



Manitoba Centre for Health Policy

**Online Supplement for:
Methamphetamine Use
in Manitoba: A Linked
Administrative Data Study**

Autumn 2020

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Appendix 2: Mental Disorders

Mental Disorders in the 5 years before first contact – stratified by where the first methamphetamine-related health care contact was recorded and by age

Here we present the prevalence of mental disorders for the entire cohort and stratified by where the first methamphetamine use was first recorded, and compare this with the prevalence of mental disorders among other Manitobans using risk ratios. These findings were adjusted for age and sex.

We also stratified the analyses by age to look at youth age 10-17 separately from adults age 18+ at first methamphetamine-related contact. Data privacy regulations prevent us from showing results where cell sizes are small because this may lead to re-identification of people in the cohort. Therefore, we are unable to present all of the results for Manitobans age 10-17.

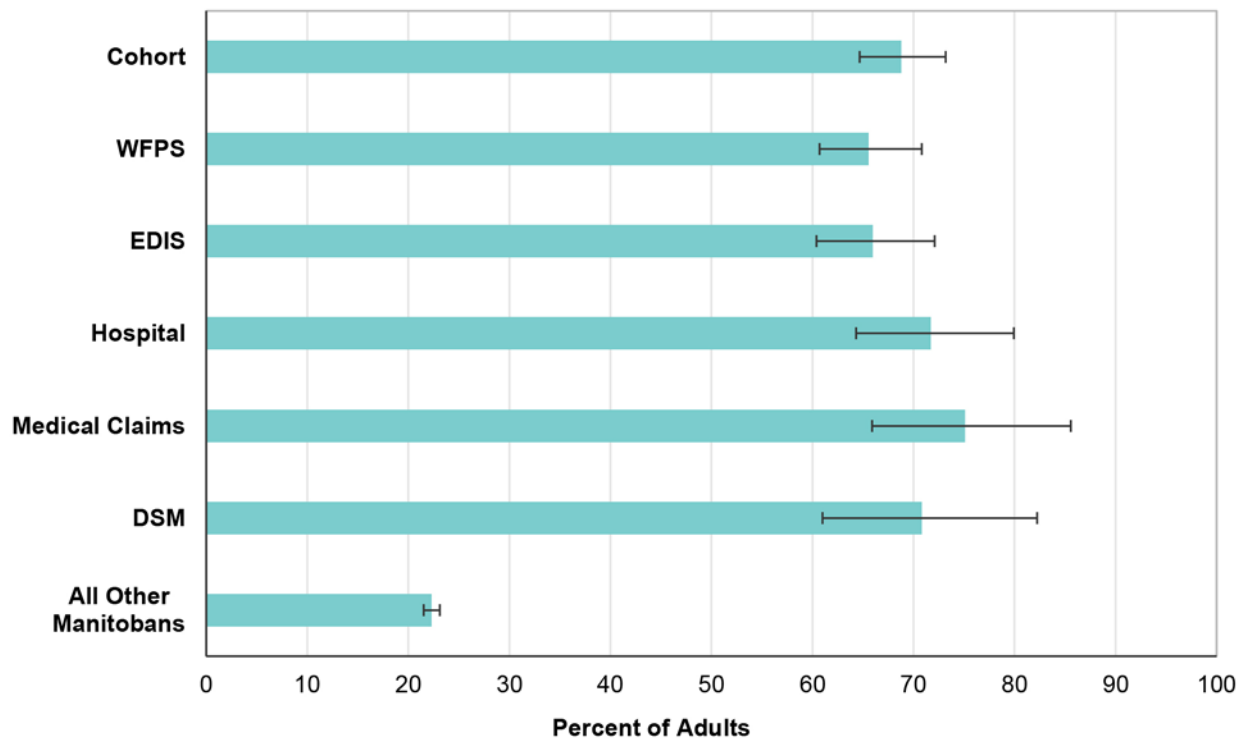
Mood or Anxiety Disorders

Appendix Figure 2.1 shows the age- and sex-adjusted five-year prevalence estimates for mood or anxiety disorders and Appendix Figure 2.2 shows risk ratios comparing the prevalence of mood or anxiety disorders in the cohort (18+) vs all other Manitobans. We present this information for the whole cohort and for each data source separately.

After adjusting for age and sex, the five-year prevalence of mood or anxiety disorders in the cohort was roughly 60-70%, while among all other Manitobans it was just over 20%. The risk ratio tells us that the risk of being diagnosed with a mood or anxiety disorder for people in the cohort was three times higher than among all other Manitobans.

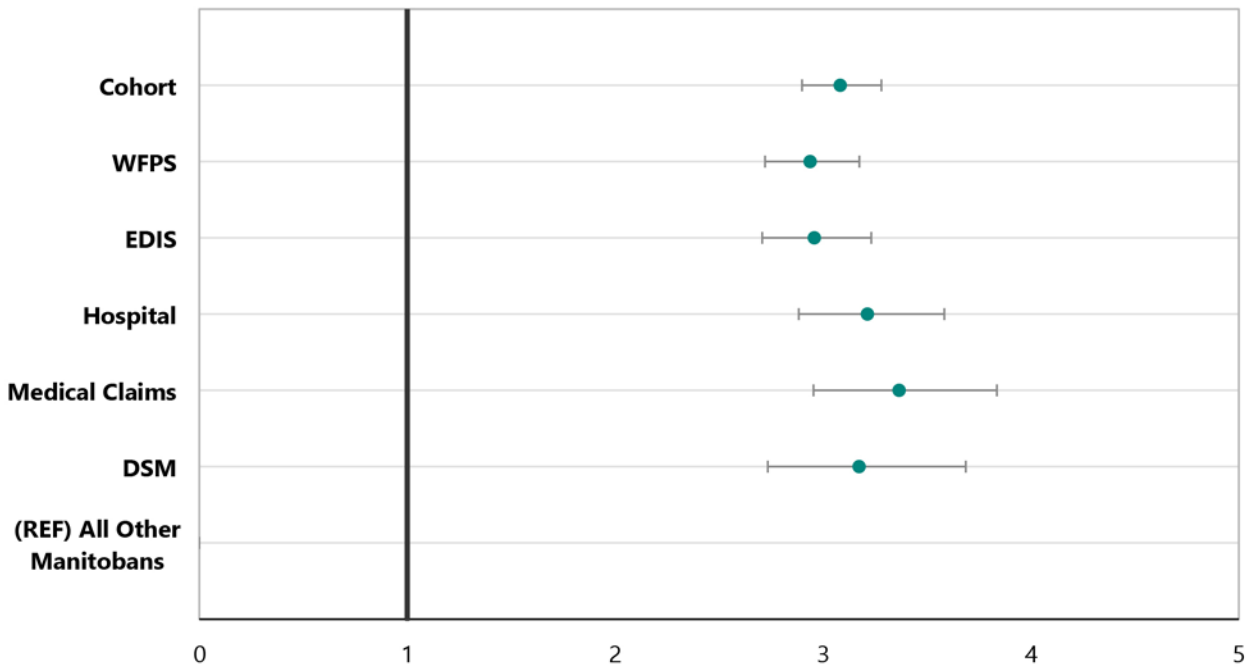
Appendix Figure 2.1: Prevalence of Mood or Anxiety Disorders among Adults who Consumed Methamphetamines, by Data Source, Compared to All Other Manitobans

Age- and Sex-adjusted Percent, Age 18+, Five-Year Prevalence as of 2018; in the 5 Years Before First Methamphetamine-Related contact with Health Care System



Appendix Figure 2.2: Risk Ratios for Mood or Anxiety Disorders among Adults by Data Source, Comparing Manitobans who Consumed Methamphetamines with All Other Manitobans

Age- and Sex-adjusted Risk Ratios, Age 18+, 2018; in the 5 Years Before First Methamphetamine-Related contact with Health Care System



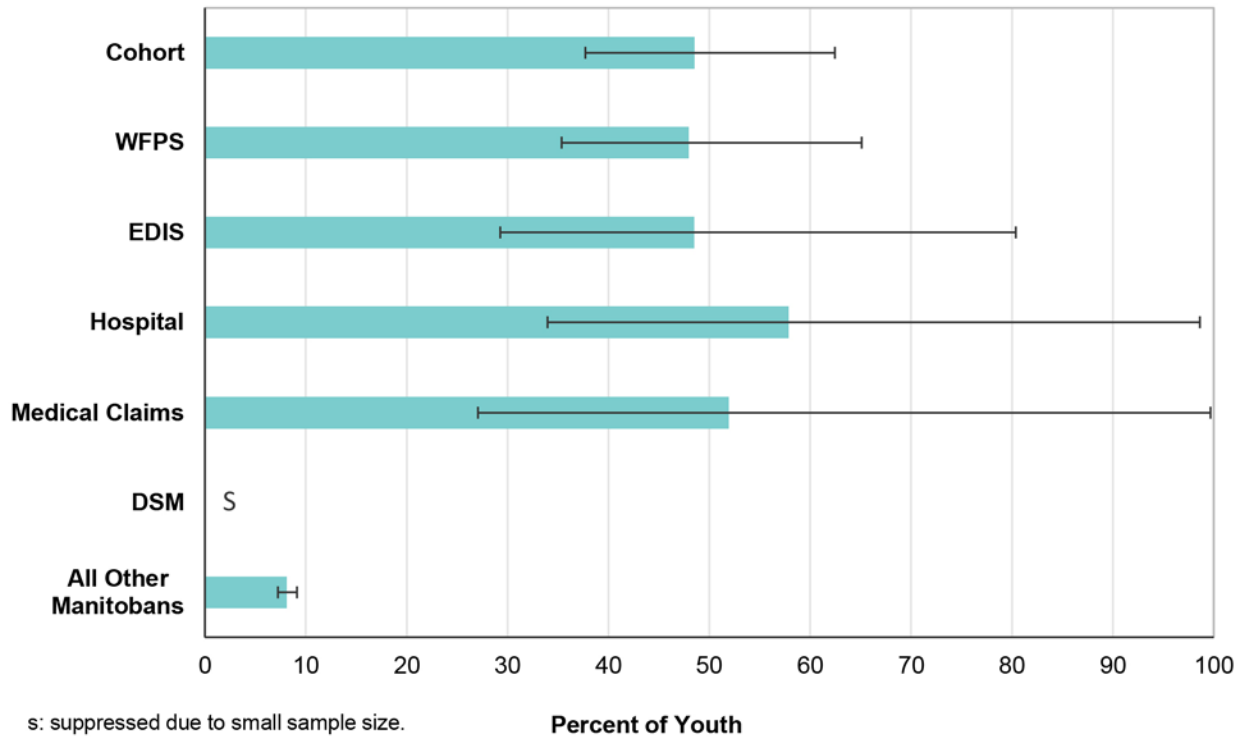
Note: REF = Reference Group.

Appendix Figure 2.3 shows the age- and sex-adjusted prevalence estimates for mood or anxiety disorders among youth age 10-17 in the cohort and Appendix Figure 2.4 shows the risk ratios comparing the prevalence of mood or anxiety disorders among youth in the cohort vs all other youth in Manitoba. We present this information for the whole cohort and for each data source separately.

The five-year prevalence of mood or anxiety disorders among youth in the cohort was almost 50%, while among all other Manitoba youth it was about 8.1%. The risk ratios tell us that the risk of being diagnosed with a mood or anxiety disorder among youth in the cohort was six times higher than among all other Manitoba youth. The relative difference between youth in the cohort and other Manitoba youth is more dramatic among 10-17 year olds than among adults because the prevalence of mood or anxiety disorders among youth in the general population is lower than it is among adults in the general population. We remind the reader that the youth analyses are based on a small number of individuals with some values being suppressed.

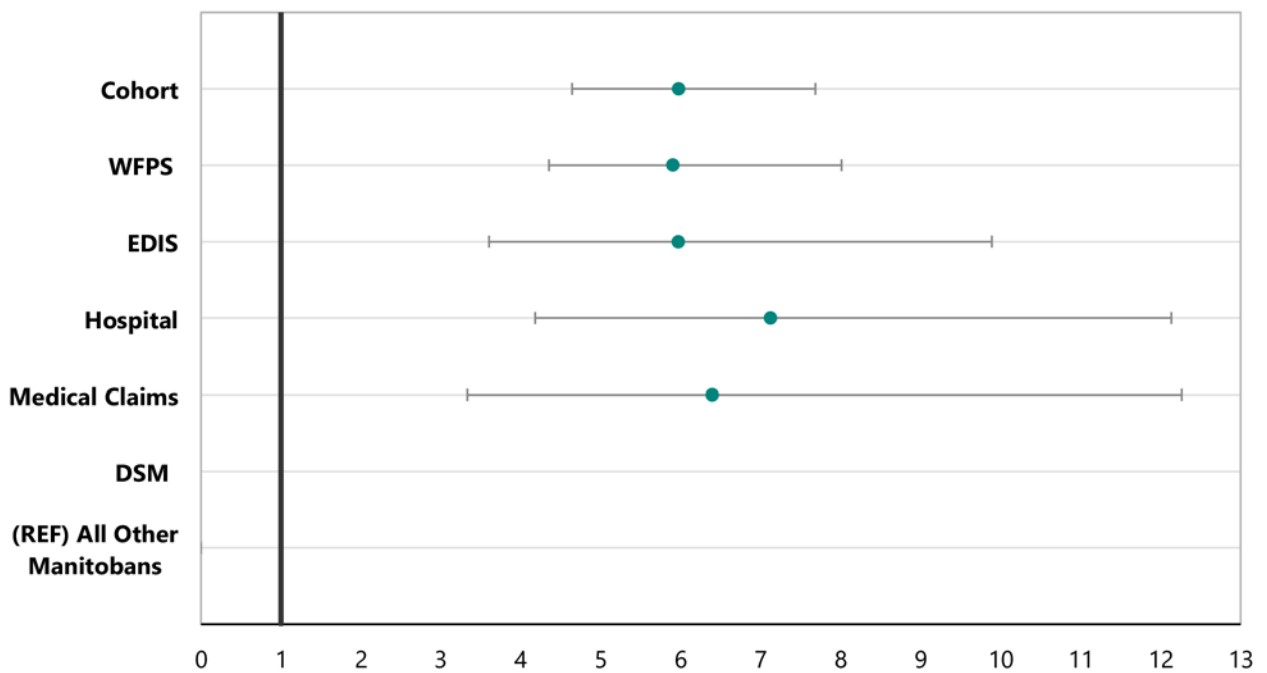
Appendix Figure 2.3: Prevalence of Mood or Anxiety Disorder among Youth who Consumed Methamphetamines, by Data Source, Compared to All Other Manitobans

Age and Sex-adjusted Percent, Age 10-17, Five-Year Prevalence as of 2018; in the 5 Years Before First Methamphetamine-Related contact with Health Care System



Appendix Figure 2.4: Risk Ratios for Mood or Anxiety Disorders among Youth by Data Source, Comparing Manitobans who Consumed Methamphetamines with All Other Manitobans

Age- and Sex-adjusted Risk Ratios, Age 10-17, 2018; in the 5 Years Before First Methamphetamine-Related contact with Health Care System



Note: REF = Reference Group.
DSM data suppressed due to small sample size.

