

# SUMMARY OF THE ANALYTICAL REPORT

## «MONITORING THE BEHAVIOUR AND HIV-INFECTION PREVALENCE AMONG FEMALE SEX WORKERS AS A COMPONENT OF HIV SECOND GENERATION SURVEILLANCE»



(according to the results of 2013  
bio-behavioral survey)

**Kyiv 2014**

## **SUMMARY OF THE ANALYTICAL REPORT**

### **«MONITORING THE BEHAVIOUR AND HIV-INFECTION PREVALENCE AMONG FEMALE SEX WORKERS AS A COMPONENT OF HIV SECOND GENERATION SURVEILLANCE»**

**(according to the results of 2013 bio-behavioural survey)**

**Kyiv 2014**

---

**Authors:** O. Balakirieva, PhD in Sociology, T. Bondar, PhD in Sociology,  
I. Loktieva, Y. Sazonova, Y. Sereda, PhD in Sociology, M. Hudik

## TABLE OF CONTENTS

List of abbreviations.....	3
Survey methodology.....	4
Social profile .....	5
Sexual behavior and condom use .....	6
Practice of alcohol consumption and drug use .....	8
Use of prevention services and means to prevent HIV and Hepatitis .....	9
Level of knowledge about HIV .....	10
Applying for VCT services .....	11
Prevalence level of HIV-infection and other socially dangerous diseases .....	12
Factors associated with HIV-infection .....	15
Factors associated with infecting with Hepatitis C.....	16
Survey limitations .....	17
Recommendations.....	18

*Preparation of this report became possible with the technical support of the Project "Involvement of local organizations to the monitoring and evaluation development in the field of HIV/AIDS in Ukraine" (METIDA) implemented by the ICF "International HIV/AIDS Alliance in Ukraine" with the financial support of the Centres for Disease Control and Prevention (CDC) under the United States President's Emergency Plan for AIDS Relief (PEPFAR).*

*This publication was supported by the Partnership Agreement № U2GGH000840 with the Centres for Disease Control and Prevention (CDC). The contents of the given publication are the sole responsibility of the authors and do not necessarily reflect the official position of the Centres for Disease Control and Prevention (CDC).*

# LIST OF ABBREVIATIONS

**HIV** – human immunodeficiency virus

**NGO** – non-governmental organizations.

**FSW** – female sex workers

**VCT (Voluntary counseling and testing)** – medical and psychological counselling of a certain person on HIV/AIDS and counselling-related medical testing of the person for presence of antibodies to HIV, carried out on voluntary basis from the person's side.

**PWID** – people who inject drugs.

**RDS (respondent-driven sample)** – sample directed and realized by the respondents themselves.

**TLS (time-location sample)** – sample by the location and time.

**KI (key informants)** – recruitment through key informants.



## METHODOLOGY

**Survey objective:** to study behavioral practices of FSW concerning condom use, HIV testing, level of awareness about ways of HIV transmission, alcohol consumption, injecting and non-injecting drug use and to identify the level of HIV and Hepatitis C prevalence among FSW.

**Survey design:** cross-sectional survey that includes individual interviews with the use of “face-to-face” method and respondents’ testing for HIV and Hepatitis C with the use of rapid tests. 3 different methodologies were used to recruit respondents to participate in the survey: RDS, TLS and KI.

**RDS** methodology provides the selection of primary respondents according to the defined characteristics and recruitment of secondary respondents to the survey by FSW themselves, who have already participated in all its components. Inclusion criteria for primary respondents:

- have reached 14 years, but are not older than 24 years;
- have more than 7 close friends (acquaintances) among FSW who can be recruited to participate in the survey;
- work at several locations, in different city regions (migration moods);
- have not participated in the survey in the last 6 months;
- represent different types of locations;
- are clients/non-clients of FSW-service non-governmental organizations;
- have not injected drugs;
- have HIV-negative status (according to FSW).

**TLS** methodology involves the formation of geographical list of locations, where representatives of the target group provide commercial sex services or search for clients. Surveyed places / locations included into each city sample were identified individually – by random numbers, but taking into consideration the types of places/locations, number of FSW working there, presence or absence of prevention programmes for FSW at these places/locations.

**Recruitment through key informants** (KI) (representatives of non-governmental organizations or private persons who have trustworthy information about FSW locations, including representatives of the target group) was implemented where neither RDS nor TLS was reasonable to use.

Methodology	Number of cities, where it was realized*	Number of respondents
RDS	5 cities	751
KI	3 cities	350
TLS	21 cities	3705

\* In certain cities some respondents were selected with the use of RDS methodology, while others with the use of TLS methodology.

**Sample:** 4806 respondents in 25 cities of Ukraine.

**Period of the data** collection stage implementation: October – December 2013 p.

**Ethical grounds for the survey:** Survey protocol and questionnaire were examined by the Committee on Sociologist’s Professional Ethics at the Sociological Association of Ukraine. Biological component was examined by the Committee on Medical Ethics of the Institute of Epidemiology and Infectious Diseases named after L.V. Gromashevskiy of the Academy of Medical Sciences of Ukraine.

