2024-25 ANNUAL REPORT OF THE NOVA SCOTIA CHILD DEATH REVIEW COMMITTEE

Caution to readers

This report contains information on the deaths of Nova Scotians under the age of 25 years. This content may be confronting or distressing for some readers.

The information included here emphasizes data, which can sometimes depersonalize the pain and loss behind the statistics. The Child Death Review Committee acknowledges the individuals, families, and communities affected by these deaths.

If you or someone you know is in a mental health crisis, call the Provincial Mental Health Crisis Line toll-free at 1-888-429-8167 or 911, or go to your nearest hospital or emergency department.

You can get support for non-urgent mental health, addiction and wellbeing by calling the provincial intake line at 1-855-922-1122.

Table of Contents

Acknowledgement

The Child Death Review Committee dedicates this report in honour of those who have passed and their loved ones. By using the evidence from these tragic losses, we are committed to making recommendations that will help prevent future deaths.

Committee Membership

LIST COMMITTEE MEMBERS

Position	Member Appointed
(1) Chair, Chief Medical Examiner (CME)	Dr. Matthew J. Bowes
(2) Vice Chair, Chief Medical Officer of Health (CMOH), and (14) Health and Wellness, Executive Lead, Public Health- director level or above	Dr. Robert Strang
(3) Public Prosecution Service (Crown Attorney)	Kimberley McOnie
(4) Police Officer, experience at the major crimes level and the Joint Protocol training from DCS	Cst. Linda de la Mothe
(5) Pediatrician	Dr. Amy Ornstein
(6) Mi'kmaw representatives	Lenora Paul Monica Clarke-Johnson
(7) African Nova Scotian representative	DeRico Symonds
(8) Immigrant community representative	*(Requires new appointee)*
(9) 2SLGBTQ+ community representative	Susanne M. Litke, K.C.
(10) Department of Opportunities and Social Development – director level or above	Tracy Embrett
(11) Justice (Correctional Services) – director level or above	Mike McAloney
(12) Education and Early Childhood Development – director level or above	Stacy McRae
(13) Child and Family Wellbeing Division – director level or above	Stacey Greenough

Background

Nova Scotia's Child Death Review Committee was established in October 2021 with the proclamation of amendments to the *Fatality Investigations Act* and the establishment of *Death Review Committee Regulations*.

Section 12 of the Death Review Committee Regulations requires that the Child Death Review Committee submit an annual report to the Minister of Justice for publication that includes:

- descriptions of trends in deaths of residents of the Province who are under age 25;
- the Committee's recommendations for system improvements aimed at reducing the number of deaths of residents of the province who are under age 25; and
- a summary of the Committee's recommendations for system improvements arising out of its review of individual child deaths during the year.

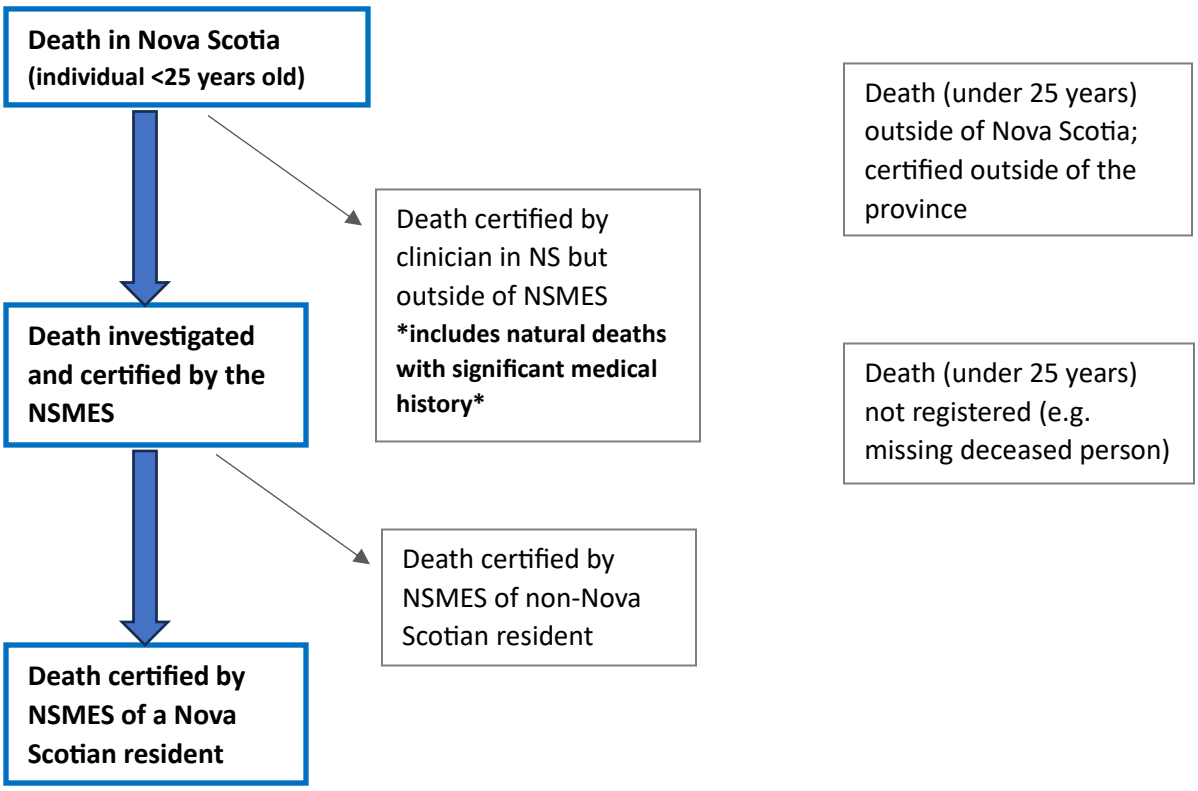
This is the first annual report of the Child Death Review Committee in fulfillment of that requirement. Future annual reports will include a summary of the Committee's recommendations for system improvements that emerge from individual death reviews, in addition to reporting on trends in the deaths of those under 25 years old.

This report contains information on deaths of Nova Scotia residents under 25 years of age over the 15 year period from 2009 to 2023 that fall under the jurisdiction of the Nova Scotia Medical Examiner Service (NSMES), pursuant to the *Fatalities Investigations Act* (the "Act"). The death investigation process brings together information from the scene of the death, the medical and social history of the individual, and the autopsy and other ancillary testing for the Medical Examiner to determine and certify the cause and manner of death. The cause of death statement describes the medical cause of death. The manner of death is assigned to one of five categories for the mode or method of death: natural, homicide, suicide, accident, or undetermined. This report does not include all deaths which resulted from natural disease processes, but includes all accidental, homicidal, and suicidal deaths as these must be referred to the NSMES pursuant to the Act.

Throughout the report the symbols "<" is used to designate less than (e.g., <25 years refers to those under 25 years of age) and "≥" is used to designate greater than or equal to (e.g., ≥25 years refers to those 25 years and older).

Figure 1 depicts the scope of this report by blue boxes. Deaths outside the scope of this report include those in the <25 age group but outside the mandate of the NSMES under the Act, deaths certified outside of the province and missing deceased Nova Scotians (numbers are unavailable but presumed to be low).

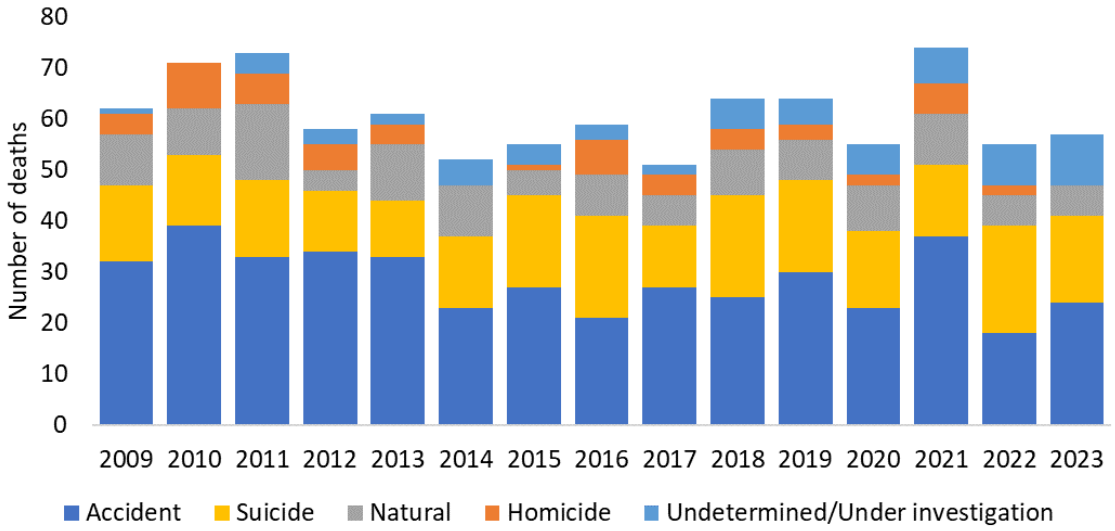
Figure 1. Scope of Report



Cases included in this report

- A total of 911 cases are summarized in this report. The mean number of cases investigated in the <25 year age group was 61 deaths/year, ranging from 51-74 deaths/year.
- Figure 2 displays the numbers of cases by year and manner of death (i.e. accident, suicide, natural, homicide, undetermined/under investigation).

Figure 2. Number of cases aged <25 years, NS residents, investigated by NS Medical Examiner Service by year and manner of death, 2009 to 2023, (n=911)



*69 out of province residents excluded

Percentage of all deaths in the <25 year age group represented in this report:
Comparing the numbers of deaths per year (registered by Vital Statistics) with the numbers of deaths investigated by the NSMES, the percentages of deaths investigated by age group are:

- Lowest in the <1 year age group, with an average of one quarter of deaths in this age group investigated
    - In the <1 year age group, a large percentage of deaths are likely the result of known congenital abnormalities, contributing to non-investigated deaths as there are documented medical histories of conditions that cause death
- Typically over 60% of annual deaths in the 1-14 year age group
- Typically over 80% of annual deaths in the 15-24 year age group

Deaths investigated at NSMES by sex and age group:
Figure 3 presents the distribution of deaths investigated by the NSMES in 2009-2023 by age group and sex. The majority of deaths investigated fall within the <1 year and the 15-24 year age groups; with somewhat equal numbers by sex in the <1 year age group and males largely overrepresented in the 15-24 year age group.

Figure 3. Number of cases investigated by NSMES by age group, 2009-2023, n=911

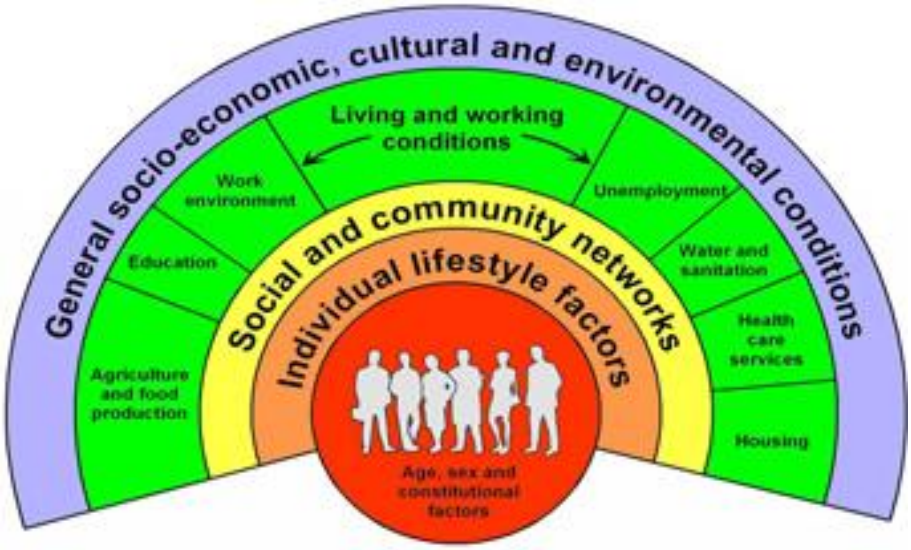
Structure of findings presented in this report

This report provides a summary of all deaths among those aged <25 years investigated by NSMES from 2009-2023. Trends in mortality are summarized by various causes and types of deaths. Each mortality topic is presented in a similar way, with counts and/or rates by age group and sex over time, by geography, assessment of disparities, and by contextual factors. As not all data used in analyses were available for the full time period, timelines reported vary as noted.

Why will there be notes on disparities across population subgroups?

Factors that affect health are beyond the individual level and encompass broad societal, structural, social and economic determinants. These determinants include elements such as housing, education, income, access to healthcare. Figure 4 depicts one of many visualizations of this framework, illustrating how these broader determinants interact to influence health outcomes. This framework underlies the reasoning for examining upstream factors that contribute to health, disease, injury, and death, highlighting the importance of addressing these root causes to improve overall population health.

Figure 4. The Dahlgren-Whitehead rainbow (1991)



Disaggregated data helps identify specific health disparities among different demographic groups, enabling more precise and effective public health interventions and improving health outcomes for all Nova Scotians. Recent initiatives, such as the Fair Care Project, have highlighted the need for specific data (i.e. race-based and linguistic identity data) to better understand community health and address systemic inequities.

In this report, examples of assessing disparities include data for specific causes or types of death disaggregated by some or all of the following groupings:

- Sex as per government issued identification (please note limitations in technical appendix)
- Age groups
- Urban versus rural location of residence
- Canadian Index of Multiple Deprivation (Canadian Index of Multiple Deprivation - Statistics Canada): Residential instability; Economic dependency; Ethnocultural composition; Situational vulnerability
- Transgender and non-binary population (please note limitations in technical appendix)
- Black and African Nova Scotians (please note limitations in technical appendix)

It is acknowledged that from an equity perspective, the representation in this report is not comprehensive. This first trend in deaths under 25 years report by the committee includes assessment of disparities in mortality with data available in the case files and with input from partners on inclusion of findings. The committee will continue to collaborate with relevant partners to ensure that groups are adequately represented, and their unique experiences are thoroughly examined. Please see technical appendix for additional information.

Intersectionality reflects the complex ways in which multiple social identities (e.g. race, gender, socioeconomic status) combine, overlap or intersect to influence health outcomes. While this report

contains information on some of the social determinants of health, it does not cover all possible intersectional analyses. While disaggregating these mortality data by multiple intersecting identities often results in small sample sizes, methods to further include an intersectional lens will be considered for future reports.

Note on interpretation of trends in frequencies and rates:

- Deaths in the <25 year old population are relatively rare in the Nova Scotian population overall. For some types of mortality, numbers are very low. As such, data may be combined over multiple years and/or data categories for more statistically stable results. Data are presented for understanding trends over time, space, and across communities.
- To mitigate disclosure risks, reporting of attributes or case characteristics of high magnitude are limited to stating '≥80%', indicating the observed percentage was in the 80% to 100% range.
- Statistical tests have been applied to certain comparisons in the suicide mortality, homicide mortality, and accidental drug toxicity mortality sections. Bar graphs show these comparisons and associated statistical findings.
- Limitations to the use of statistical comparisons include small case numbers, availability and precision of census estimates for small populations, and lack of comparison populations.
- Findings are considered in the context of other literature on the topics summarized, adding strength of evidence to given findings.