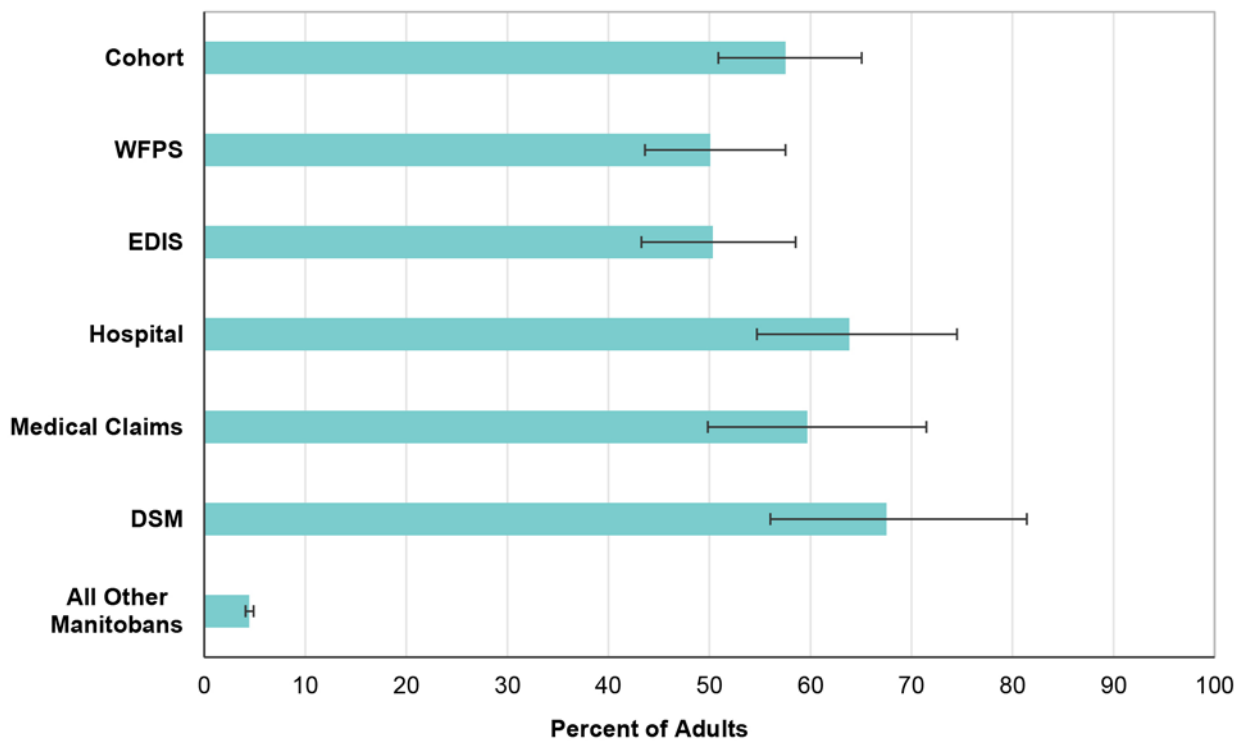
Substance Use Disorders

Appendix Figure 2.5 shows the age- and sex-adjusted five-year prevalence estimates for substance use disorders and Appendix Figure 2.6 shows the risk ratios comparing the prevalence of substance use disorders in the cohort (18+) vs all other Manitobans. We present this information for the whole cohort and for each data source separately. Our definition of substance use disorders excludes any amphetamine-related substance use disorders.

After adjusting for age and sex, the five-year prevalence of substance use disorders in the cohort was nearly 60%, while among all other Manitobans it was roughly 4.5%. The risk ratio tells us that the risk of being diagnosed with a substance use disorder for people in the cohort was 11-15 times higher than among all other Manitobans.

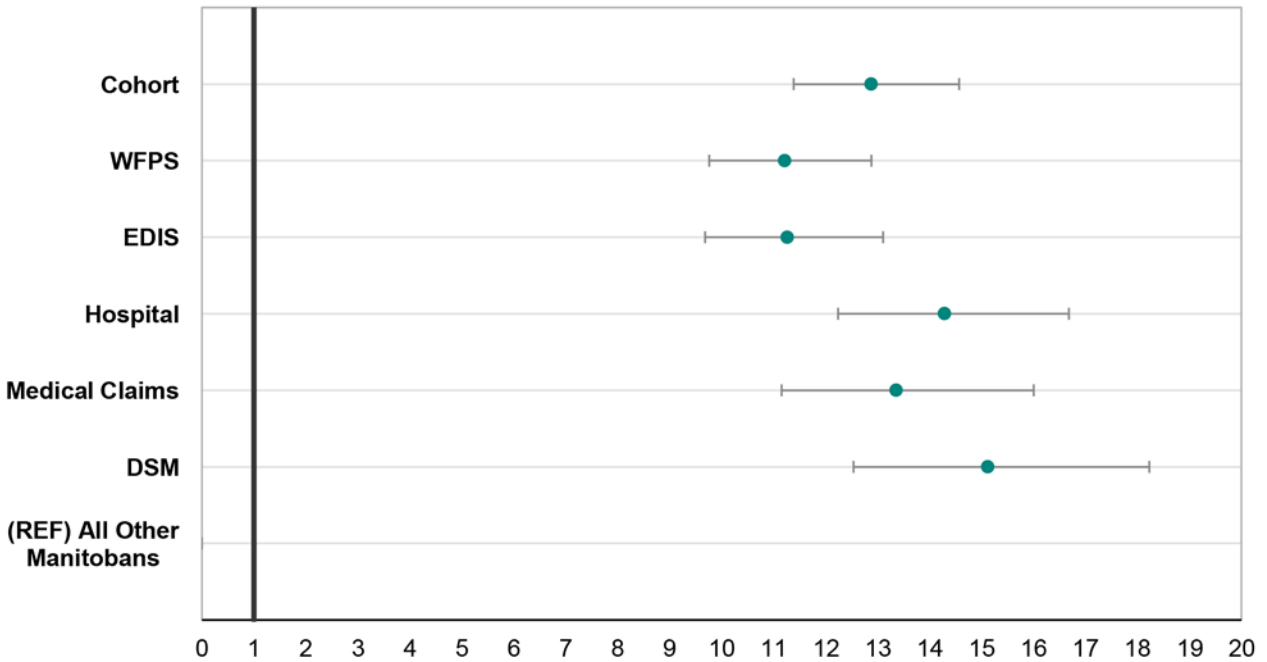
Appendix Figure 2.5: Prevalence of Substance Use Disorders, excluding Amphetamine-Related Substance Use, among Adults who Consumed Methamphetamines, by Data Source, Compared to All Other Manitobans

Age- and Sex-adjusted Percent, Age 18+, Five-Year Prevalence as of 2018; in the 5 Years Before First Methamphetamine-Related contact with Health Care System



Appendix Figure 2.6: Risk Ratios for Substance Use Disorders, excluding Amphetamine-Related Substance Use, among Adults by Data Source, Comparing Manitobans who Consumed Methamphetamines with All Other Manitobans

Age- and Sex-adjusted Risk Ratios, Age 18+, Five-Year Prevalence as of 2018; in the 5 Years Before First Methamphetamine-Related Contact with Health Care System



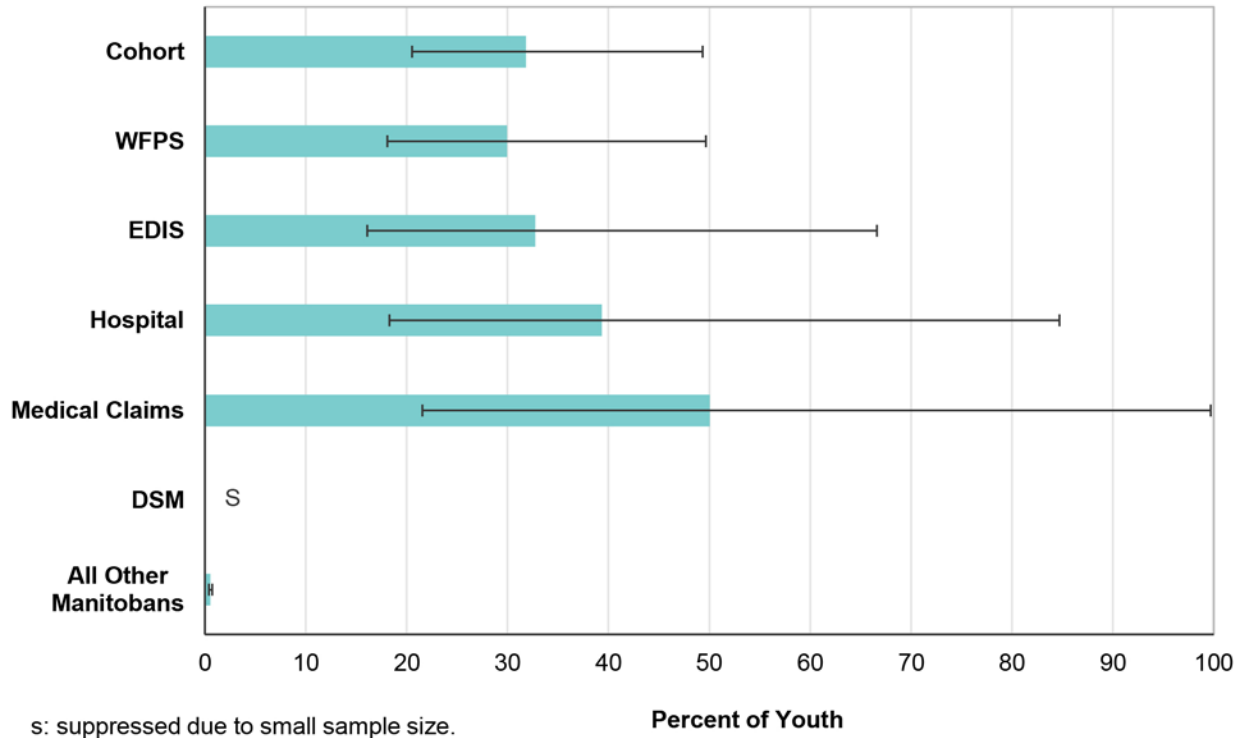
Note: REF = Reference Group.

Appendix Figure 2.7 shows the age- and sex-adjusted prevalence estimates for substance use disorders among youth age 10-17 in the cohort and Appendix Figure 2.8 shows the risk ratios comparing the prevalence of substance use disorders among youth in the cohort vs all other youth in Manitoba. We present this information for the whole cohort and for each data source separately.

The risk ratios tell us that the risk of being diagnosed with a substance disorder among youth in the cohort was higher than among all other Manitoba youth. The relative difference between youth in the cohort and other Manitoba youth is more dramatic among 10-17 year olds than among adults because the prevalence of substance use disorders among youth in the general population is very low. We remind the reader that the youth analyses are based on a small number of individuals with some values being suppressed.

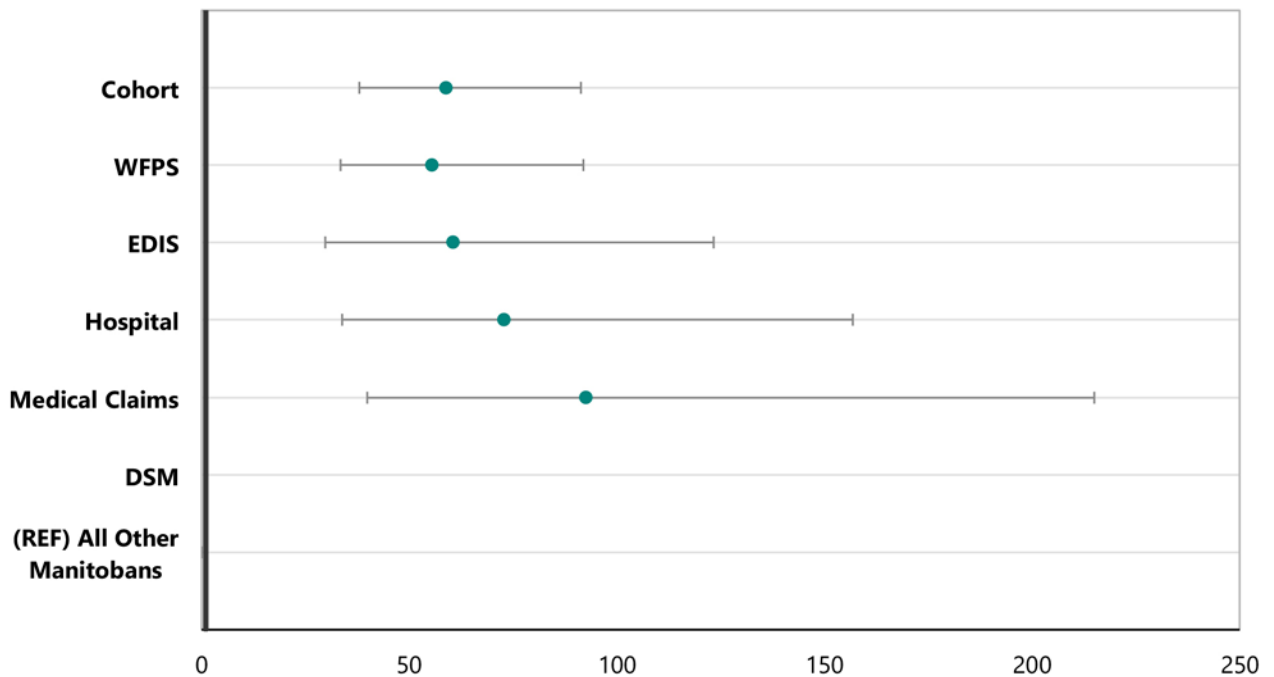
Appendix Figure 2.7: Prevalence of Substance Use Disorders, excluding Amphetamine-Related Substance Use, among Youth who Consumed Methamphetamines, by Data Source, Compared to All Other Manitobans

Age- and Sex-adjusted Percent, Age 10-17, Five-Year Prevalence as of 2018; in the 5 Years Before First Methamphetamine-Related contact with Health Care System



Appendix Figure 2.8: Risk Ratios for Substance Use Disorders, excluding Amphetamine-Related Substance Use, among Youth by Data Source, Comparing Manitobans who Consumed Methamphetamines with All Other Manitobans

Age- and Sex-adjusted Risk Ratios, Age 10-17, Five-Year Prevalence as of 2018; in the 5 Years Before First Methamphetamine-Related Contact with Health Care System



Note: REF = Reference Group.
DSM data suppressed due to low sample size.

