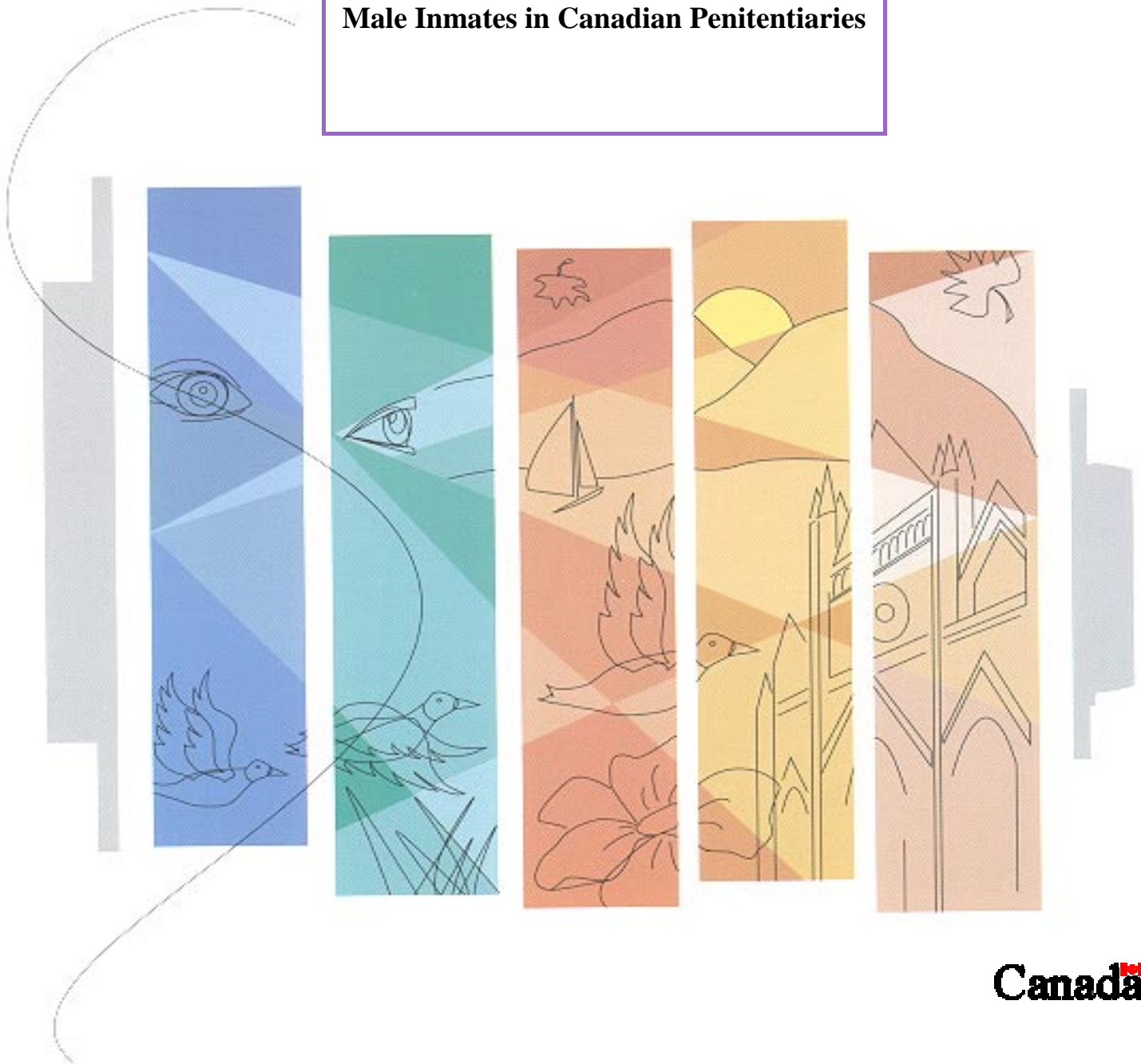Research Branch
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The Prevalence, Nature and Severity of Mental Health Problems Among Federal Male Inmates in Canadian Penitentiaries

Canada

The Prevalence, Nature and Severity of Mental Health Problems among Federal Male Inmates in Canadian Penitentiaries

by
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Acknowledgements

Executive Summary

This research report describes, in detail, the design of the 'Mental Health Survey' that was commissioned by the Correctional Service of Canada (CSC) in September, 1988. The purpose of this national 'Mental Health Survey' was to assess the prevalence, nature and severity of mental health problems among the male inmate population, and provide precise information on prevalence rates for the major categories of mental disorder at national and regional levels, as well as across a variety of offender categories.

The 'Mental Health Survey' was unique in that it relied on a structured interviewing instrument - the Diagnostic Interview Schedule (DIS) - and employed objective diagnostic criteria described in the Diagnostic and Statistical Manual (DSM III) of the American Psychiatric Association. The design of the survey involved systematic selection, a modification of simple random sampling, of all male inmates in CSC custodial facilities with the exception of High Maximum Security Units, Regional Psychiatric Centres and Regional Treatment Centres where a complete census was attempted. The population was stratified by CSC region (Atlantic, Quebec, Ontario, Prairies, Pacific) with eligible respondents listed by institution and ordered by age. Strata sample sizes were chosen to yield a 5% margin of error for a 99% level of confidence. This relates to the probability that a given prevalence estimate is an accurate indictor of the true prevalence in the inmate population.

Of the 9,801 inmates targeted for sampling in the survey, 2,812 (28.7%) were actually selected in the five CSC regions. The overall response rate was 68.5% (n = 1,925) and only a very few institutions had response rates below 50% (response rates by institution for each CSC region are appended). While 412 inmates were targeted for the census of specialized institutions, the overall response rate was 63% (n = 260). In total, 2,185 DIS interviews were conducted with inmates.

The results of the Survey are organized around eight separate groups of diagnosis: 'organic' (organic brain syndrome); 'psychotic' (Schizophrenia, Schizophreniform, Manic Episode); 'depressive' (Major Depressive Episodes, Dysthymic Disorders, Bipolar Disorder); 'anxiety' (Panic Disorder, Generalized Anxiety, Agoraphobia, Phobia, Somatization); 'psychosexual' (Psychosexual Dysfunction, Transsexualism, Ego-dystonic Homosexuality); 'antisocial' (Antisocial Personality Disorder), 'substance' (abuse/dependence) and 'alcohol' (use/dependence) disorders.

Prevalence rates are measured with respect to two defining parameters: temporal reference period and breadth of diagnostic criteria employed. The reference periods were lifetime, within the last year, or within the last two weeks. Breadth of diagnostic criteria was either wide or stringent(i.e., severe and exclusive). Severity criteria include only those cases where all identifying behaviors were present; exclusive criteria removed from the prevalence figures those diagnoses which may have been due to other mental health problems.

Using wide diagnostic criteria (i.e., ignoring severity and exclusion) for meeting a particular DSM-III diagnosis provided us with upper-bound estimates of mental health problems among the federal male inmate population. The 'Mental Health Survey' revealed DIS lifetime prevalence rates for the following major categories of mental disorder: 'organic' (4.3%); 'psychotic' (10.4%); 'depressive' (29.8%); 'anxiety' (55.6%); 'psychosexual' (24.5%); 'antisocial' (74.9%); 'substance' (52.9%); and 'alcohol' (69.8%).

DIS prevalence rates using the most stringent criteria (i.e., using both severity and exclusion) provided us with lower-bound estimates of mental health problems. From the survey results, it is clear that a significant reduction in the prevalence rates occurs when severity and exclusion criteria are considered. After applying stringent diagnostic criteria, the DIS lifetime prevalence rates were the following: 'organic' (0.1%); 'psychotic' (7.7%); 'depressive' (21.5%); 'anxiety' (44.1%); 'psychosexual' (21.1%); 'antisocial' (56.9%); 'substance' (40.9%); and 'alcohol' (47.2%).

Any differences in the DIS lifetime prevalence rates of mental disorder across the five regions of CSC (Atlantic, Quebec, Ontario, Prairies, Pacific) were deemed to be more due to idiosyncrasies in data collection rather than any intrinsic inter-regional differences in prevalence rates. With this view in mind, the prevalence rates of mental disorder were comparable across regions whether wide or stringent diagnostic criteria were applied.

In examining the prevalence of mental disorder across type of custodial setting, the highest prevalence rates of mental disorder were found among inmates located in High Maximum Security Units and then, Regional Psychiatric and Regional Treatment Centres to be followed by the general population. However, this pattern changed when stringent diagnostic criteria was employed with higher prevalence rates in Regional Psychiatric/Treatment Centres and then, Security Units and general population.

The DIS lifetime prevalence rates of mental disorder were examined in relation to selected offender characteristics. These included: age, marital status, type of offence, length of sentence and amount of time served while in prison.

The 'Mental Health Survey' revealed that the likelihood of having met the criteria for 'organic' disorder was highest among older inmates (i.e., 50 years old and over). Younger inmates were more likely to have experienced at least one episode of a 'depressive', 'antisocial', 'substance' or 'alcohol' disorder during their lifetime. Single inmates were more likely than married inmates to have suffered from episodes of 'psychotic' or 'psychosexual' disorders.

It was notable that robbery offenders had the highest DIS lifetime prevalence rate (88%) of 'antisocial' personality disorder relative to the other offence types. Sex offenders had the highest DIS lifetime prevalence rates of 'depressive' (43.6%), 'anxiety' (62.1%) and 'psychosexual' (37.9%) disorders. With the exception of 'substance'

disorders, drug offenders had the lowest DIS lifetime prevalence rates of mental disorder relative to the other offence categories.

In examining sentence lengths and time served, long-term offenders (i.e., lifers, 10 to 29 years) were more likely to have experienced an episode of 'depressive' disorder (29.8%) during their lifetime. For those offenders sentenced to terms of under four years, the DIS lifetime prevalence rates of 'antisocial', 'substance', and 'alcohol' disorders were highest. Similarly, inmates who had served longer periods (i.e., 4 years and over) of their current sentence were more likely to have experienced at least one episode of a 'depressive' disorder.

