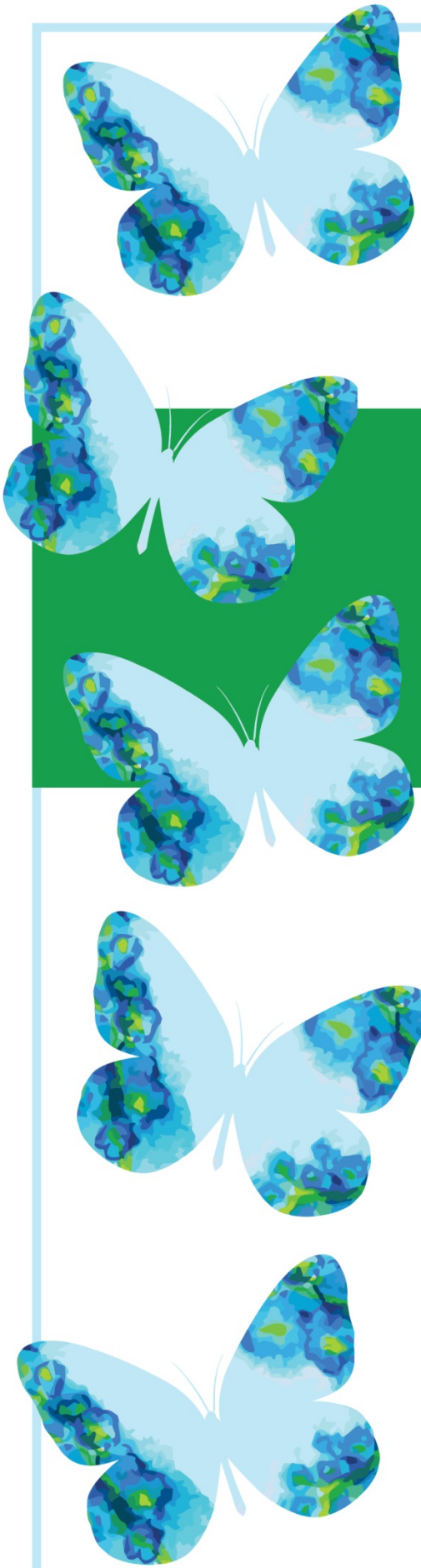

A Community Profile on Suicide and Self-Harm in Waterloo Region

Waterloo Region Suicide Prevention Council
Research Committee

April 2019

Region of Waterloo
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Suicide Prevention Council

Acknowledgements

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Reviewers

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About the report content

This report presents detailed research findings on suicide and self-harm in Waterloo Region. The intended audience for this report includes community service providers and decision-makers to support evidence-informed program and service planning decisions.

As a research committee, we aimed to be thorough in the examination of the available data to better understand the issue of suicide and self-harm in our community. One aspect examined in this report is the mechanism of injury for self-harm injury or suicide death.

We recognize the sensitivity of presenting even statistical information on these topics and have sought to present these findings in an objective way that respects guidelines for reporting[1] and minimizes the risk for potential harm to readers. Restricting access to means for suicide is widely accepted as one of the most effective suicide prevention strategies[2] and is best informed by research evidence on most prevalent mechanisms of injury in the local community.

We also recognize the general topics of self-harm and suicide can be difficult and could induce feelings of emotional distress. We encourage anyone who needs support, for themselves or someone they care about, to connect with any of the local community services listed below.

Services to support individuals struggling with suicide	
Here 24/7 - 24 hour Waterloo Region crisis line	**1-844-437-3247**
ONTX: Ontario-wide online crisis counselling (2pm-2am EST)	**http://www.dcontario.org/ontx.html**
ONTX: Ontario-wide crisis texting service (2pm-2am EST)	**Text: 741741**
Mind Your Mind – interactive tools and resources to build resilience and capacity	**http://mindyourmind.ca**
Crisis Respite Kitchener (short-term stays for mental health crises)	**519-576-7431**

Organizations that offer free walk-in counselling	
KW Counselling (480 Charles St. E. Kitchener)	**Thursday 12 – 6 p.m.**
Family Counselling Centre of Cambridge and North Dumfries	**Thursday 1 – 7 p.m.**

[1] Sinyor M et al (2017). Media guidelines for reporting on suicide: 2017 update of the Canadian Psychiatric Association Policy Paper. Canadian Psychiatric Association. Retrieved March 11, 2019 from https://www.cpa-apc.org/wp-content/uploads/Media-Guidelines-Suicide-Reporting-EN-2018.pdf.

[2] World Health Organization (n.d.) Restricting access to the means for suicide. Retrieved March 11, 2019 from https://www.who.int/mental_health/prevention/suicide/pesticides/en/.

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Executive Summary

One of the four key pillars of the Waterloo Region Suicide Prevention Council (WRSPC) is Research and Evaluation. In 2017, the WRSPC prioritized research as one of three strategic priorities for the coming years. This decision was a result of discussions with Region of Waterloo Public Health and Emergency Services (ROWPHE) after publication of the 2016 ROWPHE report titled 'Suicide in Waterloo Region: a health status report', and a recognition of knowledge gaps with this existing data to understand who is dying by suicide versus who is attempting suicide in Waterloo Region.

To investigate this identified knowledge gap, the WRSPC assembled a Research Priority Committee, which included both WRSPC members and ROWPHE staff. The first purpose of this committee is to conduct research into suicide and self-harm behaviours in the local population in order to better understand who is dying by suicide and who is attempting suicide within the Region. Another purpose was to gather information that may benefit service providers in offering effective, relevant services based on identified community needs.

This report presents the results of phase one of the WRSPC research priority work that seeks to fill some of these identified knowledge gaps. The aim of this report is to describe, as comprehensively as possible, the health status of the Waterloo Region population as it relates to suicide and self-harm, including demographics and selected risk factors, service statistics from selected community services and rates of suicide mortality and self-harm emergency department visits and hospitalizations.

Prevalence of mental illness and suicidal behaviour

Data from the 2015-16 Canadian Community Health Survey (CCHS) provided unique insights into self-reported prevalence of indicators relating to mental illness and suicidal behaviour for selected demographic sub-groups. This new information was not otherwise available from other sources. The prevalence for indicators examined for the Waterloo Region population were: moderate to severe symptoms of depression (8.3 per cent); mood disorder diagnosis (12.2 per cent); anxiety disorder diagnosis (8.4 per cent); lifetime contemplation of suicide (15.3 per cent); lifetime suicide planning (7.4 per cent); and lifetime suicide attempts (4.8 per cent). Overall, the prevalence for mood disorders, lifetime suicidal thoughts, and lifetime suicide planning were statistically significantly higher in Waterloo Region than Ontario (8.7 per cent, 10.7 per cent, and 3.7 per cent, respectively in Ontario).

There were some clear sociodemographic trends across all the CCHS indicators, particularly at the Ontario level. The following groups had higher rates of mental illness and suicidal behaviour, relative to their counterparts: females; youth (aged 15 to 24 years); individuals with lower income; individuals with less than high school education; First Nations,

Métis and Inuit peoples; lesbian, gay and bisexual individuals; single (never married), widowed, separated or divorced individuals; and non-immigrants. Of the sub-groups assessed, lesbian, gay and bisexual individuals and Indigenous peoples had by far the highest rates of mental illness and suicidal behaviour, often 3.5 to 4 times higher than the overall rate.

The results available from the Ontario Student Drug Use and Health Survey (OSDUHS) for Waterloo Wellington Local Health Integration Network (WWLHIN) secondary students supplemented the results from the CCHS. While CCHS results indicated higher local prevalence of suicidal behaviour compared to Ontario, there were no statistically significant differences between the WWLHIN and the overall Ontario student population. OSDUHS also provided some insights around the mental health and well-being of youth. In the absence of more representative findings, they can be considered as context for the local community.

Suicidal behaviour in community mental health clients and police occurrences

This report also briefly describes some service data from the Canadian Mental Heath Association of Waterloo Wellington (CMHAWW). In CMHAWW client populations, youth had higher rates of suicidal behaviour or self-harm issues compared to others. Clients whose gender was unknown or ‘another identity’ (not identifying as binary male or female) had higher rates of suicidal behaviour or self-harm compared to males or females, which may be the only indicator from all local data sources that sheds insight into the prevalence of suicidal behaviour in transgender individuals.

Data from the Waterloo Regional Police Service (WRPS) illustrated that police respond to about 1,300 to 1,800 suicide attempts and about 33 to 55 suspected suicide deaths annually. These findings, in the context of other findings from emergency department visit and mortality data, suggest that police likely respond to a large proportion of all serious suicide attempts and deaths each year in the local community. This highlights the importance of police services as a critical partner in suicide prevention work in Waterloo Region.

Emergency department visits and hospitalizations for intentional self-harm

Hospitalizations and emergency department (ED) visits represent a significant proportion of the burden of injury in Waterloo Region for suicide and intentional self-harm, particularly in females. In 2017, there were 1,109 ED visits for intentional self-harm and 475 hospitalizations, where hospitalizations represent a sub-set of incidents presenting in ED that were subsequently admitted into hospital.

Rates for both ED visits and hospitalizations for intentional self-harm were consistently and statistically significantly higher for Waterloo Region than for all of Ontario from 2006 to 2017 (e.g. 199.8 versus 139.4 ED visits per 100,000 population in Waterloo Region and Ontario in 2017, respectively). Rates for ED visits have been increasing locally and provincially since

2011, with more marked increases in Waterloo Region. The rate of ED visits for self-harm in Waterloo Region in 2017 was 199.8 visits per 100,000 population, a 63 per cent increase from 2011. The hospitalization rates increased over time at the provincial level, from 51.8 to 63.9 hospitalizations per 100,000 population from 2008 to 2017, and increased slightly in Waterloo Region, though with some fluctuations. In 2017, the Waterloo Region self-harm hospitalization rate was 85.5 per 100,000 population.

Once age and sex are also taken into consideration, it is evident the increases in the overall ED visit rate for Waterloo Region are largely attributable to the increases in females and particularly those in young females. Females aged 10 to 19 had the highest rate of ED visits for intentional self-harm, with 822.8 visits per 100,000 for 2013-17 in Waterloo Region, roughly four times as high as the overall rates.

Similarly, females in this age group also had the highest hospitalization rates (307.0 per 100,000 for 2013-17 in Waterloo Region). When youth (10 to 14, 15 to 18, and 19 to 24 years) specifically were examined, the highest rates of ED visits and hospitalizations were again for females, particularly those aged 15 to 18 years of age (1,266.0 ED visits per 100,000 for 2013-17). Overall, adolescent females are disproportionately represented in the increases in the self-harm ED visit and hospitalization rates.

When patterns of repeat ED visits for self-harm were assessed, females and particularly younger females were found to be the most likely to be repeat patients in ED for self-harm.

The majority of ED visits in Waterloo Region for intentional self-harm were drug and alcohol-related (68.7 per cent) followed by self-harm with a sharp object (22.3 per cent). Hospitalizations showed similar trends for the mechanism of intentional self-harm injuries, with 81.0 per cent being drug or alcohol-related, followed by self-harm with a sharp object (10.4 per cent). The prevalence of mechanisms of injury for youth varied slightly from those for all ages, where youth were slightly more likely to present in ED for self-harm with a sharp object (16.9 per cent), though drug or alcohol poisoning remains the most common mechanism of injury (74.2 per cent). These trends mirrored those seen provincially.

Suicide mortality

Suicide is the 16th leading cause of death overall in Waterloo Region and the 17th for the province. The most significant population health impact of suicide death is apparent when premature mortality is taken into consideration. Death by intentional self-harm is the second leading cause of premature mortality in Waterloo Region, and the third for the province.

Trends in suicide mortality rates indicate they are increasing slightly over time, for all of Ontario as well as locally. There were 55 suicide deaths in Waterloo Region in 2015 (10.3 deaths per 100,000 population). With relatively small numbers, the variability in local suicide deaths is to be expected and the changes in rates are not statistically significant over time nor are they significantly different from provincial rates. Even so, the local rates appear to be increasing somewhat and it warrants monitoring into the future.

Suicide mortality rates both locally and provincially are consistently higher for males than females, at approximately three times the rate of suicide deaths for men than women. Suicide mortality peaks in males aged 50 to 59 (25.5 deaths per 100,000 population in Waterloo Region in 2011-15). When youth suicide deaths (ages 10 to 24 years) specifically were examined, adolescent males aged 19 to 24 years had the highest rates (17.7 deaths per 100,000 population for 2011-15).

The most prevalent mechanism of injury in local suicide deaths was hanging, strangulation or suffocation (48.0 per cent), followed by drug or alcohol-related mechanism (19.4 per cent). Most trends in mechanism of injury for suicide were similar in Waterloo Region compared to the province, except for jumping from high places, which was less common in Waterloo Region than for all of Ontario. The key differences in mechanism of injury in Waterloo Region between the sexes were that males had a higher proportion of hanging, strangulation or suffocation than females (51.2 versus 37.5 per cent), whereas females had a higher proportion of drug or alcohol-related poisoning (39.1 versus 13.5 per cent). Firearms use was the third most common mechanism for males (10.2 per cent) while few local females die by firearms (1.6 per cent).

Place of injury for suicide deaths were also examined and the vast majority of suicide deaths in both Waterloo Region and Ontario take place at home (80 per cent or more).

Data from the Office of the Chief Coroner of Ontario reveals about one in five suicide deaths have a history of drug or alcohol abuse, nearly half have a history of treatment of psychiatric conditions and about a quarter have a known prior suicide attempt. A large proportion, about forty per cent, had none of the three risk factors evident in the coroner's investigation. These trends were similar for a ten-year period (2007-16) for both Waterloo Region and Ontario.

Discussion and limitations

Overall, some trends could be seen in Waterloo Region, including high risk populations and risk factors locally. Additionally, it was found that ED visits and hospitalizations related to self-harm are higher in Waterloo Region than Ontario, and appear to be increasing over time. However, some knowledge gaps about suicide and self-harm in the local community persist despite the broad and, at times, detailed existing data results.

Little is known about suicidal behaviour in transgender people in the local community. Similarly, little is known about suicidal behaviour in post-secondary students, despite the large student population. In general, it is unclear to what extent other sociodemographic groups die by suicide or engage in serious self-harming behaviour aside from the trends reportable by age and sex. While it is clear that women are seen more frequently than men in EDs and hospitals for self-harm, men more frequently die by suicide. It is unknown to what extent individuals who are at greatest risk for suicide, or those who have died by suicide, had recent encounters with primary care providers or mental health service providers, which would offer opportunities for suicide risk screening or assessment.

When examining any data related to suicide and intentional self-harm, it is important to take the limitations of the data into consideration. It is broadly understood in epidemiological research on suicide mortality that all data sources will underestimate the true incidence of suicide mortality, as it can be difficult or impossible to determine intent. As well, it should be recognized that ED visit and hospitalization data do not distinguish between incidents of self-harm with and without suicidal intent.

Further research by WRSPC, in partnership with ROWPHE and the Centre for Community Based Research will attempt to fill some of these knowledge gaps through primary, qualitative, community-based research meant to provide a deeper understanding of suicide and self-harm in the local community and existing services and supports. This research will purposefully include perspectives from diverse groups and individuals whose experiences are not reflected in the quantitative sources of data available in the community, such as those presented in this report.

Background

One of the four key pillars of the Waterloo Region Suicide Prevention Council (WRSPC) is Research and Evaluation. In 2017, the WRSPC prioritized research as one of three strategic priorities for coming years. This decision was a result of discussion spurred by the most recent findings on local suicide statistics from the report by Region of Waterloo Public Health and Emergency Services, 'Suicide in Waterloo Region: a health status report' (2016), as well as the acknowledgement of gaps in knowledge with the existing data to understand who is dying by suicide versus who is attempting suicide in Waterloo Region.

Beginning in early 2017, the WRSPC assembled a Research Priority Committee to conduct an in-depth investigation into suicide and self-harm behaviours in the local population, in order to better understand who is dying by suicide and who is attempting suicide within the Region and to gather information that may benefit service providers in offering effective, relevant services based on identified community needs.

This committee has since developed a collaborative community research project that aims to better understand who is dying by suicide, who is attempting suicide in Waterloo Region and seeks to identify groups at higher risk, who may be missed by current suicide prevention efforts. The research committee aims to accomplish this goal through a two-phase research project.

In phase one, a comprehensive report on suicide and self-harm behaviours in Waterloo Region was compiled to thoroughly describe the demographics and risk factor profiles of who is dying by suicide and who is attempting suicide within Waterloo Region, using all existing available community and secondary data sources. This report presents the results for phase one of the research project. It describes the health status of the Waterloo Region population as it relates to suicide and self-harm, including some demographics and risk factors, as well as service statistics for selected community services. It organizes the findings by topic and by data source, presenting the most recent available information from each source and concludes with implications of the findings, limitations of the data sources and a discussion of the gaps in knowledge about suicide and self-harm behaviours in Waterloo Region.

In phase two, the research project will employ qualitative methods and a community-based research approach to gain a deeper understanding of the trends within Waterloo Region around who is attempting suicide and who is dying by suicide and subsequently determine relevant suicide prevention strategies. The full research proposal describes the phase two research in greater detail (Janzen, Jenkins and WRSPC Research Committee, 2018).

1. Prevalence of mental illness and suicidal behaviour

This section summarizes population-level survey findings on the prevalence of self-reported mental illness and suicidal behaviour in adults and youth, as well as a variety of mental health-related factors in youth. While suicide is a complex issue with multiple causes, mental illness is a common risk factor and people with mental illness, particularly depression, are at higher risk for suicide than the general population (Public Health Agency of Canada, 2016).

It is important to note that the presence of a mental illness does not mean someone will die by suicide and it is not necessary for someone to be diagnosed with a mental illness for them to engage in suicidal thoughts or behaviours. For these reasons, select mental health-related indicators have been reported here in addition to those on suicidal behaviour.

1.1. The Canadian Community Health Survey (2015-16)

The Canadian Community Health Survey (CCHS) is a national survey conducted by Statistics Canada that gathers self-reported health information from individuals aged 12 years and older and can be reported at national, provincial and health region levels. In 2015-16, the CCHS included content in Ontario about mental illness and suicidal behaviour.

The following tables present the results of this CCHS data by several sociodemographic variables, for both Waterloo Region and Ontario. Estimated proportions of the population for each measure are provided, along with 95 per cent confidence intervals (CIs) for the estimates. The estimated percentages have been shaded from light to dark to help visually highlight where higher (dark) versus lower (light) proportions exist. Statistical significance, assessed using non-overlapping 95 per cent CIs, is denoted using symbols. Note that the questions about mood disorders, anxiety disorders and symptoms of depression were asked of all survey respondents aged 12 years and older, but the questions about suicidal behaviour were only asked of those aged 15 years and older.

In general, there were some clear sociodemographic trends across all the indicators, particularly at the Ontario level, that align with previous scientific knowledge about populations at higher risk for self-harm and suicide (Public Health Agency of Canada, 2016). The following groups had higher rates of suicidal behaviour relative to their counterparts:

- females (compared to males)
- youth (aged 15 to 24 years; compared to older individuals)
- individuals with lower income (compared to those with higher income)
- individuals with less than high school education (compared to those with higher levels of income)
- First Nations, Métis and Inuit peoples
- lesbian, gay and bisexual individuals

- single (never married), widowed, separated and divorced individuals (compared to married or common-law individuals)
- Canadian born individuals (compared to immigrants)

Table 1.1. Proportion of population aged 12 years and older with symptoms of moderate to severe depression, by selected characteristics, Waterloo Region and Ontario, 2015-16

Measure		Waterloo Region		Ontario	
	Overall	8.3	(CI: 6.1-10.4)	6.9	(CI: 6.4- 7.4)
Sex	Male	5.5	(CI: 2.7- 8.4)[D]	4.9	(CI: 4.3- 5.5)*
	Female	11.0	(CI: 7.2-14.9)[C]	8.8	(CI: 8.0- 9.5)*
Age groups (years)	12 to 24 years	17.5	(CI: 9.2-25.8)[C]*	10.5	(CI: 8.9-12.0)*
	25 to 49 years	6.0	(CI: 2.9- 9.1)[D]*	6.6	(CI: 5.8- 7.4)*
	50 to 64 years	7.2	(CI: 3.4-10.9)[D]	6.7	(CI: 5.6- 7.8)*
	65 years and older	4.9	(CI: 1.6- 8.3)[D]*	3.6	(CI: 2.9- 4.2)*
Household income (quintiles)	Q1 (Lowest income)	15.1	(CI: 8.1-22.2)[C]	13.1	(CI: 11.6-14.6)*
	Q2	14.8	(CI: 7.4-22.3)[D]	9.0	(CI: 7.7-10.3)*
	Q3		NR	5.3	(CI: 4.4- 6.3)*
	Q4		NR	4.9	(CI: 3.8- 6.0)*
	Q5 (Highest income)		NR	2.5	(CI: 1.9- 3.1)*
Highest level of education	Less than high school	12.7	(CI: 4.7-20.7)[D]	10.1	(CI: 8.6-11.6)*
	High school or equivalent	4.2	(CI: 1.8- 6.6)[D]*+	8.7	(CI: 7.5- 9.8)*
	College or trades diploma or certificate	11.4	(CI: 6.8-16.0)[C]*	6.7	(CI: 5.8- 7.5)*
	University bachelor's degree or higher		NR	3.9	(CI: 3.1- 4.6)*
Aboriginal identity	First Nations, Métis or Inuit		NR	15.6	(CI: 11.5-19.7)*
	Non-aboriginal	7.2	(CI:4.9- 9.5)[C]	6.5	(CI: 6.0- 7.0)*
Immigration status	Immigrant		NR	4.7	(CI: 3.8- 5.7)*
	Canadian-born	9.8	(CI: 7.2-12.4)	7.7	(CI: 7.1- 8.3)*
Sexual orientation	Heterosexual	7.3	(CI: 5.1- 9.5)[C]	6.3	(CI: 5.8- 6.8)*
	Homosexual, bisexual or another orientation		NR	20.5	(CI: 14.7-26.4)*
Marital status	Married or common law	4.5	(CI: 2.5- 6.5)[C]*	4.6	(CI: 4.1- 5.2)*
	Widowed, separated or divorced	10.2	(CI: 4.7-15.7)[D]	8.6	(CI: 7.3- 9.9)*
	Single (never married)	14.9	(CI: 9.2-20.6)[C]*	10.3	(CI: 9.1-11.4)*

Source: Canadian Community Health Survey (CCHS), (2015-16). Statistics Canada, Share File, Ontario Ministry of Health and Long-Term Care (MOHLTC).