**Data analysis.** Data was processed using RDSAT (calculations for cities) and SPSS 17 (national calculations and calculations for cities where TLS and KI were used) software.

Significance of difference in percentage among different groups was proved by the statistical chi-squared test. In order to determine factors of infecting with HIV and Hepatitis C, the method of regression analysis was used (multilevel logistic regressions).

# SOCIAL PROFILE

- FSW average age is 28,5 years. The dynamics of FSW distribution by age during 2008–2013 shows the reduction of the proportion of FSW among representatives of the age group of 14–19 years (almost twice). In 2013 the proportion of FSW adolescents (14-19 years) made up 6,4%.
- Streets, highways and motorways are the most widespread locations among FSW to search for clients.
- As for the educational level, the group with complete secondary (33%) or vocational education (33%) is the most represented.
- The overwhelming majority of FSW are not married and do not have a permanent sexual partner they live with (65,7%).
- 52% of FSW reported having people whom they support due to providing commercial sex services.
- For 81% of FSW commercial sex is the main source of income.

**Table 1. Typology of locations, where FSW have usually found their clients in the last month, % (2013)**

	Street, highway, motorway	Entertainment facilities	Hotel/motel	Sauna / massage parlour	Railway station	Flats / virtual locations	Via intermediaries	Other
Ukraine	41	15	4	4	3	13	19	1
Bila Tserkva	43	16	0	0	0	6	32	3
Vinnytsia	60	28	1	5	4	1	3	0
Dnipropetrovsk	11	6	0	0	0	8	61	13
Donetsk	26	15	6	1	0	35	16	2
Zhytomyr	35	46	1	0	0	2	17	0
Zaporizhzhia	54	3	0	0	0	20	21	2
Ivano-Frankivsk	71	2	0	0	8	13	5	0
Kyiv	24	3	0	2		32	36	2
Kirovohrad	12	16	6	4	0	28	29	5
Luhansk	58	14	0	0	0	16	11	1
Lutsk	41	1	11	5	0	1	41	1
Lviv	52	14	22	1	0	11	1	0
Mykolaiv	19	21	1	10	1	24	22	1
Odesa	35	13	10	23	10	0	10	0
Poltava	61	6	0	0	0	9	17	7
Rivne	19	63	0	0	1	13	4	0
Simferopol	74	18	2	2	1	1	1	0
Sevastopol	48	12	3	0	0	21	13	4
Sumy	2	27	4	7	0	20	35	6
Ternopil	35	28	4	13	5	1	9	5
Uzhhorod	16	35	1	1	18	0	28	1
Kharkiv	59	8	0	1	0	22	10	0
Kherson	59	22	8	5	2	1	3	0
Khmelnyskyi	38	1	6	2	25	8	3	1
Chernivtsi	72	16	1	1	6	4	0	0

## KEY RESULTS: SEXUAL BEHAVIOUR AND CONDOM USE

### *Beginning of sexual life and provision of commercial sex services*

- An average age of sexual debut is 16 years.
- An average age of beginning to provide commercial sex services is 22 years. If compared to the results of the previous surveys, the average age of beginning to provide commercial sex services has been gradually increasing.

### *Characteristics of FSW clients*

- The most widespread social and demographic groups of clients who use FSW services are businessmen and truck drivers.
- 12,7% of FSW reported having foreigners among their regular clients and 31,7% – among casual clients.

**21%** of FSW indicated having had PWID among their clients in the last 30 days.

**Table 2. Social and professional profile of clients of FSW, % (2013) (among all interviewed respondents, N=4806)**

Social and professional groups of clients	By FSW age groups (p<0,001)				
	Under 19 years	20–24 years	25–34 years	35+ years	Among all
Businessmen	39	53	47	32	46
Truck drivers	11	13	20	28	19
Taxi drivers	8	4	6	8	6
Students	21	10	3	1	5
Other transport workers	3	3	4	7	4
Seamen	4	4	5	4	4
Military men	2	2	3	5	3
«Bandits» (representatives of criminal organization)	2	2	3	3	3
Law enforcement officers (policemen)	2	3	3	3	3
Panders	1	0	0	0	0
Representatives of other professional groups	6	6	7	10	7

### *Sexual contacts with clients, regular and casual partners*

- An average frequency of FSW work during the last week preceding the survey is 4 days.
- An average number of clients during the last month are 31 people, while during the last working day – 2 people. 85% of FSW have regular clients (7 people per year on average).
- 38% of FSW have had regular sexual partners in the last 30 days.
- 15% of FSW reported having had casual sexual partners in the last 30 days.
- 20% of FSW have practiced group sex in the last 30 days.

### *Experience of violence*

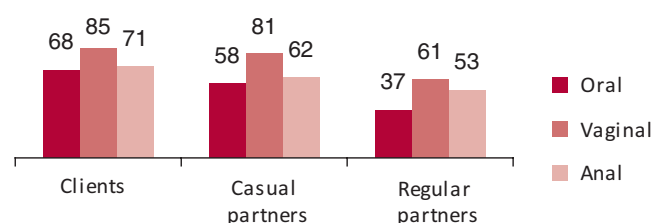
- 49% of FSW reported having been abused when providing commercial sex services.
- The most common form of violence was psychological humiliation (66% of those who have experienced violence), providing of sex services for free (45%), physical abuse (42%).
- 71% of FSW who have experienced violence did not ask for help.