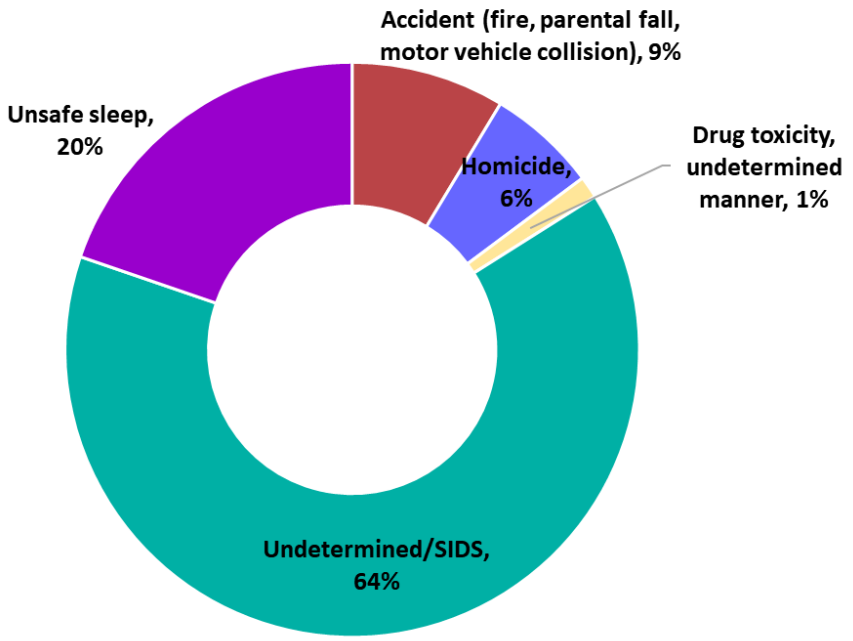
See technical appendix for further information on methods used.

Deaths in population <1 year of age, focus on non-natural deaths

All non-natural deaths are investigated by the Medical Examiner Service pursuant to the Act. The NSMES investigated 81 non-natural deaths from 2009-2023 in the <1 year old age group among NS residents.

Causes of non-natural deaths in the <1 year population in Nova Scotia are presented in Figure 5. For 64% of investigated deaths in this population, the cause of death could not be determined. In this report, please note that deaths certified in the <1 year age group with cause of 'Sudden infant death syndrome (SIDS)' or 'Undetermined' are grouped together. While the classification of SIDS (Sudden Infant Death Syndrome) was common in the past, since 2014 medical examiners at the NSMES have been certifying all sudden unexpected infant deaths for which the cause could not be determined through death investigation as 'Undetermined' instead of 'SIDS'. This is in keeping with general shifts in this practice internationally (The Diagnostic Shift of SIDS to Undetermined). Unsafe sleep practices leading to asphyxia or suffocation caused 20% of deaths in this population. Smaller percentages of the non-natural deaths were due to accidents (9%), homicide (6%), and drug toxicity of undetermined manner (1%).

Figure 5. Percentage of non-natural deaths in the <1 year old population in NS by broad classification of death, 2009-2023, n=81



Notes: Deaths are all non-natural with the exception of 6 deaths with manner=natural in Undetermined/SIDS category.

Unsafe sleep deaths and Sudden Unexpected Infant Deaths in population <1 year of age

For 16 deaths in 2009-2023 in the <1 year age group, asphyxia by overlay or positional asphyxia (e.g. wedge) could be certified from the evidence gained through the death investigation. This represents a mean of 1 death/year, with a range of 0-3 deaths/year. Infants were 44% male and 56% female.

Many jurisdictions look broadly at sudden unexpected infant deaths to assess risk and protective factors, including conditions of sleep. While the causes of these deaths remain undetermined, contextual factors show some similarities. Comprehensive death investigation accompanied by data collection, analysis and reporting can provide a public health surveillance backdrop for generating research hypotheses on this topic. There were 52 deaths investigated by NSMES in the 2009-2023 period where the cause of death was undetermined or classified as SIDS. This represents a mean of 3 deaths/year, with a range of 1-7 deaths/year. Infants were 44% male and 56% female (in common with sex composition for unsafe sleep deaths). See Figure 6 for trend in number of cases by year for Undetermined/SIDS/unsafe sleep deaths combined. Numbers of cases in the most recent seven years (2017-2023) have been stable. While the Undetermined/SIDS deaths were not determined to be caused by unsafe sleep conditions, circumstances at the time of death can be considered for potential risk factors. Nearly all (94%) of undetermined/SIDS deaths occurred during sleep. Sleep situations are summarized in Table 1. Bedsharing indicates sharing a bed or other soft surface, such as a couch or chair, with the infant. Sleeping near an infant (e.g. in the same room) is recommended (sometimes referred to as co-sleeping), while bedsharing is not. For asphyxia and suffocation deaths caused by unsafe sleep conditions, 75% occurred during bedsharing and

25% occurred in another unsafe infant sleep environment (e.g. pillows, soft bedding, prone position). For undetermined/SIDS deaths, 48% occurred during bedsharing. According to findings of the Canadian Community Health Survey (2015-2016), 35% of Nova Scotian mothers reported their infant (<1 year) frequently bedshared with them (mother) or someone else (Infant bed sharing in Canada). Bedsharing is overrepresented among unsafe sleep deaths as well as among undetermined/SIDS infant deaths in NS.

Other risk factors were noted in files for some cases including prematurity, respiratory infection, soft bedding, prone positioning, and pets present. In the future, a new case management system will enhance data collection for sudden unexpected infant deaths by recording detailed information electronically. This will allow for further descriptive analysis of factors beyond sleep conditions (which were manually abstracted here), such as recency of fever or cough, prematurity, or whether there was prenatal care. Information collection will follow the CDC investigative form Sudden Unexpected Infant Death Investigation Report Form (SUIDI Reporting Form | CDC).

Figure 6. Counts of deaths, infants <1 year, cause of death certified as Undetermined or SIDS or asphyxia or suffocation related to an unsafe sleep environment, by sex, 2009-2023 (n=68)

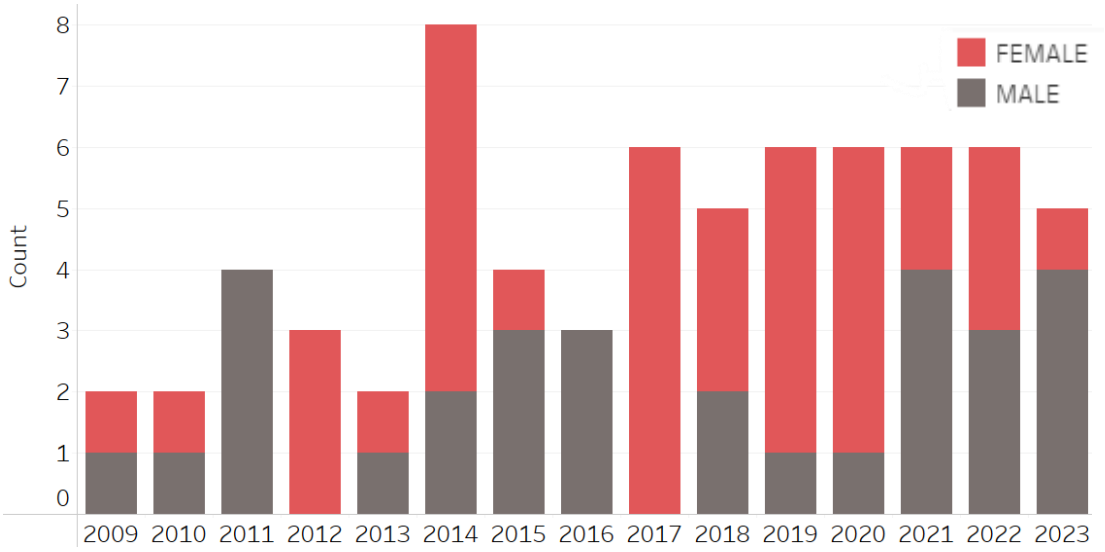


Table 1. Sleep situation for asphyxia and suffocation deaths resulting from unsafe sleep conditions and for deaths with Undetermined or SIDS cause of death, NS, <1 year, 2009-2023 (n=68)

	Unsafe sleep (n=16)		Undetermined/SIDS (n=52)	
	n	%	n	%
Bedsharing	**12**	**75%**	**25**	**48%**
Adult bed*	10	63%	20	38%
Couch/love seat	1	6%	5	10%
Reclining chair	1	6%	0	0%
Other sleeping situation	**4**	**25%**	**24**	**46%**
Crib	1	6%	7	13%
Bassinet	1	6%	7	13%
Playpen	2	13%	2	4%
Baby swing	0	0%	2	4%
Car seat	0	0%	2	4%
Adult bed* (alone)	0	0%	3	6%
Couch (alone)	0	0%	1	2%
Unclear or not during sleep	**0**	**0%**	**3**	**6%**

*includes hospital bed (n=2)

Canadian Index of Multiple Deprivation (CIMD)

The Canadian Index of Multiple Deprivation (CIMD) can be used to examine differences in mortality rates across communities that differ in demographic and socioeconomic compositions. The CIMD groups small geographic areas (census dissemination areas) together based on similarities in 'dimensions of deprivation', including residential instability, economic dependency, ethnocultural composition and situational vulnerability. Areas are then grouped into five levels (or quintiles) for each dimension based on these neighbourhood-level characteristics of the location of residence of the person who died. More information about these composite measures based on census data is available through Statistics Canada (Canadian Index of Multiple Deprivation - Statistics Canada).

For Undetermined/SIDS/unsafe sleep mortality by CIMD quintiles, see Figure 7:

- Situational vulnerability: Undetermined/SIDS/unsafe sleep mortality rates per 100,000 population increased from least vulnerable to most vulnerable.
- Ethnocultural composition: Increasing ethnocultural composition was associated with decreasing rates of undetermined/SIDS/unsafe sleep mortality per 100,000 population.
- Residential instability: Mortality rates were lowest among those with the least residential instability and highest for those with the most residential instability, there was not a clear linear pattern
- Economic dependency: Like residential instability, linear trends were not apparent across quintiles; however, the mortality rate was lowest for those with the least economic dependency and highest for those with the most economic dependency.

These associations must be interpreted with caution due to the small numbers of cases and the level of precision of the estimates of the <1 year populations in each dissemination area.

Research has also shown associations between infant mortality and the social and structural determinants of health (e.g. Canada PHAC Infant Mortality, Ontario JAMA neighbourhood income) which require further study to understand causal mechanisms and potential prevention/intervention measures.

Figure 7. Mean annual mortality rate for undetermined/SIDS/unsafe sleep deaths in the <1 year population in NS by quintiles of the Canadian Index of Multiple Deprivation four dimensions, based on area of residence, 2011-2023, n=64

Accident deaths in the 1-24 year population – overview (n=403)

- Accident deaths are those with manner certified as accident. Other manners of death are: natural, suicide, homicide, or undetermined.
- These data include one case where death occurred several years following injury. This report does not capture cases where death occurred after age of 24 years related to an injury occurring before age 25 years.
- From 2009-2023 there were 18-36 accident deaths per year (mean=27 deaths/year) in the population aged 1-24 years (see Figure 8).
- Accidents by broad cause classifications are presented in Figure 10, with motor vehicle collisions causing the highest number of deaths (56%), followed by drug toxicity (24%), drowning (8%), fire/burns (6%) and other causes (6%).

SEX (accident deaths, 1-24 year population, 2009-2023, n=403)

- Males were overrepresented among accident deaths: 73% male: 27% female (see Figure 9)

AGE GROUPS (accident deaths, 1-24 year population, 2009-2023, n=403)

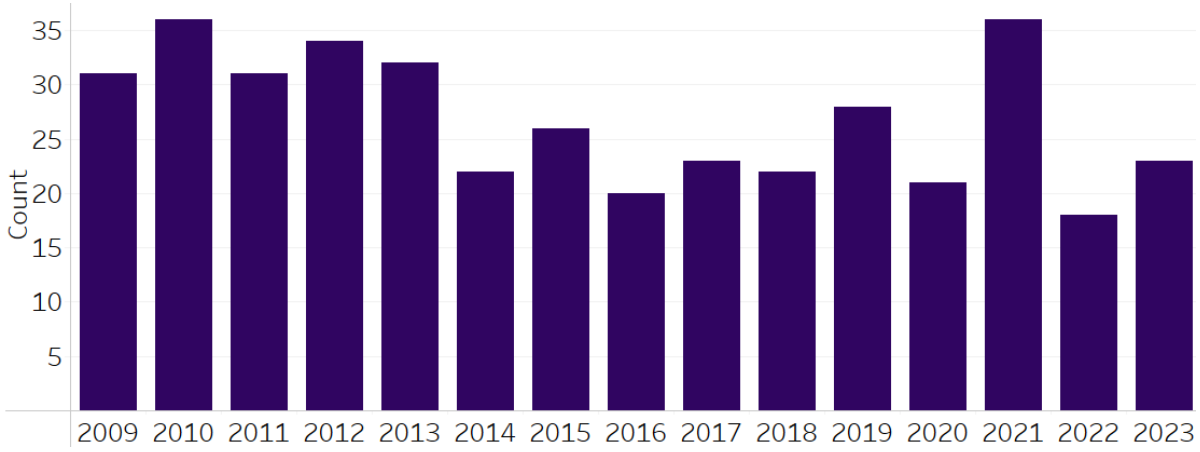
- 5% of accident deaths were in the 1-4 year age group
- 5% of accident deaths were in the 5-9 year age group
- 4% of accident deaths were in the 10-14 year age group
- 35% of accident deaths were in the 15-19 year age group
- 51% of accident deaths were in the 20-24 year age group

URBAN : RURAL (accident deaths, 1-24 year population, 2011-2023, n=403)

- The accident mortality rate in the 1-24 year population was higher in the rural population compared to the urban population (rates: 12.5/100,000 population versus 8.9/100,000 population for rural versus urban, respectively)

Figure 8. Count and rate per 100,000 population of accident deaths, 1-24 year population, 2009-2023, n=403

