

Injury Surveillance and Prevention Report

To: Chair and Members of the Board of Health

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Recommendations

It is recommended that the Board of Health receive this report for information.

Key Points

- This report provides an overview of injury-related emergency department (ED) visits, hospitalizations, and mortality information for Wellington-Dufferin-Guelph (WDG) health region by geography, age group and sex.
- Rates of injury-related ED visits, hospitalization, and mortality have been increasing in the Wellington-Dufferin-Guelph Region.
- Fall injuries account for more than 60 percent of injury-related ED visits and hospitalizations, and more than 40 percent of injury-related mortality.
- In the 0-19-year age group, ages 1-5 and 13-19 are at the highest risk of injury.
- Rates of injuries related to agricultural machinery and tools are highest for Wellington, and specifically the municipalities of Wellington North and Minto.
- Wellington Dufferin Guelph Public Health (WDGPH) works closely with community partners to reduce the burden of preventable injuries.

Background

Injuries have a significant impact in WDG, both in terms of the toll they take on individuals and their families, as well as broader social and economic costs they impose.¹ Unintentional injuries were the leading cause of death among Canadians aged 1 to 34 years, and the 6th leading cause of death among all ages combined.^{2,3} They also result in a significant burden of disability, with many people experiencing long-term physical, emotional and psychological effects that can impact their quality of life. Many injuries are preventable and there are evidence-based strategies that can help reduce the incidence and impact of injuries. For instance, the Canadian Institute for Health Information (CIHI) has estimated that up to 80% of fall-related injuries among older adults could be prevented through the implementation of fall-prevention programs.⁴

Although most injuries are minor and unreported, the more severe injuries are captured through ED visits, which may be followed by hospitalizations, and, in the most serious cases, mortality. To gain insight into injuries, this report examines injury ED visits, hospitalizations, and mortality information for WDG health region by geography, age group and sex.^{5,6,7} The following injury categories used in this report align with priorities identified by local community partners:

- Pedestrian and cyclist injuries;
- On/Off road motor vehicle injuries;
- Sports and recreation injuries;
- Falls injuries;
- Accidental poisonings; and
- Intentional self-harm

In addition, this report also includes details related to youth (0-19-years) and agricultural machinery and tools injuries, as the rates for the latter category are higher in WDG than other areas of Ontario.

Discussion

Overall Injury Rates and Trends

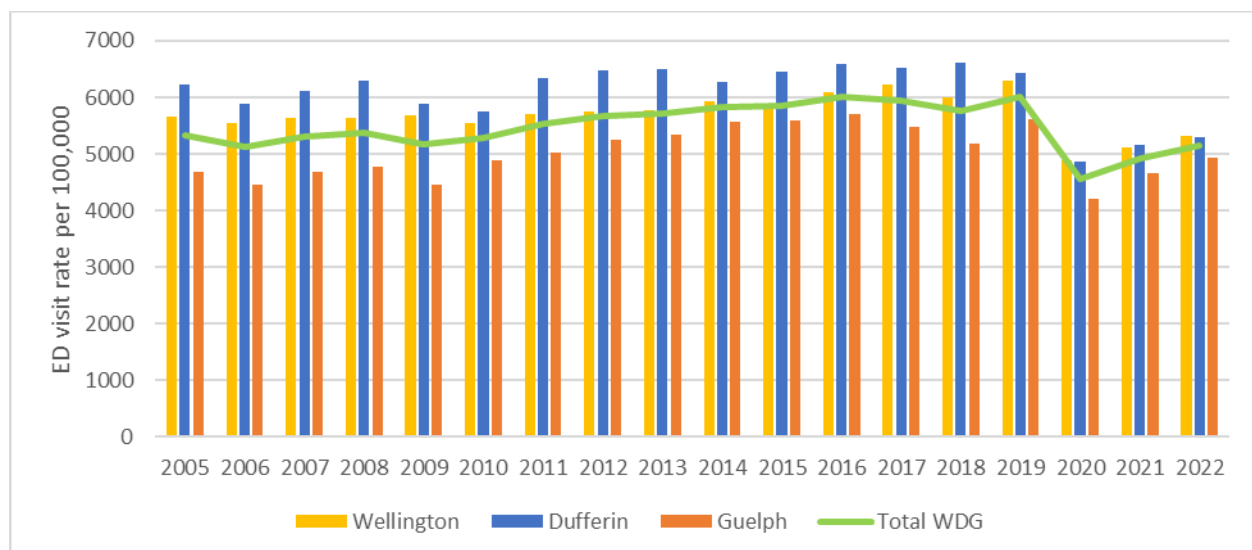
Wellington-Dufferin-Guelph's injury rate is higher compared to Ontario for ED visits, as shown in Table 1. It should be noted that WDG's ED visit rate ranks tenth amongst the 34 Public Health Units, where first place has the lowest rate. The age-standardized rate comparison between Ontario and all public health units eliminates population age distribution differences between the populations being compared.