**23%** of FSW have experienced violence from law enforcement officers

# KEY RESULTS: SEXUAL BEHAVIOUR AND CONDOM USE

## Condom use

- 97% of FSW reported condom use during the last sexual contact with a client, 85% of FSW indicated that they have always used condoms with clients in the last 7 days.
- 48% of FSW used condoms during last sexual contact with a regular partner, 89% of FSW – with a casual partner.
- 85% of FSW who have practices group sex in the last 30 days, have used a new condom with every new sexual partner.



**Fig. 1. Proportion of FSW, who have always used condoms in the last 30 days, by the type of sexual intercourse and partner, % (2013 p.)**

Practice of regular condom use depends on the type of sexual contact. FSW less often use condoms during oral and anal sex as compared to vaginal sexual contacts.

Cases of incorrect condom use are quite common among FSW.

**31%** of FSW have experienced a situation when a condom tore or slipped off during sex with a client in the last month.

**Table 3. Cases of condom misuse with sexual partners in the last 30 days, % (2013 p.)**

	Condoms tore or slipped off	Condoms were put in the process of the sexual intercourse	Sex was continued after the condom was taken off
With clients	31	9	10
With permanent partners	18	30	21
With casual partners	11	16	15

There is a trend to increasing percentage of FSW who reported that they would not agree to condom non-use with a client under any circumstances: in 2008/2009 the proportion of such FSW made up 47,2%, in 2013 – 63%.

**Table 4. Proportion of FSW who reported having used condoms during last sexual contact with a client, % (by regions, 2013)**

City	Used condoms,%
Dnipropetrovsk (N=300)	100
Mykolaiv (N=300)	100
Odesa (N=400)	100
Rivne (N=100)	100
Kharkiv (N=354)	100
Khmelnyskyi (N=150)	100
Simferopol (N=200)	99.5
Vinnytsia (N=150)	99.4
Lviv (N=150)	99.4
Kherson (N=150)	99.3
Bila Tserkva (N=100)	99.0
Luhansk (N=150)	98.9
Chernivtsi (N=150)	98.7
Poltava (N=150)	98.
Donetsk (N=300)	98.1
Sumy (N=150)	94.6
Kyiv (N=300)	94.5
Zaporizhzhia (N=252)	94.3
Ternopil (N=100)	94.0
Ivano-Frankivsk (N=100)	93.0
Zhytomyr (N=150)	92.9
Kirovohrad (N=100)	91.0
Sevastopol (N=300)	88.6
Uzhhorod (N=100)	85.7
Lutsk (N=150)	84.7

## PRACTICE OF ALCOHOL CONSUMPTION AND DRUG USE

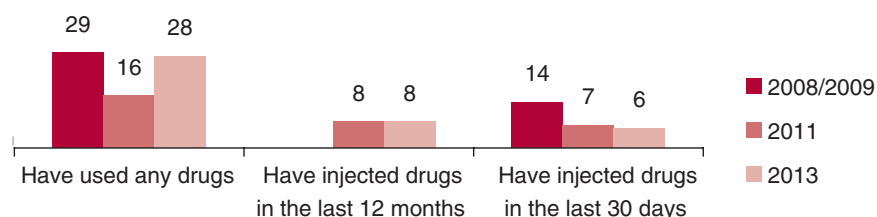
### Alcohol consumption

- 90% of FSW reported having consumed alcohol beverages in the last 30 days preceding sexual contacts with a client, 12% indicated that they regularly practice it.

### Drug use

- A third of FSW indicated having an experience of drug use: 17% used to use them before, 11% use them now.
- In the last 12 months 8% of FSW reported having injected drugs in the last 12 months. Those who inject drugs consider opium extract to be the most popular (74%).

**24%** of FSW-PWID reported having shared injecting equipment or utensils to prepare or distribute drugs or did not see how the syringe was filled.



\* Survey toolkit in 2008/2009 did not include question on injecting drugs in the last 12 months.

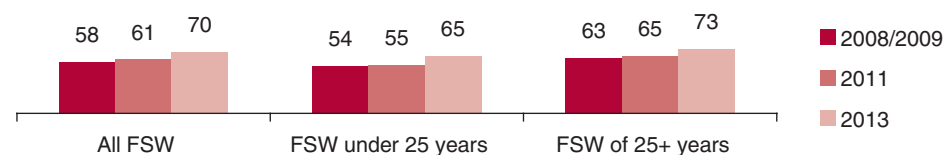
Fig. 2. Drug use practice among FSW, %

Table 5. Proportion of FSW who have injected drugs in the last 30 days, % (by regions, 2013)