A. Count



B. Rate

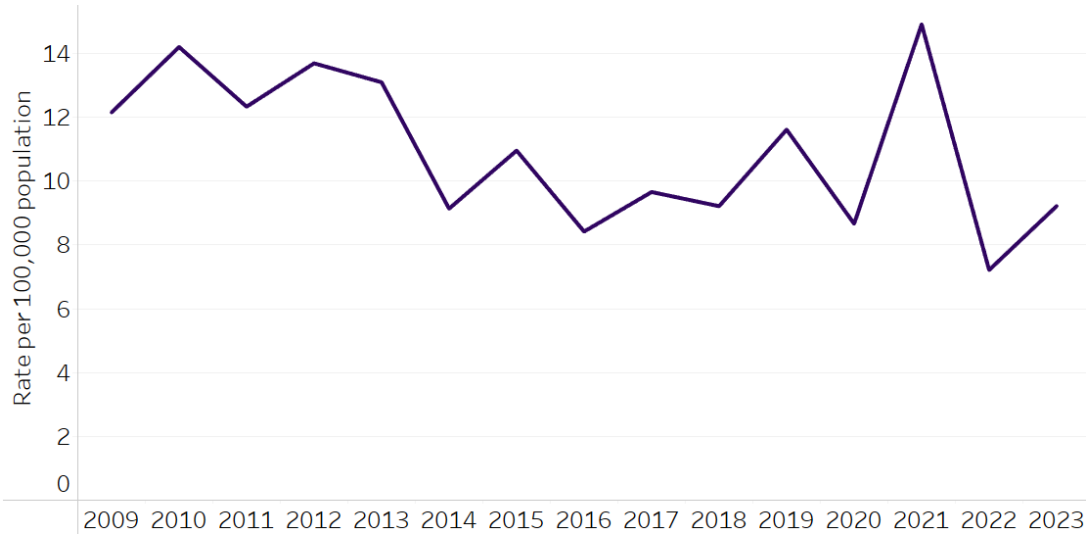
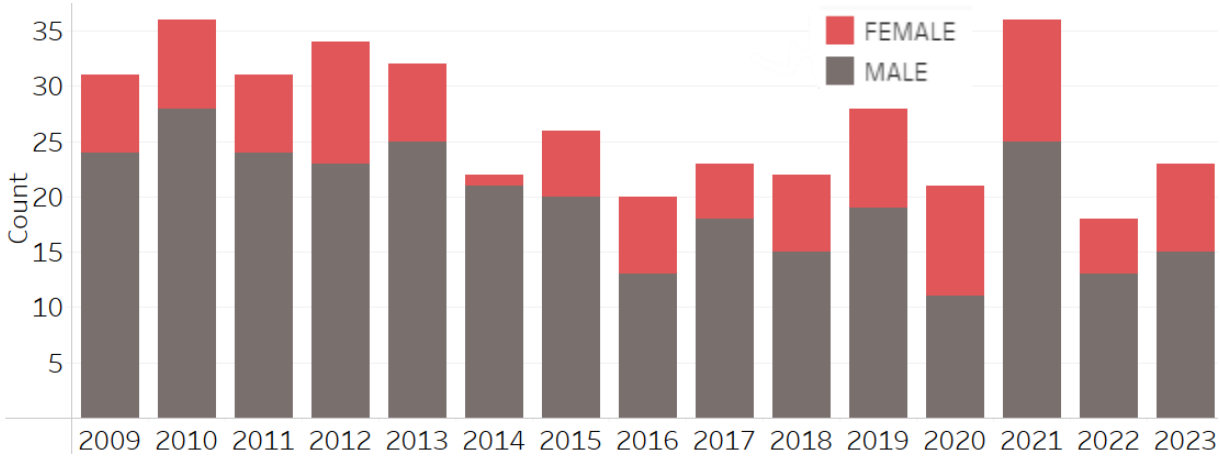


Figure 9. Count and rate per 100,000 population of accident deaths, 1-24 year population, by sex, 2009-2023, n=403

A. Count



B. Rate

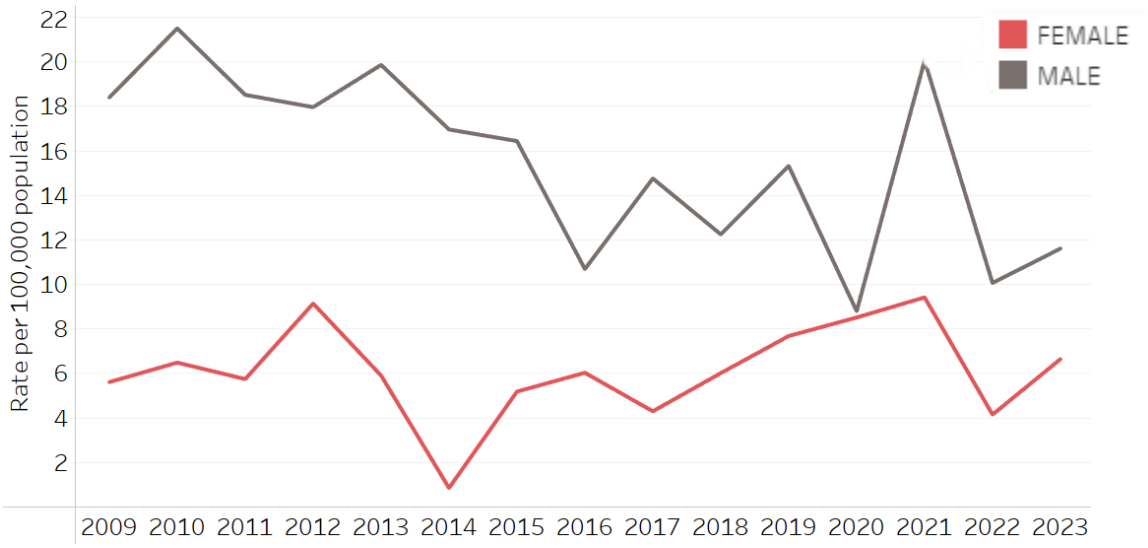
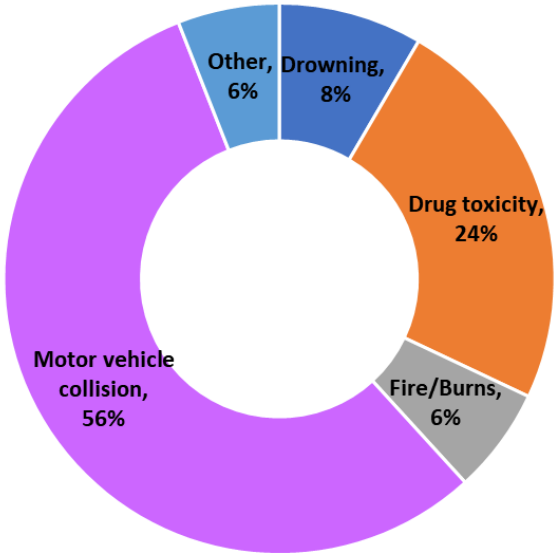


Figure 10. Percentage of accident deaths in the 1-24 year population in NS by broad classification of death, 2009-2023, n=403



Accident mortality by broad types of death

Accident – Motor Vehicles, <25 years

- From 2009-2023 there were 6-23 accidental motor vehicle collision deaths per year (mean=15 deaths/year; n=226; see Figure 11)

SEX (accident motor vehicle deaths, 2009-2023, n=226)

- Males were overrepresented among motor vehicle deaths: 77% male: 23% female (see Figure 12)

AGE GROUPS (accident motor vehicle deaths, 2009-2023, n=226)

- 2% of accident deaths were in the 0-4 year age group
- 3% of accident deaths were in the 5-9 year age group
- 4% of accident deaths were in the 10-14 year age group
- 41% of accident deaths were in the 15-19 year age group
- 51% of accident deaths were in the 20-24 year age group

URBAN : RURAL (accident motor vehicle deaths, 2011-2023, n=188)

- 71% of accident motor vehicle deaths were among residents of rural areas and 29% were among residents of urban areas
- For the 20-24 and 15-19 year age groups, mortality rates were higher in rural areas compared to urban areas (see Figure 13)

CONTEXTUAL FACTORS (accident motor vehicle deaths, 2010-2023, n=209)

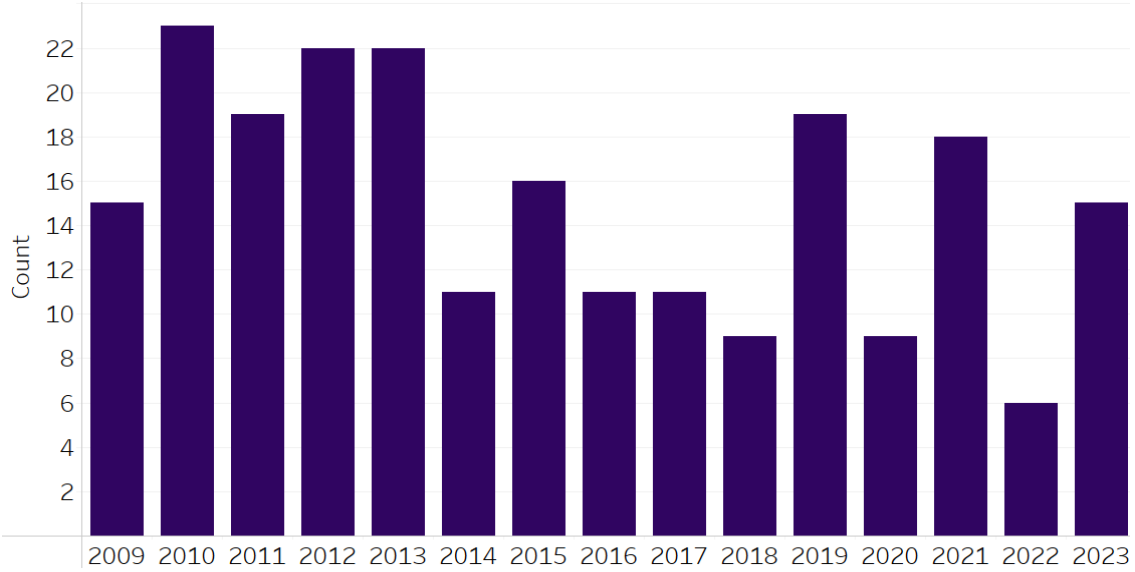
- The majority of fatalities were among drivers of motor vehicles (59%), followed by passengers of motor vehicles (30%), and then pedestrians involved in motor vehicle collisions (7%). See Figure 14.
- Safety equipment
    - For at least 38% of cases in which the person who died was in a car/truck (i.e. not motorcycle, ATV, pedestrian, bicycle), they were not appropriately using a seatbelt or car seat. This may be an underestimate, as for an additional 34% of cases this information was unavailable or unknown.
- Time of day
    - 64% of fatalities related to accidental motor vehicle collisions occurred from 6pm to 6am
- Month (see Figure 15)
    - Considering multiple years of data, deaths were generally highest in the summer months
- All terrain vehicles (ATVs)
    - This class of vehicles has unique rules and regulations by age group (7RandR). In addition to driving the right size vehicle for age, size, ability and wearing personal safety gear, rules and regulations specify that:
        - Youth aged 13 years and younger drive on closed course, supervised by parent/guardian

- NSMES findings: 80% or more of fatal cases in this age group were not under supervision at the time of the fatal event

- Youth aged 14-15 years drive anywhere parent/guardian allows as long as they can see you
  - NSMES findings: 80% or more of fatal cases in this age group were not under supervision at the time of the fatal event
- Youth aged 16+ years must complete appropriate safety training program and parents/guardians for children <16 years must have completed the training course approved for the child's ATV
  - NSMES findings: Further information would be required to gain an understanding of whether the appropriate safety training program had been undertaken by parents or guardians, decedents, or drivers of passengers who died

Figure 11. Count and rate per 100,000 population of accident motor vehicle deaths, <25 year population, 2009-2023, n=226

A. Count



B. Rate

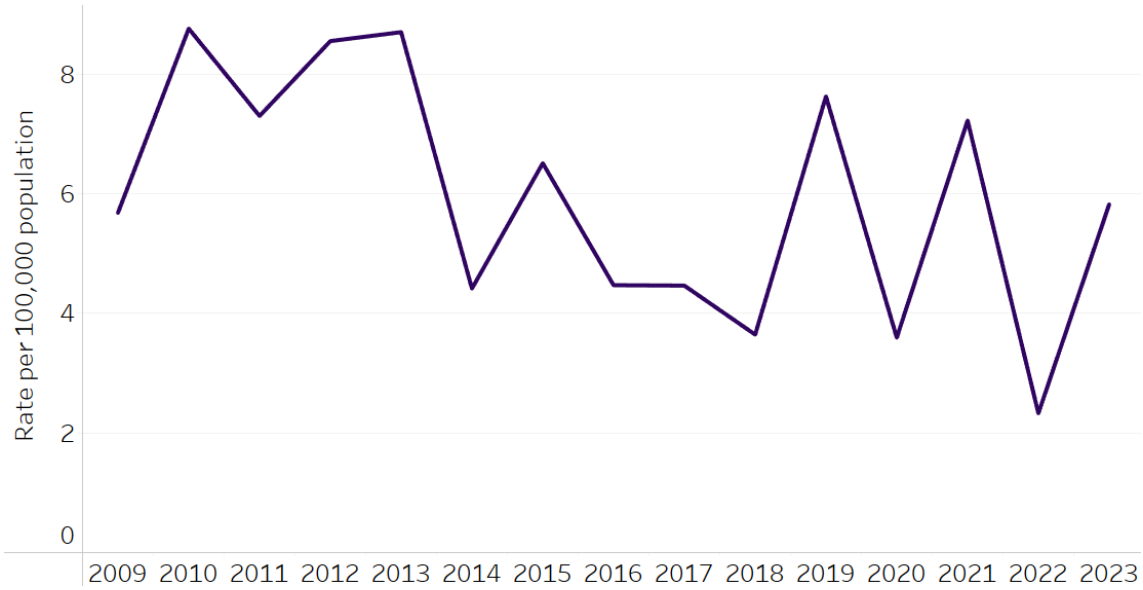
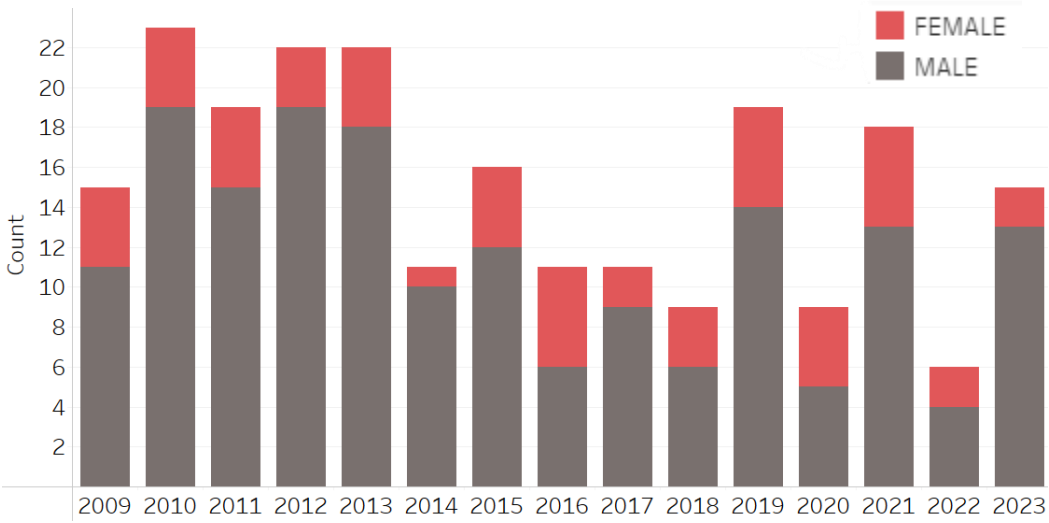


