

# Report on Child and Youth Mental Health Outcomes

within the Northwestern Health Unit

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September 2023



Northwestern  
Health Unit

[www.nwhu.on.ca](http://www.nwhu.on.ca)



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## Executive Summary

This report is comprised of key population health indicators among children and youth aged 10-24 in the catchment area of Ontario monitored by the Northwestern Health Unit. Statistics included in this report describe outcomes for suicide and for hospitalization and emergency room visits for intentional self-harm, mental and behavioural disorders and substance-related mental and behavioural disorders. Data was collected from 2012 to 2021. Statistical significance of incidence rates was assessed using negative binomial regression.

Generally, across most indicators (excluding suicide) female children and youth tended to experience higher rates of mental illness relative to male children and youth. In addition, disparities in sex-stratified trends tended to be exacerbated among the younger age groups compared to older ones. As well, across all indicators, the Sioux Lookout local health hub experienced the highest rates of mental illness, across all indicators. For the most recent year of data available (2021), incidence rates for mental illness are as follows:

- The incidence rate of emergency room visits (ER visits) due to intentional self-harm was 2408.2 visits per 100,000
- The incidence rate of emergency room visits (ER visits) due to mental and behaviour disorders was 12,619.1 visits per 100,000
- The incidence rate of emergency room visits (ER visits) due to substance-related mental and behavioural disorders was 6474.8 visits per 100,000
- The incidence rate of hospitalizations due to intentional self-harm was 698.9 hospitalizations per 100,000
- The incidence rate of hospitalizations due to mental and behavioural disorders was 3177.0 hospitalizations per 100,000
- The incidence rate of hospitalizations due to substance-related mental and behavioural disorders was 1,162.79 hospitalizations per 100,000
- The incidence rate of suicides among those aged 10-24 was 50.8 suicides per 100,000

## Background

The Northwestern Health Unit's catchment area covers a large geographical region within Northern Ontario, spanning approximately 171,000 squared kilometres (Lunny & Jibb, 2017). This region is comprised of 39 First Nations communities, the Rainy River District, the western part of the Kenora district, 19 municipalities and two unincorporated territories (the unorganized regions of Kenora and the Rainy River District) (Lunny & Jibb, 2017). Data is often organized and reported by local health hubs, which group together different communities within this region (Lunny & Jibb, 2017).

There have been numerous reports detailing a growing number of mental illnesses in Ontario, with a stark increase among youth (Chiu et al., 2020; Gardner et al., 2019; Saunders et al., 2018). Some reports indicate that between 2006 and 2017, mental illness or addiction-related use of emergency rooms increased by nearly 90% (Chiu et al., 2020), with emergency room visits tending to many of those in crisis.

However, far less is known about current rates of mental illness among children and youth within Northern Ontario compared to Southern Ontario. A previous report has been released describing mental illness in the Northwestern Health Unit (Lunny & Jibb, 2017). This current report continues the work done by Lunny and Jibb (2017) and provides more recent rates and statistics in the Northwestern Health Unit for seven mental health indicators. In this report, we examine suicides, as well as emergency room visits and hospitalizations among children and

youth for intentional self-harm, mental and behaviour disorders and substance-related mental and behavioural disorders.

## Data Sources & Notes

Data for Emergency Room (ER) visits for intentional self-harm, mental and behavioural disorders and substance-related mental and behavioural disorders were collected by the National Ambulatory Care Reporting System (NACRS). Data for hospitalizations of intentional self-harm were also collected by the National Ambulatory Care Reporting System (NACRS). Data for hospitalizations of mental and behavioural disorders were collected from the Discharge Abstract Database (DAD) and the Ontario Mental Health Reporting System (OMRHS), then combined. All data, including suicide data, was accessed through IntelliHEALTH Ontario.

Data sources and diagnostic codes by indicator

<b>Indicator</b>	<b>Data Source(s)</b>	<b>ICD-10 Codes</b>	<b>DSM IV Codes (prior to FY2016)</b>	<b>DSM V Codes (FY2016 onward)</b>
ER visits due to mental and behavioural disorders	NACRS	F00-F99		
Hospitalizations due to mental and behavioural disorders	DAD + OMRHS	F00-F99	All Codes	All Codes
ER visits due to substance-related mental and behavioural disorders	NACRS	F10-F19		
Hospitalizations due to substance-related mental and behavioural disorders	DAD + OMRHS	F10-F19	291.0-305.90	F10-F19
ER visits due to intentional self-harm	NACRS	X60-X84, Y87.0		
Hospitalizations due to intentional self-harm	NACRS	X60-X84, Y87.0		
Suicide mortality	Vital Statistics Database	X60-X84, Y87.0		

## Data Analysis

Incidence rates were calculated for all six of the indicator variables between the years of 2012 and 2021 for both the Northwestern Health Unit and Ontario. Incidence rate calculations were performed using Microsoft Excel. These incidence rates were then stratified by local health hub, age group and sex across each individual year. Incidence rates across different strata (e.g. male vs females) were compared for statistical significance only between the years 2017 to 2021 (inclusive). Given that the data used for these calculations involved count data, all statistical tests were initially evaluated for a Poisson distribution. After undergoing a Pearson goodness-of-fit test, in which the null hypothesis postulates that the data's distribution does not differ significantly from the Poisson distribution (Cameron & Trivedi, 2013), we found that some of the data's distribution did not match the null hypothesis ( $p < 0.000$ ). As well, some data was also found to be heavily over-dispersed (i.e. the variance was found to be greater than the mean). For this reason, a negative binomial model was used for the comparisons between rates in which over-dispersion was present, and Poisson were the Poisson distribution was met (Cameron & Trivedi, 2013). Most statistical comparisons were performed using negative binomial regression except in the case of the suicide indicator. All incidence rate comparisons were calculated as incidence rate ratios with 95% confidence intervals. Rate ratios were considered statistically significant if the 95% confidence interval did not cross 1. 95% confidence intervals were not reported in this report.

Incidence rate ratios were obtained for all comparisons that were performed. All statistical analyses were performed using STATA. However, since 2021 population breakdowns for the Northwestern Health Unit were not available at the time of data analysis, all 2021 incidence rates were calculated using population data from the year 2020.

## Mental Health Indicators

### Emergency Room (ER) Visits from Intentional Self-Harm

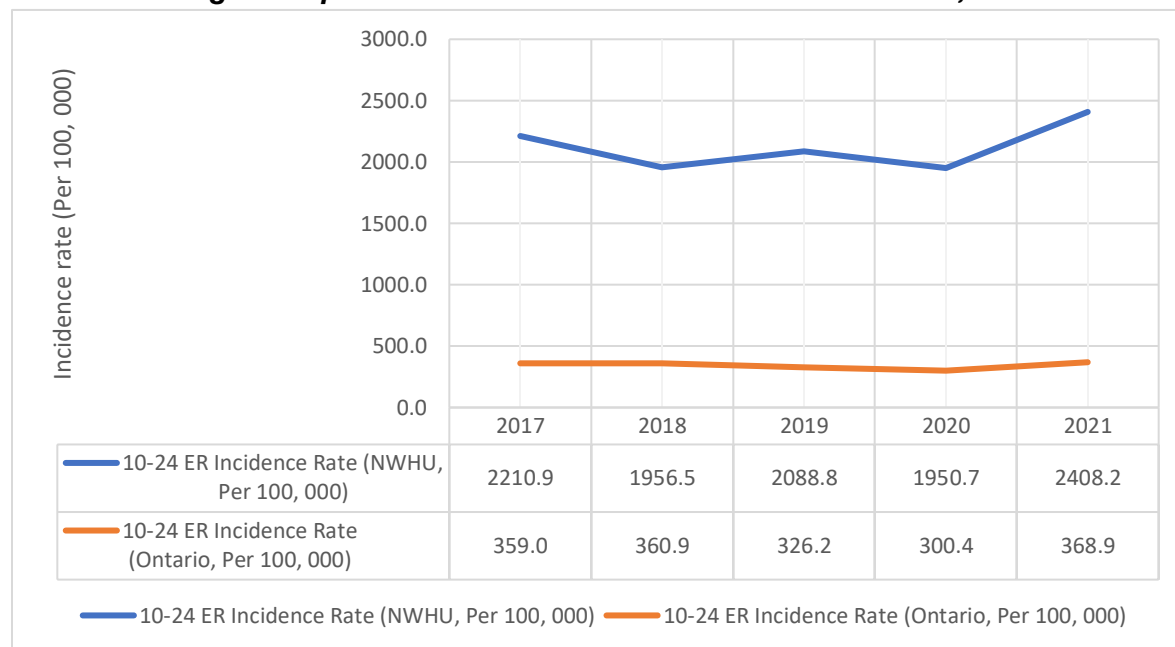
Between 2012 and 2021, there were 4,547 emergency room (ER) visits due to intentional self-harm in the Northwestern Health Unit (NWHU) across all age groups. In total, 5,075 diagnostic codes were applied to these ER visits. The most common diagnoses for self-harm were (X60) intentional self-poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics ( $n = 1254$ , 24.7%) and (X78) intentional self-harm by sharp object ( $n = 1180$ , 23.4%).

#### 10-24 Age Group

Among those aged 10 to 24 between 2012 and 2021, the most common diagnostic codes recorded were (X60) intentional self-poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics (27.5% of visits) and (X78) intentional self-harm by sharp object (27.6% of visits). Rates of these visits increased gradually among the 10-24 age group, from 1105.5 visits per 100,000 per year in 2012 to 2408.2 visits per 100,00 per year in 2021 (Table 1). In comparison, increases in the incidence of ER visits due to intentional self-harm were more modest across recent years, and were always higher than Ontario's incidence of ER visits due to intentional self-harm (Figure 1).

<b>Table 1: Incidence (Per 100,000) of ER Visits Due to Intentional Self-Harm among the 10-24 Age Group in the Northwestern Health Unit (NWHU) vs Ontario, 2012-2021</b>		
<b>Year</b>	<b>10-24 ER Incidence rate (NWHU, Per 100, 000)</b>	<b>10-24 ER Incidence rate (Ontario, Per 100, 000)</b>
2012	1105.5	222.5
2013	1308.0	255.1
2014	1614.7	280.1
2015	1940.3	297.0
2016	1871.6	314.9
2017	2210.9	359.0
2018	1956.5	360.9
2019	2088.8	326.2
2020	1950.7	300.4
2021	2408.2	368.9