	2008/2009	2011	2013
Bila Tserkva	–	–	9.7
Vinnitsia	1.3	1.5	0.0
Dnipropetrovsk	20.0	13.4	1.9
Donetsk	28.9	19.7	12.1
Zhytomyr	15.3	2.2	0.6
Zaporizhzhia	27.9	3.8	19.8
Ivano-Frankivsk	2.7	1.2	0.8
Kyiv	29.4	9.8	4.2
Kirovohrad	15.9	3.8	3.0
Luhansk	0.0	0	0.0
Lutsk	31.0	12.3	8.7
Lviv	1.8	2.3	2.5
Mykolaiv	9.0	2.6	0.6
Odesa	8.6	2.7	1.7
Poltava	48.0	48.0	32.1
Rivne	4.1	2.2	1.9
Sevastopol	–	–	9.6
Simferopol	32.6	0.7	10.0
Sumy	5.0	5.0	0.7
Ternopil	0.0	0.0	6.0
Uzhhorod	5.0	1.2	1.9
Kharkiv	1.7	0.4	0.2
Kherson	8.0	3.5	7.2
Khmelnytskyi	13.9	1.9	4.0
Cherkasy	0.0	3.1	0.0

# USE OF PREVENTION SERVICES AND MEANS TO PREVENT INFECTING WITH HIV AND HEPATITIS C

- 61% of FSW are clients of non-governmental organizations. The proportion of clients of non-governmental organizations has slightly increased as compared to 2011 (52%).
- 70% of FSW are covered with prevention programs<sup>1</sup>. There has been some slight improvement as compared to 2011.



**Fig. 3. Proportion of FSW covered with prevention programs, by surveyed years, %**

- FSW who are not clients of non-governmental organizations remain to be no included in the system of prevention services (39% of non-clients received at least some help in 2011, 18% in 2013).

**Table 6. Top-10 services of non-governmental organizations that FSW have received within the last year, % (2013)**

	Among all FSW	Among NGO clients	Among NGO non-clients
Received any help	67	99	18
Received condoms	64	97	14
Free testing for HIV/AIDS	52	82	6
Received hygienic items	50	78	7
Received informational leaflets, brochures	48	76	6
Received disinfectant solutions	44	70	4
Free testing for Hepatitis C	41	65	4
Free testing for sexually transmitted diseases	37	59	3
Consultations on HIV/AIDS and STD	28	45	2
Psychological consultations	12	20	1
Peer-to-peer consultations	11	18	1

<sup>1</sup> Indicator was calculated according to the system of National indicators – «Percentage of FSW covered with prevention services» (Please, see Methodological recommendations on conducting surveys for monitoring country's response to the HIV-infection epidemics. / [O.Balyakirieva, M.Varban, G.Dovbah and others]; ICF «International HIV/AIDS Alliance in Ukraine». – K., 2008. – 96 p.).

## USE OF PREVENTION SERVICES AND MEANS TO PREVENT INFECTING WITH HIV AND HEPATITIS C

Табл. 7. Proportion of FSW covered with prevention programs, % (by regions, 2013)

	All FSW	FSW at the age of...		Non-governmental organizations	
		younger than 25 years	25+ years	Clients	Not clients
Simferopol	99	96	99	100	67
Vinnytsia	93	94	93	98	74
Lutsk	41	41	42	97	4
Dnipropetrovsk	99	98	99	100	57
Donetsk	67	58	64	97	33
Zhytomyr	25	11	34	100	2
Uzhhorod	22	14	46	91	5
Zaporizhzhia	20	16	22	98	3
Ivano-Frankivsk	11	9	11	100	7
Bila Tserkva	44	30	52	90	33
Kyiv	85	84	87	100	66
Kirovohrad	13	14	11	–	13
Luhansk	96	97	95	100	63
Lviv	92	86	95	97	36
Mykolaiv	99	100	98	99	98
Odesa	96	94	98	99	84
Poltava	68	62	76	98	3

	All FSW	FSW at the age of...		Non-governmental organizations	
		younger than 25 years	25+ years	Clients	Not clients
Rivne	60	41	81	100	22
Sumy	37	26	49	94	8
Ternopil	38	29	45	100	32
Kharkiv	75	71	78	99	21
Kherson	65	58	70	91	44
Khmelnyskyi	92	85	95	97	58
Chernivtsi	74	61	86	93	15
Sevastopol	57	59	57	99	15

# LEVEL OF KNOWLEDGE ABOUT HIV

**54%** of FSW correctly identify ways of HIV transmission

- Proportion of FSW who gave correct answers on ways of HIV sexual transmission has increased as compared to 2008 (51%), but has slightly decreased as compared to 2011 (56%).
- The main factor related to higher level of knowledge about HIV – FSW membership in NGOs. Among FSW who are clients of NGOs there are no age differences concerning the level of knowledge; however, there are differences between FSW who inject drugs and those who do not: the latter have better level of knowledge.

