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A Comparison of Drug-Related and Sexual Risk-Behaviours in the Community and Prison for Canadian Federal Inmates

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A Comparison of Drug-Related and Sexual Risk-Behaviours in the Community and Prison for Canadian Federal Inmates

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Executive Summary

Canadian and European studies involving the adult incarcerated population indicate that the proportion of offenders reporting risk-behaviours (i.e., drug-, sex-, tattooing- and piercing-related) is lower in prison than in the community. Some studies suggest, however, that those who engage in risk-behaviours in prison may be performing them in a riskier fashion. Unfortunately, most studies suggesting riskier behaviour in prison share a common design limitation: the time periods being compared outside and inside prison have not been standardized. Furthermore, none of these studies have specifically examined whether the observed riskier behaviour in prison is a continuation of community behaviour or practiced primarily in prison.

To address these deficiencies in the literature, in 2007 the Correctional Service of Canada (CSC) conducted the National Inmate Infectious Diseases and Risk Behaviours Survey (NIIDRBS), a self-administered paper questionnaire completed by a large sample of Canadian federal inmates. The NIIDRBS captured information on drug- and sex-related risk-behaviours during the last six months in the community prior to the current incarceration, and during the past six months in prison prior to completion of the questionnaire.

Consistent with previously published research, the prevalence and frequency of non-injection drug use and injection drug use declined in prison compared to the community for both men and women. The change in injection equipment sharing practices across environments reflected the decline in injection drug use among women but not men. Specifically, although the proportion of men who reported injecting drugs significantly declined from 22% in the community to 16% in prison, the proportion who passed a needle to someone else after using it (7% vs. 7%), used someone else's needle after they used it (8% vs. 7%), and shared a needle with someone who was infected or possibly infected (4% vs. 5%) did not significantly decline. These findings indicate that the proportion of male injectors who share injection equipment is greater in prison than in the community. This was not entirely due to the riskiest injectors continuing their risky practices as they move from the community to prison. In fact, among inmates who injected in both the community and prison, 33% used a needle previously used by someone else during the past six months in prison but not during the last six months in the community.

With respect to sexual behaviour, the proportion of inmates reporting any sex and specific sexual behaviours significantly declined in prison compared to the community except for sex with a partner of the same sex. The proportion of men reporting sex with other males remained stable at about 4% across environments while the proportion of women reporting sex with females significantly increased in prison compared to the community (26% vs. 22%). In regards to unprotected sex, the bulk of men and women who reported unprotected sex with a regular partner in prison had actually engaged in the behaviour in the community (5% and 14%, respectively). Similarly, the majority of males who reported unprotected sex with casual partner(s) in prison also reported the behaviour during the last six months in the community. Among women, however, 70% of those who reported recent unprotected sex with a casual partner in prison did not engage in the activity during their last months in the community. For women, this indicates that unprotected sex with a casual partner is not necessarily the continuation of a recent community behaviour.

Thus, in general, there was a lower prevalence of risk-behaviours as offenders moved from the community to prison, but those who engaged in risk-behaviours in prison were not necessarily continuing recent community behaviour. This general decline in risk-behaviours may be more a consequence of incarceration rather than an independent choice to live a healthier lifestyle.

The major limitations associated with the NIIDRBS, such as measurement error and social desirability bias, are typical of cross-sectional, self-report surveys that attempt to capture information about sensitive or illicit activities over time. Additional limitations included lack of information regarding why behaviours change, and how and why behaviours change upon community reintegration. To address these limitations, future research should be longitudinal in nature, surveying inmates at several points in time throughout incarceration and community reintegration, and should inquire as to why behaviours change. Such information is useful in identifying important modifiable factors which can inform CSC's health policy and programming decisions.

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Introduction

Health risk-behaviours, such as injection drug use and unprotected sex, occur at a high rate among offenders entering the correctional system (Conklin, Lincoln, & Tuthill, 2000; Hogben, St. Lawrence, & Eldridge, 2001; Long et al., 2001). Such risky behaviour increases the risk of acquiring blood-borne and sexually transmitted infections, as evidenced by the high rate of human immunodeficiency virus (HIV) and hepatitis C virus (HCV) infections among inmates compared to the general population. For example, studies involving Canadian federal inmates have estimated the overall seroprevalence[1] of HIV at 2% and HCV at 26% to 33% (De, Connor, Bouchard, & Sutherland, 2004; Ford et al., 2000). Conversely, the prevalence of HIV is estimated at 0.3% (UNAIDS, 2006) in the Canadian adult population (15-49 years old), and the prevalence of HCV is estimated at 0.8% in the Canadian population as a whole (Zou, Tepper, & Giulivi, 2001).

Canadian and European studies involving the adult incarcerated population indicate that the proportion of offenders reporting risk-behaviours (i.e., drug-, sex-, tattooing-, and piercing-related) is lower in prison than in the community (Bullock, 2003; Calzavara et al., 2003; Calzavara, Myers, Millson, Schlossberg, & Burchell, 1997; Gyarmathy, Neaigus, & Szamado, 2003; Martin et al., 2005; Poulin et al., 2007) (see Appendix A for study details). Some studies suggest, however, that those who engage in risk-behaviours in prison may be performing them in a riskier fashion (Allwright et al., 2000; Calzavara et al., 1997; Poulin et al., 2007; Rotily et al., 2001). For example, in a Republic of Ireland prison sample of men and women who inject drugs, 46% shared needles in the month prior to prison while 71% shared needles inside prison (Allwright et al., 2000).

Unfortunately, most studies suggesting riskier behaviour in prison share a common design limitation: the time periods being compared outside and inside prison have not been standardized. Furthermore, none of these studies have specifically examined whether the observed riskier behaviour in prison is a continuation of community behaviour or practiced primarily in prison.

To address these and other deficiencies in the literature, in 2007 the Correctional Service of Canada (CSC) conducted the National Inmate Infectious Diseases and Risk Behaviours

[1] Prevalence based on biological testing.

Survey (NIIDRBS), a self-administered paper questionnaire completed by a large sample of Canadian federal inmates. The NIIDRBS captured information on drug-related and sexual behaviours during the last six months in the community prior to the current incarceration and during the last six months in prison prior to completion of the questionnaire. To optimize recall accuracy, the community questions were only asked of inmates admitted within the past three years. Thus, the survey allowed for a comparison of risk-behaviours in the community and prison for Canadian federal inmates admitted within the past three years.

This report presents information on the prevalence and frequency of drug-related and sexual behaviours in the community and prison. Further, it examines two particularly risky behaviours, needle-sharing and unprotected sex, in greater detail to determine if they are continued from the community into prison or practiced primarily in prison. Information about how risk-behaviours change between the community and prison can inform CSC's health policy and programming decisions.

Method

Development of Survey Instrument

To obtain the data to meet the study objectives, a project team drawn from several federal government departments[2] opted to use a self-administered paper and pencil questionnaire (Zakaria, Thompson, & Borgatta, 2009) as the data collection instrument. Questionnaire development included consultations with inmates in five different penitentiaries, including a women's facility and an Aboriginal inmate group, through focus groups. To maximize comprehension, the questions did not exceed a grade 8 literacy level. Further, inmates could choose between the English or French version of the questionnaire.

The final questionnaire was 50 pages long and took inmates approximately 45 to 55 minutes to complete. The questionnaire captured information on risk-behaviours associated with the spread of blood-borne and sexually transmitted infections; inmate testing and treatment for HIV and HCV infections; inmate knowledge of HIV and HCV; and, inmate awareness and use of health education and harm reduction programs. In regards to risk-behaviours associated with the spread of blood-borne and sexually transmitted infections, inmates reported on their risk-behaviours during the last six months in the community prior to their current incarceration and during the past six months in prison prior to survey completion. To optimize recall accuracy, the community questions were limited to inmates admitted within the past three years. Thus, NIIDRBS findings in this report should not be generalized to inmates admitted more than three years ago.

Prior to data collection, Health Canada's Research Ethics Board reviewed and approved the survey methodology.

Measures

NIIDRBS sections relevant to this report included drug- and sex-related risk-behaviours captured in both the community and prison. Drug-related risk-behaviours included: non-injection drug use; frequency of non-injection drug use; most frequently used non-injection drugs; injection drug use; frequency of injecting drugs; frequency of binge-injecting; most frequently injected drugs; passing a needle to someone else after using it; using someone else's needle after

[2] CSC Research Branch, CSC Public Health Branch, and the Public Health Agency of Canada HIV/AIDS Policy, Coordination and Programs Division and Community Acquired Infections Division.

they used it; sharing a needle with someone who has HIV, HCV or an unknown infection status; passing works (i.e., water, filter, cooker/spoon) to someone else after using them; using someone else's works after they used them; and sharing works with someone who has HIV, HCV or an unknown infection status. Sexual risk-behaviours included: any sex (oral, vaginal, or anal); sex with male(s); sex with more than one male; sex with female(s); sex with more than one female; unprotected sex with regular partner(s); unprotected sex with casual partner(s); sex with someone who has HIV, HCV, an STI or an unknown infection status; being paid for sex; and paying someone else for sex. For a detailed link between these behaviours and the NIIDRBS questions, see Appendix B.

Sampling

Survey design and sample size estimation.

The sample frame was all inmates in federal penitentiaries, numbering approximately 13,749 just prior to the time of the survey (March, 2007). Excluded from the frame were inmates unable to understand, orally or in writing, English or French (less than 0.5% of the inmate population). Each penitentiary served as a stratum, the size of which varied from stratum to stratum. For each male penitentiary, a sample size was calculated to ensure estimated proportions had a small margin of error (±5%), 8 times out of 10 [$\alpha = 0.20$ (two-tailed), $\sigma 2 = 0.25$, finite population correction factor applied] (Cochran, 1977, p. 75). If the estimated sample size for a specific institution was 80% or more of the institution's population, the whole population of the institution was invited to participate. This occurred with small penitentiary populations so the extra survey cost was minimal. Given the small number (N = 479) of women inmates, all were invited to participate. The final sample size estimate for the entire federal population, including both men and women, was 4,981 inmates.

