25–34 years age group.

In the cross–section of oblast centers, a remarkable situation is observed: in most cases the sample share of IDUs covered by prevention programs is higher than the estimated share. For Dnipropetrovsk, Kirovohrad, Cherkasy, and Lviv the real share lies outside the confidence interval. In Dnipropetrovsk the estimated share is lower by 8 % than the sample share; in Kirovohrad, by 10 %; and in Cherkasy, by 16 %. The rather high homophily value in many cities suggests that a part of the IDU network in those cities rallies around harm reduction programs and hence is covered by prevention programs. This can be said of Odesa (0.338), Lutsk and Cherkasy (0.320 in each).

According to the RDS–based estimate, in the first place is Kherson (54 %), followed by Poltava (50 %) and Lutsk (48.5 %). Other cities, including Cherkasy, are far behind, with 16–35 %. In Lviv, Dnipropetrovsk, Sumy, Odesa, and Luhansk the coverage index is 4–8 %. As regards Dnipropetrovsk and Odesa in those two cities a small part of the sample was recruited through IDUs familiar with prevention programs, whereas in Lutsk and Cherkasy this part was much larger. By contrast, the negative homophily values in Sumy (–0.283) and Luhansk (–0.153) show that participants in prevention programs, who were few in number, recruited respondents not participating in the programs.

The next parameter indicating quality implementation of prevention programs is accessibility of pre– and post–test counseling at the testing sites. Below we present data received from respondents tested at least once in their life on whether or not they were given such counseling prior and after their most recent testing.

Table 5.1.6. "Did you receive pre–test counseling prior to your most recent testing (1) and post–test counseling after your most recent testing (2)?", percentages

	Yes	No	Hard to answer
(1)	79.2	17.1	3.1
(2)	73.5	22.9	3.6

As one can see from these data, the share of those who received pre–testing counseling is 79.2 %; post–testing counseling, 73.5 %. That is, we can see that in a vast majority of the cases medics do what they should do and provide at least informational and psychological support, as required by the instructions. It might perhaps be expedient to increase the share of recipients of post–testing counseling, because reporting and interpretation of the result are more important generally, as well as having psychological impact.

It should be noted that 13.6 % of the total number of the interviewees are registered at AIDS centers as persons requiring dispensary observation. According to the related 2008 research, the share of HIV positive IDUs is 32.8 %; of these, 39.2 % are registered at AIDS centers.

5.2. Seeking HIV Testing

Testing for HIV is included in the National Indices list and is important for assessing the risk of contracting HIV and for HIV/AIDS awareness. Overall, 56.5 % of the interviewees were tested for HIV at least once in their life; 57.7 % of them (N=2,098) were tested for HIV during the past 12 months. The National Index "Percentage of injection drug users seeking to be tested for HIV during the past 12 months and receiving the test result" is calculated in relation to the total number of the interviewees; it amounts to **29.4** %. The 2007 survey index was 29.3 %.

Injection drug users were most frequently tested in Simferopol (54 %), Donetsk and Mykolaiv (47 % in each), Kherson (43 %), and Khmelnytskyi (38 %). The rest of the oblasts are rather far behind: in none of them does the index exceed 31 %. In Lviv and Kharkiv the indices are very low: 2 % and 6 %, respectively; in Sumy and Odesa, rather low: 13 % and 16.5 %, respectively.

Table 5.2.1 National Index "Percentage IDUs seeking to be tested for HIV during the past 12 months and receiving the test result," percentages

Gender	Male	28.0
	Female	33.0
Age	16–19	16.5
	20–24	23.8
	25–34	31.3
	35+	31.2
Duration of addiction	Under 1 year	24.4
	1 to 5 years	23.2
	5 to 10 years	28.0
	10+ years	38.0
All IDUs		29.4

From the table one can see that the rate of testing for female IDUs is 5 % higher. The share of tested persons sharply increases with age.

Comparing data obtained in this research (29.4 %) with 2007 research data (29 %), we can say that there is no significant difference between these values of the index.

The largest share of injection drug users tested for HIV is observed among those who have been using drugs for more than 10 years (38.0 %). In view of their long period of drug abuse, they could also have been covered by many projects whereby they may have been tested for HIV. It should also be noted that there is no big difference between the rates of testing among those using drugs for less than one year and those addicted for 1–10 years.

Table 5.2.2. Relationship between being tested for HIV and seeking medical assistance, percentages (N=2,099)

	Sought medical assistance	Did not seek medical assistance
Were tested for HIV	75.9	24.1
Were not tested for HIV	43.8	56.2

The above table illustrates rather clearly that there is a direct relationship between being tested for HIV and seeking medical assistance. Also worthy of note is the higher share of IDUs tested for HIV among those who ever applied for medical assistance (75.9 %,), compared to 24.1 % among those who never did so.

Table 5.2.3. Distribution of answers to the question "Where can you buy/obtain a new (unused) syringe if necessary?", percentages

	Buy	Obtain for free
1. Pharmacy (pharmaceutical kiosk)	96	0.6
2. Other point of sale (kiosk, non-specialized shop))	8.4	0.4
3. Private hospital	7.9	0.2
4. Public hospital	8.7	1.7
5. Syringes exchange point	1.7	63.2
6. Drug-dealer	10.8	4.1
7. Friend	4.3	19.4
8. Family member/relative	0.9	4.1
9. Sexual partner	1.6	8.1
10. Other injection drug addict	3.2	10.1
11. Volunteers in special syringes exchange programs	0.6	11
12. In the street (hawker's stands, street vendors)	2.1	0.4
13. Other (where exactly)_____	0.3	1.4

As one can see from these data, a majority of injection drug users can buy a syringe primarily at pharmacies (96 %) or at the same time receive it for free at syringes exchange points (63.2 %). In the context of sale of syringes, except pharmacies respondents also address other institutions or persons: private hospitals (7.9 %), public hospitals (8.7 %)6 and drug-dealers (10.8 %). Respondents can also obtain free syringes from friends sympathizing with them (19.4) %; besides, quite considerable are the shares of other IDUs (10.1 %) and volunteers in special programs (11 %); one must not disregard sexual partners either (8.1 %).