Estimates of the _wide_ DIS incidence of comorbidity (i.e., the co-occurrence of one or more other disorders) in the federal male inmate population was examined in relation to 'psychotic', 'depressive', 'anxiety', and 'psychosexual' disorders. The 'Mental Health Survey' revealed that the incidence of comorbidity in the federal male inmate population was very common. Overall, the wide DIS lifetime prevalence rate of 'psychotic' disorder was found to be 10.4%. However, it is noteworthy that the prevalence rate of 'psychotic' disorder was dramatically reduced to 0.2% when the occurrence of other pre-selected categories of mental disorders were partialed out. The incidence of offenders who had met the DIS lifetime criteria for 'psychotic', 'depressive' and 'anxiety' disorders was 4.0%, whereas for 'psychotic', 'depressive', 'anxiety' and 'psychosexual' disorders it was 3.1%. It would appear that inmates who have suffered from 'psychotic' symptoms in the past have also endured a variety of other mental health problems during their lifetime.

In sum, the 'Mental Health Survey' underscored some notable trends about the prevalence nature and severity of mental health problems in the federal male inmate population. While it is possible that these survey results might also reflect other factors such as differences between inmates who remain in custody and those who are released, the ability of inmates to remember episodes that happened long ago and willingness to report symptoms, it seems likely that inmates in federal institutions have experienced much more mental disorder than was understood before. Nevertheless, this major survey of mental disorders among penitentiary inmates has shown that mental health is rapidly become one of the major challenges facing federal corrections today.

TABLE OF CONTENTS

Introduction

In September of 1988, the Correctional Service of Canada (CSC commissioned a national survey to assess the prevalence, nature and severity of mental health problems among the male offender population in federal custody. Although there had been previous attempts to estimate the degree of mental disturbance in CSC's offender population (Wormith & Borzecki, 1985), this 'Mental Health Survey' was unique in that it relied on: a) an objective interviewing tool in order to minimize subjectivity and unreliability of diagnostic classification, and b) objective diagnostic criteria commonly employed by mental health professionals in the community at large.

This report on the 'Mental Health Survey' provides the details of the survey methodology that was adopted and gives an overview of the most significant findings regarding national and regional prevalence estimates for particular categories of mental disorder.

II. Description of the Diagnostic Interview Schedule (DIS)

The 'Mental Health Survey' was conducted using the Diagnostic Interview Schedule (DIS) Version III-A, an instrument developed by the National Institute of Mental Health (Robins & Helzer, 1985) in the United States, and is now used internationally, specifically for large-scale epidemiological studies of mental health. To date, only several other large scale surveys of mental health have been conducted on sentenced offenders. Neighbors et al. (1987) used the DIS to conduct a psychiatric epidemiologic study of the Michigan prison system. These researchers drew a random sample of 1,000 prisoners in correctional institutions and minimum security farm camps. Another large survey which utilized the Clinical Interview Schedule (CIS) examined the prevalence of psychiatric disorder among sentenced prisoners in the United Kingdom (Gunn, Maden, & Swinton, 1991).

The various diagnoses of mental disorder (see next page) that flow from the DIS are based on objective and precise sets of criteria derived from the American Psychiatric Association's Diagnostic and Statistical Manual III (American Psychiatric Association, 1980). While the DIS can provide diagnoses on a historical (lifetime) basis, it also allows for alternative diagnostic approaches for some mental disorders, such as with or without preemptions by other diagnoses, with or without severity criteria, as well as milder forms of particular disorders, with and without current symptoms.

DSM-III DIAGNOSES COVERED BY THE DIS

*recency available

Organic Brain Syndrome
Schizophrenic Disorder*
Schizophreniform*
Affective Disorders: Manic Episode*
                                  Major Depressive Episode*
                                  Dysthymic Disorder
                                  Bipolar Disorder*
                                  Major Depression (Single episode)*
                                  Major Depression (Recurrent)*
                                  Atypical Bipolar Disorder (Bipolar II)*
Obsessive Compulsive Disorder*
Phobic Disorders: Phobic Disorders (Summary)*
                                  Agoraphobia
                                  Simple Phobia
                                  Social Phobia
Somatization Disorder*
Panic Disorder*
Agoraphobia with and without panic attacks
Anorexia Nervosa
Generalized Anxiety*
Post-Traumatic Stress By Event Type*
Post-Traumatic Stress Summary*
Bulimia*
Psychosexual Disorders: Psychosexual Dysfunctions
                                  Transsexualism*
                                  Ego-Dystonic Homosexuality*
Antisocial Personality Disorder*
Alcohol Abuse and Dependence*
Drug Abuse and Dependence: Barbiturate
                                  Opioid
                                  Cocaine
                                  Amphetamine
                                  Hallucinogen
                                  Cannabis
                                  Substance Abuse Disorders*
                                  Tobacco Dependence*
Pathological Gambling*

III. Description of the Mental Health Survey

A. Sampling and Estimation

In a country as large as Canada, with the variations in linguistic and cultural mosaic that are recognized, it is always important to attend to possible regional differences. With criminal offenders, variation in sentencing patterns, types of institutional settings and distributions across custody levels, and other region-specific factors might account for some of the variation in the extent of mental disorder. Consequently, we chose to stratify the federal inmate population into regional subgroups. This process of stratification would allow us to make separate conclusions and comparisons for each CSC region (i.e., Atlantic, Quebec, Ontario, Prairies, Pacific) and improve the national representativeness of the survey.

Prior to sample selection, it was necessary to arrive at a clear definition of the target population, that is, those offenders about whom we wished to draw conclusions. Our first step in defining the target population was to specify that all federal male inmates in custodial "facilities" were to be covered by the survey. The next step was to define the population or regional subgroups to be studied within these limits.

The study population was defined in terms of the time period of interest. Given the scope of the survey, and the time it would take to complete interviews, it was decided to define the population relative to a specific point in time. In particular, the federal male inmate population was defined to be eligible as of August 30, 1988, a date which allowed sample selection to be completed immediately before the start of interviewing. It should be noted, however, that the sample surveyed in the Quebec region was defined from an eligible population as of April 15, 1988. This was due to the fact that the Quebec region was prepared to proceed with their portion of the survey sooner than the rest of the country.

Regional subgroups or strata were derived from listings of on-register male inmates. These listings were systematically reviewed to exclude those cases currently on day parole, those residing in community correctional centres, and those who had escaped or were unlawfully at large. Also excluded were individuals currently confined in the High Maximum Security Units (2), the Regional Psychiatric Centres (2), and the Regional Treatment Centre. Given that the incidence of psychiatric and behavioural disturbance among inmates in specialized institutions was expected to be significantly higher than in regular penitentiaries, it was decided that a census, covering all of these inmates, would be more appropriate and thereby improve the representativeness of a national 'Mental Health Survey'.

The inmate population in custody of more than 10,000 is distributed across more than 45 settings in different parts of the country. Regional listings of federal inmates formed the "population bases" for determining sample sizes and conducting sampling procedures.

B. Sample Size Determination

The determination of sample size depends upon the following factors: 1) survey design, 2) population size, 3) variability in the target population, 4) desired precision of the sample estimates, 5) non-response and 6) operational constraints. In Table 1, we present the sample sizes that were calculated by Statistics Canada to achieve prevalence estimates for the regional "population bases" that would be correct within a 5% margin of error with 99% confidence (i.e., the probability that a given prevalence estimate is an accurate indicator of the true prevalence in the population).

Table 1.
Sample Size Determination

Regional Stratum	Population Base	Sample Size
Atlantic	845	438
Quebec	2,910	636
Ontario	2,772	630
Prairies	1,865	576
Pacific	1,409	531

C. Sampling Procedure

Systematic selection, a modification of simple random sampling, was used as the method to select cases from regional listings. This procedure entailed selecting individuals from a listing through the application of a selection interval so that every 'Ith' inmate on the list, following a random start, would be included in the sample.

The selection intervals were determined by simply dividing the regional population base by the desired sample size. The result is the inverse of the sampling fraction. As Table 2 indicates, the appropriate selection intervals were calculated by dividing the regional "population base" by the required sample size.

Table 2.
Selection Intervals

Regional Stratum	Selection Interval
Atlantic	1,929
Quebec	4,575
Ontario	4,400
Prairies	3,237
Pacific	2,653

Systematic random samples were selected from the regional listings as follows: individuals were first sorted by institution and, within each institution, by ascending order of age. This procedure was followed to ensure that there would be proportional representation by institution, and by age within institutions. With cases sorted in this

fashion, a random starting point to begin selection was chosen within the range of the sampling interval.

D. Field Work

In order to ensure the quality of the data being gathered in the 'Mental Health Survey', the organization and administration of field work entailed the careful recruitment and selection of interviewers, DIS training, field supervision and quality control.

Interviewer Recruitment and Selection. While the task of recruiting qualified interviewers is largely a matter of personal judgement, a variety of personal attributes were considered essential for selecting survey interviewers. These included: interviewing experience; ability to establish rapport; accurate listening skills; ability to follow instructions consistently; work experience in a correctional setting; maturity; personal suitability; and security clearance. Upon having been pre-screened on the aforementioned criteria, an in-depth personal telephone interview was conducted with each potential candidate in order to choose those individuals who would be asked to participate in a DIS training program. Final selection of survey interviewers was made contingent upon successful completion of the DIS training program and overall performance during those sessions.

E. Sample Size and Response Rates

A total of 3,224 inmates were selected for the survey by CSC. A number of these offenders were no longer within institutions at the time of survey (i.e., they had been released). In total, 2,812 (87.2%) offenders were available for sampling in the five separate CSC regions covered in this study (Atlantic, Quebec, Ontario, Prairies, and Pacific).

In Table 3, we present the obtained overall non-response (i.e., refusal, no show or not available) and response rates (i.e., complete DIS interview) for each of the regional samples. Although the overall response rate for the nation (i.e., regional samples combined) was 68.5%, there was considerable variation in response rate across the various regions. With respect to specialized institutions (i.e., Regional Treatment Centres), the overall response rate was 63.1% and will be described in more detail later.