Symptoms of moderate to severe depression were assessed using the Patient Health Questionnaire (PHQ-9).

C,D = high sampling variability, caution in interpreting results is recommended.

NR = Not reportable due to unacceptably high sampling variability or insufficient sample size.

* = statistically significant differences between sociodemographic variable categories, using non-overlapping 95% confidence intervals (CIs).

+ = statistically significant differences between Waterloo Region and Ontario, using non-overlapping 95% CIs.

Colours correspond to the relative size of the estimate. Darker shades denote higher rates of the indicator.

As shown in Table 1.1, overall about 8.3 per cent of Waterloo Region residents and 6.9 per cent of Ontarians aged 12 years and older had symptoms of moderate to severe depression when screened with the Patient Health Questionnaire (PHQ-9).[3] There were essentially no statistically significant differences between Waterloo Region and Ontario estimates. There were statistically significant differences in the prevalence of moderate to severe depressive symptoms within all sociodemographic groups examined at the Ontario level.

In Waterloo Region, there were statistically significant differences in the prevalence of moderate to severe depressive symptoms by age, level of education and by marital status.

In general, the prevalence was highest in youth aged 12 to 17 (17.5 per cent), those with lower high school education and in people who have never been married (singles, 14.9 per cent). Caution should be exercised with the results for level of education due to high variability of the estimates.

Rates were not reportable for First Nations, Metis or Inuit peoples or for non-heterosexual individuals in Waterloo Region, but it is worth noting that these two groups experienced the highest rates of moderate to severe depressive symptoms at the Ontario level (15.6 and 20.5 per cent, respectively).

[3] A copy of the Patient Health Questionnaire (PHQ-9) can be accessed here: https://www2.gov.bc.ca/assets/gov/health/practitioner-pro/bc-guidelines/depression_patient_health_questionnaire.pdf

Table 1.2. Proportion of population aged 12 years and older with a mood disorder (self-reported), by selected characteristics, Waterloo Region and Ontario, 2015-16

Measure		Waterloo Region		Ontario	
	Overall	12.2	(CI: 9.3-15.1)+	8.7	(CI: 8.2- 9.2)
Sex	Male	9.2	(CI: :4.9-13.4)C	6.6	(CI: 5.9- 7.3)*
	Female	15.1	(CI: 10.8-19.5)	10.7	(CI: 10.0-11.4)*
Age groups (years)	12 to 24 years	12.8	(CI: 5.0-20.5)D	7.7	(CI: 6.6- 8.9)*
	25 to 49 years	13.5	(CI: 9.1-18.0)C	8.7	(CI: 7.8- 9.6)
	50 to 64 years	11.3	(CI: 6.8-15.9)	10.5	(CI: 9.5-11.5)*
	65 years and older	9.0	(CI: 4.3-13.7)D	7.3	(CI: 6.4- 8.1)*
Household income (quintiles)	Q1 (Lowest income)	19.4	(CI: 11.5-27.2)C*	15.9	(CI: 14.6-17.3)*
	Q2	17.1	(CI: 8.6-25.6)D	8.5	(CI: 7.5- 9.6)*
	Q3	12.6	(CI: 4.9-20.3)D	8.0	(CI: 6.9- 9.2)*
	Q4		NR	6.1	(CI: 5.1- 7.1)*
	Q5 (Highest income)	5.8	(CI: 2.4- 9.2)D*	5.0	(CI: 4.2 -5.7)*
Highest level of education	Less than high school		NR	10.2	(CI: 8.8-11.5)*
	High school or equivalent	12.6	(CI: 6.7-18.4)C	10.1	(CI: 9.0-11.2)*
	College or trades diploma or certificate	14.9	(CI: 10.2-19.7)C	9.3	(CI: 8.4-10.2)*
	University bachelor's degree or higher	7.7	(CI: 3.4-11.9)D	6.0	(CI: 5.2- 6.8)*
Aboriginal identity	First Nations, Métis or Inuit		NR	18.5	(CI: 14.6-22.3)*
	Non-aboriginal	11.1	(CI: 8.2-14.1)	8.4	(CI: 7.9- 8.9)*
Immigration status	Immigrant	10.4	(CI: 4.9-16.0)D	5.7	(CI: 4.8- 6.6)*
	Canadian-born	12.7	(CI: 9.3-16.2)	10.1	(CI: 9.5-10.7)*
Sexual orientation	Heterosexual	11.6	(CI: 8.4-14.8)	8.1	(CI: 7.6- 8.6)*
	Homosexual, bisexual or another orientation		NR	21.2	(CI: 16.7-25.8)*
Marital status	Married or common law	10.0	(CI: 6.6-13.3)	6.9	(CI: 6.3- 7.5)*
	Widowed, separated or divorced	13.2	(CI: 7.6-18.9)C	14.1	(CI: 12.3-15.8)*
	Single (never married)	16.2	(CI: 10.0-22.3)C	10.0	(CI: 9.1-11.0)*

Source: CCHS, (2015-16). Statistics Canada, Share File, Ontario MOHLTC.
Mood disorders include, but are not necessarily limited to, depression, bipolar, mania, and dysthymia.
C,D = high sampling variability, caution in interpreting results is recommended.
NR = Not reportable due to unacceptably high sampling variability or insufficient sample size.
* = statistically significant differences between sociodemographic variable categories, using non-overlapping 95% confidence intervals (CIs).
+ = statistically significant differences between Waterloo Region and Ontario, using non-overlapping 95% CIs.
Colours correspond to the relative size of the estimate. Darker shades denote higher rates of the indicator.

As shown in Table 1.2, overall Waterloo Region residents aged 12 years and older experienced a significantly higher rate of mood disorders (including but not necessarily limited to depression, bipolar, mania and dysthymia) compared to Ontarians (12.2 versus 8.7 per cent, respectively). There were statistically significant differences in the prevalence of mood disorders for all sociodemographic groups examined at the Ontario level.

In Waterloo Region, there were statistically significant differences in the prevalence of mood disorders by level of household income. In general, the prevalence of mood disorders in Waterloo Region was highest in those with the lowest household income (19.4 per cent), females (15.1 per cent) and those individuals who are single, never married (16.2 per cent). Caution should be exercised with many of these results due to high variability of the estimates.

Rates were not reportable for Waterloo Region First Nations, Metis or Inuit peoples or for non-heterosexual individuals, but it is worth noting that these two groups experienced the highest rates of mood disorders at the Ontario level (18.5 and 21.2 per cent, respectively).

Table 1.3. Proportion of population aged 12 years and older with an anxiety disorder (self-reported), by selected characteristics, Waterloo Region and Ontario, 2015-16

Measure		Waterloo Region		Ontario	
	Overall	8.4	(CI: 6.3-10.6)	8.6	(CI: 8.0- 9.0)
Sex	Male	7.6	(CI: 4.2-10.9)[C]	6.3	(CI: 5.6- 7.0)*
	Female	9.3	(CI: 6.2-12.4)[C]	10.6	(CI: 9.9-11.4)*
Age groups (years)	12 to 24 years		NR	11.7	(CI: 10.1-13.3)*
	25 to 49 years	9.8	(CI: 5.8-13.7)[C]	9.0	(CI: 8.1- 9.9)*
	50 to 64 years	5.7	(CI: 2.9- 8.5)[C]	7.6	(CI: 6.8 -8.5)*
	65 years and older	7.9	(CI: 2.6-13.2)[D]	5.5	(CI: 4.8- 6.2)*
Household income (quintiles)	Q1 (Lowest income)	18.1	(CI: 10.3-25.8)[C]*	14.2	(CI: 12.8-15.5)*
	Q2	10.5	(CI: 3.7-17.2)[D]	9.2	(CI: 8.0-10.4)*
	Q3	3.7	(CI: 1.2- 6.3)[D]*	7.4	(CI: 6.3- 8.4)*
	Q4	7.5	(CI: 3.3-11.8)[D]	6.7	(CI: 5.5- 7.9)*
	Q5 (Highest income)		NR	5.1	(CI: 4.2- 5.9)*
Highest level of education	Less than high school	11.1	(CI: 3.7-18.5)[D]	10.8	(CI: 9.4-12.3)*
	High school or equivalent	9.1	(CI: 3.8-14.4)[D]	9.6	(CI: 8.5-10.6)*
	College or trades diploma or certificate	8.4	(CI: 4.1-12.8)[D]	9.4	(CI: 8.4-10.4)*
	University bachelor's degree or higher	5.7	(CI: 2.6- 8.9)[D]	5.2	(CI: 4.4- 5.9)*
Aboriginal identity	First Nations, Métis or Inuit		NR	22.2	(CI: 17.9-26.5)*
	Non-aboriginal	7.8	(CI: 5.5-10.1)	8.0	(CI: 7.5- 8.6)*
Immigration status	Immigrant		NR	4.6	(CI: 3.8- 5.4)*
	Canadian-born	9.5	(CI: 6.8-12.1)	10.3	(CI: 9.6-10.9)*
Sexual orientation	Heterosexual	8.6	(CI: 6.2-11.1)	7.7	(CI: 7.2- 8.2)*
	Homosexual, bisexual or another orientation		NR	22.7	(CI: 17.9-27.6)*
Marital status	Married or common law	7.2	(CI: 4.6-13.9)[C]	6.3	(CI: 5.7- 6.8)*
	Widowed, separated or divorced	8.6	(CI: 3.3-13.9)[D]	10.2	(CI: 8.8-11.6)*
	Single (never married)	10.8	(CI: 5.9-15.8)[C]	11.9	(CI: 10.7-13.1)*

Source: CCHS, (2015-16). Statistics Canada, Share File, Ontario MOHLTC.

Anxiety disorders include, but are not necessary limited to, phobias, obsessive-compulsive or a panic disorder.

C,D = high sampling variability, caution in interpreting results is recommended.

NR = Not reportable due to unacceptably high sampling variability or insufficient sample size.

* = statistically significant differences between sociodemographic variable categories, using non-overlapping 95% confidence intervals (CIs).

Colours correspond to the relative size of the estimate. Darker shades denote higher rates of the indicator.

As shown above, about 8.4 per cent of Waterloo Region residents and 8.6 per cent of Ontarians aged 12 years and older reported having an anxiety disorder (including, but not necessarily limited to phobias, obsessive-compulsive disorder or panic disorders). There were no statistically significant differences between Waterloo Region and Ontario estimates. There were statistically significant differences in the prevalence of anxiety disorders for all sociodemographic groups examined at the Ontario level.

In Waterloo Region, there were statistically significant differences by level of household income. The prevalence of anxiety disorders was highest in those with the lowest level of income (18.1 per cent). Caution should be exercised due to some high variability of the estimates.

Rates were not reportable for Waterloo Region First Nations, Metis or Inuit peoples or for non-heterosexual individuals, but it is worth noting that these two groups experienced the highest rates of anxiety disorders at the Ontario level (22.2 and 22.7 per cent, respectively).

Table 1.4. Proportion of population aged 15 years and older who ever seriously contemplated suicide, by selected characteristics, Waterloo Region and Ontario, 2015-16

Measure		Waterloo Region		Ontario	
	Overall	15.3	(CI: 12.2-18.3)+	10.7	(CI: 10.1-11.2)
Sex	Male	11.2	(CI: 7.2-15.2)	8.8	(CI: 8.0- 9.5)*
	Female	19.2	(CI: 14.2-24.3)	12.5	(CI: 11.7-13.3)*
Age groups (years)	15 to 24 years	20.9	(CI: 9.2-32.6)D	12.9	(CI: 11.2-14.6)*
	25 to 49 years	17.1	(CI: 12.0-22.3)C	11.1	(CI: 10.2-12.0)*
	50 to 64 years	13.1	(CI: 7.4-18.8)C	11.7	(CI: 10.6-12.9)*
	65 years and older	7.7	(CI: 4.0-11.5)C	6.1	(CI: 5.3 -6.9)*
Household income (quintiles)	Q1 (Lowest income)	22.6	(CI: 13.7-31.5)C	14.0	(CI: 12.6-15.3)*
	Q2	19.3	(CI: 11.3-27.4)C	12.3	(CI: 10.9-13.6)*
	Q3	16.5	(CI: 8.2-24.8)D	10.1	(CI: 8.9-11.4)*
	Q4	8.4	(CI: 3.0-13.8)D	8.8	(CI: 7.6-10.0)*
	Q5 (Highest income)	10.6	(CI: 3.8-17.4)D	8.6	(CI: 7.4- 9.7)*
Highest level of education	Less than high school	17.1	(CI: 7.0-27.1)D	12.6	(CI: 10.9-14.4)*
	High school or equivalent	15.6	(CI: 8.9-22.3)C	12.0	(CI: 10.7-13.3)*
	College or trades diploma or certificate	17.4	(CI: 11.8-22.9)C	11.6	(CI: 10.6-12.6)*
	University bachelor's degree or higher	11.5	(CI: 6.0-17.1)C	7.8	(CI: 6.9- 8.7)*
Aboriginal identity	First Nations, Métis or Inuit	53.3	(CI: 30.0-76.7)C*	27.2	(CI: 22.7-31.7)*
	Non-aboriginal	13.8	(CI: 10.6-17.1)*	10.3	(CI: 9.7-10.9)*
Immigration status	Immigrant	7.5	(CI: 3.3-11.6)D*	6.0	(CI: 5.1- 7.0)*
	Canadian-born	18.1	(CI: 14.3-21.9)*+	13.0	(CI: 12.3-13.7)*
Sexual orientation	Heterosexual	14.3	(CI: 11.2-17.4)*+	10.0	(CI: 9.4-10.5)*
	Homosexual, bisexual or another orientation	54.3	(CI: 26.7-81.9)D*	38.3	(CI: 32.2-44.4)*
Marital status	Married or common law	12.3	(CI: 8.5-16.0)C	8.2	(CI: 7.6- 8.9)*
	Widowed, separated or divorced	22.6	(CI: 13.6-31.6)C	14.3	(CI: 12.7-15.9)*
	Single (never married)	19.2	(CI: 12.0-26.4)C	14.0	(CI: 12.8-15.3)*

Source: CCHS, (2015-16). Statistics Canada, Share File, Ontario MOHLTC.

C,D = high sampling variability, caution in interpreting results is recommended.

NR = Not reportable due to unacceptably high sampling variability or insufficient sample size.

* = statistically significant differences between sociodemographic variable categories, using non-overlapping 95% confidence intervals (CIs).

+ = statistically significant differences between Waterloo Region and Ontario, using non-overlapping 95% CIs.

Colours correspond to the relative size of the estimate. Darker shades denote higher rates of the indicator.

As shown above, overall Waterloo Region residents aged 15 years and older were significantly more likely to have ever seriously contemplated suicide compared Ontarians (15.3 versus 10.7 per cent, respectively). There was one significant difference between Waterloo Region and Ontario estimates among the sociodemographic characteristics; specifically, that non-immigrants were significantly more likely to have ever contemplated suicide in Waterloo Region compared to Ontario (18.1 versus 13.0 per cent). There were statistically significant differences in the prevalence of ever having contemplated suicide for all sociodemographic groups examined at the Ontario level.

In Waterloo Region, there were statistically significant differences by Aboriginal identity, immigration status and sexual orientation. First Nations, Métis and Inuit peoples were significantly more likely to have ever contemplated suicide compared to non-aboriginals (53.3 compared to 13.8 per cent), Canadian-born individuals were more likely than immigrants (18.1 versus 7.5 per cent) and homosexual, bisexual or people with another sexual orientation were significantly more likely than heterosexual people (54.3 versus 14.3 per cent).

The significant difference between Canadian-born individuals and immigrants may be explained in part by the inclusion of Aboriginal individuals within the Canadian-born population. It may also be explained by a varying cultural understanding of suicide and/or differing levels of stigmatization of suicide within diverse cultures resulting in self-report bias.

Rates for Aboriginals and non-heterosexual individuals in particular are extremely high, with more than half of these individuals having ever contemplated suicide in their lifetime. These are rates about 3.5 times higher than the overall rate for Waterloo Region.

The rates for these two groups at the Ontario level are also very high (27.2 and 38.3 per cent, respectively), though not as high as for these groups in Waterloo Region. The rates between Waterloo Region and Ontario for these two groups are not statistically significant, however, the lack of significant differences may be partly due to limited statistical power with the Waterloo Region estimates.

Table 1.5. Proportion of population aged 15 years and older who ever made a plan to seriously attempt suicide, by selected characteristics, Waterloo Region and Ontario, 2015-16

Measure		Waterloo Region		Ontario	
	Overall	7.4	(CI: 4.9 -10.0)[C+]	3.7	(CI: 3.4 -4.0)
Sex	Male	4.4	(CI: 1.5 -7.4)[D]	2.6	(CI: 2.3 -3.0)*
	Female	10.4	(CI: 6.2 -14.6)[C+]	4.6	(CI: 4.1 -5.1)*
Age groups (years)	15 to 24 years	NR		5.7	(CI: 4.6 -6.9)*
	25 to 49 years	7.5	(CI: 3.5 -11.5)[D]	3.9	(CI: 3.4 -4.4)*
	50 to 64 years	6.2	(CI: 2.4 -9.9)[D]	3.7	(CI: 3.1 -4.2)*
	65 years and older	NR		1.4	(CI: 1.0 -1.7)*
Household income (quintiles)	Q1 (Lowest income)	NR		5.9	(CI: 5.1 -6.8)*
	Q2	11.3	(CI: 4.0 -18.7)[D]	4.3	(CI: 3.4 -5.1)*
	Q3	10.0	(CI: 3.3 16.7)[D]	3.4	(CI: 2.7 -4.0)*
	Q4	NR		2.4	(CI: 1.8 -2.9)*
	Q5 (Highest income)	NR		2.6	(CI: 2.0 -3.2)*
Highest level of education	Less than high school	NR		4.6	(CI: 3.8 -5.5)*
	High school or equivalent	3.4	(CI: 1.3 -5.5)[D]	4.5	(CI: 3.7 -5.3)*
	College or trades diploma or certificate	10.5	(CI: 5.1 -15.8)[D+]	3.9	(CI: 3.4 -4.5)*
	University bachelor's degree or higher	NR		2.4	(CI: 1.9 -2.9)*
Aboriginal identity	First Nations, Métis or Inuit	NR		12.3	(CI: 9.2 -15.5)*
	Non-aboriginal	6.5	NR	3.5	(CI: 3.2 -3.8)*
Immigration status	Immigrant	NR		1.6	(CI: 1.2 -2.1)*
	Canadian-born	8.5	(CI: 5.2 -11.7)[C]	4.7	(CI: 4.3 -5.2)*
Sexual orientation	Heterosexual	7.2	(CI: 4.6 -9.8)[C+]	3.3	(CI: 3.0 -3.6)*
	Homosexual, bisexual or another orientation	NR		17.3	(CI: 12.9-21.7)*
Marital status	Married or common law	4.8	(CI: 2.0 -7.5)[D]	2.7	(CI: 2.3 -3.1)*
	Widowed, separated or divorced	NR		5.0	(CI: 4.2 -5.9)*
	Single (never married)	12.2	(CI: 5.1 -19.3)[D]	5.1	(CI: 4.4 -5.8)*

Source: CCHS, (2015-16). Statistics Canada, Share File, Ontario MOHLTC.

C,D = high sampling variability, caution in interpreting results is recommended.

NR = Not reportable due to unacceptably high sampling variability or insufficient sample size.

* = statistically significant differences between sociodemographic variable categories, using non-overlapping 95% confidence intervals (CIs).

+ =statistically significant differences between Waterloo Region and Ontario, using non-overlapping 95% CIs.

Colours correspond to the relative size of the estimate. Darker shades denote higher rates of the indicator.

As shown above, Waterloo Region residents aged 15 years and older were significantly more likely to have ever made a plan to seriously attempt suicide (7.4 per cent), compared to Ontarians (3.7 per cent). The proportion of heterosexual individuals in Waterloo Region who ever planned to attempt suicide was also statistically significantly higher than for Ontario (7.2 versus 3.3 per cent); a similar trend was also found for females (10.4 per cent of women in Waterloo Region compared to 4.6 per cent for all of Ontario.

There were statistically significant differences in the prevalence of mood disorders for all sociodemographic groups examined at the Ontario level. In Waterloo Region, there were no statistically significant differences between the sociodemographic groups and a number of the estimates were not reportable due to high variability of the estimates.