As one can see from the above data, there are grounds for conjecturing that there is some kind of solidarity in the IDU environment, since syringes can be more frequently obtained from other IDUs than purchased (10.1 % versus 3.2 %). The same also applies to friends, who come in handy even more often that than other IDUs do (19.4 % versus 4.3 %).

Table 5.2.4. HIV status cross-distribution according to previous testing data as well as to the results of the related study, percentages

		HIV status according to the results of a related 2008 study	
		Positive	Negative
HIV status according to previous testing data	Positive	45.3	1.8
	Negative	15.7	34.1
Were not tested or refused to report their status		39.0	64.1
TOTAL		100	100

Table 5.2.4. presents some important information. Firstly, 15.7 % of the HIV positive IDUs reported being HIV negative. This might be indicative of recent cases of contracting HIV. Secondly, 39 % of the HIV positive interviewees were not tested in the past or were unaware of the testing result; this can serve as a starting point for assessing the rate of HIV incidence among the IDU population. Thirdly, 1.8 % of HIV negative interviewees (35 persons) reported being HIV positive. This might be interpreted as a consequence of an erroneous previous testing or of lack of post-testing counseling.

Presented below are some characteristics of those 15.7 % of HIV positive IDUs who during a different, earlier testing said they had been informed of a negative testing result; these are the so-called "fresh cases" of contracting HIV, which are instrumental in tracking the dynamics of infection factors. They are presented in comparison with those IDUs whose negative result was confirmed during the related research.

Table 5.2.5. HIV status cross–distribution according to previous testing data as well as to the results of a related study, percentages

	"Fresh cases" of contracting HIV (N=190)	Confirmed negative results (N=851)
Percentage of women	42.9	28.4
Percentage of those sharing injection equipment	20.5	11.8
Percentage of those always sharing utensils	45.3	30.8
Percentage of those receiving payment for sex during the past 3 months	8.2	4.5

And so, female IDUs account for a considerable majority of the "fresh cases" of infection. These cases are also distinguished by twice more frequent use of shared instruments and one and a half times more frequent sharing of utensils. They involve a two times higher share of providers of sex services for money, although in the absolute values the figure is very small. Yet there is no difference between these two groups in terms of injection frequency, number of sexual partners, or rate of condom use.

CONCLUSIONS FOR SECTION V

- The index of coverage of IDUs by prevention programs and the index of testing are two most variable parameters in the oblast centers, ranging from 2 % to 55 %. High indices can reflect a high factual level of coverage in the oblast, or alternatively, the specifics of network functioning (Lutsk).
- In the cross–section of oblast centers, the index of coverage does not match the level of awareness of HIV transmission modes or the rate of HIV incidence. Thus, in Dnipropetrovsk, Luhansk, and Mykolaiv the level of coverage does not conform to the level of knowledge, which is much higher than the coverage index. The level of knowledge, however, does not prevent Mykolaiv or Dnipropetrovsk from having a high rate of HIV incidence. In Luhansk and Sumy, lack of preventive coverage goes in parallel with low HIV incidence, whereas in Poltava a high coverage index is not an obstacle to a high rate of HIV incidence as well as of unsterilized equipment usage.
- A comparison of the results of previous tests with testing results in the related research is instrumental in assessing risk factors in the group of "fresh cases"; these factors are gender and use of shared injection equipment.

CONCLUSIONS

- The RDS technique was used to construct an IDU sample in which men and women were presented in a proportion conforming to data from previous studies, namely, 72 % to 28 %. This technique was also instrumental in reaching IDUs not rallying around NGOs, which fact is attested to by the value of the index of coverage by prevention programs. The level of homophily (inclination towards recruiting people similar to oneself) did not exceed 0.4 in relation to the prevention index or to any other parameter, which means that the researchers succeeded in obtaining a rather heterogeneous IDU sample.
- In this research, youngest and underage IDUs were rather scarcely represented. This can be accounted for by the fact that the group of underage IDUs may be rather isolated from networks of adult IDUs, because drug-using youngsters do not associate themselves with IDUs in view of occasional use of drugs. However, change of the IDU environment can be a more essential methodological problem, as younger generations of IDUs gradually substitute amphetamines for opiates, which entails great difficulties for network-based search for IDUs, inasmuch as using analeptics is unrelated to an urgent need for dealers or for acquaintanceships with other IDUs.
- The sample included large numbers of IDUs aged 35+ years as well as of IDUs with completed higher education and married IDUs. This can be accounted for by the specifics of the recruiting process as well as by changes in the drug users environment in Ukraine. Nevertheless, the research revealed a rather pronounced interregional difference: IDUs from the Eastern region are much younger than those from the Southern region.
- The level of awareness about HIV transmission modes is rather high: 49.6 %.
- 40 % of the IDUs had their first sexual experience before they were 15 years old.
- 76.2 % of the injection drug users having practiced sex during the past three months had sexual intercourse with their regular partners; 37.5 % of the IDUs had sex with casual partners; 5.3 %, with commercial partners; and 3.4 % themselves provided sex services for pay. Yet 22.3 % of those who had regular partners also entered into casual relationships; about 3 % used sexual services and another 3 % themselves provided them.
- Regular sexual partners also rather frequently (in one third of the cases) acted as partners in injection sessions whereby equipment was shared; even more frequently (two thirds of the answers) such partners were simply IDU acquaintances.
- Female IDUs differ from male IDUs in that they have a smaller number of sexual partners, yet use condoms less frequently, which is particularly dangerous in case of commercial sex.
- In the event of sex with an irregular or commercial partner, a condom is regularly used, respectively, in 43.5 % and 45.3 % of the cases.
- 27 % of the IDUs started practicing injections before reaching the age of maturity.
- 31.3 % of the male IDUs have been using injection drugs for more than 10 years; among the female IDUs, the respective share is 22.7 %. Although there is no difference in the age of starting injection practice between men and women, the share of females in the youngest age group is 38 % and in the oldest group, 24 %. This might be indicative of a higher mortality rate among female IDUs as a result of uncontrolled drug abuse.
- 41 % of the IDUs use drugs every day; by the time the injection period reaches 4 years injections become practically daily for a majority of the IDUs, whereas during the first year of injection practice drugs are injected on a virtually daily basis by just 25 % of the interviewees.
- Starting injections at an earlier age entails a somewhat higher frequency of using injection drugs. This means that, regardless of how old an IDU is, if he/she started practicing injections before reaching the age of maturity, then he/she is more likely to reach the maximum frequency in a shorter period of time.
- Opiates continue to be the most widespread drug type (77.5 %); yet analeptics (26.5 %) are gaining ever greater popularity among young people and women.