Institutional sample lists.

For each male penitentiary, simple random sampling without replacement from the sample frame generated a primary list. Two or more replacement lists (secondary lists) helped maintain required sample sizes in the event an inmate refused to participate in the study or was not in the institution. Lists sorted by Aboriginal self-identification, primary official language (English or French), and aggregate sentence length facilitated substitutions. If an inmate on the primary list declined to participate or was not in the penitentiary for any reason, another inmate

from the secondary list with the same characteristics could substitute for the originally sampled inmate.

Survey Implementation

Selection and training of survey coordinators.

Regional (Atlantic, Quebec, Ontario, Prairies, and Pacific) survey coordinators were nominated by the Assistant Deputy Commissioners for Institutional Operations. In addition, each institution's warden nominated an institutional survey coordinator. Regional coordinators acted as liaisons with institutional coordinators and held weekly teleconferences with the Research Branch to resolve logistical issues during survey implementation. The Research Branch prepared an extensive survey training manual for the coordinators and conducted face-to-face training sessions to encourage survey ownership and standardize approaches and messaging.

Promoting awareness of the survey.

Regional Management Committees, wardens, security staff and unions were briefed regarding the survey and indicated their support. To raise awareness in institutions about the survey, a general communication and frequently asked questions were sent to all CSC employees, and posters announcing the survey were posted in all institutions (Zakaria et al., 2009). These posters emphasized the voluntary nature of the survey; guaranteed participants anonymity and confidentiality; and, reinforced that the overall purpose of the survey was to improve inmate health. Wardens also assisted by informing institutional management committees, inmate committees and local unions.

Inmate recruitment.

Institutional coordinators received lists of eligible inmates two to three weeks prior to the scheduled data collection period. Before inmates were approached, both primary and secondary lists were reviewed by an institution's Warden or his/her designate to identify security risks. Inmates deemed security risks were either excluded from further consideration or remained eligible to complete the questionnaire in their cell.

Institutional survey coordinators invited inmates on the sample list to participate in the study and to sign a consent form if they agreed (Zakaria et al., 2009). For efficiency, group information sessions were organized with eligible inmates to describe the survey and review the

consent form. Consent, however, was not obtained in a group setting but privately from each inmate. Inmates in segregation were recruited individually. Educational attainment information and experiences interacting with an inmate were used to decide whether to ask an inmate if he/she would like assistance completing the questionnaire. A small version (13.9 cm by 21.6 cm) of the survey poster was left with each inmate approached for participation (Zakaria et al., 2009).

After scheduling was complete, CSC Security reviewed the list of inmates scheduled to complete the survey in a group setting to ensure compatibility among inmates scheduled for the same group session. Thereafter, each inmate was informed of when and where they were to complete the questionnaire and were reminded the day before. Recruitment activities continued, as necessary, until the end of the data collection period for a specific institution. This allowed replacement of inmates who were unable to complete the questionnaire for any reason.

Data Collection.

From May 22 to July 6, 2007, a private firm administered the questionnaire in each institution to those inmates with a signed consent form. The survey coordinator was responsible for organizing inmates for the day and time the survey contractor arrived to distribute questionnaires. Since the contractor did not have the sample list and inmates were specifically instructed not to put their name or the name of anyone else on the questionnaire, it was impossible to link the consent form with the completed questionnaire. In this manner, inmates could be assured of their anonymity and confidentiality.

Each inmate completed a self-administered questionnaire: behind a privacy screen when completed in a group setting; in his/her cell if in segregation; or through private one-on-one interviews if an inmate requested assistance. All participating inmates received the answers to the questionnaire's HIV and HCV knowledge questions after data collection was complete within their institution (Zakaria et al., 2009).

Several factors limit inmate recruitment and survey completion in the correctional environment including the transfer of inmates between institutions, the departure of inmates at warrant expiry, and inmates on conditional leave during the survey period. In total, 3,370 inmates (3,006 men, 351 women, 13 transgendered) completed a questionnaire. Operational issues limited the majority of facilities from maintaining detailed records of the total number of inmates asked to participate; however, 13 institutions, accounting for approximately 27% of the total federal inmate population at the time of the survey, provided adequate detail to estimate a

survey consent and response rate. Across these 13 institutions, which included inmates residing in minimum to maximum security levels, 1,687 inmates were asked to participate, 996 consented (consent rate = 59%) and 811 completed a questionnaire (response rate = 48%). In comparison, the 1995 National Inmate Survey reported a response rate of 64.2% [response rate = number who completed a questionnaire/(number who completed a questionnaire + number who refused)]. If inmate illnesses, releases, and transfers are included in the denominator, however, the response rate declines to 59.7% (Price Waterhouse, 1996, derived from Exhibit 1.3 on p.12). The difference in the response rates across the two surveys could be due to several factors, such as a change in the inmate profile over time or the greater sensitive content of the NIIDRBS.

The contractor retained all completed questionnaires and provided a database of anonymous survey records in August 2007. Preliminary analyses to test the integrity of the data were conducted in the fall and winter of 2007/08. The contractor destroyed all completed questionnaires in June 2008 after all data integrity issues were resolved.

General Analytical Approach

Statistical procedures for complex sample surveys.

Typically, statistical procedures assume data were obtained through a simple random sample. Under such circumstances each inmate in the sample represents one inmate from the population and estimates derived from the sample relate to the population. In the NIIDRBS, inmates were randomly selected, but the sampling fraction was not consistent across institutions ranging from approximately 8% to 94%. Consequently, each inmate in the sample represented anywhere from about 1 to 13 inmates. Analyzing the NIIDRBS data as if it were obtained through simple random sampling (i.e., each inmate in the sample represents one inmate in the population) would produce incorrect population estimates and variances (Lee & Forthofer, 2006). All statistical estimates shown in this report acknowledge the NIIDRBS' complex sample design by incorporating weights that convey the number of inmates in the population represented by each inmate in the sample. The inverse of the institution's sampling fraction formed the weight for a record. Thus, estimates presented in this report relate to the Canadian federal inmate population. In addition, provision of estimated population sizes in the tables allows derivation of the number of inmates reporting a specific characteristic. Such information is of administrative value.

All analyses used SAS® 9.1 or 9.2 survey procedures (SAS Institute Inc., 2004, 2008)

that take the complex sampling design into account. Inferences to the population use common decision criteria (e.g., two-tailed alpha of 0.05). To calculate the variance of an estimate, Taylor series (linearization)[3] was used with the finite population correction factor. Each point estimate reported here comes with a two-sided 95% confidence interval using the Student's t-distribution. During bivariate analyses, we used the Rao-Scott chi-square test[4] for association if the data were categorical and the Wald F statistic[5] for continuous data.

Question non-response and small subpopulations.

Question non-response is a limitation of most self-report surveys that probe personal or private matters such as sexual behaviour. Although sophisticated procedures exist for addressing low response rates on certain questions, this report used an approach similar to other studies found in the survey literature: on any given question we assume that non-responders and responders share similar characteristics. Tables shown in the report note those analyses using questions where the item non-response rate varied between 20% and 50% (based on the weighted distribution) to alert the reader to this issue. Furthermore, when item non-response exceeded 50%, we chose to suppress the reporting of estimates. For reasons of confidentiality and privacy, we do not report estimates where there are fewer than five inmates sharing a characteristic. Finally, due to their small number (n = 13), results for the transgendered are not presented in this report.

Specific Analyses

Degree to which the sample is representative of the population.

To evaluate the extent to which the sample is representative of the inmate population, we compared sample estimates of sociodemographic and incarceration characteristics with estimates obtained from Canadian federal inmate administrative data. To more clearly define the subpopulation of interest to this report, sociodemographic, incarceration and risk-behaviour characteristics were also compared between those inmates with community data (i.e., admitted within the past three years) and those without.

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[3] See SAS Institute Inc. (2004, p. 166) for details and related references.

[4] See SAS Institute Inc. (2004, p. 4216) for details and related references.

[5] See SAS Institute Inc. (2008, p.6558) for details.

Change scores for drug-related and sexual risk-behaviours.

All behaviours were captured as binary variables (i.e., 0 and 1 indicate not engaging or engaging in the behaviour, respectively). For each inmate, a change score was derived for each behaviour by subtracting the community behaviour variable from the prison behaviour variable. Consequently, a change score of 0 indicates no change in behaviour across environments (i.e., the behaviour was either present or absent in both the community and prison); a value of +1 indicates the behaviour was not present in the community but present in prison; and a value of -1 indicates the behaviour was present in the community but not in prison. The mean change score (M_{CS}) for each behaviour can range from -100% to +100% and indicates the overall change in the behaviour in prison compared to the community. For example, a M_{CS} of +20% indicates that, on average, there was a 20% increase in the prevalence of the behaviour in prison compared to the community; a M_{CS} of -20% indicates that, on average, there was a 20% decrease in the prevalence of the behaviour in prison compared to the community; and, a M_{CS} of 0% indicates that, on average, the prevalence of the behaviour in prison is not different than that in the community. The t-test was used to determine if the M_{CS} for each behaviour significantly differed from 0.

Risk-profiles for high-risk behaviours.

The change in risk-behaviours across the community and prison were examined in greater detail (see Table 1) for some particularly high-risk activities: injection drug use, using a needle after someone else used it, unprotected sex with a regular partner, and unprotected sex with a casual partner. By classifying inmates into one of four mutually exclusive behaviour patterns, it was possible to determine if risk-behaviours reported in prison were mainly continued from the community (pattern 4) or engaged in primarily in prison (pattern 2).