In general, rates of ever planning to attempt suicide were highest at the Ontario level for Aboriginals (12.3 per cent) and non-heterosexuals (17.3 per cent), which is about four times and five times the overall prevalence for Ontarians, respectively.

Table 1.6. Proportion of population aged 15 years and older who ever seriously attempted suicide, by selected characteristics, Waterloo Region and Ontario, 2015-16

Measure		Waterloo Region		Ontario	
	Overall	4.8	(CI: 2.7 -7.0)[C]	2.7	(CI: 2.4 -3.0)
Sex	Male		NR	1.9	(CI: 1.6 -2.2)*
	Female	5.9	(CI: 2.6 -9.1)[D]	3.5	(CI: 3.1 -3.9)*
Age groups (years)	15 to 24 years		NR	3.7	(CI: 2.8 -4.6)*
	25 to 49 years	5.5	(CI: 1.9 -9.0)[D]	2.9	(CI: 2.4 -3.3)*
	50 to 64 years	4.3	(CI: 1.9 -6.7)[D]	2.9	(CI: 2.4 -3.4)*
	65 years and older		NR	1.2	(CI: 0.9 -1.4)*
Household income (quintiles)	Q1 (Lowest income)		NR	5.2	(CI: 4.4 -6.0)*
	Q2		NR	3.3	(CI: 2.6 -4.0)*
	Q3		NR	2.3	(CI: 1.8 -2.9)*
	Q4		NR	1.6	(CI: 1.1 -2.0)[C]*
	Q5 (Highest income)		NR	1.4	(CI: 0.9 -1.8)[C]*
Highest level of education	Less than high school		NR	3.6	(CI: 2.8 -4.4)*
	High school or equivalent		NR	3.6	(CI: 2.9 -4.3)*
	College or trades diploma or certificate	8.1	(CI: 3.3 -12.9)[D]	2.9	(CI: 2.5 -3.4)*
	University bachelor's degree or higher		NR	1.4	(CI: 1.0 -1.7)*
Aboriginal identity	First Nations, Métis or Inuit		NR	10.9	(CI: 7.8 -13.9)*
	Non-aboriginal	3.7	(CI: 1.8 -5.5)[D]	2.5	(CI: 2.2 -2.7)*
Immigration status	Immigrant		NR	1.0	(CI: 0.7 -1.3)[C]*
	Canadian-born	5.8	(CI: 3.0 -8.6)[C]	3.5	(CI: 3.2 -3.9)*
Sexual orientation	Heterosexual	4.4	(CI: 2.5 -6.4)[C]	2.5	(CI: 2.2 -2.8)*
	Homosexual, bisexual or another orientation		NR	11.2	(CI: 7.9 -14.4)*
Marital status	Married or common law	3.4	(CI: 1.1 -5.7)[D]	1.9	(CI: 1.6 -2.1)*
	Widowed, separated or divorced		NR	4.2	(CI: 3.4 -5.1)*
	Single (never married)		NR	3.8	(CI: 3.2 -4.4)*

Source: CCHS, (2015-16). Statistics Canada, Share File, Ontario MOHLTC.

C,D = high sampling variability, caution in interpreting results is recommended.

NR = Not reportable due to unacceptably high sampling variability or insufficient sample size.

* = statistically significant differences between sociodemographic variable categories, using non-overlapping 95% confidence intervals (CIs).

Colours correspond to the relative size of the estimate. Darker shades denote higher rates of the indicator.

As shown above, overall about 4.8 per cent of Waterloo Region residents and 2.7 per cent of Ontarians aged 15 years and older reported having ever seriously attempted suicide. Of those who reported having ever attempted suicide, the average number of lifetime attempts was 2.2.

These rates between Waterloo Region and Ontario were not statistically significantly different. In Waterloo Region, many rates by sociodemographic groups were not reportable due to unacceptably high variability in the estimates or insufficient sample sizes.

There were statistically significant differences in the prevalence of mood disorders for all sociodemographic groups examined at the Ontario level.

In general, at the Ontario level the highest rates of ever having attempted suicide were in Aboriginal peoples (10.9 per cent) and in non-heterosexual individuals (11.2 per cent). These rates are about four times the overall provincial rate of ever having attempted suicide.

Table 1.7. Proportion of population aged 15 years and older who seriously contemplated suicide, who made a serious plan to attempt suicide, and who seriously attempted suicide in the past 12 months, by selected characteristics, Ontario, 2015-16

Measure		Contemplated	Planned	Attempted
	Overall	2.2 (CI: 1.9 -2.5)	0.7 (CI: 0.5 -0.8)	0.3 (CI: 0.2 -0.4)[C]
Sex	Male	1.7 (CI: 1.3 -2.0)*	0.4 (CI: 0.2 -0.5)[C]*	0.3 (CI: 0.1 -0.4)[D]
	Female	2.7 (CI: 2.3 -3.2)*	1.0 (CI: 0.7 -1.2)*	0.4 (CI: (0.2 -0.6)[C]
Age groups (years)	15 to 24 years	5.3 (CI: 4.1 -6.4)*	1.9 (CI: 1.3 -2.5)[C]*	1.2 (CI: 0.6 -1.8)[C]*
	25 to 49 years	2.1 (CI: 1.6 -2.5)*	0.6 (CI: 0.4 -0.9)[C]*	0.2 (CI: 0.1 -0.3)[C]*
	50 to 64 years	1.5 (CI: 1.1 -1.8)*	0.3 (CI: 0.2 -0.4)[C]*	0.1 (CI: 0.0 -0.2)[D]*
	65 years and older	1.0 (CI: 0.6 -1.5)[C]*	0.3 (CI: 0.1 -0.4)[D]*	NR
Household income (quintiles)	Q1 (Lowest income)	3.2 (CI: 2.6 -3.8)*	1.4 (CI: 1.0 -1.8)*	0.7 (CI: 0.4 -1.0)[C]
	Q2	3.1 (CI: 2.2 -4.0)	0.6 (CI: 0.3 -0.9)[C]*	NR
	Q3	1.8 (CI: 1.3 -2.3)*	0.8 (CI: 0.4 -1.2)[C]	0.6 (CI: 0.2 -0.9)[D]
	Q4	1.9 (CI: 1.2 -2.6)[C]	0.3 (CI: 0.1 -0.4)[C]*	NR
	Q5 (Highest income)	1.2 (CI: 0.8 -1.6)[V]*	NR	NR
Highest level of education	Less than high school	4.4 (CI: 3.2 -5.7)*	1.4 (CI: 0.9 -1.9)[C]*	0.7 (CI: 0.4 -1.1)[C]
	High school or equivalent	2.5 (CI: 1.9 -3.1)*	0.7 (CI: 0.4 -1.0)[C]	0.4 (CI: 0.2 -0.6)[D]
	College or trades diploma or certificate	2.1 (CI: 1.6 -2.5)*	0.5 (CI: 0.3 -0.7)[C]*	0.2 (CI: 0.1 -0.4)[D]
	University bachelor's degree or higher	1.3 (CI: 0.9 -1.7)[C]*	0.6 (CI: 0.3 -0.9)[D]	NR
Aboriginal identity	First Nations, Métis or Inuit	7.9 (CI: 4.4 -11.4)[C]*	2.2 (CI: 0.9 -3.6)[D]*	NR
	Non-aboriginal	2.1 (CI: 1.8 -2.4)*	0.6 (CI: 0.5 -0.8)*	0.3 (CI: 0.2 -0.4)[C]
Immigration status	Immigrant	1.2 (CI: 0.7 -1.7)*	0.3 (CI: 0.1 -0.4)[D]*	NR
	Canadian-born	2.8 (CI: 2.4 -3.1)*	0.9 (CI: 0.7 -1.1)*	0.4 (CI: 0.3 -0.6)[C]
Sexual orientation	Heterosexual	2.0 (CI: 1.8 -2.3)*	0.6 (CI: 0.5 -0.7)*	0.3 (CI: 0.2 -0.4)C
	Homosexual, bisexual or another orientation	9.1 (CI: 6.3 -11.8)[C]*	4.3 (CI: 4.3 -6.4)[C]*	NR
Marital status	Married or common law	1.1 (CI: 0.9 -1.3)*	0.3 (CI: 0.2 -0.4)[C]*	0.1 (CI: 0.0 -0.2)[D]
	Widowed, separated or divorced	2.7 (CI: 1.6 -3.7)[C]*	0.6 (CI: 0.4 -0.9)[C]*	NR
	Single (never married)	4.3 (CI: 3.6 -5.1)*	1.5 (CI: 1.1 -1.9)*	0.8 (CI: 0.5 -1.2)[C]

Source: CCHS, (2015-16). Statistics Canada, Share File, Ontario MOHLTC.
C,D = high sampling variability, caution in interpreting results is recommended.
NR = Not reportable due to unacceptably high sampling variability or insufficient sample size.
* = statistically significant differences between sociodemographic variable categories, using non-overlapping 95% confidence intervals (CIs).
Colours correspond to the relative size of the estimate. Darker shades denote higher rates of the indicator.

The table above shows the proportions of Ontarians aged 15 years and older reporting having seriously contemplated, planned and attempted suicide in the past 12 months. In general, rates for Waterloo Region were not reportable due to insufficient sample sizes. The only reportable rates for Waterloo Region were the overall rates for having seriously contemplated suicide and having seriously planned to attempt suicide in the past year (4.8 and 1.6 per cent, respectively; data not shown in table). The Waterloo Region rate for contemplating suicide in the past year was statistically significantly higher than the Ontario rate (4.8 versus 2.2 per cent).

Overall, about 2.2 per cent of Ontarians aged 15 years and older had seriously contemplated suicide in the past year, about 0.7 per cent had planned suicide in the past year, and about 0.3 per cent had attempted suicide in the past year.

There were statistically significant differences in the prevalence of the three indicators in the past 12 months for virtually all sociodemographic groups examined at the Ontario level. The highest rates of contemplating and planning suicide in the past year were in Aboriginal individuals (7.9 and 2.2 per cent, respectively) and in non-heterosexual individuals (9.1 and 4.3 per cent, respectively).

1.2. The Ontario Student Drug Use and Health Survey (2015)

The Ontario Student Drug Use and Health Survey (OSDUHS) is a self-administered population-level survey conducted with late elementary and secondary students across the province of Ontario. OSDUHS, conducted by the Centre for Addiction and Mental Health (CAMH), began in 1977 and is the longest on-going school survey in Canada (Boak et al, 2016). This survey provides reliable information about health risks, attitudes and beliefs of Ontario adolescents. Estimates for selected indicators about mental health and suicidal behaviour are reported from OSDUHS at regional (Local Health Integration Network region) level, and are cited below.

Table 1.8. Proportion of secondary students (Grades 9-12) reporting various mental health-related factors, Waterloo Wellington Local Heath Integration Network (WWLHIN) and Ontario, 2015

	WW LHIN	Ontario
Mental health care visit in past year	18.0	19.6
Been prescribed medication for anxiety or depression in past year	7.2	5.6
Unmet need for mental health support in past year	24.3	30.5
Fair or poor self-rated mental health	15.0	18.9
Serious psychological distress in the past month	16.1	16.1
Suicidal ideation in past year	15.2	14.1
Suicide attempt in past year	NR	3.1
Been a victim of bullying at school in past school year	25.9	22.3
Been a victim of cyberbullying in past year	15.9	20.1
Coexisting problems*	6.6	7.8

Source: Boak A, Hamilton HA, Adlaf EM, Henderson JL, Mann RE (2016). The mental health and well-being of Ontario Students 1991-2015: Detailed OSDUHS findings: Table 3.8.1. Toronto, ON: Centre for Addiction and Mental Health. Accessed on January 25, 2019 at: https://www.camh.ca/-/media/files/pdf---osduhs/the-mental-health-and-well-being-of-ontario-students-1991-2015---detailed-osduhs-findings.pdf.

*Coexisting problems refers to the presence of two or more of the following: psychological distress, antisocial behaviour, hazardous/harmful drinking, or drug use problem.

NR = not reportable due to statistically unreliable estimate.

As shown above, about a quarter of Waterloo Wellington high school students reported having an unmet need for mental health support in the last year. About 15 per cent of WWLHIN students had reported suicidal thoughts in the past year and about 16 per cent reported serious psychological distress in the past month. The proportion of WWLHIN students who attempted suicide in the past year was not reportable, however about three per cent of Ontario secondary students reported having attempted suicide in the past year.

A limitation of these findings is that they represent students from WWLHIN, not Waterloo Region – however, Waterloo Region represents about 60 per cent of the LHIN region. As such, in the absence of other data sources, it should be reasonable to assume Waterloo Region high school students' experiences are similar to those for the entire WWLHIN.

2. Suicidal behaviour in clients of community mental health services and police occurrences

This section summarizes the number of clients and occurrences related to suicide and self-harm for two Waterloo Region-wide community services, the Canadian Mental Health Association Waterloo Wellington (CMHAWW) and Waterloo Regional Police Service (WRPS).

2.1. Canadian Mental Health Association Waterloo Wellington

The following table presents the number of CMHAWW clients who reside in Waterloo Region who presented with suicidal behaviour or self-harm related issues in 2017-18.

Table 2.1. Number and proportion of Canadian Mental Health Association Waterloo Wellington (CMHAWW) clients with suicidal behaviour or self-harm issues, Waterloo Region, 2017-18

Type	Category	Number of clients	Per cent of total clients
Service type	Children	<5	<0.1
	Adults	539	16.7
	Seniors	<5	0.7
	Here 24/7	363	9.9
Age (years)	0-11	<5	<0.1
	12-18	106	18.9
	19-65	760	9.8
	66+	33	4.6
Sex	Male	302	8.2
	Female	491	11
	Unknown/another identity	97	15.6
Total		904	9.9

Source: Canadian Mental Health Association Waterloo Wellington (2017-18). CMHAWW data. Received May 16, 2018.

As illustrated above, about 10 per cent of all CMHAWW clients in 2017-18 presented with suicidal behaviour or self-harm issues. Core services for adults had higher proportions of clients with suicidal behaviour or self-harm issues (16.7 per cent). It was extremely uncommon for children's and seniors core services clients to present with suicidal behaviour or self-harm issues (<0.1 and 0.7 per cent of total service type clients, respectively). By age, youth aged 12 to 18 years were by far the most likely CMHAWW clients to present with suicidal behaviour or self-harm issues (18.9 per cent). Female clients were more likely than males to present with suicidal behaviour or self-harm issues (11.0 per cent versus 8.2 per cent), and clients whose gender was unknown or was another identity were more likely than

either males or females to present with suicidal behaviour or self-harm issues (15.6 per cent).

Overall, about nine per cent of CMHAWW clients with suicidal behaviour or self-harm issues had been seen in hospital for the similar issues (data not shown). About one-quarter of CMHAWW clients with suicidal behaviour or self-harm issues were referred upon discharge of service to another clinical service for on-going care (data not shown). About five per cent of clients with suicidal behaviour or self-harm issues had mental health co-diagnoses (data not shown). The most common co-diagnoses were mood disorder, followed by anxiety disorder and psychosis (data not shown).

2.2. Waterloo Regional Police Service

The number of suicide-related police occurrences is useful information in this assessment of suicide and self-harm in the local community. It is recognized that police often respond to crisis situations involving suicidal behaviour and self-harm and it is worthwhile to assess the frequency of police encounters with such issues in the context of other statistics from the community.

Table 2.2. Number of suicide attempt or suicide death occurrences generated by Waterloo Regional Police Service, by type of occurrence, 2012-16

Type of occurrence	2012*	2013*	2014	2015	2016	Total
(Suspected) suicide deaths	43	55	45	33	44	220
Attempted suicides	1,387	1,327	1,378	1,511	1,780	7,383
Per cent in youth	20.4	18.6	21.0	19.6	18.5	19.5
Per cent in females	53.8	54.3	52.8	52.9	58.3	54.0
Number of attempts per suicide	32	24	31	46	40	34

Source: Waterloo Regional Police Service, WRPS Niche Records Management System. Extract Date: August 9, 2017.

*Includes cancelled occurrences

Note: Per cent of attempt occurrences in youth and in females were calculated only of those cases where age or sex were identified (approximately 90 to 92 per cent of the time).

WRPS responded to between 33 to 55 suspected suicide death occurrences and between 1,327 to 1,780 suicide attempt occurrences each year from 2012-16. There were on average about 33 suicide attempt occurrences for every suspected suicide death. Just over half of the suicide attempt occurrences were for females, and about one in five were for children or youth under the age of 18.

It is recognized that the police occurrences reflect suspected, but not necessarily confirmed suicide deaths. If all of these deaths were later confirmed by a physician or coroner as a suicide (i.e. as an official cause of death, reflected in more definitive sources of suicide mortality statistics, described in a later chapter) then this would mean WRPS data reflect approximately three-quarters of suicide death incidents in Waterloo Region.

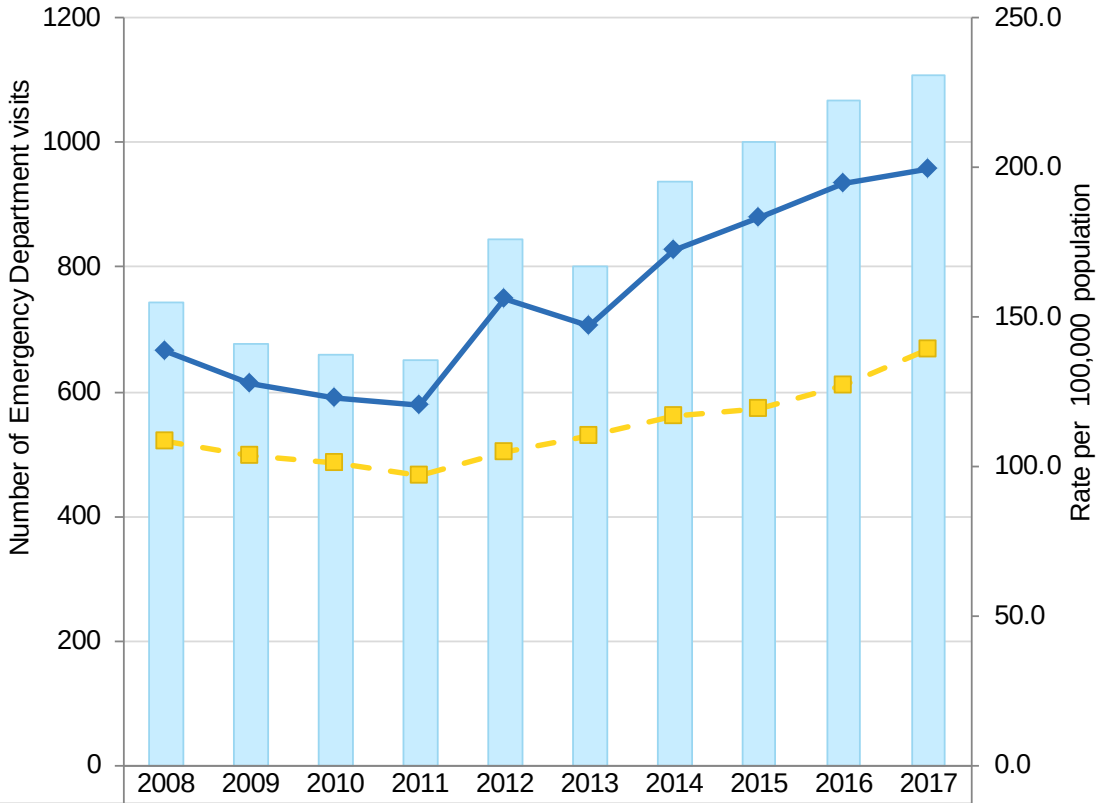
3. Emergency Department visits for intentional self-harm

3.1. Overall trends over time and by age and sex

Examining data on emergency department (ED) visits for intentional self-harm provides insight into the local incidence and burden of injury related to suicide and self-harm. As well, a recent report by the Mental Health Commission of Canada (MHCC) found that existing evidence shows ED visits can be a useful indicator of unmet need in mental health services (MHCC, 2018). It is important to note that this data cannot distinguish between instances of deliberate self-harm with suicidal intent versus non-suicidal self-injury (NSSI).

Figure 3.1 shows the annual number of ED visits and age-standardized rate of ED visits for intentional self-harm in Waterloo Region and Ontario for 2008-17.