**Table 8. Proportion of FSW who correctly identify ways of prevention of HIV sexual transmission and know how it is not transmitted, % among different groups, by years**

	2011		2013	
	Among...		Among...	
	clients	non-clients	clients	non-clients
<b>By age</b>				
Under 25 years	58	45	55	46
Older than 25 years	67	47	58	53
<i>p-value</i>	<0.01	0.366	0.123	<0.01
<b>Among those who have injected drugs in the last 12 months</b>				
Injected	72	34	50	50
Not injected	63	47	58	50
<i>p-value</i>	0.937	0.486	<0.05	0.987

**Table 9. Proportion of FSW who correctly identify ways of HIV transmission, % (by regions, 2013)**

City	2008/2009	2011	2013
Bila Tserkva	–*	–	51.9
Vinnitsia	66.6	51.7	62.8
Dnipropetrovsk	34.7	22.6	74.4
Donetsk	51.5	52.2	69.2
Zhytomyr	42.7	65.6	35.5
Zaporizhzhia	49.6	50.8	44.8
Ivano-Frankivsk	43.3	38.7	64.3
Kyiv	63.3	47.3	45.1
Kirovohrad	71.9	74.6	75.0
Luhansk	10.4	54.7	43.5
Lutsk	47	52.9	88.7
Lviv	14.7	71.1	24.2
Mykolaiv	62	95	85.2
Odesa	24.4	31.3	44.9

\* In 2011 survey in the given cities was not implemented.



## APPLYING FOR VCT SERVICES

- 95% of FSW know where they can be tested for HIV and consider HIV testing to be available for them.

**56%** of FSW adolescents (14–19 years) know where they can be tested for HIV, **64%** consider HIV testing to be available for them.

- During 2012–2013 about a half of FSW were tested for HIV at non-governmental organizations with the use of rapid tests. A third was tested for syphilis, Hepatitis B and Hepatitis C; almost a quarter was tested for gonorrhoea and chlamydia.

**Table 10. Proportion of FSW who were tested for HIV and other sexually transmitted diseases with the use of rapid tests in 2012–2013, by age, %**

	HIV		Syphilis		Gonorrhoea		Chlamydia		Hepatitis B		Hepatitis C	
	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013	2012	2013
Among all	48	43	33	35	22	23	23	23	32	34	34	36
Under 25 years	40	40	26	32	19	22	20	23	27	32	29	33
Of 25+ years	52	45	37	36	24	24	25	24	35	34	38	38

- FSW, who have been tested for HIV, indicate that pre- and post-test counseling was not always conducted. 74% of FSW who have ever been tested for HIV report having pre-test counseling, 71% – post-test counseling.

**63%** of all interviewed FSW have been tested for HIV in the last 12 months and received their test results (in 2011 – 59%).

**Table 11. Proportion of FSW who have been tested for HIV in the last 12 months and received their test results, % (by regions, 2013)**

	Among all	Among FSW under 25 years	Among FSW of 25+ years
Simferopol	71	58	75
Vinnitsia	93	86	95
Lutsk	54	46	56
Dnipropetrovsk	76	78	74
Donetsk	43	59	38
Zhytomyr	18	16	20
Uzhhorod	21	19	29
Zaporizhzhia	36	31	38
Ivano-Frankivsk	62	58	63
Bila Tserkva	58	55	60
Kyiv	72	84	69
Kirovohrad	33	19	48
Luhansk	90	93	88
Lviv	79	78	79
Mykolaiv	77	78	77
Odesa	74	67	80
Poltava	84	77	91
Rivne	65	46	80
Sumy	29	20	38
Ternopil	53	46	57
Kharkiv	69	66	71
Kherson	73	59	81
Khmelnitskyi	81	76	82
Chernivtsi	72	58	81
Sevastopol	44	29	46

# PREVALENCE LEVEL OF HIV-INFECTION AND OTHER SOCIALLY DANGEROUS DISEASES

- During the last year FSW most often reported having candidiasis (24%). 7% were diagnosed with chlamydia. The same percentage of FSW had genital herpes and Hepatitis C. 5% of FSW reported having trichomoniasis, 2% – gonorrhoea and Hepatitis B. About 1% of FSW had syphilis and tuberculosis.