Table 1:
Complete Distribution of Risk-Behaviour Patterns for the Last Six Months in the Community and Prison

Behaviour Pattern	**Behaviour in Community**	**Behaviour in Prison**
1	No	No
2	No	Yes
3	Yes	No
4	Yes	Yes

Results

Representativeness of the Sample

Canadian federal inmate population characteristics were comparable across data sources indicating the whole sample was representative of the population (see Appendix C). Based on the NIIDRBS, the majority of inmates were English speaking (78%, 95% CI: 77, 79), non-Aboriginal people (79%, 95% CI: 77, 80), born in Canada (89%, 95% CI: 88, 91), who had a high school diploma or greater at the time of the survey (54%, 95% CI: 52, 56), and were not in committed relationships (69%, 95% CI: 68, 71). Gender differences existed. On average, males were older (38 vs. 34 years, $F(1, 3192) = 106.64$, $p < 0.05$), had served a longer duration of their current sentence (4.8 vs. 2.2 years, $F(1, 2975) = 274.15$, $p < 0.05$), and were less likely to be Aboriginal (21% vs. 36%, $\chi^2(1, n = 3{,}234) = 94.37$, $p < 0.05$) compared to women.

Differences Between Inmates With and Without Community Data

When comparing inmates with and without community data, significant differences existed for sociodemographic, incarceration, and risk-behaviour characteristics (see Table 2). Both men and women with community data were younger, less likely to have a high school diploma, and more likely to have ever used non-injection drugs compared to inmates without community data. Among the men, those with community data were also more likely to be in married or common-law relationships (34% vs. 26%, $\chi^2(1, 2826) = 13.73$, $p < 0.05$), more likely to be Aboriginal (22% vs. 18%, $\chi^2(1, 2794) = 4.99$, $p < 0.05$), more likely to reside in medium security (62% vs. 57%, $\chi^2(3, 2876) = 11.62$, $p < 0.05$), less likely to have ever had sex with male partners (11% vs. 18%, $\chi^2(1, 2721) = 18.52$, $p < 0.05$), and less likely to have had any sex recently in prison (14% vs. 20%, $\chi^2(1, 2768) = 11.52$, $p < 0.05$) compared to those without community data. Finally, among the women, those with community data were also less likely to be Aboriginal (33% vs. 42%, $\chi^2(1, 329) = 4.48$, $p < 0.05$), more likely to have ever engaged in sex-trade work (43% vs. 27%, $\chi^2(1, 324) = 13.51$, $p < 0.05$), more likely to have recently used drugs in prison (36% vs. 25%, $\chi^2(1, 328) = 5.70$, $p < 0.05$), and less likely to have had recent unprotected sex with a regular partner in prison (18% vs. 25%, $\chi^2(1, 321) = 3.87$, $p < 0.05$) compared to those without community data.

Differences in the characteristics of inmates by recency of admission were expected. Inmates who have served 3 years or less of their current sentence will be more reflective of the

offender population received by CSC. This population will include offenders serving short to long sentences for offences ranging from the relatively minor to first degree murder. Conversely, the population which has served more than three years will be disproportionately comprised of inmates having committed more serious offences for which they are serving longer sentences.

Since information regarding offence severity and sentence length was not captured by the NIIDRBS, it is not possible to determine if changes in risk-behaviours vary by offence severity or sentence length. Nonetheless, limiting the study population to inmates admitted within the past three years ensured the results reflected the experiences of a more representative offender population as they move from the community to prison.

Table 2: *Sociodemographics, Incarceration Characteristics, and Risk-Behaviours for Canadian Federal Inmates by Community Status*

	Men					**Women**				
	In Community within Last Three Years					**In Community within Last Three Years**				
Characteristics	**Yes n=1,712 N=7,942**		**No n=1,164 N=5,279**			**Yes n=273 N=391**		**No n=61 N=88**		
	n	**Mean or % (95% CI)**	**n**	**Mean or % (95% CI)**	**χ^2(df) F(v_1,v_2)**	**n**	**Mean or % (95% CI)**	**n**	**Mean or % (95% CI)**	**χ^2(df) F(v_1,v_2)**
Sociodemographics										
Age (years)	1652	36 (36, 37)	1145	41 (41, 42)	139.22 (1)*	264	33 (33, 34)	59	39 (37, 40)	32.61 (1)*
High school diploma or greater (%)	798	48 (46, 51)	697	63 (61, 66)	43.56 (1)*	134	51 (47, 54)	36	61 (54, 68)	4.96 (1)*
Married or common-law (%)	564	34 (32, 36)	293	26 (24, 29)	13.73 (1)*	98	36 (33, 39)	17	28 (22, 34)	3.63 (1)
Aboriginal (%)	360	22 (20, 24)	220	18 (16, 20)	4.99 (1)*	96	33 (30, 35)	25	42 (35, 48)	4.48 (1)*
Incarceration Characteristics										
Security level (%)										
Maximum	293	20 (18, 21)	258	23 (21, 25)	11.62 (3)*	-	-	-	-	-
Medium	872	62 (60, 63)	541	57 (55, 59)		-	-	-	-	
Minimum	517	18 (17, 19)	332	19 (17, 20)		20	6 (6, 7)	6	9 (7, 11)	
Multi-level	30	1 (1, 1)	33	2 (1, 2)		253	94 (93, 94)	55	91 (89, 93)	
Years served of current sentence	1536	1.2 (1.1, 1.2)	1164	9.8 (9.4, 10.2)	1649.30* (1,2973)	257	1.0 (1.0, 1.1)	61	6.9 (6.2, 7.6)	225.09* (1,2973)
Lifetime Risk-Behaviours (%)										
Tattooed	1140	69 (67, 71)	769	69 (66, 71)	0.02 (1)	178	67 (64, 70)	45	74 (68, 81)	2.81 (1)
Pierced (including ears)	826	50 (48, 53)	584	53 (50, 56)	1.26 (1)	126	48 (44, 51)	27	45 (38, 52)	0.31 (1)
Any drug use	1402	84 (82, 86)	911	79 (77, 82)	8.23 (1)*	238	87 (85, 89)	47	78 (72, 84)	7.13 (1)*
Non-injection drug use	1351	82 (80, 84)	882	77 (75, 80)	8.03 (1)*	232	85 (82, 87)	45	75 (69, 81)	7.52 (1)*
Injection drug use	695	43 (41, 46)	535	47 (44, 50)	3.12 (1)	147	54 (50, 57)	31	51 (44, 58)	0.28 (1)
Any sex (oral, vaginal, or anal)	1666	98 (98, 99)	1111	97 (96, 98)	7.11 (1)*	267	98 (97, 99)	59	99 (98, 100)	0.07 (1)
Sex with females	1583	97 (96, 98)	1075	96 (94, 97)	4.15 (1)*	133	50 (47, 54)	34	57 (50, 64)	2.03 (1)

Table 2: *Sociodemographics, Incarceration Characteristics, and Risk-Behaviours for Canadian Federal Inmates by Community Status*

	Men					Women				
	In Community within Last Three Years					In Community within Last Three Years				
Characteristics	**Yes n=1,712 N=7,942**		**No n=1,164 N=5,279**			**Yes n=273 N=391**		**No n=61 N=88**		
	n	**Mean or % (95% CI)**	**n**	**Mean or % (95% CI)**	**χ^2(df) F(v_1,v_2)**	**n**	**Mean or % (95% CI)**	**n**	**Mean or % (95% CI)**	**χ^2(df) F(v_1,v_2)**
Sex with males	180	11 (10, 13)	203	18 (16, 20)	18.52 (1)*	249	94 (92, 95)	52	88 (83, 93)	6.03 (1)*
Sex-trade worker	124	8 (7, 9)	89	9 (7, 11)	0.05 (1)	113	43 (40, 46)	16	27 (21, 33)	13.51 (1)*
Sex with a sex-trade worker(s)	685	46 (43, 48)	466	44 (41, 47)	0.43 (1)	59	24 (21, 27)	9	17 (11, 22)	3.16 (1)
Risk-Behaviours during the Past Six Months in Prison (%)										
Any drug use	562	38 (36, 40)	383	38 (35, 41)	0.02 (1)	96	36 (32, 39)	15	25 (19, 31)	5.70 (1)*
Non-injection drug use	464	33 (31, 36)	323	34 (32, 37)	0.23 (1)	70	27 (25, 30)	12	21 (15, 26)	2.73 (1)
Injection drug use	230	16 (14, 17)	175	17 (15, 19)	0.71 (1)	41	15 (13, 17)	6	11 (6, 16)	1.29 (1)
Any sex (oral, vaginal, or anal)	255	14 (13, 16)	230	20 (18, 22)	11.52 (1)*	79	30 (27, 33)	21	36 (29, 43)	1.65 (1)
Sex with females	154	9 (8, 11)	134	12 (10, 14)	4.24 (1)*	65	26 (23, 29)	13	26 (19, 33)	0.00 (1)
Sex with males	55	4 (3, 5)	64	7 (5, 8)	9.03 (1)*	27	13 (10, 15)	7	15¶ (9,20)	0.34 (1)
Unprotected sex with regular partner(s)	87	5 (4,6)	106	9 (8, 11)	14.18 (1)*	46	18 (15,20)	14	25 (18, 31)	3.87 (1)*
Unprotected sex with casual partner(s)[a]	30	2 (1, 2)	30	3 (2, 4)	2.01 (1)	27	11 (8, 13)	8	15 (9, 20)	1.59 (1)
Exchange-sex[b]	23	1 (1, 2)	18	2 (1, 2)	0.31 (1)	‡	‡	‡	‡	-

Note. Since security level is based on institutional security level, it is unknown for the majority of women inmates residing in multi-level security institutions. n = sample size; N = estimated population size.