Figure 3.1. Number and age-standardized rate of intentional self-harm emergency department visits, Waterloo Region and Ontario, 2008-17



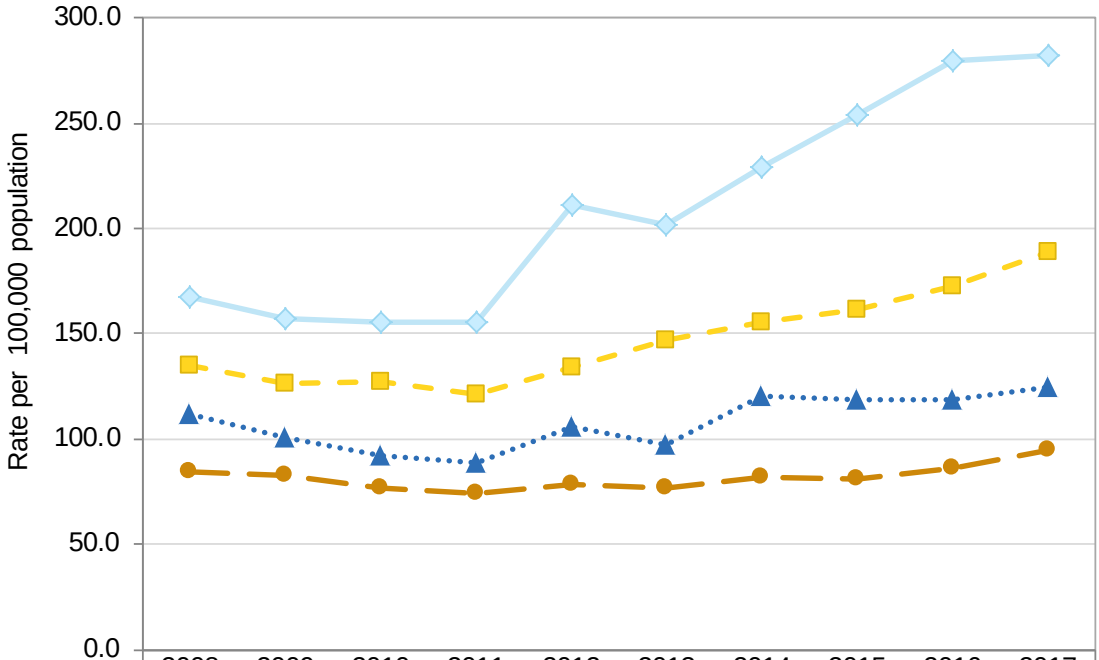
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Waterloo ED Visits	744	677	660	651	846	800	938	1,001	1,067	1,109
Waterloo Rate	138.9	128.1	122.7	120.5	155.8	147.1	172.1	183.4	194.6	199.8
Ontario Rate	108.6	103.5	101.3	97.0	104.9	110.2	117.1	119.2	127.4	139.4

Source: Ambulatory Emergency External Cause Table (2008-17), Ontario Ministry of Health and Long-Term Care (MOHLTC), IntelliHealth Ontario, Extracted: December 6, 2018; Population Estimates (2008-16) and Population Projections (2017), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

From 2008-17, the age-standardized ED visit rate in Waterloo Region was consistently higher than that of the province. While both local and provincial rates increased since 2011, the increase at the provincial level was more modest than local changes. In 2017, the local rate was 199.8 ED visits per 100,000 population, which was significantly higher compared to 139.4.1 per 100,000 for all of Ontario. This local ED visit rate in 2017 is also statistically significantly higher than local rates prior to 2015.

Figure 3.2 shows the annual age-standardized rates of ED visits for intentional self-harm by sex for Waterloo Region and Ontario for 2008-17.

Figure 3.2. Age-standardized rate of intentional self-harm emergency department visits, by sex, Waterloo Region and Ontario, 2008-17



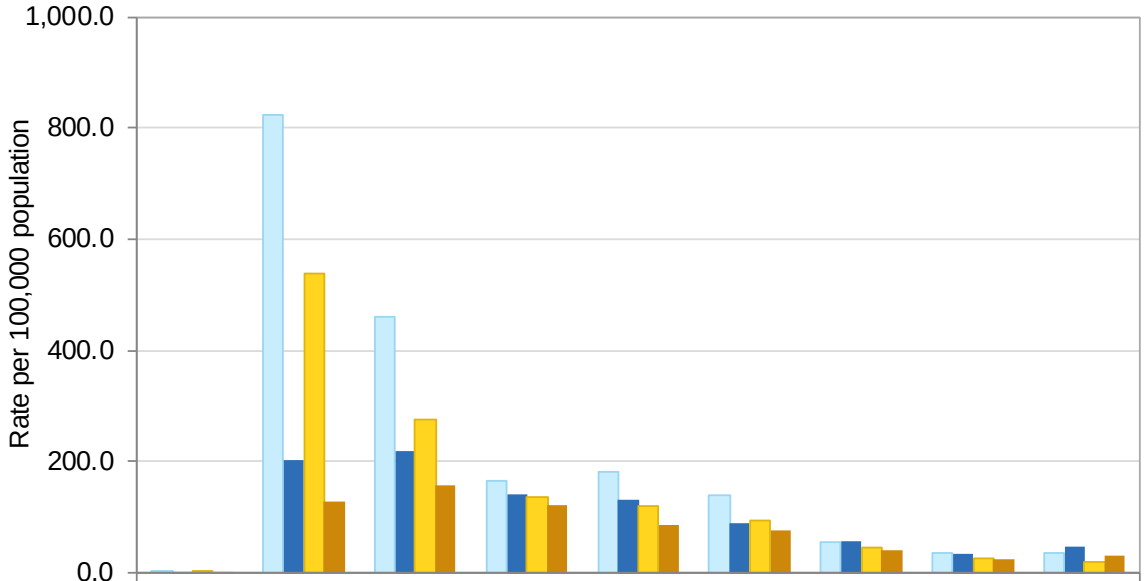
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Waterloo Females	167.5	157.2	155.8	155.2	211.0	201.6	229.4	254.1	279.5	282.5
Waterloo Males	112.3	100.5	92.4	88.6	105.5	97.7	120.0	119.1	119.0	125.1
Ontario Females	134.9	126.0	127.2	121.6	134.2	147.4	155.8	161.2	172.9	189.1
Ontario Males	84.3	82.5	77.0	74.2	78.1	76.4	81.9	81.0	86.3	94.6

Source: Ambulatory Emergency External Cause Table (2008-17), MOHLTC, IntelliHealth Ontario, Extracted: December 6, 2018; Population Estimates (2008-16) and Population Projections (2017), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

For both Waterloo Region and Ontario, ED visit rates for intentional self-harm are consistently higher for females over time, roughly twice as high as the rates for males. Both local and provincial rates for females steadily increased from 2011 onwards, while rates for males increased, but more slowly. The local female ED visit rate for 2017 (282.5 ED visits per 100,000) is statistically significantly higher than those rates prior to 2015. The findings by sex suggest the increases in overall local ED visit rates (illustrated in figure 3.1) are largely attributable to increased incidence in females.

Figure 3.3 shows five-year average rates of self-harm ED visits by ten-year age groups and by sex, for Waterloo Region and Ontario, for 2013-17.

Figure 3.3. Five-year average rate of intentional self-harm emergency department visits, by age and sex, Waterloo Region and Ontario, 2013-17



	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+
Waterloo Females	4.6	822.8	460.0	165.4	181.5	139.4	54.7	36.9	36.6
Waterloo Males	3.1	204.7	218.1	141.2	132.2	90.9	59.0	33.2	47.7
Ontario Females	2.7	540.0	276.7	137.8	122.0	94.3	47.2	28.2	20.1
Ontario Males	3.6	129.0	157.4	121.2	85.7	76.8	39.7	25.0	32.2

Age group (years)

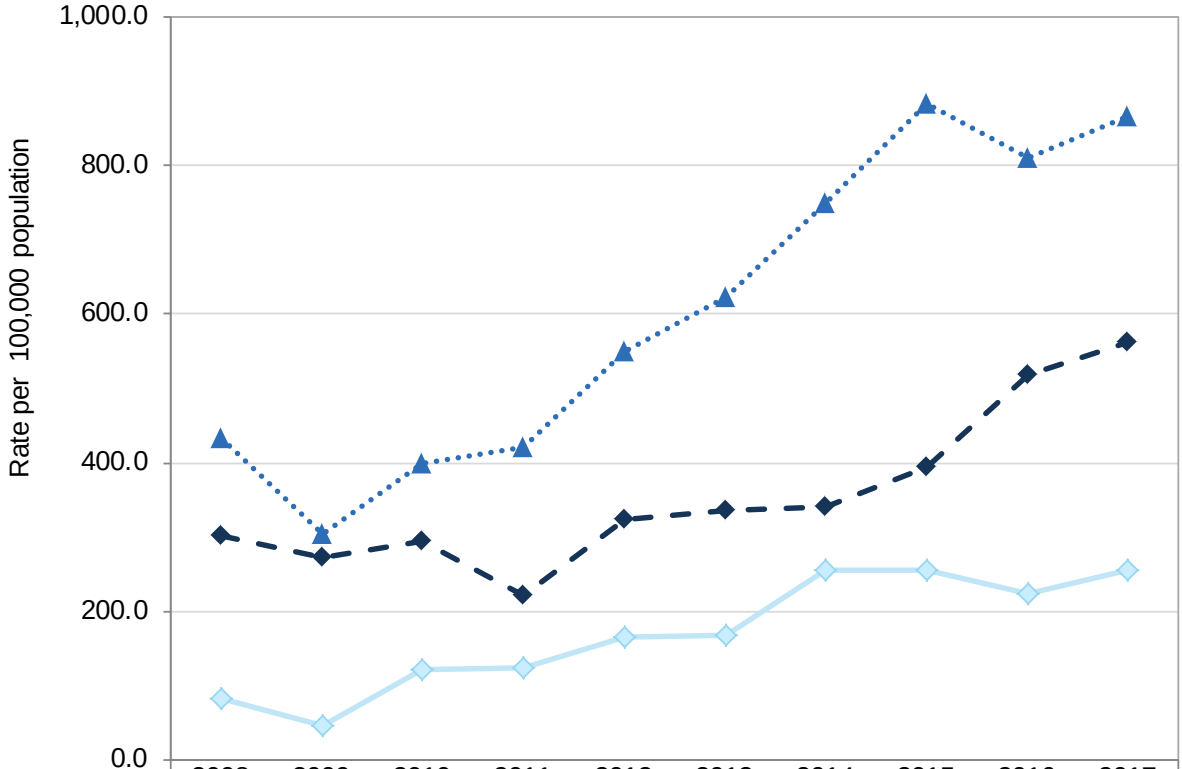
Source: Ambulatory Emergency External Cause Table (2013-17), MOHLTC, IntelliHealth Ontario, Extracted: December 6, 2018; Population Estimates (2013-16) and Population Projections (2017), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

The figure above illustrates that young females represent the greatest proportion of ED visits for intentional self-harm both locally and provincially. The highest rates by age and sex were seen in females aged 10 to 19 years (822.8 ED visits per 100,000 in Waterloo Region and 540.0 ED visits per 100,000 for Ontario). ED visit rates for intentional self-harm tend to decrease over the lifespan, with the lowest rates seen in the oldest age groups; there does appear to be a modest increase in the local rate in women aged 40 to 49 years (181.5 ED visits per 100,000 in Waterloo Region, compared to 165.4 ED visits per 100,000 in women aged 30 to 39 years), although this difference was not statistically significant. Provincially, the rates in females declined between ages 30 to 39 and 40 to 49, consistent with the overall trend of decline over the lifespan.

Compared to the rates in females, those for young males are relatively low; for example females aged 10 to 19 years experience about four times the rate of ED visits compared to their male counterparts. The peak ED visit rates for intentional self-harm in males occur in those 20 to 29 years (218.1 ED visits per 100,000 in Waterloo Region, and 157.4 ED visits per 100,000 for all of Ontario).

The Waterloo Region Suicide Prevention Council also has previously chosen to examine self-harm rates specifically in youth. As such, trends in ED visits have also been assessed for three youth age groups. Figure 3.4 shows annual rates of ED visits for intentional self-harm for three age groups of youth (10 to 14, 15 to 18, and 19 to 24 year olds) for Waterloo Region, from 2008-17.

Figure 3.4. Age-specific rate of intentional self-harm emergency department visits in youth aged 10 to 24 years, Waterloo Region, 2008-17



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
10-14 years	82.3	46.0	120.7	123.5	165.7	167.8	255.8	256.5	223.1	255.4
15-18 years	434.0	304.8	399.9	419.7	549.8	621.5	748.2	882.7	810.3	865.3
19-24 years	300.4	273.3	295.5	221.6	324.5	334.5	340.3	393.7	517.0	561.6

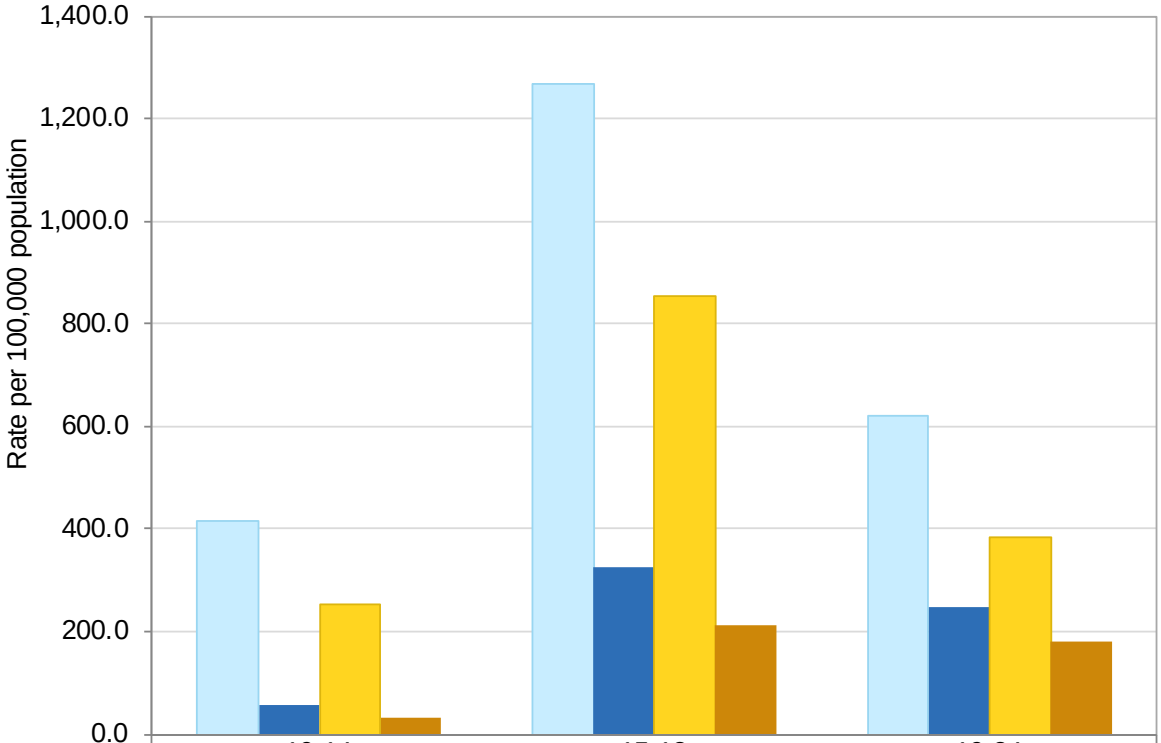
Source: Ambulatory Emergency External Cause Table (2008-17), MOHLTC, IntelliHealth Ontario, Extracted: December 6, 2018; Population Estimates (2008-16) and Population Projections (2017), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

As shown above, ED visit rates for intentional self-harm in all three youth age groups in Waterloo Region significantly increased over the ten-year timeframe from 2008-17. These increases over time were most pronounced in those aged 15 to 18 years, with 304.8 ED visits per 100,000 population in 2009 versus 865.3 per 100,000 in 2017, a 180 per cent increase over nine years. Of the three youth age groups in Waterloo Region, those aged 10 to 14 years tended to have the lowest ED visit rates for intentional self-harm (255.4 ED visits per 100,000 population in 2017), followed by those aged 19 to 24 years (561.6 per 100,000 in 2017) and then those aged 15 to 18 years.

These local trends in ED visit rates for self-harm in youth are similar to those seen provincially, though the provincial rates are consistently lower and the increases over time are less pronounced (data not shown).

Figure 3.5 shows five-year average rate of self-harm ED visits for the same three youth age groups, by sex, for Waterloo Region and Ontario for 2013-17.

Figure 3.5. Five-year average rate of intentional self-harm emergency department visits in youth aged 10 to 24 years, by age and sex, Waterloo Region and Ontario, 2013-17



	10-14	15-18	19-24
Waterloo Females	416.7	1,266.0	622.1
Waterloo Males	55.5	326.9	248.4
Ontario Females	253.1	852.6	383.2
Ontario Males	33.8	210.8	180.9

Age group (years)

Source: Ambulatory Emergency External Cause Table (2013-17), MOHLTC, IntelliHealth Ontario, Extracted: December 6, 2018; Population Estimates (2013-16) and Population Projections (2017), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

The above figure highlights differences in ED visit rates for intentional self-harm in youth between males and females, with females experiencing rates 2.1 to 7.5 times higher than males of the same age group. These significant differences in rates between the sexes are persistent both in Waterloo Region and Ontario and across all three age groups. For example, in Waterloo Region, females aged 15 to 18 years experienced an average annual

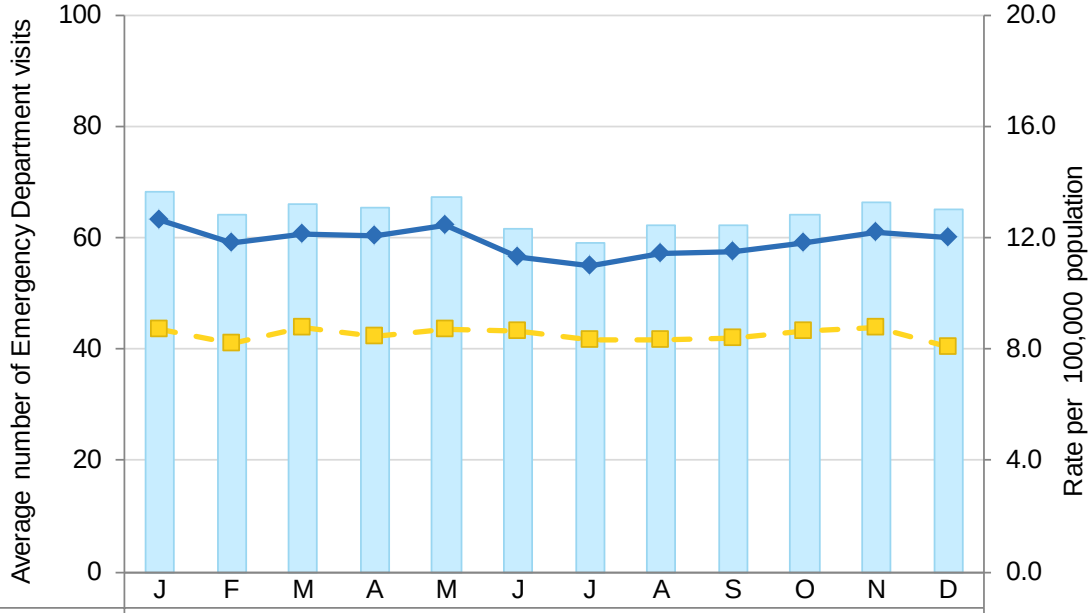
ED visit rate for intentional self-harm of 1,266.0 ED visits per 100,000 population in 2013-17, compared to a rate of 326.9 per 100,000 in males of the same age group.

This figure also reiterates the trends previously noted, where local ED visit rates in youth are significantly higher than those provincially and that those aged 15 to 18 years experience the highest ED visit rates compared to those aged 10 to 14 and 19 to 24 years.

3.2. Seasonality

The next figure describes seasonal trends in ED visits for intentional self-harm for Waterloo Region and Ontario, by providing the average number and age-standardized rate of visits by month for a 10-year period (2008-17).

Figure 3.6. Average number and age-standardized rate of intentional self-harm emergency department visits, by month, Waterloo Region and Ontario, 2008-17



	J	F	M	A	M	J	J	A	S	O	N	D
Waterloo ED Visits	68	64	66	66	67	62	59	62	62	64	66	65
Waterloo Rate	12.6	11.8	12.1	12.1	12.4	11.3	11.0	11.4	11.5	11.8	12.2	12.0
Ontario Rate	8.7	8.2	8.7	8.5	8.7	8.6	8.3	8.3	8.4	8.6	8.7	8.1

Source: Ambulatory Emergency External Cause Table (2008-17), MOHLTC, IntelliHealth Ontario, Extracted: December 6, 2018; Population Estimates (2008-16) and Population Projections (2017), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

The local monthly average number of ED visits for intentional self-harm for 2008-17 was fairly consistent, with a range of 59 (July) to 68 (January). The monthly age-standardized rate of ED visits for Waterloo Region was 12.6 per 100,000 at its peak in January. There were no statistically significant differences in the average number of self-harm ED visits from month to month.

Provincially, there were similarly no obvious peaks or seasonal trends apparent.

3.3. Mechanism of injury

Reviewing data on the mechanism of injury for intentional self-harm ED visits provides insight into the most common types of injuries. Note that for ED visits, the mechanism of injury categories are not mutually exclusive (i.e., a single visit may have more than one mechanism of injury) so the sum of the categories may be greater than 100 per cent.

The most common mechanism of injury for self-harm ED visits seen both locally and provincially was drugs or alcohol-related, representing over two-thirds of ED visits (68.7 per cent in Waterloo Region and 70.2 per cent for all of Ontario). The second most common mechanism of injury was self-harm using a sharp object (22.3 per cent in Waterloo Region and 21.1 per cent for all of Ontario). The third most common mechanism of injury was poisoning by chemicals or vapours (4.3 per cent in Waterloo Region and 3.8 per cent in Ontario). The overall ranking of mechanism of injury was largely consistent between Waterloo Region and Ontario.