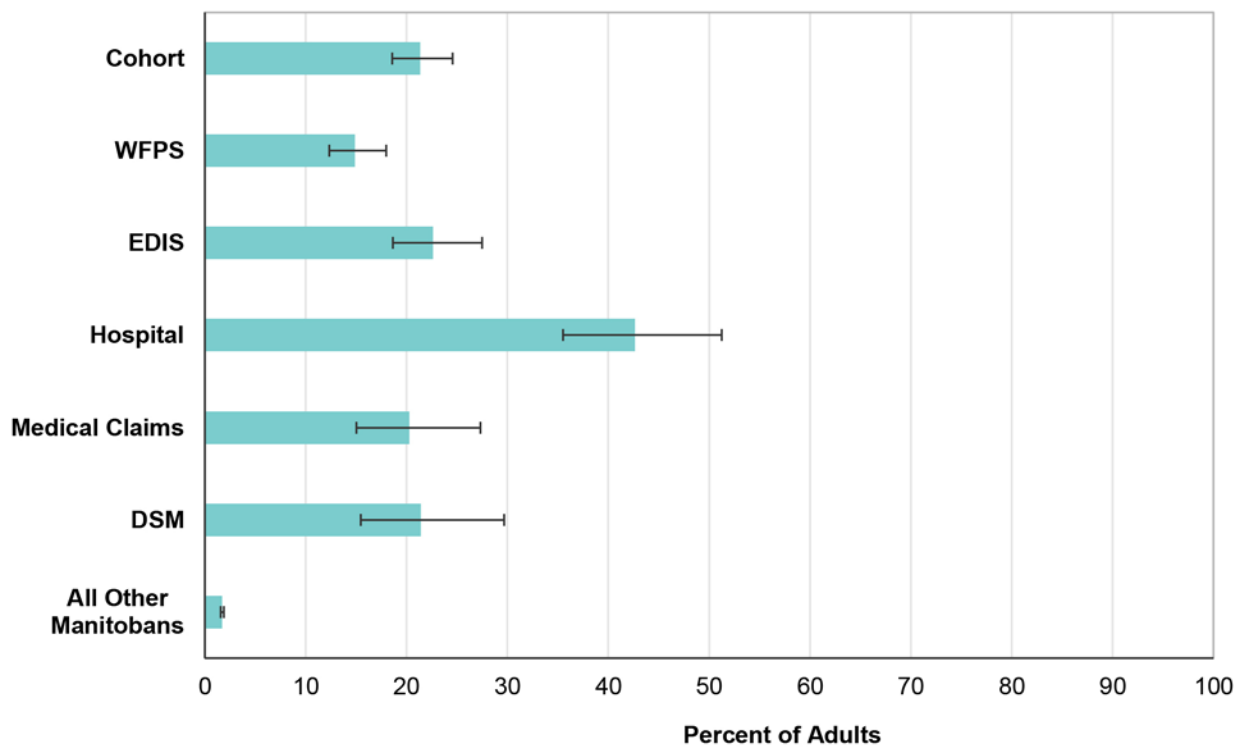
Psychotic Disorders

After adjusting for age and sex, the risk ratio tells us that the risk of being diagnosed with a psychotic disorder for people in the cohort was 12 times higher than among all other Manitobans (Appendix Figure 2.10).

As well, people in the cohort whose first health care contact following methamphetamine use was in hospital had the highest prevalence of psychotic disorders (more than 40%) vs any other data source (Appendix Figure 2.9). The risk of being diagnosed with a psychotic disorder was 25 times higher in this group compared to all other Manitobans. It is worth noting that previous work at the Manitoba Centre for Health Policy suggested that the diagnosis for psychosis may be misused in rural and northern areas. Further investigation into this pattern was beyond the scope of this project.

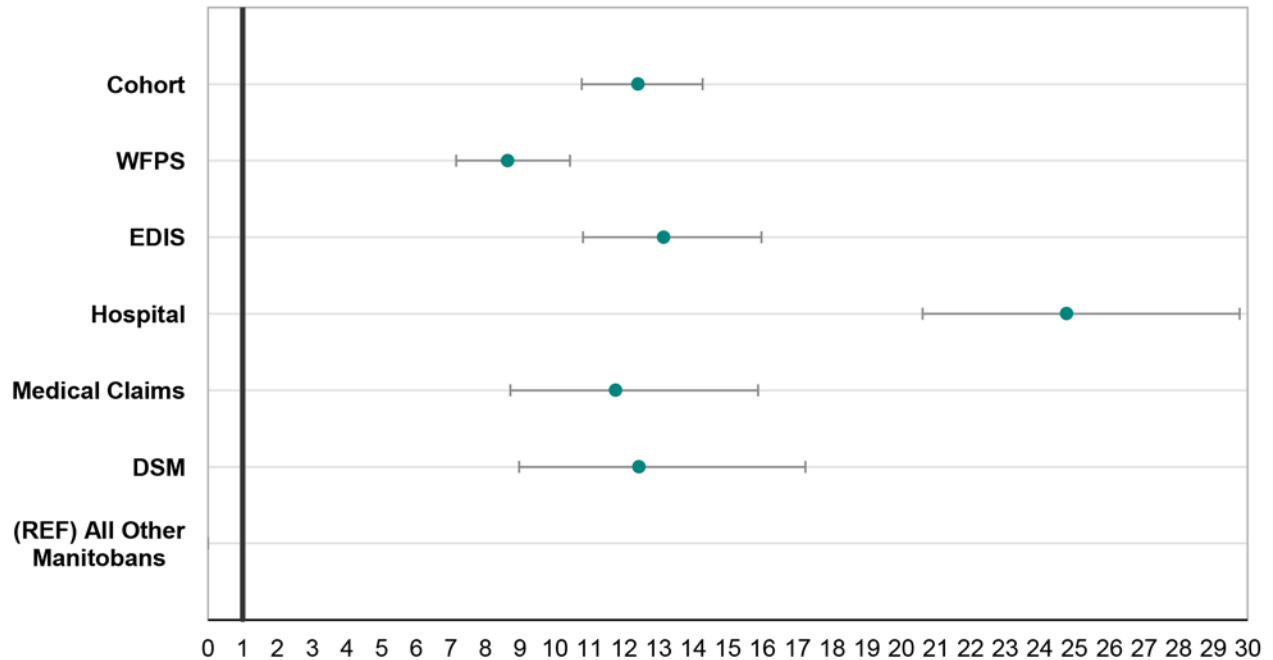
Appendix Figure 2.9: Prevalence of Psychotic Disorders among Adults who Consumed Methamphetamines, by Data Source, Compared to All Other Manitobans

Age- and Sex-adjusted Percent, Age 18+, Five-Year Prevalence as of 2018; in the 5 Years Before First Methamphetamine-Related Contact with Health Care System



Appendix Figure 2.10: Risk Ratios for Psychotic Disorders among Adults by Data Source, Comparing Manitobans who Consumed Methamphetamines with to All Other Manitobans

Age- and Sex-adjusted Risk Ratios, Age 18+, Five-Year Prevalence as of 2018; in the 5 Years Before First Methamphetamine-Related Contact with Health Care System



Note: REF = Reference Group.

We are unable to present findings on youth diagnosed with psychotic disorders because of small sample sizes.

Personality Disorders

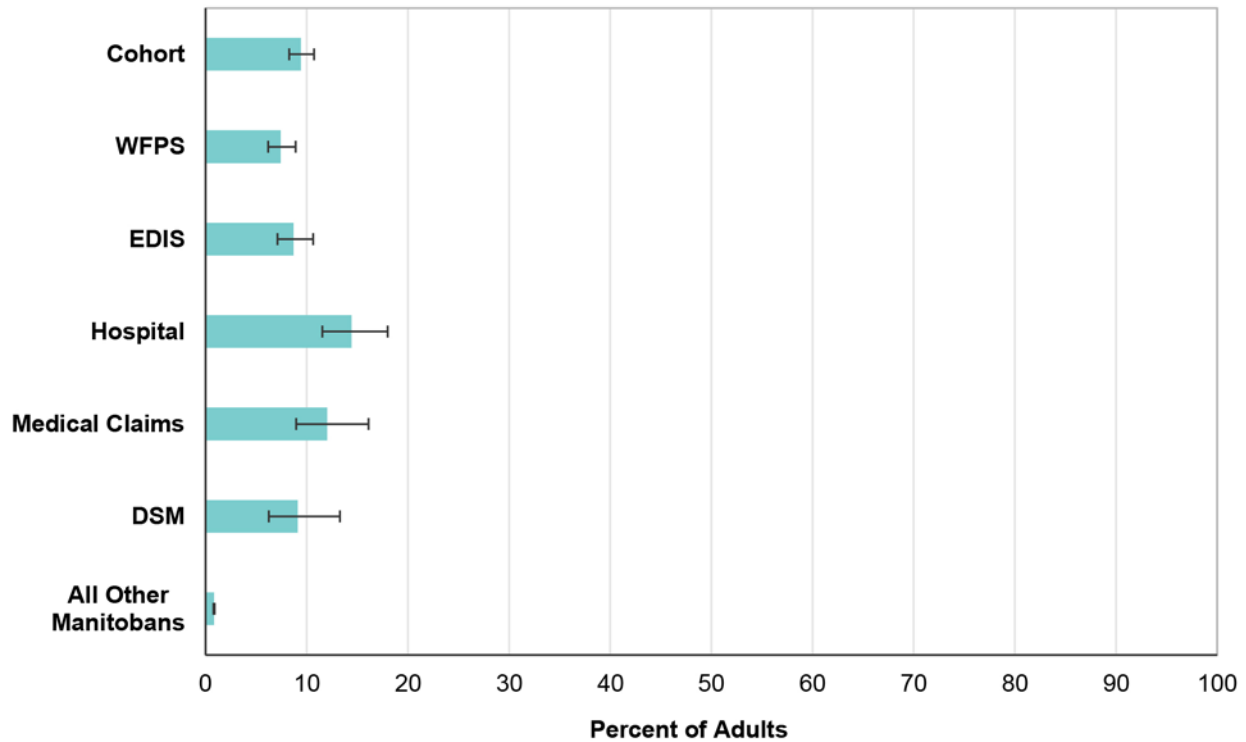
Appendix Figure 2.11 shows the age- and sex-adjusted five-year prevalence estimates for personality disorder and Appendix Figure 2.12 shows the risk ratios comparing the prevalence of personality disorders in the cohort (18+) vs all other Manitobans. We present this information for the whole cohort and for each data source separately.

After adjusting for age and sex, the five-year prevalence of personality disorder in the cohort was 9.5%, while among all other Manitobans it was less than 1%. The risk ratio tells us that the risk of being diagnosed with a personality disorder for people in the cohort was 11 times higher than among all other Manitobans.

As well, people in the cohort whose first health care contact following methamphetamine use was in hospital (14.4%) or in the medical claims data (12%) had a higher prevalence of personality disorder compared with other data sources. The risk of being diagnosed with a personality disorder was 17 times higher among those whose methamphetamine use was documented in the hospital data compared to all other Manitobans.

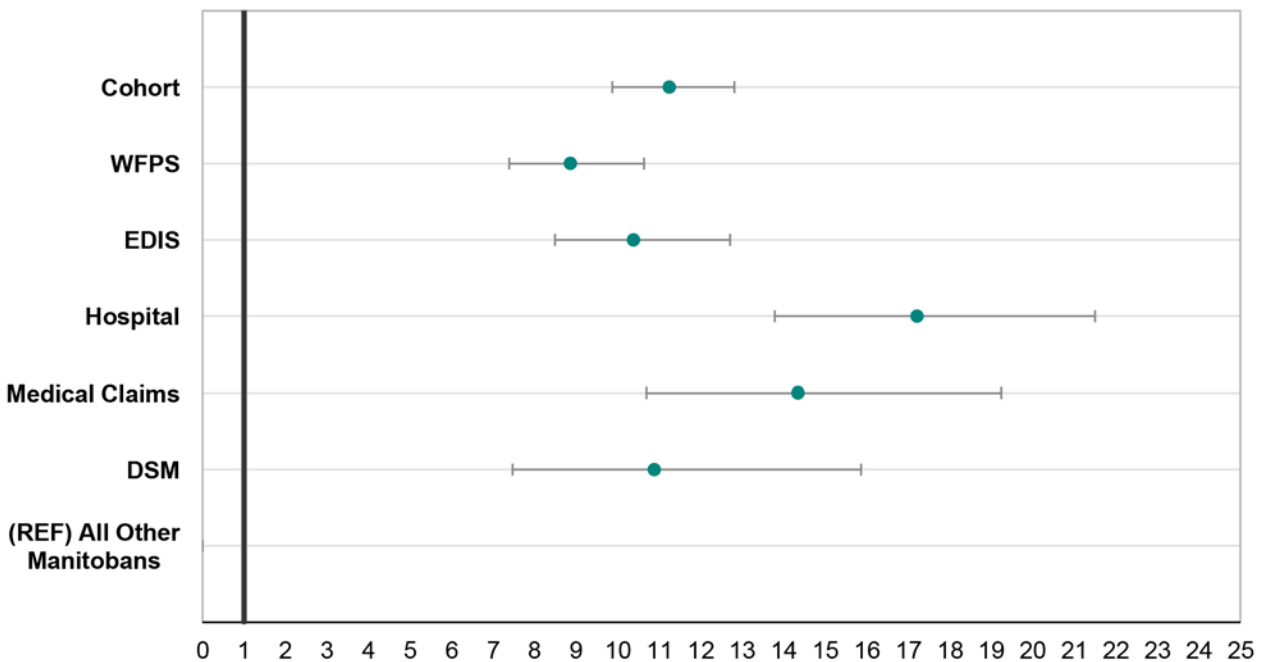
Appendix Figure 2.11: Prevalence of Personality Disorder among Adults who Consumed Methamphetamines, by Data Source, Compared to All Other Manitobans

Age- and Sex-adjusted Percent, Age 18+, Five-Year Prevalence as of 2018; in the 5 Years Before First Methamphetamine-Related Contact with Health Care System



Appendix Figure 2.12: Risk Ratios for Personality Disorder among Adults by Data Source, Comparing Manitobans who Consumed Methamphetamines with to All Other Manitobans

Age- and Sex-adjusted Risk Ratios, Age 18+, Five-Year Prevalence as of 2018; in the 5 Years Before First Methamphetamine-Related Contact with Health Care System



Note: REF = Reference Group.