Figure 12. Count and rate per 100,000 population of accident motor vehicle deaths, by sex, <25 year population, 2009-2023, n=226

A. Count



A. Rate

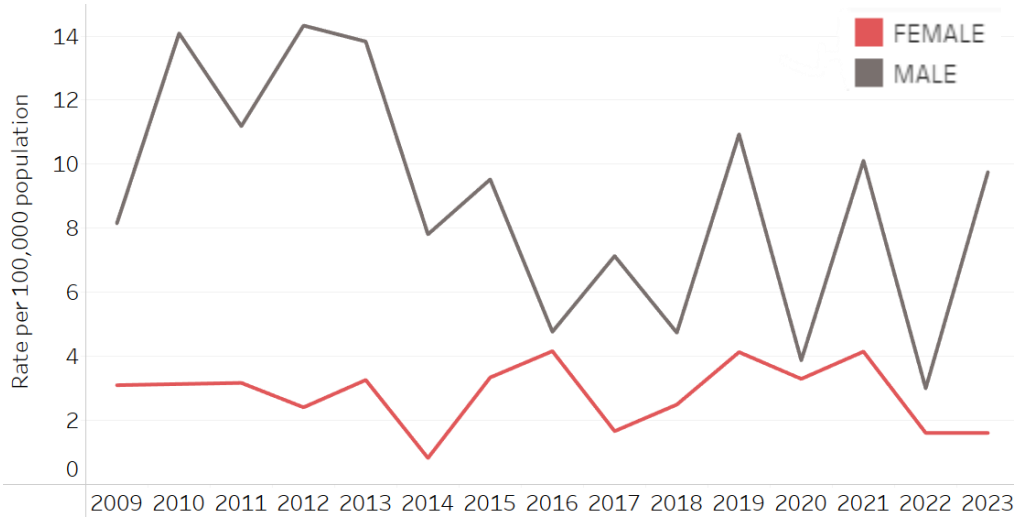


Figure 13. Mean annual rate per 100,000 population, accidental motor vehicle deaths by sex, age group and urban/rural location of residence, 2011-2023, n=188

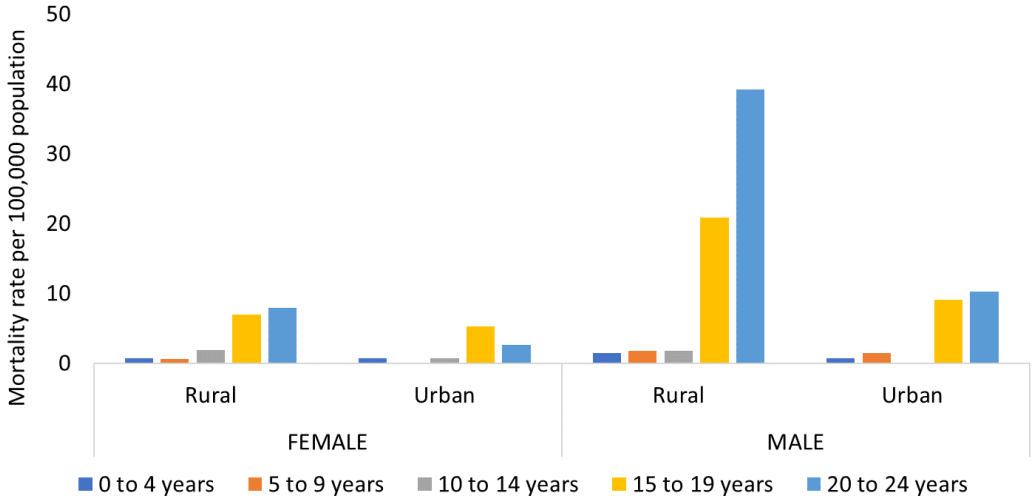


Figure 14. Percentage of motor vehicle collision deaths by activity of decedent at time of death, 2010-2023 (n=209)

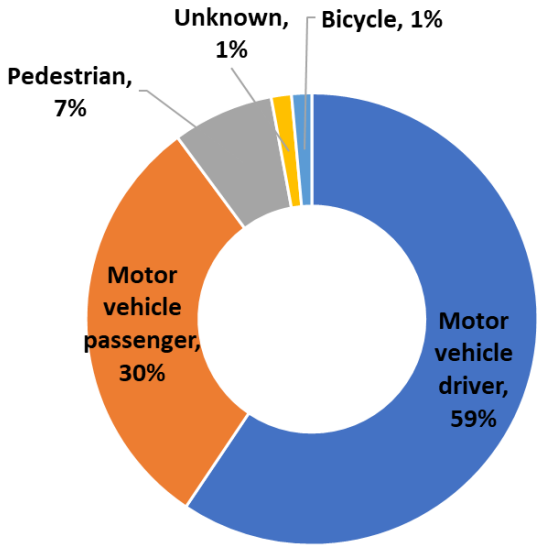
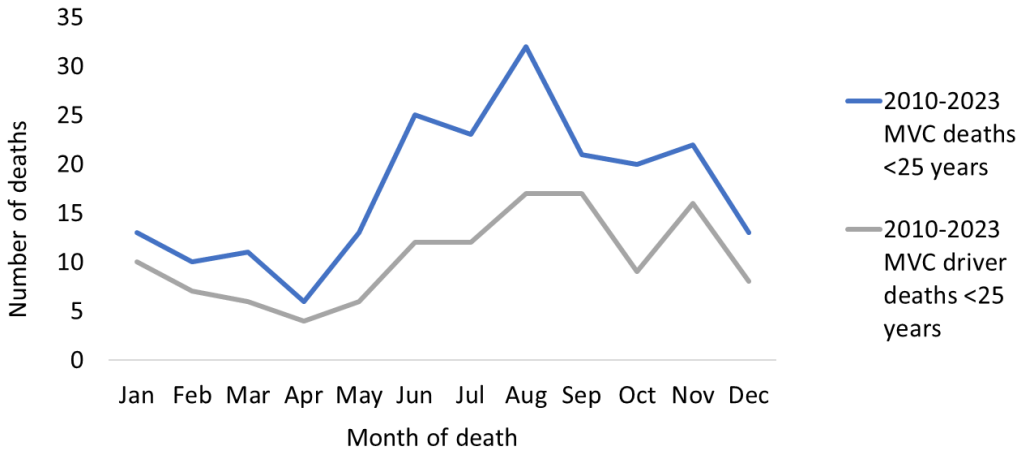


Figure 15. Month of death, motor vehicle collisions deaths, 2010-2023, n=209



Accident – Drug Toxicity, <25 years

- From 2009-2023 there were from 1-11 accidental drug toxicity deaths per year (mean=6 deaths/year; n=95)
- The majority of drug toxicity deaths were multidrug toxicities (i.e. death was caused by more than one drug) and had either a stimulant, an opioid, or both contributing to death.
- The numbers and associated population annual rates of accident drug toxicity deaths show a decreasing trend over the time period (see Figure 16)

SEX (accident toxicity, 2009-2023, n=95)

- Males were overrepresented among drug toxicity deaths: 67% male: 33% female

AGE GROUPS (accident toxicity, 2009-2023, n=95, see Figure 17)

- 32% of toxicity deaths were in the 15-19 year age group
- 68% of toxicity deaths were in the 20-24 year age group

URBAN : RURAL (accident toxicity, 2011-2023, n=77; see Figure 18)

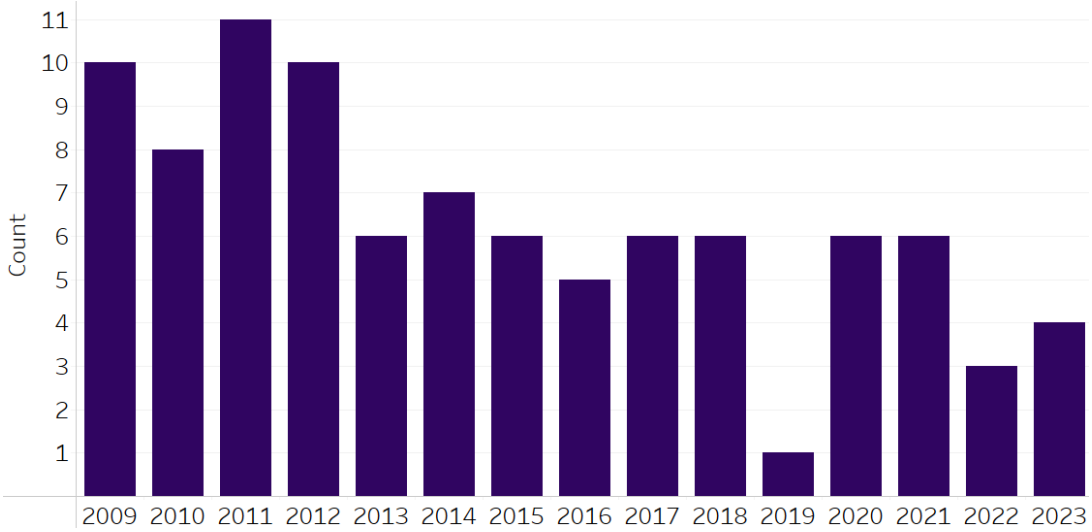
- For the 20-24 year age group, mortality rates were similar in rural and urban areas
- For the 15-19 year age group, mortality was lower in rural areas compared to urban areas

POTENTIAL FOR INTERVENTION (accident toxicity, 2019-2023, n=20; see Figures 19 and 20)

- The <25 year age group were more often with someone when they died from toxicity when compared with the ≥25 year age group (55% compared to 32%, respectively; p=0.05) who were more often alone.
- The <25 year age group had a higher proportion of deaths where others were with the person when they died from toxicity and/or others were aware the person was intoxicated when compared with the ≥25 year age group (75% compared to 49%, respectively; p=0.036)

Figure 16. Count and rate per 100,000 population of accident drug toxicity deaths, <25 year population, 2009-2023, n=95

A. Count



B. Rate

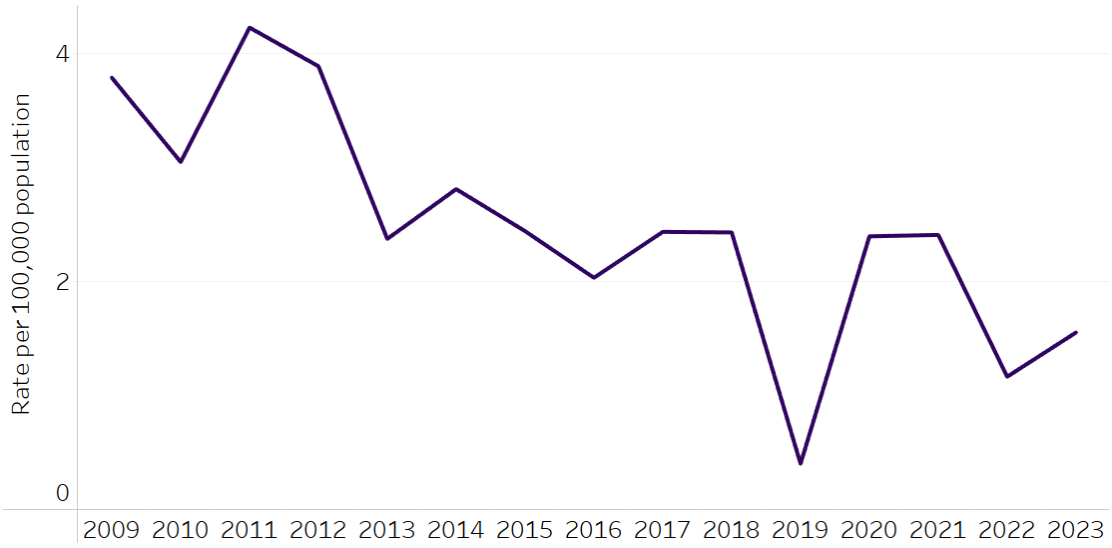
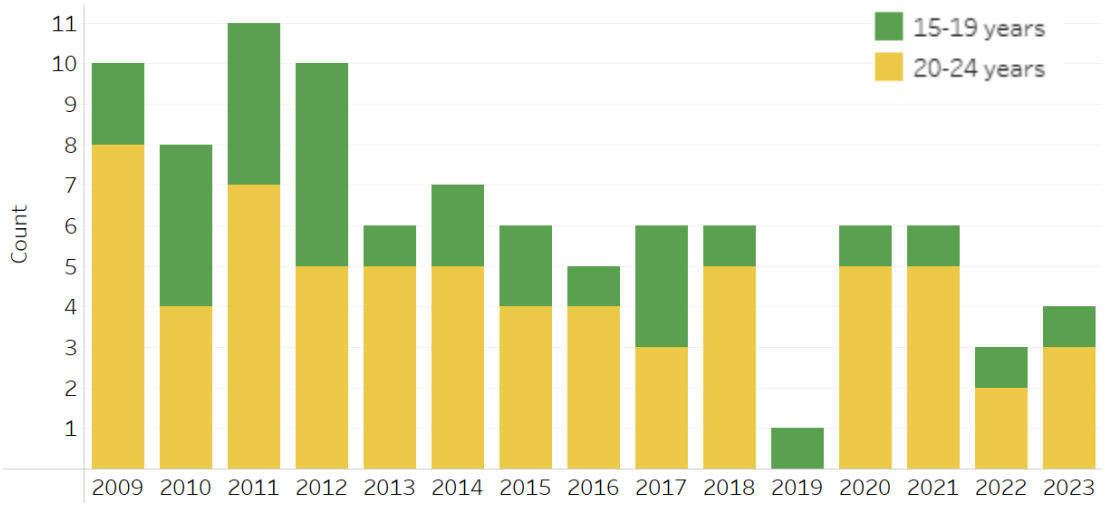


Figure 17. Count and rate per 100,000 population of accident drug toxicity deaths by age group, 2009-2023, n=95

A. Count



B. Rate

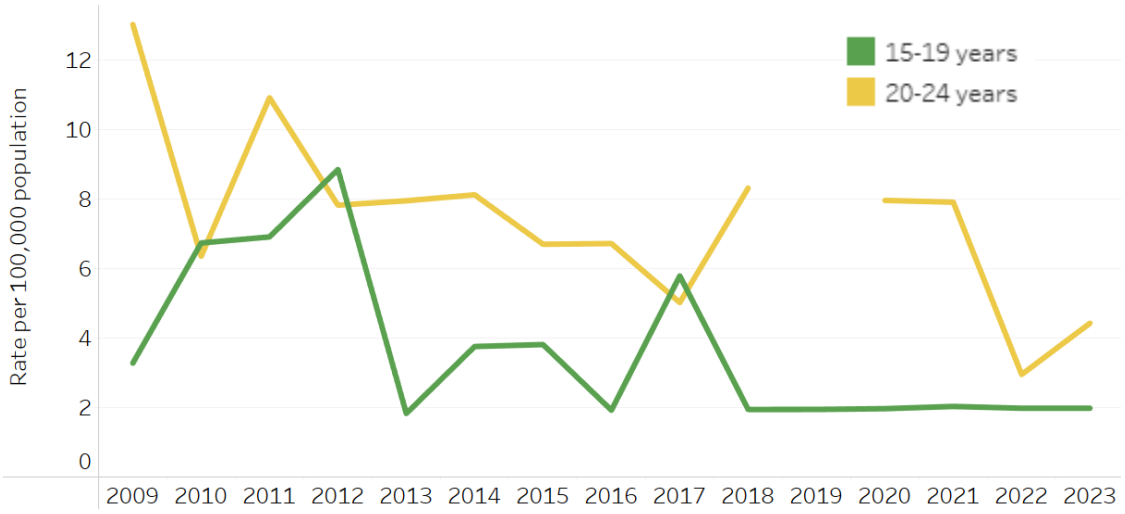


Figure 18. Mean annual rate per 100,000 population, accidental toxicity deaths by sex, age group and urban/rural location of residence, 2011-2023, n=77