¶Greater than 20% to 50% missing data (based on weighted distribution). ‡Suppressed because fewer than 5 offenders reported the characteristic.

[a]Casual sex partners are partners not known well.

[b]Exchange-sex is a transaction involving the exchange of sex for money, works (i.e., water, filter, cooker/spoon), rigs (i.e., needles/syringes), drugs, or goods (e.g., tobacco or cigarettes).

*$p < 0.05$.

Non-Injection Drug Behaviours during the Last Six Months in the Community and Prison

The overall prevalence of non-injection drug use declined in prison compared to the community for both men (33% vs. 57%, M_{CS} = -23%, t (1369) = 16.53, $p < 0.05$) and women (27% vs. 60%, M_{CS} = -32%, t(224) = 16.37, $p < 0.05$) (see Table 3). The proportion who reported using at least once per week was also lower in prison compared to the community for both men (10% vs. 47%, M_{CS} = -35%, t(1325) = 25.00, $p < 0.05$) and women (4% vs. 52%, M_{CS} = -46%, t(214) = 24.86, $p < 0.05$). Although the top three most frequently used drugs (cannabis, cocaine, and opiates) were consistent across gender and environment, their relative ranking was not. Most notably, the proportion who reported cocaine as one of their most frequently used drugs declined substantially in prison compared to the community for both men (3% vs. 34%, M_{CS} = -31%, t(1259) = -21.62, $p < 0.05$) and women (6% vs. 46%, M_{CS} = -38%, t(198) = -18.72, $p < 0.05$). The decline in opiate use, however, was less substantial for both men (7% vs. 9%, M_{CS} = -2%, t(1259) = -1.51, $p > 0.05$) and women (7% vs. 9%, M_{CS} = -4%, t(198) = -3.61, $p < 0.05$).

Table 3:
Non-Injection Drug Behaviours during the Last Six Months in the Community and Prison for Canadian Federal Inmates Admitted within the Past Three Years

Non-Injection Drug Behaviours during the Last Six Months	Men n=1,712 N=7,942						Women n=273 N=391					
	Community		Prison		Mean Change Score		Community		Prison		Mean Change Score	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Non-injection drug use	799	57 (54, 59)	464	33 (31, 36)	1,409	-23 (-26, -20)*	152	60 (56, 63)	70	27 (25, 30)	231	-32 (-36, -28)*
Used at least 1x/wk	647	47 (44, 49)	136	10 (9, 12)	1,365	-35 (-38, -33)*	132	52 (48, 55)	10	4 (3, 6)	221	-46 (-49, -42)*
Most Frequently Used Drugs												
Alcohol	54	4 (3, 5)	10	1 (0, 1)	1,299	-3¶ (-5, -2)*	12	5 (3, 6)	‡	‡	-	-
Amphetamines	86	6 (5, 7)	19	2 (1, 2)	1,299	-4¶ (-6, -3)*	18	8 (6, 10)	7	3 (2, 4)	205	-5¶ (-7, -3)*
Cannabis	487	36 (34, 39)	328	25 (23, 27)	1,299	-10¶ (-12, -7)*	60	25 (22, 28)	39	17 (14, 19)	205	-8¶ (-12, -5)*
Cocaine	469	34 (32, 37)	43	3 (2, 4)	1,299	-31¶ (-34, -28)*	111	46 (42, 49)	15	6 (5, 8)	205	-38¶ (-41, -34)*
Hallucinogens	91	7 (6, 8)	25	2 (1, 3)	1,299	-5¶ (-6, -3)*	13	6 (4, 8)	‡	‡	-	-
Opiates (heroin)	31	3 (2, 3)	19	2 (1, 3)	1,299	-1¶ (-2, 0)	‡	‡	‡	‡	-	-
Opiates (non-heroin)	79	6 (5, 8)	71	5 (4, 7)	1,299	-1¶ (-3, 1)	20	8 (6, 10)	17	7 (5, 8)	205	-2¶ (-4, 0)*
Opiates (any)	107	9 (7, 10)	87	7 (5, 8)	1,299	-2¶ (-4, 0)	23	9 (8, 11)	17	7 (5, 8)	205	-4¶ (-6, -2)*
Tranquilizers	22	1 (1, 2)	6	0 (0, 1)	1,299	-1¶ (-2, 0)*	5	2 (1, 3)	5	2 (1, 3)	205	0¶ (-1, 1)

Note. To contribute to the mean change score, an inmate must have complete data on both the community and prison behaviour. Consequently, the mean change score may not be equal to the difference between the prison and community estimates. n = sample size; N = estimated population size.
¶Greater than 20% to 50% missing data (based on weighted distribution). ‡Suppressed because fewer than 5 offenders reported the characteristic.
*$p < 0.05$, using the t-test to assess if the mean change score significantly differs from 0.

Drug-Injecting Behaviours during the Last Six Months in the Community and Prison

Prevalence, frequency, and drugs most frequently used.

The overall prevalence of injecting drugs declined in prison compared to the community for both men (16% vs. 22%, M_{CS} = -6%, t (1400) = 5.2, $p < 0.05$) and women (15% vs. 29%, M_{CS} = -15%, t(240) = 8.48, $p < 0.05$) (see Table 4). Similarly, the proportion injecting at least once per week and binge-injecting significantly declined in prison compared to the community. Although the two most frequently injected drugs (cocaine and opiates) were consistent across gender and environment, their relative ranking was not. Most notably, the proportion reporting cocaine as one of their most frequently injected drugs declined in prison compared to the community for both men (3% vs. 15%, M_{CS} = -13%, t(1262) = -11.58, $p < 0.05$) and women.

Injection equipment sharing.

The change in injection equipment sharing practices across environments mirrored the decline in injection drug use among women but not among men (see Table 5). Specifically, the proportion of women passing or receiving a needle or works, or sharing a needle or works with an infected or potentially infected person consistently decreased in prison compared to the community. As an example, the proportion of women who injected with someone else's used needle was three times greater in the community compared to prison (15% vs. 5%, M_{CS} = -10%, t(230) = -7.68, $p < 0.05$). Conversely, men did not show consistent declines in their sharing practices in prison compared to the community. For instance, the proportion of men who injected with someone else's used needle was about the same in the community and prison (8% vs. 7%, M_{CS} = 0%, t(1365) = 0.37, $p > 0.05$).

Table 4:

Drug-Injecting Behaviours during the Last Six Months in the Community and Prison for Canadian Federal Inmates Admitted within the Past Three Years

Drug Injecting Behaviours during the Last Six Months	Men n=1,712 N=7,942						Women n=273 N=391					
	Community		Prison		Mean Change Score		Community		Prison		Mean Change Score	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Injection drug use	306	22 (20, 25)	230	16 (14, 17)	1,439	-6 (-9, -4)*	73	29 (26, 32)	41	15 (13, 17)	246	-15 (-18, -11)*
Injecting at least 1x/wk	181	14 (12, 16)	39	3 (2, 4)	1,351	-10¶ (-12, -8)*	47	19 (16, 21)	‡	‡	-	-
Binge-injecting (often/always)	184	14 (12, 15)	54	4 (3, 5)	1,401	-9 (-11, -7)*	45	18 (15, 20)	8	3 (2, 4)	235	-16 (-18, -13)*
Most Frequently Injected Drugs												
Amphetamines	28	3 (2, 4)	12	1 (0, 2)	1,304	-2¶ (-3, -1)*	14	5 (4, 7)	‡	‡	-	-
Cocaine	201	15 (13, 17)	36	3 (2, 4)	1,304	-13¶ (-15, -10)*	52	21 (18, 24)	‡	‡	-	-
Opiates (heroin)	52	4 (3, 5)	29	3 (2, 4)	1,304	-1¶ (-3, 0)	8	4 (2, 5)	‡	‡	-	-
Opiates (non-heroin)	103	8 (7, 10)	78	6 (5, 8)	1,304	-2¶ (-4, 0)*	33	13 (11, 15)	17	6 (5, 7)	214	-6¶ (-8, -5)*
Opiates (any)	134	11 (9, 13)	91	8 (6, 9)	1,304	-3¶ (-5, -2)*	39	16 (14, 19)	18	6 (5, 8)	214	-9¶ (-11, -6)*

Note. To contribute to the mean change score, an inmate must have complete data on both the community and prison behaviour. Consequently, the mean change score may not be equal to the difference between the prison and community estimates. n = sample size; N = estimated population size.

¶Greater than 20% to 50% missing data (based on weighted distribution). ‡ Suppressed because fewer than 5 inmates reported the characteristic.

*$p < 0.05$, using the t-test to assess if the mean change score significantly differs from 0.