We are unable to present findings on youth diagnosed with personality disorders because of small sample sizes.

Mental Disorders in the year after first contact – stratified by where the first methamphetamine-related health care contact was recorded and by age

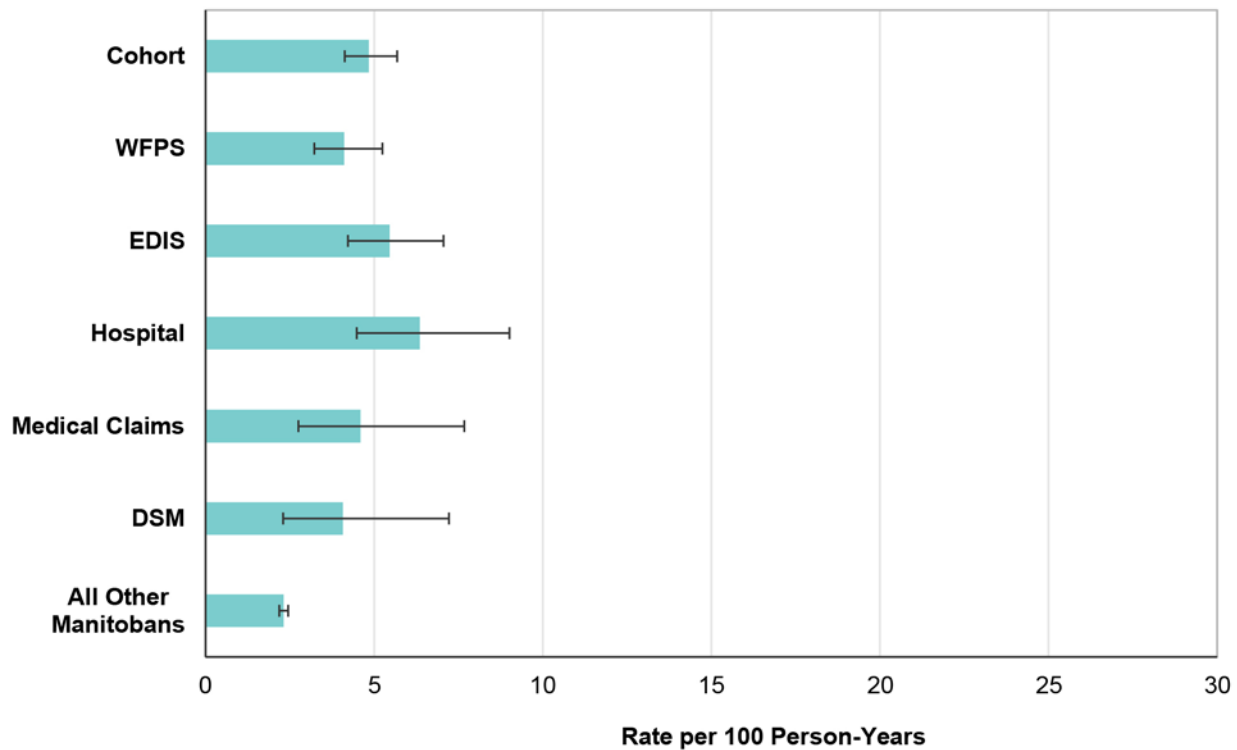
Mood or Anxiety Disorders

Appendix Figure 2.13 shows the age- and sex-adjusted one-year incidence of mood or anxiety disorders and Appendix Figure 2.14 shows the rate ratios comparing the incidence of mood or anxiety disorders in the cohort (18+) vs all other Manitobans. We present this information for the whole cohort and for each data source separately.

After adjusting for age and sex, the one-year incidence of mood or anxiety disorders in the cohort was fewer than 5 cases per 100 person-years, while among all other Manitobans it was fewer than two cases per 100 person-years. The rate ratio tells us that in the year after the first health care contact, the rate of being diagnosed with a mood or anxiety disorder for people in the cohort was two times higher than among all other Manitobans.

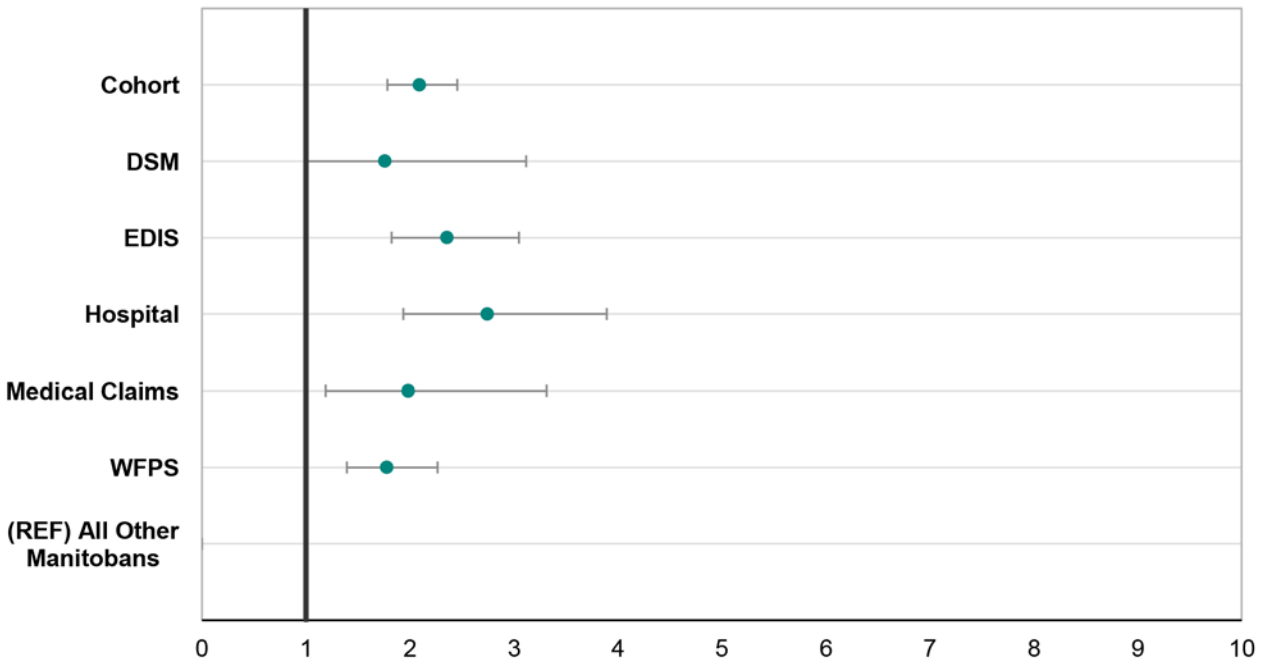
Appendix Figure 2.13: Incidence Rate of Mood or Anxiety Disorders among Adults who Consumed Methamphetamines, by Data Source, Compared to All Other Manitobans

Age- and Sex-adjusted rate per 100 Person-years, Age 18+, 2018; 1 Year After First Methamphetamine-Related Contact with Health Care System



Appendix Figure 2.14: Rate Ratios for Mood or Anxiety Disorders among Adults by Data Source, Comparing Manitobans who Consumed Methamphetamines with All Other Manitobans

Age- and Sex-adjusted Rate Ratios, Age 18+, 2018; 1 Year After First Methamphetamine-Related Contact with Health Care System



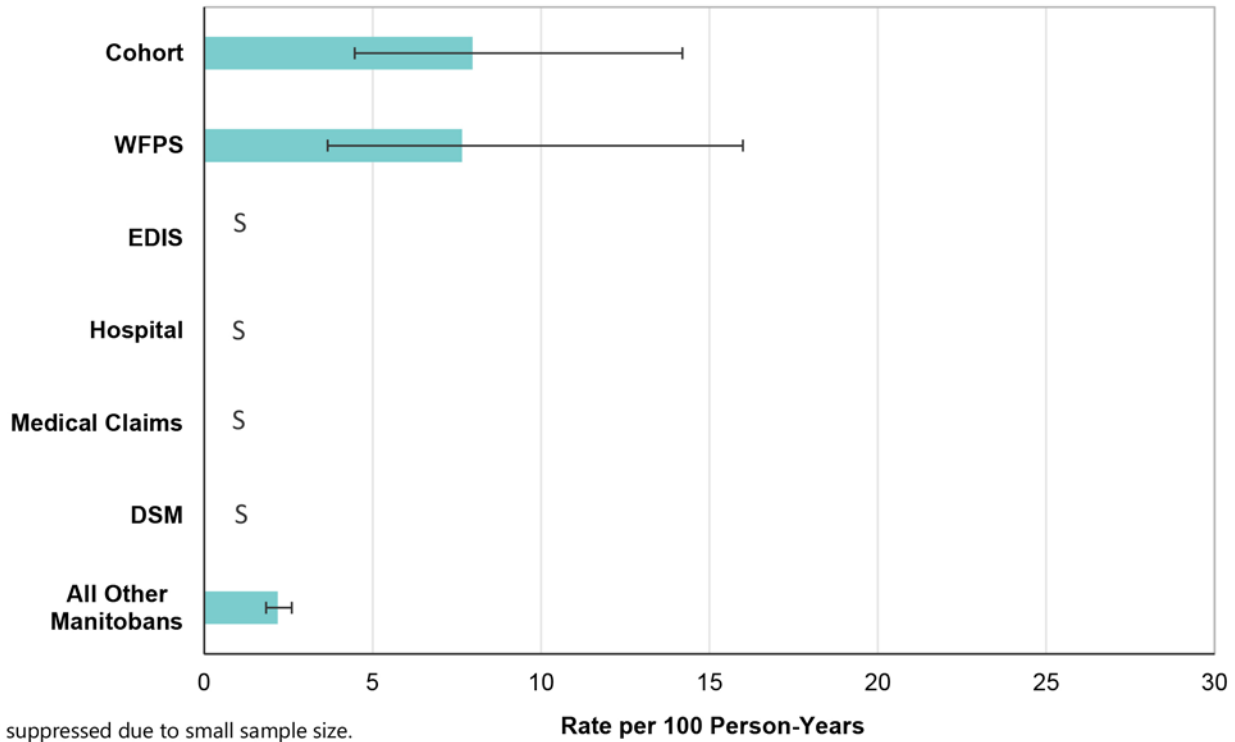
Note: REF = Reference Group.

Appendix Figure 2.15 shows the age- and sex-adjusted one-year incidence of mood or anxiety disorders among youth age 10-17 in the cohort and Appendix Figure 2.16 shows the rate ratios comparing the incidence of mood or anxiety disorders among youth in the cohort vs all other youth in Manitoba. We present this information for the whole cohort and for each data source separately.

Given small sample sizes, many data points were suppressed. The relative differences between youth in the cohort and all other Manitoba youth were similar to the adult population.

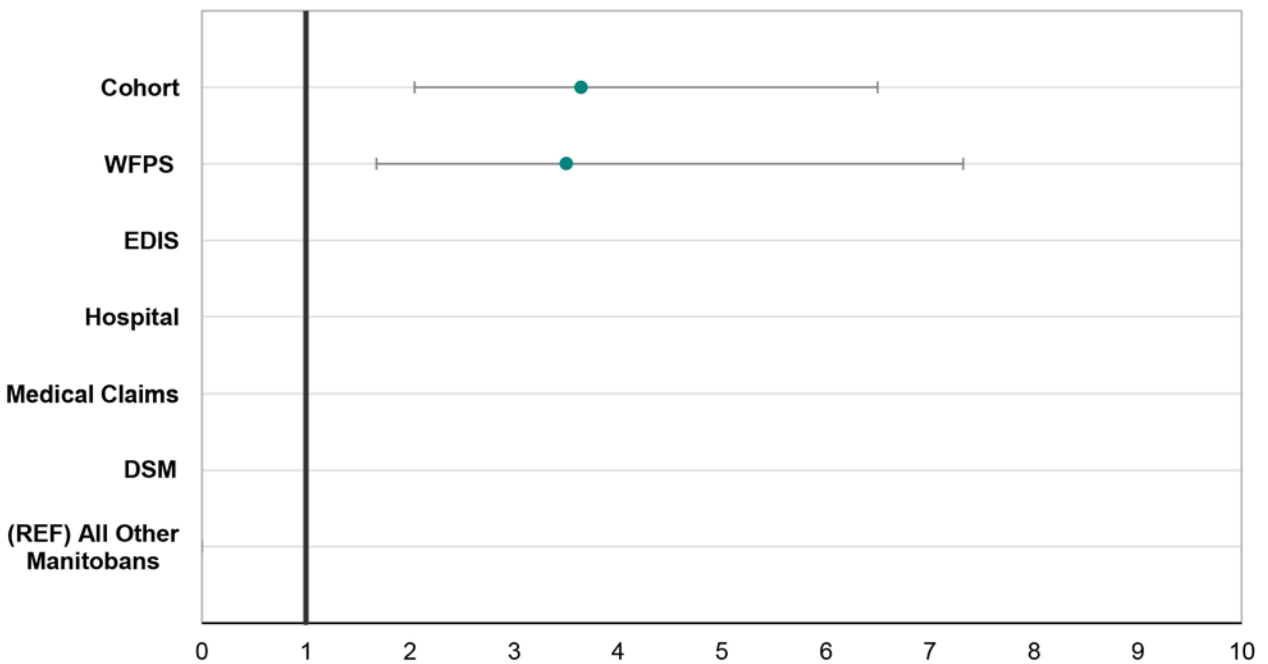
Appendix Figure 2.15: Incidence Rate of Mood or Anxiety Disorders among Youth who Consumed Methamphetamines, by Data Source, Compared to All Other Manitobans

Age- and Sex-adjusted rate per 100 Person-years, Age 10-17, 2018; 1 Year After First Methamphetamine-Related Contact with Health Care System



Appendix Figure 2.16: Rate Ratios for Mood or Anxiety Disorders among Youth by Data Source, Comparing Manitobans who Consumed Methamphetamines with All Other Manitobans

Age- and Sex-adjusted Rate Ratios, Age 10-17, 2018; 1 Year After First Methamphetamine-Related Contact with Health Care System



Note: REF = Reference Group.
 DSM, EDIS, Hospital, and Medical Claims data suppressed due to small sample size.