- The index of sterilized syringe usage is 83 %; of safe behavior, 48.5 %. At the same time, shared utensils were used for preparing drugs by 57 % of the interviewees.
- Based on the results of the related research, HIV incidence is 32.1 %, displaying extremely great variance over the cities of Ukraine: from 80 % in Mykolaiv to 8 % in Luhansk.
- The impact of the drug usage period length is very great: using injection drugs for 3–10 years increases the likelihood of contracting HIV 3.6 times compared to those with an under one year experience, whereas using drugs for more than 10 years results in an 8–fold increase of the probability. Women face a much higher risk of contracting HIV than men do, and they get infected faster. For men, the risk is increased by contacts with female partners providing sex services for pay. The provoking effect of combining alcohol with drugs on the infection level holds true most conspicuously in IDU groups with experience of sexual contacts and in particular of unsafe sex. Contrary to using unsterilized equipment, use of shared utensils for preparing a drug is a significant predictor of contracting HIV. Opiate consumers face a higher risk of contracting the virus, in spite of their less active sexual behavior.
- After learning about being HIV positive, men reduce the rate of using shared utensils. Among women, no similar change in behavior is observed.
- IDUs who practice injections 1–3 times a month, use sterilized equipment and used a condom during the most recent sexual intercourse with a partner of any type, in particular with a casual partner, have a higher chance of contracting HIV than those who practice injections several times a day, always use shared equipment and did not use a condom during their most recent sexual intercourse. Such a situation might be attributed to the fact that infected respondents who were unaware of being HIV positive before the survey had been leading a very dangerous lifestyle in the not too distant past, but at some point (a year ago or more) switched to a different mode of living.
- Rates of HIV incidence do not always correlate with the level of awareness of HIV transmission modes or with prevalence of risky practices in the oblast cross–section. Thus, in Mykolaiv the highest level of awareness of HIV transmission modes goes in parallel with the highest rate of HIV incidence; at the same time, the local level of using sterilized equipment is low; of using condoms, high. A similar situation is also observed in Poltava. By contrast, a low rate of HIV incidence is recorded in Kirovohrad, despite prevalence of risky practices, and in Sumy, despite relatively popular use of shared equipment.
- The share IDUs covered by prevention programs is 31 %. In Lviv, Dnipropetrovsk, Sumy, Odesa, and Luhansk the level of coverage is very low (2–8 %).
- In the cross–section of oblast centers, the index of coverage by prevention programs does not always match the level of awareness of HIV transmission modes or the rate of HIV incidence. Thus, in Dnipropetrovsk, Luhansk, and Mykolaiv the level of coverage does not conform to the level of knowledge, which is much higher than the coverage index.

RECOMMENDATIONS

To State bodies and institutions:

- Medical institutions responsible for voluntary counseling and testing for HIV (VCT) should bring the level of pre– and post–testing counseling to 100 %.
- The Ministry of Education and Science of Ukraine should provide for higher–quality teaching, in institutions of general education, of Life Safety, Valeology and other disciplines which enhance the spiritual component of education and provide the necessary knowledge about sexual behavior and prevention of sexually transmitted diseases. This type of work is particularly needed for educational institutions in the Eastern region of Ukraine.

Public HIV–service organizations should –

- Coordinate their activities with other organizations which also have experience of work with the risk groups, aiming to evaluate how successful and efficient their activities are.
- Increase the quality of prevention services being provided in Odesa, Kharkiv and Cherkasy, aiming to inform IDUs of HIV transmission modes; and in Lviv, Dnipropetrovsk, Sumy, and Luhansk, to expand outreach work and inform IDUs of the location of points of voluntary testing for HIV.
- Take measures to raise the level of awareness of female IDUs about the services provided by public organizations, get them involved in programs aimed at promoting healthy lifestyle and at reducing harm. Inform them of the level of risk of contracting HIV during sexual contacts; facilitate the formation of skills necessary for persuading the partner of the necessity to use a condom, in particular when dealing with casual or commercial partners.

Scientific and research organizations and international organizations performing IDU–related studies should –

- In their dialogue with representatives of academic science, epidemiologists, and HIV–service organizations, reach consensus about the expediency and frequency of RDS–based research projects, with consideration for the fact that they require a lot of resources as well as for the changes taking place in the drug users environment in Ukraine.
- In cooperation with foreign experts in RDS, resolve questions related to sample size and to data format required for RDS analysis.
- Promote more extensively foreign colleagues' experience in RDS–based surveys in Third World countries, placing their translated publications on specialized Internet sites.
- Organize trainings in using RDS when interviewing risk groups for sociologists, interviewers, and NGO employees.
- When discussing questionnaires for the surveys, take into account sociologists' view on the limits of respondents' competence as well as on the specificity of memory and calculating abilities of IDU interviewees answering questions which require handling figures and dates.
- Develop various approaches to measuring risk behavior on metric scales and on tree–type multi–alternative scales (rotating alternatives), taking account of respondent's psychological attitude towards working with such scales.
- Develop and promote multifactor modeling for explaining the various risks; this will be a breakthrough in epidemiological studies which at present rely primarily on two–dimensional distributions.
- When improving the techniques, take account of the fact that each subsequent monitoring will involve participation of more and more IDUs knowing about their being HIV positive. Their presence in the sample complicates common techniques based search for behavioral factors in contracting HIV, because in it researchers rely on past behavior related information which remains undetermined until the IDU receives a positive testing result.
- It should also be taken into account that the index of testing for HIV will tend to increase to some extent owing to participation of respondents previously involved in related studies.