Table 1. Injury rates in WDG and Ontario

Age-standardized rate per 100,000	WDG	ON	Significant difference	Rank of 34 health units (lowest to highest)
ED visit (2012-2021) ⁸	10,113.5	8,527.4	Higher	10
Hospitalization (2012-2021) ⁹	546.8	553.3	No	8
Mortality (2003-2015) ¹⁰	42.2	43.8	No	8

Injury rates have been steadily increasing in the pre-pandemic years starting in 2005, as seen in ED visits, hospitalizations and mortality data, as shown in chart 1 below. This is true for WDG's sub-regions, with Dufferin generally having higher rates compared to the rest of WDG.

Chart 1. WDG injury ED visit rates by geography and year



It is worth noting, since 2005 the WDG population has gotten older, is living longer (especially women) and is more active than before.

Injury Types and Geography

Falls account for more than 60% of injury ED visits and hospitalizations, and more than 40% of injury-related mortality in WDG. When comparing regions within WDG, Wellington has a higher proportion of falls resulting in hospitalization at 74%, as shown in Table 2.

Table 2: Proportion of falls injury of total injuries in ED visits, hospitalizations, mortality by geography

Falls injury proportion	Wellington	Dufferin	Guelph	WDG
ED visits	64%	63%	64%	64%
Hospitalization	74%	63%	64%	64%
Mortality	43%	43%	45%	44%

Sports recreational injuries and motor vehicle accidents represent the next highest proportion of injury-related ED visits and hospitalizations, accounting for about 10% each. However, injuries like accidental poisonings and intentional self-harm represent a small proportion of ED visits and hospitalizations but make up a sizable proportion of deaths, as seen in Table 3 below.

Table 3: Proportion of injury mortality by geography, 2005-2018

Injury mortality type	Wellington	Dufferin	Guelph	WDG
1. Pedestrian and Cyclist injuries	3%	2%	3%	3%
2. On/Off Road Motor Vehicle	18%	22%	10%	16%
3. Agricultural Machinery and Tools	1%	1%	0%	1%
4. Sports and Recreation injuries	2%	2%	0%	1%
5. Falls injuries	43%	43%	45%	44%
6. Accidental Poisonings	7%	11%	15%	11%
7. Intentional Self-harm	25%	18%	26%	24%

When examining hospitalizations, accidental poisoning and intentional self-harm stand out. While 10% of injury-related ED visits are hospitalized in WDG, there is variability by injury type and geography. Falls, accident poisonings and intentional self-harm injuries are hospitalized at a higher rate due to the serious nature of the injuries (Table 4).

Table 4: Percent ED visits hospitalized by injury and geography, 2005-2022

Injury type	Wellington	Dufferin	Guelph	WDG
1. Pedestrian and Cyclist injuries	6%	6%	7%	7%
2. On/Off Road Motor Vehicle	10%	8%	7%	8%
3. Agricultural Machinery and Tools	2%	1%	2%	2%
4. Sports and Recreation injuries	3%	2%	2%	2%
5. Falls injuries	12%	11%	11%	11%
6. Accidental Poisonings	12%	13%	11%	12%
7. Intentional Self-harm	39%	52%	23%	32%

The risk factors associated with each injury type and effective prevention strategies depend on the nature of the injury. For example, preventing motor vehicle collisions and injuries includes a broad range of strategies, ranging from seatbelt use and speed reduction to road design and vehicle safety features.