Substance Use Disorders

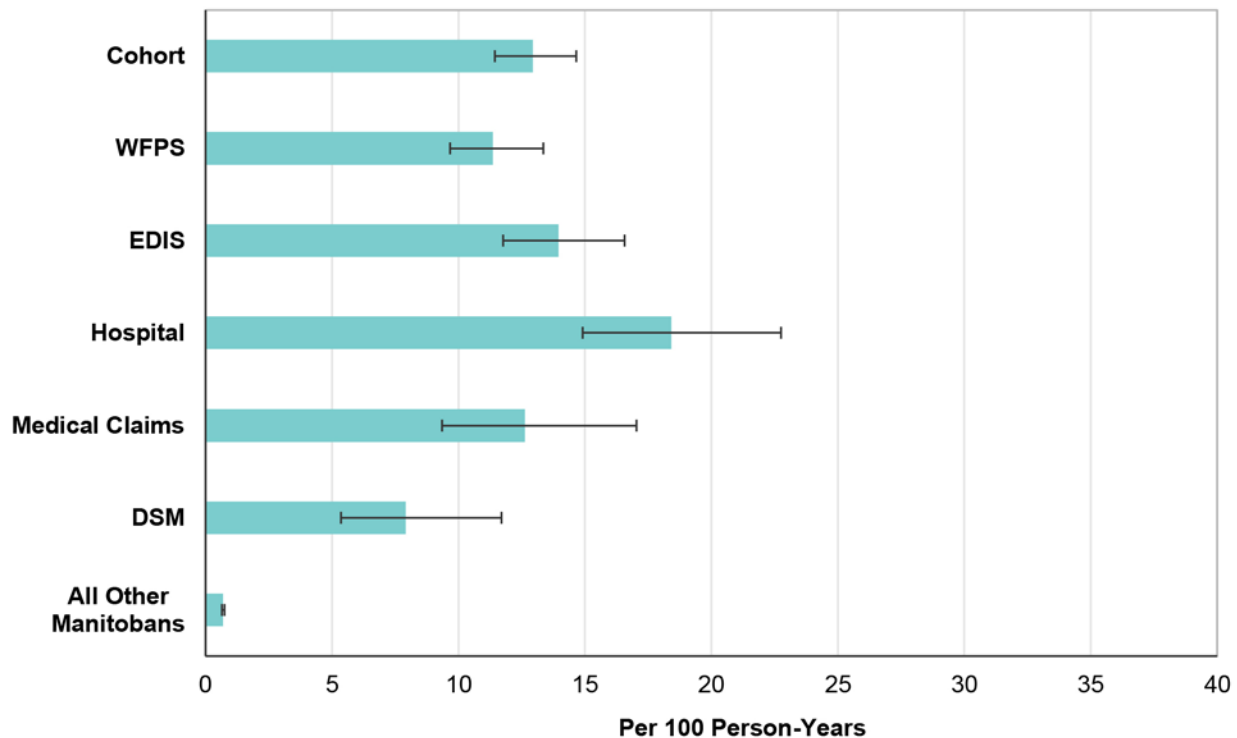
Appendix Figure 2.17 shows the age- and sex-adjusted one-year incidence of substance use disorders and Appendix Figure 2.18 shows the rate ratios comparing the incidence of substance use disorders in the cohort (18+) vs all other Manitobans. We present this information for the whole cohort and for each data source separately. Our definition of substance use disorders excludes any amphetamine-related substance use disorders.

After adjusting for age and sex, the one-year incidence of substance use disorders in the cohort was 12.9 cases per 100 person-years, while among all other Manitobans it was 0.7 cases per 100 person-years. The rate ratio tells us that in the year after first health care contact, the rate of being diagnosed with a substance use disorder for people in the cohort was 18.6 times higher than among all other Manitobans.

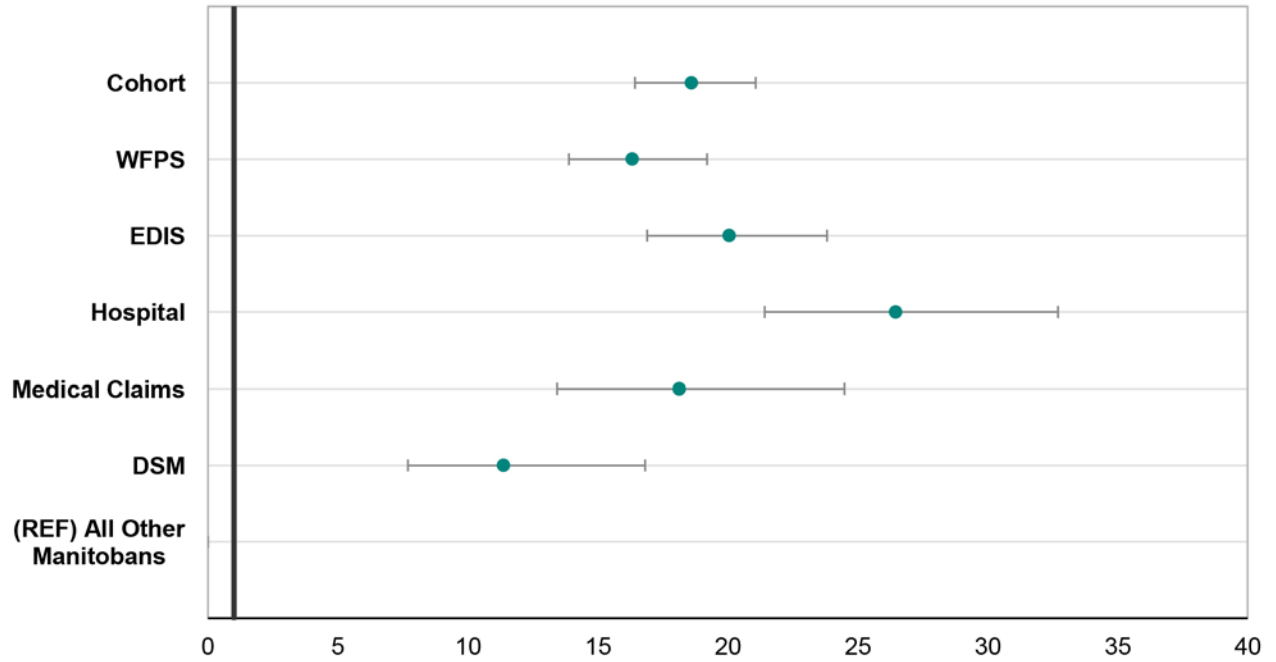
As well, people in the cohort whose first health care contact following methamphetamine use was in hospital had the highest incidence of substance use disorders and those whose first contact was with the WFPS had the lowest incidence of substance use disorders vs any other data source.

Appendix Figure 2.17: Incidence Rate of Substance Use Disorders, excluding Amphetamine-Related Substance Use, among Adults who Consumed Methamphetamines, by Data Source, Compared to All Other Manitobans

Age- and Sex-adjusted rate per 100 Person-years, Age 18+, 2018; 1 Year After First Methamphetamine-Related Contact with Health Care System



Appendix Figure 2.18: Rate Ratios for Substance Use Disorders, excluding Amphetamine-Related Substance Use, among Adults by Data Source, Comparing Manitobans who Consumed Methamphetamines with All Other Manitobans
Age- and Sex-adjusted Rate Ratios, Age 18+, 2018; 1 Year After First Methamphetamine-Related Contact with Health Care System

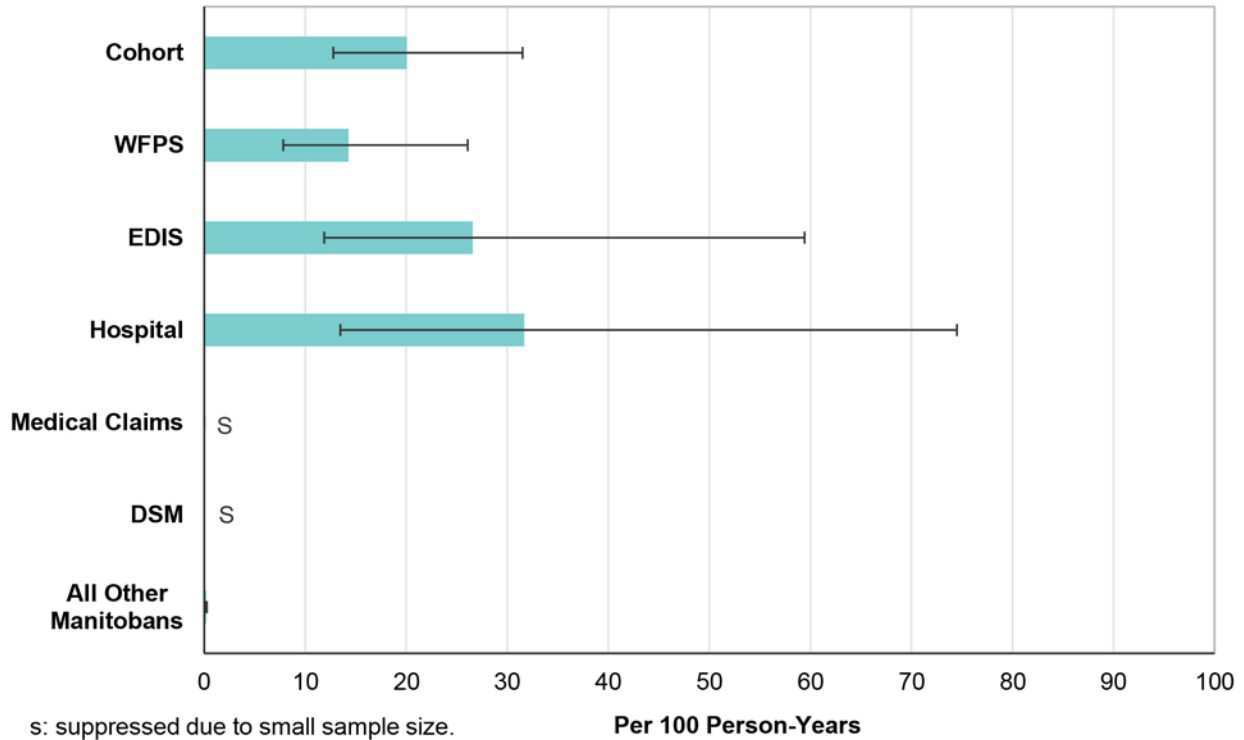


Note: REF = Reference Group.

The rates of substance use disorder among youth (age 10-17) in the cohort were higher than among adults (age 18+) in the cohort (Appendix Figure 2.19). However, due to small sample sizes, as indicated by the very large confidence intervals in the figure, these rates must be interpreted with extreme caution.

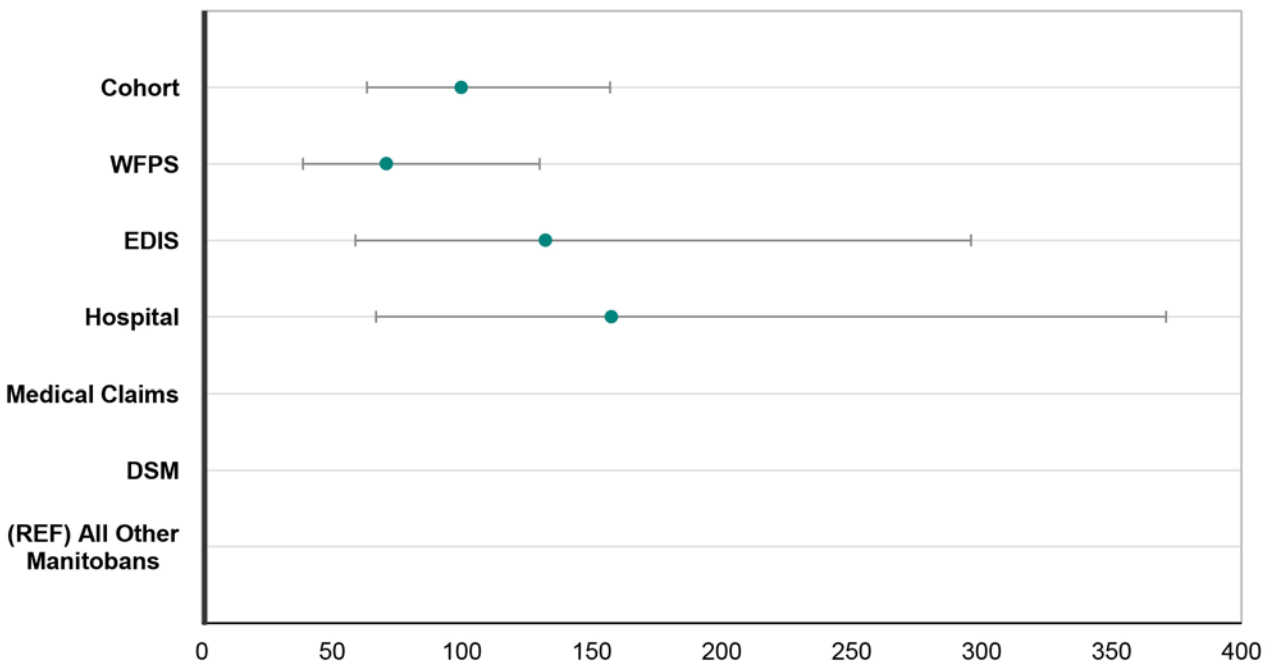
Appendix Figure 2.19: Incidence Rate of Substance Use Disorders, excluding Amphetamine-Related Substance Use, among Youth who Consumed Methamphetamines, by Data Source, Compared to All Other Manitobans

Age- and Sex-adjusted rate per 100 Person-years, Age 10-17, 2018; 1 Year After First Methamphetamine-Related Contact with Health Care System



Appendix Figure 2.20: Rate Ratios for Substance Use Disorders, excluding Amphetamine-Related Substance Use, among Youth by Data Source, Comparing Manitobans who Consumed Methamphetamines with All Other Manitobans

Age- and Sex-adjusted Rate Ratios, Age 10-17, 2018; 1 Year After First Methamphetamine-Related Contact with Health Care System



Note: REF = Reference Group.
 DSM and Medical Claims data suppressed due to small sample size.