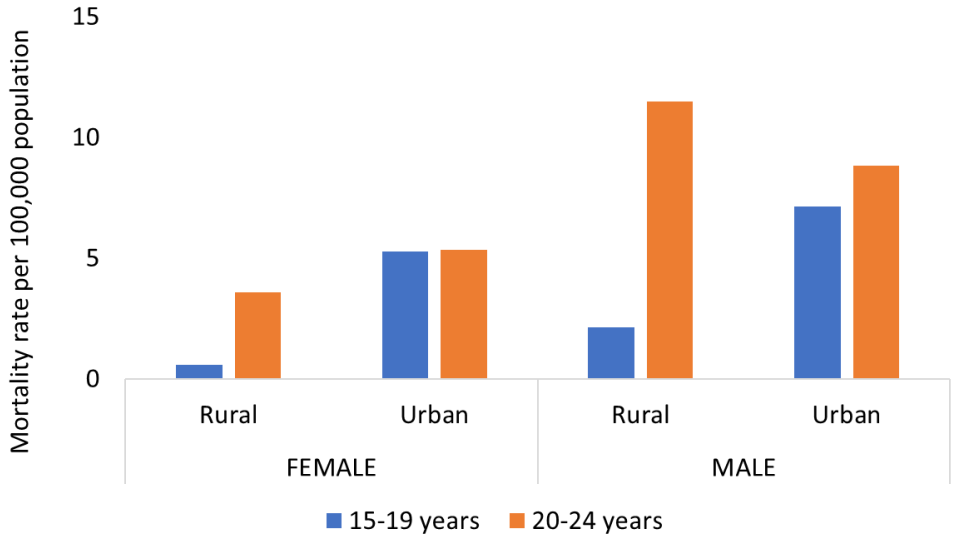
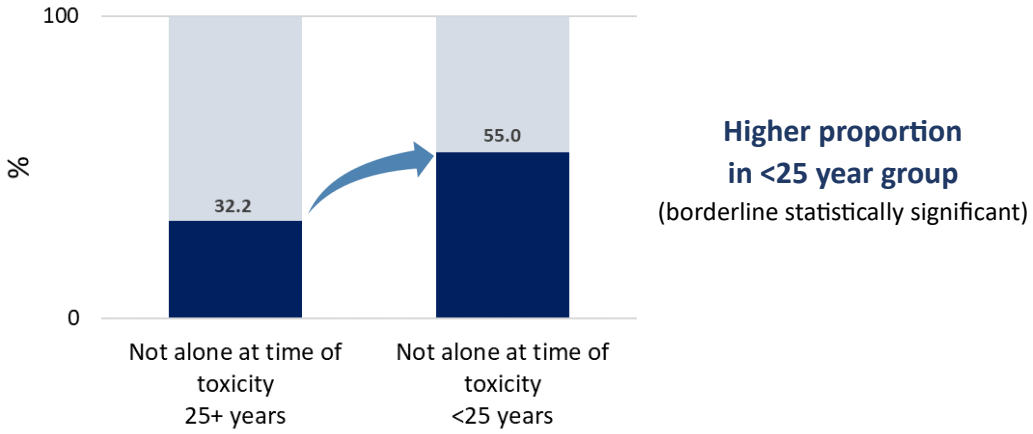
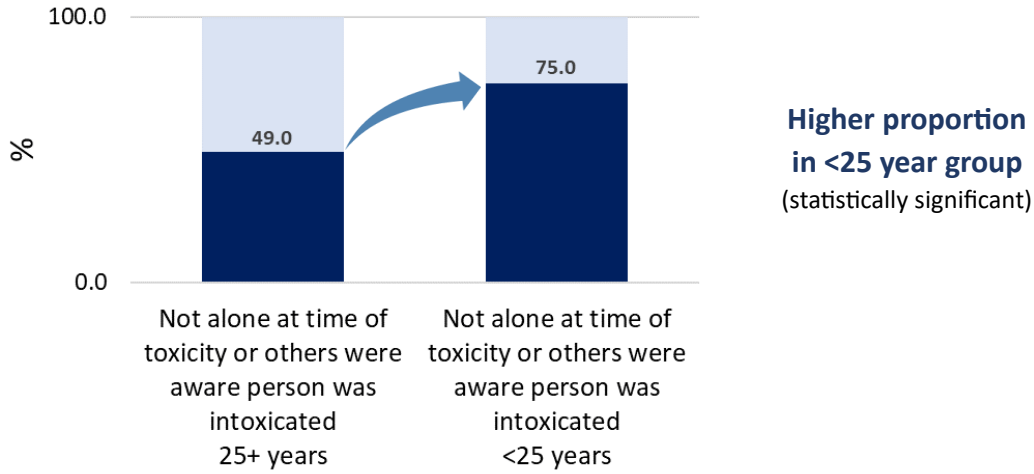


Figure 19. Percent of accident drug toxicity deaths where the person who died was not alone at the time of the toxicity death, <25 years and 25+ years of age, 2019-2023



*p=0.05

Figure 20. Percent of accident drug toxicity deaths where the person who died was not alone at the time of the toxicity death and/or others were aware the person was intoxicated, <25 years and 25+ years of age, 2019-2023



*p=0.036

Accident – Drowning, <25 years

- From 2009-2023 there were between 1-5 accidental drowning deaths per year (mean of 2 deaths/year; n=34) in the <25 year age group (see Figure 21). Drowning deaths are relatively small in number but show an increasing trend over time.

SEX (accident drowning, 2009-2023, n=34)

- Males were overrepresented among drowning deaths: 79% male: 21% female

AGE GROUPS (accident drowning, 2009-2023, n=34)

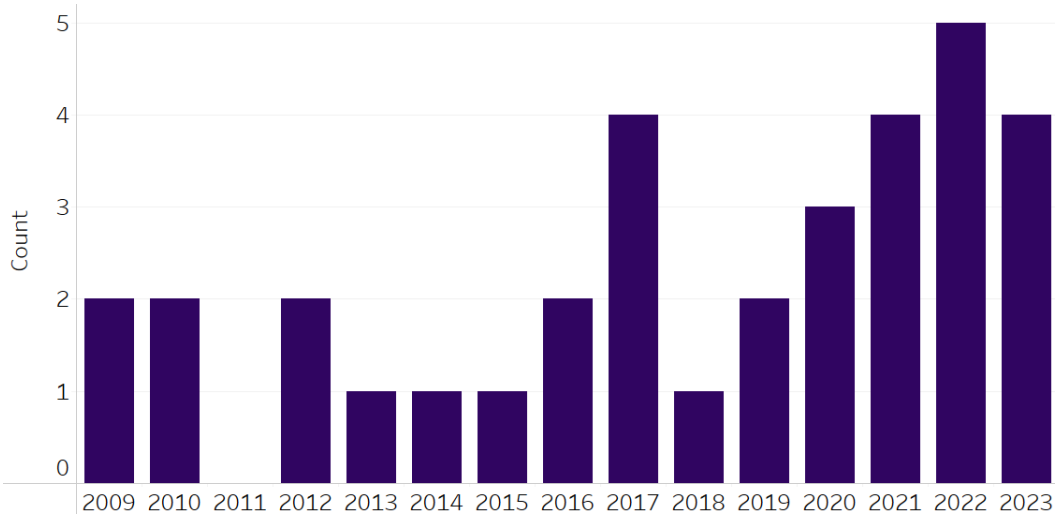
- 38% of drowning deaths were in the 1-14 year age group
- 27% of drowning deaths were in the 15-19 year age group
- 35% of drowning deaths were in the 20-24 year age group

ACTIVITY (accident drowning, 2009-2023, n=34)

- See Table 2 for activities of decedents <15 years and 15-24 years when they drowned
- Three most common activities of decedents when drowning occurred and risk factors:
    - Swimming/wading (11/34=32%)
        - 5/8 (62%) of decedents aged 15-24 years who were swimming or wading when drowning occurred were noted to be either new to Canada or international students who were not strong swimmers
        - 3/11 (27%) of decedents who were swimming or wading when drowning occurred were noted to have been drinking alcohol, some of whom had also been consuming cannabis
    - Falling into water (7/34=21%)
        - Decedents aged <15 years (n=4) who fell into a body of water drowned in a pool or pond
        - Decedents aged 15-24 years (n=3) who fell into a body of water drowned in the ocean
    - Boating (any boat type) (6/34=18%)
        - ≥80% of decedents who drowned while boating did not have personal flotation devices (PFDs)
        - 3/6 (50%) of decedents were noted to have been drinking alcohol, some of whom had also been consuming cannabis (alcohol and cannabis=2/6); these decedents did not have PFDs with them
        - 3/6 (50%) of boating drownings occurred between 12am and 6am
        - 3/6 (50%) of decedents were noted to not be able to swim
        - 2/6 (33%) of decedents were international students

Figure 21. Count and rate per 100,000 population of accident drowning deaths, <25 year population, 2009-2023, n=34

A. Count



*there were no drowning deaths in this age group in 2011

B. Rate

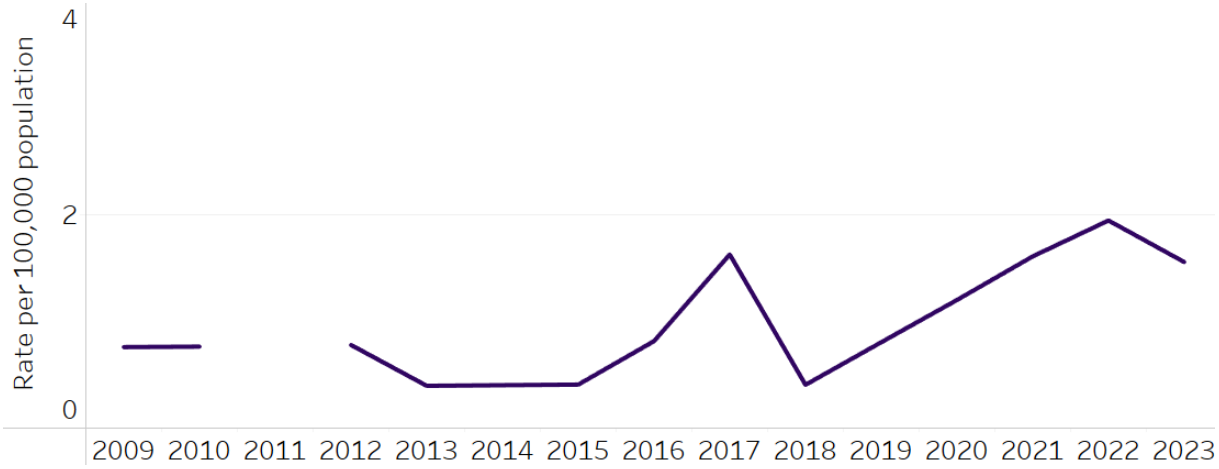


Table 2. Activity at time of drowning by age group, 2009-2023, n=34

Activity	<15 years		15-24 years	
	n	%	n	%
Swimming/wading	3	23%	8	38%
Fall into water (pool or body of water)	4	31%	3	14%
Boat, any	1	8%	5	24%
Flash flood, car washed off road*	3	23%	0	0%
Bath	2	15%	1	5%
Jumping (bridge/rocks)	0	0%	3	14%
Working on a boat	0	0%	1	5%
Total	13		21	

*these deaths are also summarized in the 'Climate and/or disaster related mortality' section

Accident – Fire/Burns, <25 years

- From 2009-2023 there were between 0-7 accidental fire/burns deaths per year (mean of 2 deaths/year; n=28) in the <25 year age group (see Figure 22)
- These deaths were associated with 0-3 fire events per year (n=12)

SEX (accident fire/burns, 2009-2023, n=28)

- Accident fire/burns deaths were 57% male and 43% female

AGE GROUPS (accident fire/burns, 2009-2023, n=28)

- 75% of fire/burns deaths were in the 0-14 year age group
- 18% of fire/burns deaths were in the 15-19 year age group
- 7% of fire/burns deaths were in the 20-24 year age group

TYPE OF FIRE (fires associated with deaths in <25 year age group, 2009-2023, n=12)

- 11 structural fires (includes 1 moveable dwelling)
- 1 vehicle fire (non-collision)

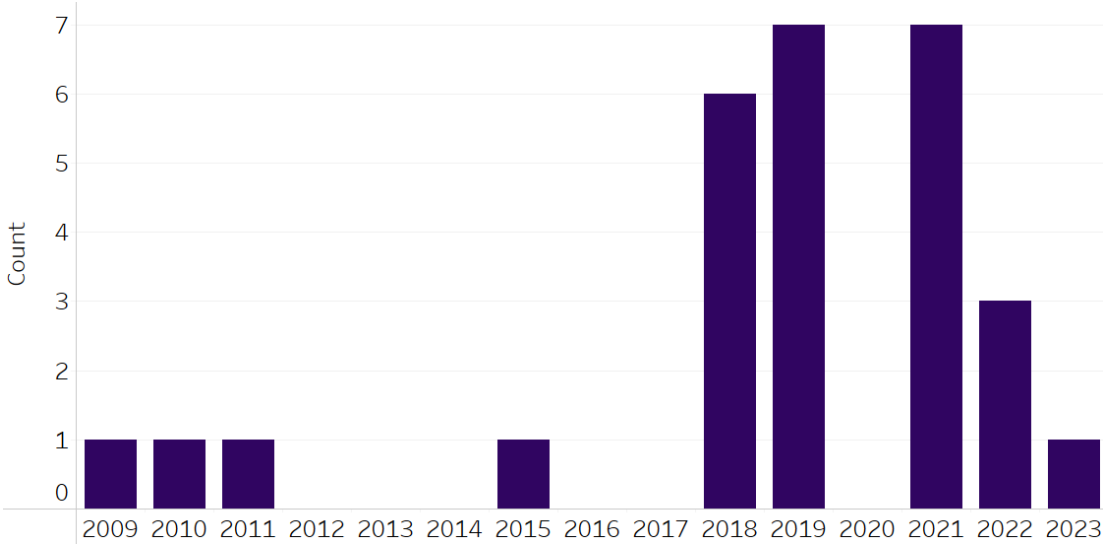
SOURCES OF IGNITION (fires associated with deaths in <25 year age group, 2009-2023, n=12)