The prevalence of mechanism of injury was relatively consistent between the sexes, with 69.2 per cent of visits by females and 67.7 per cent of visits by males in Waterloo Region related to drugs or alcohol. There was a slightly larger proportion of visits for females for the second most common injury type, self-harm by a sharp object, (24.9 per cent) than for males (16.8 per cent). The third most common mechanism of injury was poisoning by chemicals or vapours (3.3 per cent in females and 6.4 per cent for males). Hanging, strangulation or suffocation was the fourth most common mechanism at 1.3 per cent in females and 3.8 per cent for males. These local differences by sex in the mechanism of injury for intentional self-harm ED visits were similar to those seen provincially.

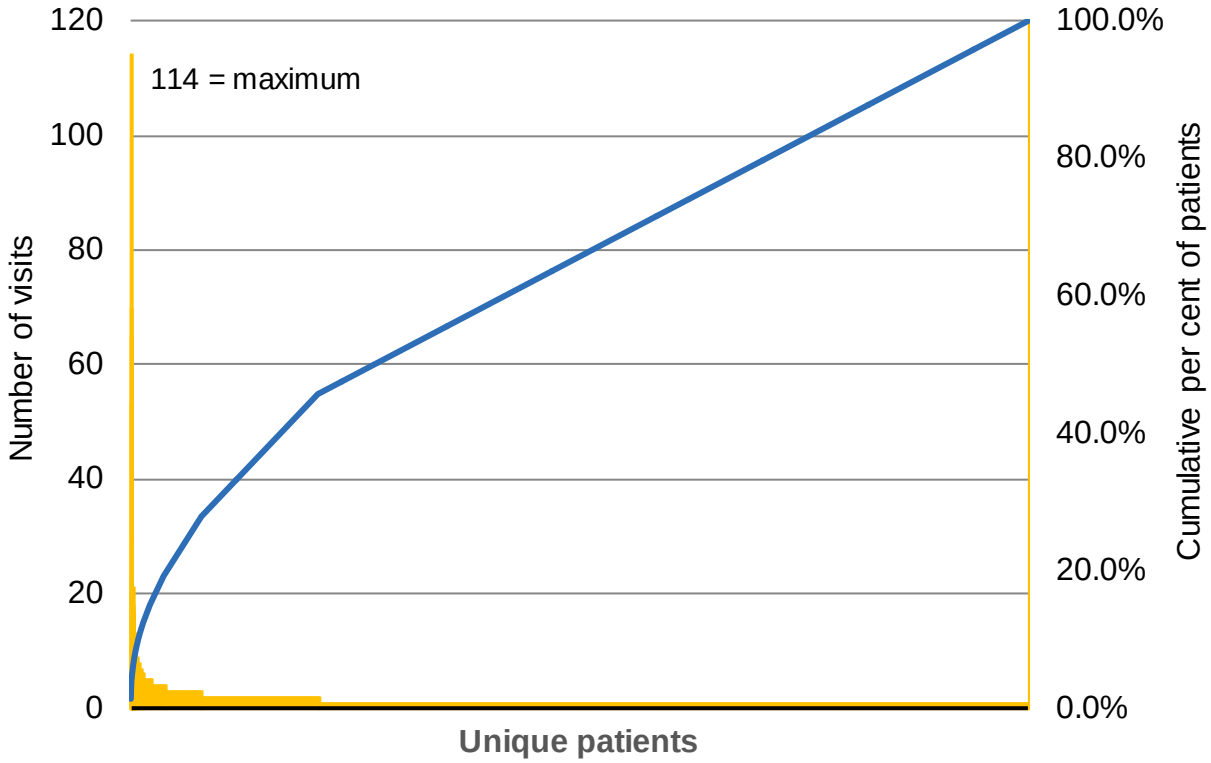
The most common mechanism of injury for ED visits for intentional self-harm in youth in Waterloo Region was the same as that for the overall population, specifically, poisoning or exposure to drugs or alcohol (58.3 per cent in youth aged 10 to 18 years and 67.1 per cent in those aged 19 to 24 years, versus 68.7 per cent overall). Self-harm with a sharp object was the second most common mechanism of injury for ED visits in both youth age groups as well as the overall population, however it is worth noting that the proportion presenting in the ED with this mechanism of injury was greater in 10 to 18 year olds (33.2 per cent) than for the overall population (22.3 per cent).

3.4. Repeat emergency department visits and discharge status

The following section describes patterns of repeated emergency department visits for intentional self-harm by the same patients more than once in a 12-month time period. Such repeated visiting can indicate a lack of long-term successful intervention to treat the precipitating causes of the self-harming behaviour.

Figure 3.7 shows the proportion of self-harm ED visits in Waterloo Region for the ten-year period, 2008-17, by the number of visits per unique patient.

Figure 3.7. Proportion of emergency department visits for intentional self-harm within a 12-month period, by number of visits per unique patient, Waterloo Region, 2008-17

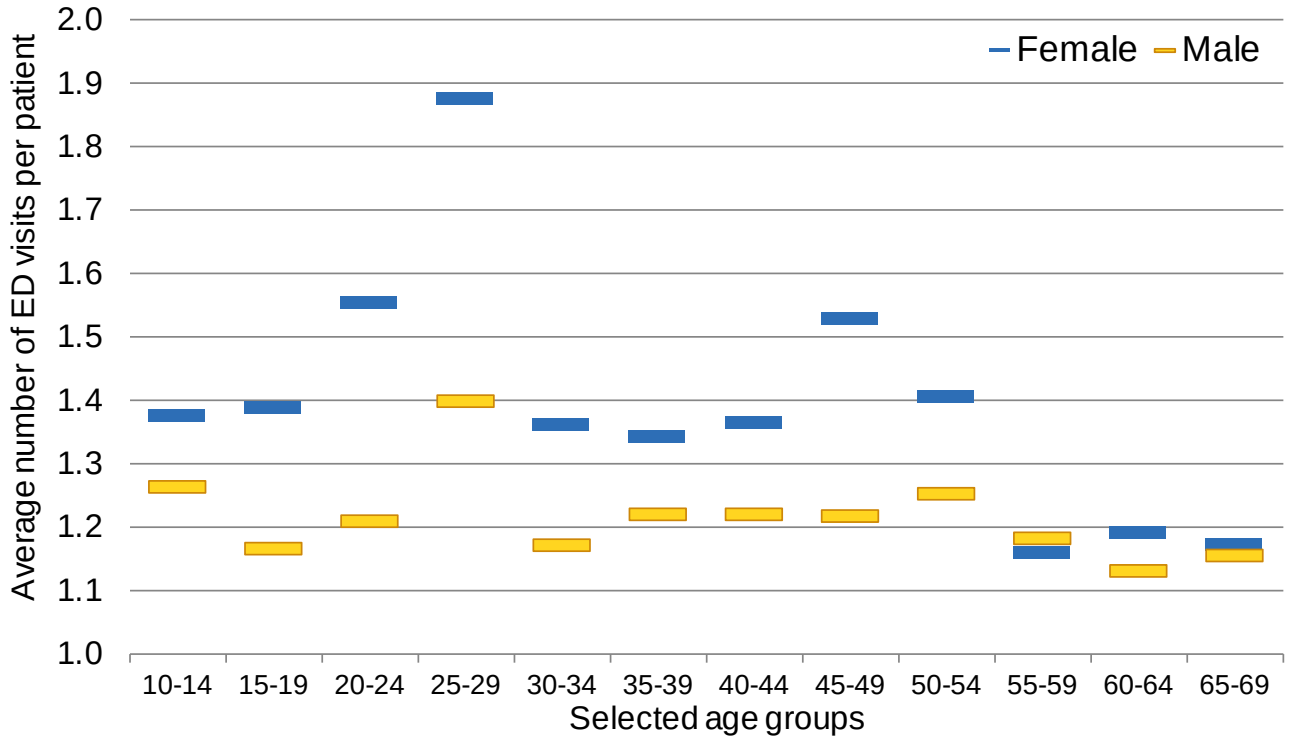


Source: Ambulatory Emergency External Cause Table (2008-17), MOHLTC, IntelliHealth Ontario, Extracted: December 21, 2018.

As illustrated above, about one per cent of all unique patients with an emergency department visit for intentional self-harm generated 10 per cent of all intentional self-harm visits over a ten-year period. In other words, 47 patients generated 833 visits between 2008-17. About 80 per cent of patients had only one visit for intentional self-harm and 13 per cent had two visits for intentional self-harm over the 10-year period.

The proportion of patients with more than one emergency department visit for intentional self-harm within one year has increased by 32 per cent over the past 10 years (data not shown). On average, females are more likely to be repeat patients for intentional self-harm; women have 14 per cent more emergency department visits per patient than men.

Figure 3.8. Average number of repeat emergency department visits for intentional self-harm per patient in a 12-month period, by age and sex, Waterloo Region, 2008-17



Source: Ambulatory Emergency External Cause Table (2008-17), MOHLTC, IntelliHealth Ontario, Extracted: December 21, 2018.

As illustrated above, females aged 25 to 29 years have by far the highest average number of ED visits for intentional self-harm over a 10-year period. Or, in other words, women aged 25 to 29 years were the most likely to be repeat patients for intentional self-harm. Females were more likely to be repeat patients for self-harm in almost every age group examined, from 10 to 69 years of age.

Additional analyses were also conducted to assess the overall patterns of discharge dispositions for ED visits for intentional self-harm. For the time period 2006-15, about 40 per cent of all intentional self-harm ED visits for Waterloo Region residents were admitted into an acute hospital unit in the same facility; an additional nine per cent of visits were transferred to critical care or an operating room in the same facility; and about 37 per cent of visits were discharged to a private dwelling (i.e., home; data not shown).

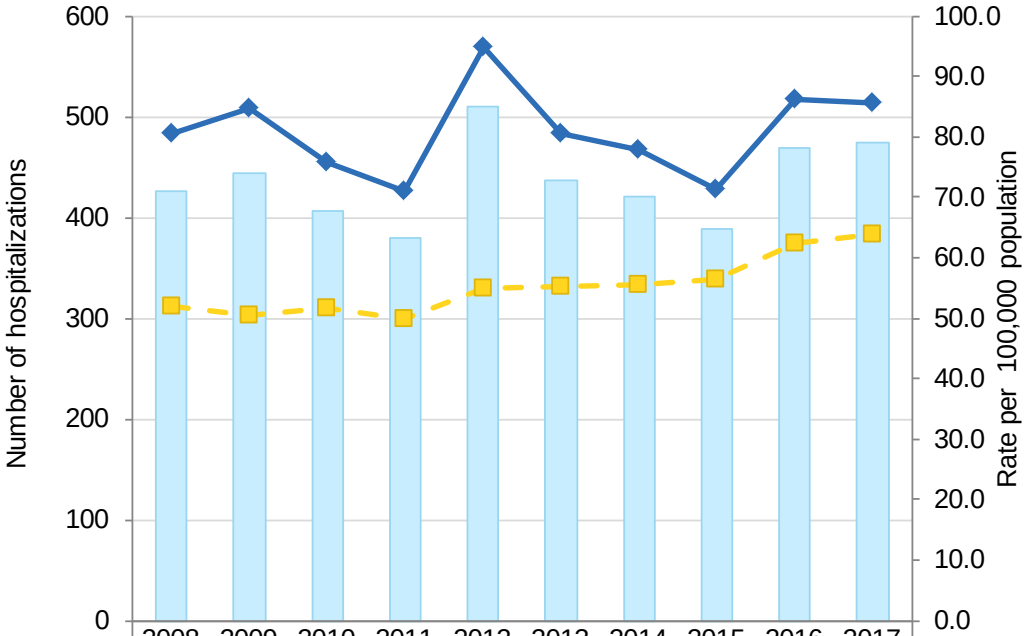
4. Hospitalizations for intentional self-harm

4.1. Overall trends over time and by age and sex

Hospitalization data for intentional self-harm provides insight into the most severe non-fatal incidents. This report captures hospitalizations as emergency department (ED) visits that were subsequently admitted into hospital, and in effect these incidents are a sub-set of the incidents captured in the previous chapter on ED visits.

Figure 4.1 shows the annual number and age-standardized rate of self-harm hospitalizations for Waterloo Region and Ontario for 2008-17.

Figure 4.1. Number and age-standardized rate of intentional self-harm hospitalizations, Waterloo Region and Ontario, 2008-17



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Waterloo Hospitalizations	427	444	406	379	511	436	420	388	469	475
Waterloo Rate	80.7	84.6	75.9	71.0	94.9	80.6	78.0	71.4	86.2	85.5
Ontario Rate	51.8	50.5	51.7	49.9	54.9	55.3	55.5	56.6	62.5	63.9

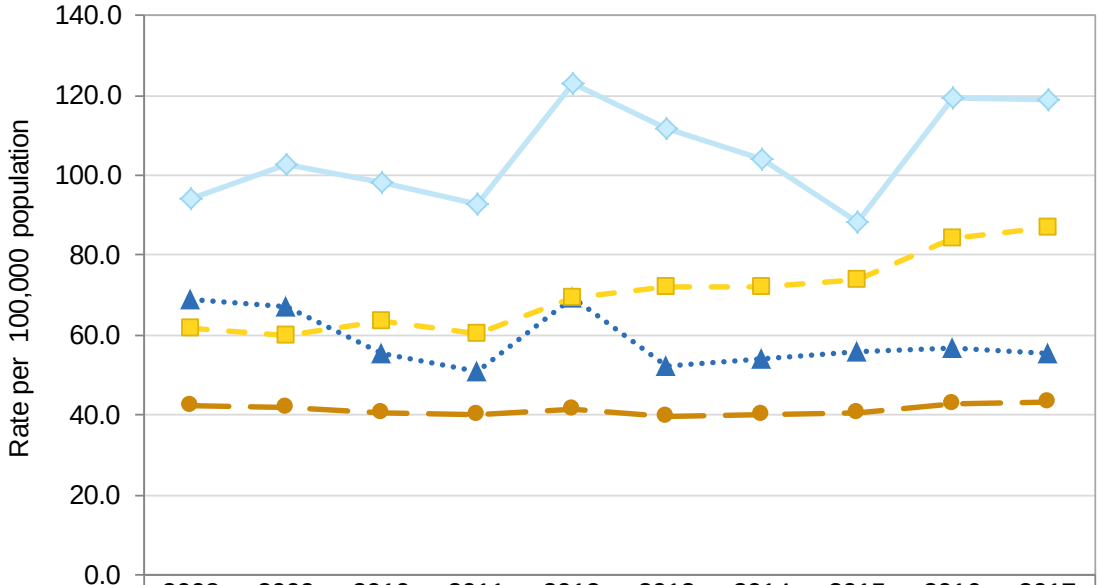
Source: Ambulatory Emergency External Cause Table (2008-17), Ontario Ministry of Health and Long-Term Care (MOHLTC), IntelliHealth Ontario, Extracted: December 12, 2018; Population Estimates (2008-16) and Population Projections (2017), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

Overall, the rate of hospitalizations for intentional self-harm for Waterloo Region was consistently higher than that for all of Ontario from 2008-17. There was some fluctuation in local rates, with a peak rate of 94.9 hospitalizations per 100,000 population in 2012. Following this peak in 2012, the local rate was not statistically difference from those seen

previously (in 2017, 85.5 hospitalizations per 100,000). By comparison, the provincial rate experienced a slow but steady increase from 2011 onwards.

Figure 4.2 shows the annual rates of self-harm hospitalizations for males and females in Waterloo Region and Ontario, for 2008-17.

Figure 4.2. Age-standardized rate of intentional self-harm hospitalizations, by sex, Waterloo Region and Ontario, 2008-17



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Waterloo Females	94.1	102.9	98.3	92.7	123.1	111.8	104.0	88.4	119.2	118.8
Waterloo Males	68.8	67.2	55.5	50.9	69.6	52.5	54.2	55.9	56.7	55.3
Ontario Females	61.9	60.0	63.7	60.6	69.3	72.3	72.2	74.1	84.5	86.9
Ontario Males	42.6	41.8	40.4	40.1	41.7	39.9	40.3	40.7	42.6	43.2

Source: Ambulatory Emergency External Cause Table (2008-17), MOHLTC, IntelliHealth Ontario, Extracted: December 12, 2018; Population Estimates (2008-16) and Population Projections (2017), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

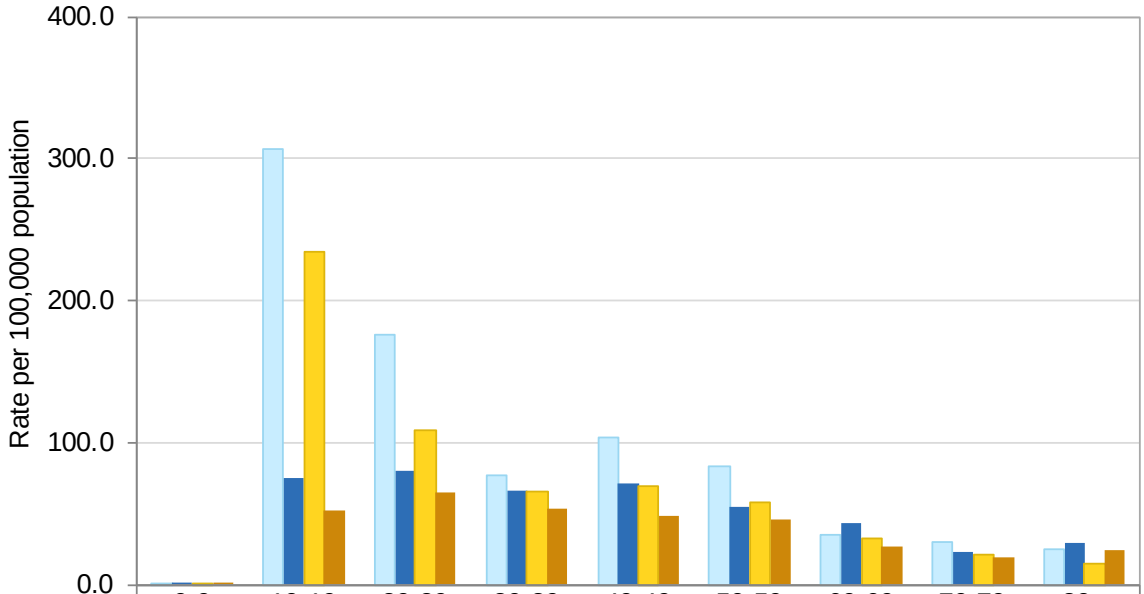
Overall, the rates of intentional self-harm hospitalizations were consistently higher for females than for males over time, both locally and provincially. There was a peak in hospitalization rates for both females and males in Waterloo Region in 2012 (123.1 hospitalizations per 100,000 in females and 69.6 hospitalizations per 100,000 in males); this finding indicates that while females contributed more to the rates overall, the peak in overall local rates for 2012 can be attributed to an increase in hospitalizations that year for individuals of both sexes.

With the exception of the 2012 peak, the hospitalization rate for local males actually decreased from 2008 (68.8 per 100,000) to 2017 (55.2 per 100,000). By contrast, the rate for local females, while fluctuating considerably, appears to be generally increasing over time.

Provincially, rates for males were stable over time. The rates for Ontario females increased from 2011 onwards; consequently the provincial rate in females in 2017 was 86.9 hospitalizations per 100,000, significantly higher than the rate from six years prior (60.6 hospitalizations per 100,000).

Figure 4.3 shows the five-year average rate of self-harm hospitalizations for males and females, by 10-year age groups for Waterloo Region and Ontario, for the period 2013-17.

Figure 4.3. Five-year average rate of intentional self-harm hospitalizations, by age and sex, Waterloo Region and Ontario, 2013-17



	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+
Waterloo Females	0.7	307.0	176.2	77.3	103.5	83.8	34.8	29.8	24.9
Waterloo Males	0.6	75.2	80.4	66.9	72.2	54.9	43.1	23.5	29.2
Ontario Females	0.3	235.0	108.4	65.9	69.7	58.7	32.3	21.1	14.8
Ontario Males	0.3	52.4	64.9	53.2	49.2	45.7	27.4	19.9	25.0

Age group (years)

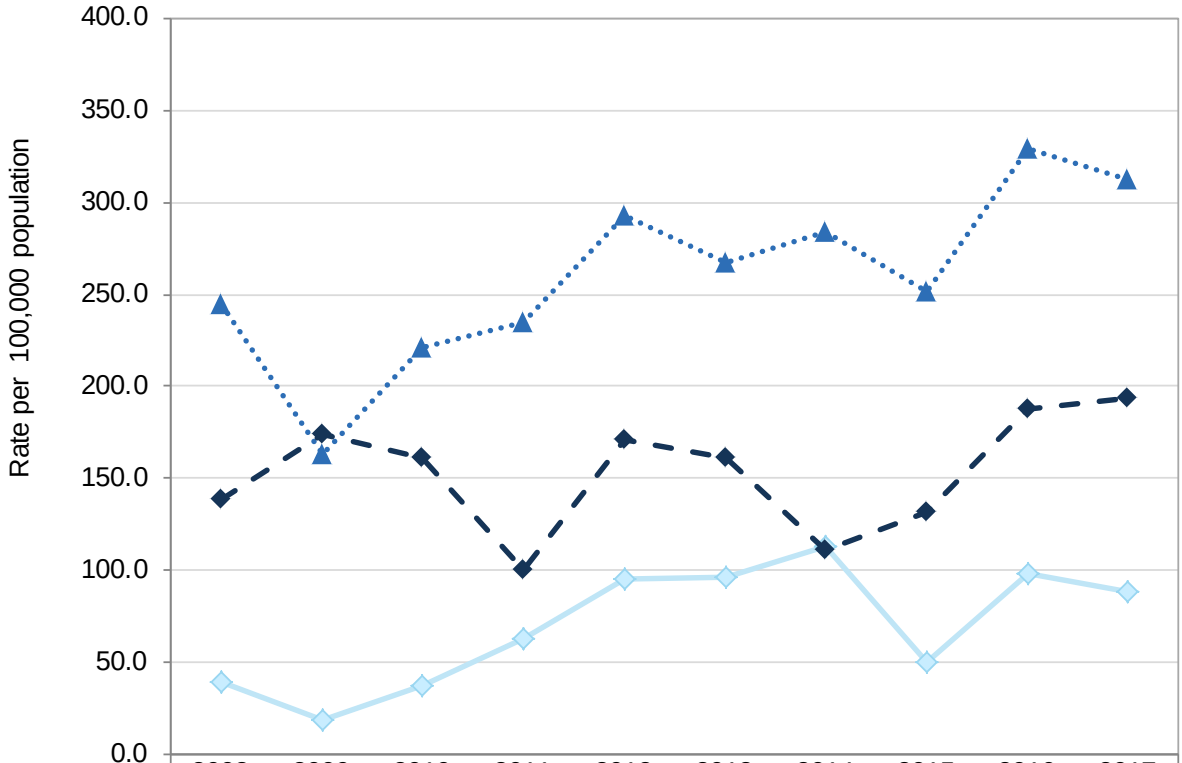
Source: Ambulatory Emergency External Cause Table (2013-17), MOHLTC, IntelliHealth Ontario, Extracted: December 12, 2018; Population Estimates (2013-16) and Population Projections (2017), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

Overall, the above figure illustrates that young females represent a significant proportion of intentional self-harm hospitalizations in Waterloo Region as well as Ontario. The highest rates by age and sex were in females aged 10 to 19 years (307.0 hospitalizations per 100,000 in Waterloo Region and 235.0 hospitalizations per 100,000 in Ontario). The peak rates in males were in those aged 20 to 29 years (80.4 hospitalizations per 100,000 in Waterloo Region and 64.9 hospitalizations per 100,000 in Ontario), although these rates in young males were still significantly lower than those in their female counterparts.