Table 3.
Response Rates by Region

Region	Population N	Sample n	Non-response n	%	Response n	%
Atlantic	845	438	105	(24.0)	333	(76.0)
Quebec	2,910	637	153	(24.0)	484	(76.0)
Ontairo	2,772	629	201	(32.0)	428	(68.0)
Prairies	1,865	576	190	(33.0)	386	(67.0)
Pacific	1,409	532	238	(44.7)	294	(55.3)
National	9,801	2,812	887	(31.5)	1925	(68.5)

A major aim of the survey was to achieve response rates across the various institutions of each region which would yield improved prevalence estimates of mental disorder. The percentage distribution of non-response and response for institutions within each region are tabled in Appendix C. Although there is clearly variation in the obtained response rates from one institution to another, it is notable that only a few institutions had response rates below 50%.

In order to estimate the prevalence of mental disorder in CSC's specialized institutions, we sought to interview all of the inmates in these facilities. In Table 4, we show the percentage distribution of response rates in each of these facilities. Of those surveyed, the Regional Psychiatric Centre (Prairies) had the highest response rate (79.3%), with the High Maximum Security Unit (HMSU) in the Prairies region showing proportionately the lowest rate of response (31.5%). Overall, the obtained response rate for all of the specialized institutions combined was 63.1

Table 4.
Response Rates for Specialized Institutions

Special Centre	Sample n	Non-repsonse n	%	Response n	%
Quebec H.M.S.U	62	22	(35.5)	40	(64.5)
Quebec L.T.S.U.	36	11	(30.6)	25	(69.4)
Ontario R.T.C.	48	14	(29.2)	34	(70.8)
Prairies R. P. C.	87	18	(20.7)	69	(79.3)
Prairies H.M.S.U.	54	37	(68.5)	17	(31.5)
Pacific R.P.C.	125	50	(40.0)	75	(60.0)
Total	412	152	(36.9)	260	(63.1)

Note: H.M.S.U. = High Maximum Security Unit
L.T.S.U. = Long Term Segregation Unit
R.T.C. = Regional Treatment Centre
R.P.C. = Regional Psychiatric Centre

Table 5 shows how response rates were distributed by security level groupings. We note that there is relatively little variation in response across the three security levels.

Notably, minimum security institutions had the highest response rate (72.7%) compared to 65.6% for maximum security institutions.

Table 5.
Response Rates for Different Security Levels*

Security Level	Sample n	Non-response n	%	Response n	%
Minimum	322	88	(27.3)	234	(72.7)
Medium	1,676	519	(31.0)	1,157	(69.0)
Maximum	814	280	(34.4)	534	(65.6)
Total	2,812	887	(31.5)	1,925	(68.5)

* special centres are excluded.

F. Characteristics of the Sample

The total 'Mental Health Survey' sample consisted of 2,185 adult male inmates. Although the majority of responders in the survey sample were Caucasian (85%), this percentage was found to be reflective of the total federal inmate population. Of non-responders in the survey, there were proportionately more Natives non-responders (14.4%) relative to Native responders (9.8%) and Natives in the total federal inmate population (10.4%).

Table 6 provides the percentage distribution of sample characteristics (i.e., age, marital status, major offence, sentence length, time served) for responders and non-responders in the survey, the sample drawn and the total federal inmate male population. As Table 6 indicates, the distribution of responder characteristics compares favorably with that of non-responder, sample, and total federal male inmate population.

Table 6.
Distribution of Case Characteristics in the Survey

Variable	Responders %	Non-responcers %	Sample %	Population %
Age:				
< 19	1.8	0.4	1.5	1.3
20-24	22.6	17.4	20.9	20.2
25-29	26.7	24.2	25.9	25.8
30-39	31.4	33.5	32.1	32.7
40-49	12.7	16.6	14.0	13.6
50 +	5.0	7.2	5.9	5.9
Marital Status				
Single	62.2	65.4	63.3	61.0
Married	37.8	34.6	36.7	39.0
Major Offence:				
Homicide	15.4	14.3	15.1	12.9
Manslaughter	4.5	5.3	4.8	5.2
Robbery	22.8	24.3	23.3	23.5
Sexual	12.8	10.3	12.0	11.4
Drug	4.8	5.2	4.9	6.4
Other	39.7	40.6	40.0	40.6
Sentence Length:				
< 2 ans	6.9	8.3	7.4	4.6
2 - 4	37.9	40.3	38.7	44.3
5 - 9	23.2	21.5	22.6	23.7
10 +	13.6	11.9	13.0	12.6
Life	18.5	17.9	18.3	14.3
Time Served:				
< 6 mois	22.9	18.6	21.5	19.1
6 - 11	15.6	17.1	16.1	18.8
12 - 23	20.7	24.5	21.9	21.2
24 - 35	10.5	11.4	11.4	11.4
36 - 47	6.4	4.4	6.2	6.2
48 - 59	4.9	4.6	4.3	4.3
60 +	15.9	19.4	16.1	16.1

IV. Findings

The following provides the results of the analyses that have been conducted so far in order to examine the prevalence, nature and severity of mental health problems among federal male inmates in Canadian penitentiaries.

In many studies, only the most stringent criteria are used (i.e., severity and exclusion) for the estimation of prevalence rates for mental disorders in a population. While exclusion criteria removes from the prevalence figures those positive diagnoses which may be due to other mental health problems (i.e., schizophrenia and not organic brain syndrome), the main purpose of such criteria is to increase the likelihood that a given mental health problem is not due to any other DSM-III diagnosis. Given the fact that figures using the most stringent criteria would be underestimates of the overall mental health symptoms diagnosed, it is perhaps more useful to begin with the fullest extent of mental health problems in the federal male inmate population and then focus on severity and exclusion.

At this point, we have chosen to proceed with the analyses of the 'Mental Health Survey' data in the following manner. First, we will provide wide lifetime prevalence rates of mental disorder using the widest possible criteria for meeting a DSM-111 diagnosis. Second, we will focus on recency estimates (i.e., within the last year and within the last two weeks) using wide criteria for meeting a DSM-III diagnosis. Third, we will look at stringent lifetime prevalence estimates taking into account severity and exclusion criteria. Finally, we will give the most stringent estimates of mental health problems by reporting recency estimates. In this regard, having met the criteria for a particular DSM-III diagnosis within the last year and within the last two weeks were chosen as the reference periods of interest.

The findings are presented in the form of prevalence rates, calculated as the number diagnosed with a particular disorder per 10,045 inmates. A series of tables summarizing most of the findings follows and are organized around the following eight groups of diagnoses:

- **Organic Brain Syndrome**

- **Psychotic**(including Schizophrenia, Schizophreniform, Manic Episodes)

- **Depressive**(including Major Depressive Episodes, Dysthymic Disorders, and Bipolar Disorder)

- **Anxiety**(including Panic Disorder, Generalized Anxiety, Agoraphobia, Phobia, Somatization)

- **Psychosexual**(Psychosexual Dysfunction, Transsexualism, Ego-dystonic Homosexuality)

- **Antisocial Personality**

- **Substance Abuse/dependence**(including abuse of Barbiturates, Opioids, Cocaine, Amphetamines, Hallucinogens, and Cannabis)

- **Alcohol Abuse/dependence**

Wide Diagnostic Criteria, DIS Lifetime Prevalence and Recency

In order to maximize the estimates of mental health problems in the federal inmate population we chose to, first, employ the widest criteria possible used for meeting a particular DSM-111 diagnosis and then, examine both lifetime prevalence and recency. That is, we essentially ignored whether or not severity and exclusion criteria were met and report a positive diagnosis if it had occurred at any time during the inmate's life. With respect to recency estimates, we examined whether or not there was an occurrence of a diagnosis within the last year as well as within the last two weeks.

A. National Prevalence Rates

Table 7 shows the national prevalence rate according to the DIS using wide criteria and weighted estimates for each of the categories of mental disorder. As Table 12 shows, all eight categories of mental disorder that we chose to examine were found to be prevalent among our offender population. Notably, the DIS lifetime prevalence rates for antisocial personality was 74.9%, alcohol abuse/dependence 69.8%, and anxiety disorders 55.6%.

In exploring further Table 7, it is clearly evident that there is considerable variation in the prevalence rates of mental disorder when considering recency. For example, within the 'psychotic' category (i.e., schizophrenia, schizophreniform, or mania), 10.4% of the cases were assessed as having experienced this type of disorder at some point in their lives, whereas 6.9% were assessed as having had a 'psychotic' disorder within the last year, and 4.6% were assessed as having had this type of disorder within the last two weeks.

Table 7.
National Prevalence Rates According to the DIS Using Wide Criteria (Weighted)

Disorder	Lifetime	Within One Year	Within Two Weeks
Organic	4.3	n/a	n/a
Psychotic	10.4	6.8	4.6
Depressive	29.8	15.6	9.1
Anxiety	55.6	34.8	15.4
Psychosexual	24.5	n/a	n/a
Antisocial	74.9	n/a	n/a
Substance	52.9	16.8	4.2
Alcohol	69.8	13.1	0.6

Note: n/a = not available

B. Regional Prevalence Rates

In moving towards a clearer understanding of the distribution of mental disorder across Canada, we examined the lifetime prevalence rates of mental disorder for each region. Separated in this fashion, the regional prevalence rates using the widest possible diagnostic criteria for each category of mental disorder are presented in Table 8.

Overall, we note that there is little variation in the lifetime prevalence rate of mental disorder across the five regions of CSC (see also Appendix D). It should be noted, however, that the finding of a lower lifetime prevalence rate of 'psychotic' disorder in the Pacific region (6.5%) relative to the other four regions (i.e., Atlantic 10.8%, Quebec 11.3%, Ontario 11.8%, and Prairies 9.6%) was most likely due to the fact that we were not able to interview a significant portion of inmates clinically diagnosed as being psychotic at the regional Psychiatric Centre in British Columbia. In regards to the lower prevalence rate of 'psychosexual' disorders in the Quebec region relative to the other regions may simply be an artifact of the diagnostic training received by the DIS interviewers.