Psychotic Disorders

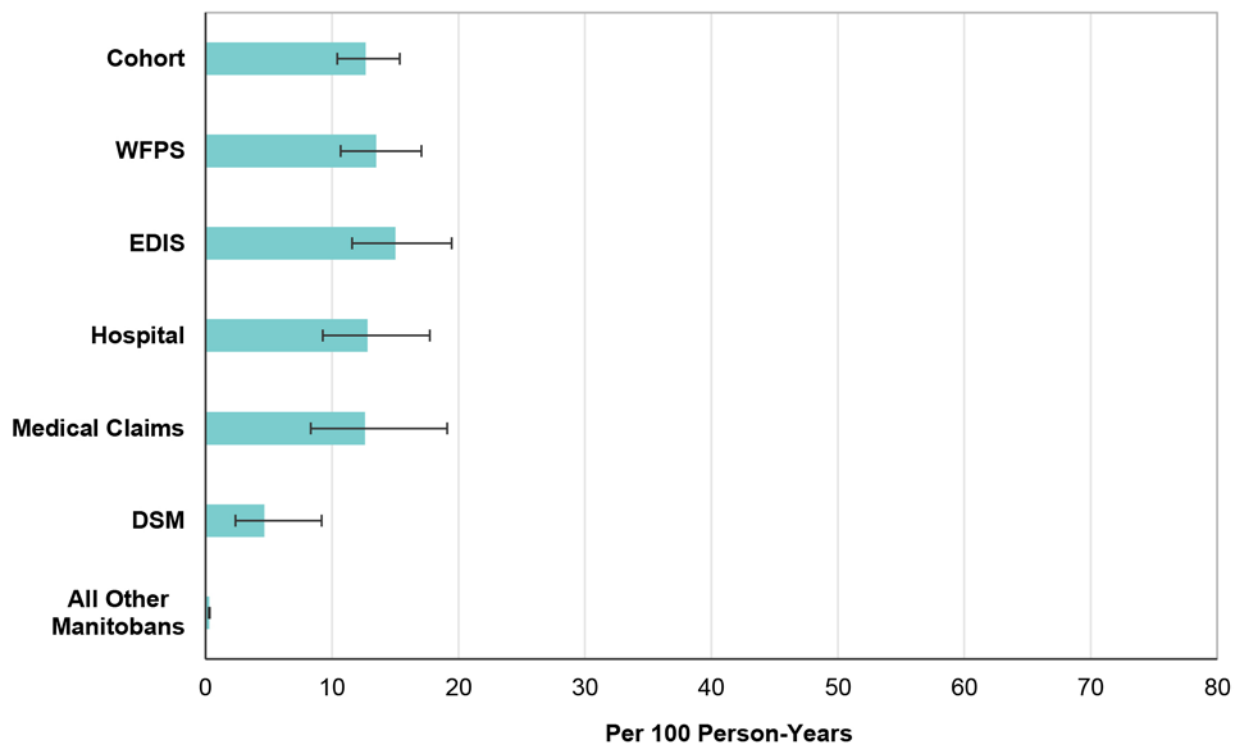
Appendix Figure 2.21 shows the age- and sex-adjusted one-year incidence of psychotic disorders and Appendix Figure 2.22 shows the rate ratios comparing the incidence of psychotic disorders in the cohort (18+) vs all other Manitobans (right panel). We present this information for the whole cohort and for each data source separately.

After adjusting for age and sex, the one-year incidence of psychotic disorders in the cohort was 12.6 cases per 100 person-years, while among all other Manitobans it was 0.3 cases per 100 person-years. The rate ratio tells us that in the year after first health care contact, the rate of being diagnosed with a psychotic disorder for people in the cohort was 43.7 times higher than among all other Manitobans.

Across all data sources, the incidence of psychotic disorders in the cohort was higher than among all other Manitobans.

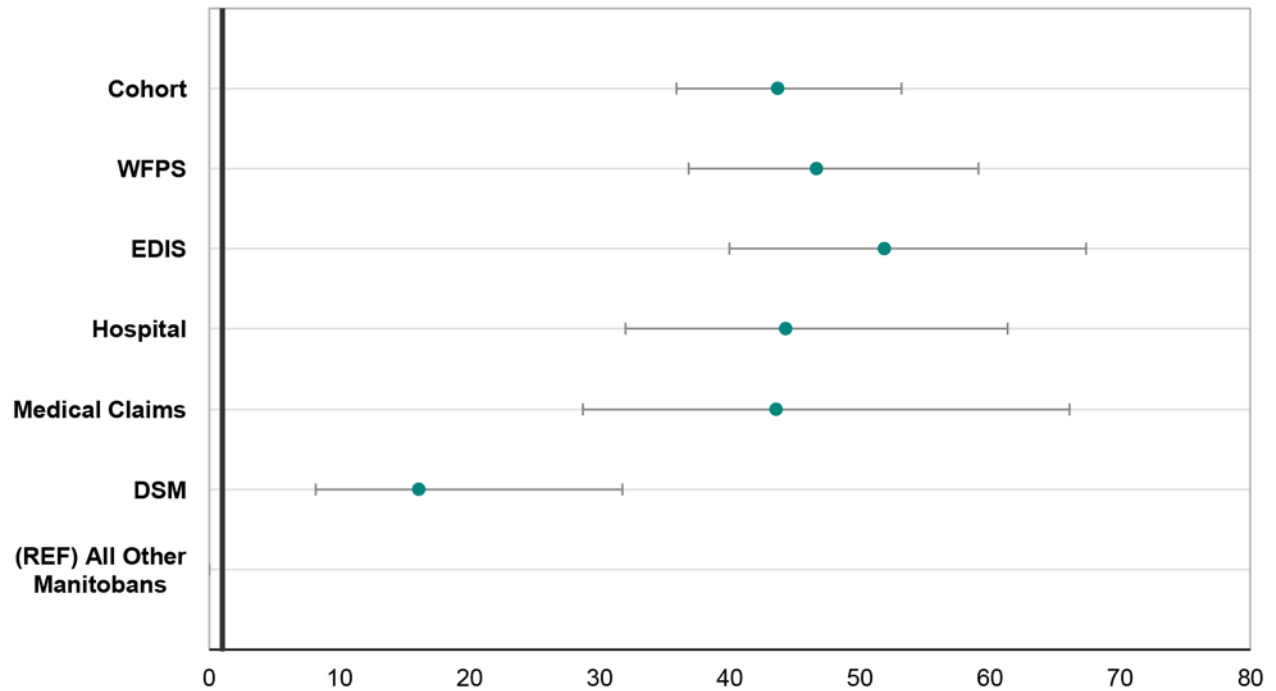
Appendix Figure 2.21: Incidence Rate of Psychotic Disorders among Adults who Consumed Methamphetamines, by Data Source, Compared to All Other Manitobans

Age- and Sex-adjusted rate per 100 Person-years, Age 18+, 2018; 1 Year After First Methamphetamine-Related Contact with Health Care System



Appendix Figure 2.22: Rate Ratios for Psychotic Disorders among Adults by Data Source, Comparing Manitobans who Consumed Methamphetamines with All Other Manitobans

Age- and Sex-adjusted Rate Ratios, Age 18+, 2018; 1 Year After First Methamphetamine-Related Contact with Health Care System



Note: REF = Reference Group.

We are unable to present findings on youth diagnosed with psychotic disorders because of small sample sizes.

Personality Disorders

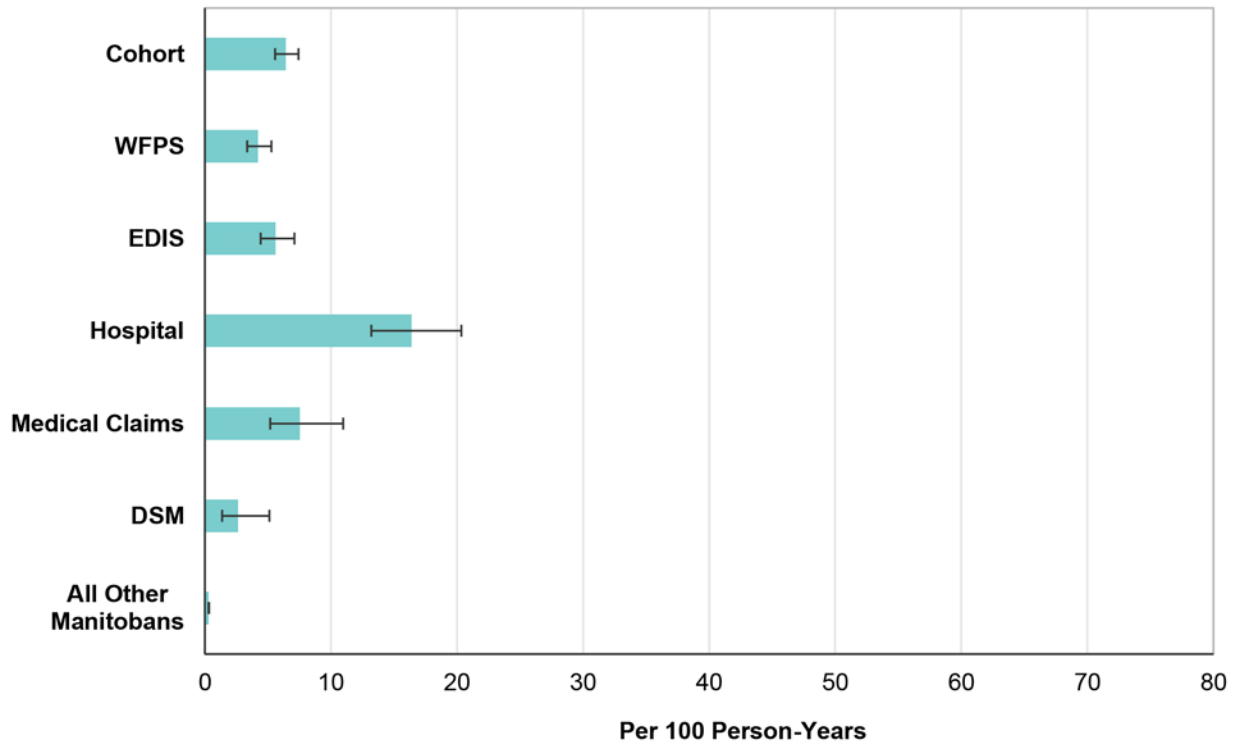
Appendix Figure 2.23 shows the age- and sex-adjusted one-year incidence of personality disorders and Appendix Figure 2.24 shows the rate ratios comparing the incidence of personality disorders in the cohort (18+) vs all other Manitobans. We present this information for the whole cohort and for each data source separately.

After adjusting for age and sex, the rate ratio tells us that in the year after the first health care contact, the rate of being diagnosed with a personality disorder for people in the cohort was 20.3 times higher than among all other Manitobans (Appendix Figure 2.24).

As well, people in the cohort whose first health care contact following methamphetamine use was in hospital had the highest incidence of personality disorders vs any other data source (51.8 times higher than all other Manitobans).

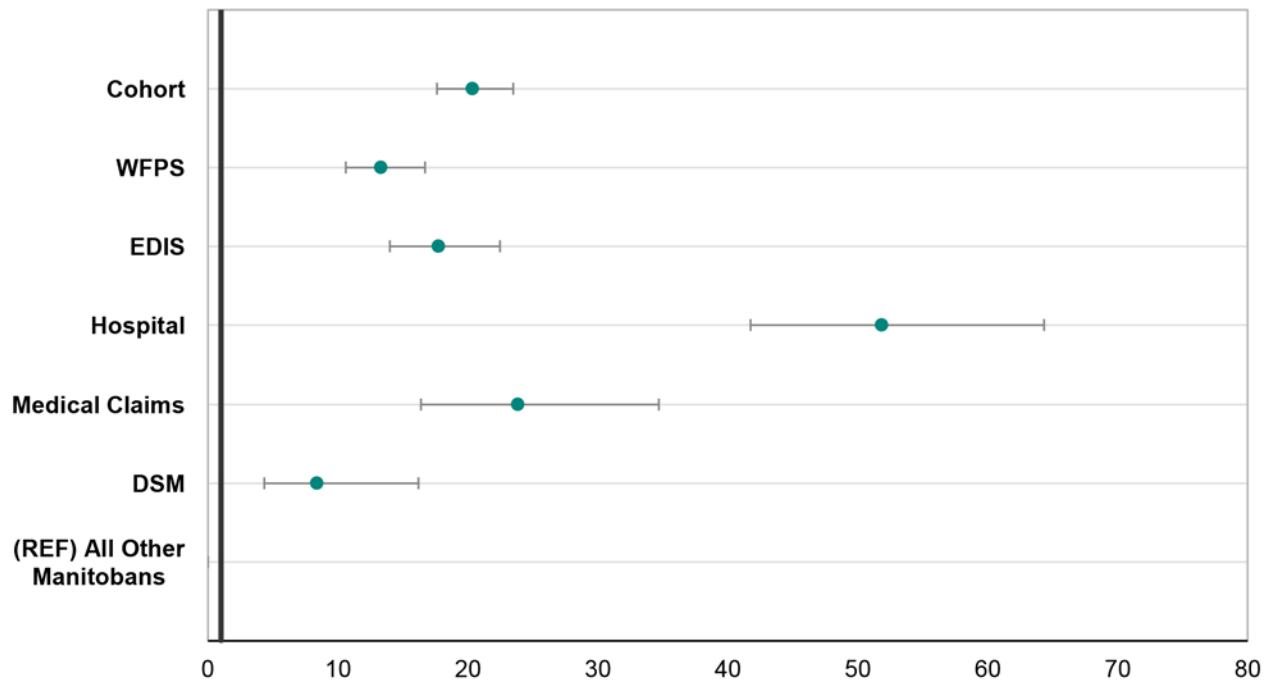
Appendix Figure 2.23: Incidence Rate of Personality Disorder among Adults who Consumed Methamphetamines, by Data Source, Compared to All Other Manitobans

Age- and Sex-adjusted rate per 100 Person-years, Age 18+, 2018; 1 Year After First Methamphetamine-Related Contact with Health Care System



Appendix Figure 2.24: Rate Ratios for Personality Disorder among Adults by Data Source, Comparing Manitobans who Consumed Methamphetamines with All Other Manitobans

Age- and Sex-adjusted Rate Ratios, Age 18+, 2018; 1 Year After First Methamphetamine-Related Contact with Health Care System



Note: REF = Reference Group.

We are unable to present findings on youth diagnosed with personality disorders because of small sample sizes.

Appendix 3: Health Services Use

In Chapter 5, we presented annual rates of health services use among Manitobans whose methamphetamine use was documented in the administrative health data. We presented rates for the Winnipeg cohort for contacts with WFPS, emergency department visits, and rates for the Manitoba cohort for hospitalizations and physician visits.