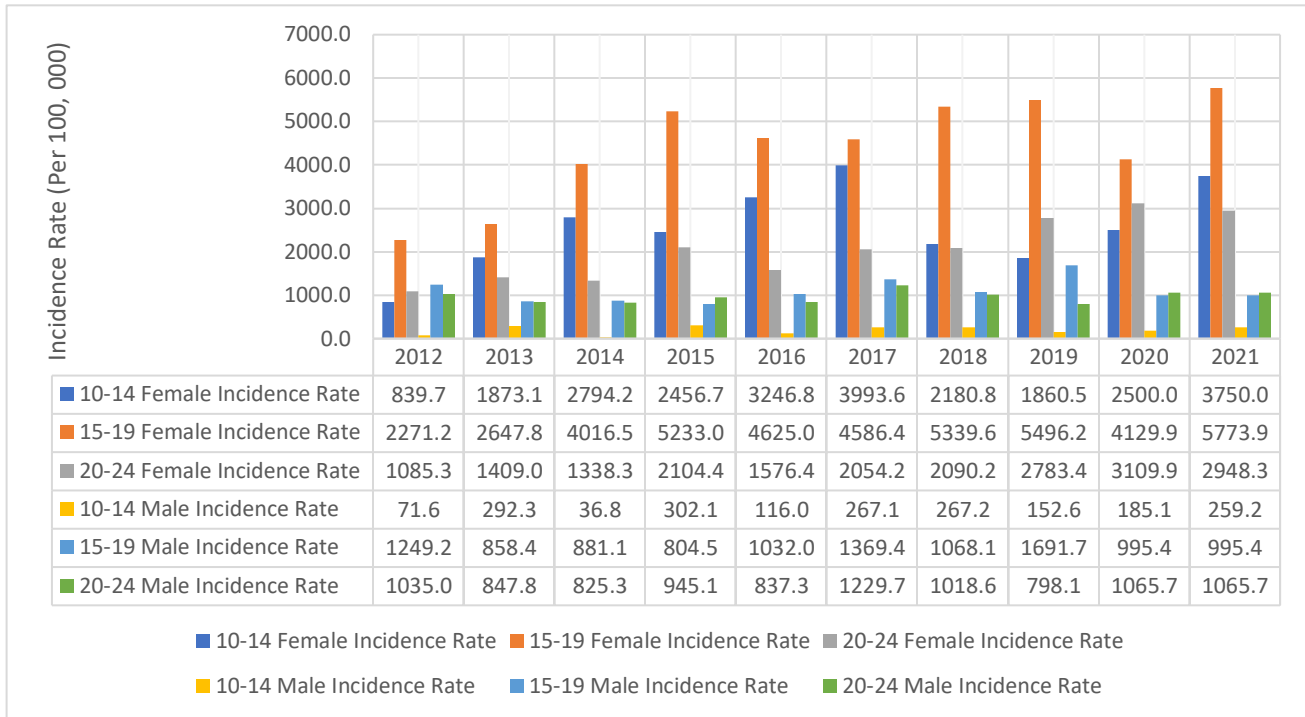
**Figure 1: Incidence (Per 100,000) of ER Visits due to Intentional Self-Harm Among the 10-24 Age Group in the Northwestern Health Unit and Ontario, 2017-2021**



### Sex-stratification

Within the NWHU, females tended to have much higher incidence rates ER visits due to intentional self-harm than males (Figure 2). Between 2012 and 2021, female children and youth had over 3.6 times more ER visits for intentional self-harm than males.

**Figure 2: Incidence (Per 100,000) of ER Visits due to Intentional Self-Harm in the Northwestern Health by Sex, 2012-2021**



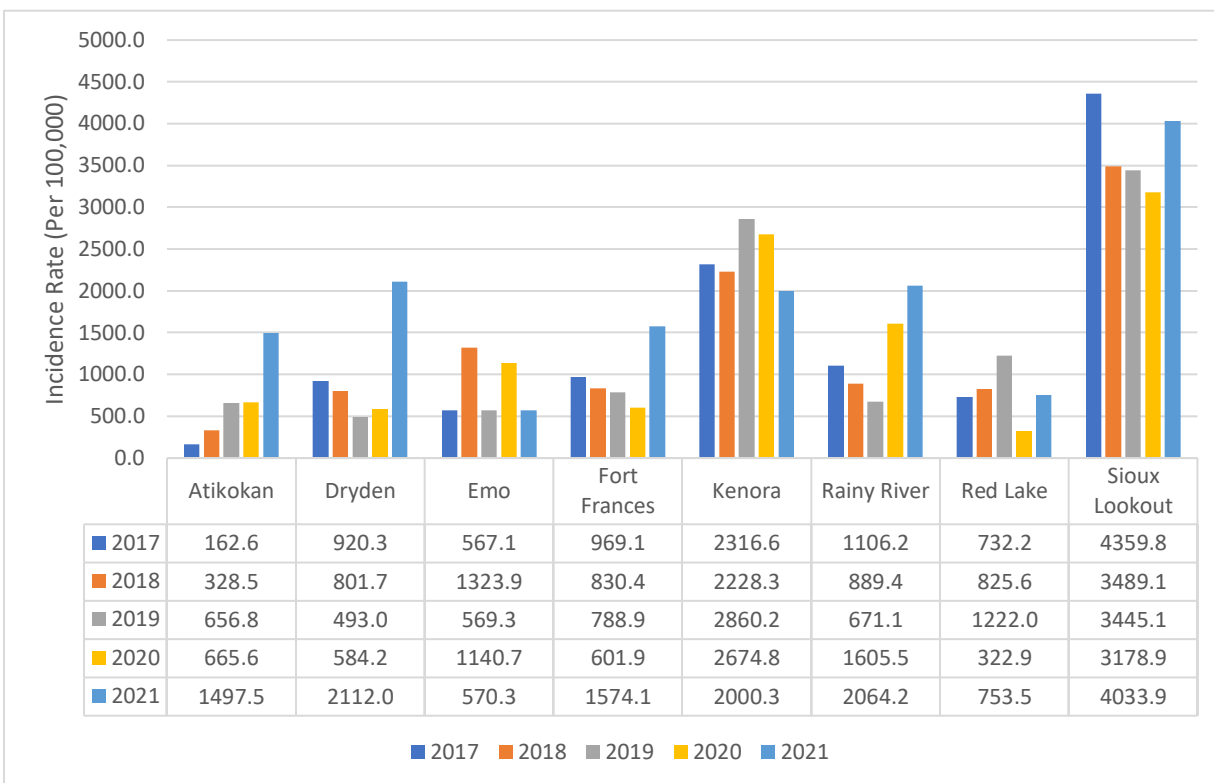
In 2021, the incidence rates of ER visits for intentional self-harm among females and males in the 10-14 age group were 3750.0 per 100,000 among females and 259.2 per 100,000 among males. Among the 15-19 age group, the incidence rates in 2021 were 5772.9 visits per 100,000 among females and 995.4 visits per 100,000 among males. As well, in the 20-24 age group in 2021, incidence rates were 2948.3 visits per 100,000 among females and 1065.7 visits per 100,000 among males.

After combining the most recent five years of data (2017 to 2021, inclusive) comparisons between males and females in the 10-14, 15-19 and 20-24 age groups all indicated that females had statistically significantly higher rates of ER visits for intentional self-harm. Interestingly, this difference was starker among younger age groups than older. For example, between 2017 and 2021, females in the 10-14 age group had an incidence rate for ER visits from intentional self-harm that was 12.6 times higher than males. Conversely, over the same period, females in the 20-24 age group had an incidence rate for ER visits from intentional self-harm that was 2.8 times higher than males.

### Local Health Hub

In addition, there were disparities between the incidence rates of ER visits due to intentional self-harm across different health hubs (Figure 3). Sioux Lookout tended to consistently have higher rates of ER visits from intentional self-harm compared to other health hubs. The incidence rate of Sioux Lookout in 2021 was 4033.9 visits per 100,000. Between 2017 and 2021, the incidence rate of ER visits from intentional self-harm in Sioux Lookout was 5.6 times higher than that of Atikokan. This difference was statistically significant.

**Figure 3: Incidence (Per 100,000) of ER Visits due to Intentional Self-Harm in the Northwestern Health by Local Health Hub, 2017-2021**



### Emergency Room (ER) Visits Due to Mental and Behavioural Disorders

Between 2012 and 2021, there were 63, 686 ER visits due to mental and behavioural disorders taking place within the NWHU across all age groups. The two most common diagnostic codes were (F10-F19) MENTAL & BEH DISRD DT PSYACT SUBS USE (59.1% of visits) and (F40-F48) NEUROTIC, STRESS-REL & SOMATOFORM DISRD (24.8% of visits).

#### 10-24 Age Group

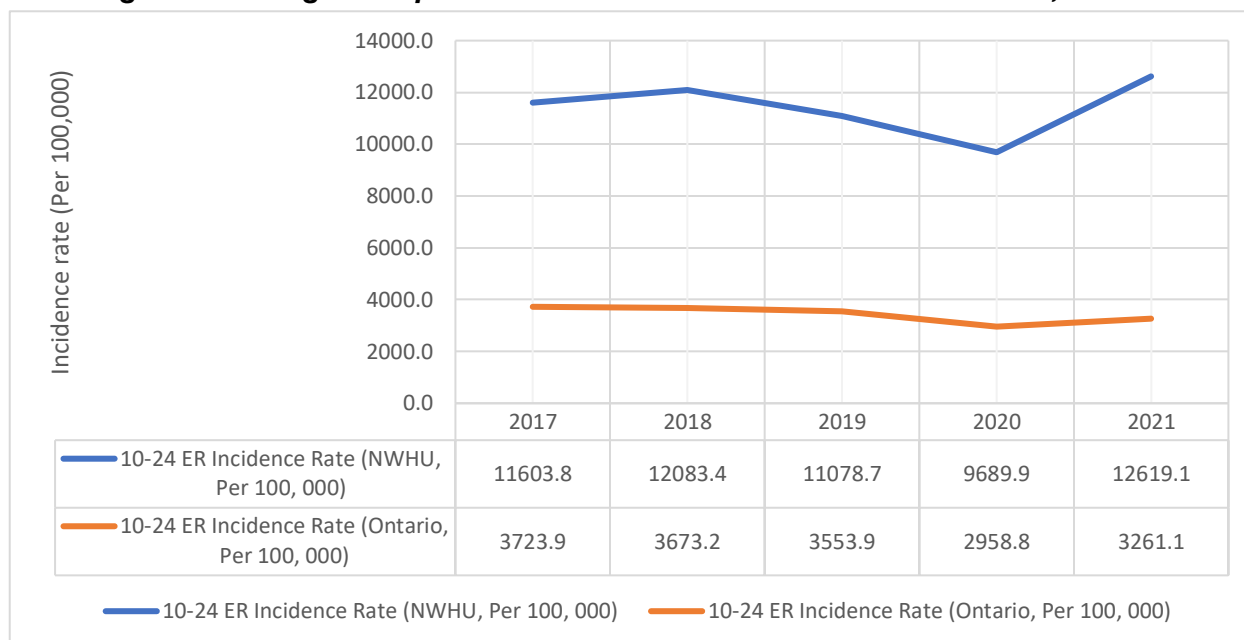
In the 10-24 age group, the most common two diagnostic codes applied to ER visits for mental and behaviour disorders remained F10-F19) MENTAL & BEH DISRD DT PSYACT SUBS USE (47.1% of visits) and (F40-F48) NEUROTIC, STRESS-REL & SOMATOFORM DISRD (31.0% of visits). The yearly incidence rate of ER visits due to mental and behavioural disorders among the 10-24 age group increased from 2012 to 2021, albeit unsteadily (Table 2). As well, incidence rates did not show a major net change between 2017 and 2021; instead, incidence rates changed heavily on a year-to-year basis (Figure 4). For example, between 2020 and 2021, the incidence changed from 9,689.9 ER visits per 100, 000 people per year, to 12,619.1 ER visits per 100, 000 people per year.