Table 8.
Regional Prevalence Rates According to the DIS Using Wide Criteria (Weighted)

Disorder	Atlantic	Quebec	Ontario	Prairies	Pacific
Organic	6.9	4.3	2.3	4.6	6.2
Psychotic	10.8	11.3	11.8	9.6	6.5
Depressive	28.2	34.4	26.9	28.5	29.4
Anxiety	50.6	70.4	51.0	47.0	48.9
Psychosexual	28.8	19.0	23.9	30.2	26.9
Antisocial	79.3	74.9	72.7	77.7	73.3
Substance	52.5	57.6	48.4	53.7	50.9
Alcohol	76.0	66.6	69.3	75.8	65.8

C. General Population, Treatment Centre and Security Unit Prevalence Rates

Table 9 contrasts the distribution of prevalence rates for each category of mental disorder by type of correctional setting. As Table 9 shows, the lifetime prevalence of mental disorder varies considerably from one setting to another. As expected, the lifetime prevalence of 'psychotic' disorder was found to be highest amongst inmates in security units (29.3%), then next highest among inmates in treatment centres (25.3%) when compared to inmates in the general population (9.9%). This pattern of results remained consistent for the following: 'organic', 'anxiety', 'antisocial', 'substance', and 'alcohol' disorders. Only for 'depressive' and 'psychosexual' disorders was there a higher lifetime prevalence rate found among treatment centre inmates relative to the other groups.

Table 9.
Prevalence Rates According to the DIS for General Population, Treatment Centres and Security Units Using Wide Criteria Weighted)

Disorder	General Population	Treatment Centres	Security Units
Organic	4.3	2.3	8.5
Psychotic	9.9	25.3	29.3
Depressive	29.3	51.1	47.6
Anxiety	55.3	64.6	73.2
Psychosexual	24.3	37.6	23.2
Antisocial	74.8	78.7	86.6
Substance	52.7	56.7	72.0
Alcohol	69.6	72.5	81.7

Stringent Diagnostic Criteria, DIS Lifetime Prevalence and Recency

In order to provide lower bound estimates of mental health problems in the federal male inmate population, we next employed the most stringent criteria possible for meeting a particular DSM-III diagnosis and then, examined both lifetime prevalence and recency. Stringent diagnostic criteria essentially reflects whether or not the full criteria were met for a particular diagnosis and takes into account severity and exclusion criteria. Again, we report a positive diagnosis for each category of mental disorder if it occurred at any time in the inmate's life, within the last year and within the last two weeks.

A. National Prevalence Rates

In Table 10, we present national prevalence rates for each category of mental disorder using stringent DIS diagnostic criteria and weighted estimates. As Table 10 indicates, all of the mental disorder categories were found to be present among the federal male inmate population. We note that there is a consistent pattern of reductions in the prevalence rate when severity and exclusion criteria are taken into consideration. As previously reported, the DIS lifetime prevalence rates for 'antisocial personality' disorder using wide DIS diagnostic criteria was 74.9%. In using stringent diagnostic criteria, however, the DIS lifetime prevalence rate for 'antisocial' falls to 56.9%.

A closer examination of Table 10 reveals that there were substantial reductions in prevalence rates using stringent DIS criteria with recency. As Table 10 shows, within the 'psychotic' category, 7.7% of the cases were assessed as having experienced this type of disorder at some point in their lives, whereas 5.0% were diagnosed as having met the criteria for a 'psychotic' disorder within the last year, and 3.6% were assessed as having experienced this type of disorder within the last two weeks.

Table 10.
National Prevalence Rates According to the DIS Using Stringent Criteria (Weighted)

Disorder	Lifetime	Within One Year	Within Two Weeks
Organic	0.1	n/a	n/a
Psychotic	7.7	5.0	3.6
Depressive	21.5	9.9	5.4
Anxiety	44.1	27.0	11.8
Psychosexual	21.1	n/a	n/a
Antisocial	56.9	n/a	n/a
Substance	40.9	13.1	3.0
Alcohol	47.2	9.8	0.5

Note: n/a = not available

B. Regional Prevalence Rates

In Table 11, we provide regional prevalence rates using stringent DIS criteria for each category of mental disorder. It can be seen from the results that, in general, there is little variation in the lifetime prevalence of mental disorder across the five regions of CSC (see also Appendix F). Again, it should be noted, that the finding of a lower prevalence rate of 'psychotic' disorder in the Pacific region (4.1%) relative to the other four regions (i.e., Atlantic 6.9%, Quebec 8.6%, Ontario 9.3%, and Prairies 7.2%) is due to the fact that a significant portion of inmates clinically diagnosed as 'psychotic' at the regional Psychiatric Centre in British Columbia were not interviewed.

Table 11.
Regional Prevalence Rates According to the DIS Using Stringent Criteria Weighted)

Disorder	Atlantic	Quebec	Ontario	Prairies	Pacific
Organic	0.3	0.2	0.0	0.0	0.3
Psychotic	6.9	8.6	9.3	7.2	4.1
Depressive	20.4	23.3	17.7	22.4	24.2
Anxiety	41.7	57.5	39.5	34.6	40.1
Psychosexual	24.0	16.0	20.9	25.7	24.0
Antisocial	61.9	56.7	52.1	61.1	58.1
Substance	40.5	48.6	36.2	39.3	36.8
Alcohol	51.4	45.8	46.0	51.6	43.8

C. General Population, Treatment Centre and Security Unit Prevalence Rates

Table 12 presents the distribution of prevalence rates for each category of mental disorder associated with each type of correctional setting. That is, we see that as inmates are found to be housed in more specialized facilities within CSC so does the prevalence of mental disorder tend to increase among these groups. This finding is not so surprising when one considers that the very purpose for which these facilities are designed is to provide specialized services to these type of offenders (i.e., mentally disordered). Not so surprising, the lifetime prevalence of 'psychotic' disorder using stringent DIS criteria was found to be highest amongst inmates in treatment centres (22.5%), then next highest among inmates in security units (19.5%) when compared to inmates in the general population (7.4%). This pattern of results was mixed for 'organic', 'anxiety', 'antisocial', 'substance', and 'alcohol' disorders. Only for 'depressive' and 'psychosexual' disorders was a higher lifetime prevalence rate found among treatment centre inmates relative to the other groups.

Table 12.
Prevalence Rates According to the DIS for General Population, Treatment Centres and Security Units Using Stringent Criteria (Weighted)

Disorder	General Population	Treatment Centres	Security Units
Organic	0.1	0.0	0.0
Psychotic	7.4	22.5	19.5
Depressive	21.2	38.2	22.0
Anxiety	44.1	41.6	61.0
Psychosexual	20.9	29.8	19.5
Antisocial	57.1	49.4	51.2
Substance	40.8	41.6	59.8
Alcohol	47.0	49.4	64.6

DIS Lifetime Prevalence Rates Using Wide Criteria and Offender Characteristics

A. Age

A breakdown of the DIS lifetime prevalence rates of mental disorder by selected age categories is presented in Table 13. Using wide diagnostic criteria, the likelihood of having met the diagnostic criteria for 'organic' brain syndrome was found to be significantly higher amongst older inmates. On the other hand, younger inmates were more likely to have experienced at least one episode of a 'depressive', 'antisocial', 'substance' or 'alcohol' disorder during their lifetime.

Table 13.
Lifetime Prevalence Rates According to the DIS Using Wide Diagnostic Criteria for Mental Disorders by Age (n)

Disorder	<19 (37)	20-24 (437)	25-29 (664)	30-39 (664)	40-49 (268)	50+ (105)
Organic	2.7	5.4	3.0	3.6	6.3	10.5
Psychotic	10.8	11.3	12.7	11.6	12.7	8.6
Depressive	46.0	26.3	30.0	34.2	37.7	31.4
Anxiety	59.5	55.3	56.7	56.5	59.3	45.7
Psychosexual	29.7	26.3	23.0	28.8	27.6	18.1
Antisocial	81.1	87.5	82.9	74.1	61.9	40.0
Substance	56.8	62.0	75.4	55.6	36.9	11.4
Alcohol	67.6	73.9	61.1	70.0	66.8	58.1

B. Marital Status

With respect to marital status (see Table 14), we found that single inmates were more likely than those married (i.e., married/common law) to have experienced at least one episode of 'psychotic' or 'psychosexual' disorder during their lifetime.

Table 14.
Lifetime Prevalence Rates According to the DIS Using Wide Diagnostic Criteria for
Mental Disorders by Marital Status

Disorder	Single (1,313)	Married (797)
Organic	4.3	4.8
Psychotic	13.2	9.4
Depressive	30.9	33.3
Anxiety	54.8	58.1
Psychosexual	29.1	20.8
Antisocial	76.5	76.2
Substance	54.6	53.0
Alcohol	71.1	70.9

C. Type of Offence

In Table 15, we contrast the DIS lifetime prevalence rates of mental disorders using wide criteria across selected categories of major offence (i.e., the offence with longest sentence). As Table 15 shows, the distribution of DIS lifetime prevalence rates of 'organic', 'depressive', 'psychosexual', 'antisocial', 'substance' and 'alcohol' disorders significantly differed across offence types. The two diagnostic categories found not to be significant were 'psychotic' and 'anxiety' disorders. It can also be seen from the results that the likelihood of having met the criteria for 'antisocial' personality disorder was greatest among those offenders whose major offence was robbery (88.0%). Interestingly, with the exception of 'substance' disorder, the DIS lifetime prevalence rates of the other categories of mental disorder were lowest for drug offenders.