- Included: heating equipment, cooking equipment, smoking material, electrical distribution/equipment, and unknown sources

CONTEXTUAL FACTORS

- Information on presence and functional status of smoke alarms was largely unavailable/unknown
- The majority of accident fire fatalities occurred in the 12am-6am time period (70%)

Figure 22. Count of fire/burns deaths, <25 year population, 2009-2023, n=28



Suicide deaths, <25 years

- From 2009-2023 there were between 11-21 suicide deaths per year (mean of 16 deaths/year; n=236) in the <25 year age group
- While numbers fluctuate, a slight increasing trend in suicide mortality rate is observed over the time period (see Figures 23B, 25)

SEX (suicide deaths, 2009-2023, n=236)

- Males were overrepresented among suicide deaths: 69% male: 31% female (see Figure 24)

AGE GROUPS (suicide deaths, 2009-2023, n=236; see Figure 25)

- 56% of decedents were aged 20-24 years at the time of death; range 3-16 deaths/year
- 38% were aged 15-19 years; range 5-7 deaths/year
- 6% were aged <15 years; range 0-3 deaths/year
- The youngest person to die by suicide in this time period was 9 years old

URBAN : RURAL (10-24 years population by sex, see Figure 26 and technical notes on urban/rural classification for this report, 2011-2023, n=207)

- The suicide rate among urban female youth aged 15-19 years was higher and more similar to that among males of that age, compared to the suicide rate among rural female youth aged 15-19 years
- Male suicide rates increased with age in both rural and urban communities, with the highest rate noted among rural males aged 20-24 years

- The suicide rate among urban females aged 20-24 years was lower than that in the female 15-19 year age group

TRANSGENDER AND NON-BINARY POPULATION (suicide deaths, 2010-2023, n=221; see technical appendix for methods and limitations)

- For 4.1% of those who died by suicide in the <25 year age group in 2010-2023, gender was noted to differ from the sex assigned at birth (Figure 27)
- This is disproportionate to the reported percentage of the NS population who are transgender or non-binary, where 0.48% of Nova Scotia's population identifies as transgender or non-binary, with 1.17% of Nova Scotians aged 15-34 years identifying as transgender or non-binary ($p<0.01$, The Daily — Canada is the first country to provide census data on transgender and non-binary people (statcan.gc.ca))

BLACK AND AFRICAN NOVA SCOTIANS (2010-2023, n=221; see Figure 28 and technical notes for case identification)

- With available data, 4.5% of those who died by suicide were Black or African Nova Scotian
- This proportion is similar to the percentage of the population who are Black or African Nova Scotian in the province (4.0%, $p=0.7$; see Figure 28). Black or African Nova Scotians were not disproportionately represented among suicide deaths in the <25 year population.

CANADIAN DIMENSIONS OF MULTIPLE DEPRIVATION (2011-2023, n=206, see Figure 29)

- There was a general increasing trend in suicide rate associated with increasing area-based levels of: residential instability, economic dependency, and situational vulnerability by quintile.
- Research shows associations between social, economic, and structural characteristics of communities and violence and violent death (Societal determinants of violent death: The extent to which social, economic, and structural characteristics explain differences in violence ; Structural and social determinants of inequities in violence risk).
- There was no trend noted in suicide rate corresponding with increasing area-based levels of ethnocultural composition by quintile.

CONTEXTUAL FACTORS (2010-2023, n=221; see Table 3 and technical notes for definitions and abstraction protocol for contextual factors)

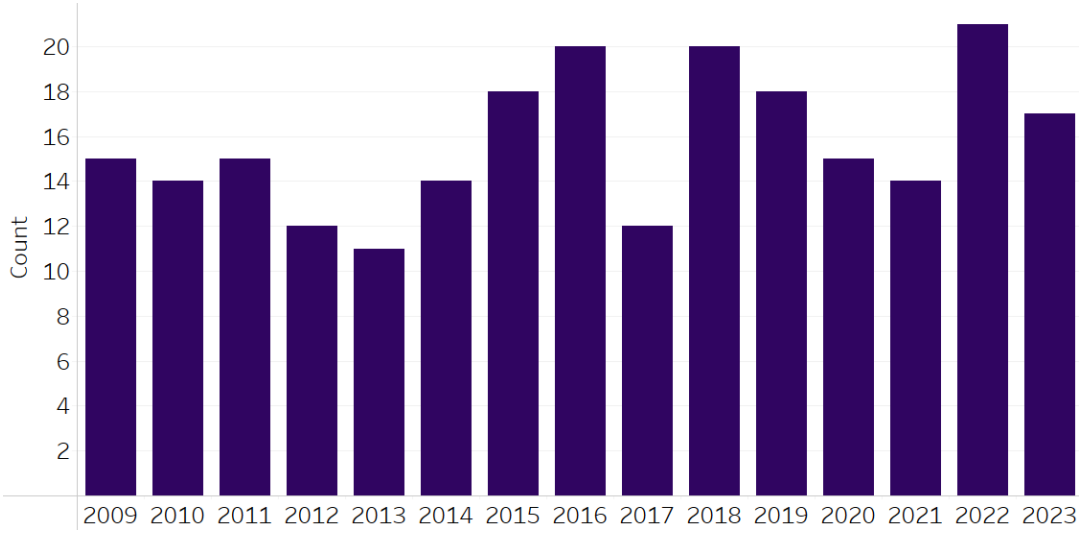
- Table 3 summarizes contextual factors and characteristics of those who died by suicide.
- Prevalence of these characteristics are not readily available for the remaining NS population who did not die by suicide.
- Some indirect comparisons can be made with available literature:
    - Of those <25 years who died by suicide, the proportion from families experiencing marital discord or with parents who were divorced/divorcing/separated and/or having custody disputes was higher than the 22% of Nova Scotian children reported to have

experienced separation or divorce of parents (2019 Canadian Health Survey on Children and Youth)

- Of those <25 years who died by suicide, the proportion with a reported history of self-directed violence was higher than reported in a survey of youth in British Columbia, where 17% of respondents 14-21 years reported self-harm (Nonsuicidal self-harm in youth: a population-based survey)

Figure 23. Count and rate per 100,000 population of suicide deaths, <25 year population, 2009-2023, n=236

A. Count



B. Rate

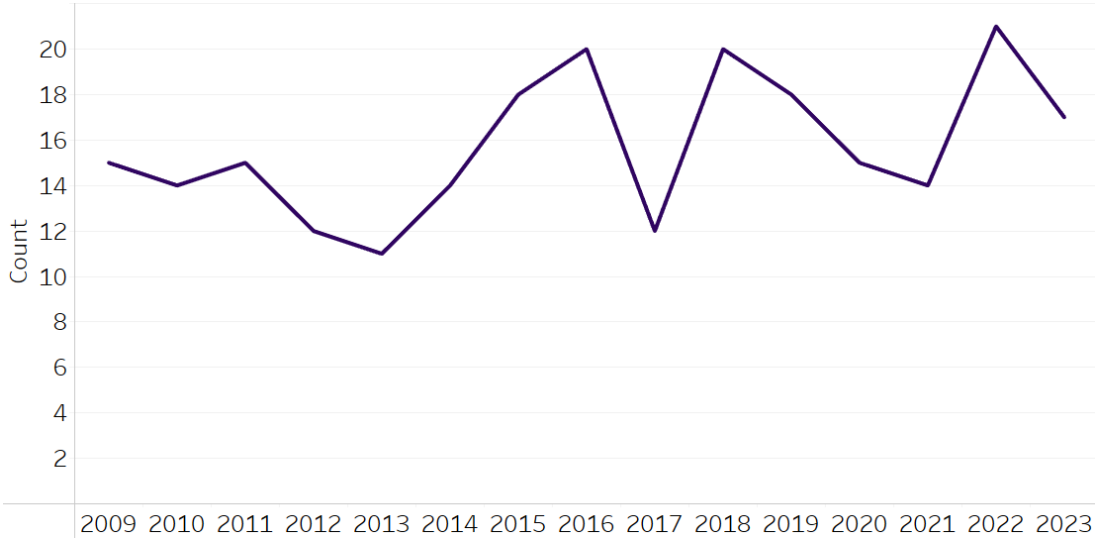
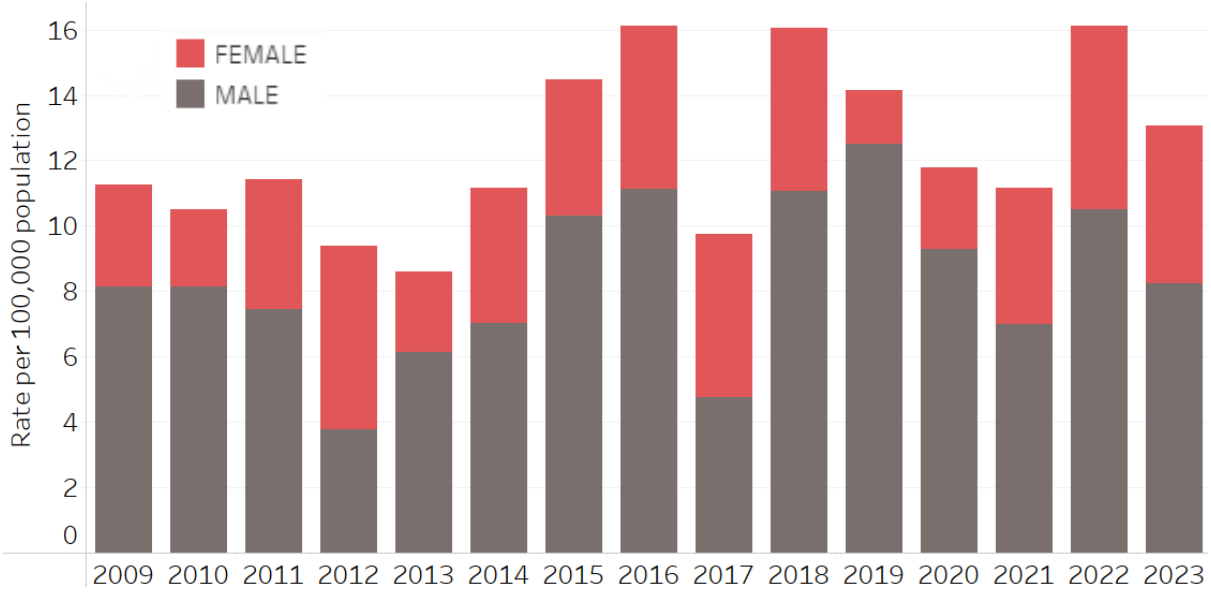


Figure 24. Count and rate per 100,000 population of suicide deaths, by sex, <25 year population, 2009-2023, n=236

A. Count



B. Rate

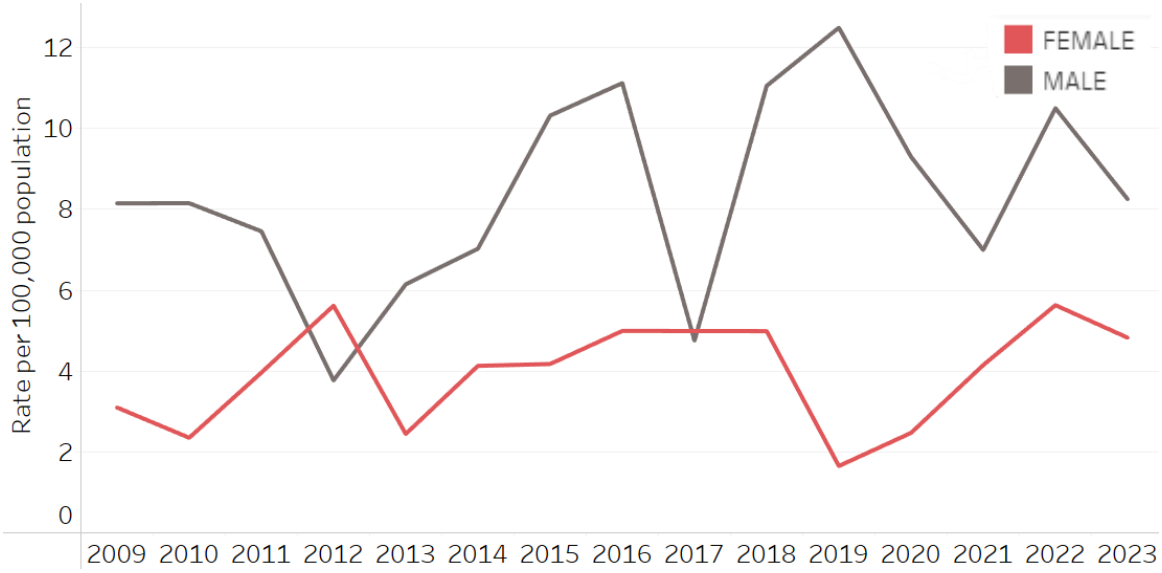


Figure 25. Count and rate per 100,000 population of suicide deaths in 15-19 and 20-24 year age groups, 2009-2023, n= 222 (excludes 14 deaths, decedents aged <15 years)

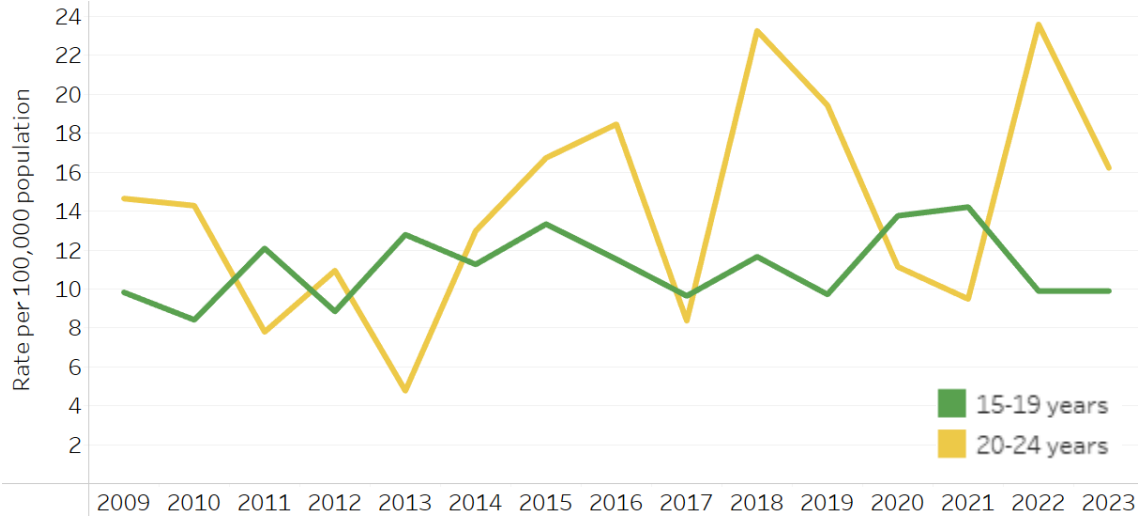


Figure 26. Mean annual rate per 100,000 population, suicide deaths by age group and urban/rural location of residence, 2011-2023, n=206 (excludes one death <10 years)