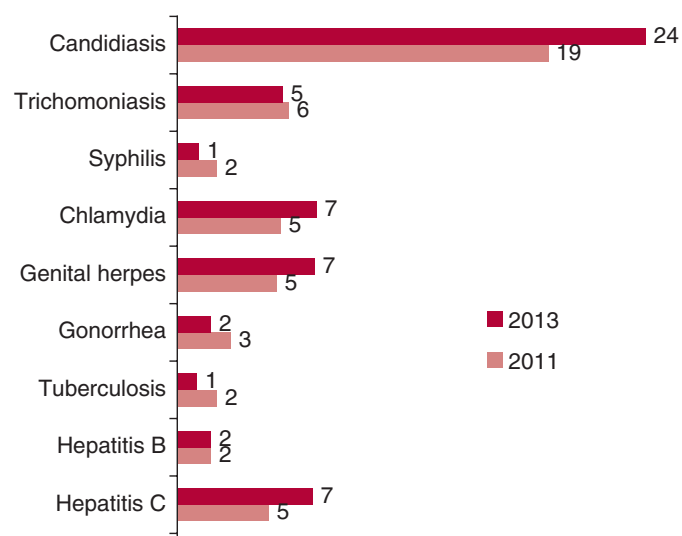


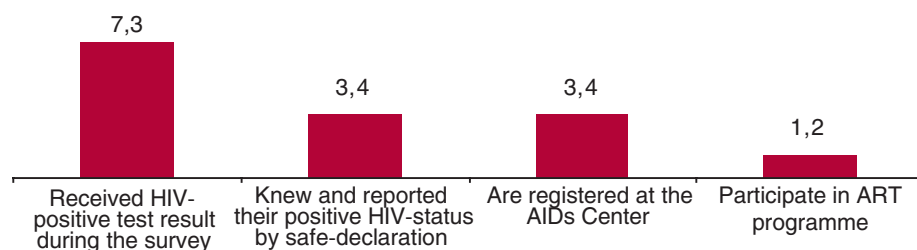
Fig. 4. Proportion of FSW who have had Hepatitis B and C, tuberculosis and STDs within the last year, dynamics during 2011–2013, % (according to self-declaration)

Table 12. Proportion of FSW who had or have Hepatitis B, Hepatitis C and tuberculosis according to self-declaration, % (by regions, 2013)

	Tuber-culosis	Gonor-rhea	Genital herpes	Chlamy-dia	Hepa-titis B	HepatitisC	Syphi-lis	Tricho-moniasis	Candi-diasis
Bila Tserkva	2	0	0	2	4	10	1	0	2
Vinnytsia	2	0	6	3	0	5	2	1	17
Dnipropetrovsk	0	1	2	4	1	2	0	4	38
Donetsk	2	1	5	4	1	17	1	2	30
Zhytomyr	0	0	4	7	0	0	0	1	1
Zaporizhzhia	2	0	4	7	5	14	4	8	48
Ivano-Frankivsk	0	3	2	20	0	1	0	17	7
Kirovohrad	0	3	2	0	0	2	1	1	7
Kyiv	0	7	19	24	2	5	6	8	46
Luhansk	0	0	1	2	0	9	0	0	16
Lutsk	1	1	4	6	1	10	0	7	22
Lviv	1	1	1	1	1	4	0	2	5
Mykolaiv	0	1	11	4	1	4	1	1	39
Odesa	0	5	11	2	3	3	0	2	1
Poltava	0	6	24	31	0	30	1	33	40
Rivne	0	0	0	7	7	22	1	0	3
Simferopol	2	0	4	3	2	3	1	5	6
Sevastopol	2	1	4	4	6	7	1	5	28
Sumy	0	0	12	8	0	4	0	7	30
Ternopil	4	6	8	14	4	11	0	3	16
Uzhhorod	2	0	2	6	0	1	2	4	9
Kharkiv	0	2	12	6	0	1	0	6	26
Kherson	7	0	1	4	1	6	1	2	18
Khmelnyskyi	1	0	0	0	1	3	0	0	0
Cherkasy	–	–	–	–	–	–	–	–	–
Chernivtsi	0	3	1	11	2	6	1	7	64
Chernihiv	–	–	–	–	–	–	–	–	–

## PREVALENCE LEVEL OF HIV-INFECTION AND OTHER SOCIALLY DANGEROUS DISEASES

According to the results of the linked survey<sup>2</sup>, in 2013 the HIV-infection prevalence among FSW made up **7,3%**.



**Fig. 5. HIV prevalence and its coverage by AIDS among all interviewed FSW, %**

- 3% of FSW had negative HIV-result according to the previous tests, but got positive result according to testing within the survey. This percentage partially shows new cases of infection, however it does not correspond to number of new cases as not all FSW were tested before the survey or agreed to declare test results.

<sup>2</sup> Linked research is a combination of survey among risk group representatives with their testing, that allows to verify the status which is declared by the respondent, to get information when respondents are ignorant of their status or in case of respondents' refusal to declare the results of previous testing and to make more detailed analysis of the factors of infection.

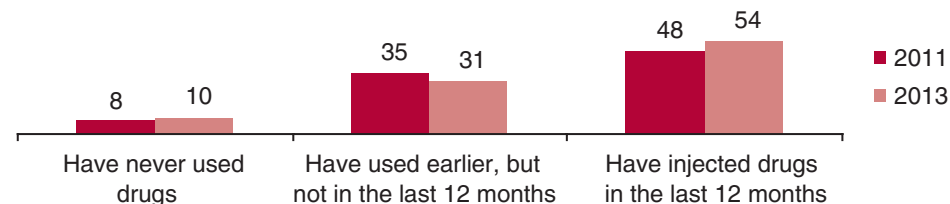
**Table 13. HIV-infection prevalence among FSW per surveyed city, % (2008–2013)**