Table 5:

Injection Equipment Sharing Behaviours during the Last Six Months in the Community and Prison for Canadian Federal Inmates Admitted within the Past Three Years

Injection Equipment Sharing Behaviours during the Last Six Months	Men n=1,712 N=7,942						Women n=273 N=391					
	Community		Prison		Mean Change Score		Community		Prison		Mean Change Score	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Passed a needle to someone else after using it	95	7 (5, 8)	93	7 (6, 8)	1,404	+1 (-1, 2)	29	12 (9, 14)	18	6 (5, 7)	238	-6 (-8, -3)*
Used someone else's needle after they used it	98	8 (6, 9)	96	7 (6, 9)	1,404	0 (-2, 1)	37	15 (12, 17)	15	5 (4, 6)	236	-10 (-13, -7)*
Shared needle with someone who has HIV, HCV, or an unknown infection status	50	4 (3, 5)	60	5 (4, 6)	1,389	+1 (0, 3)	25	10 (8, 12)	11	4 (3, 5)	233	-6 (-7, -4)*
Passed works to someone else after using them	106	7 (6, 9)	70	5 (4, 6)	1,395	-2 (-4, -1)*	32	13 (11, 15)	9	3 (2, 4)	233	-10 (-12, -8)*
Used someone else's works after they used them	104	8 (6, 9)	62	5 (4, 6)	1,387	-3 (-4, -1)*	37	15 (12, 17)	10	3 (3, 4)	234	-11 (-13, -9)*
Shared works with someone who has HIV, HCV, or an unknown infection status	57	4 (3, 5)	52	4 (3, 5)	1,382	0 (-1, 1)	23	9 (7, 11)	8	3 (2, 4)	229	-6 (-7, -4)*

Note. To contribute to the mean change score, an inmate must have complete data on both the community and prison behaviour. Consequently, the mean change score may not be equal to the difference between the prison and community estimates. n = sample size; N = estimated population size; HIV = human immunodeficiency virus; HCV = hepatitis C virus.

*$p < 0.05$, using the t-test to assess if the mean change score significantly differs from 0.

Drug-injecting risk-profiles.

Injection drug use.

The drug-injecting risk-profiles of both men and women indicated that those inmates who recently injected in prison did not necessarily inject during their last six months in the community (see Table 6). Approximately 7% (95% CI: 6, 8) of inmates reported recently injecting drugs in prison but not during their last months in the community. This means that close to half of inmates [7% / (7% + 9%) = 44%] who recently injected in prison did not inject during their last months in the community. Conversely, about 13% (95% CI: 12, 15) of men and 20% (95% CI: 18, 23) of women reported they had not recently injected in prison despite injecting during their last months in the community.

Table 6:
Injection Drug Use Risk-Profile for Canadian Federal Inmates Admitted within the Past Three Years

Injection Drug Use		Men n=1,712 N=7,942		Women n=273 N=391		All n=1,985 N=8,333	
Community	**Prison**	**n**	**% (95% CI)**	**n**	**% (95% CI)**	**n**	**% (95% CI)**
No	**No**	1,056	71 (69, 73)	159	65 (62, 68)	1215	71 (68, 73)
	Yes	91	7 (6, 8)	14	6 (4, 7)	105	7 (6, 8)
Yes	**No**	184	13 (12, 15)	50	20 (18, 23)	234	14 (12, 16)
	Yes	108	9 (7, 10)	23	9 (7, 11)	131	9 (7, 10)

Note. The injection drug use risk-profile significantly differed by gender ($\chi^2(3, 1685) = 15.83$, $p < 0.05$). n = sample size; N = estimated population size.

Using someone else's needle after they used it.

Inmates who reported injecting during the last six months in the community and prison were explored in more detail with respect to their tendency to use a needle after someone else had used it (see Table 7). Approximately 32% (95% CI: 23, 40) of these inmates reported this behaviour in both the community and prison. A similar proportion (33%, 95% CI: 24, 42), however, reported this behaviour recently in prison but not during their last six months in the community. Thus, among inmates who reported injecting in both the community and prison, approximately 50% [33%/(33% + 32%)] of the sharing in prison appeared to be specific to the prison environment.

Table 7:
Needle-Sharing Risk-Profile for Canadian Federal Inmates Who were Admitted within the Past Three Years and Injected Drugs during the Last Six Months in the Community and Prison

Using Someone Else's Needle After They Used It		**Men n=108 N=676**		**Women n=23 N=35**		**All n=131 N=712**	
Community	**Prison**	**n**	**% (95% CI)**	**n**	**% (95% CI)**	**n**	**% (95% CI)**
No	**No**	26	23 (16, 31)	6	30 (19, 41)	32	24 (16, 31)
	Yes	29	33 (24, 43)	5	20 (14, 26)	34	33 (24, 42)
Yes	**No**	14	12 (6, 17)	‡	‡	a	12 (7, 17)
	Yes	30	32 (22, 41)	8	34 (25, 42)	38	32 (23, 40)

Note. Needle-sharing risk-profiles did not differ by gender ($\chi^2(3, 121) = 3.2018$, $p > 0.05$). Population estimates may not add to total due to rounding. n = sample size; N = estimated population size.
‡Suppressed because fewer than 5 inmates reported the characteristic.
[a]Suppressed to ensure the confidentiality and privacy of the estimate for women.

Sexual Behaviours during the Last Six Months in the Community and Prison

The proportion of inmates reporting any sex (oral, vaginal, or anal) substantially declined in prison compared to the community for men (14% vs. 83%, M_{CS} = -70%, $t(1354) = -55.61$, $p < 0.05$) and women (30% vs. 84%, M_{CS} = -54%, $t(231) = -29.08$, $p < 0.05$) (see Table 8). Similarly, the proportion reporting specific sexual behaviours declined in prison compared to the community except for sex with a partner of the same sex. The proportion of men reporting sex with males did not significantly differ across environments (4% vs. 4%, M_{CS} = -1%, $t(1058) = -1.24$, $p > 0.05$) while the proportion of women reporting sex with females increased in prison compared to the community (26% vs. 22%, M_{CS} = +5%, $t(197) = 3.12$, $p < 0.05$).

Table 8:

Sexual Behaviours during the Last Six Months in the Community and Prison for Canadian Federal Inmates Admitted within the Past Three Years

Sexual Behaviours during the Last Six Months	Men n=1,712 N=7,942						Women n=273 N=391					
	Community		Prison		Mean Change Score		Community		Prison		Mean Change Score	
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Any sex (oral, vaginal, or anal)	1204	83 (82, 85)	255	14 (13, 16)	1,403	-70 (-72, -67)*	205	84 (81, 86)	79	30 (27, 33)	238	-54 (-58, -51)*
Sex with male(s)	60	4¶ (3, 5)	55	4 (3, 5)	1,098	-1¶ (-2, 0)	165	72 (69, 75)	27	13 (10, 15)	187	-58¶ (-63, -54)*
Sex with more than 1 male partner	42	3¶ (2, 4)	17	1 (1, 2)	1,069	-2¶ (-3, -1)*	106	48 (44, 51)	5	3¶ (1, 4)	165	-42¶ (-46, -38)*
Sex with female(s)	1051	78 (76, 81)	154	9 (8, 11)	1,247	-70¶ (-72, -67)*	48	22 (19, 25)	65	26 (23, 29)	204	+5¶ (2, 8)*
Sex with more than 1 female partner	707	55 (52, 57)	29	1 (1, 2)	1,194	-53¶ (-56, -50)*	25	11 (9, 14)	22	9 (7, 11)	197	-1¶ (-4, 1)
Unprotected sex with regular partner(s)	920	70 (67, 72)	87	5 (4, 6)	1,250	-65¶ (-67, -62)*	161	70 (66, 73)	46	18 (15, 20)	223	-52 (-57, -48)*
Unprotected sex with casual partner(s)[a]	433	33 (31, 36)	30	2 (1, 2)	1,249	-32¶ (-34, -29)*	63	27 (24, 30)	27	11 (8, 13)	223	-17 (-.21, -.13)*
Sex with someone who has HIV, HCV, an STI or an unknown infection status	249	20 (17, 22)	30	2 (1, 3)	1,262	-17¶ (-19, -15)*	72	31 (28, 35)	27	10 (8, 11)	223	-21 (-.25, -.18)*
Was paid for sex with money, works, rigs, drugs or goods (e.g., tobacco or cigarettes)	113	8¶ (7, 9)	11	1 (0, 1)	1,257	-7¶ (-8, -5)*	64	27 (24, 30)	‡	‡	-	-
Paid for sex with money, works, rigs, drugs or goods (e.g., tobacco or cigarettes)	229	16 (14, 18)	11	1 (0, 1)	1,294	-16¶ (-18, -14)*	13	6 (4, 7)	‡	‡	-	-

Note. To contribute to the mean change score, an inmate must have complete data on both the community and prison behaviour. Consequently, the mean change score may not be equal to the difference between the prison and community estimates. n = sample size; N = estimated population size; HIV = human immunodeficiency virus; HCV = hepatitis C virus; STI = sexually transmitted infection.

¶Greater than 20% to 50% missing data (based on weighted distribution). ‡Suppressed because fewer than 5 offenders reported the characteristic.

[a]Casual sex partners are partners not known well.

*$p < 0.05$, using the t-test to assess if the mean change score significantly differs from 0.

Unprotected sex risk-profiles.

Unprotected sex with regular partner(s).

The majority of men (65%, 95% CI: 62, 68) and women (56%, 95% CI: 52, 60) did not have unprotected sex with a regular partner recently in prison despite engaging in the behaviour during their last six months in the community (see Table 9). Small proportions of men (0.4%, 95% CI: 0, 1) and women (4%, 95% CI: 2, 5) reported engaging in the behaviour recently in prison, but not in their last months in the community. Rather, the bulk of men and women who recently had unprotected sex with a regular partner in prison also engaged in the behaviour during their last months in the community (5% and 14%, respectively).

Table 9:
Unprotected Sex with Regular Partner(s) Risk-Profile for Canadian Federal Inmates Admitted within the Past Three Years

Unprotected Sex (Oral, Vaginal, or Anal) with Regular Partner(s)		**Men n=1,712 N=7,942**		**Women n=273 N=391**		**All n=1,985 N=8,333**	
Community	**Prison**	**n**	**% (95% CI)**	**n**	**% (95% CI)**	**n**	**% (95% CI)**
No	**No**	392	30 (28, 33)	57	26 (23, 30)	449	30 (27, 32)
	Yes	7	0.4 (0, 1)	8	4 (2, 5)	15	1 (0, 1)
Yes	**No**	791	65 (62, 68)	127	56 (52, 60)	918	64 (62, 67)
	Yes	60	5 (3, 6)	31	14 (12, 17)	91	5 (4, 6)

Note. Approximately 26% of men, 18% of women, and 25% of all inmates were missing the risk-profile. The unprotected sex with regular partner(s) risk-profile significantly differed by gender ($\chi^2(3, 1473) = 89.69$, $p < 0.05$). n = sample size; N = estimated population size.