Table 15.
Lifetime Prevalence Rates According to the DIS Using Wide Diagnostic Criteria for
Mental Disorders by Type of Offence (n)

Disorder	Homicide (337)	Manslaughter (98)	Robbery (498)	Sex (103)	Drugs (105)	Other (1,044)
Organic	3.0	9.2	2.4	7.8	3.8	5.6
Psychotic	13.1	13.3	11.0	9.7	3.8	12.6
Depressive	40.4	41.8	26.5	43.7	16.2	30.7
Anxiety	59.9	59.2	56.0	62.1	38.1	55.4
Psychosexual	29.1	36.7	22.1	37.9	16.2	25.7
Antisocial	68.6	73.5	88.0	58.3	57.1	76.6
Substance	43.6	48.0	67.7	30.1	43.8	54.2
Alcohol	68.8	78.6	74.5	58.3	51.4	72.5

D. Sentence Length

Using wide diagnostic criteria, Table 16 presents the DIS lifetime prevalence rates of mental disorder with selected sentence lengths. The DIS lifetime prevalence rates of five major diagnostic categories were found to significantly differ across sentence

length. These included: 'organic', 'depressive', 'antisocial', 'substance' and 'alcohol' disorders. As expected, those offenders who were sentenced to longer periods of incarceration (i.e., life, 10 to 29 years) were more likely to have experienced at least one episode of a 'depressive' disorder during their lifetime. Of special note, inmates serving relatively shorter terms (i.e., < 4 years) were more likely to have met the criteria for 'antisocial', 'substance' and 'alcohol' disorders.

Table 16.
Lifetime Prevalence Rates According to the DIS Using Wide Diagnostic Criteria for Mental Disorders by Sentence Length (n)

Disorder	< 2 yrs. (151)	2 - 4 (829)	5 - 9 (506)	10 - 29 (296)	Life (403)
Organic	7.3	4.7	3.2	7.4	3.2
Psychotic	12.6	10.0	12.7	11.5	14.4
Depressive	25.2	26.5	34.2	31.8	41.2
Anxiety	53.0	54.3	54.4	57.8	60.8
Psychosexual	20.5	25.5	24.3	26.4	31.0
Antisocial	78.8	78.9	77.7	73.3	70.0
Substance	54.3	57.2	55.7	55.7	42.4
Alcohol	77.5	74.7	71.7	61.5	67.3

E. Time Served

In Table 17, the wide criteria DIS lifetime prevalence rates for mental disorders are presented by the amount of time served. As can be seen from Table 17, a similar pattern of results emerges as was previously found for sentence length. That is, the likelihood of having had at least one episode of a 'depressive' disorder was highest among those offenders who had served longer periods of time in prison (i.e., greater than 4 years). As before, the DIS lifetime prevalence rates of 'organic', 'depressive', 'antisocial', 'substance' and 'alcohol' disorders were found to significantly differ across time served.

Table 17.
Lifetime Prevalence Rates According to the DIS Using Wide Diagnostic Criteria for Mental Disorders by Time Served (n)

Disorder	< 6 mos. (401)	6-11 (382)	12 - 23 (485)	24 - 35 (241)	36 - 47 (150)	48 - 59 (102)	60+ (357)
Organic	4.5	4.7	4.7	2.9	3.3	6.9	5.0
Psychotic	10.7	10.7	10.5	12.9	16.0	13.7	12.9
Depressive	25.9	33.0	29.5	32.8	35.3	38.2	36.4
Anxiety	50.9	57.1	57.7	55.6	60.7	61.8	55.7
Psychosexual	24.9	20.7	27.8	25.3	28.0	26.5	30.0
Antisocial	76.3	73.0	77.5	78.4	80.7	78.4	74.5
Substance	50.9	56.5	57.7	53.5	64.7	48.0	47.1
Alcohol	72.1	71.1	72.0	71.0	80.0	70.6	63.9

DIS Lifetime Prevalence Rates Using Stringent Criteria and Offender Characteristics

A. Age

A distribution of the DIS lifetime prevalence rates of mental disorder using stringent diagnostic criteria by selected age groupings are presented in Table 18. The results revealed that younger inmates were more likely to have experienced 'depressive', 'antisocial', or 'substance' disorders at some point in their lives.

Table 18.
Lifetime Prevalence Rates According to the DIS Using Stringent Diagnostic Criteria for Mental Disorders by Age

Disorder	< 19 (37)	20 - 24 (437)	25 - 29 (566)	30 - 39 (664)	40 - 49 (268)	50 + (105)
Organic	0.0	0.2	0.0	0.2	0.0	1.0
Psychotic	8.1	7.3	9.0	9.0	10.5	8.6
Depressive	37.8	17.8	20.5	25.9	28.0	22.9
Anxiety	43.2	46.1	44.9	41.3	48.1	36.2
Psychosexual	18.9	23.6	20.1	24.0	21.6	15.2
Antisocial	56.8	68.7	64.3	55.0	40.3	21.0
Substance	46.0	47.4	47.4	44.7	24.6	10.5
Alcohol	37.8	46.1	50.0	49.7	48.5	41.0

B. Marital Status

In Table 19, we present the DIS lifetime prevalence rates of mental disorder in relation to marital status. Using stringent diagnostic criteria we found meaningful differences in that single inmates were more likely than those married to have experienced at least one episode of 'organic', 'psychotic', 'anxiety' or 'psychosexual' disorder during their lifetime.

Table 19.
Lifetime Prevalence Rates According to the DIS Using Stringent Diagnostic Criteria for Mental Disorders by Marital Status

Disorder	Single (1,313)	Married (797)
Organic	0.2	0.0
Psychotic	10.2	6.5
Depressive	22.5	23.6
Anxiety	46.7	42.3
Psychosexual	25.2	16.8
Antisocial	55.6	59.4
Substance	41.6	42.0
Alcohol	48.7	47.3

C. Type of Offence

Table 20 contrasts the DIS lifetime prevalence rates of mental disorders using stringent criteria across selected categories of major offence. As Table 20 indicates, the DIS lifetime prevalence rates of 'depressive', 'anxiety', 'psychosexual', 'antisocial', 'substance' and 'alcohol' are distributed significantly different across the various offence types. Noteworthy, the lifetime prevalence rates of 'organic' and 'psychotic' disorders did not significantly differ across offence types. We note that, the DIS lifetime prevalence rates of 'depressive', 'anxiety' and 'psychosexual' disorder were highest among sex offenders. Further, the DIS lifetime prevalence rates of 'antisocial' (71.5%) and 'substance' (54.6%) disorders were found to be highest among robbery offenders.

Table 20.
Lifetime Prevalence Rates According to the DIS Using Stringent Diagnostic Criteria for Mental Disorders by Type of Offence (n)

Disorder	Homicide (337)	Manslaughter (98)	Robbery (498)	Sex (103)	Drugs (105)	Other (1,044)
Organic	0.3	0.0	0.0	0.0	0.0	0.2
Psychotic	10.7	11.2	8.0	5.8	3.8	9.2
Depressive	29.1	30.6	19.3	36.9	12.4	21.1
Anxiety	41.3	46.9	44.6	47.6	29.5	45.2
Psychosexual	23.7	26.5	18.5	31.1	15.2	22.7
Antisocial	45.4	44.9	71.5	42.7	36.2	58.3
Substance	30.0	36.7	54.6	22.3	36.2	41.7
Alcohol	46.1	46.9	51.0	36.9	29.5	50.3

D. Sentence Length

Using stringent diagnostic criteria, Table 21 presents the DIS lifetime prevalence rates of mental disorder for inmates across various sentence lengths. DIS lifetime prevalence rates of 'depressive' disorder were found to significantly differ across sentence length. As was found using wide diagnostic criteria, offenders with longer

sentences (i.e., lifers) were more likely to have had at least one episode of a 'depressive' disorder during their lifetime.

Table 21.
Lifetime Prevalence Rates According to the DIS Using Stringent Diagnostic Criteria for Mental Disorders by Sentence Length (n)

Disorder	< 2 yrs. (151)	2-4 (829)	5-9 (506)	10-29 (296)	Life (403)
Organic	0.0	0.2	0.0	0.0	0.3
Psychotic	9.3	7.4	8.9	9.1	11.4
Depressive	15.9	19.3	24.7	22.3	29.8
Anxiety	44.4	45.6	41.5	44.6	42.7
Psychosexual	17.9	22.6	20.4	22.3	24.8
Antisocial	63.6	60.4	58.5	56.1	45.9
Substance	38.4	45.1	42.9	47.3	28.8
Alcohol	55.6	51.2	48.2	39.5	46.4

E. Time Served

In exploring further the DIS lifetime prevalence rates (using stringent diagnostic criteria) of major mental disorders, Table 22 presents estimates by the amount of time served. As Table 22 shows, the likelihood of having had at least one episode of a 'depressive' disorder was highest among those offenders who had served longer periods of time in prison (i.e., greater than 4 years). In addition, the DIS lifetime prevalence rates of 'substance' disorder were found to significantly differ across time served.

Table 22.
Lifetime Prevalence Rates According to the DIS Using Stringent Diagnostic Criteria for Mental Disorders by Time Served (n)

Disorder	< 6 mos. (401)	6-11 (382)	12-23 (485)	24-35 (241)	36-47 (150)	48-59 (102)	60 + (357)
Organic	0.0	0.0	0.4	0.0	0.0	0.0	0.3
Psychotic	8.0	7.6	7.6	9.5	11.3	12.8	9.8
Depressive	19.0	24.1	21.2	21.6	26.7	32.4	25.2
Anxiety	39.9	44.2	49.1	41.1	47.3	45.1	41.5
Psychosexual	21.7	17.8	24.3	21.6	19.3	19.6	26.1
Antisocial	58.1	55.0	60.6	58.9	56.7	56.9	52.1
Substance	39.7	45.0	45.4	39.4	51.3	36.3	35.0
Alcohol	45.1	47.6	51.3	52.3	49.3	48.0	44.8

Incidence of Comorbidity in the Federal Male

In order to provide estimates of comorbidity (e.g., dual diagnoses) in the federal male inmate population, we used the _widest_ criteria possible for meeting a major diagnostic category and then, explored the DIS lifetime co-occurrence of these disorders. We report a positive co-occurrence of 'psychotic', 'depressive', 'anxiety'

and/or 'psychosexual' disorder if it was experienced at any time during the inmate's life (in combination with one or more of the other major diagnostic categories).