In general, intentional self-harm hospitalization rates decrease over the lifespan, with the lowest rates in adults aged 60 years or older. There was one notable exception to this trend, where hospitalization rates increased again for local females in the 40 to 49 year old category (103.5 hospitalizations per 100,000, versus 77.3 hospitalizations per 100,000 in 30 to 39 year old females).

The Waterloo Region Suicide Prevention Council also has previously chosen to examine self-harm rates specifically in youth. As such, trends in hospitalizations have also been assessed for three youth age groups. Figure 4.4 shows annual rates for self-harm hospitalizations for three age groups for youth (10 to 14, 15 to 18 and 19 to 24 years), for Waterloo Region and Ontario for 2008-17.

Figure 4.4. Age-specific rate of intentional self-harm hospitalizations in youth aged 10 to 24 years, Waterloo Region, 2008-17



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
10-14 years	39.6	18.4	37.1	63.3	95.6	96.8	113.3	50.7	98.8	88.3
15-18 years	245.0	163.0	221.4	234.8	292.7	267.4	283.8	251.7	329.4	312.6
19-24 years	138.3	174.3	161.5	100.3	170.6	161.0	111.4	131.2	187.6	193.4

Source: Ambulatory Emergency External Cause Table (2008-17), MOHLTC, IntelliHealth Ontario, Extracted: December 12, 2018; Population Estimates (2008-16) and Population Projections (2017), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

This figure illustrates that, similar to the trends seen for ED visits in youth, the rate of intentional self-harm hospitalizations in youth in Waterloo Region generally increased over

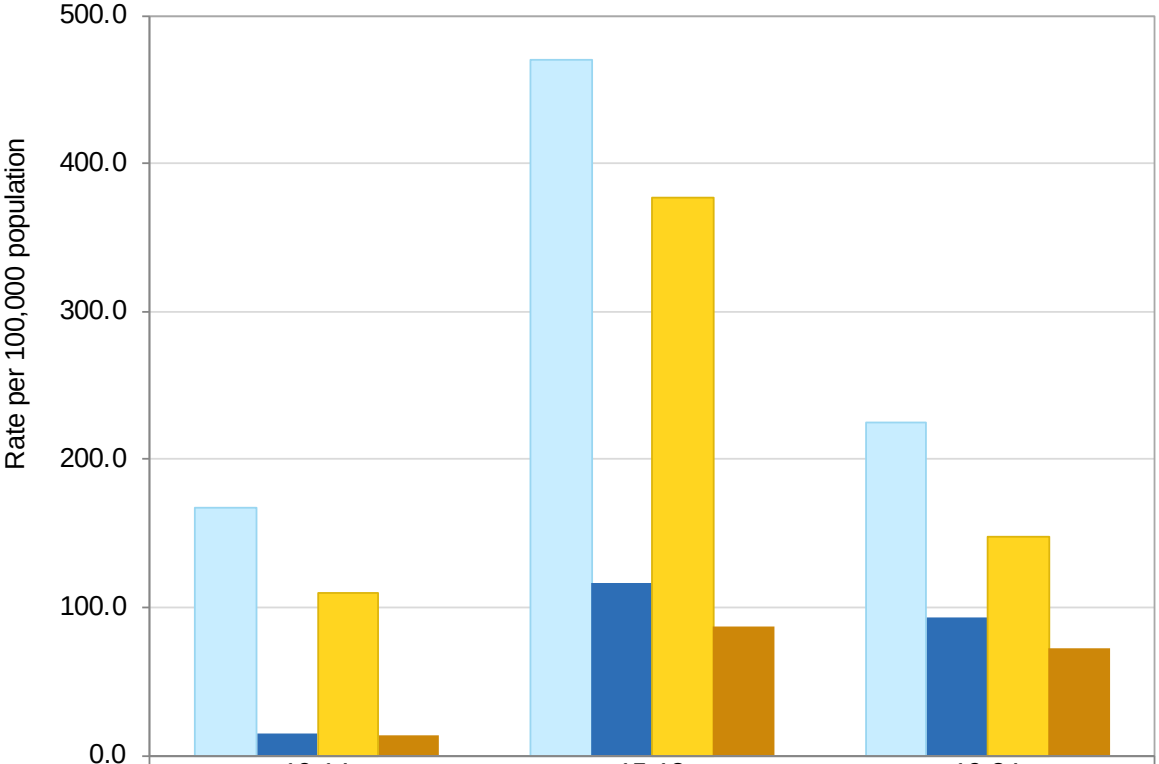
time from 2008-17, though there were a number of fluctuations in the trend. Youth aged 15 to 18 years show a demonstrable increasing trend over time from 2009-17; the difference between the rates for those years was statistically significant (163.0 per 100,000 in 2009 to 312.6 per 100,000 in 2017).

As with ED visits, youth aged 15 to 18 experienced the highest rates of the three youth age groups examined, with 10 to 14 year olds having the lowest rates of the three. For example, in 2017 the intentional self-harm hospitalization rate in Waterloo Region for youth aged 10 to 14 years old was 88.3 per 100,000 population, compared to 193.4 per 100,000 for 19 to 24 year olds and 312.6 per 100,000 in 15 to 18 year olds.

Provincially, the self-harm hospitalization rates showed similar trends to those seen locally, with clear increasing trends over time and the highest rates in 15 to 18 year olds (data not shown).

Figure 4.5 shows the five-year average rate of self-harm hospitalizations for male and female youth of the same three age groups, for Waterloo Region and Ontario, for the period 2013-17.

Figure 4.5. Five-year average rate of intentional self-harm hospitalizations in youth aged 10 to 24 years, by age and sex, Waterloo Region and Ontario, 2013-17



	10-14	15-18	19-24
Waterloo Females	167.2	470.5	224.6
Waterloo Males	15.1	116.2	93.0
Ontario Females	110.0	377.0	147.7
Ontario Males	13.2	87.0	72.0

Age group (years)

Source: Ambulatory Emergency External Cause Table (2013-17), MOHLTC, IntelliHealth Ontario, Extracted: December 12, 2018; Population Estimates (2013-16) and Population Projections (2017), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

There were statistically significant differences in hospitalizations rates for intentional self-harm in youth between the sexes, with females experiencing rates between 2.1 to 11.1 times higher than those in males of the same age group. These significant differences in rates between males and females are present in both Waterloo Region and Ontario and across all three age groups. For example, in Waterloo Region, females aged 15 to 18 years experienced an average annual hospitalization rate for intentional self-harm of 470.5 hospitalizations per 100,000 population in 2013-17, compared to a rate of 116.2 hospitalizations per 100,000 population in males of the same age group.

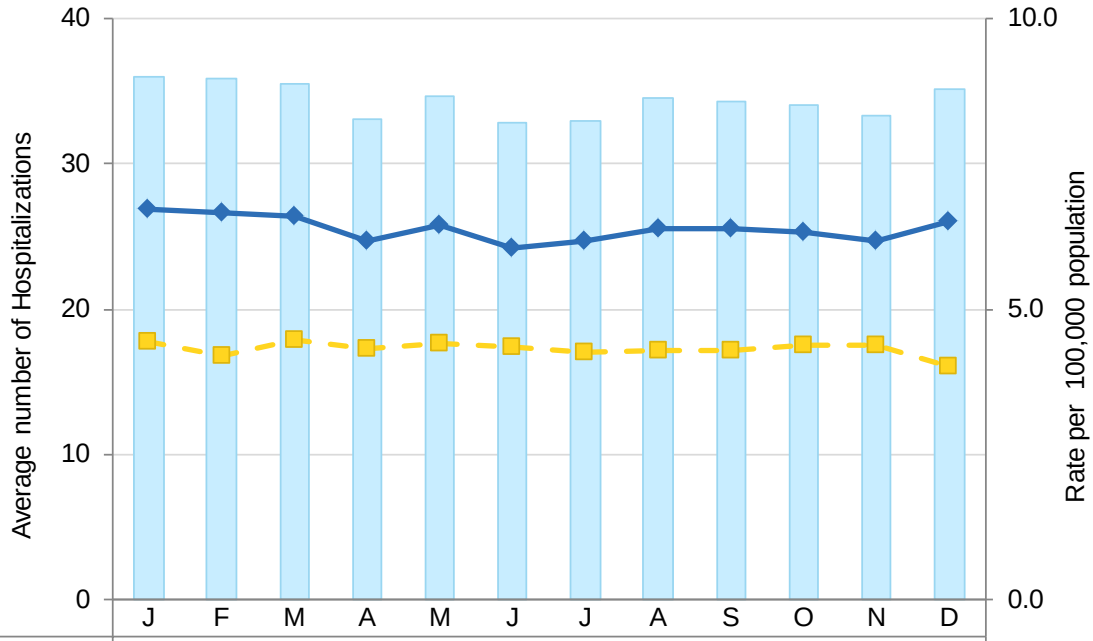
This figure also illustrates the same trends shown in the previous two figures, where local hospitalization rates in youth were significantly higher than those provincially and that those

aged 15 to 18 years experience the highest hospitalizations rates compared to those aged 10 to 14 and 19 to 24 years.

4.2. Seasonality

The next figure describes seasonal trends in hospitalizations for intentional self-harm for Waterloo Region and Ontario, by providing the average number and age-standardized rate of visits by month for a 10-year period (2008-17).

Figure 4.6. Average number and age-standardized rate of intentional self-harm hospitalizations, by month, Waterloo Region and Ontario, 2008-17



	J	F	M	A	M	J	J	A	S	O	N	D
Waterloo Hosp'ns	36	36	36	33	35	33	33	35	34	34	33	35
Waterloo Rate	6.7	6.7	6.6	6.2	6.5	6.1	6.2	6.4	6.4	6.3	6.2	6.5
Ontario Rate	4.4	4.2	4.5	4.3	4.4	4.3	4.3	4.3	4.3	4.4	4.4	4.0

Source: Ambulatory Emergency External Cause Table (2008-17), MOHLTC, IntelliHealth Ontario, Extracted: December 13, 2018; Population Estimates (2008-16) and Population Projections (2017), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

This figure shows the local average number of hospitalizations for intentional self-harm was very consistent with a range of only 33 to 36 per month. The monthly age-standardized rate of hospitalizations for Waterloo Region ranged from 6.1 to 6.7 hospitalizations per 100,000 population. The provincial monthly average rate was similarly consistent, ranging from 4.0 to 4.5 hospitalizations per 100,000 population.

4.3. Mechanism of injury

Note that as with the previous chapter on ED visits, the mechanism of injury categories for hospitalizations are not mutually exclusive (i.e. a single hospitalization may have more than one mechanism of injury) so the sum of the categories may be greater than 100 per cent.

The most common mechanism of injury for hospitalizations for intentional self-harm was related to drugs or alcohol, for both Waterloo Region (81.0 per cent) and Ontario (82.0 per cent). This finding is not surprising, given that a similar trend in mechanism of injury was also seen in the previous chapter for emergency department visits related to intentional self-harm. The second most common mechanism of injury for hospitalizations in both Waterloo Region and Ontario was self-harm using a sharp object (10.4 and 11.1 per cent, respectively) followed by poisoning or exposure to chemicals or vapours (e.g. carbon monoxide poisoning; 5.9 and 4.3 per cent, respectively). Hanging, strangulation or suffocation was the fourth most common mechanism of injury for self-harm hospitalizations, at 2.7 per cent in Waterloo Region and 2.3 per cent for all of Ontario.

The most common mechanism of injury for both sexes in Waterloo Region was related to poisoning or exposure to drugs or alcohol, with a higher proportion of females (84.7 per cent) than males (73.9 per cent) presenting with this mechanism. The second most common mechanism of injury was again self-harm with a sharp object (9.6 per cent in females versus 11.9 per cent in males). There were higher proportions of hospitalizations for poisoning or exposure to chemicals or vapours and hanging, strangulation or suffocation in males (8.0 and 4.7 per cent, respectively) than in females (4.8 and 1.7 per cent, respectively). These local differences by sex in the mechanism of injury for intentional self-harm hospitalizations were similar to those seen provincially.

The most common mechanism of injury for hospitalizations for intentional self-harm in youth in Waterloo Region was the same as that for the overall population, specifically, poisoning or exposure to drugs or alcohol (74.2 per cent in youth aged 10 to 18 years and 85.2 per cent in those aged 19 to 24 years, versus 81.0 per cent overall). Self-harm using a sharp object was the second most common mechanism of injury for hospitalizations in both youth age groups as well as the overall population, however, it is worth noting that, as with the ED visits, for youth aged 10 to 18 years, the proportion who were hospitalized with this mechanism of injury was greater (16.9 per cent) than for 19 to 24 year olds (10.1 per cent) or the overall population (10.4 per cent).

5. Suicide mortality

As described previously in a report by Region of Waterloo Public Health and Emergency Services (ROWPHE), suicide is the 16th leading cause of death overall in Waterloo Region and the 17th for the province (ROWPHE, 2016). The most significant population health impact of suicide death is apparent when premature mortality (i.e. years of life lost prior to age 75) is taken into consideration. Death by intentional self-harm is the second leading cause of premature mortality in Waterloo Region (287.1 potential years of life lost per 100,000 population in 2012), and the third for the province (ROWPHE, 2016).

Suicide death data is primarily captured in this report using Vital Statistics data, which is a database created from information captured on death certificates. Although it is generally considered the best available and most accessible data source for describing deaths in Ontario, timeliness tends to be a limitation of using Vital Statistics. At the time of writing this report, the most recent available Vital Statistics data was from 2015.

Data from the Office of the Chief Coroner for Ontario (OCC) was also obtained and is reported for the 10-year period 2007-16. The key advantage of the OCC data in this case is the availability of selected additional information about the presence of risk factors for suicide death that were found during the coroner's investigation, specifically, treatment for a psychiatric condition, history of abuse of drugs or alcohol and known past suicide attempt. It is important to note the number of suicide deaths and the rates between the two data sources should be compared with caution, due to differences in how deaths are categorized in each source. Vital Statistics tends to provide a slightly more conservative estimate of suicide mortality than data from the OCC.

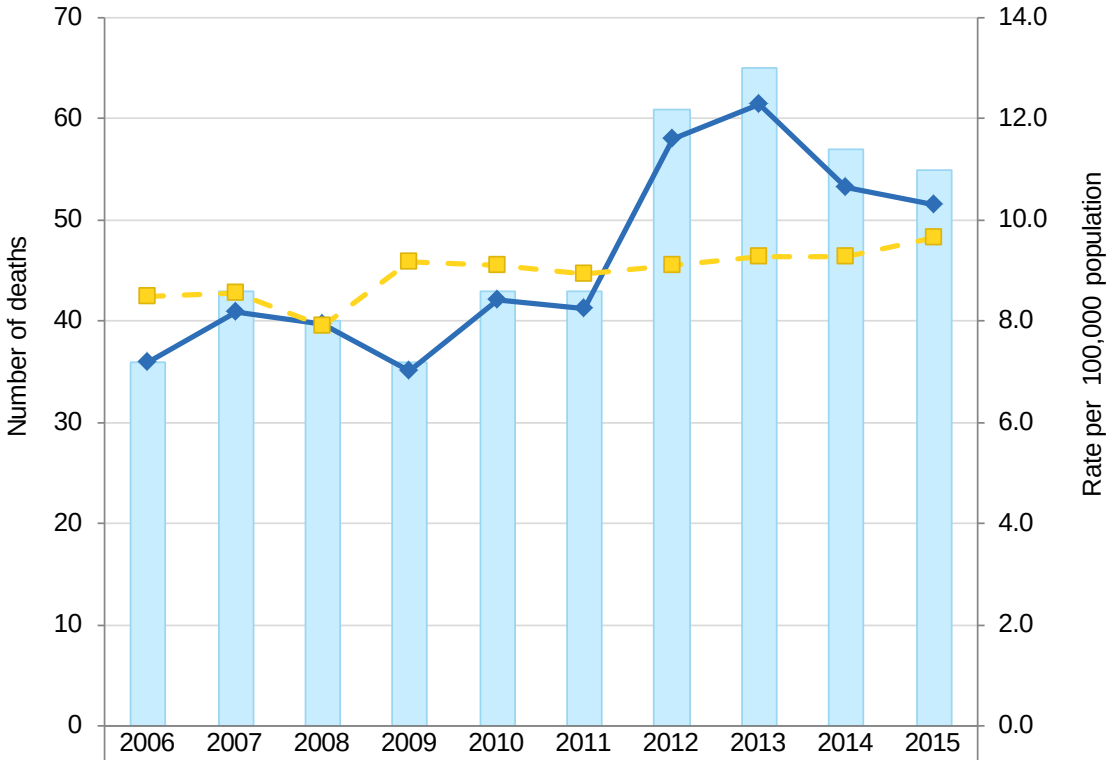
It is broadly understood in epidemiological research on suicide mortality that all data sources will underestimate the true incidence of suicide mortality, as it can be difficult or impossible to determine the intent of the individual and some deaths that were as a result of true suicidal intent may end up categorized as having 'undetermined intent'.

5.1. Vital Statistics Deaths

5.1.1. Overall trends over time and by age and sex

Figure 5.1 shows the annual number and age-standardized rate of suicide deaths for Waterloo Region and Ontario, for 2006-15.

Figure 5.1. Number and age-standardized rate of suicide deaths, Waterloo Region and Ontario, 2006-15



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Waterloo Deaths	36	43	40	36	43	43	61	65	57	55
Waterloo Rate	7.2	8.2	8.0	7.0	8.4	8.3	11.6	12.3	10.6	10.3
Ontario Rate	8.5	8.6	7.9	9.2	9.1	8.9	9.1	9.3	9.3	9.7

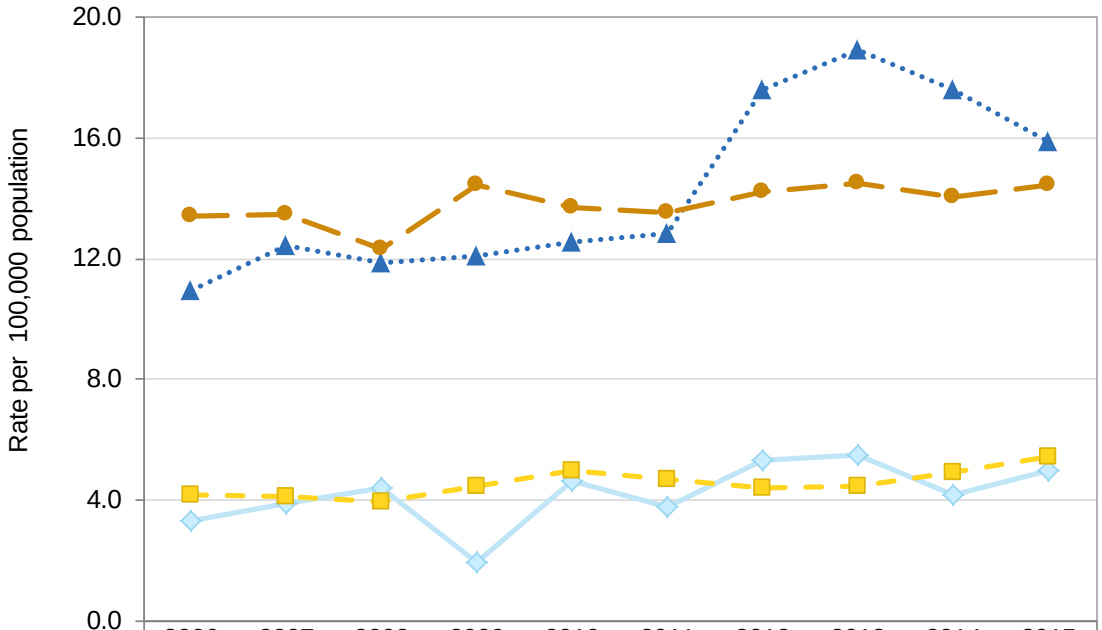
Source: Vital Statistics Deaths Table (2006-15), Ontario Ministry of Health and Long-Term Care (MOHLTC), IntelliHealth Ontario, Extracted: February 5, 2019; Population Estimates (2006-15), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

From 2006-15 in Waterloo Region, there were between 36 to 65 deaths annually due to suicide. There was considerable fluctuation in the local rates, though the local trend is generally increasing over time. The age-standardized suicide mortality rate for Waterloo Region in 2015 was 10.3 deaths per 100,000 population. The provincial rate increased significantly over time.