Unprotected sex with casual partner(s).

The majority of inmates (66%, 95% CI: 64, 69) did not have unprotected sex with a casual partner during either of the community or prison six-month time periods (see Table 10). In addition, substantial proportions of men (32%, 95% CI: 29, 35) and women (24%, 95% CI: 21, 27) did not recently engage in the behaviour in prison but did during their last months in the community. Approximately 7% (95% CI: 5, 9) of women, however, reported unprotected sex with a casual partner recently in prison, but not during their last months in the community. This means that 70% [7% / (7% + 3%)] of women who recently reported unprotected sex with a casual partner in prison did not engage in the behaviour during their last months in the community.

Table 10:
Unprotected Sex with Casual Partner(s) Risk-Profile for Canadian Federal Inmates Admitted within the Past Three Years

Unprotected Sex (Oral, Vaginal, or Anal) with Casual Partner(s)		**Men n=1,712 N=7,942**		**Women n=273 N=391**		**All n=1,985 N=8,333**	
Community	**Prison**	**n**	**% (95% CI)**	**n**	**% (95% CI)**	**n**	**% (95% CI)**
No	**No**	838	66 (64, 69)	146	66 (62, 69)	984	66 (64, 69)
	Yes	7	0.4 (0, 1)	14	7 (5, 9)	21	1 (0, 1)
Yes	**No**	386	32 (29, 35)	56	24 (21, 27)	442	32 (29, 34)
	Yes	18	1 (1, 2)	7	3 (2, 4)	25	1 (1, 2)

Note. Approximately 26% of men, 18% of women, and 25% of all inmates were missing the risk-profile. The unprotected sex with casual partner(s) risk-profile significantly differed by gender ($\chi^2(3, 1472) = 130.82$, $p < 0.05$). n = sample size; N = estimated population size.

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Discussion

Consistent with previously published research, the prevalence and frequency of non-injection and injection drug use declined in prison compared to the community (see Tables 3 and 4). According to a study involving drug using male inmates in England, the main reasons reported for decreased drug use in prison were relative lack of availability (61%), desire to discontinue drug use (14%), inability to afford drugs (13%), and concerns about punishment (6%) (Bullock, 2003).

Inmates who did inject during the past six months in prison were not necessarily continuing a recent community behaviour (see Table 6). More specifically, approximately 7% of inmates reported recently injecting drugs in prison but not during their last months in the community. This group accounts for about 44% of inmates who recently injected in prison.

In the transition from the community to prison, women demonstrated a decline in needle-sharing behaviours that was proportional to their decline in injection drug use. Among men, however, needle-sharing behaviours did not significantly decline in prison compared to the community. Specifically, although the proportion of men injecting drugs declined from 22% in the community to 16% in prison (see Table 4), the proportions who passed a needle to someone else after using it, used someone else's needle after they used it, and shared a needle with someone who was infected or possibly infected did not decline in prison compared to the community (see Table 5). This indicates that the proportion of male injectors who share injection equipment is greater in prison than in the community.

An elevated rate of injection equipment sharing among men who inject drugs in prison compared to the community has been previously documented. In a study involving Quebec provincial prison inmates, 63% of men ever injecting in prison shared needles compared to 53% of men ever injecting in the community; for women the estimates were 50% and 56%, respectively (Poulin et al., 2007). In a predominantly male prison population of ever injectors in the Republic of Ireland, approximately 46% reported sharing needles in the month prior to imprisonment compared to 71% in prison (Allwright et al., 2000). Finally, among European male inmates who injected during their last four weeks in the community, 46% injected with a used needle compared to 50% to 76% of ever prison injectors (Rotily et al., 2001). Although these studies suggest elevated rates of sharing among men who inject drugs in prison compared to the community, the findings are weakened by an inconsistent time frame across environments.

Because the NIIDRBS standardized the time frame, it provides more definitive evidence of an increased rate of sharing among male inmates who inject drugs in prison compared to the community.

The sharing of injection equipment in prison is not entirely due to the riskiest injectors continuing their risky practices as they move from the community to prison. In fact, among inmates who injected in both the community and prison, 33% used a needle previously used by someone else during the past six months in prison but not during the last six months in the community (see Table 7). This suggests that needle-sharing in prison may reflect the reduced availability of needles. Further research is necessary, however, to validate and explain the gender differences observed.

The most frequently used drugs differed across environments (see Tables 3 and 4). Specifically, the proportion of inmates reporting cocaine as one of their most frequently used non-injection or injection drugs dramatically declined in prison compared to the community. Because declines in cannabis and opiate use in prison were smaller, they became the most frequently used drugs in prison. Similarly, Bullock (2003) and Calzavara et al. (1997, 2003) found there was a greater tendency to use depressants (opiates, cannabis, and tranquilizers) rather than stimulants in prison. The most frequently cited reasons for using depressants were relaxation and relief of boredom (Bullock, 2003; Calzavara et al., 1997). Bullock (2003) hypothesized that the use of depressants are more suited to the prison environment than stimulants because the heightened mental awareness associated with stimulants may be exacerbated by the physical confinement of imprisonment resulting in increased paranoia, anxiety, and related mental stresses. Further, the potential for stimulants to induce insomnia is also likely to be a deterrent. According to Calzavara et al. (2003), possible explanations for opiates being the most commonly injected drug in prison include: the nature of addiction to opiates; a preference for the high from opiates, a sedative and pain-killer with an effect that lasts hours, rather than cocaine, a stimulant with an effect that lasts minutes; and, that opiates may be more accessible in correctional facilities.

With respect to sexual behaviour, the proportion of inmates reporting any sex and specific sexual behaviours significantly declined in prison compared to the community except for sex with a partner of the same sex (see Table 8). The proportion of men reporting sex with other males remained stable at about 4% across environments while the proportion of women reporting sex with females significantly increased in prison compared to the community (26% vs. 22%).

These findings are consistent with previous research examining the sexual behaviours of a small sample (n = 39) of Canadian federal inmates during their last 12 months in the community and past 12 months in prison (Calzavara et al., 1997). This study found that the proportion reporting sexual activity with a partner of the same sex increased in prison compared to the community for both men (15% vs. 10%) and women (37% vs. 21%).

In regards to unprotected sex with a regular partner, small proportions of men and women reported recently engaging in the behaviour in prison but not during their last months in the community. Rather, the bulk of men and women who reported this behaviour recently in prison had actually engaged in the behaviour during their last months in the community (5% and 14%, respectively) (see Table 9).

The pattern for unprotected sex with casual partners was similar to that for regular partners for men but not for women. Only 3% of women reported engaging in unprotected sex with a casual partner in both the community and prison time periods. A greater proportion (7%) reported engaging in the behaviour recently in prison but not during their last six months in the community (see Table 10). This indicates that for women, unprotected sex with a casual partner is not necessarily the continuation of a recent community behaviour.

Although encouraging declines in the prevalence and frequency of risk-behaviours are observed in federal penitentiaries, some men and women are at risk for blood-borne and sexually transmitted infections because of injection drug-use and unprotected sex while in prison. The occurrence of risk-behaviours in federal penitentiaries reinforces the importance of presently available health promotion, treatment, and harm-reduction programs. Specifically, CSC provides health education classes; voluntary testing and treatment for infectious diseases; vaccines for hepatitis A and B; substance abuse treatment programs that are tailored to an inmate's level of addiction, gender and ethnicity; dedicated living arrangements in some institutions to assist inmates in achieving a drug-free life style; opiate substitution therapy for opiate addicted inmates; bleach to disinfect injecting equipment; and, condoms, dental dams, and lubricant for safer sex.

Limitations

The major limitations associated with the NIIDRBS, such as measurement error and social desirability bias, are typical of cross-sectional, self-report surveys that attempt to capture information about sensitive or illicit activities over time. In particular, if inmates underreported their risky behaviours while in prison, the study findings would overstate the decline in risk-behaviours as offenders move from the community to prison.

Additional limitations included lack of standardization of the duration of incarceration at time of survey completion and not exploring why behaviours change. Although all inmates were admitted within the past three years, there was still some variability in the amounts of time they had served prior to survey completion. It is conceivable that inmates' behaviours during their first six months of incarceration may be different than their behaviours during subsequent six month periods. Consequently, estimates of prison behaviours presented in this report represent an average for the past six months among inmates admitted within the past 3 years.

Future Research

To address identified limitations, future research should be longitudinal in nature, surveying inmates at several standardized points in time throughout incarceration and community reintegration, and should inquire as to why behaviours change. Such information is useful in identifying important modifiable factors which can inform CSC's health policy and programming decisions.