**Table 2: Incidence (Per 100,000) of ER Visits Due to Mental and Behavioural Disorders among the 10-24 Age Group in the Northwestern Health Unit (NWHU) vs Ontario, 2012-2021**



Year	10-24 ER Incidence rate (NWHU, Per 100, 000)	10-24 ER Incidence rate (Ontario, Per 100, 000)
2012	8383.1	2727.2
2013	8147.8	2843.3
2014	8183.5	3041.6
2015	8929.4	3163.8
2016	10475.9	3453.9
2017	11603.8	3723.9
2018	12083.4	3673.2
2019	11078.7	3553.9
2020	9689.9	2958.8
2021	12619.1	3261.1

**Figure 4: Incidence (Per 100,000) of ER Visits due to Mental and Behavioural Disorders Among the 10-24 Age Group in the Northwestern Health Unit and Ontario, 2017-2021**

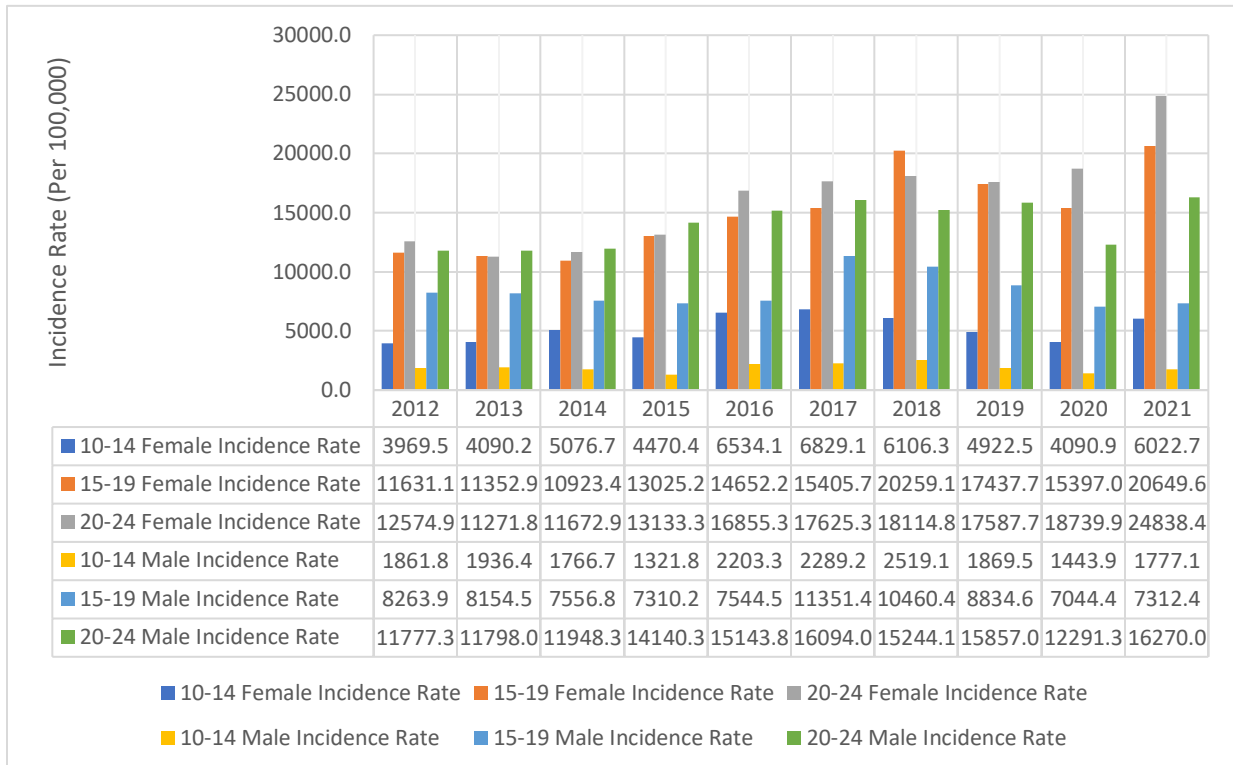


### Sex-stratification

Female children and youth tended to have higher rates of ER visits due to mental and behavioural disorders than males, though this distribution changed somewhat over time (Figure 5). In 2021, the incidence of ER visits due to mental and behavioural disorders in the 10-14 age group was 6022.7 per 100,000 among females and 1777.1 per 100,000 among males. Among the 15-19 age group, the incidence rate was 20,649.6 per 100,000 among females and 7312.4

per 100,000 among males. As well, in the 20-24 age group, incidence rates for ER visits due to mental and behavioural disorders were 24838.4 visits per 100,000 among females and 16,270.0 per 100,000 among males in the 20-24 age group.

**Figure 5: Incidence (Per 100,000) of ER Visits Due to Mental and Behavioural Disorders in the Northwestern Health by Sex, 2012-2021**

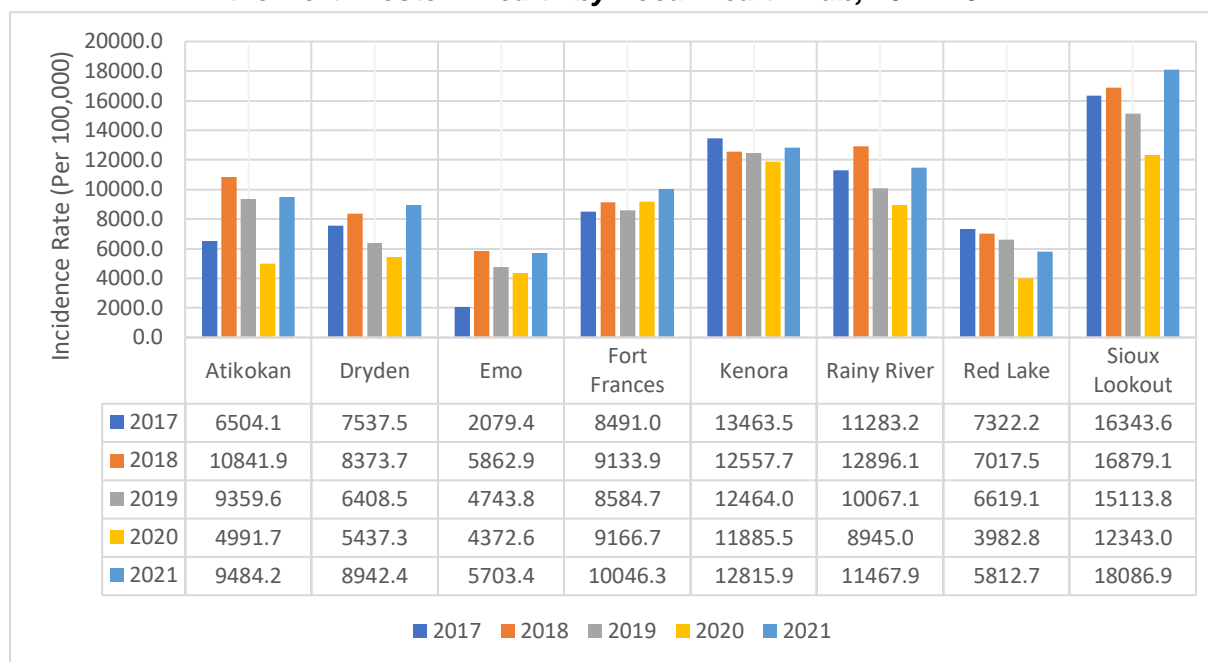


There were some sex-related differences in the incidence rates of ER visits due to mental and behavioural disorders. These differences were larger among younger age groups. For example, between 2017 and 2021, female children and youth in the 10-14 age group had an incidence rate for ER visits from mental and behaviour disorders that was 2.8 times higher than that of males. In comparison, female youth in the 20-24 age group had an incidence rate that was only 1.3 times higher than that of males in the same age group. Both ratios were statistically significant.

### Local Health Hub

Like with ER visits for intentional self-harm, Sioux Lookout had the overall highest incidence rates of ER visits due to mental and behavioural disorders in the Northwestern Health Unit (Figure 6). In comparison, Emo had some of the lowest incidence rates. In 2021, Sioux Lookout had an incidence rate of 18,086.9 visits per 100,000. Emo had an incidence rate in 2021 of 570.3 visits per 100,000. Between 2017 and 2021, Sioux Lookout had an incidence rate that was 1.91 times higher than that of Atikokan and Emo had an incidence rate that was 0.55 times lower. Both ratios were statistically significant.

**Figure 6: Incidence (Per 100,000) of ER Visits due to Mental and Behavioural Disorders in the Northwestern Health by Local Health Hub, 2017-2021**



## Emergency Room (ER) Visits Due to Substance-Related Mental and Behavioural Disorders

Between 2012 and 2021, 39,449 ER visits due to substance-related mental and behavioural disorders took place across the NWHU catchment area across all age groups. The two most common diagnostic codes used were (F100) MENTAL AND BEHAVIOURAL DISORDERS DUE TO USE OF ALCOHOL, ACUTE INTOXICATION (37.3% of visits) and (F101) MENTAL AND BEHAVIOURAL DISORDERS DUE TO USE OF ALCOHOL, HARMFUL USE (20.3% of visits).

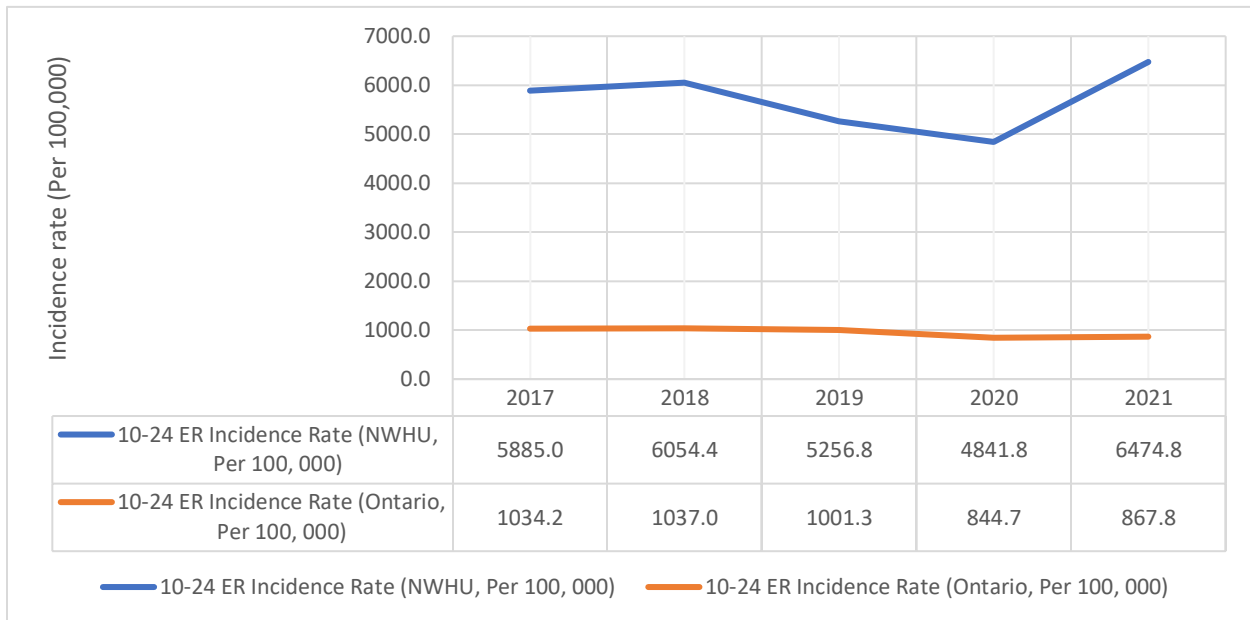
### 10-24 Age Group

Across the 10-24 age group, the two most commonly used diagnostic codes were (F100) MENTAL AND BEHAVIOURAL DISORDERS DUE TO USE OF ALCOHOL, ACUTE INTOXICATION (36.0% of visits) and (F101) MENTAL AND BEHAVIOURAL DISORDERS DUE TO USE OF ALCOHOL, HARMFUL USE (21.5% of visits). The incidence of these visits increased from 4537.8 visits per 100,000 in 2012 to 6474.8 visits per 100,000 in 2021 (Table 3). In more recent years, the incidence of ER visits due to substance-related mental and behavioural disorders fluctuated around 6000 visits per 100,000 (Figure 7).