Due to the relatively small number of suicide deaths in Waterloo Region, the interval of statistical confidence around the local rates is wide and as such, there are actually no statistically significant differences in the local rates from year to year, nor are there any significant differences in the Waterloo Region rate compared to that of the province.

The next figure shows annual age-standardized suicide mortality rates for males and females in Waterloo Region and Ontario, for 2006-15.

Figure 5.2. Age-standardized rate of suicide deaths, by sex, Waterloo Region and Ontario, 2006-15



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Waterloo Females	3.3	3.9	4.4	2.0	4.6	3.8	5.3	5.5	4.2	5.0
Waterloo Males	10.9	12.4	11.9	12.1	12.6	12.8	17.6	18.9	17.6	15.9
Ontario Females	4.2	4.2	4.0	4.5	5.0	4.7	4.4	4.5	4.9	5.4
Ontario Males	13.4	13.5	12.3	14.4	13.7	13.5	14.2	14.5	14.1	14.5

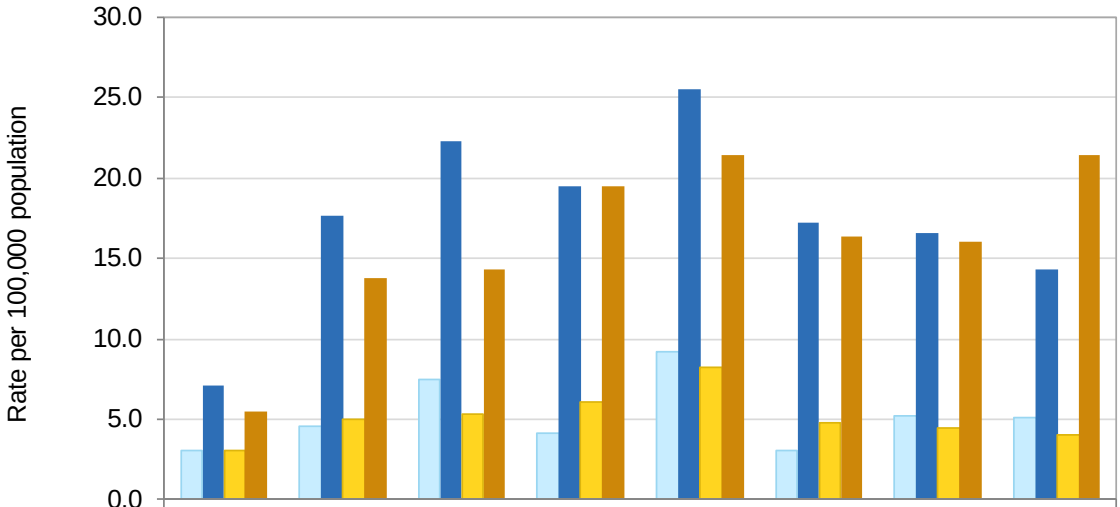
Source: Vital Statistics Deaths Table (2006-15), MOHLTC, IntelliHealth Ontario, Extracted: February 5, 2019; Population Estimates (2006-15), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

As illustrated above, suicide mortality rates were consistently higher in males than in females over time, both locally and provincially. Local suicide mortality rates in men were at their lowest in the 10-year timeframe in 2006 (10.9 deaths per 100,000) and peaked in 2013 (18.9 deaths per 100,000). There are no statistically significant differences in annual rates of suicide mortality for men in Waterloo Region compared to those for all of Ontario. Provincial rates of suicide mortality in men increased over time (12.3 per 100,000 in 2008 to 14.5 per 100,000 in 2015).

The suicide mortality rates in females were similar and increased slightly over time in Waterloo Region and Ontario; the increases over time were significant provincially, but not locally.

Figure 5.3 shows the five-year average suicide mortality rates for males and females by 10-year age groups, for Waterloo Region and Ontario, for the period 2011-15.

Figure 5.3. Five-year average rate of suicide deaths, by sex, Waterloo Region and Ontario, 2011-15



	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+
Waterloo Females	3.1	4.6	7.4	4.2	9.2	3.1	5.2	5.1
Waterloo Males	7.1	17.7	22.3	19.5	25.5	17.2	16.5	14.3
Ontario Females	3.1	5.0	5.3	6.0	8.2	4.8	4.5	4.0
Ontario Males	5.5	13.7	14.3	19.5	21.4	16.3	16.0	21.4

Age group (years)

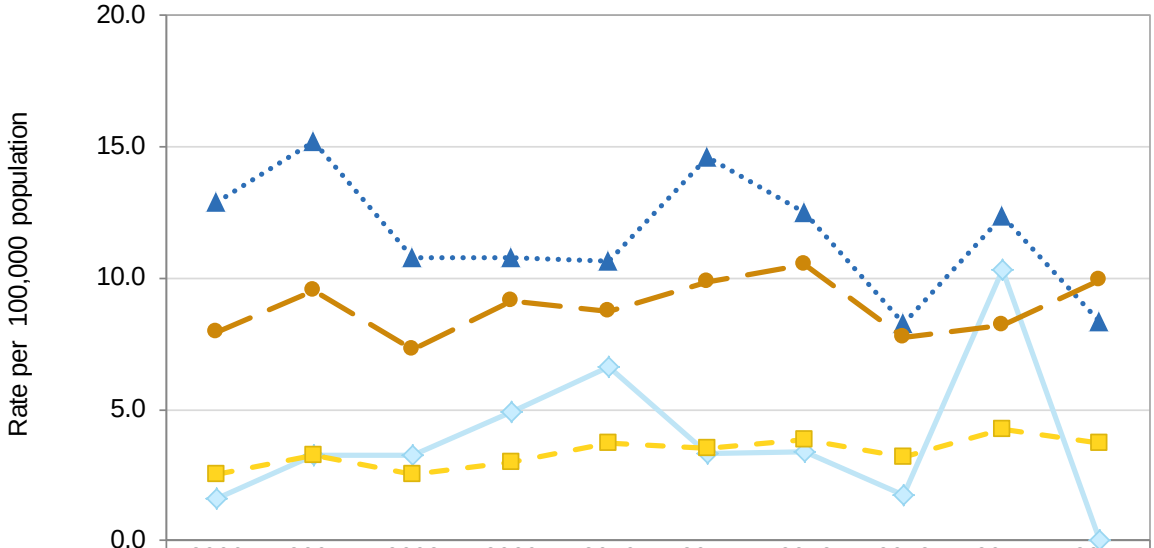
Source: Vital Statistics Deaths Table (2011-15), MOHLTC, IntelliHealth Ontario, Extracted: February 5, 2019; Population Estimates (2011-15), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

Suicide mortality rates vary by age and sex in a similar trend in Waterloo Region, as for all of Ontario. The highest rates of suicide deaths are seen in men aged 50 to 59 years of age (25.5 deaths per 100,000 in Waterloo Region and 21.4 deaths per 100,000 for all of Ontario) and the provincial rate peaks again in the oldest age group, 80 years and older, in males (21.4 deaths per 100,000). The rates for females also peak in the same middle-age years, albeit at a significantly lower rate (9.2 deaths per 100,000 in Waterloo Region females aged 50 to 59 years and 8.2 deaths per 100,000 in Ontario).

The Waterloo Region Suicide Prevention Council also has previously chosen to examine self-harm rates specifically in youth. As such, trends in suicide mortality have also been assessed for three youth age groups.

Figure 5.4 shows the annual suicide mortality rates for youth in Waterloo Region and Ontario for two age groups, 10 to 18 and 19 to 24 years, for 2006- 2015.

Figure 5.4. Age-specific rate of suicide deaths in youth aged 10 to 24 years, Waterloo Region and Ontario, 2006-15



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Waterloo 10-18	1.6	3.3	3.3	4.9	6.6	3.4	3.4	1.7	10.3	0.0
Waterloo 19-24	12.9	15.2	10.8	10.8	10.6	14.6	12.5	8.3	12.4	8.3
Ontario 10-18	2.6	3.3	2.5	3.0	3.7	3.5	3.8	3.2	4.3	3.7
Ontario 19-24	7.9	9.5	7.3	9.1	8.7	9.8	10.5	7.7	8.2	9.9

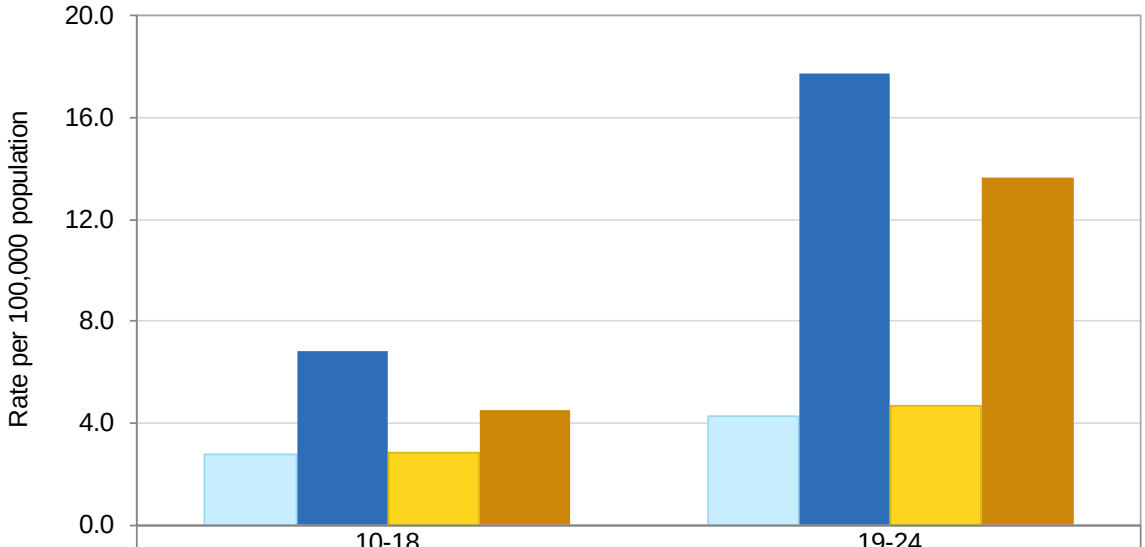
Source: Vital Statistics Deaths Table (2006-15), MOHLTC, IntelliHealth Ontario, Extracted: February 5, 2019; Population Estimates (2006-15), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

As shown above, youth aged 19 to 24 years tended to have higher rates of suicide mortality than youth aged 10 to 18 years, both locally and provincially. For example, in 2013, local youth aged 10 to 18 years had a suicide mortality rate of 1.7 deaths per 100,000 population, compared to 8.3 deaths per 100,000 population for local youth aged 19 to 24 years.

Although there was considerable variation in the local youth suicide mortality rates, these fluctuations occur due to the relatively small number of deaths in Waterloo Region. There were no statistically significant differences in any of the suicide mortality rates in youth of either age group between Waterloo Region and Ontario.

Figure 5.5 shows the five-year average suicide mortality rate for male and female youth aged 10 to 18 and 19 to 24 years in Waterloo Region and Ontario, for the period 2011-2015.

Figure 5.5. Five-year average rate of suicide deaths in youth aged 10 to 24 years, by age and sex, Waterloo Region and Ontario, 2011-15



	10-18	19-24
Waterloo Females	2.8	4.3
Waterloo Males	6.8	17.7
Ontario Females	2.8	4.7
Ontario Males	4.5	13.6

Age group (years)

Source: Vital Statistics Deaths Table (2011-15), MOHLTC, IntelliHealth Ontario, Extracted: February 5, 2019; Population Estimates (2011-15), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

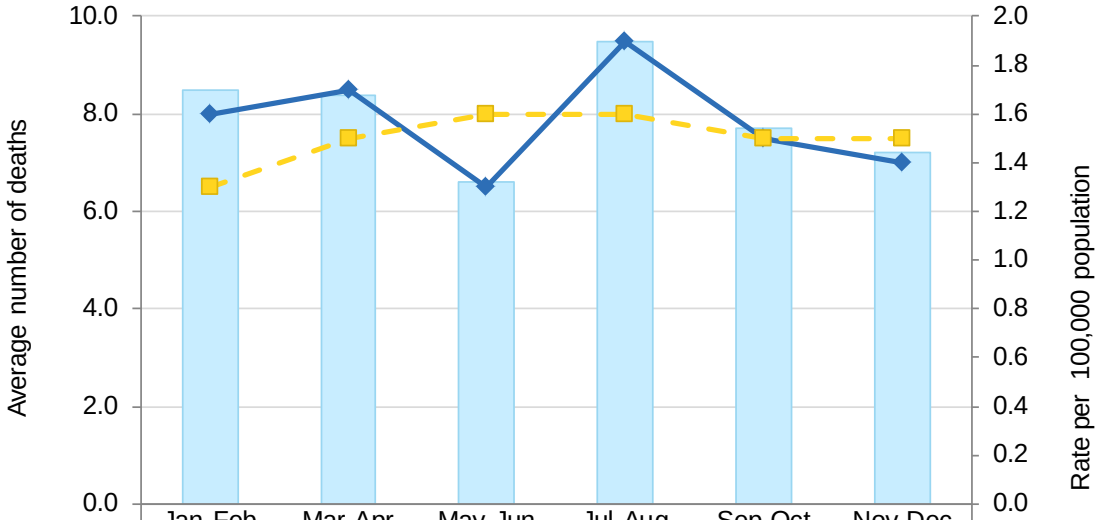
There were statistically significant differences in suicide mortality rates in youth between the sexes at the Ontario level, with a rate in males aged 10 to 18 that was 2.4 times that of females of the same age (6.8 versus 2.8 deaths per 100,000 population, respectively) and a rate in males aged 19 to 24 years that was 4.1 times that of females of the same age (17.7 versus 4.3 deaths per 100,000 population, respectively). There were no statistically significant differences between the sexes at the local level, however there is a relatively small number of suicide deaths in youth in Waterloo Region, which results in wide confidence intervals. Even without statistical significance, however, it appears likely that male suicide deaths do exceed female deaths in the local youth population in a similar trend as is seen in the overall population in Waterloo Region and for the youth population in all of Ontario.

5.1.2. Seasonality

Due to the relatively small number of local suicide deaths, seasonal trends are described using bi-monthly intervals, as opposed to the monthly intervals used for emergency department visits and hospitalizations in previous chapters.

Figure 5.6 shows the bi-monthly average number and rate of suicide deaths for Waterloo Region and Ontario, over a ten-year period from 2006-15.

Figure 5.6. Bi-monthly average number and age-standardized rate of suicide deaths, by Waterloo Region and Ontario, 2006-15



	Jan-Feb	Mar-Apr	May-Jun	Jul-Aug	Sep-Oct	Nov-Dec
Waterloo Deaths	8.5	8.4	6.6	9.5	7.7	7.2
Waterloo Rate	1.6	1.7	1.3	1.9	1.5	1.4
Ontario Rate	1.3	1.5	1.6	1.6	1.5	1.5

Source: Vital Statistics Deaths Table (2006-15), MOHLTC, IntelliHealth Ontario, Extracted: February 5, 2019; Population Estimates (2006-15), MOHLTC, IntelliHealth Ontario, Extracted December 10, 2018.

The figure above shows a local bi-monthly average number of suicide deaths that ranges between 6.6 deaths in May and June to 9.5 deaths in July and August. The bi-monthly rate of suicide deaths for Waterloo Region ranges from 1.3 to 1.9 deaths per 100,000, and there are no statistically significant differences between bi-monthly intervals.

The Ontario suicide mortality rates also had no significant seasonality trend.

5.1.3. Mechanism of injury

Note that the values for mechanism of injury for suicide deaths do not necessarily sum to 100.0 per cent due to rounding. Unlike the ED visit and hospitalization data on mechanism

of injury, it is only possible to list one mechanism of injury per suicide death, therefore these categories are mutually exclusive.

The most common mechanism of injury for suicide deaths for both Waterloo Region and Ontario for 2011-15 was hanging, strangulation or suffocation (48.0 and 44.3 per cent, respectively), followed by poisoning or exposure to drugs or alcohol (i.e. overdose; 19.4 and 19.1 per cent, respectively). Death as a result of firearm or handgun was the third most common mechanism of injury in Waterloo Region (8.2 per cent) as well as Ontario (11.4 per cent). Jumping from a high place was less frequent in Waterloo Region (4.7 per cent) than in all of Ontario (8.9 per cent). This finding might suggest there is less access to high places in Waterloo Region relative to other places in Ontario.

The most common mechanism of injury for suicide deaths for both sexes in Waterloo Region was hanging, strangulation or suffocation, with a higher proportion of males than females (37.5 per cent versus 51.2 per cent, respectively). The second most common mechanism of injury was poisoning or exposure to drugs or alcohol for both sexes, with a higher proportion in females (39.1 per cent) than males (13.5 per cent). Firearm or handgun was the third most common mechanism of injury for suicide deaths in men in Waterloo Region (10.2 per cent), while poisoning and exposure to chemicals or vapours was the third most common mechanism of injury for females (6.3 per cent) during the period 2011-15. The fifth most common mechanism of injury for males was jumping from a high place (5.1 per cent); it was also fifth for females, along with self-harm by a sharp object (both 3.1 per cent).

The most common mechanism of injury in suicide deaths for Ontario youth and the overall population was hanging, strangulation or suffocation, however, it represents a much greater proportion of youth deaths than for the overall population (71.7 per cent in youth aged 10 to 18 and 56.7 per cent in youth aged 19 to 24 years, compared to 44.3 per cent overall). The second most common mechanism of injury for youth suicide deaths was jumping from a high place (8.7 per cent in 10 to 18 year olds and 14.2 per cent in 19 to 24 year olds), which was the fourth most common mechanism for all ages.

The third most common mechanism of injury varied for each of the youth ages - in youth aged 10 to 18, it was by firearms (6.8 per cent) and for youth 19 to 24, it was drug or alcohol overdose (7.7 per cent), whereas firearms and overdose were second and third most common for all ages (19.1 and 11.4 per cent, respectively). In general, these findings were consistent with the relative frequency of mechanisms of injury in local youth suicide deaths.

5.1.4. Place of injury

The following section summarizes the proportion of suicide deaths by place where the injury resulting in death occurred, for Waterloo Region and Ontario, for the period 2011-15. The vast majority of suicide deaths in Waterloo Region and Ontario occurred at home (77.9 and 79.5 per cent, respectively). A small proportion of suicide deaths occur in other places including streets or highways (3.9 per cent in Waterloo Region and 2.9 per cent in Ontario), trade or service areas or industrial and construction areas (2.9 and 2.4 per cent in Ontario, respectively). About 10 per cent of suicide deaths occurred in an unknown or other locality, both in Waterloo Region and for all of Ontario.

The vast majority of Ontario youth suicide deaths occurred at home, similar to the overall population (74.8 per cent for youth 10 to 18, 74.3 per cent for youth aged 19 to 24 years, and 79.5 per cent overall). These findings were consistent with the findings in local youth suicide deaths.

5.2. Office of the Chief Coroner of Ontario data

It is important to note that the number of suicide deaths and the rates between the two data sources should only be compared with great caution, due to differences in how deaths are categorized in each source. Vital Statistics tends to provide a slightly more conservative estimate of suicide mortality than data from the OCC.

As mentioned previously, it is broadly understood in epidemiological research on suicide mortality that all data sources will underestimate the true incidence of suicide mortality, as it can be difficult or impossible to determine the intent of the individual, and some deaths that were as a result of true suicidal intent may end up categorized as having ‘undetermined intent’.

Table 5.6 illustrates the number of suicide death cases where there were one or more known risk factors for suicide identified during the coroner’s investigation, for Waterloo Region and Ontario, for the 10-year period 2007-16.

The three risk factors that are tracked in the OCC database include known previous suicide attempts, history of treatment for psychiatric condition, and history of alcohol or drug abuse. It is important to note that the risk factors tracked in the database are not mutually exclusive (one case can have all or none of the risk factors at the same time), so the proportions across categories will not sum to 100.0 per cent.

In general, the findings in the table illustrate that based on coroner’s investigations, suicide deaths in Waterloo Region demonstrate a similar prevalence of the known risk factors compared to those for Ontario overall over the past 10 years. About one in five individuals who died by suicide in in Waterloo Region and Ontario had a known history of alcohol or drug abuse; nearly half had a known history of treatment for a psychiatric condition and

about one-quarter had a known previous suicide attempt. About 40 per cent of suicide deaths in both Waterloo Region and Ontario did not have any of the three risk factors.