APPENDIX A

Table 1A. Distribution of injection drug users by gender; sample and estimated shares and confidence intervals

Gender	Number in the sample	Share in the sample	Estimated share, RDS–based	Confidence intervals, RDS–based	Homophily
Simferopol					
Male	178	67.2	64.5	57.0–72.1	0.001
Female	87	32.8	35.5	28.0–43.0	– 0.227
Mykolaiv					
Male	186	71.5	71.9	64.6–79.0	0.145
Female	74	28.5	28.1	21.0–35.4	0.113
Odesa					
Male	303	75.8	70.9	63.8–76.3	0.256
Female	97	24.3	29.1	23.7–36.2	0.127
Kherson					
Male	190	84.4	82.7	75.7–89.0	0.320
Female	35	15.8	17.3	11.1–24.3	0.157
Dnipropetrovsk					
Male	82	72.6	76.3	65.7–84.5	–0.013
Female	31	27.4	23.7	15.5–34.3	0.075
Donetsk					
Male	256	64.0	54.8	47.0–62.9	0.412
Female	144	36.0	45.2	37.1–53.0	0.077
Luhansk					
Male	186	93.0	92.0	85.7–97.1	0.332
Female	14	7.0	8.0	2.9–14.4	0.074
Kharkiv					
Male	110	62.9	57.0	47.9–66.2	0.225
Female	65	37.1	43.0	33.8–52.1	–0.026
Kyiv					
Male	273	68.3	67.2	60.9–72.9	0.084
Female	127	31.8	32.8	27.2–39.1	0.025
Kirovohrad					
Male	154	88.0	88.1	82.0–93.5	0.021
Female	21	12.0	11.9	6.5–18.0	0.027
Poltava					
Male	157	78.5	74.7	67.7–81.6	0.185
Female	43	21.5	25.3	18.4–32.3	0.034
Sumy					
Male	141	81.5	79.0	70.4–87.4	0.216
Female	32	18.5	21.0	12.6–29.6	–0.089
Cherkasy					
Male	144	82.3	85.4	78.5–92.7	–0.01
Female	31	17.7	14.6	7.3–21.5	0.122
Lviv					
Male	151	86.3	87.0	80.7–92.0	–0.009
Female	24	13.7	13.0	8.0–19.3	–0.037

Lutsk					
Male	122	69.7	69.3	61.0– 6.6	–0.015
Female	53	30.3	30.7	23.5–39.0	–0.007
Khmelnytskyi					
Male	135	67.5	64.4	55.4–72.8	0.095
Female	65	32.5	35.6	27.2 –44.6	–0.101

Table 2A. Distribution of injection drug users by age; sample and estimated shares and confidence intervals

Age	Number in the sample	Share in the sample	Estimated share, RDS–based	Confidence intervals, RDS–based	Homophily
Simferopol					
Under 24 years	34	12.8	11.2	7.1–16.1	0.115
25–34 years	88	33.2	36.3	29.4–46.5	0.093
35+ years	143	54.0	52.6	41.4–60.3	0.16
Mykolaiv					
Under 24 years	14	5.4	4.8	1.5–9.4	0.324
25–34 years	108	41.5	41.5	33.9–49.9	0.201
35+ years	138	53.1	53.7	45.4–61.1	0.160
Odesa					
Under 24 years	46	11.5	11.3	7.9–15.0	0.029
25–34 years	149	37.3	38.6	32.8–43.9	–0.018
35+ years	205	51.3	50.1	43.9–56.8	0.170
Kherson					
Under 24 years	21	9.3	10.5	5.8–15.6	0.106
25–34 years	100	44.4	44.6	37.4–51.5	–0.018
35+ years	104	46.2	44.9	37.9–52.3	0.020
Dnipropetrovsk					
Under 24 years	18	15.9	12.5	5.8–18.4	0.071
25–34 years	37	32.7	28.0	19.2–37.08	0.033
35+ years	58	51.3	59.5	47.8–72.0	–0.016
Donetsk					
Under 24 years	177	44.3	45.7	37.9–53.6	0.220
25–34 years	139	34.8	37.9	30.5–45.6	0.150
35+ years	84	21.0	16.3	11.1–22.3	0.245
Luhansk					
Under 24 years	82	41.0	43.1	33.8–50.3	–0.173
25–34 years	103	51.5	46.9	39.1–57.3	0.049
35+ years	15	7.5	10.0	4.3–16.7	0.028
Kharkiv					
Under 24 years	81	46.3	42.7	35.3–51.3	0.012
25–34 years	75	42.9	47.6	38.6–55.4	–0.179
35+ years	19	10.9	9.8	4.3–16.0	0.181
Kyiv					
Under 24 years	78	19.5	20.1	15.0–25.3	0.065
25–34 years	245	61.3	60.3	54.1–66.2	0.104

35+ years	77	19.3	19.6	14.8–25.3	0.149
Kirovohrad					
Under 24 years	49	28.0	37.9	28.8–47.4	–0.018
25–34 years	99	56.6	49.9	41.0–58.8	0.214
35+ years	27	15.4	12.1	7.2– 17.5	0.046
Poltava					
Under 24 years	20	10.0	21.6	12.9–38.6	0.150
25–34 years	97	48.5	45.7	34.1–54.8	0.145
35+ years	83	41.5	32.7	21.7–39.8	0.247
Sumy					
Under 24 years	29	16.8	20.5	9.8–29.9	0.226
25–34 years	83	48.0	48.4	40.5–62.8	0.226
35+ years	61	35.3	31.1	19.2–40.0	0.23
Cherkasy					
Under 24 years	16	9.1	8.4	3.7–17.1	–1.0
25–34 years	80	45.7	41.5	30.3–50.5	0.047
35+ years	79	45.1	50.0	38.3–61.9	–0.013
Lviv					
Under 24 years	7	4.0	3.0	0.09–5.4	–1.0
25–34 years	10	40.0	41.6	32.9–50.2	–0.031
35+ years	98	56.0	55.4	46.9–64.2	–0.023
Lutsk					
Under 24 years	49	28.0	27.1	20.3–34.3	–0.314
25–34 years	85	48.6	47.6	39.6–56.0	–0.02
35+ years	41	23.4	25.3	17.8–32.6	–0.097
Khmelnytskyi					
Under 24 years	25	12.5	15.0	7.7–22.6	0.091
25–34 years	85	42.5	43.7	34.7–53.9	0.101
35+ years	90	45.0	41.3	31.9–50.4	0.111

Table 3A. Distribution of injection drug users by education level; sample and estimated shares and confidence intervals