In Table 23, we present the incidence for each possible combination of mental disorder using wide diagnostic criteria and DIS lifetime prevalence estimates. As Table 23 indicates, all of the possible combinations of co-occurring mental disorders were found to be present among the federal male inmate population. We note, however, that there are substantial reductions in the prevalence of a particular diagnostic category whenever the co-occurrence of other mental disorders) were partialed out. For example, using wide diagnostic criteria the overall DIS lifetime prevalence of 'psychotic' disorder was found to be 10.4%. While this estimate reflects the fullest extent of 'psychotic' symptoms in the federal male inmate population, it includes the occurrence of the other categories of mental disorder. Upon extraction of the co-occurrence of the other major diagnostic categories of mental disorder from this prevalence rate, we found that the estimate of 'psychotic' disorder was reduced to 0.2%. This pattern of results was found to be consistent for 'depressive' (i.e., 29.8% versus 3.7%), 'anxiety' (i.e., 55.0% versus 22.3%), and 'psychosexual' (i.e., 24.5% versus 8.5%) disorders.

Table 23.
Incidence of Comorbidity in the Federal Male Inmate Population

Type(s) of Disorder(s)	%
psychotic	0.2
psychotic + depressive	0.7
psychotic + anxiety	1.0
psychotic + psychosexual	0.4
psychotic + depressive + anxiety	4.0
psychotic + depressive + psychosexual	0.2
psychotic + anxiety + psychosexual	0.7
psychotic + depressive + anxiety + psychosexual	3.1
overall psychotic	**10.4**
depressive	3.7
depressive + anxiety	12.9
depressive + psychosexual	0.6
depressive + psychotic	0.7
depressive + anxiety + psychosexual	4.7
depressive + anxiety + psychotic	4.0
depressive + psychosexual + psychotic	0.2
depressive + anxiety + psychosexual + psychotic	3.1
overall depressive	**29.8**
anxiety	22.3
anxiety + psychosexual	6.4
anxiety + psychotic	1.0
anxiety + depressive	12.9
anxiety + psychosexual + psychotic	0.7
anxiety + psychosexual + depressive	4.7
anxiety + psychotic + depressive	4.0
anxiety + psychosexual + psychotic + depressive	3.1
overall anxiety	**55.0**
psychosexual	8.5
psychosexual + psychotic	0.4
psychosexual + depressive	0.6
psychosexual + anxiety	6.4
psychosexual + psychotic + depressive	0.2
psychosexual + psychotic + anxiety	0.7
psychosexual + depressive + anxiety	4.7
psychosexual + psychotic + depressive + anxiety	3.1
overall psychosexual	**24.5**

V. Discussion

The purpose of CSC's 'Mental Health Survey' was to assess the prevalence, nature and severity of mental health problems among the male inmate population. The survey provided information on prevalence rates at national and regional levels as well as across a variety of offender characteristics for the major categories of mental disorder.

The 'Mental Health Survey' was unique in that it relied on a structured interviewing instrument - the Diagnostic Interview Schedule (DIS) - and employed the objective diagnostic criteria described in the Diagnostic and Statistical Manual (DSM III) of the American Psychiatric Association. The design of the survey involved systematic selection, a modification of simple random sampling, of all male inmates in CSC custodial facilities with the exception of High Maximum Security Units, Regional Psychiatric Centres and Regional Treatment Centres where a complete census was attempted. The population was stratified by region with eligible respondents listed by institution and ordered by age. Strata sample sizes were chosen to yield a 5% margin of error for a 99% confidence; that is, the probability that a given prevalence estimate is an accurate indictor of the true prevalence in the inmate population.

Of the 9,801 inmates targeted for sampling in the survey, 2,812 (28.7%) were actually selected in the five CSC regions. The overall response rate was 68.5% and only a very few institutions had response rates below 50%. The overall response rate for the census of specialized institutions was 63%. With respect to security levels, minimum security institutions had the highest response rate, 73%, compared with 66% for maximum security.

The results of the survey were organized around eight separate groups of diagnosis: 'organic' (organic brain syndrome); 'psychotic' (Schizophrenia, Schizophreniform, Manic Episode); 'depressive' (Major Depressive Episodes, Dysthymic Disorders, Bipolar Disorder); 'anxiety' (Panic Disorder, Generalized Anxiety, Agoraphobia, Phobia, Somatization); 'psychosexual' (Psychosexual Dysfunction, Transsexualism, Ego-dystonic Homosexuality); 'antisocial' (Antisocial Personality Disorder), 'substance' (abuse/dependence) and 'alcohol' (use/dependence) disorders.

Prevalence rates were measured with respect to two defining parameters: reference period and breadth of diagnostic criteria employed. The reference periods were lifetime, within the last year, or within the last two weeks. Breadth of diagnostic criteria was either wide or stringent(i.e., severe and exclusive). Severity criteria include only those cases where all identifying behaviors were present; exclusive criteria removed from the prevalence figures those diagnoses which may have been due to other mental health problems.

Using wide diagnostic criteria (i.e., ignoring severity and exclusion) for meeting a particular DSM-III diagnosis provided us with upper-bound estimates of mental health problems among the federal male inmate population. The 'Mental Health Survey' revealed that the DIS lifetime prevalence rate for the following major categories of

mental disorder were: 'organic' (4.3%); 'psychotic' (10.4%); 'depressive' (29.8%); 'anxiety' (55.6%); 'psychosexual' (24.5%); 'antisocial' (74.9%); 'substance' (52.9%); and 'alcohol' (69.8%).

DIS prevalence rates using the most _stringent_ criteria (i.e., using both severity and exclusion) provided us with lower-bound estimates of mental health problems. From the survey results, it is clear that a significant reduction in the prevalence rates took place whenever severity and exclusion criteria were considered. After applying _stringent_ diagnostic criteria, the DIS lifetime prevalence rates were: 'organic' (0.1%); 'psychotic' (7.7%); 'depressive' (21.5%); 'anxiety' (44.1%); 'psychosexual' (21.1%); 'antisocial' (56.9%); 'substance' (40.9%); and 'alcohol' disorder (47.2%).

Any differences in the DIS lifetime prevalence rates of mental disorder across the five regions of CSC (Atlantic, Quebec, Ontario, Prairies, Pacific) were deemed to be more likely due to idiosyncrasies in data collection rather than any intrinsic inter-regional differences in prevalence rates. With this view in mind, the prevalence rates of mental disorder were comparable across regions whether _wide_ or _stringent_ diagnostic criteria were applied.

In examining the prevalence of mental disorder across type of custodial setting, the highest prevalence rates of mental disorder were found among inmates located in High Maximum Security Units and then, Regional Psychiatric and Regional Treatment Centres to be followed by the general population. However, this pattern changed when _stringent_ diagnostic criteria was employed to higher prevalence rates in Regional Psychiatric/Treatment Centres and then, Security Units and general population.

The DIS lifetime prevalence rates of mental disorder were examined in relation to selected offender characteristics. These included: age, marital status, type of offence, length of sentence and amount of time served while in prison.

The 'Mental Health Survey' revealed that the likelihood of having met the criteria for 'organic' disorder was highest among older inmates (i.e., 50 years old and over). Younger inmates were more likely to have experienced at least one episode of a 'depressive', 'antisocial', 'substance' or 'alcohol' disorder during their lifetime. Single inmates were more likely than married inmates to have suffered from episodes of 'psychotic' or 'psychosexual' disorders.

It was notable that robbery offenders had the highest DIS lifetime prevalence rate (88%) of 'antisocial' personality disorder relative to the other offence types. Sex offenders had the highest DIS lifetime prevalence rates of 'depressive' (43.6%), 'anxiety' (62.1%) and 'psychosexual' (37.9%) disorders. With the exception of 'substance' disorders, drug offenders had the lowest DIS lifetime prevalence rates of mental disorder relative to the other offence categories.

In examining sentence lengths and time served, long-term offenders (i.e., lifers, 10 to 29 years) were more likely to have experienced an episode of 'depressive' disorder

(29.8%) during their lifetime. For those offenders sentenced to terms of under four years, the DIS lifetime prevalence rates of 'antisocial', 'substance', and 'alcohol' disorders were highest. Similarly, inmates who had served longer periods (i.e., 4 years and over) of their current sentence were more likely to have experienced at least one episode of a 'depressive' disorder.

Estimates of the wide DIS incidence of comorbidity (i.e., the co-occurrence of one or more other disorders) in the federal male inmate population was examined in relation to 'psychotic', 'depressive', 'anxiety', and 'psychosexual' disorders. The 'Mental Health Survey' revealed that the incidence of comorbidity in the federal male inmate population was very common. Overall, the wide DIS lifetime prevalence rate of 'psychotic' disorder was found to be 10.4%. However, it is noteworthy that the prevalence rate of 'psychotic' disorder was dramatically reduced to 0.2% when the occurrence of other pre-selected categories of mental disorders were partialed out. The incidence of offenders who had met the DIS lifetime criteria for 'psychotic', 'depressive' and 'anxiety' disorders was 4.0%, whereas for 'psychotic', 'depressive', 'anxiety' and 'psychosexual' disorders was 3.1%. It would appear that inmates who have suffered from 'psychotic' symptoms in the past have also endured a variety of other mental health problems during their lifetime,

In sum, the 'Mental Health Survey' revealed some notable trends about the nature and prevalence of mental health problems among male inmates in Canadian penitentiaries. While it is possible that these survey results also reflect other factors such as: differences between inmates who remain in custody and those who are released, the ability of inmates to remember episodes that happened long ago and willingness to report symptoms, it seems likely that inmates in federal institutions have experienced much more mental disorder than was understood before. Nevertheless, this major survey of mental disorders among penitentiary inmates has shown that mental health is rapidly become one of the major challenges facing federal corrections today.

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Appendicies

Appendix A:

Descriptions of Mental Disorders

(cf: DSM-III, APA 1980)

ORGANIC DISORDERS:

Organic Brain Syndrome: The DIS permits screening for the presence of organic brain syndrome, but does not allow diagnosis of an 'organic mental disorder', for which the cause of the syndrome must be known or presumed. Within the organic syndromes, the DIS focuses on the assessment of dementia - a severe loss of intellectual ability. However, a person with delirium or intoxication could also be found positive because the clouded consciousness associated with these states would similarly inhibit correct responses to the questions used to test memory and other intellectual abilities.