Here we present the rates of hospitalizations and physician visits for the Winnipeg cohort.

Hospitalizations Where Methamphetamine Use was Documented

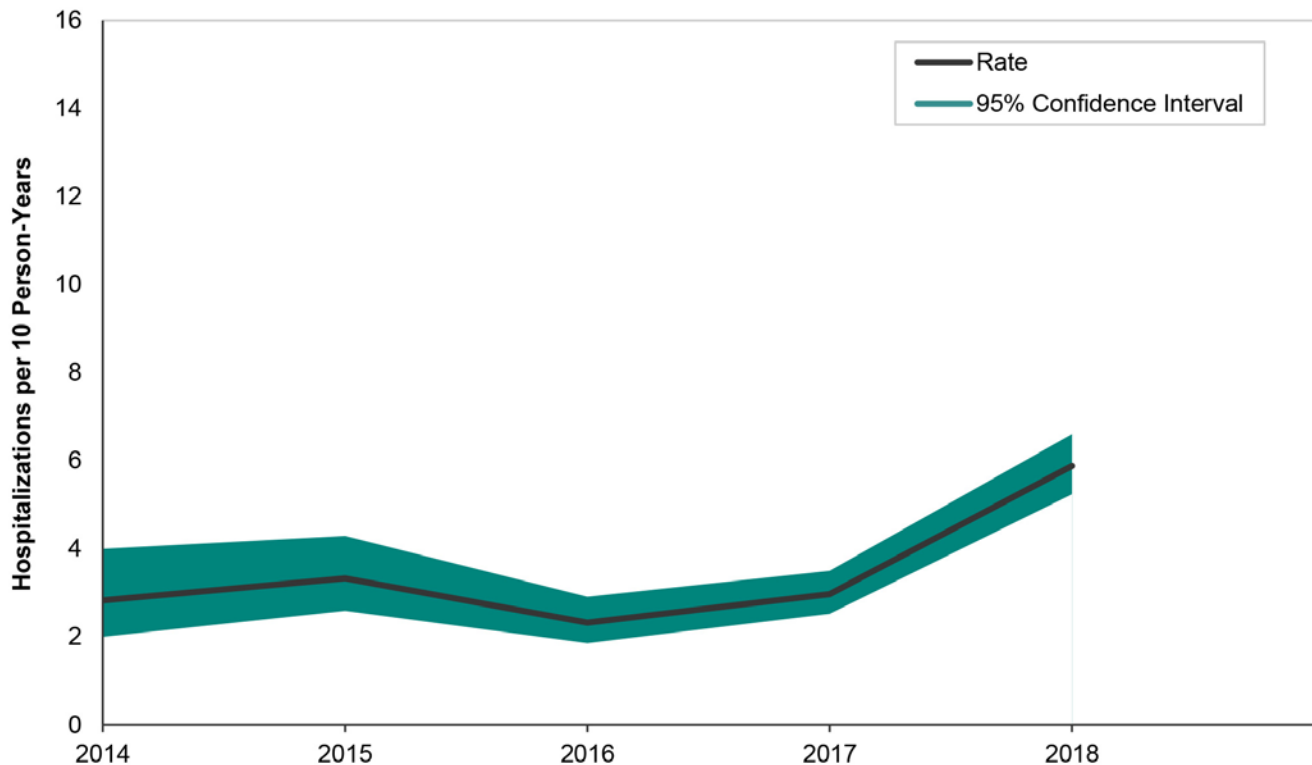
Winnipeg Cohort

As shown in Appendix Figure 3.1, the rate of hospitalizations in the year after first documented methamphetamine use for the Winnipeg cohort was between 2.3 and 5.9 hospitalizations per 10 person-years. We observed quite a bit of fluctuation from year to year because hospitalization was a relatively rare outcome, but there appeared to be a substantial increase in the rate in the final year of the study.

When we examined the intensity of hospitalization in the years following first documented methamphetamine use, the rate was between 1.1 and 2 hospitalizations per 10 person-years (Appendix Figure 3.2).

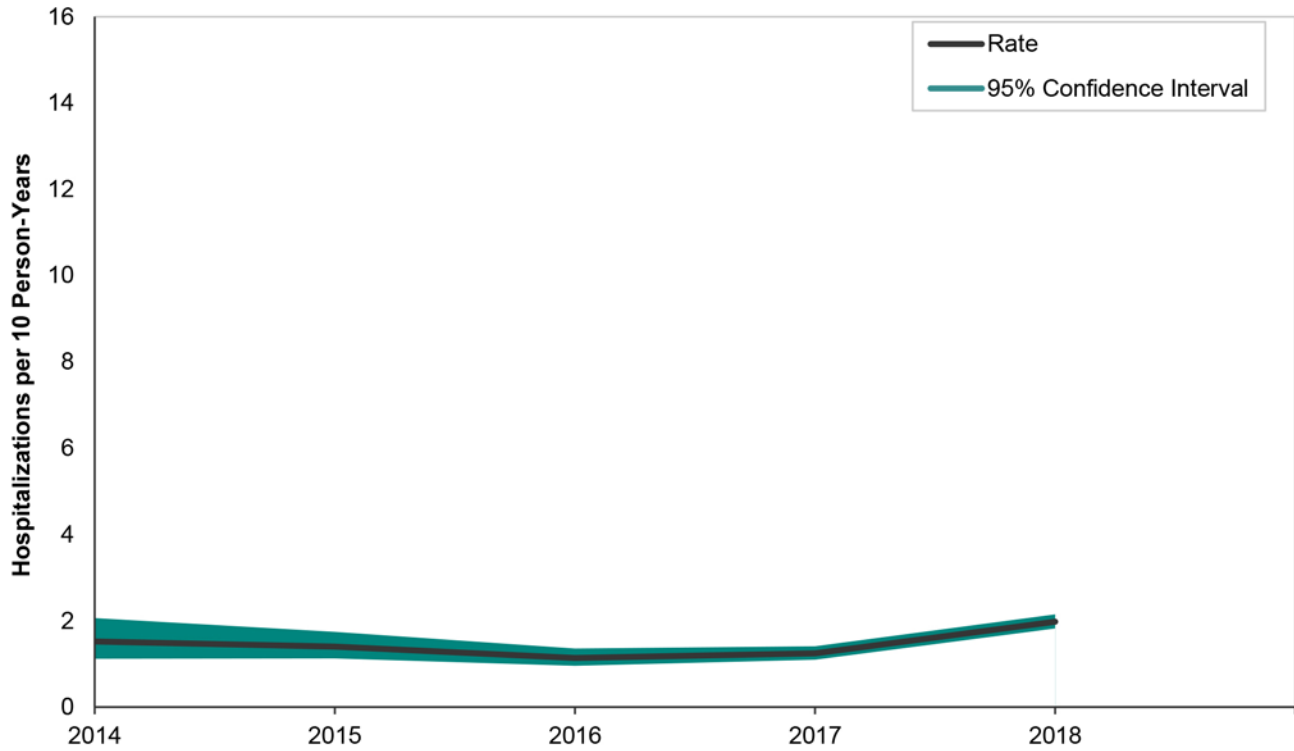
Appendix Figure 3.1: Rate of Methamphetamine-Related Hospitalizations in Winnipeg for Individuals with Documented Methamphetamine Use

Per 10 Person-Years, 18 and Older, 2014-2018; by Year Entering Cohort



Appendix Figure 3.2: Intensity of Methamphetamine-Related Hospitalizations in Winnipeg for Individuals with Documented Methamphetamine Use

Per 10 Person-Years, 18 and Older, 2014-2018; by Year



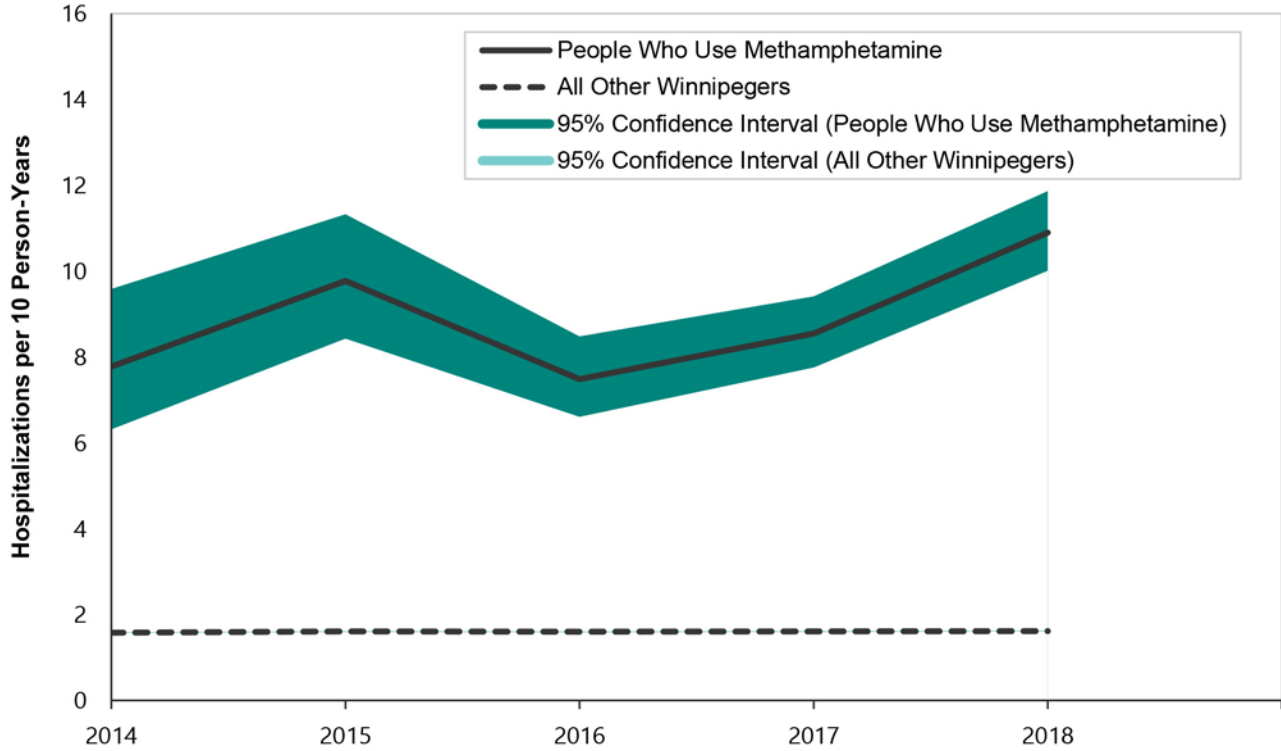
All Hospitalizations

Winnipeg Cohort

As shown in Appendix Figure 3.3, the rate of hospitalizations in the year after first documented methamphetamine use for the Winnipeg cohort was between 7.5 and 11 hospitalizations per 10 person-years. When we examined the intensity of hospitalization in the years following first documented methamphetamine use, the rate dropped to between 5 and 6 hospitalizations per 10 person-years (Appendix Figure 3.4). As a comparison, the hospitalization rate among all other Manitobans is presented as a dotted line (about 2 hospitalizations per 10 person-years).

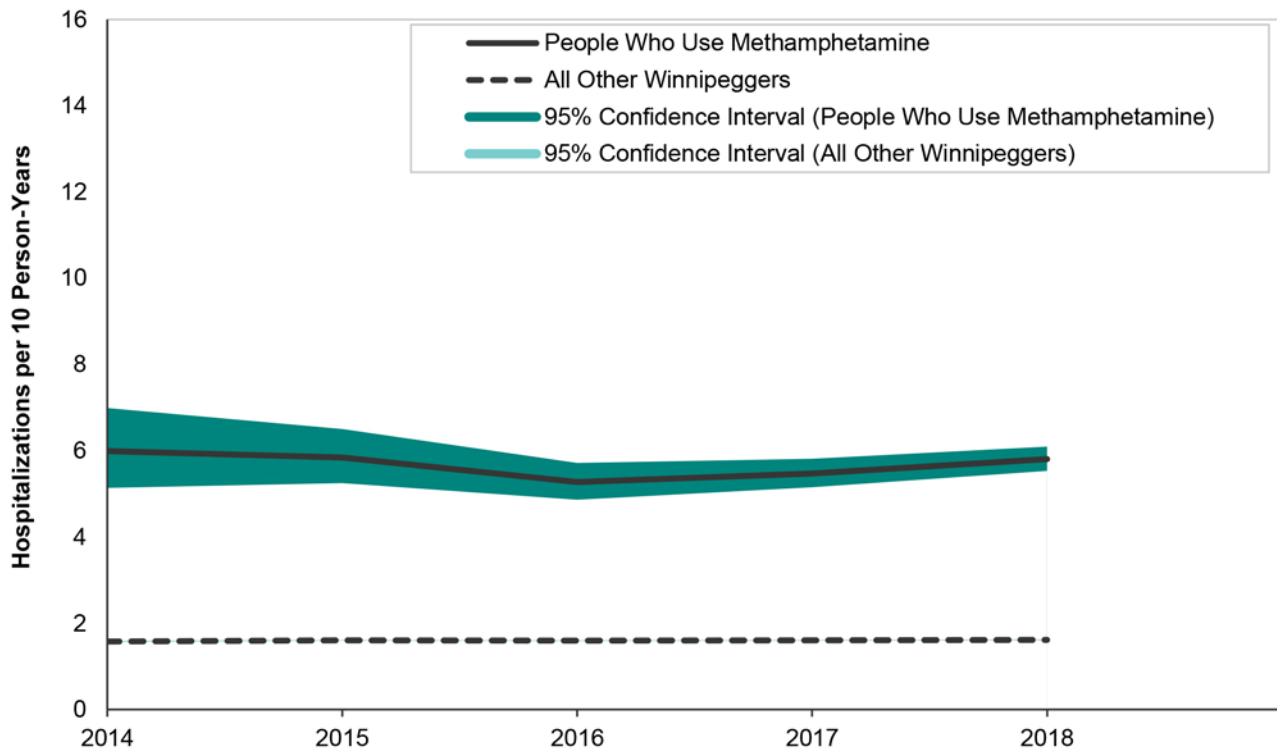
Appendix Figure 3.3: Rate of All Hospitalizations in Winnipeg for Individuals with Documented Methamphetamine Use and All Other Manitobans

Per 10 Person-Years, 18 and Older, 2014-2018; by Year Entering Cohort



Appendix Figure 3.4: Intensity of All Hospitalizations in Winnipeg for Individuals with Documented Methamphetamine Use and All Other Manitobans