Cities	2008/2009	2011	2013
Bila Tserkva	–	–	9.7
Vinnitsia	10.7	1.5	8.0
Dnipropetrovsk	14.0	9.6	6.7
Donetsk	39.0	42.7	10.5
Zhytomyr	10.0	5.3	3.1
Zaporizhzhia	4.0	4.8	7.2
Ivano-Frankivsk	7.3	9.8	13.8
Kyiv	24.7	24.2	2.0
Kirovohrad	17.0	13.7	6.0
Luhansk	0.0	0.0	0.0
Lutsk	13.0	5.2	4.7
Lviv	9.0	5.7	2.5
Mykolaiv	24.0	7.1	3.9
Odesa	16.5	13.5	10.3
Poltava	19.3	26.5	13.4
Rivne	8.6	4.8	0.9
Sevastopol	–	–	4.2
Simferopol	25.0	3.6	6.6
Sumy	17.0	0.9	1.0
Ternopil	5.3	2.0	4.0
Uzhhorod	0.0	0.0	0.0
Kharkiv	0.0	0.0	1.2
Kherson	11.0	9.3	7.8
Khmelnytskyi	18.1	18.7	8.7
Cherkasy	17.9	14.4	–
Chernivtsi	0.0	2.0	0.0
Chernihiv	0.0	1.0	–

# PREVALENCE LEVEL OF HIV-INFECTION AND OTHER SOCIALLY DANGEROUS DISEASES

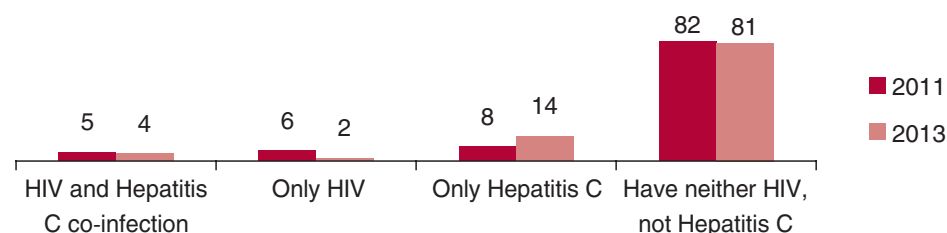
According to the results of the linked survey, in 2013 Hepatitis C prevalence among FSW made up **17,5%**.

- The highest indicators of Hepatitis C prevalence are observed among FSW who inject drugs.



**Fig. 6. Hepatitis C prevalence among FSW depending on the drug use practice, %**

- 4% of FSW have both HIV-infection and Hepatitis C. The proportion of group with HIV/Hepatitis C co-infection has remained stable within 2011–2013.



**Fig 7. Intersection of FSW groups, infected with HIV and Hepatitis C among all interviewed FSW, dynamics within 2011-2013, %**

**Table 14. Hepatitis C prevalence among FSW per surveyed city, % (2011–2013)**

	2011	2013
Bila Tserkva	–	29.8
Vinnitsia	1.5	16.0
Dnipropetrovsk	16.8	17.4
Donetsk	32.4	26.9
Zhytomyr	1.6	3.0
Zaporizhzhia	38.5	39.3
Ivano-Frankivsk	5.5	7.75
Kyiv	22.1	21.8
Kirovohrad	24.4	8.0
Luhansk	7.0	10.7
Lutsk	12.3	18.7
Lviv	7.8	10.8
Mykolaiv	10.0	11.6
Odesa	13.2	18.9
Poltava	21.0	44.4
Rivne	5.1	32.7
Sevastopol	–	10.8
Simferopol	2.7	12.4
Sumy	4.4	12.6
Ternopil	3.3	14.0
Uzhhorod	10.7	10.5
Kharkiv	3.8	4.41
Kherson	8.8	22.9
Khmelnyskyi	13.3	6.0
Cherkasy	17.8	–
Chernivtsi	2.8	22.0
Chernihiv	0.6	–

## FACTORS ASSOCIATED WITH HIV-INFECTION

According to the results of multilevel logistic regression analysis, higher possibility of HIV positive test result is related to older age and experience of providing commercial sex services, native status, irregular condom use with casual and regular partners, injecting drugs, searching for clients on the street, highways or motorways and experience of violence against FSW. There has not been identified any statistically association between presence of dependents and HIV if to monitor social and demographic characteristics of FSW and their risky practices.

- Odds of FSW aged 25+ years to get HIV positive test result are 3.4 times higher as compared to younger FSW.
- Native FSW, i.e. those who were born and work in one and the same city, have higher possibility to get HIV-infection as compared to non-residents.
- There is no linear association between HIV test results and experience of providing commercial sex services. As compared to FSW with relatively small experience of work in sex business (up to 2 years), women with 3–4-year experience and 5–10-year experience have actually the same odds to get HIV. At the same time, FSW with work experience of more than 11 years have twice higher odds to get HIV positive test result than FSW with work experience of less than 2 years.
- FSW, who used flats, was working “by call” or through intermediaries have fewer odds to get HIV positive test result as compared to street FSW (those who search for clients at highways and motorways).

- FSW, who have practiced irregular condom use with casual or permanent partners in the last 30 days, have 1.7 times higher odds to get HIV positive test result as compared to FSW who have always used condoms with such partners.
- FSW who inject drugs have almost 7 times higher odds to get HIV as compared to FSW who do not inject drugs.
- FSW who have experienced violence from their clients have 1,4 times higher odds to get HIV as compared to FSW, who have not had such cases.