Table 5.1. Proportion of suicide deaths with known risk factors for suicide, Waterloo Region and Ontario, 2007-16

Ontario

Year	History of Alcohol or Drug Abuse		History of Treatment for Psychiatric Condition		Known previous attempt		None of the 3 factors		Total suicide deaths
	#	%	#	%	#	%	#	%	
2007	214	19.1	374	33.3	249	22.2	610	54.3	1,123
2008	218	20.2	416	38.6	268	24.8	579	53.7	1,079
2009	268	21.6	553	44.7	286	23.1	535	43.2	1,238
2010	263	21.6	557	45.8	289	23.8	455	37.4	1,215
2011	257	21.0	566	46.3	335	27.4	475	38.9	1,222
2012	246	19.8	556	44.7	296	23.8	478	38.5	1,243
2013	260	20.0	617	47.4	290	22.3	447	34.4	1,301
2014	286	21.5	673	50.7	313	23.6	515	38.8	1,328
2015	271	19.5	700	50.4	337	24.2	509	36.6	1,390
2016*	273	19.7	710	51.2	325	23.4	482	34.8	1,387
10 yr avg	256	20.4	572	45.7	299	23.9	509	40.6	1,253

Waterloo Region

Year	History of Alcohol or Drug Abuse		History of Treatment for Psychiatric Condition		Known previous attempt		None of the 3 factors		Total suicide deaths
	#	%	#	%	#	%	#	%	
2007	7	15.6	21	46.7	7	15.6	19	42.2	45
2008	5	12.5	21	52.5	11	27.5	14	35.0	40
2009	7	15.2	18	39.1	12	26.1	17	37.0	46
2010	9	21.4	16	38.1	16	38.1	18	42.9	42
2011	10	20.0	21	42.0	15	30.0	20	40.0	50
2012	6	9.5	28	44.4	17	27.0	31	49.2	63
2013	15	22.4	31	46.3	12	17.9	26	38.8	67
2014	13	24.1	29	53.7	17	31.5	20	37.0	54
2015	14	25.9	29	53.7	13	24.1	19	35.2	54
2016*	10	19.2	29	55.8	14	26.9	17	32.7	52
10-yr avg	10	18.7	24	47.4	13	26.1	20	39.2	51

Source: Office of the Chief Coroner (2007-16), Ontario Ministry of Community Safety and Correctional Services (MCSCS), Received August 7, 2018.

* 2016 figures are preliminary.

6. Discussion

The report findings describe a variety of existing data from community organizations and secondary data sources, in order to provide a broad and detailed picture of suicide and self-harm in Waterloo Region.

Overall population trends

Overall trends for self-reported mood disorders, lifetime suicidal ideation and lifetime suicide planning from the Canadian Community Health Survey (CCHS) were all statistically significantly higher in Waterloo Region than in Ontario. This finding seems to align with findings from other data sources such as emergency department (ED) visits and hospitalizations.

Self-harm ED visit and hospitalization rates are significantly higher in Waterloo Region compared to the rates for all of Ontario. Both rates, locally and provincially, have increased over the past 10 years, but particularly the ED visit rate. Trends in suicide mortality rates suggest that they are increasing slightly, for all of Ontario as well as locally.

High risk populations and risk factors

CCHS data revealed unique sociodemographic insights into self-reported mental illness and suicidal behaviour that was otherwise not available from other sources. Females, youth, individuals with lower income and less education, single, widowed, separated or divorced individuals and Canadian-born individuals self-reported consistently higher rates of mental illness, depressive symptoms and suicidal thoughts or behaviours, relative to their counterparts.

Of the sub-populations assessed in CCHS data, lesbian, gay and bisexual individuals and Indigenous peoples reported by far the highest rates of mental illness and suicidal behaviour, often 3.5 to 4 times higher than the rate for the overall population.

The Office of the Chief Coroner data reveals that about one in five suicide deaths have a known history of drug or alcohol abuse, nearly half have a known history of treatment for psychiatric conditions, and about a quarter have a known prior suicide attempt. A large proportion, about 40 per cent, still had none of these three risk factors.

Trends by sex and gender

The self-reported CCHS data results on suicidal behaviour by sex aligned with trends seen in self-harm ED visit and hospitalization data. Females reported higher rates of contemplating, planning or attempting suicide compared to males.

Females, particularly adolescents, have consistently significantly higher rates of self-harm ED visits than males. Females generally, but particularly adolescent females, are

disproportionately represented in the increases in self-harm ED visit rates observed in the past 10 years. Self-harm ED visit rates for adolescent females are more than four times higher than the overall rates. Females are also more likely to be repeat ED patients for self-harm. All of these findings highlight concerning trends for self-harm in young females in Ontario, and particularly in Waterloo Region.

Rates of suicide mortality remain consistently higher in men, particularly middle-aged, though the evidence does seem to suggest the rates in females may be increasing as well.

Transgender people can be at a greater risk for suicide (Centre for Suicide Prevention, 2019), however, questions about gender identity were not asked in the CCHS. Within the Canadian Mental Health Association of Waterloo Wellington (CMHA) client populations, clients whose gender was unknown or another identity (i.e. other than male or female) had higher rates of suicidal behaviour or self-harm. This may be the only source of information from all the local data sources that speaks to the prevalence of suicidal behaviour in transgender individuals. More investigation is required to understand the local context of suicidal behaviours within the Waterloo Region LGBTQ communities, particularly for transgender individuals.

Trends by age

The self-reported CCHS data results also aligned with trends for suicidal behaviour by age seen in ED visit and hospitalization data. In the CCHS data, youth reported higher rates of suicidal behaviour than other age groups. Youth aged 15 to 18 years also have the highest self-harm ED visit rates of all youth aged 10 to 24. All of these findings highlight concerning trends in the province of Ontario and particularly in Waterloo Region. In the CMHAWW client population, youth again had higher rates of suicidal behaviour or self-harm issues.

The brief results from the Ontario Student Drug Use and Health Survey (OSDUHS) for Waterloo Wellington Local Health Integration Network on secondary students supplement the results from the CCHS. While some CCHS results indicate higher prevalence of suicidal behaviour in local youth, there were no statistically significant differences between the WWLHIN students compared to the overall student population in Ontario. The OSDUHS also provided some additional insights around mental health and well-being of youth, including the prevalence of bullying at school – a quarter of youth reported being bullied in the past year – and a similar proportion with unmet needs for mental health support. Literature indicates that peer bullying is associated with increased risk of thoughts of suicide and suicide attempts in youth (Mental Health Commission of Canada, 2018). Though the ODSUHS findings have some limitations, they are useful in that they indicate potential areas of focus for future efforts for intervention and prevention work with local youth. For example, ensuring that youth have adequate access to mental health supports and enhancing bullying prevention efforts may be necessary.

One caution on the CCHS self-reported suicidal behaviour data is that youth reported higher lifetime rates of having contemplated, planned or attempted suicide. Although research does support the notion that youth are at high risk for suicidal behaviour, this finding would still seem somewhat counterintuitive for measures of lifetime (cumulative) occurrence. It would be expected that a cumulative measure would increase over the lifespan with the highest proportions in the oldest age groups. One possible explanation would be that this counterintuitive finding reflects bias due to the self-reported nature of the data. Younger people may have greater familiarity with issues around mental health and suicide and be more likely to recognize it within themselves and less reluctant to disclose compared to older cohorts. Older adults also may have experienced mental illness or suicidal behaviour in earlier times of their lives, but may not recall it at time of survey.

Mechanisms of injury

The prevalence of mechanism of injury differs in self-harm ED visits and hospitalizations compared to suicide mortality. These differences likely reflect, at least in part, the more immediate lethality of certain mechanisms compared to others. The most common mechanism of injury seen in self-harm ED visits and hospitalizations are drug and alcohol poisonings, followed by self-harm with a sharp object. By comparison, the most common for suicide deaths is hanging, strangulation or suffocation, in nearly half of deaths, followed by drug or alcohol overdoses in about 20 per cent, and firearms as third most common (about one in ten deaths).

Service access and utilization

There is little information available on service access related to health care or suicide prevention supports. It is clear that women are seen more frequently than men in EDs and hospitals for self-harm, but men still die more often by suicide. The reasons for this trend are unknown, however, research evidence shows men, particularly younger men, are significantly less likely to seek help for mental health problems (Lynch, Long and Moorhead, 2018).

There was data available from the Waterloo Regional Police Service (WRPS). Police respond to many suicide and self-harm crises and suggests WRPS may interact with a larger proportion of suicide attempts than are seen in the ED. Findings further suggest that police may respond to a large proportion of the suicide deaths each year. These results highlight the importance of the on-going partnership with police services in suicide prevention work in Waterloo Region.

Gaps in local data

While the findings described in this report do provide a broad and, at times, detailed understanding of suicide and self-harm in Waterloo Region, many unanswered questions remain. While research evidence points to high-risk populations and common risk factors for

suicide, such as employment status, level of income, sexual orientation and Indigenous identity, most of this information is not available for analysis for most data sources. In general, it is unclear which sub-populations in Waterloo Region, aside from the trends reportable by age and sex, die by suicide or engage in self-harming behaviour. Further research is needed to gain a more thorough understanding of who is dying by suicide versus who is attempting suicide in Waterloo Region.

It is important to note that questions about gender identity were not asked in the CCHS, so it was not possible to assess any of the mental illness or suicidal behaviours for transgender individuals. This gap in knowledge for the local community is concerning, given that existing research in Ontario has illustrated very high rates of suicidal behaviour in transgender individuals, including that 43 per cent of trans individuals in Ontario have ever attempted suicide, and 10 per cent have attempted in the past year (Bauer and Scheim, 2015). These rates are higher than those seen in any of the sub-groups examined in CCHS; therefore, it will be important for future community research to include transgender individuals.

With three post-secondary institutions in Waterloo Region, little is known about the extent to which post-secondary students are represented in the data sources. A University of Waterloo report on the National College Health Assessment results for 2016 states that 14 per cent of students reported contemplating suicide in the past year and about two per cent had attempted suicide in the past year (American College Health Association, 2016). Other data for post-secondary students were not available, which is a significant gap in knowledge considering the size of the post-secondary student population in Waterloo Region – approximately 60,000 (Region of Waterloo, 2018).

It is also important to note that, due to the nature of the data sources on ED visits, hospitalizations and mortality, those trends do not necessarily capture post-secondary students who live temporarily in Waterloo Region, only those whose home addresses (e.g., with the Ontario Health Insurance Plan) are in Waterloo Region. Approximately half of the post-secondary student population, or 30,000 students, live in the region temporarily (Region of Waterloo, 2018).

The reasons for the steadily increasing self-harm ED visit rates, particularly in adolescent females, are not known. It is possible these trends could indicate more people in self-harm or suicidal crisis are reaching out and receiving needed care. Yet the on-going increases in ED visits, hospitalizations and the slight increases in the suicide mortality rates suggests that these trends represent a true increase in the overall burden of suicide and self-harming behaviours in Ontario and Waterloo Region.

It is also not known how individuals use community and health care services or how they may move through the system when seeking and receiving care. It is unknown how often individuals who died by suicide had sought treatment or had been seen by a community or health care provider prior to death. Due to the discrepancy between populations seen more often in ED or community service organizations (mainly females) and the population with the

highest mortality rates (mainly males), it could be hypothesized that those who die by suicide are not readily accessing services available. Health and community service visits, such as visits with a primary care provider or mental health service provider, offer opportunities for suicide risk screening and assessment for those at increased risk for suicide.

Further research by WRSPC in partnership with ROWPHE and the Centre for Community Based Research will attempt to fill some of these knowledge gaps through primary, qualitative, community-based research meant to provide a deeper understanding of suicide and self-harm in the local community and existing services and supports. This research will purposefully include perspectives from diverse groups and individuals whose experiences are not reflected in the quantitative sources of data available in the community, such as those presented in this report.

7. Methodology, Data Sources and Data Limitations

7.1. Methodology

This report describes data related to suicide in Waterloo Region and Ontario, updating and replacing statistics that were released in a previous report by Region of Waterloo Public Health and Emergency Services (ROWPHE, 2016).

This report includes the most recent 10 years of data available from most of the data sources. Descriptions of the data sources as well as a discussion of limitations are described below. Note that population estimates from the Ontario Ministry of Finance were used as denominators to calculate all incidence rates. These population estimates originate from census and intercensal estimates from the 2006, 2011 and 2016 Canadian Censuses.

The data presented in this report represents the residents of Waterloo Region and Ontario. All rates were age-standardized to the 2011 Canadian population, and 95 per cent confidence intervals were calculated for all rates. The terms ‘significant’ or ‘significance’ used throughout this report denote a statistically significant difference between two values, defined as non-overlapping 95 per cent confidence intervals. Detailed data tables including confidence intervals are available upon request.

7.2. Canadian Community Health Survey

Data on mental health and suicide-related indicators were obtained from the Canadian Community Health Survey (CCHS) 2015-15 Ontario Share file, as distributed by the Ontario Ministry of Health and Long-Term Care to local public health units. CCHS is a national, largely telephone-based survey conducted by Statistics Canada that provides estimates of health determinants, health status and health system utilization at the national, provincial, regional and health unit levels. The survey is conducted on an on-going basis, with new cycles of the survey occurring on a bi-annual basis.

The CCHS target population includes household residents 12 years and older in all provinces and territories, excluding those living on Indian Reserves, Canadian Forces Bases, institutions, some remote areas, and individuals or households without a telephone. Note also that the suicide-related questions were only asked of those aged 15 years and older.

Where sample sizes were sufficiently large, data were analyzed for Waterloo Region and Ontario, overall and cross-tabulated by multiple variables of interest. A superscript ‘E’ indicates that an estimate should be interpreted with caution due to high sampling variability. Responses such as ‘don't know’, refusals to answer or ‘not stated’ were excluded from

analysis if they represented less than five per cent of the responses. In removing these responses, it is assumed that they occur randomly, which may not be the case.

7.3. National Ambulatory Care Reporting System

Emergency department (ED) visit data were obtained from IntelliHealth Ontario, a web-based health information platform managed by the Ministry of Health and Long-Term Care (MOHLTC). These data originate from the National Ambulatory Care Reporting System (NACRS), an administrative database managed by the Canadian Institute for Health Information. ED visits and hospitalizations for Ontario residents that occur outside of the province are not available and are not represented in this report. All visits with diagnoses codes X60-X84 and Y87.0 from the Canadian version of the 10th revision of the International Classification of Diseases (ICD-10-CA) are considered to be related to intentional self-harm. Note that intentional self-harm does not necessarily denote suicidal intention.

Note that unlike the age-related definition of suicide deaths described in the next section, intentional self-harm ED visits and hospitalization data do not have any age-related definitions and as such, individuals of all ages were included in analyses.

Figures on hospitalizations for intentional self-harm were also calculated using NACRS data, with the rationale that NACRS provides more timely information, as injury data are captured at admission to an inpatient floor from the emergency department rather than at discharge. Furthermore, NACRS also captures admissions to acute care psychiatric beds and all non-elective hospital admissions, thereby providing a more accurate estimate of injury-related hospitalizations.

7.4. Vital Statistics – Deaths

Vital Statistics mortality data were also obtained through IntelliHealth. These data originate from death certificates via the Vital Statistics administrative database managed by the Ontario Office of the Registrar General. Ontario residents who died outside of the province are not available and are not represented in this report. The underlying cause of death[4] is indicated on provincial death certificates. In the province of Ontario, a death of a child under age 10 cannot be ruled a suicide (Office of the Chief Coroner of Ontario, 2010). As of January 1, 2000, primary cause of death is classified using the 10th Revision of the ICD (ICD-10). All deaths coded as ‘intentional self-harm’ (i.e., X60-X84 or Y87.0) were classified as suicides and were included in this report. Note that in using intentional self-harm ICD codes to represent suicide-related deaths, it is assumed that all incidents of self-harm occurred with an intent to end one’s life, which may not always be the case.

[4] The underlying cause of death is either (a) the disease or injury that initiated the train of events leading directly to death, or (b) the circumstances of the accident or violence that produced the fatal injury.

Local and provincial suicide mortality rates likely underestimate the true incidence of death by suicide. Cause of death classification may be influenced by social or legal conditions surrounding the death as well as by the level of medical investigation. Information regarding the nature of the death may only become available after the original death certificate is complete. In some situations, assessing whether the death was intentional due to self-harm may be difficult, and a death can only be ruled a suicide when the victim's intent is clear.

7.5. Other data sources

Data from Waterloo Regional Police Service were acquired by custom request to the Strategic Services branch and are shared with permission from WRPS. Similarly, service data from the Canadian Mental Health Association Waterloo Wellington were acquired by custom request and are shared with permission from CMHA. Representatives from both organizations reviewed the presentation and interpretation of findings to ensure accuracy.

Data on mental health and substance use in youth in the Waterloo Wellington Local Health Integration Network (WWLHIN) region were obtained from the Ontario Student Drug Use and Health Survey (OSDUHS). OSDUHS is a cross-sectional survey of Ontario students in Grades 7 to 12 conducted on a bi-annual basis by the Centre for Addiction and Mental Health (CAMH). A cluster sampling design is used, where schools and classes in publicly funded schools are randomly selected, and all students in a classroom have the opportunity to participate. School dropouts, 'street youth' and youth not otherwise being educated in the publicly funded school system are excluded from the sampling frame. Since survey responses were self-reported, the true prevalence of drug and alcohol use may be over- or underestimated due to social desirability bias, recall bias or high non-response rates.

Data from the Office of the Chief Coroner (OCC) were received in August 2018.The majority of deaths in Canada are often due to natural diseases, where a physician will complete a death certificate that identifies the cause of death. In some instances, a physician may not know the cause of death, thereby requiring a coroner to carry out an investigation (Statistics Canada, 2012). In Ontario, the Coroner classifies a death as a suicide only if the intention is clear. A death may initially be coded as 'undetermined' until further information on the nature of death becomes available after the investigation. Certain causes of death may produce greater uncertainty as to whether it was intended as a suicide or not. Furthermore, reporting of suicides may be impacted by numerous other factors including changes in the Coroner's weighting of evidence to classify a death as a suicide, or stigma about suicide that influences coding on the death certificate.

7.6. Data limitations

For CCHS, it is important to note that data are self-reported and may be subject to recall bias. Sensitive questions, such as those related to mental health and suicide, may be subject to social desirability bias or high non-response and result in an underestimate or

overestimate of the true prevalence in the population. Such biases may not affect all respondent groups equally (e.g. females versus males, by age, cultural/religious background, etc.) as understanding of suicidal behaviours and levels of stigmatization experienced will vary from person to person.

It is extremely difficult, if not impossible, to accurately estimate true suicide mortality rates in a given population. One of the main issues with suicide mortality reporting is the likelihood of attributing a true suicide death to a different classification, such as accidental death or death due to undetermined causes. Coroners or medical examiners may be reluctant to certify a death as a suicide unless intention is clear. In many jurisdictions, Ontario included, coroners or medical examiners tend to misclassify suicides as accidental deaths or due to an undetermined cause (Health Canada, 1994; Parai et al, 2006; Edwards et al., 2008).

Furthermore, this misclassification tends to occur more often for certain methods of suicide; in one study, a sample of Ontario coroners were more likely to assign deaths from hanging and carbon monoxide gas exposure as suicides, whereas deaths from poisoning and drowning were more frequently classified as accidents. Deaths from over-the-counter medication overdose were more frequently certified as a suicide than death from heroin overdose (41.6 per cent versus 12.4 per cent). Cases with prior suicide attempts were more likely to be classified as a suicide than those without any documented past attempts (Parai et al, 2006).

Another potential source of misclassification for true suicide mortalities lies in how cause of death in children is defined. There has been some research and discussion about whether young children are capable of suicidal behaviour. In Ontario, like in many other jurisdictions, an apparent suicide in a child under the age of 10 cannot be classified as such; rather, it must be classified as death due to undetermined cause (OCC, 2010). An OCC report states that a suicide is defined as a death resulting from “an intentional act of a person knowing the probable consequence of what he/she is about to do – that is his/her own death” (OCC, 2010). Historically, it was prominently accepted that, developmentally speaking, children could not understand the probable consequence of death from suicidal actions (Pfeffer, 1986). Yet more recent research affirms suicidal behaviour and suicide deaths in children as young as five years of age and states “most child development specialists now agree that the essential quality of suicidality is the intent to cause self-injury or death, regardless of the cognitive ability to understand finality, lethality or outcomes,” (Tishler, Reiss and Rhodes, 2007, p.811) suggesting that the exclusion of children under age 10 from the legal classification of suicide may be outdated based on modern evidence.

Since death classification criteria explicitly exclude them, children aged nine years or younger are largely absent from suicide mortality statistics in Canada and other countries. There were three children five to nine years of age in Canada who died between 2000 and

2012 with the cause classified as intentional self-harm (Tjepkema M, Wilkins R, Long A, 2012).

A limitation of all the available data sources is the absence of information to identify transgender and gender non-conforming individuals. Many common health data sources include sex variables with binary format (i.e. male or female) and do not collect information on gender identity. This lack of information prevents the identification of transgender or gender non-conforming individuals. Similarly, no data sources except the CCHS permit analysis for Indigenous sub-populations or sexual minority groups. This systematic lack of information in national and provincial health data sources on these sub-populations is problematic, preventing comprehensive assessment of trends for high-risk groups, which in turn limits the ability for community programs and services to make evidence-informed planning decisions.

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