**Table 3: Incidence (Per 100,000) of ER Visits Due to Substance-Related Mental and Behavioural Disorders Among the 10-24 Age Group in the Northwestern Health Unit (NWHU) vs Ontario, 2012-2021**

Year	10-24 ER Incidence rate (NWHU, Per 100, 000)	10-24 ER Incidence rate (Ontario, Per 100, 000)
2012	4575.8	786.4
2013	3983.9	761.5
2014	3871.6	813.4
2015	4835.2	869.2
2016	5423.2	967.2
2017	5885.0	1034.2
2018	6054.4	1037.0
2019	5256.8	1001.3
2020	4841.8	844.7
2021	6474.8	867.8

**Figure 7: Incidence (Per 100,000) of ER Visits due to Substance-Related Mental and Behavioural Disorders Among the 10-24 Age Group in the Northwestern Health Unit and Ontario, 2017-2021**

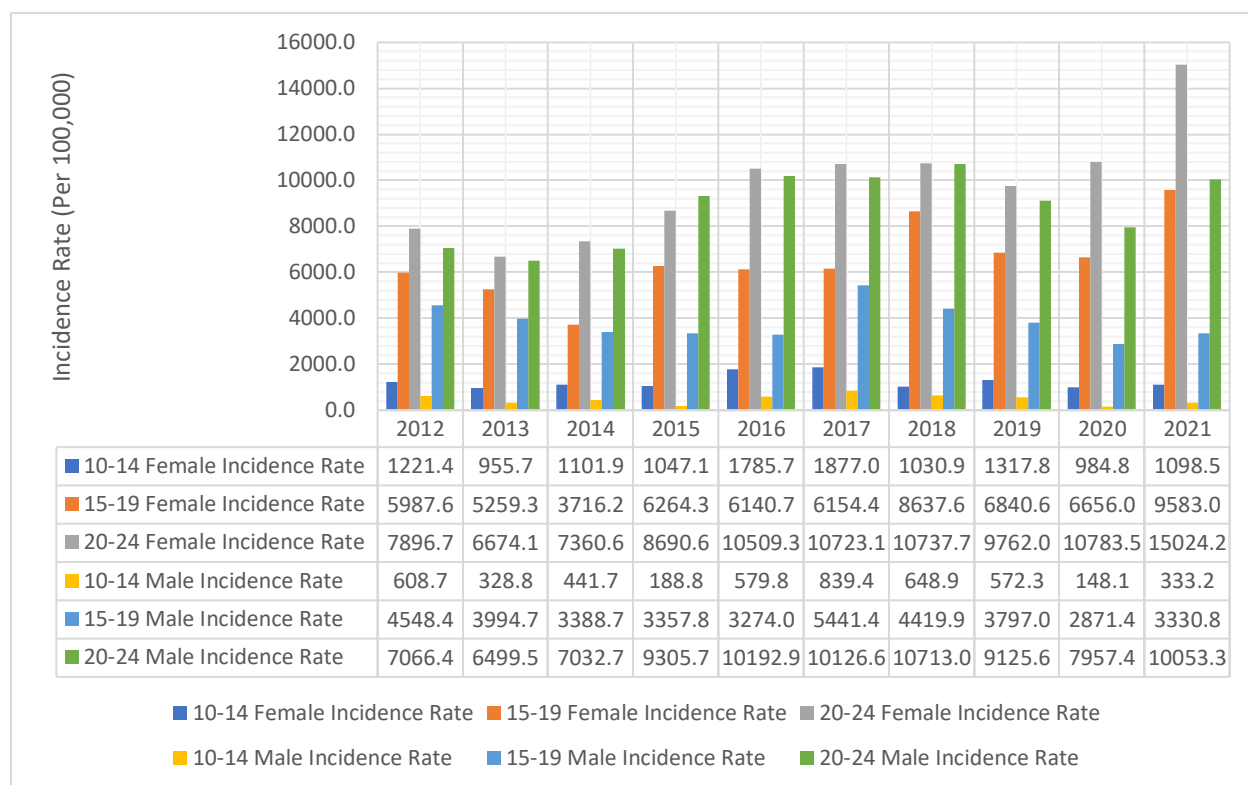




## Sex-stratification

Overall, females tended to have somewhat higher incidence rates of ER visits due to substance-related mental and behavioural disorders in the NWHU (Figure 8). In 2021, children and youth in the 10-14 age group had an incidence rate of ER visits from substance-related mental and behavioural disorders of 1098.5 per 100,000 among females and 333.2 per 100,000 among males. Among the 15-19 age group, the incidence rate in 2021 was 9583.0 visits per 100,000 females and 3330.8 visits per 100,000 among males. In addition, among the 20-24 age group in 2021, the incidence rate was 9583.0 visits per 100,000 among females and 10053.0 visits per 100,000 per year among males.

**Figure 8: Incidence (Per 100,000) of ER Visits Due to Substance-Related Mental and Behavioural Disorders in the Northwestern Health by Sex, 2012-2021**



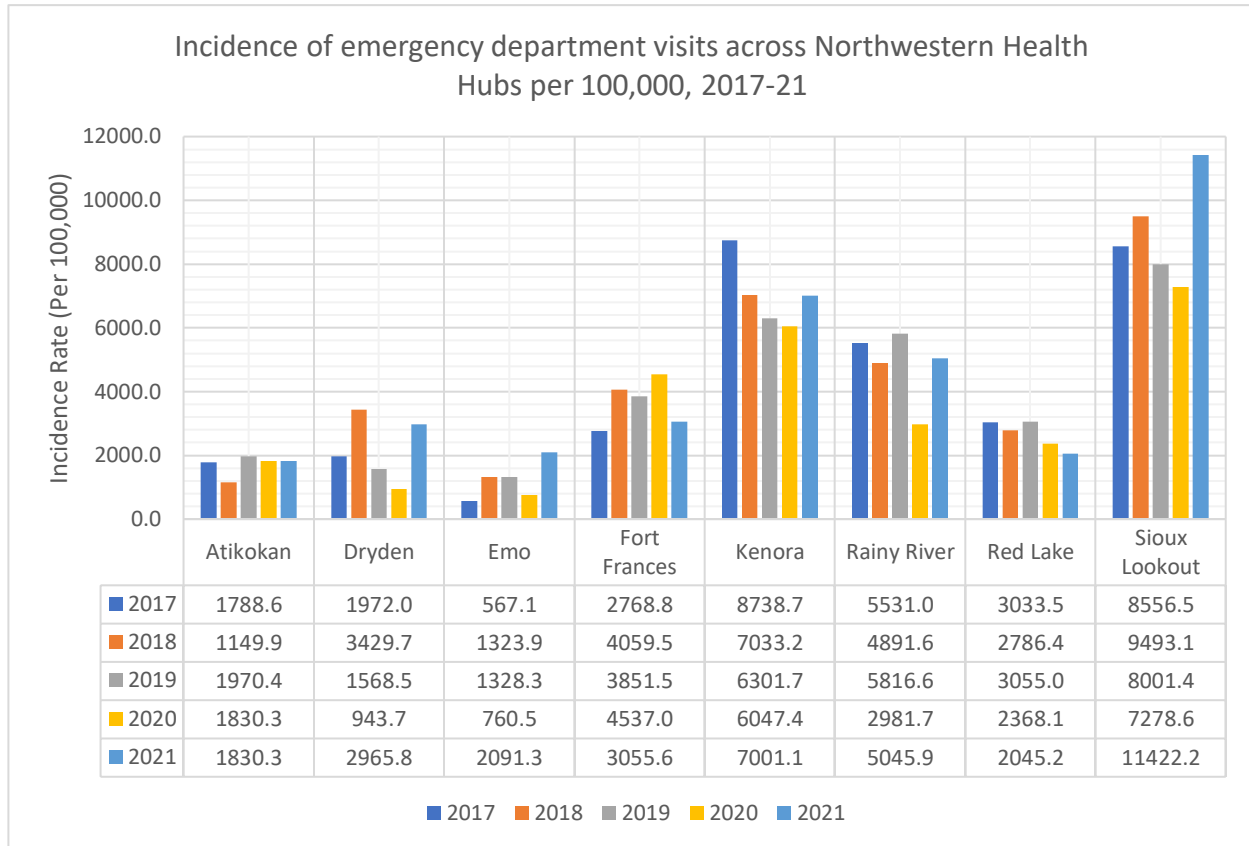
Among younger age groups, between 2017 and 2021, females in the 10-24 age group had an incidence rate that was 1.9 times higher than that of males. This ratio of rates was significant statistically. In contrast, females in the 20-24 age group, across the same period had an incidence rate that was only 1.18 times greater than that of males. This ratio was not statistically significant, indicating that males and females in the 20-24 age group did not have truly different rates of ER visits due to substance-related mental and behavioural disorders.

## Local Health Hub

In 2021, Sioux Lookout had an incidence rate of ER visits due to substance-related mental and behavioural disorders of 1293.5 visits per 100,000 (Figure 9). Sioux Lookout was the local health hub with the highest rates of emergency room visits due to substance-related mental and

behavioural disorders; indeed, its rate of ER visits due to substance-related mental and behavioural disorders was 5.2 times higher than that of Atikokan between 2017 and 2021 and was statistically significant.

**Figure 9: Incidence (Per 100,000) of ER Visits due to Substance-Related Mental and Behavioural Disorders in the Northwestern Health by Local Health Hub, 2017-2021**



## Hospitalizations Due to Intentional Self-Harm

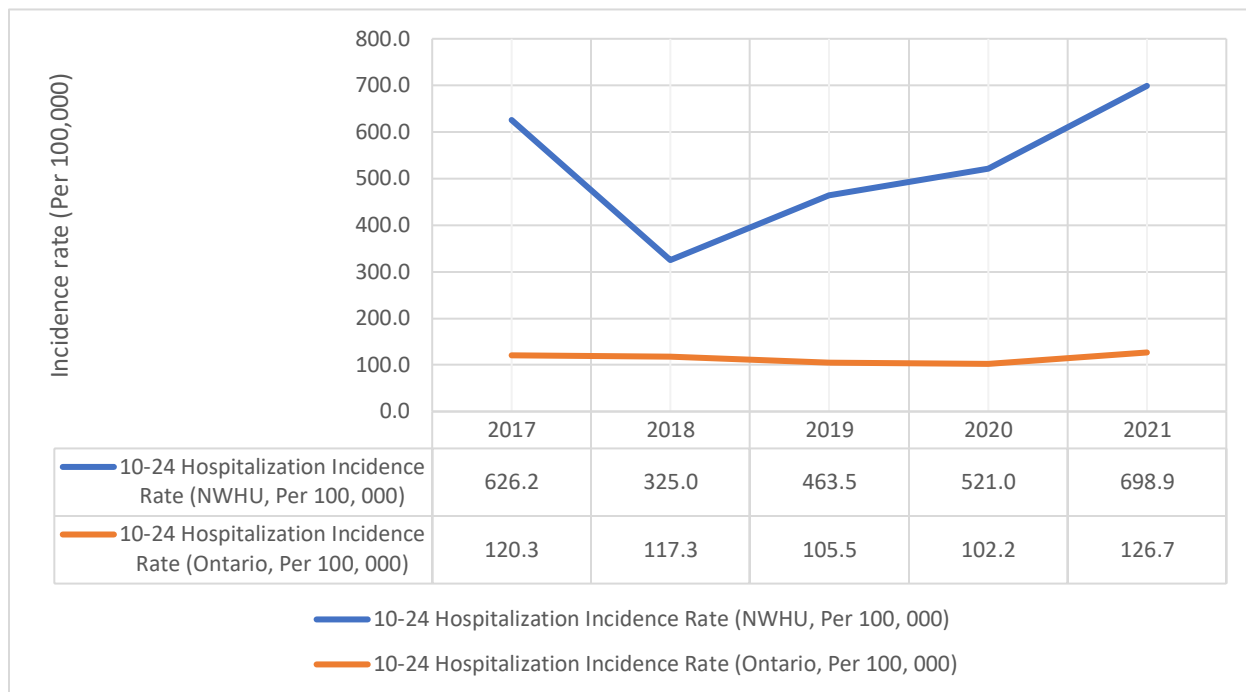
Between 2012 and 2021, 1,252 hospitalizations due to intentional self-harm took place in the regions monitored by the Northwestern Health Unit across all age groups. The most common diagnostic codes for the hospitalizations were (X60) intentional self-poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics (33.2% of hospitalizations) and (X64) intentional self-poisoning by and exposure to other and unspecified drugs, medicaments and biological substances (21.3% of hospitalizations).