   The essential features of dementia are: disorientation in time and place; impairment of memory, as shown by inability to recall recently learned material; deterioration of other intellectual functions, such as ability to do arithmetic, spelling, ability to follow instructions, copy drawings, and name common objects.

PSYCHOTIC DISORDERS:
Schizophrenia: The diagnosis of Schizophrenia essentially requires the presence of psychotic symptoms such as delusions or hallucinations, deterioration from a previous level of functioning, onset before age 45, and a duration of at least six months.

Schizophreniform: The criteria for the diagnosis of Schizophreniform disorder are the same as for Schizophrenia except that the minimum duration is only two weeks.

Manic Episode: The essential feature of a Manic Episode is a distinct period when the predominant mood of the individual is either happy, elevated, expansive, or irritable, and when there are associated symptoms of heightened activity, spending sprees, increased interest in sex, rapid and extensive speech, moving so rapidly from one idea to another when speaking that it is hard for a listener to see the connections, inflated self-esteem, decreased need for sleep, and distractibility. Between Manic Episodes, people may be completely normal or may have periods of depression. It is also possible to have depressed mood off and on during a manic episode.

DEPRESSIVE DISORDERS:

Major Depressive Episode: Individuals experiencing a Major Depressive Episode have felt low and depressed for two weeks or more and at the same time have had other symptoms such as a poor appetite, difficulty sleeping, feelings of worthlessness or guilt, decreased energy, and thoughts of death. Between these episodes, they may feel entirely normal.

Dysthymic Disorder: A diagnosis of Dysthymia requires at least two years of feeling depressed most days and some additional symptoms, but fewer than a major depressive episode.

Bipolar disorders: A DSM-III diagnosis of Bipolar disorder requires having a manic episode. While the elevated mood may be described as euphoric, unusually good, cheerful, or high, it is recognized as excessive and inappropriate by those who know the individual well. Although an elevated mood is considered prototypical, the predominant mood disturbance may also be irritability.

ANXIETY DISORDERS:

Panic Disorder: Essential features of Panic disorder are recurrent panic (anxiety) attacks that occur at times unpredictably, though certain situations, such as driving a car, may become associated with a panic attack. The same clinical picture occurring during marked physical exertion or in a life threatening situation is not termed a panic attack.

   A panic attack is manifested by a sudden onset of intense apprehension, fear, or terror, often associated with feelings of impending doom. The most common symptoms experienced during an attack are: breathing difficulty; heart pounding; chest pain or discomfort; choking or smothering sensations; dizziness; feelings of unreality; tingling in the hands or feet; hot and cold flashes; sweating; faintness; trembling or shaking; and fear of dying, going crazy, or doing something uncontrollable during the attack. Attacks usually last minutes, and more rarely, hours.

Generalized Anxiety: The diagnosis of Generalized Anxiety requires suffering from an anxious mood for at least one month, as indicated by the presence of 3 or 4 groups of symptoms: motor tension; automatic hyperactivity (sweating, heart pounding); apprehensive expectation; and vigilance and scanning. In the survey, Generalized Anxiety is quite prevalent.

Agoraphobia: The essential feature of Agoraphobia is a marked fear of being alone or being in a public place where escape might be difficult.

Phobia: The essential feature of a Phobic Disorder is persistent and irrational fear of a specific object, activity, or situation that results in a compelling desire to avoid the dreaded object, activity, or situation. The fear is recognized by the individual as excessive or unreasonable in proportion to the actual dangerousness of the object, activity, or situation.

   Irrational avoidance of objects, activities, or situations that has an insignificant effect on life adjustment is commonplace. For example, many individuals experience some irrational fear when unable to avoid contact with harmless insects or spiders, but this has no major effect on their lives. However, when the avoidance behaviour or fear is a

significant source of distress to the individual or interferes with social or role functioning, a diagnosis of Phobic Disorder is warranted.

Somatization: The essential features of Somatization Disorder are recurrent and multiple physical symptoms occurring over a period of several years which are apparently not due to physical disorder. Somatization disorder begins before the age of 30.

   Complaints are often presented in a dramatic, vague, or exaggerated way or as part of a complicated medical history in which many physical diagnoses have been considered. Medical care has often been given by many physicians, sometimes concurrently. Often there is a history of multiple surgical operations. Complaints typically involve the following organ symptoms or types of symptoms:

- Conservation or pseudoneurological (e.g. paralysis, blindness);
- Gastrointestinal (e.g. abdominal pain);
- Female reproductive (e.g. painful menstruation);
- Psychosexual (e.g. sexual indifference);
- Pain (e.g. back pain); and
- Cardiopulmonary (e.g. dizziness).

PSYCHOSEXUAL DISORDERS:

Psychosexual Dysfunction: Psychosexual dysfunction is characterized by inhibition in sexual desire or function, which is not attributable entirely to any physical disorder or to the use of medication or other substances. There is either persistent and pervasive inhibition of sexual desire, inhibited sexual excitement (frigidity or impotence), inhibited orgasm, premature ejaculation, or persistent pain on intercourse.

Transsexualism: The essential features of Transsexualism are a conviction that one's anatomic sex is in error, a wish to live as a member of the opposite sex, and if the desire has been continuous for two years in persons who are not schizophrenic.

Ego-dystonic Homosexuality: Ego-dystonic homosexuality is a sustained pattern of overt homosexual arousal that is unwanted and a persistent source of distress.

ANTISOCIAL DISORDER:

Antisocial Personality: The essential features of Antisocial Personality disorder are a history of continuous and chronic antisocial behaviour in which the rights of others are violated, persistence into adult life of a pattern of antisocial behaviour that began before the age of 15, and failure to sustain good job performance over a period of several years.

Lying, stealing, fighting, truancy, and resisting authority are typical early childhood signs. In adolescence, unusually early or aggressive sexual behaviour, excessive drinking, and use of illicit drugs are frequent. In adulthood, these kinds of behaviour continue, with the addition of inability to sustain consistent work performance or to function as a responsible parent, and failure to accept social norms with respect to lawful behaviour. After age 30 the more flagrant aspects may diminish, particularly sexual promiscuity, fighting, criminality, and vagrancy.

SUBSTANCE DISORDER:

Substance Abuse/dependence: The Drug section of the DIS asks about problems associated with the use of a variety of drugs. The following substances are covered:

- Cannabis (marijuana and hashish);
- Amphetamines or similarly acting stimulants;
- Barbiturates and similarly acting sedatives or hypnotics, including minor tranquilizers;
- Cocaine;
- Opioids, including heroin; and
- Phencyclidine (PCP) and other hallucinogens.

A DSM-III diagnosis of abuse requires both a pattern of pathological use and impairment in social or occupational functioning. A diagnosis of dependence requires either tolerance or withdrawal. For cannabis dependence, it also requires either social or occupational impairment or a pattern of pathological use.

ALCOHOL DISORDER:

Alcohol Abuse/dependence: The essential feature of alcohol abuse is a pattern of pathological use of alcohol for at least a month that causes impairment in social or occupational functioning.

The essential features of alcohol dependence are either tolerance or a withdrawal syndrome plus either a pattern of pathological alcohol use or impairment in social or occupational functioning due to alcohol.

Appendix B:

Regional Response Rates by Institution

Table A.

Response Rates for Atlantic Region Institutions

Institution	Sample	Non-response		Response	
		n	%	n	%
Springhill (Md)	192	39	(20.3)	153	(79.7)
Dorchester (Mx)	103	24	(23.3)	79	(76.7)
Westmorland (Mn)	73	8	(11.0)	65	(89.0)
Atlantic (Mx)	70	34	(48.6)	36	(51.4)
Total	438	105	(24.0)	333	(76.0)

Note: SL = Security Level;
Mn = Minimum, Md = Medium, Mx = Maximum

Table B.

Response Rates for Quebec Region Institutions
Note: SL = Security Level; Mn = Minimum, Md = Medium, Mx = Maximum

Institution (SL)	Sample	Non-response		Response	
		n	%	n	%
Montée St-François (Mn)	30	10	(33.3)	20	(66.7)
Laval (Mx)	45	10	(22.2)	35	(77.8)
Federal Training Centre (Md)	93	17	(18.3)	76	(81.7)
Donnaconna (Mx)	56	18	(32.1)	38	(67.9)
Leclerc (Md)	92	25	(27.2)	67	(72.8)
Archambault (Mx)	71	26	(36.6)	45	(63.4)
Ste.-Anne-Des-Plaines (Mn)	28	4	(14.3)	24	(85.7)
Regional Reception Centre (Mx)	21	4	(19.1)	17	(80.9)
Drummond (Md)	59	13	(22.0)	46	(78.0)
Cowansville (Md)	96	14	(14.6)	82	(85.4)
La Macaza (Md)	46	12	(26.1)	34	(73.9)
Total	637	153	(24.0)	484	(76.0)

Table C.
Response Rates for Ontario Region Institutions

Institution (SL)	Sample n	Non-response		Response	
		n	%	n	%
Kingston Penitentiary (Mx)	106	33	(31.1)	73	(68.9)
Millhaven Transfer Unit (Mx)	14	4	(28.6)	10	(71.4)
Millhaven (Mx)	63	25	(39.7)	38	(60.3)
Bath (Mn)	23	5	(21.7)	18	(78.3)
Collins Bay (Md)	106	41	(38.7)	65	(61.3)
Frontenac (Mn)	32	15	(46.9)	17	(53.1)
Beaver Creek (Mn)	17	4	(23.5)	13	(76.5)
Joyceville (Md)	120	38	(31.7)	82	(68.3)
Pittsburgh (Mn)	19	2	(10.5)	17	(89.5)
Warkworth (Md)	129	34	(26.4)	85	(73.6)
Total	629	201	(32.0)	428	(68.0)

Note: SL = Security Level; Mn = Minimum, Md = Medium, Mx = Maximum

Table D.
Response Rates for Prairies Region Institutions

Institution (SL)	Sample n	Non-response n	%	Response n	%
Stony Mountain (Md)	119	30	(25.2)	89	(74.8)
Rockwood (Mn)	18	3	(16.7)	15	(83.3)
Saskatchewan (Mx)	107	40	(37.4)	67	(62.6)
Saskatchewan Farm Annex (Mn)	17	80	(47.1)	9	(52.9)
Drumheller (Md)	116	35	(30.2)	81	(69.8)
Bowden (Md)	130	46	(35.4)	84	(64.6)
Edmonton (Mx)	69	28	(40.6)	41	(59.4)
Total	576	190	(33.0)	386	(67.0)