Education	Number in the sample	Share in the sample	Estimated share, RDS–based	Confidence intervals, RDS–based	Homophily
Simferopol					
Primary	40	15.2	11.8	7.4–17.2	0.045
Secondary	177	67.0	67.7	60.7–74.4	–0.047
Higher	47	17.8	20.5	13.7–27.5	0.076
Mykolaiv					
Primary	71	27.3	30.9	24.1–38.1	0.047
Secondary	168	64.6	62.6	55.1–70.2	0.153
Higher	21	8.1	6.6	3.2–10.1	0.101
Odesa					
Primary	55	13.8	14.1	9.9–18.5	0.076
Secondary	239	59.8	61.9	54.9–64.6	0.134
Higher	106	26.5	24.1	19.4–30.0	0.139
Kherson					
Primary	84	37.3	34.8	27.4–42.5	0.129

Secondary	104	46.2	46.3	37.6–53.7	0.076
Higher	37	16.4	18.9	13.2–26.4	0.035
Dnipropetrovsk					
Primary	12	10.6	7.8	2.9–15.5	0.187
Secondary	91	80.5	81.8	71.6–89.5	0.041
Higher	10	8.8	10.4	4.0–18.6	–0.260
Donetsk					
Primary	31	7.7	6.4	3.6–10.4	0.072
Secondary	306	76.5	73.8	67.4–80.6	0.179
Higher	63	15.8	19.7	13.3–25.6	0.003
Luhansk					
Primary	69	34.5	34.7	25.4–44.0	0.036
Secondary	104	52.0	48.1	39.2–57.3	0.106
Higher	27	13.5	17.2	11.3–23.8	–0.813
Kharkiv					
Primary	56	32.0	33.6	25.4–41.7	0.073
Secondary	101	57.7	57.1	48.6–64.8	0.024
Higher	18	10.3	9.2	4.7–16.0	0.174
Kyiv					
Primary	69	17.2	16.9	12.1–22.2	0.098
Secondary	239	59.8	55.2	48.9–60.9	0.101
Higher	92	23.0	27.9	22.7–33.8	–0.211
Kirovohrad					
Primary	49	28.0	33.4	24.7–42.9	0.027
Secondary	92	52.6	51.8	42.4–60.9	0.07
Higher	34	19.4	14.8	10.0–20.1	–0.325
Poltava					
Primary	14	7.0	9.1	3.3–15.2	0.01
Secondary	169	84.5	85.0	78.2–91.4	0.06
Higher	17	8.5	5.9	3.0–9.9	–1.0
Sumy					
Primary	24	13.9	13.8	8.1–21.5	0.063
Secondary	139	80.3	80.9	74.2–87.5	–0.029
Higher	10	5.8	5.3	1.7–8.0	–1.0
Cherkasy					
Primary	20	11.4	10.4	4.2–16.8	0.081
Secondary	117	66.9	72.5	62.5–81.0	–0.052
Higher	38	21.7	17.1	11.0–25.7	–0.237
Lviv					
Primary	33	18.9	19.2	12.9–25.9	0.109
Secondary	115	65.7	68.1	59.1–76.7	–0.135
Higher	27	15.4	12.7	6.5–20.0	–1.0
Lutsk					
Primary	56	32.2	33.8	24.5–40.9	–0.181
Secondary	114	65.5	64.4	57.1–73.8	0.063
Higher	4	2.3	1.8	0.3–4.0	–1.0
Khmelnytskyi					
Primary	29	14.5	10.1	5.6–15.9	0.147
Secondary	124	62.0	62.9	52.4–72.1	0.035
Higher	47	23.5	27.0	17.5–37.7	0.172

Table 4A. Distribution of injection drug users by marital status; sample and estimated shares and confidence intervals

Marital status	Number in the sample	Share in the sample	Estimated share, RDS–based	Confidence intervals, RDS–based	Homophily
Simferopol					
Single	135	50.9	53.2	44.6–61.7	0.038
Married	110	41.5	41.4	33.2–49.7	0.020
Separated/Divorced	20	7.5	5.4	2.7–8.7	0.043
Mykolaiv					
Single	92	35.4	36.3	29.1–44.1	0.084
Married	154	59.2	58.9	50.8–66.4	0.114
Separated/Divorced	14	5.4	4.8	2.1–8.0	0.073
Odesa					
Single	176	44.0	48.5	41.7–54.4	0.053
Married	206	51.5	47.3	41.5–53.9	0.207
Separated/Divorced	18	4.5	4.2	2.1–6.9	0.001
Kherson					
Single	86	38.2	39.2	32.0–46.7	0.001
Married	110	48.9	50.2	42.8–57.7	–0.032
Separated/Divorced	29	12.9	10.5	6.3–15.0	0.061
Dnipropetrovsk					
Single	57	50.4	48.4	36.1–59.4	0.142
Married	42	37.2	36.3	24.4–50.5	0.235
Separated/Divorced	14	12.4	15.2	7.3–24.5	–0.180
Donetsk					
Single	274	68.5	67.6	60.9–74.3	0.142
Married	120	30.0	30.9	24.3–37.5	0.122
Separated/Divorced	6	1.5	1.5	0.2–3.8	–1.0
Luhansk					
Single	137	68.5	72.1	63.3–80.3	–0.026
Married	53	26.5	23.6	15.5–32.2	0.106
Separated/Divorced	10	5.0	4.4	1.4–8.7	–1.0
Kharkiv					
Single	97	55.4	58.8	51.8–66.6	–0.081
Married	69	39.4	36.4	28.7–43.3	–0.041
Separated/Divorced	9	5.1	4.8	1.8–8.5	–1.0
Kyiv					
Single	176	44.0	47.3	41.0–53.6	–0.008
Married	189	47.3	44.4	37.9–51.1	0.115
Separated/Divorced	35	8.8	8.3	5.4–11.6	–0.313
Kirovohrad					
Single	99	56.6	59.9	50.4–68.5	0.003
Married	60	34.3	34.9	26.9–43.6	–0.045
Separated/Divorced	16	9.1	5.2	2.7–8.6	0.062
Poltava					
Single	25	12.5	12.8	6.8–18.6	0.025
Married	143	71.5	73.1	65.9–80.5	–0.056
Separated/Divorced	32	16.0	14.1	8.9–20.3	–0.24