### 10-24 Age Group

Among the 10-24 age group, the two most common diagnostic codes applied were (X60) intentional self-poisoning by and exposure to nonopioid analgesics, antipyretics and antirheumatics (40.9% of hospitalizations) and (X64) intentional self-poisoning by and exposure to other and unspecified drugs, medicaments and biological substances (19.6% of hospitalizations). There was a strong increase in the incidence rates of hospitalization due to intentional self-harm between 2012 and 2021 among children and youth (Table 4). Increases in yearly hospitalization incidence hit its highest points in more recent years, where yearly incidence in the 10-24 age group grew from 521.0 hospitalizations per 100,000 people in 2020 to 698.9 hospitalizations per 100,000 people in 2021. Throughout this period, the NWHU's incidence rates of hospitalization due to intentional self-harm stayed higher than that of Ontario's (Figure 10).

<b>Table 4: Incidence (Per 100,000) of Hospitalizations Due to Intentional Self-Harm Among the 10-24 Age Group in the Northwestern Health Unit (NWHU) vs Ontario, 2012-2021</b>		
<b>Year</b>	<b>10-24 Hospitalization Incidence Rate (NWHU, Per 100, 000)</b>	<b>10-24 Hospitalization Incidence Rate (Ontario, Per 100, 000)</b>
2012	254.2	81.9
2013	294.0	88.6
2014	385.3	94.3
2015	383.0	98.7
2016	645.2	115.3
2017	626.2	120.3
2018	325.0	117.3
2019	463.5	105.5
2020	521.0	102.2
2021	698.9	126.7

**Figure 10: Incidence (Per 100,000) of Hospitalization due to Intentional Self-Harm Among the 10-24 Age Group in the Northwestern Health Unit and Ontario, 2017-2021**



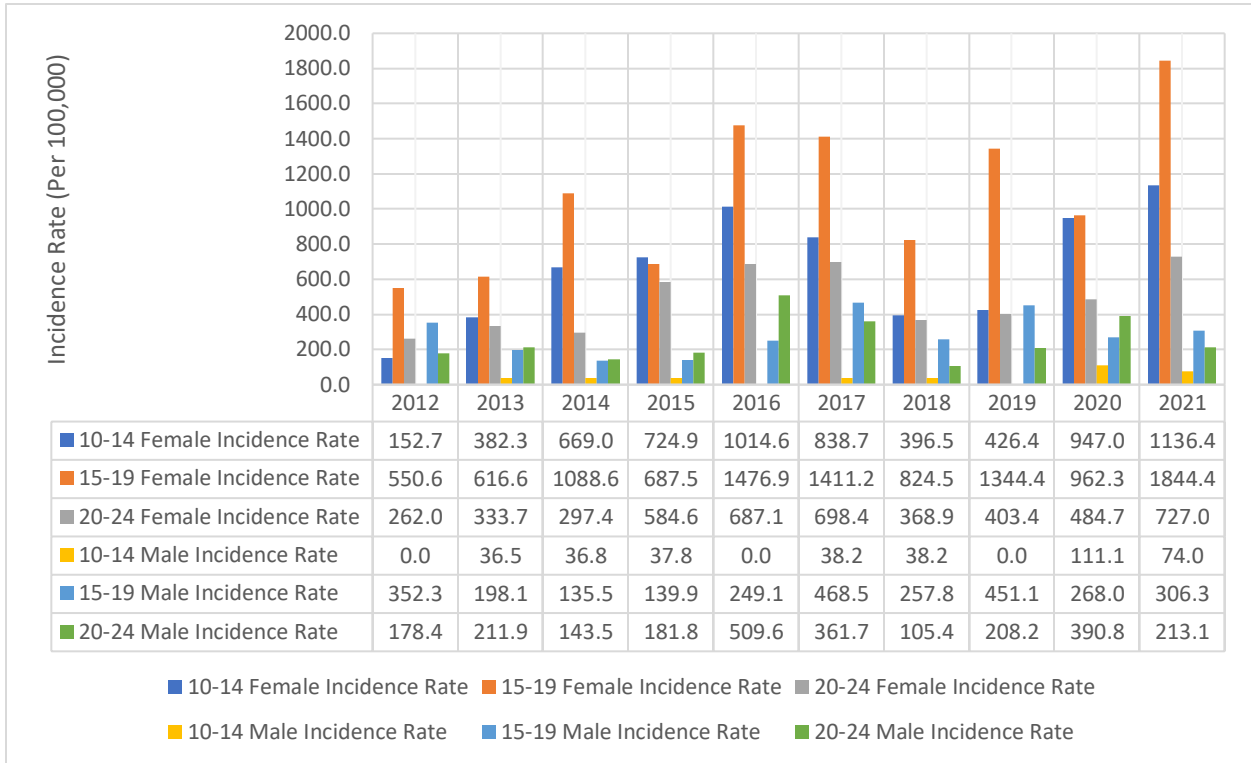
### Sex- Stratification

In 2021, the incidence rates for hospitalizations for intentional self-harm in the 10-14 age group were 1136.4 hospitalizations per 100,000 among females and 74.0 hospitalizations per 100,000 among males. Among the 15-19 age group (over the same period), the incidence rate was 1844.4 hospitalizations per 100,000 among females and 306.3 hospitalizations per 100,000 among males. In addition, among those aged 20-24 in 2021, the incidence rates for intentional self-harm hospitalization were 727.0 hospitalizations per 100,000 among females and 213.1 hospitalizations per 100,000 among males.

There were substantial differences in the incidence of hospitalizations due to intentional self-harm between females and males (Figure 11). Females had consistently higher incidence rates than males. However, differences in rates between males and females were much more pronounced among younger age groups compared to older age groups. For example, between 2017 and 2021, the females aged 10-14 had an incidence rate for hospitalizations from intentional self-harm that was 14.2 times higher than that of males. In contrast, in the same period, females aged 20-24 had an incidence rate that was only 2.1 times higher than that of males. Among each age group, the differences in incidence rates between males and females were statistically significant.



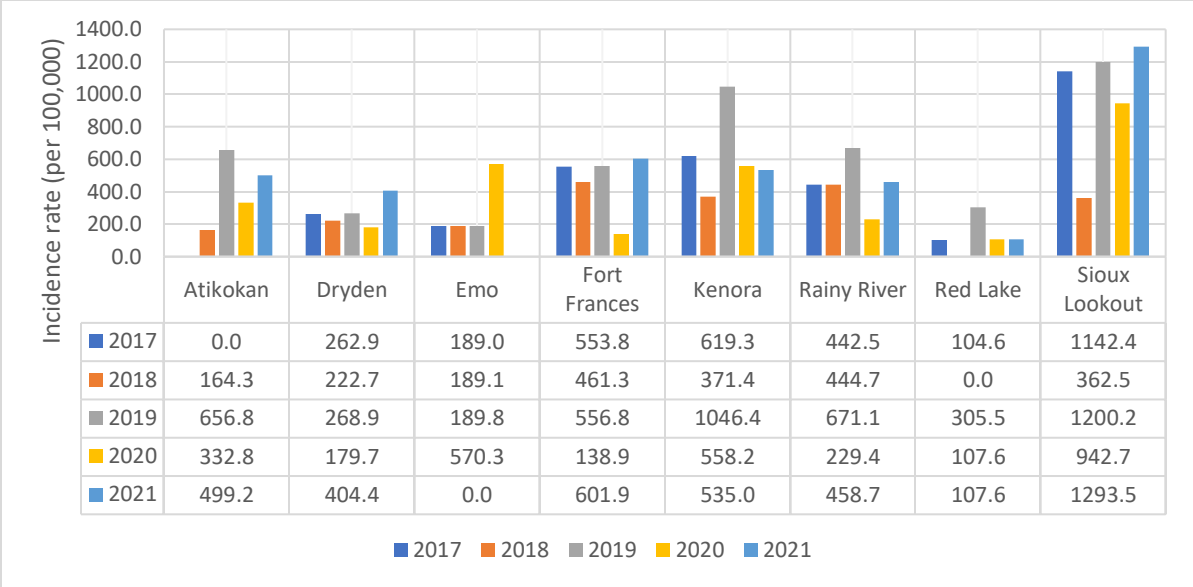
**Figure 11: Incidence (Per 100,000) of Hospitalizations due to Intentional Self-Harm in the Northwestern Health by Sex, 2012-2021**



**Local Health Hub**

Incidence rates for hospitalization due to intentional self-harm differed substantially across the different health hubs (Figure 12). In 2021, Sioux Lookout had a self-harm hospitalization incidence rate of 472.7 hospitalizations per 100,000 and Red Lake had an incidence rate of 19.8 hospitalizations per 100,000. Sioux Lookout had the highest rates of hospitalizations due to intentional self-harm between 2017 and 2021, while Red Lake was the lowest.

**Figure 12: Incidence (Per 100,000) of Hospitalizations due to Intentional Self-Harm in the Northwestern Health by Local Health Hub, 2017-2021**



### Hospitalizations Due to Mental and Behavioural Disorders

Between 2012 and 2021, there were 18,439 hospitalizations due to mental and behavioural disorders taking place in the Northwestern Health Unit across all age groups. The two most common diagnostic codes used across all-age groups were (F10-F19) MENTAL & BEH DISRD DT PSYACT SUBS USE (8.3% of hospitalizations) and (F30-F39) MOOD [AFFECTIVE] DISORDERS (4.5% of hospitalizations).

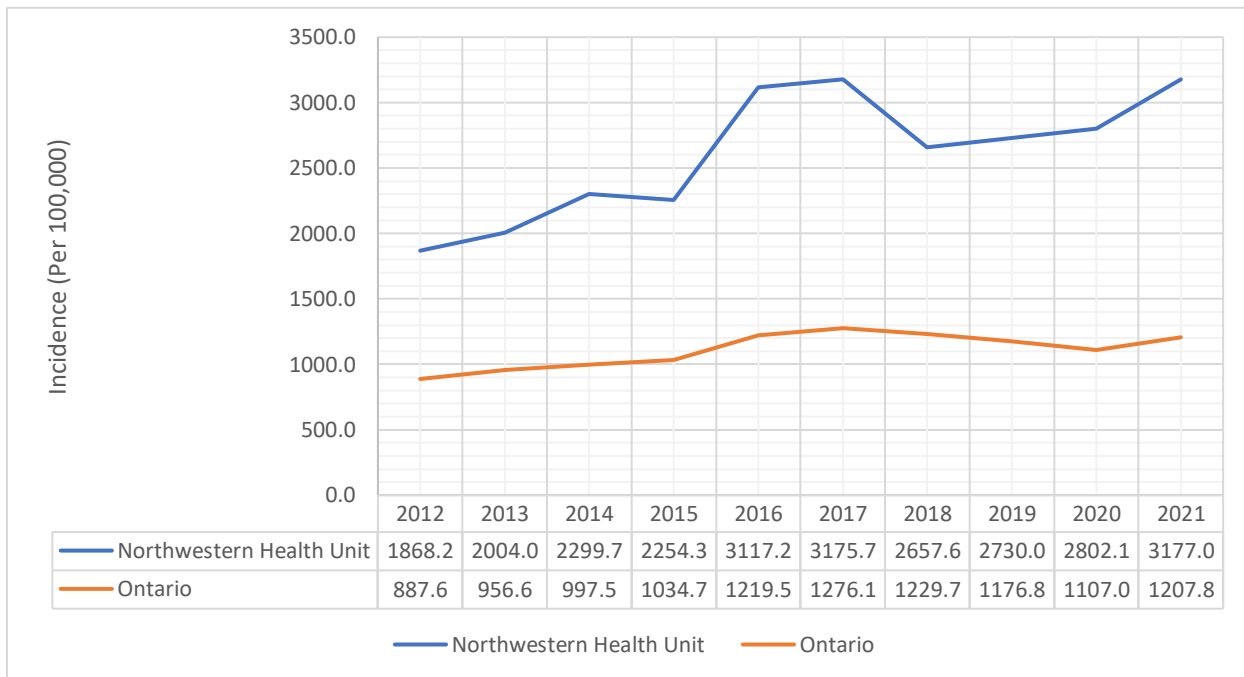
#### 10-24 Age Group

Among the 10-24 age group, the two most common diagnosis were (F40-F48) NEUROTIC, STRESS-REL & SOMATOFORM DISRD (11.2% of hospitalizations) and (F30-F39) MOOD [AFFECTIVE] DISORDERS (10.1% of hospitalizations). The incidence of hospitalizations for mental and behavioural disorders among the 10–24-year age group increased from 1868.2 per 100,000 in 2012 to 3177.0 per 100,000 per year in 2021 (Table 5, Figure 13).