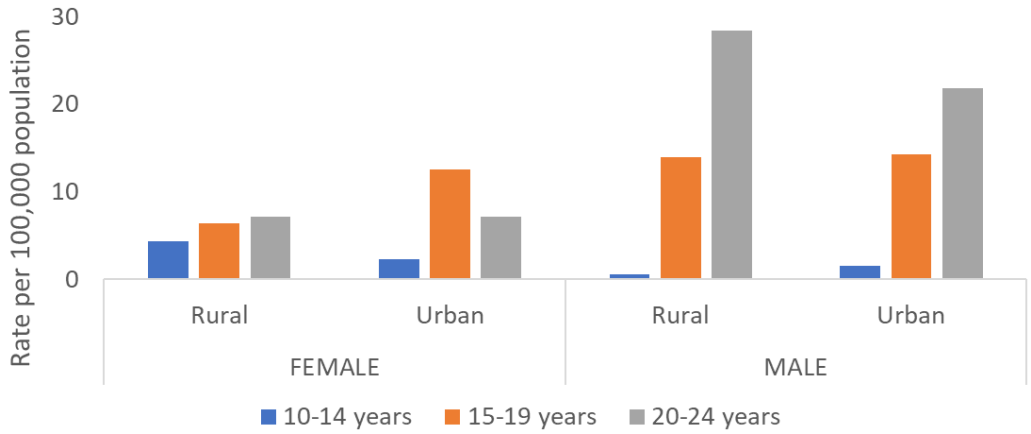
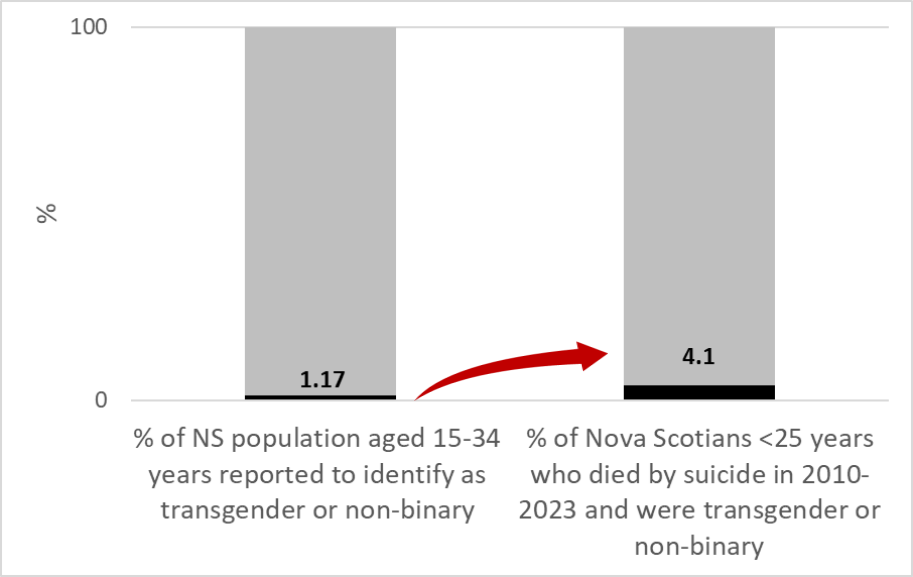


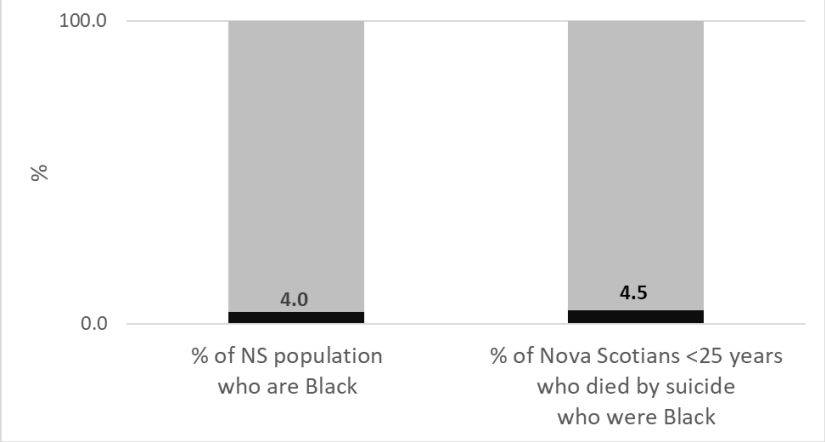
Figure 27. Percent of people <25 years who died by suicide who were noted to be transgender or non-binary, NS, 2010-2023 compared to percent of population reported to identify as transgender or non-binary, NS, census data



Higher proportion of transgender or non-binary people among suicide deaths than proportion in census
(statistically significant)

*p<0.01; note difference in census age group comparator, data not available for <25 year age group

Figure 28. Percent of suicide decedents who were Black or African Nova Scotia, suicide deaths in NS, 2010-2023



Black or African Nova Scotians not disproportionately represented among suicide deaths
(no statistically significant difference)

*p=0.7

Figure 29. Suicide mortality rate per 100,000 population by quintiles of the Canadian Index of Multiple Deprivation four dimensions, based on area of residence, <25 year population, NS, 2011-2023, n=206 (one DAUID missing)

Table 3. Contextual factors among suicide cases, <25 year population, 2010-2023, n=221

	<20 years (n=97)	20-24 years (n=124)
Population subgroups		
People who were known to be international students	2.1% (2/97)	3.2% (4/124)
People who were known to have been adopted	3.1% (3/97)	3.2% (4/124)
Factors related to home/family		
Living in provisional or transitional housing	4.1% (4/97)	4.0% (5/124)
Marital discord or parents divorced/divorcing/separated and/or have custody disputes	58.8% (57/97)	44.3% (55/124)
Little to no connection with family	26.8% (26/97)	25.8% (32/124)
Suicide of family/friend	12.4% (12/97)	10.5% (13/124)

Other death of family/friend	7.2% (7/97)	12.1% (15/124)
Childhood experiences		
Report of one or more: maltreatment, bullying, youth violence, intimate partner violence, sexual violence, emotional/psychological violence	36.1% (35/97)	17.7% (22/124)
Proximal risk factor		
Crisis within 2 weeks prior to death	46.4% (45/97)	58.9% (73/124)
Pregnancy of decedent or sexual partner	3% (3/97)	1% (1/124)
Mental health and self-directed violence		
Mental health issue (any diagnosis or mention)	79.3% (73/92)	73.7% (42/57)
Self-directed violence	60.9% (56/92)	40.3% (23/57)
Suicide note		
Presence of writings indicating suicidal intent	34.0% (33/97)	29.0% (36/124)

Homicide deaths, <25 years

- From 2009-2023 there were between 0-9 deaths per year where the manner was certified as homicide in the <25 year age group (mean of 4 deaths/year; n=57, see Figure 30)
- These data include two cases where death was noted to be delayed by years following injury. If a death were delayed to after 25 years it would not be captured in this report.

SEX (homicide deaths, 2009-2023, n=57)

- Males were overrepresented among homicide deaths: 79% male: 21% female (see Figure 30)

AGE GROUPS (homicide deaths, 2009-2023, n=57)

- 67% of decedents were aged 20-24 years at the time of death
- 16% were aged 15-19 years

- 17% were aged <15 years

URBAN : RURAL (10-24 years population, see Figure 31 and technical notes on urban/rural classification for this report, homicide deaths 2011-2023, n=44)

- Homicide deaths were less frequent among females and males <20 years old compared to males 20-24 years old
- Male homicides in the 20-24 year population occurred at similar rates in rural and urban communities

BLACK AND AFRICAN NOVA SCOTIANS (homicide deaths, 2009-2023, n=57; see technical notes for case identification)

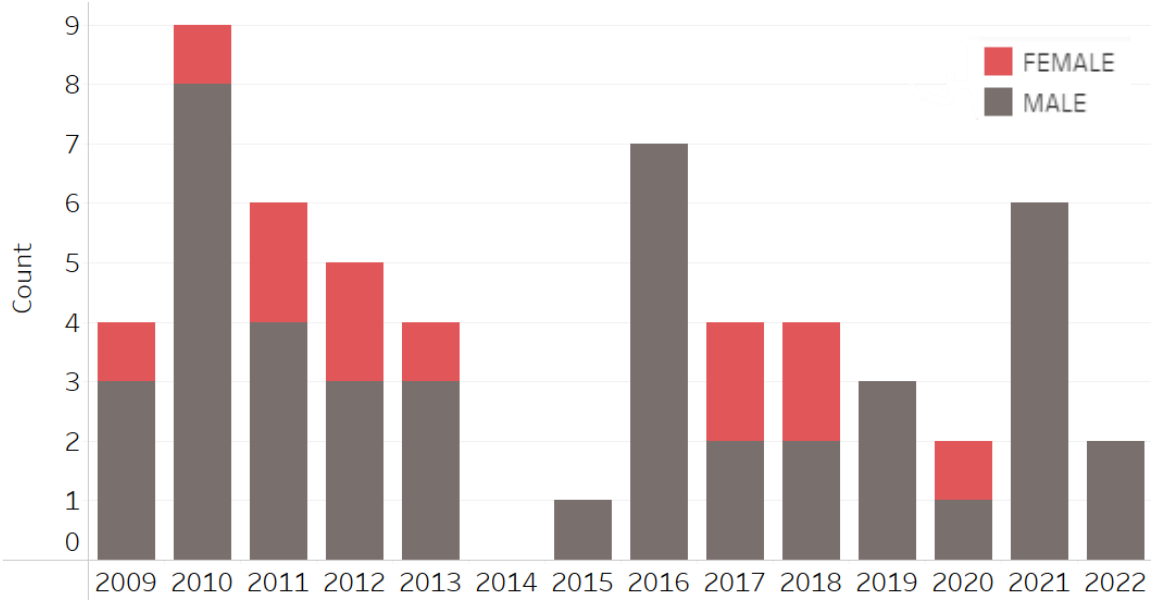
- With available data, 32% of those who died by homicide were Black or African Nova Scotian
- This is disproportionate to the percentage of the population who are Black or African Nova Scotian in the province ($p<0.0001$; see Figure 32).

CANADIAN DIMENSIONS OF MULTIPLE DEPRIVATION

- There was a general increasing trend in homicide rate associated with increasing area-based levels of residential instability, ethnocultural composition, and situational vulnerability by quintile. See Figure 33.
- Research shows associations between social, economic, and structural characteristics of communities and violence and violent death (Societal determinants of violent death: The extent to which social, economic, and structural characteristics explain differences in violence ; Structural and social determinants of inequities in violence risk).
- There was no trend noted in homicide rate corresponding with increasing area-based levels of economic dependency by quintile.

Figure 30. Count and rate per 100,000 population of homicide deaths by sex of decedent, <25 year population, 2009-2023, n=57

A. Count



B. Rate (total; males and females)

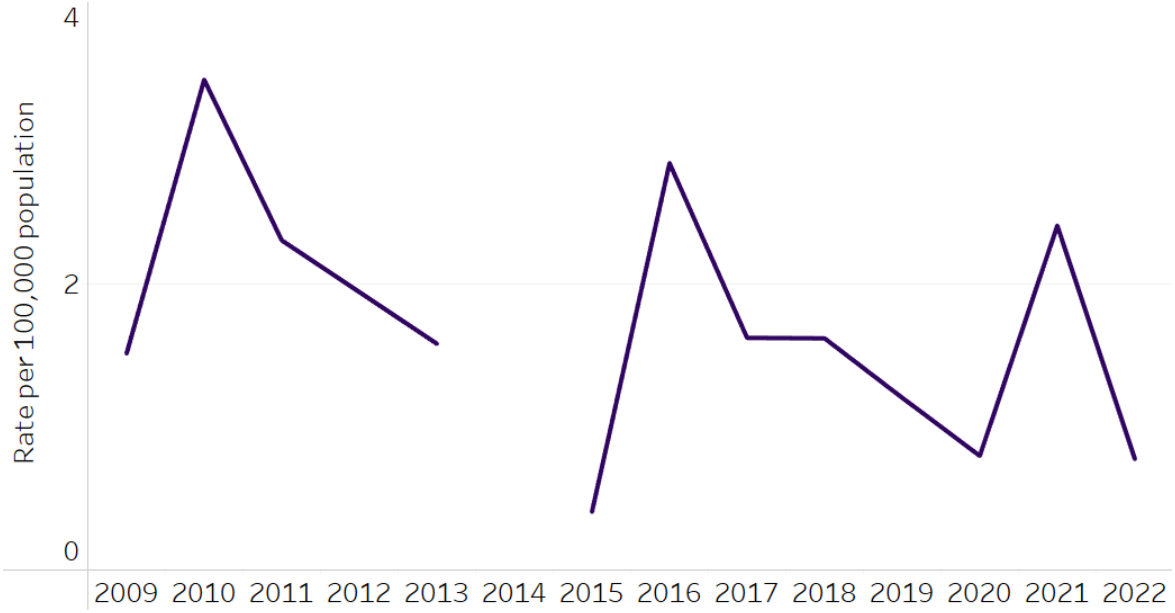


Figure 31. Homicide mortality rate per 100,000 population by age group, sex, and urban/ rural location of residence, NS, 2011-2022, n=44

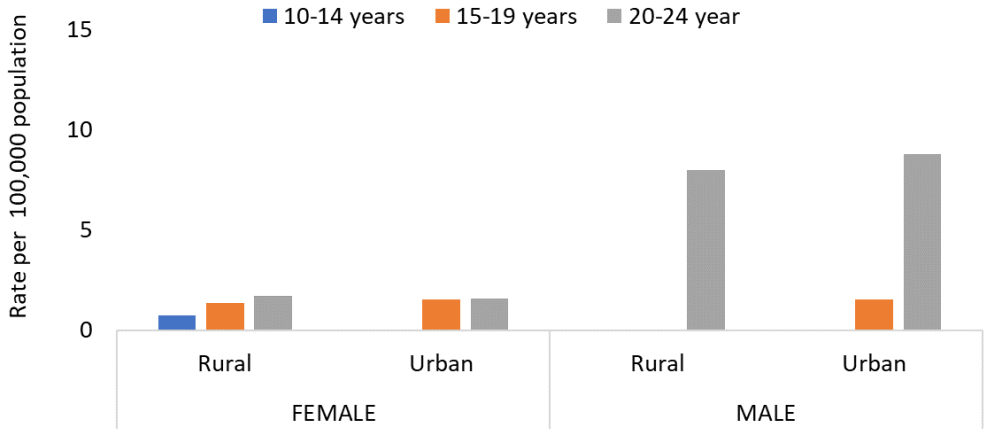
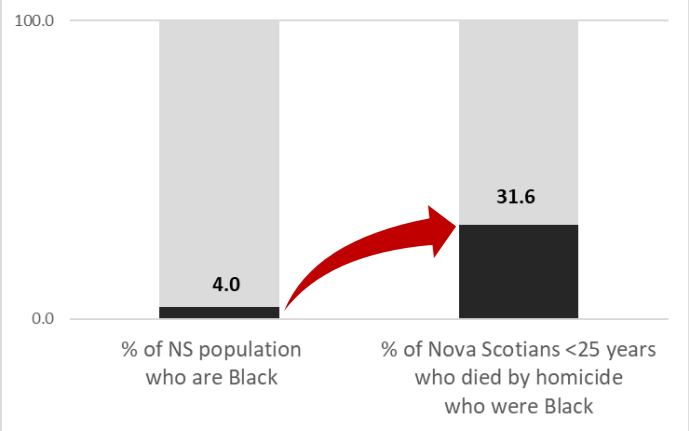


Figure 32. Percent of homicide decedents perceived to be Black or African Nova Scotian, homicide deaths in NS, 2009-2023, n=57



Black or African Nova Scotians disproportionately represented among homicide deaths
(statistically significant)

Figure 33. Homicide mortality rate per 100,000 population by quintiles of the Canadian Index of Multiple Deprivation four dimensions, based on area of residence, NS, <25 years, 2011-2022, n=44

Deaths with undetermined manner, 1-24 years (2009-2023, n=15)

- From 2009-2023 there were between 0-2 deaths per year where the manner was certified as 'undetermined' (rather than homicide, suicide, accident, or natural) in the 1-24 year age group (mean of 1 deaths/year; n=15, see Figure 34)
- The cause of death was also undetermined for 33.3% of these cases. Other certified causes of deaths with undetermined manner included blunt injuries, gun related injuries, and drug toxicity.
- Deaths in the <1 year of age population certified with undetermined manner are included in the 'Deaths in population <1 year of age, focus on non-natural deaths' section of this report.