Sumy					
Single	86	49.7	58.8	48.8–67.1	–0.125
Married	80	46.2	39.0	30.3–48.9	0.119
Separated/Divorced	7	4.0	2.3	0.7–4.6	–1.0
Cherkasy					
Single	112	64.0	69.6	59.0–78.5	–0.046
Married	53	30.3	25.9	17.2–36.1	0.063
Separated/Divorced	10	5.7	4.5	1.7–8.2	–1.0
Lviv					
Single	96	54.9	49.9	39.1–58.5	0.109
Married	74	42.3	47.7	38.9–58.7	–0.135
Separated/Divorced	5	2.9	2.4	0.4–5.1	–1.0
Lutsk					
Single	104	59.4	62.0	53.4–70.4	0.0
Married	49	28.0	26.9	19.1–35.1	0.045
Separated/Divorced	22	12.6	11.1	6.4–16.8	0.089
Khmelnytskyi					
Single	105	52.5	57.3	48.0–67.6	–0.034
Married	90	45.0	39.6	29.7–48.6	0.119
Separated/Divorced	5	2.5	3.1	0.2–7.0	–1.0

Table 5A. Distribution of injection drug users by occupation; sample and estimated shares and confidence intervals

Place of residence	Number in the sample	Share in the sample	Estimated share, RDS–based	Confidence intervals, RDS–based	Homophily
Simferopol					
Employed	140	56.7	59.5	50.4–68.5	–0.023
Unemployed	101	40.9	37.6	28.7–46.7	0.144
Pupils and students	6	2.4	2.9	0.7–5.7	–1.0
Mykolaiv					
Employed	134	51.9	52.3	45.1–59.9	0.105
Unemployed	123	47.7	47.7	40.1–54.9	0.065
Pupils and students	1	0.4	0	–	0.0
Odesa					
Employed	239	73.3	71.6	66.1–76.6	0.074
Unemployed	106	26.5	28.4	23.4–33.9	–0.047
Pupils and students	0	0.0	0.0	–	
Kherson					
Employed	131	58.2	59.8	50.9–68.3	0.252
Unemployed	89	39.6	37.1	28.0–46.5	0.28
Pupils and students	5	2.2	3.1	0.7–6.5	–1.0
Dnipropetrovsk					
Employed	50	44.2	48.1	35.0–59.9	0.144
Unemployed	62	54.9	51.4	39.7–64.3	0.163
Pupils and students	1	0.9	0.5	0.0–1.7	–0.999
Donetsk					

Employed	221	55.2	55.2	48.5–62.0	0.03
Unemployed	144	36.0	34.3	27.6–40.3	0.095
Pupils and students	35	8.8	10.5	6.6–15.7	0.01
Luhansk					
Employed	153	76.5	76.6	69.6–83.5	–0.007
Unemployed	35	17.5	17.3	11.2–23.9	–0.068
Pupils and students	12	6.0	6.1	2.5–10.2	–1.0
Kharkiv					
Employed	111	63.4	62.1	51.9–70.8	0.071
Unemployed	44	25.1	23.0	16.2–30.3	0.032
Pupils and students	20	11.4	14.8	7.2–25.0	0.295
Kyiv					
Employed	225	56.7	64.1	57.9–70.3	–0.052
Unemployed	157	39.5	31.5	25.6–37.7	0.177
Pupils and students	15	3.8	4.4	2.0–7.1	0.103
Kirovohrad					
Employed	88	50.3	0.0		
Unemployed	79	45.1	0.0		
Pupils and students	8	4.6	1.0		
Poltava					
Employed	106	53.0	56.1	48.0–65.0	–0.084
Unemployed	93	46.5	42.2	34.0–50.9	0.052
Pupils and students	1	0.5	1.7	0.0–3.5	0.328
Sumy					
Employed	101	58.4	55.8	46.3–65.0	–0.046
Unemployed	69	39.9	41.4	32.4–51.8	0.022
Pupils and students	3	1.7	2.8	0.0–6.6	–1.0
Cherkasy					
Employed	114	65.1	63.4	54.7–74.0	0.067
Unemployed	59	33.7	34.4	24.1–43.8	0.026
Pupils and students	2	1.1	2.2	0.0–5.0	0.318
Lviv					
Employed	125	71.8	75.6	67.9–83.2	–0.039
Unemployed	49	28.2	24.4	16.8–32.1	0.074
Pupils and students	0	0.0	0.0	–	–
Lutsk					
Employed	110	63.2	60.3	50.5–67.9	0.077
Unemployed	57	32.8	33.8	26.7–42.6	–0.034
Pupils and students	7	4.0	5.9	2.3–10.5	–1.0
Khmelnytskyi					
Employed	110	59.1	57.5	48.5–69.9	0.104
Unemployed	73	39.2	38.9	27.2–49.2	0.034
Pupils and students	3	1.6	3.6	0.0–6.5	0.309

Table 6A. Distribution of injection drug users by place of residence; sample and estimated shares and confidence intervals