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Appendix A: Studies Examining Risk-Behaviours across the Community and Prison

Author Geographic Region Study Time Period Study Design	Sample	Risk-behaviour	Prevalence Prior To Incarceration	Prevalence During Incarceration
Poulin et al. (2007) Quebec, Canada 2003 CS-SAQ	1,607 males and females recruited through a census type method from 7 of a total 17 provincial prisons. Greater than 98% participation rate. 84% males; mean age: males 33 years, females 36 years; 63% had not competed high-school.		(all estimates refer to ever outside of prison)	(all estimates refer to ever inside of prison)
		Injection drug use.	females: 42.8% males: 27.8%	females: 0.8% males: 4.4%
		Needle-sharing among injection drug users.	females: 56.1% males: 53.3%	females: 50.0% males: 63.3%
		Receiving tattoo.	females: 60.4% males: 48.4%	females: 4.8% males: 37.9%
		Non-sterile equipment used by those receiving tattoo.	females: 31.1% males: 15.5%	females: 41.7% males: 18.3%
		Receiving piercing.	females: 54.4% males: 30.7%	females: 4.0% males: 2.1%
		Non-sterile equipment used by those receiving piercing.	females: 9.6% males: 14.4%	females: 30.0% males: 20.7%
		Anal sex.	females: 50.4% males: 42.5%	females: NA males: 1.5%
		Unprotected anal sex among those reporting anal sex.	females: 84.1% males: 82.8%	females: NA males: 80%
		Anal or vaginal sex for money or drugs.	females: 42.0% males: 6.0%	females: 0.4% males: 1.3%
		Unprotected anal/vaginal sex among those reporting anal/vaginal sex for money or drugs.	females: 41.9% males: 62.2%	females: 100% males: 94.1%

Author Geographic Region Study Time Period Study Design	Sample	Risk-behaviour	Prevalence Prior To Incarceration	Prevalence During Incarceration
Martin et al. (2005) British Columbia, Canada 2001 CS-SAQ	104 volunteering females from Burnaby Correctional Centre for Women which includes the remanded to those sentenced to more than 2 years. 83% participation rate. 66% caucasian; 54% aged 19-30 years; 74% with current sentence related to illicit drug use.	Any drug use. Injection drug use.	93% 65%	36% 21%
Bullock (2003) England 2000/2001 Longitudinal interviews	529 male inmates who had been in custody for up to 1.5 years and had been identified at admission as drug users (i.e., drug use in the year prior to their incarceration).	 Prevalence of use for 10 drugs of interest. Injecting drugs. Drugs injected among injection drug users.	(all estimates refer to last 12 months in community prior to current incarceration) amphetamines 40% cannabis 89% cocaine 40% crack 40% ecstasy 40% heroin 44% tranquilizers 32% 32% amphetamines 32% crack 23% heroin 82%	(all estimates refer to ever during current incarceration) amphetamines 2% cannabis 54% cocaine 5% crack 7% ecstasy 4% heroin 27% tranquilizers 15% <1% amphetamines 20% heroin 80%
Ford et al. (2000) Ontario, Canada 1998 CS-SAQ	350 volunteering males from a medium-security federal penitentiary sentenced to two or more years. 68% participation rate.	Sharing injection equipment.	18% of all offenders ever outside prison	19% of all offenders ever inside prison

Author Geographic Region Study Time Period Study Design	Sample	Risk-behaviour	Prevalence Prior To Incarceration	Prevalence During Incarceration
Allwright et al. (2000) Republic of Ireland 1998 CS-SAQ	1,205 male and female prisoners obtained through random sampling or census in 9 of the 15 prisons in the Republic of Ireland. 88% participation rate. 95.3% male; median age 25 years; age range 16-67 years.	Sharing needles among ever injection drug users.	45.7% in month prior to imprisonment	71%
Gyarmathy, Neaigus, & Szamado (2003) Hungary 1997/1998 CS-SAQ	632 male and female offenders recruited through convenience sampling from 14 of 24 correctional facilities. 87% male; mean age (sd) : females 36.4 years (9.9), males 29.0 years (9.2).	Any drug use.	females: 5.1% males: 20.7%	females: 1.3% males: 8.9%
Calzavara et al. (2003) Ontario, Canada 1996/1997 CS interviews	597 males and females serving sentences less than 2 yrs and recruited through stratified random sampling from 6 of 10 provincial correctional centres. 89% participation rate. 74% male; 71% white; 45% aged 18-29 years.	 Any drug use. Injection drug use. Injecting with used needles among injection drug users. Full strength bleach always used to clean needles among those injecting with used needles.	(all estimates refer to the year prior to incarceration) 68% 17% 32% 47%	(all estimates refer to the past year in prison) 45% 3% 32% 50%

Author Geographic Region Study Time Period Study Design	Sample	Risk-behaviour	Prevalence Prior To Incarceration	Prevalence During Incarceration
Rotily et al. (2001) France, Germany, Italy, The Netherlands, Scotland, and Sweden 1996/1997 CS-SAQ	847 males recruited through random sampling or census. One prison for sentenced male prisoners was selected in each country except in The Netherlands where a remand prison was chosen. Participation rates ranged from 48% in Italy to 94% in Scotland.	Injecting with a used needle.	46% of those who injected in the 4 weeks prior to incarceration	50% to 76% of ever prison injectors
Calzavara, Myers, Millson, Schlossberg, & Burchell (1997) Ontario, Canada 1995 CS-interview	Inmates randomly selected from the bed list of two federal institutions, one housing males the other females (n = 39, 20 men, 19 women). Participation rate was 82%.		(all estimates refer to the year prior to incarceration)	(all estimates refer to the past year in prison)
		Any drug use.	67%	56%
		Most frequently used drugs.	amphetamines (13%) barbiturates (21%) cocaine (33%) crack cocaine (35%) marijuana/hashish (55%) opiates: heroin (21%) opiates: other (28%) psychedelics (33%) tranquilizers (35%)	amphetamines (5%) barbiturates (18%) cocaine (10%) crack cocaine (10%) marijuana/hashish (51%) opiates: heroin (8%) opiates: other (18%) psychedelics (13%) tranquilizers (23%)
		Injection drug use.	31%	5%
		Most commonly injected drugs.	Cocaine & heroin.	Cocaine & heroin.
		Needle sharing.	all: 13% among inmates injecting drugs: 42%	all: 5% among inmates injecting drugs: 100%

Author Geographic Region Study Time Period Study Design	Sample	Risk-behaviour	Prevalence Prior To Incarceration	Prevalence During Incarceration
		Needle cleaning with concentrated bleach.	all: 8% among inmates injecting drugs: 26%	all: 3% among inmates injecting drugs: 60%
		Any sexual activities with a partner.	97%	38%
		Sexual activities with a same-sex partner.	all: 15% females: 21% males: 10%	all: 26% females: 37% males: 15%
		Anal and/or vaginal intercourse.	95%	18%
		Any unprotected intercourse.	all: 69% among those having anal and/or vaginal intercourse: 73%	all: 18% among those having anal and/or vaginal intercourse: 100%

Note. Studies are presented by recency. The time period during which the behaviour is quantified is detailed when provided by the study. CS-SAQ = cross-sectional self-administered questionnaire; sd = standard deviation; NA = not asked.

Appendix B: Sexual and Drug-Related Behaviours Captured by the NIIDRBS

	NIIDRBS Questions	
Sexual and Drug-Related Behaviours Over a Six Month Period	**Community**	**Prison**
Sexual Behaviours		
Any sex (oral, vaginal, or anal)	During the last 6 months you were free in the community, did you have oral, anal or vaginal sex with anyone? Yes No	Since last November in prison, did you have oral, vaginal or anal sex with anyone? No Yes
Sex with male(s)	Did you have oral, anal or vaginal sex with a man? No Yes	Since last November in prison, how many men and / or women did you have sex with? *(Please check all that apply)* Men / Women None / None 1 / 1 2 to 5 / 2 to 5 6 to 10 / 6 to 10 11 or more / 11 or more

	NIIDRBS Questions	
Sexual and Drug-Related Behaviours Over a Six Month Period	**Community**	**Prison**
Sex with male(s) (continued)		**Sex with one or more <u>men</u>** Since last November in prison how often did you use … A condom while having vaginal sex? Doesn't apply Never Rarely Often Always A condom or dental dam while having oral sex? Doesn't apply Never Rarely Often Always A condom while having anal sex? Doesn't apply Never Rarely Often Always
Sex with more than one male partner	How many men did you have oral, anal or vaginal sex with? 1 2 to 5 6 to 10 11 to 25 more than 25	Since last November in prison, how many men and / or women did you have sex with? *(Please check all that apply)* Men: None, 1, 2 to 5, 6 to 10, 11 or more Women: None, 1, 2 to 5, 6 to 10, 11 or more

	NIIDRBS Questions	
Sexual and Drug-Related Behaviours Over a Six Month Period	**Community**	**Prison**
Sex with female(s)	Did you have oral, anal or vaginal sex with a woman?	Since last November in prison, how many men and / or women did you have sex with? *(Please check all that apply)*
	No Yes	Men / Women None / None 1 / 1 2 to 5 / 2 to 5 6 to 10 / 6 to 10 11 or more / 11 or more **Sex with one or more <u>women</u>** A condom while having vaginal sex? Doesn't apply Never Rarely Often Always A condom or dental dam while having oral sex? Doesn't apply Never Rarely Often Always A condom while having anal sex? Doesn't apply Never Rarely Often Always