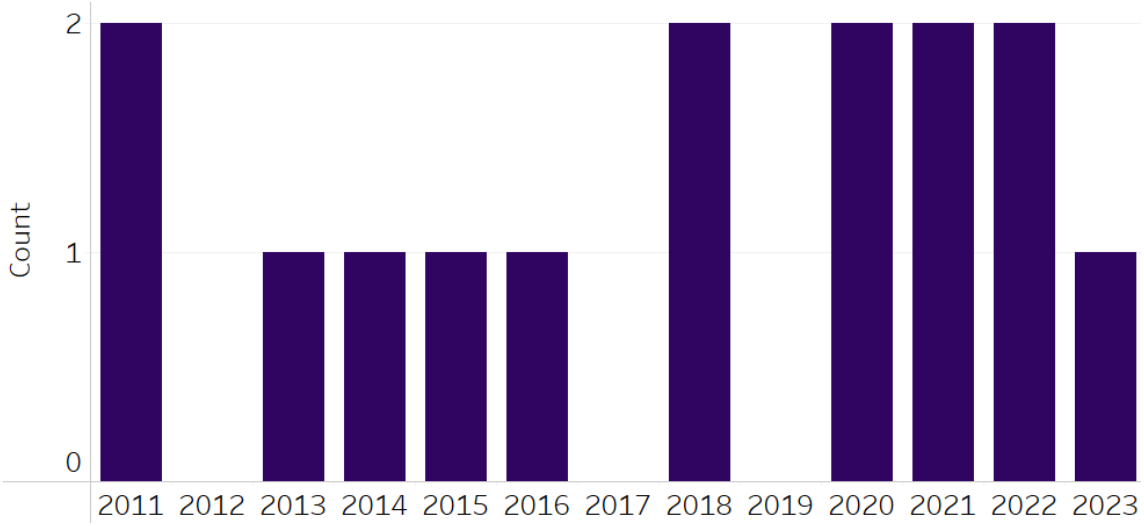
SEX (2009-2023, 1-24 years, n=15)

- Males were overrepresented among deaths with an undetermined manner: 80% male: 20% female

AGE GROUPS (2009-2023, 1-24 years, n=15)

- 47% of decedents were 20-24 years of age
- 33% were 15-19 years of age
- 20% were 1-14 years of age

Figure 34. Count of deaths with undetermined manner, 1-24 year population, 2009-2023, n=15



Climate and/or disaster related mortality, <25 years

- Death investigation systems in various jurisdictions are working towards systematic capture and monitoring of climate and/or disaster related mortality. Events of interest may include extreme heat, hurricanes, cold/snow, tornadoes, thunder/lightning and wildfires. Deaths directly related to these events are referable to the NSMES. Indirect mortality related to these events would not necessarily fall under the current mandate of the Act.
- On July 22, 2023, flash flooding due to heavy rains led to declaration of a Provincial State of Emergency in Nova Scotia
    - 3 drowning deaths occurred among those aged <25 years associated with flash floods washing vehicles off of road
        - As the body of one decedent was discovered days later, in the absence of intentional surveillance this death would not readily be associated with the event on that particular date

Recommendations

Overarching recommendation

1. We recommend that the Minister of Justice direct the Chief Medical Examiner to investigate the feasibility of collecting and reporting on available information on missing persons under the age of 25 years for the purpose of monitoring and reporting as part of the CDRC report. The committee notes that this would align with recommendations from the National Inquiry into Missing and Murdered Indigenous Women and Girls (mmiwg-ffada.ca).

Recommendation related to deaths under 1 year of age

2. The committee recommends strengthening the inclusion of these findings on SIDS/sleep related deaths; into existing health system and community programs, policies and public communication initiatives, including Family Resource Centers, IWK Child Safety Link, Public Health Early Years programs: Healthy Beginnings, Enhanced Home Visiting, and Nurse Family partnership programming.

Recommendations related to motor vehicle and recreational vehicle accident deaths

3. The committee recommends that the provincial government update the Road Safety Advisory Committee's Terms of Reference to clearly establish it as the lead provincial body on road safety and to define its accountability to the appropriate Deputy Ministers and Ministers. The committee also recommends that the Road Safety Advisory Committee be tasked with issuing an annual public report on motor vehicle crashes including causal and contributing factors.
4. The committee recommends that the mandate of the provincial government's Road Safety Advisory Committee should include ATV and other recreational vehicle crashes.
5. The committee recommends that the provincial government's Road Safety Advisory Committee produce an action plan that includes public engagement to address the recommendations of the 2022 report by Injury Free Nova Scotia "A Path Towards Improved Off Highway Vehicle Safety".

Recommendations related to drowning accident deaths

6. The committee recommends that the Department of Communities, Culture, Tourism and Heritage leads the development of programs for educating newcomers and international students on water safety, with the support of the Departments of Health and Wellness; Labour, Skills and Immigration; Advanced Education.
7. The committee recommends that the Department of Communities, Culture, Tourism and Heritage leads the work to enhance water safety public communication and programming with the support of the Department of Health and Wellness and with the Nova Scotia Lifesaving Society and the Canadian Red Cross.

Recommendation related to drug toxicity accident deaths

8. The committee recommends that ongoing work on preventing drug use harms remains a priority for provincial government departments (including Office of Addictions and Mental Health; Health and Wellness; L'Nu Affairs, Education and Early Childhood Development; African Nova Scotian Affairs, and Justice).

Recommendation related to death by suicide

9. The committee recommends that provincial government departments (including Office of Addictions and Mental Health; Health and Wellness; Education and Early Childhood Development; Justice; Opportunities and Social Development; Communities, Culture, Tourism and Heritage, Office of L'nu Affairs; African Nova Scotian Affairs) strengthen and enhance collaboration with relevant partners to identify opportunities for suicide prevention efforts focused on high-risk groups.

Recommendation related to death by homicide

10. The committee recommends that provincial government departments (including Justice, African Nova Scotian Affairs, L'Nu Affairs, Health and Wellness, Education and Early Childhood Development, Opportunities and Social Development) strengthen and enhance collaboration to identify opportunities for homicide prevention efforts focused on high-risk groups.

Recommendation related to death related to climate- and/or disaster-related events

11. The committee recommends that the Department of Health and Wellness (Public Health Branch), in collaboration with the Medical Examiner Service, leads the development of surveillance of harms related to extreme weather events. This work should include deaths and non-fatal harms that are directly related to extreme weather events as well as deaths and non-fatal harms where the event may have been a contributing factor. This approach should include comprehensive determinants of health and equity lenses.

Technical Appendix

1. Case identification/classification
    - Relevant electronic data elements for cases under 25 years of age were extracted from the case management system, the Medical Examiner Application, for 2009-2023 inclusive.
    - In Stata, coded searches for key syntax strings (applied to cause of death and how did injury occur fields) were used to classify cases by broad causes/types of death.
    - Broadly classified groups of cases were manually reviewed to ensure accuracy of classification of cause of death statements for public health purposes. Manual reclassification was completed if/when necessary (e.g. cause of death was drowning but the drowning was subsequent to a motor vehicle collision = reassignment of death as a motor vehicle death rather than a drowning death).
    - Not all data are available for all years; data included in each section/figure are as noted

2. Limitations to reporting by sex binary
    - Routine electronic data collection currently includes the binary classification (male or female) of each case by sex. The recorded sex of the decedent reflects that indicated on the official government documents used for ascertaining the decedent's name, in accordance with the investigative process to determine the identity of the decedent. As such, the sex recorded typically reflects the sex assigned at birth. The option to change the sex recorded on a birth certificate and for sex to be recorded as 'X' on birth certificates and/or passports requires consideration for sex and gender data collection going forward.
    - Reporting based on this information does not allow for identification of intersex populations and/or populations of decedents with conditions such as Klinefelter syndrome, Turner syndrome, or adrenal hyperplasia, for examples.
    - Only suicide mortality has been reported by gender in this report. Information on gender was collected through manual retrospective case review according to the data abstraction protocol. It is possible that not all gender diverse individuals were identified through this process. There was also a limitation in assessing for disparity. The closest comparator data were from census reporting of the proportion of the population aged 15-34 years who identified as transgender or non-binary. However, this age group did not align with the focus of this report, the population under 25 years.
    - Work is underway to allow for better capture of sex and to also collect gender (separately).

3. Limitations to methods used to identify Black and African Nova Scotians
    - Nova Scotia has a unique Black experience and history. African Nova Scotians are a distinct founding people in Nova Scotia who have been a key part of the province's culture and history since 1605. African Nova Scotians are most often recognized and perceived as part of the Black race, but African Nova Scotian is a multidimensional identity that is rooted as a distinct ethnic group unique to Nova Scotia.
    - There are also people in Nova Scotia who identify as Black (African Canadian, African descent, Afro-Caribbean descent, etc) but do not identify as African Nova Scotian with ties to the historical African Nova Scotian communities.

- Work is underway, through the Fair Care project, to include race-based data in the MSI card registry. A protocol was implemented to identify Black and African Nova Scotian decedents through review of case files in order to assess disparities in mortality as part of the Child Death Review Committee's work. This protocol relies on observer reports, which is not best practice and comes with challenges and limitations including subjectivity, bias, inter-observer variability, among others. Nevertheless, this method was chosen to ensure the inclusion of this critical information with noted caveats be made available in this report in the interim, while awaiting the data collection methods stemming from the Health Equity Framework.
- Population derived from census data summarized here african_ns_census_data (accessed Feb 2024).

4. Respect of OCAP® principles
   - We are respecting the First Nation Principles of OCAP® and the long-standing partnerships and data sharing agreements that support the Mi'kmaw Client Linkage Registry, the Mi'kmaq continue to explore the potential participation in the Fair Care Project and the necessary data governance framework that would be required to support access to Mi'kmaw and Indigenous data collected as part of the Fair Care Project. As a result, information contained in this report does not include data for Mi'kmaw or Indigenous individuals out of respect for that process and OCAP®.

5. Data abstraction protocol
   - Information from complete case files including narrative notes was abstracted manually according to a data abstraction protocol
   - These data were saved to an Excel spreadsheet
   - These additional data elements were appended to the data extract from the case management system for analyses
   - Data abstraction protocol available upon request

6. Rate calculations and denominators
   - Population data were obtained from Statistics Canada (Population estimates by age and gender (statcan.gc.ca); accessed Feb 2024) for years 2009-2023
   - Rates per 100,000 population were calculated as: number of deaths in specific population or subpopulation in specified time period/specified population in specified time period * 100,000

7. Geocoding
   - Civic address of residence was geocoded to specific latitude/longitude coordinates (point location)
   - Point location of residence was geocoded to DAUID (Statistics Canada census dissemination area) and county
   - DAUID (dissemination area) of residence was used for urban/rural and CIMD classifications
   - Geocoding was available for data from 2011-2023; all sections and figures in the report state the years of data depicted.

8. Urban and rural classification: population density method
    - According to Statistics Canada census classification of urban and rural for Nova Scotia, Halifax County is assigned as urban and the remainder of the province as rural. A finer approach was sought for this report.
    - For this report, urban areas were those where the population density was 400 or more persons per square kilometer and rural areas were those where the population density was less than 400 persons per square kilometer. (This definition shares some similarities with Statistics Canada measure of population centres, but some differences: Dictionary, Census of Population, 2021 – Population centre (POPCTR) (statcan.gc.ca))
    - Dissemination area (DAUID) of residence was used to assign location of residence as either urban or rural.

9. Canadian Index of Multiple Deprivation (CIMD)
    - Four dimensions of multiple deprivation developed by Statistics Canada provide area-based measures which allow for an understanding of inequalities in various outcomes related to health and social wellbeing.
    - Dissemination areas are the smallest standard geographic units applied by Statistics Canada to census data with population sizes typically between 400-700. These small neighbourhood-level areas can be grouped based on common characteristics/indicators. To assign the four CIMD dimensions, areas are assigned a "score" for each indicator comprised in the dimension and then placed into one of five groups (quintiles) based on the combined score.
    - An association between an outcome, such as suicide for example, and community-level deprivation scores suggests prevention efforts at the community and societal levels may be beneficial.

10. Risk-based disclosure reporting practices
    - NSMES follows risk-based disclosure reporting practices which assesses risk of re-identification with consideration of quasi-identifiers and with a threshold for likelihood of re-identification of 5%, as well as assessment of attribute disclosure and community disclosure.
    - As such, considering risk of re-identification:
        - Annual deaths for <1 year, 15-19 year and 20-24 year age groups can be reported as typically >20 deaths/year
        - Annual deaths by sex for <25 year age group can be reported as >20 deaths/year
        - Annual deaths for males 15-24 years can be reported, but annual deaths for females 15-24 years are typically <20 deaths/year
    - Considering community disclosure risks:
        - Decisions to include the information on disparities across population subgroups were based on discussions with committee members as well as external groups, depending on the community(ies) represented.
    - Considering attribute disclosure risks:
        - When reporting proportions by attribute, any proportion of <20% or >80% was reviewed for potential risks. The committee decided on reporting of the exact proportion or

applying the language of “less than 20% of cases” or “more than 80% of cases” depending on each attribute and perceived risks.

11. Statistical comparison of proportion observed in mortality cohort with population proportion
    - One sample test of proportion (prtesti; Stata 15.1) was used to compare sample proportion with reported population proportions.