Place of residence	Number in the sample	Share in the sample	Estimated share, RDS-based	Confidence intervals, RDS-based	Homophily
Simferopol					
Born in the city of residence	197	74.3	71.0	63.9–78.8	0.147
Temporarily resident	12	4.5	5.0	2.0–8.4	–1.0
Born elsewhere	56	21.1	23.9	16.4–31.3	0.048
Mykolaiv					
Born in the city of residence	222	85.4	85.0	79.9–90.0	0.036
Temporarily resident	7	2.7	2.8	0.8–5.3	–1.0
Born elsewhere	31	11.9	12.1	7.6–16.8	–0.029
Odesa					
Born in the city of residence	278	69.5	66.1	60.8–72.1	0.141
Temporarily resident	5	1.3	1.5	0.03–3.2	–1.0
Born elsewhere	116	29.0	32.3	26.4–37.8	0.033
Kherson					
Born in the city of residence	171	76.0	75.6	68.7–81.8	0.074
Temporarily resident	22	9.8	9.3	5.5–13.5	0.042
Born elsewhere	32	14.2	15.2	10, –20.9	–0.009
Dnipropetrovsk					
Born in the city of residence	78	69.0	69.0	57.4–81.8	0.215
Temporarily resident	13	11.5	9.5	3.5–15.7	0.150
Born elsewhere	22	19.5	21.5	12.1–30.9	–0.031
Donetsk					
Born in the city of residence	354	88.7	87.2	82.1–92.2	0.153
Temporarily resident	2	0.5	0.3	0.0–0.8	–0.998
Born elsewhere	43	10.8	12.5	7.5–17.7	0.047
Luhansk					
Born in the city of residence	196	98.0	97.1	92.8–99.9	0.273
Temporarily resident	1	0.5	0.1	0.0–0.4	–0.997
Born elsewhere	3	1.5	2.8	0.0–7.0	–1.0
Kharkiv					
Born in the city of residence	135	77.1	76.7	69.6–83.7	0.029
Temporarily resident	6	3.4	3.7	0.9–7.7	0.065
Born elsewhere	34	19.4	19.6	13.2–25.5	–0.204
Kyiv					
Born in the city of residence	299	74.8	76.6	70.1–81.0	–0.006
Temporarily resident	18	4.5	5.0	2.2–8.2	0.053
Born elsewhere	83	20.7	18.4	14.8–24.0	–0.043
Kirovohrad					
Born in the city of residence	135	77.1	74.6	66.7–82.1	0.138
Temporarily resident	14	8.0	9.2	4.7–14.8	–1.0
Born elsewhere	26	14.9	16.2	9.5–22.9	0.063
Poltava					
Born in the city of residence	177	89.4	89.3	83.4–94.7	0.067
Temporarily resident	1	0.5	0.7	0.0–1.9	0.328
Born elsewhere	20	10.1	9.9	5.2–15.8	0.001

Sumy					
Born in the city of residence	143	83.1	82.0	78.3–90.5	–0.001
Temporarily resident	2	1.2	2.3	0.0–6.8	–1.0
Born elsewhere	27	15.7	15.7	7.9–18.4	–0.019
Cherkasy					
Born in the city of residence	114	65.1	57.1	45.7–68.6	0.265
Temporarily resident	8	4.6	6.0	0.7–13.2	0.114
Born elsewhere	53	30.3	36.9	26.1–48.0	–0.077
Lviv					
Born in the city of residence	161	92.0	87.6	80.8 –93.5	0.3
Temporarily resident	3	1.7	2.1	0.0–4.7	–1.0
Born elsewhere	11	6.3	10.3	4.6–17.0	–0.350
Lutsk					
Born in the city of residence	136	77.7	77.8	70.1–85.4	0.1
Temporarily resident	11	6.3	5.1	1.1–9.3	0.21
Born elsewhere	28	16.0	17.2	11.1–24.9	0.052
Khmelnytskyi					
Born in the city of residence	155	77.5	75.0	65.9–82.5	0.191
Temporarily resident	2	1.0	3.8	0.0–7.3	0.307
Born elsewhere	43	21.5	21.2	15.4–30.3	0.016

Table 7A. Share of injection drug users correctly identifying HIV transmission mode through sexual intercourse and knowing how HIV cannot be transmitted; sample and estimated shares and confidence intervals

City	Number in the sample	Share in the sample	Estimated share, RDS–based	Confidence intervals, RDS–based	Homophily
Simferopol	147	55.5	54.2	45.5–62.7	0.039
Mykolaiv	209	80.4	80.7	74.7–86.0	0.028
Odesa	131	32.8	34.0	28.3–40.4	0.131
Kherson	102	45.3	44.5	37.3–51.6	0.005
Dnipropetrovsk	65	57.5	63.9	52.5–74.9	–0.015
Donetsk	244	61.0	63.2	56.5–69.8	0.034
Luhansk	146	73.0	69.1	59.7–77.1	0.190
Kharkiv	29	16.6	16.9	10.4–23.8	0.016
Kyiv	149	37.3	36.8	30.7–42.8	0.060
Kirovohrad	113	64.4	62.5	54.1–70.4	0.034
Poltava	65	32.5	32.8	22.5–43.1	0.163
Sumy	87	50.3	46.7	36.5–56.7	0.175
Cherkasy	46	26.3	23.5	15.9–34.1	0.044
Lviv	74	42.3	41.1	32.2–50.1	0.058
Lutsk	113	64.6	67.3	57.4–77.8	0.283
Khmelnytskyi	122	61.0	61.1	51.9–69.2	0.038

Table 8A. Share of injection drug users who reported having used a condom during their most recent sexual intercourse; sample and estimated shares and confidence intervals

City	Number in the sample	Share in the sample	Estimated share, RDS–based	Confidence intervals, RDS–based	Homophily
Simferopol	124	59.6	64.1	57.2–76.5	–0.082
Mykolaiv	144	66.4	65.9	55.6–75.7	0.293
Odesa	171	49.7	53.7	47.6–60.3	–0.050
Kherson	144	69.2	67.2	58.2– 74.8	0.165
Dnipropetrovsk	53	54.6	39.9	24.3–55.6	0.189
Donetsk	169	55.0	52.9	44.4–62.2	0.142
Luhansk	108	55.4	54.1	44.9–63.3	–0.097
Kharkiv	53	41.1	41.5	27.5–51.8	0.043
Kyiv	190	52.9	59.0	53.6–67.4	–0.039
Kirovohrad	42	35.3	29.1	19.7–43.5	0.180
Poltava	122	66.3	67.2	58.5–77.7	0.004
Sumy	62	37.1	43.6	32.2–55.2	0.0230
Cherkasy	100	62.1	56.7	47.3–69.1	0.001
Lviv	63	41.4	43.2	33.3–52.8	0.054
Lutsk	67	40.6	41.4	32.2–50.1	0.063
Khmelnytskyi	110	59.1	59.9	51.1–70.8	–0.027

Table 9A. Share of injection drug users who reported having used a sterilized syringe/needle during their most recent drug injecting episode; sample and estimated shares and confidence intervals