	NIIDRBS Questions	
Sexual and Drug-Related Behaviours Over a Six Month Period	**Community**	**Prison**
Sex with more than one female partner	How many women did you have oral, anal or vaginal sex with? 1 2 to 5 6 to 10 11 to 25 more than 25	Since last November in prison, how many men and / or women did you have sex with? *(Please check all that apply)* Men / Women None / None 1 / 1 2 to 5 / 2 to 5 6 to 10 / 6 to 10 11 or more / 11 or more
Unprotected sex with regular partner(s)	Did you have **unprotected** sex with your **regular** sex partner(s)? No Yes	Since last November in prison, did you have **unprotected** sex with a **regular** sex partner? No Yes
Unprotected sex with casual partner(s) (i.e., someone or people you didn't know well)	Did you have **unprotected** sex with **casual** sex partner(s) (i.e. someone or people you didn't know well)? No Yes	Since last November in prison, did you have **unprotected** sex with a **casual** sex partner (i.e. someone you didn't know well)? No Yes
Sex with someone who has HIV, HCV, an STI or an unknown infection status[a]	Did you ever have sex with anyone who you knew was infected with HIV or hepatitis C? No Yes Don't know if they were infected or not	Since last November in prison, have you had sex with anyone who had HIV, hepatitis C or sexually transmitted infections? No Yes Don't know
Being paid for sex with money, works (i.e., water, filter, cooker/spoon), rigs (i.e., needles/syringes), drugs or goods (e.g., tobacco or cigarettes).	Did **someone** ever pay **you for sex** with money, works, rigs, drugs or goods (e.g., tobacco or cigarettes)? No Yes	Since last November in prison, did **someone** ever **pay you for sex** with money, works, rigs, drugs or goods (e.g., tobacco or cigarettes)? No Yes
Paying someone else for sex with money, works, rigs, drugs or goods.	Did **you** ever **pay for sex** with money, works, rigs, drugs or goods (e.g., tobacco or cigarettes)? No Yes	Since last November in prison, did **you** ever **pay for sex** with money, works, rigs, drugs or goods (e.g., tobacco or cigarettes)? No Yes

	NIIDRBS Questions	
Sexual and Drug-Related Behaviours Over a Six Month Period	**Community**	**Prison**
Drug-Related Behaviours		
Any drug use	Did you ever do drugs and / or chemicals during the last 6 months you were free in the community? No Yes	Since last November in prison, have you done drugs and / or chemicals? No Yes
Non-injection drug use	During the last six months you were free in the community, did you do drugs *(e.g. pot or cocaine)* or chemicals *(e.g. glue, gasoline)* by snorting, sniffing, smoking or swallowing? No Yes	Since last November in prison, did you do drugs *(e.g. pot or cocaine)* or chemicals *(e.g. glue, gasoline)* by snorting, sniffing, smoking or swallowing (i.e., **without** using a rig)? No Yes
Frequency of non-injection drug use	During the last six months you were free in the community, how often did you do drugs and / or chemicals by snorting, sniffing, smoking or swallowing? *(Please check one response only)* Daily Once or twice a week Once or twice a month Every couple of months Every now and then One time only	Since last November in prison how often did you do drugs and / or chemicals **without** using a rig? *(Please check one response only)* Daily Once or twice a week Once or twice a month Every couple of months Every now and then One time only
Most frequently used non-injection drugs	During the last six months you were free in the community, which drugs and / or chemicals did you do **most often** by snorting, sniffing, smoking or swallowing? *(Please specify no more than three)*	Since last November in prison which drugs and / or chemicals did you do **most often without** using a rig? *(Please specify no more than three)*
Injection drug use	During the last six months you were free in the community, did you ever inject drugs and / or chemicals? No Yes	Since last November in prison, have you **injected** drugs (or anything else such as alcohol or chemicals)? No Yes
Frequency of injection drug use	During the last six months you were free in the community, how often did you **inject** drugs (or anything else such as alcohol or chemicals)? Daily Once or twice a week Once or twice a month Every couple of months Every now and then One time only	Since last November in prison, how often did you **inject** drugs (or anything else such as alcohol or chemicals)? Daily Once or twice a week Once or twice a month Every couple of months Every now and then One time only

	NIIDRBS Questions	
Sexual and Drug-Related Behaviours Over a Six Month Period	**Community**	**Prison**
Frequency of binge-injecting (i.e., many times over a short period)	During the last six months you were free in the community, how often did you inject drugs "on a binge" (i.e., many times over a short period)? Never Rarely Often Always	Since last November in prison, how often did you inject drugs "on a binge" (i.e., many times over a short period)? Never Rarely Often Always
Most frequently injected drugs	During the last six months you were free in the community, which drugs and / or chemicals did you inject **most often**? *(Please specify no more than three.)*	Since last November in prison, which drugs and / or chemicals did you inject **most often**? *(Please specify no more than three.)*
Passing a needle to someone else after using it	During the last six months you were free in the community, did you **pass a rig on *to someone else* <u>after</u> you** had used it? No Yes	Since last November in prison, did you **pass a rig on *to someone else* <u>after</u> you** had used it? No Yes
Using someone else's needle after they used it	During the last six months you were free in the community, did you **use someone else's rig <u>after</u> they** had used it? No Yes	Since last November in prison, did you **use someone else's rig <u>after</u> they** had used it? No Yes
Sharing a needle with someone who has HIV, HCV or an unknown infection status	During the last six months you were free in the community, did you ever share a rig with anyone who *you knew* was infected with HIV or hepatitis C? No Yes Didn't know if they were infected or not	Since last November in prison have you shared a rig with anyone who *you knew* was infected with HIV or hepatitis C? No Yes Didn't know if they were infected or not
Passing works to someone else after using them	During the last six months you were free in the community, did you **pass works on *to someone else* <u>after</u> you** had used them? No Yes	Since last November in prison, did you **pass works on *to someone else* <u>after</u> you** had used them? No Yes
Using someone else's works after they used them	During the last six months you were free in the community, did you **use someone else's works <u>after</u> they** had used them? No Yes	Since last November in prison, did you **use someone else's works <u>after</u> they** had used them? No Yes

	NIIDRBS Questions	
Sexual and Drug-Related Behaviours Over a Six Month Period	**Community**	**Prison**
Sharing works with someone who has HIV, HCV or an unknown infection status	During the last six months you were free in the community did you ever share works with anyone who *you knew* was infected with HIV or hepatitis C? No Yes Didn't know if they were infected or not	Since last November in prison have you ever shared works with anyone who *you knew* was infected with HIV or hepatitis C? No Yes Didn't know if they were infected or not

Note. Inmates reported sexual and drug-related behaviours for the last six months in the community prior to the current incarceration, and the last six months in prison prior to survey completion. NIIDRBS = National Inmate Infectious Diseases and Risk-Behaviours Survey; HIV = human immunodeficiency virus; HCV = hepatitis C virus; STI = sexually transmitted infection.
[a]The community question did not include STI.

Appendix C: Canadian Federal Inmate Characteristics by Data Source

	NIIDRBS (n=3,357) (N=13,701)					CSC Administrative Data (N=13,041)			
	Men (n=3,006) (N=13,222)		Women (n=351) (N=479)		X^2(df) or $F(v_1,v_2)$	Men (N=12,574)		Women (N=467)	
Characteristics	n	Mean or % (95% CI)	n	Mean or % (95% CI)		N	Mean or %	N	Mean or %
Age (years)	2,899	38 (38, 39)	335	34 (34, 35)	106.64* (1,3192)	12,554	38	466	35
Highest level of education at time of survey (%)									
Less than highschool diploma	1,252	46 (44, 48)	156	48 (45, 51)	0.68	-	-	-	-
Highschool diploma or greater	1,533	54 (52, 56)	176	52 (49, 55)	(1)	-	-	-	-
Marital status (%)									
Married/common law	884	31 (29, 32)	121	35 (32, 38)	4.90*	4,839	39	165	36
Single/separated/divorced/widowed	2,043	69 (68, 71)	224	65 (62, 68)	(1)	7,654	61	297	64
Country of birth (%)									
Canada	2,622	89 (88, 90)	320	92 (91, 94)	5.87*	11,175	89	412	89
Other	305	11 (10, 12)	26	8 (6, 9)	(1)	1,386	11	53	11
Aboriginal self-identification (%)									
Aboriginal	612	21 (19, 22)	129	36 (33, 38)	94.37*	2,466	20	147	32
Non-Aboriginal	2,281	79 (78, 81)	212	65 (62, 67)	(1)	10,023	80	310	68
Race (%)									
White/caucasian	1,852	65 (63, 67)	179	55 (52, 58)	82.52*	8,482	68	258	56
Aboriginal	612	21 (20, 23)	129	36 (34, 38)	(2)	2,466	20	147	32
Other visible minority	356	14 (13, 15)	28	9 (7, 11)		1,541	12	52	11
Language most comfortable speaking (%)									
English	2,154	78 (77, 79)	302	84 (83, 86)	32.90*	8,425	74	317	79
French	719	20 (20, 21)	37	14 (13, 15)	(2)	2,342	21	62	15
Other	54	2 (1, 2)	6	2 (1, 2)		642	6	22	5
Years served of present sentence	2,702	4.8 (4.6, 5.1)	318	2.2 (2.0, 2.4)	274.15* (1, 2975)	12,554	4.4	466	3.0
Region (%)									
Atlantic	317	10 (10, 10)	50	13 (13, 13)	-	1,297	10	62	13
Quebec	868	24 (24, 24)	42	16 (16, 16)		2,990	24	73	16
Ontario	627	27 (27, 27)	84	26 (26, 26)		3,344	27	123	26
Prairie	847	25 (25, 25)	137	33 (33, 33)		3,168	25	151	32
Pacific	347	15 (14, 15)	38	13 (12, 13)		1,772	14	58	12
Security level (%)									
Maximum	581	21 (21, 21)	0		-	3,199	25	102	22
Medium	1,488	60 (60, 60)	0			6,934	55	196	42
Minimum	869	18 (18, 18)	4	1 (1, 1)		1,907	15	161	34
Unknown	68	1 (1, 1)	347	99 (99, 99)		534	4	8	2

Note. Percentages may not add to 100 due to rounding. Education level derived from administrative data is not comparable to NIIDRBS estimates because of inconsistency in method of capture (i.e., standardized testing at admission versus self-report at time of survey). Since NIIDRBS security level is based on institutional security level, it is unknown for the majority of women inmates residing in multi-level security institutions. The chi-square test was not calculable for region because of lack of stratum variance. NIIDRBS = 2007 National Inmate Infectious Diseases & Risk-Behaviours Survey; CSC = Correctional Service Canada; n = sample size; N = estimated population size.
*$p < 0.05$.