**Table 5: Incidence (Per 100,000) of Hospitalizations Due to Mental and Behavioural Disorders Among the 10-24 Age Group in The Northwestern Health Unit (NWHU) vs Ontario, 2012-2021**

Year	10-24 Hospitalization Incidence Rate (NWHU, Per 100, 000)	10-24 Hospitalization Incidence Rate (Ontario, Per 100, 000)
2012	1868.2	887.6
2013	2004.0	956.6
2014	2299.7	997.5
2015	2254.3	1034.7
2016	3117.2	1219.5
2017	3175.7	1276.1
2018	2657.6	1229.7
2019	2730.0	1176.8
2020	2802.1	1107.0
2021	3177.0	1207.8

**Figure 13: Incidence (Per 100,000) of Hospitalizations due to Mental and Behavioural Disorders Among the 10-24 Age Group in the Northwestern Health Unit and Ontario, 2017-2021**

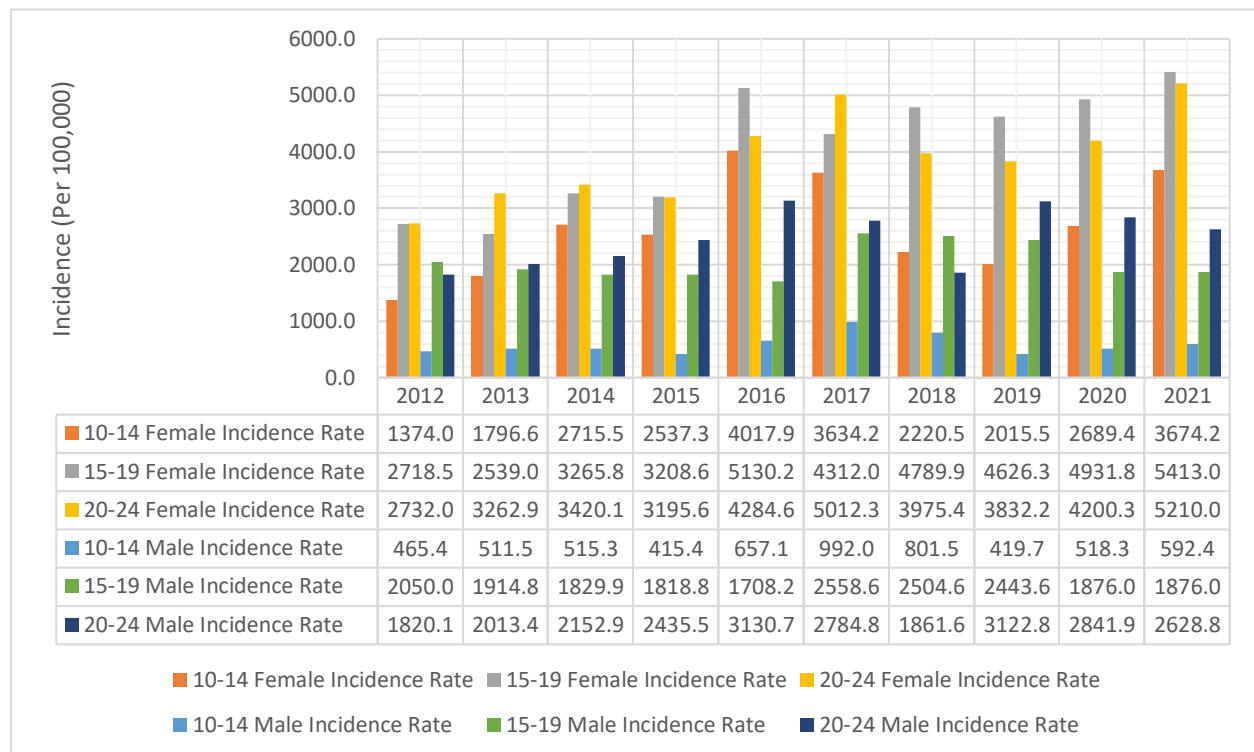


## Sex-stratification

In 2021, the 10-14 age group had mental and behavioural disorder hospitalizations incidence rates of 3674.2 hospitalizations per 100,000 per year among females and 592.4 hospitalizations per 100,000 per year among males. The 15-19 age group had incidence rates in 2021 of 5413.0 hospitalizations per 100,000 among females and 1876.0 hospitalizations per 100,000 among males. As well, the 20-24 age group had incidence rates of 5210.0 hospitalizations per 100,000 among females and 2628.8 hospitalizations per 100,000 among males.

There were some differences in the incidence rates between males and females (Figure 14). Like other indicators, female children and youth tended to have higher rates of mental illness, across each age group. Furthermore, differences in the rates of hospitalizations for mental and behaviour disorders tended to increase among younger age-groups compared to older age groups. For example, between 2017 and 2021, females aged 10-14 had an incidence rate for hospitalizations of mental and behaviour disorders that were 4.3 times higher than that of males. In comparison, females in the 20-24 age group had an incidence rate that was only 1.7 times higher than that of males, across the same period. Both of these differences in rates were statistically significant.

**Figure 14: Incidence (Per 100,000) of Hospitalizations Due to Mental and Behavioural Disorders in the Northwestern Health by Sex, 2012-2021**



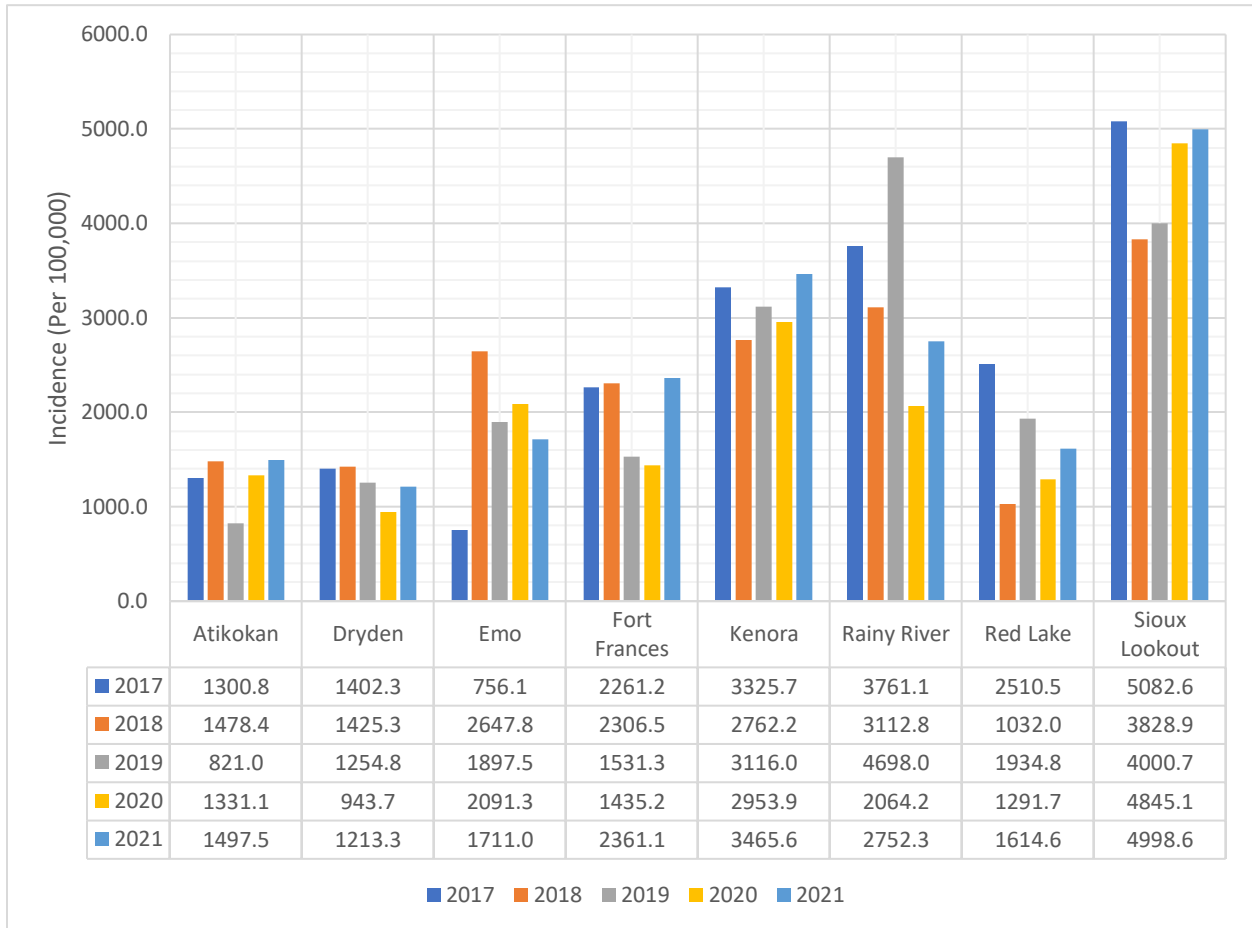
## Local Health Hub

In 2021, Sioux Lookout had an incidence rate of hospitalizations for mental and behavioural disorders of 4998.6 hospitalizations per 100,000. There were significant differences in the incidence rates of hospitalizations for mental and behavioural disorders across different health



hubs (Figure 15). Sioux Lookout tended to have the highest incidence rates of hospitalizations due to mental and behavioural disorders; indeed, between 2017 and 2021, the incidence rate for Sioux Lookout was 3.5 times higher than that of Atikokan. This difference was also statistically significant.

**Figure 15: Incidence (Per 100,000) of Hospitalizations due to Mental and Behavioural Disorders in the Northwestern Health by Local Health Hub, 2017-2021**



## Hospitalizations Due to Substance-Related Mental and Behavioural Disorders

There were 9,782 hospitalizations due to substance-related mental and behavioural disorders across all age groups between 2012 and 2021. The two most common diagnostic codes used across all ages were (F103) MENTAL AND BEHAVIOURAL DISORDERS DUE TO USE OF ALCOHOL, WITHDRAWAL STATE (16.6% of hospitalizations) and (F101) MENTAL AND BEHAVIOURAL DISORDERS DUE TO USE OF ALCOHOL, HARMFUL USE (13.7% of hospitalizations).