### *Regional differences*

- Injecting drug use as a risk factor is more critical in Zhytomyr, Uzhhorod, Ivano-Frankivsk, Luhansk, Lviv, Kharkiv, Khmelnytskyi and Sevastopol, where the odds ratio for FSW who inject drugs and those who do not inject drugs does not exceed ten.
- Presence of cases of irregular condom use with regular or casual partners in the last 30 days is a risk factor for getting HIV-infection in Lutsk, Ivano-Frankivsk, Donetsk and Khmelnytskyi, while in other cities the odds ratio for this factor was not statistically significant.
- In Dnipropetrovsk, Bila Tserkva and Odesa FSW who have had at least one case of irregular condom use with clients in the last 30 days demonstrated higher odds to have HIV-infection if monitor by other factors. Such correlation was not observed in any other cities.

# FACTORS RELATED TO INFECTING WITH HEPATITIS C

According to the results of multilevel logistic regression analysis, statistically significant factors associated with higher risk of Hepatitis C are older age and experience of providing commercial sex services, native status, experience of violence from clients, injecting drugs, searching for clients on the street, highways or motorways. There has not been identified any statistically association between presence of dependents and Hepatitis C if to monitor social and demographic characteristics of FSW and their risky practices.

- Odds of FSW aged 25+ years to get Hepatitis C positive test result are twice higher as compared to younger FSW.
- Native FSW, i.e. those who were born and work in one and the same city, have higher odds to get Hepatitis C as compared to non-residents.
- There is no linear association between Hepatitis C test results and experience of providing commercial sex services. Statistically significant differences have been fixed between FSW with work experience of less than 2 years and FSW with work experience of more than 11 years, as the latter have 2.2 times higher odds to get Hepatitis C positive test result.
- FSW who have used any locations except for the street have less odds to get Hepatitis C positive test result as compared to street FSW (those who mostly search for clients at highways and motorways).

- FSW who have experienced violence from their clients have 1.3 times higher odds to get Hepatitis C as compared to FSW, who have not had such cases.
- FSW who inject drugs have almost 6,6 times higher odds to get Hepatitis C positive test result as compared to FSW who do not inject drugs.

## *Regional differences*

- Injecting drug use as a risk factor for getting Hepatitis C is more critical in Zhytomyr, Ivano-Frankivsk, Kirovohrad, Kharkiv, Khmelnytskyi and Chernivtsi, where the odds ratio for FSW who inject drugs and those who do not inject drugs exceeds ten.

## SURVEY LIMITATIONS

- Cross-sectional survey design allows us to estimate key behavioral indicators among FSW for the certain period of time, but sets limits for the researchers to identify factors and causation. All data on the risky or safe behavior with regards to HIV were obtained through FSW self-declaration during the survey, which may result in receiving socially expected answers from respondents. Therefore, the data on the sterile injecting equipment use as well as condom use may be slightly overestimated.
- The size of the implemented samples in the surveyed cities is not sufficient to assure representativeness of the data at the regional level. Therefore, the representativeness of the obtained results may be applicable only regarding the data at the national level. Regional data cannot be considered as representative, but it can be interpreted as descriptive and such that characterize the behavior models and other indicators for a certain percentage of PWID in one or another surveyed city.
- RDS methodology provides data analysis only at the regional level, therefore data analysis within SPSS software with the use of extrapolated weights from RDSAT software is an optimal way of analysis to get national indicators, but has certain limitations due to inconsistency to RDS methodology.
- Several methodologies of data collection (RDS, TLS and KI) were used during the survey, which provides certain limitations when analyzing the whole data array at the national level and can influence the survey results. Therefore, the best option for data analysis is to use the same methodology in all surveyed regions, which was not possible due to significant differences in sex business in different cities according to the formative survey results. As a result, possible bias should be considered when interpreting survey data.

# RECOMMENDATIONS

- The system of access to HIV counseling and testing during the examination should be improved at the regional level.
- It is necessary to actively implement prevention programs among FSW with full and reliable information about main ways of HIV transmission and real methods to prevent it, especially concerning sexual relations.
- It is necessary to enhance FSW informing about not only ways of HIV transmission, but also the ability to negotiate with a client in order to avoid unprotected sex as well as formation of personal responsibility for their behavior and health.
- Due to the fact that sex business in Ukraine is becoming more virtual with Internet use (i.e. clients are searched via Internet), it is advisable to develop special web-sites with the possibility to inform FSW about HIV prevention programs, especially those FSW working in flats, bars, saunas, etc., i.e. less accessible for non-governmental organizations than street FSW.
- It would be appropriate to develop prevention programs for adolescents involved in providing commercial sex services and being most vulnerable to HIV/STI.
- Peer-to-peer work experience should be extended and educators should be trained to use this method in their work.
- It is still necessary to establish cooperation among all organizations in the region, involved in providing and supporting HIV prevention programs among FSW as well as regularly monitor their implementation.
- It is important to continue survey conduction on the given problem with the use of additional tools to study channels and methods of influence on improvement of situation with HIV-infection among FSW.