City	Number in the sample	Share in the sample	Estimated share, RDS–based	Confidence intervals, RDS–based	Homophily
Simferopol	233	87.9	86.7	80.3–93.6	0.160
Mykolaiv	203	78.1	78.9	72.3–85.3	0.028
Odesa	336	84.0	84.6	80.2–88.8	0.018
Kherson	212	94.2	89.8	78.8–96.5	0.466
Dnipropetrovsk	82	72.6	79.3	69.9– 87.0	–0.106
Donetsk	318	79.5	78.8	71.4– 84.4	0.096
Luhansk	189	94.5	95.7	92.0– 98.8	–0.007
Kharkiv	122	69.7	74.8	66.5– 82.1	–0.017
Kyiv	318	79.5	86.3	81.9–90.4	–0.062
Kirovohrad	160	91.4	92.5	87.3–97.0	0.167
Poltava	139	69.5	75.9	67.3– 83.8	–0.012
Sumy	120	69.4	72.2	62.3– 78.4	–0.046
Cherkasy	151	86.3	85.9	76.9– 94.3	0.126
Lviv	146	83.4	83.0	74.4–90.3	0.065
Lutsk	160	91.4	88.8	81.3– 97.1	0.272
Khmelnytskyi	169	84.5	84.5	78.0– 93.0	–0.001

Table 10A. National Index: Percentage of IDUs who shifted to a lower HIV risk behavior (those using sterilized injecting materials and condoms)

City	Number in the sample	Share in the sample	Estimated share, RDS–based	Confidence intervals, RDS–based	Homophily
Simferopol	108	40.8	44.8	35.6–54.2	–0.13
Mykolaiv	118	45.4	41.7	34.1–49.6	0.135
Odesa	153	38.3	43.0	36.7–49.7	–0.036
Kherson	140	62.2	54.9	43.7–65.1	0.309
Dnipropetrovsk	40	35.4	30.8	20.5–41.6	0.133
Donetsk	144	36.0	33.3	26.8–40.6	0.098
Luhansk	102	51.0	46.8	37.0–58.2	0.027
Kharkiv	42	24.0	26.3	17.3–34.8	0.056
Kyiv	161	40.3	47.9	39.9–54.4	–0.015
Kirovohrad	34	19.4	16.3	10.4–22.9	0.085
Poltava	87	43.5	47.9	36.9–58.3	0.081
Sumy	49	28.3	31.0	21.0–41.2	0.275
Cherkasy	91	52.0	49.3	37.5–60.7	–0.008
Lviv	56	32.0	33.8	23.8–41.2	0.063
Lutsk	62	35.4	36.9	26.8–45.2	0.037
Khmelnytskyi	96	48.0	46.0	36.3–59.1	0.086

Table 11A. Percentage of HIV–infected individuals; sample and estimated shares and confidence intervals

City	Number in the sample	Share in the sample	Estimated share, RDS–based	Confidence intervals, RDS–based	Homophily
Simferopol	185	69.8	65.5	57.4–73.1	0.168
Mykolaiv	207	79.6	79.9	70.2–88.0	0.441
Odesa	150	37.5	36.8	30.4–43.0	0.131
Kherson	58	25.8	26.7	19.9–34.4	0.127
Dnipropetrovsk	51	46.8	40.3	29.4–52.8	0.106
Donetsk	143	35.8	33.2	26.9–39.7	0.023
Luhansk	9	4.5	6.7	2.3–12.2	–0.169
Kharkiv	18	10.3	10.6	4.8–16.1	0.140
Kyiv	160	40.0	30.8	24.7–36.6	0.273
Kirovohrad	20	11.4	13.2	8.1–18.8	–0.790
Poltava	59	29.5	23.7	16.6–32.0	0.096
Sumy	22	12.7	9.3	4.6– 16.2	0.192
Cherkasy	45	25.7	18.2	11.6–27.0	0.072
Lviv	39	22.5	21.0	15.2–29.9	–0.207
Lutsk	45	25.7	26.7	19.3–34.9	0.048
Khmelnytskyi	55	27.5	26.8	18.2–36.5	0.112

Table 12A. National Index of prevention programs coverage, percentages; sample and estimated shares and confidence intervals

City	Number in the sample	Share in the sample	Estimated share, RDS–based	Confidence intervals, RDS–based	Homophily
Simferopol	111	41.9	35.2	26.1–43.9	–0.077
Mykolaiv	98	37.7	34.3	26.4–42.8	0.151
Odesa	44	11.0	7.4	3.1–11.4	0.338
Kherson	130	57.8	53.8	43.4–62.7	0.089
Dnipropetrovsk	14	12.4	3.8	0.8–8.5	0.252
Donetsk	152	38.0	31.4	24.6–38.5	0.153
Luhansk	15	7.5	8.4	2.9–14.1	–0.153
Kharkiv	32	18.3	16.1	10.1–22.9	0.073
Kyiv	123	30.8	22.9	17.6–28.5	0.196
Kirovohrad	47	26.9	16.4	11.1–22.4	0.202
Poltava	108	54.0	50.3	39.6–61.8	0.153
Sumy	17	9.9	7.0	3.6–12.1	–0.283
Cherkasy	83	47.4	30.9	20.4–43.0	0.320
Lviv	14	8.0	3.8	1.7–7.4	0.029
Lutsk	94	53.7	48.5	35.7–59.8	0.320
Khmelnytskyi	60	30.0	24.4	18.3–34.3	0.149

Table 13A. National Index of being tested for HIV during the past 12 months (only those receiving the testing results), percentages; sample and estimated shares and confidence intervals

City	Number in the sample	Share in the sample	Estimated share, RDS–based	Confidence intervals, RDS–based	Homophily
Simferopol	143	54.0	55.4	46.0–64.3	0.064
Mykolaiv	127	48.8	46.9	37.7–55.5	0.198
Odesa	70	17.5	16.5	12.3–22.1	0.020
Kherson	104	46.2	42.9	33.5–52.3	0.086
Dnipropetrovsk	31	27.4	23.0	13.4–33.8	0.101
Donetsk	193	48.3	46.8	39.3–54.6	0.138
Luhansk	35	17.5	18.3	9.6–27.3	0.075
Kharkiv	10	5.7	5.8	2.1– 10.7	0.132
Kyiv	115	28.8	24.2	18.2–29.8	0.158
Kirovohrad	48	27.4	20.2	13.8–26.8	0.108
Poltava	62	31.0	26.3	17.2–38.0	0.198
Sumy	26	15.0	12.8	7.0–21.9	0.155
Cherkasy	42	24.0	18.5	11.4–30.5	0.182
Lviv	6	3.4	1.9	0.4–3.9	–1.0
Lutsk	67	38.3	31.2	20.8–39.2	0.193
Khmelnytskyi	74	37.0	38.1	28.1–48.7	–0.138