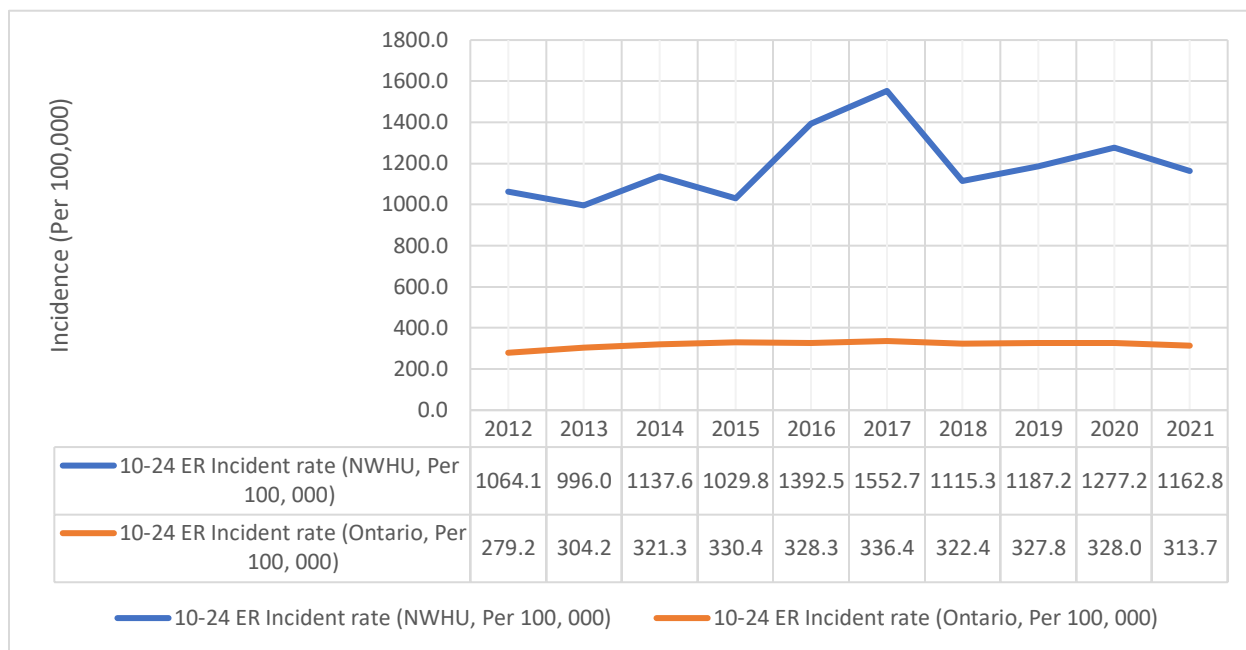
### 10-24 Age Group

Across those in the 10-24 age group, the most common diagnostic code used was (F111) MENTAL AND BEHAVIOURAL DISORDERS DUE TO USE OF OPIOIDS, HARMFUL USE (n = 11.9% of hospitalizations) a. Between 2012 and 2021, the incidence rate of hospitalization due to substance-related mental and behavioural disorders increased from 1,064.14 hospitalizations per 100,000 per year to 1,162.79 hospitalizations per 100,000 per year (Table 6, Figure 16).

**Table 6: Incidence (Per 100,000) of Hospitalizations Due to Substance-Related Mental and Behavioural Disorders Among the 10-24 Age Group in the Northwestern Health Unit (NWHU) vs Ontario, 2012-2021**

Year	10-24 ER Incidence Rate (NWHU, Per 100, 000)	10-24 ER Incidence Rate (Ontario, Per 100, 000)
2012	1064.144	279.2046
2013	995.9801	304.2359
2014	1137.615	321.3326
2015	1029.827	330.4149
2016	1392.526	328.2846
2017	1552.716	336.3521
2018	1115.289	322.4369
2019	1187.226	327.8117
2020	1277.164	327.9686
2021	1162.791	313.7043

**Figure 16: Incidence (Per 100,000) of Hospitalizations due to Substance-Related Mental and Behavioural Disorders Among the 10-24 Age Group in the Northwestern Health Unit and Ontario, 2017-2021**

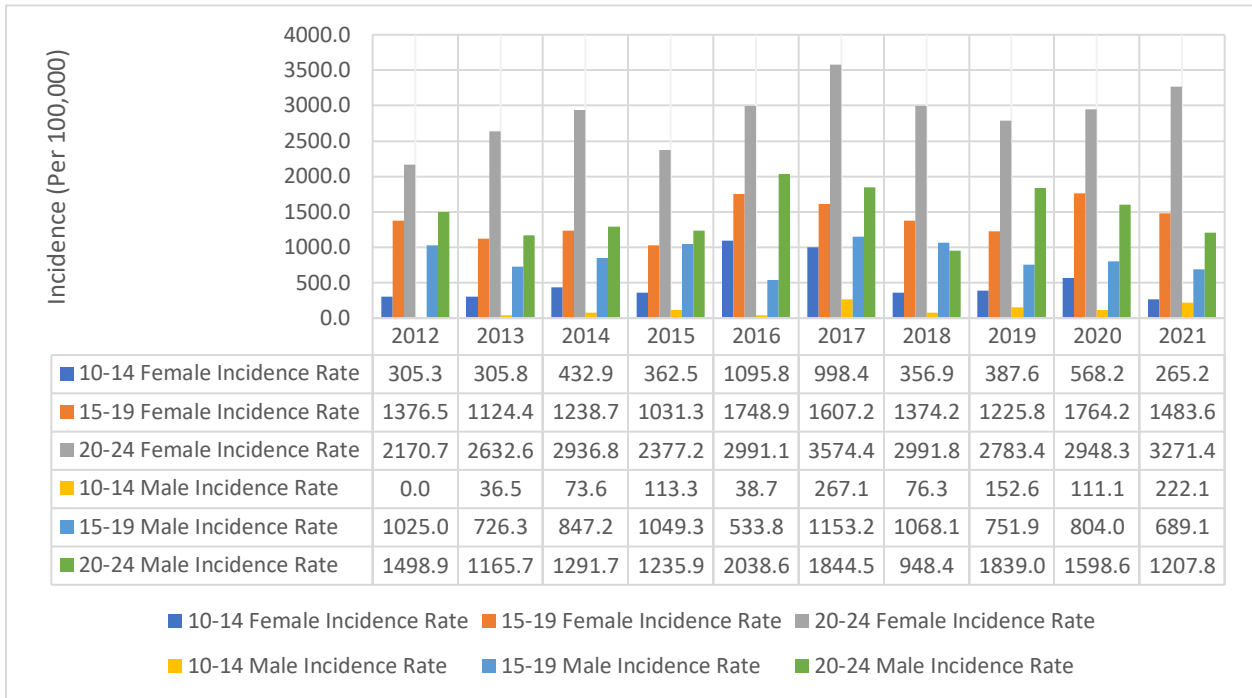


### Sex-stratification

In 2021, the incidence rate of hospitalizations due to substance-related mental and behavioural disorders in the 10-14 age group was 265.2 hospitalizations per 100,000 among females and 222.1 hospitalizations per 100,000 among males. Among the 15-19 age group in 2021, the incidence rates were 1483.6 hospitalizations per 100,000 among females and 689.1 hospitalizations per 100,000 among males. In addition, among the 20-24 age group in 2021, the incidence rates were 3271.4 hospitalizations per 100,000 among females and 1207.8 hospitalizations per 100,000 among males.

There were some differences in the incidence rates between males and females (Figure 17). The youngest female age group (aged 10-14) had an incidence rate of hospitalizations for substance-related mental and behavioural disorders that was 3.1 times higher than that of males (between 2017 and 2021). This ratio was statistically significant. In comparison, among older age groups (aged 20-24), females had an incidence rate that was 2.1 times higher than that of males (between 2017 and 2021). This ratio was also statistically significant.

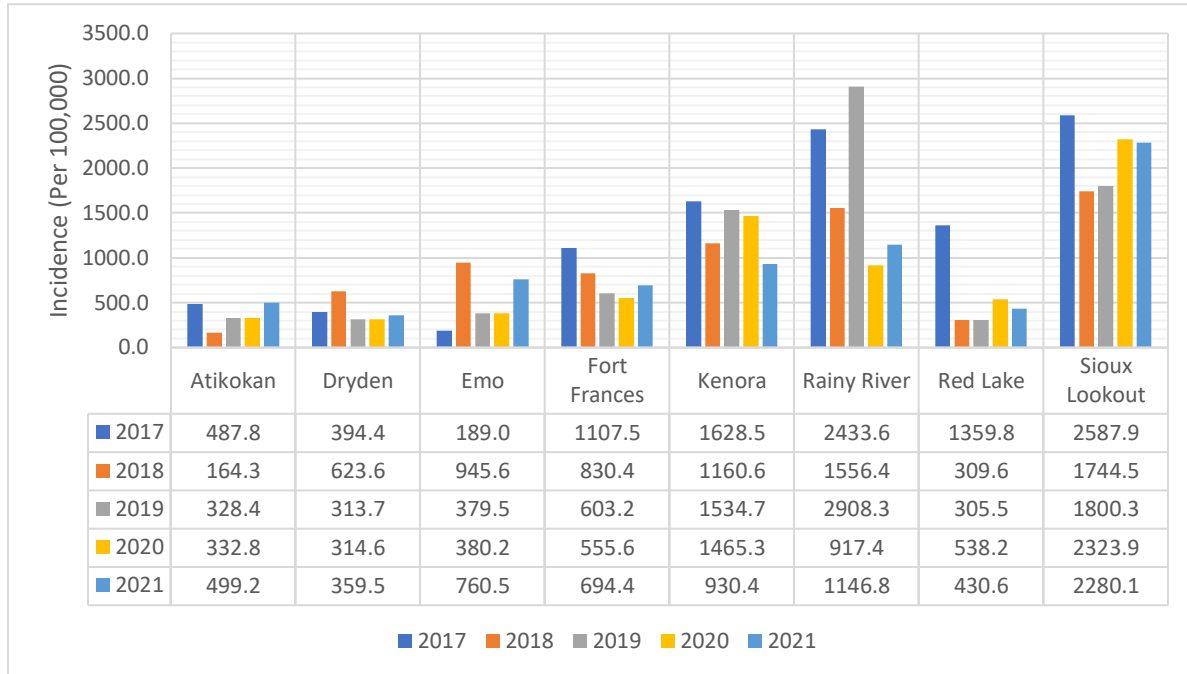
**Figure 17: Incidence (Per 100,000) of Hospitalizations Due to Substance-Related Mental and Behavioural Disorders in the Northwestern Health by Sex, 2012-2021**



**Local Health Hub**

In 2021, Sioux Lookout had an incidence rate of hospitalizations due to substance-related mental and behavioural disorders of 2280.1 hospitalizations per 100,000. Compared to other health hubs, Sioux Lookout had the highest incidence rate for hospitalizations due to substance-related mental and behavioural disorders; its incidence rate between 2017 and 2021 was 5.9 times higher than that of Atikokan (Figure 18). Conversely, Dryden had the lowest incidence rate during this time period; its incidence rate between 2017 and 2021 was only 1.11 times greater than that of Atikokan (though this was not statistically significant).

**Figure 18: Incidence (Per 100,000) of Hospitalizations due to Substance-Related Mental and Behavioural Disorders in the Northwestern Health by Local Health Hub, 2017-2021**



## Suicides

Between 2012 and 2021, 239 suicides took place across the Northwestern Health Unit. The two most common diagnostic codes were: (X70) INTENTIONAL SELF-HARM BY HANGING, STRANGULATION AND SUFFOCATION (77.7% of cases) and (X74) INTENTIONAL SELF-HARM BY OTHER AND UNSPECIFIED FIREARM DISCHARGE (8.2% of cases).