Per 10 Person-Years, 18 and Older, 2014-2018; by Year



Physician Visits Where Methamphetamine Use was Documented

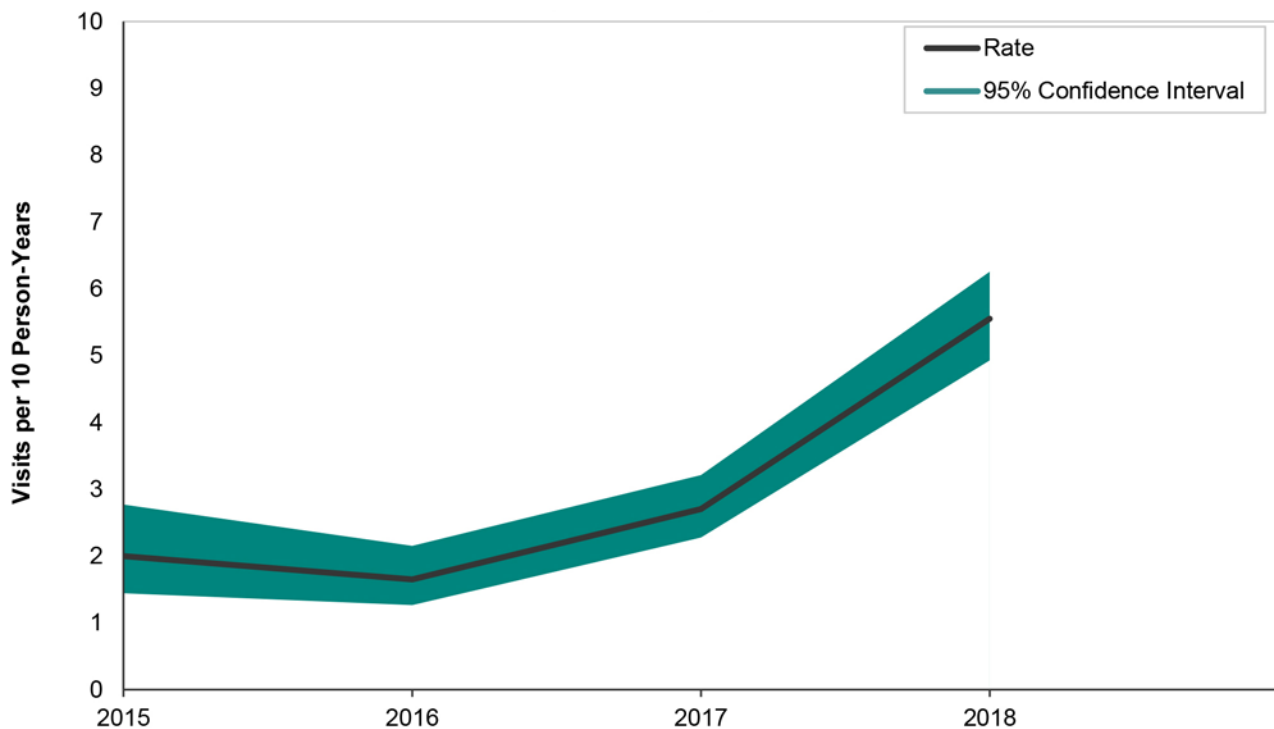
Winnipeg Cohort

As shown in Appendix Figure 3.5, the rate of physician visits for people in the Winnipeg cohort whose methamphetamine use had been documented within the last year increased steadily over time, both in the first year after methamphetamine use documentation and to the end of the study.

In 2015, people in the cohort visited a physician, on average, twice per person-year in the year after their methamphetamine use was documented; by 2018, this had increased to 5.6 visits per 10 person-years. In 2018, the cohort overall made, on average, 2.0 visits per 10 person-years.

Appendix Figure 3.5: Rate of Methamphetamine-Related Ambulatory Physician Visits in Winnipeg for Individuals with Documented Methamphetamine Use

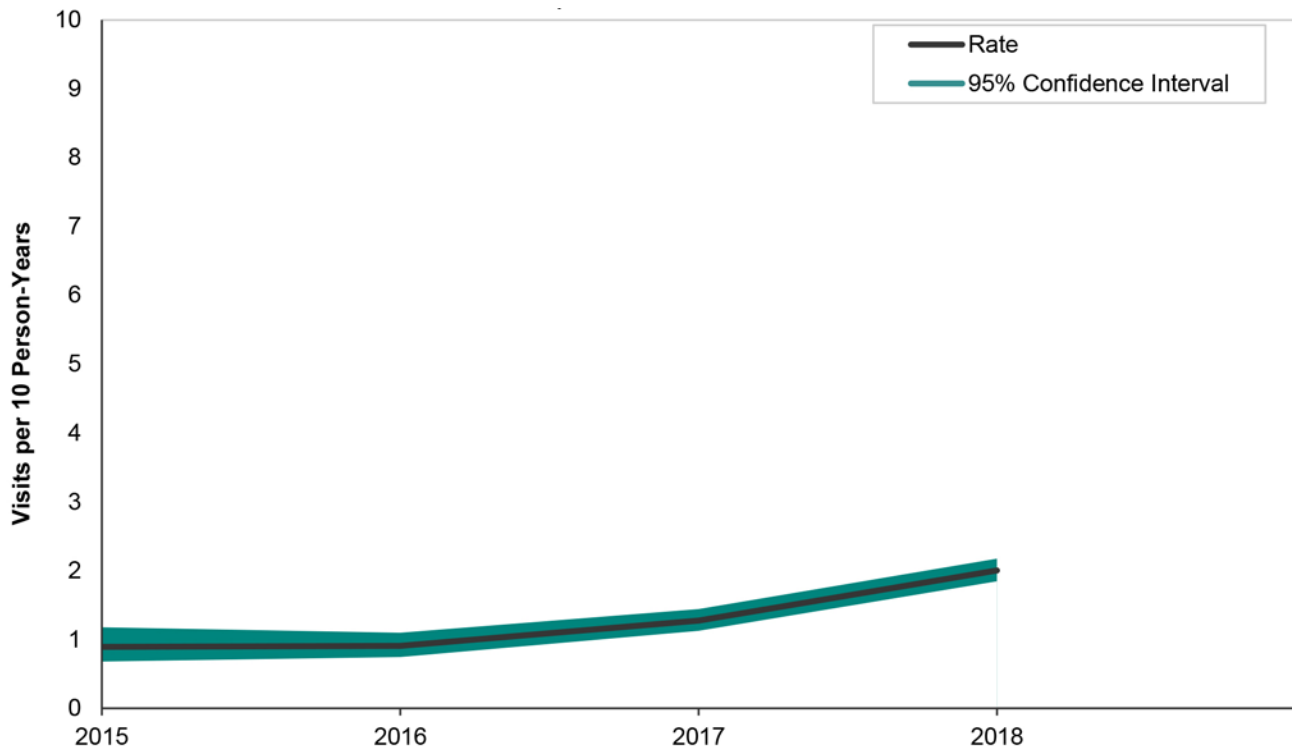
Per 10 Person-Years, 18 and Older, 2014-2018; by Year Entering Cohort



Note: Data not available for methamphetamine use in physician visits for 2014.

Appendix Figure 3.6: Intensity of Methamphetamine-Related Ambulatory Physician Visits in Winnipeg for Individuals with Documented Methamphetamine Use

Per 10 Person-Years, 18 and Older, 2014-2018; by Year



Note: Data not available for methamphetamine use in physician visits for 2014.

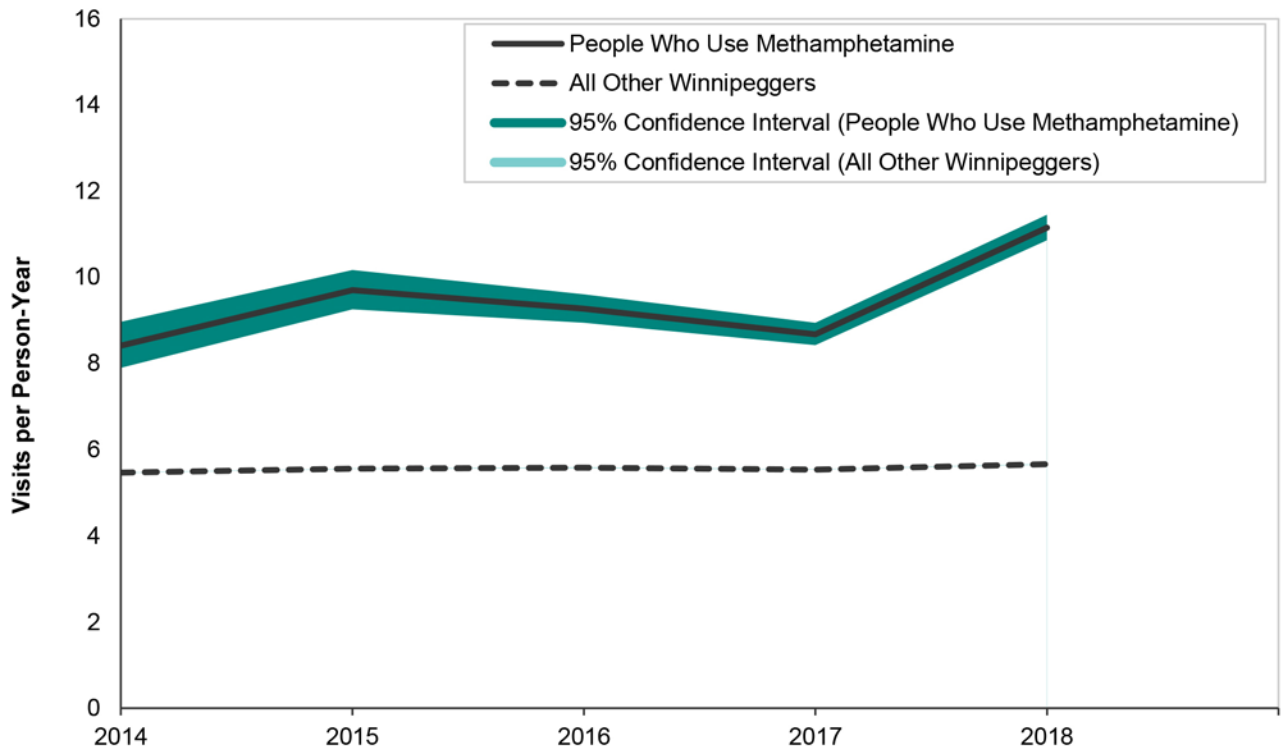
All Physician Visits

Winnipeg Cohort

As shown in Appendix Figure 3.7, the rate of all physician visits for people in the Winnipeg cohort whose methamphetamine use had been documented within the last year was 8.4 to 11.1 visits per person-year, whereas for all other Manitobans, the rate was about 5 visits per person-year. The intensity of physician visits following first documented methamphetamine use was lower, but still significantly higher than the rate among all other Manitobans (Appendix Figure 3.8).

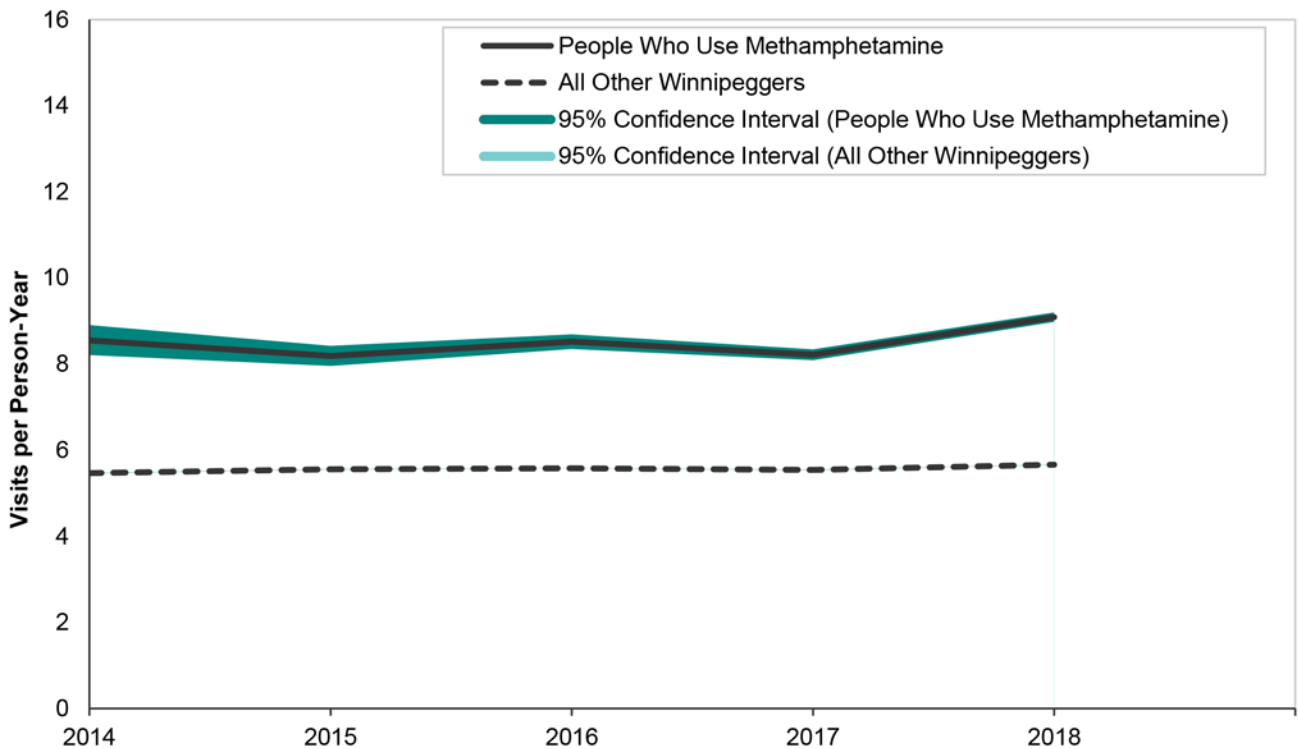
Appendix Figure 3.7: Rate of All Ambulatory Physician Visits in Winnipeg for Individuals with Documented Methamphetamine Use and All Other Manitobans

Per Person-Year, 18 and Older, 2014-2018; by Year Entering Cohort



Appendix Figure 3.8: Intensity of All Ambulatory Physician Visits in Winnipeg for Individuals with Documented Methamphetamine Use and All Other Winnipeggers

Per Person-Year, 18 and Older, 2014-2018; by Year





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