Note: SL = Security Level; Mn = Minimum, Md = Medium, Mx = Maximum

Table E.
Response Rates for Pacific Region Institutions

Institution (SL)	Sample n	Non-response n	%	Response n	%
William Head (Md)	64	15	(23.4)	49	(76.6)
Matsqui (Mn)	129	90	(69.8)	39	(30.2)
Mountain (Md)	98	37	(37.8)	61	(62.2)
Kent (Mx)	89	34	(38.2)	55	(61.8)
Elbow Lake (Mn)	26	13	(50.0)	13	(50.0)
Ferndale (Mn)	39	16	(41.0)	23	(59.0)
Mission (Md)	87	33	(37.9)	54	(62.1)
Total	532	238	(44.7)	294	(55.3)

Note: SL = Security Level; Mn = Minimum, Md = Medium, Mx = Maximum

Appendix C:
National Prevalence Rates According to the DIS (Weighted)

Disorder	Widest Criteria			Stringent Criteria		
	Life Time	Within Year	Within 2 Wks	Life Time	Within Year	Within 2 Wks
Organic:	4.3	n/a	n/a	0.1	n/a	n/a
Psychotic:						
Schizophrenia	4.9	3.7	2.8	4.4	3.4	2.6
Schizophreniform	0.8	0.6	0.4	0.5	0.4	0.4
Manic Episode	5.7	3.2	1.8	2.8	1.2	0.6
Depressive:						
Major Episode	21.4	15.7	9.2	13.6	9.8	5.4
Dysthymic Disorder	14.3	n/a	n/a	7.9	n/a	n/a
Bipolar Disorder	3.6	n/a	n/a	1.6	n/a	n/a
Anxiety:						
Panic Disorder	3.7	2.5	1.0	0.8	0.6	0.3
Generalized Anxiety	46.7	26.5	7.6	31.9	17.9	4.9
Agoraphobia	13.8	n/a	n/a	6.7	n/a	n/a
Phobia	28.3	16.7	9.8	22.9	13.4	7.7
Somatization	0.6	0.6	0.5	0.6	0.6	0.5
Psychosexuels:						
Psychosexual Dysfunction	23.1	n/a	n/a	19.6	n/a	n/a
Transexxualism	1.0	1.0	0.5	0.8	0.5	0.4
Ego-dystonic Homosexuality	2.1	1.0	0.5	2.1	1.0	0.5
Antisocial:	75.4	-	-	57.2	-	-
Substance:	53.7	17.2	4.3	41.6	13.3	3.0
Barbiturate	20.8	-	-	8.7	-	-
Opioid	19.2	-	-	11.2	-	-
Cocaine	20.8	-	-	20.8	-	-
Amphetamine	19.5	-	-	10.1	-	-
Hallucinogen	10.0	-	-	10.0	-	-
Cannabis	30.8	-	-	10.4	-	-
					-	-
Alcohol:	70.1	13.5	0.6	47.4	-	-

Appendix D:
Regional Lifetime Prevalence Rates Using Wide Diagnostic Criteria

Disorder	Region				
	Atlantic	**Quebec**	**Ontario**	**Prairies**	**Pacific**
Organic:	6.9	4.3	2.3	4.6	6.2
Psychotic					
Schizophrenia	6.3	6.3	4.7	4.7	2.4
Schizophreniform	0.3	1.4	0.9	0.3	0.8
Manic Episode	5.1	7.7	7.7	4.9	3.4
Depressive					
Major Episode	20.1	26.2	19.9	17.7	20.4
Dysthymic Disorder	13.2	13.9	12.0	16.7	17.0
Bipolar Disorder	2.1	4.8	4.9	1.8	1.6
Anxiety:					
Panic Disorder	3.9	3.3	3.4	2.8	3.1
Generalized Anxiety	39.3	68.0	41.8	37.7	39.5
Agoraphobia	14.4	14.8	13.2	13.8	11.5
Phobia	24.9	34.1	27.2	23.7	26.1
Somatization	0.3	1.0	0.5	0.5	0.0
Psychosexual					
Psychosexual dusfunction	27.4	17.7	22.7	29.2	24.3
Transsexualism	0.6	1.7	0.7	0.5	0.8
Ego-dystonic Homosexuality	2.1	1.7	2.0	2.2	0.5
Antisocial:	79.5	75.3	72.7	78.6	74.0
Substance	53.7	58.3	49.4	54.1	51.8
Barbiturate	25.2	23.0	16.5	22.3	19.6
Opioid	15.6	18.3	16.8	20.0	26.3
Cocaine	17.3	33.4	16.7	13.3	15.0
Amphetamine	22.7	14.3	23.0	20.8	20.2
Hallucinogen	13.4	12.9	8.6	7.4	8.1
Cannabis	38.8	29.2	24.5	37.7	31.9
Alcohol	76.2	66.7	69.4	76.1	66.9

Note: n/a = not available

Appendix E:

Lifetime Prevalence Rates for Treatment Centres Using Wide Diagnostic Criteria (Weighted)

Disorder	Treatment Centre		
	Ontario R.T.C.	**Prairies R.P.C.**	**Pacific R.P.C.**
Organic:	n/a	n/a	n/a
Psychotic:			
Schizophrenia	20.6	17.7	9.3
Schizophreniform	0.0	0.0	2.7
Manic Episode	8.8	20.6	9.4
Depressive			
Major Episode	35.3	46.4	42.6
Dysthymic Disorder	20.6	26.1	26.6
Bipolar Disorder	8.8	20.6	9.3
Anxiety:			
Panic Disorder	11.7	5.7	9.4
Generalized Anxiety	41.1	50.7	52.0
Agoraphobia	20.6	27.4	21.3
Phobia	35.3	43.5	42.7
Somatization	0.0	0.0	0.0
Psychosexual			
Psychosexual Dysfunction	20.5	42.7	29.3
Transsexualism	0.0	0.0	2.7
Ego-dystonic Homosexuality	9.1	6.0	6.7
Antisocial:	73.5	77.9	82.7
Substance:	50.0	49.3	68.0
Barbiturate	32.4	26.9	27.8
Opioid	17.6	20.9	25.0
Cocaine	11.8	11.9	21.9
Amphetamine	29.4	26.9	20.5
Hallucinogen	11.8	13.4	15.3
Cannabis	32.4	37.3	49.3
Alcohol	76.5	69.1	74.7

Appendix F:
Regional Lifetime Prevalence Rates Using Stringent Diagnostic Criteria (Weighted)

Disorder	Atlantic	Quebec	Region Ontario	Prairies	Pacific
Organic:	0.3	0.2	0.0	0.0	0.3
Psychotic:					
Schizophrenia	5.1	6.2	4.0	4.1	2.0
Schizophreniform	0.3	0.6	0.7	0.3	0.8
Manic Episode	1.5	1.6	4.9	2.9	1.6
Depressive:					
Major Episode	13.2	15.3	12.1	12.2	15.4
Dysthymic Disorder	7.2	8.1	5.6	10.2	9.1
Bipolar disorder	0.3	1.3	2.8	1.4	0.9
Anxiety:					
Panic Disorder	1.5	0.6	1.2	0.6	2.1
Generalized Anxiety	26.9	43.8	27.7	23.4	27.1
Agoraphobia	7.5	7.3	6.3	6.9	6.0
Phobia	21.0	27.8	21.8	18.3	22.6
Somatization	0.3	1.0	0.5	0.5	0.0
Psychosexual:					
Psychosexual Dysfunction	22.3	14.6	19.7	24.6	21.2
Transsexualism	0.6	1.4	0.2	0.5	0.8
Ego-dystonic Homosexuality	2.1	1.7	2.0	2.2	2.6
Antisocial:	62.1	57.0	52.1	61.8	58.7
Substance:	41.4	49.2	37.0	39.6	37.4
Barbiturate	9.7	10.1	6.9	8.5	9.0
Opioid	7.3	11.2	10.2	10.2	16.7
Cocaine	17.3	33.4	16.7	13.3	15.0
Amphetamine	11.8	7.7	12.8	7.6	12.3
Hallucinogen	13.4	12.9	8.6	7.4	8.1
Cannibis	18.9	7.2	7.8	13.9	12.0
Alcohol:	51.5	45.9	46.2	51.8	44.6

Appendix G:
Lifetime Prevalence Rates for Treatment Centres Using Stringent Diagnostic Criteria (Weighted)

Disorder	Treatment Centre		
	Ontario R.T.C.	**Prairies R.P.C.**	**Pacific R.P.C.**
Organic	n/a	n/a	n/a
Psychotic:			
Schizophrenia	20.6	16.2	8.0
Schizophreniform	0.0	0.0	2.7
Manic Episode	2.9	11.8	6.7
Depressive:			
major episode	23.5	34.8	33.3
Dysthymic Disorder	8.8	5.8	5.3
Bipolar Disorder	2.9	1.5	1.3
Anxiety:			
Panic Disorder	2.9	1.4	2.7
Generalized Anxiety	17.6	18.8	26.7
Agoraphobia	2.9	7.2	9.3
Phobia	26.5	29.0	30.7
Somatization	0.0	0.0	0.0
Psychosexual:			
Psychosexual Dysfunction	17.6	30.9	21.3
Transsexualism	0.0	0.0	2.7
Ego-dystonic Homosexuality	9.1	6.0	6.7
Antisocial:	32.4	50.0	57.3
Substance:	38.3	34.4	50.7
Barbiturate	11.8	14.9	13.9
Opioid	8.8	13.4	18.1
Cocaine	11.8	11.9	21.9
Amphetamine	20.6	13.4	13.7
Hallucinogen	11.8	13.4	15.3
Cannabis	14.7	17.9	14.7
Alcohol:	47.1	51.5	49.3