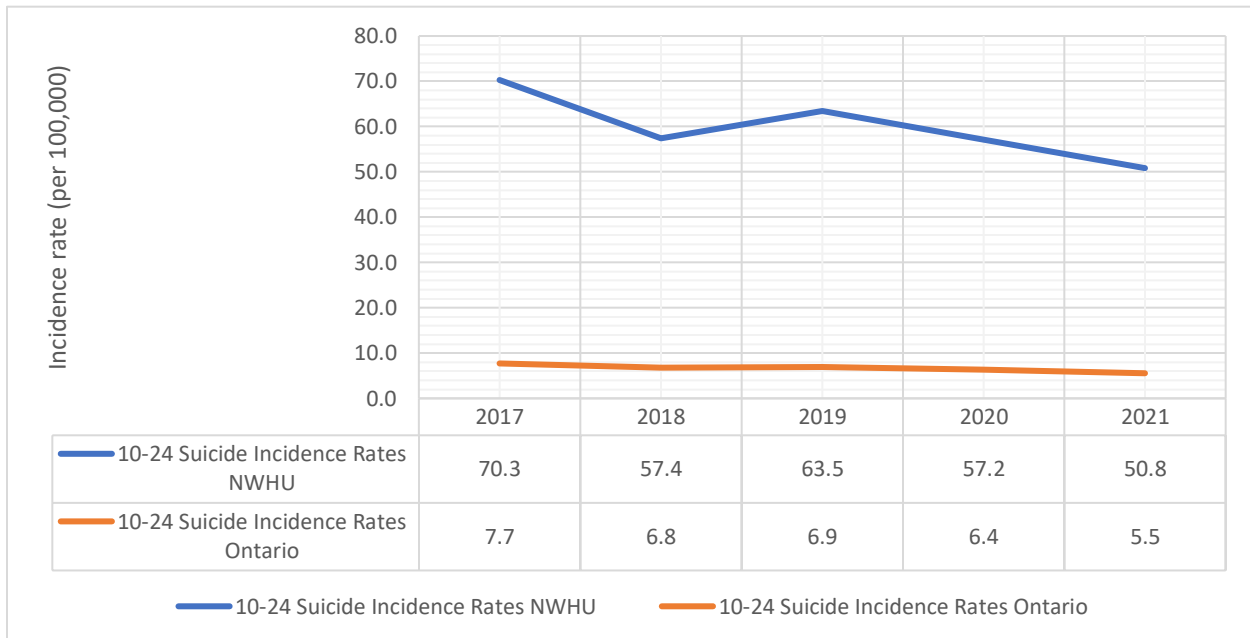
### 10-24 Age Group

97 suicides took place among those aged 10-24 in the Northwestern Health Unit between 2012 and 2021. The two most commonly applied diagnostic code for this demographic was (X70) INTENTIONAL SELF-HARM BY HANGING, STRANGULATION AND SUFFOCATION (93.5%). Between 2012 and 2021, the incidence rate of suicides among those aged 10-24 in the Northwestern Health Unit decreased from 59.1 suicides per 100,000 to 50.8 suicides per 100,000. Incidence rates of suicide among this age group were consistently higher than those of Ontario (Table 7, Figure 19).

**Table 7: Incidence (Per 100, 000) of Suicides Among the 10-24 Age Group in the Northwestern Health Unit (NWHU) vs Ontario, 2012-2021**

Year	10-24 Suicide Incidence Rates (NWHU, Per 100,000)	10-24 Suicide Incidence Rates (Ontario, Per 100,000)
2012	59.119	6.790
2013	71.999	5.259
2014	24.465	6.098
2015	61.162	6.567
2016	89.428	7.160
2017	70.288	7.714
2018	57.358	6.767
2019	63.488	6.941
2020	57.186	6.369
2021	50.832	5.549

**Figure 19: Incidence (Per 100,000) of Suicides Among the 10-24 Age Group in the Northwestern Health Unit and Ontario, 2017-2021**

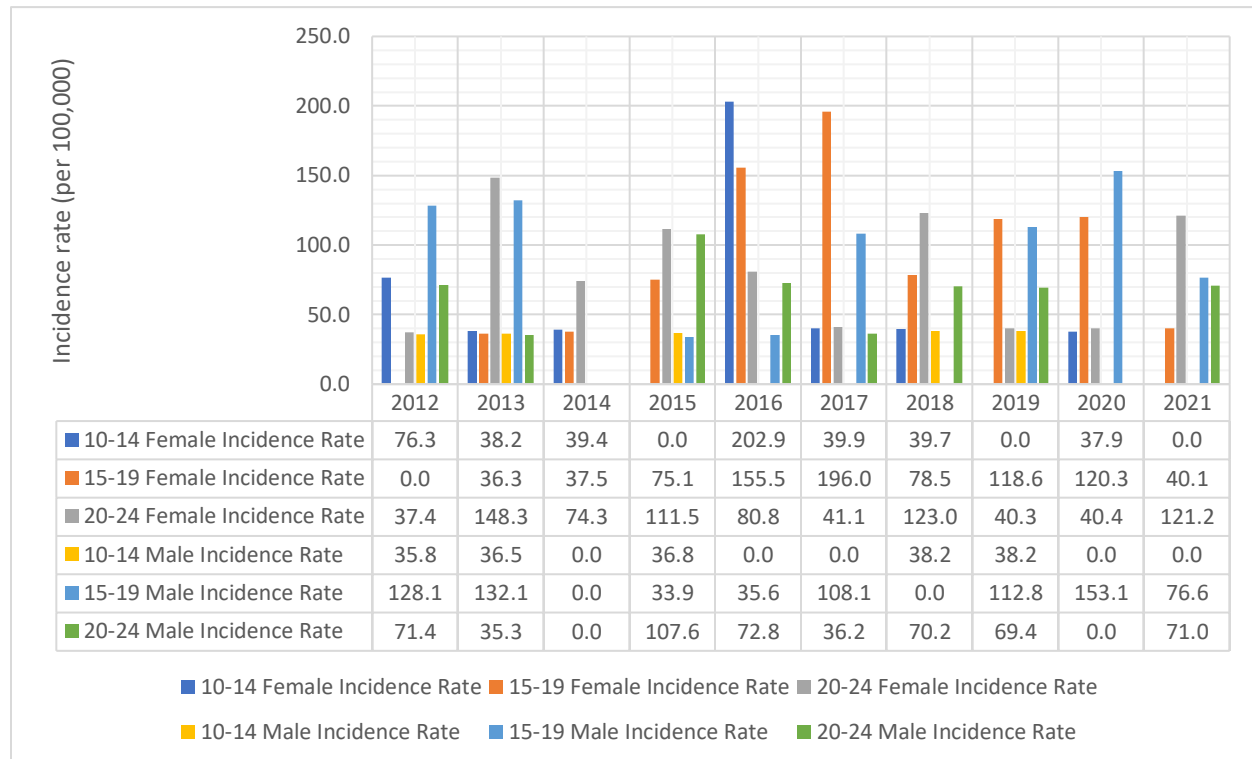




## Sex-Stratification

In 2021, the incidence rates of suicide in the 10-14 age group in the Northwestern Health Unit was 0 among female and male youth. In the 15-19 age group, the incidence rate of suicides was 40.1 per 100,000 among female youth and 76.6 per 100,000 among male youth. In the 20-24 age group, the incidence rate of suicides among females was 121.2 per 100,000 and was 71.0 per 100,000 among males (Figure 20).

**Figure 20: Incidence (Per 100,000) of Suicides Due to Substance-Related Mental and Behavioural Disorders in the Northwestern Health by Sex, 2012-2021**

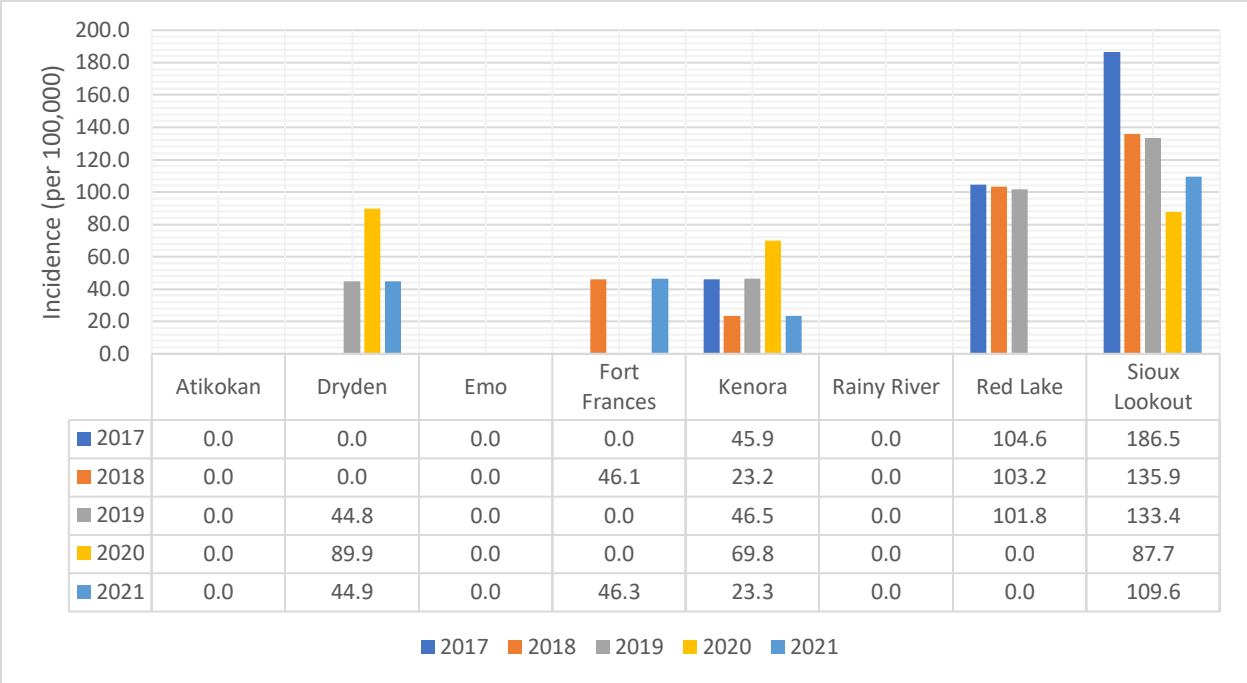


There were no statistically significant differences in incidence rates for suicide between males and females of different age groups. Between 2017 and 2021, females in the 10-14 age group had a suicide incidence rate that was 1.54 times greater than that of males in the same age group; however, this was not statistically significant. Among the 15-19 age group, females had an incidence rate of suicide that was 1.24 times greater than that of males between 2017 and 2021; this also was not statistically significant. Finally, females in the 20-24 age group had an incidence rate of suicide between 2017 and 2021 that was 1.47 times greater among females than males; this statistic was also not statistically significant.

## Local Health Hub

Sioux Lookout had the highest incidence rate for suicides in 2021, at 109.62 suicides per 100,000 people (Figure 21). It also had the highest suicide incidence rate across the NWHU between 2017 and 2021; during this time period, Sioux Lookout's suicide incidence rate was 3.64 times that of Dryden's. This was statistically significant. During this time period, 3 health hubs did not report any suicides at all: Atikokan, Emo and Rainy River.

**Figure 21: Incidence (Per 100,000) of Suicides in the Northwestern Health by Local Health Hub, 2017-2021**



**Interpretation**

Overall, we found that the Northwestern Health Unit has been experiencing high burdens of child and youth mental illness. We also found that burdens of mental illness within the NWHU were not distributed equally, as there were disparities related to both sex and health hub. These results were somewhat surprising. For example, it has also been found in the literature that females tend to have higher rates of self-harm (Gardner et al., 2019). This is similar to our findings on incidence rates related to intentional self-harm, where females tended to have much higher rates than males. In addition, we found that the Northwestern Health Unit is experiencing disproportionately higher rates of suicide among those aged 10-24 compared to provincial rates.

Not all of our findings matched published literature. For instance, prior research found that males tend to experience higher rates of substance abuse in Ontario (Centre for Mental Health and Addiction, n.d.). In addition, reported rates of mental illness between males and females tend to be inconclusive regarding which sex experiences the higher burden (Beckman et al., 2019; Gardner et al., 2019). Yet, we found that across all indicators, female children and youth tended to have greater or similar rates of mental illness compared to male children and youth, including in indicators related to substance-induced mental illness. Moreover, our data also indicates that stronger disparities between rates of males and females are exacerbated by youth, leading to younger females experiencing larger burdens of mental illness for their age group. This trend may have been influenced by rates of mental illness among males increasing as they got older.

One major strength of this report is that it looked at sub-regional variations in the burdens of mental illness among children and youth and provides an overview of mental illness in the NWHU- a region that is underrepresented in other mental illness-based literature. This report is

also timely. Thus, this report will help to support future intervention or surveillance work dedicated to examining and ameliorating child and youth mental health within this public health unit.

## Limitations

There were some limitations to this report. The data used in this report is only accurate as of the time of extraction. In some cases (e.g., population data for 2021), data was not available at the time of writing, and had to be substituted with older data. In addition, data was often pooled across several years for analysis, making it more difficult to examine yearly temporal differences of mental illness in the NWHU. [OBJ]

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