A summary of injury rates at a municipality level is shown in Table 5. It is interesting to note that, in Wellington, the rural municipalities have the highest injury rates. While in Dufferin, the more urban municipalities have the highest rates. Each municipality has its own characteristics and knowing these rates helps to not only understand the reason for the higher injury but also plan the best strategy for community education and prevention.

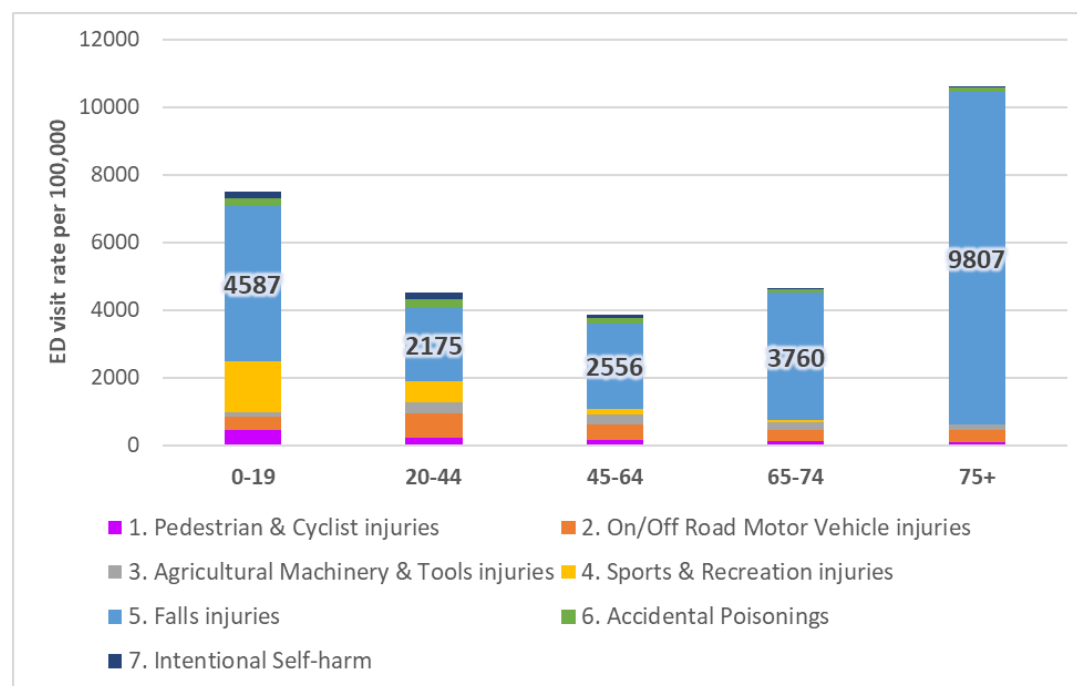
Table 5: Highest risk groups for injuries by geography, rates per 100,000 population

Groups	ED visits rate	Hospitalization rate	Mortality rate
WDG rate	5473	540	37
WDG region	Dufferin – 6,076	Dufferin - 588 Wellington - 580	Dufferin - 43
Wellington municipalities	Wellington North – 8,778 Minto – 7,723	Wellington North - 935 Minto - 837	Minto – 58 Wellington North - 53
Dufferin municipalities	Orangeville – 7,632 Shelburne – 7,469 Grand Valley – 6,595	Shelburne – 871 Orangeville - 752	Shelburne - 67

Injuries by Age and Sex

Age is a significant risk factor for injuries. Of the five age groups shown in Chart 2, the youngest and oldest groups have the highest injury ED visit rates.

Chart 2. WDG ED visit rate by injury type and age group, 2005-2022



Falls represent the largest proportion of ED visits within each age group, ranging from 48% (20-44-years) to 92% (75+ years). As expected, the youngest group has the highest rates of sports and recreational injuries, since that age group is more likely to participate in those activities.

Injury hospitalization is highest in the oldest group with a rate of over 3,700 per 100,000 or 1 in 27 people. That rate is relatively high compared to other age groups (Table 6).

Table 6. WDG injury by age group, rates per 100,000

Age Group	ED visit rate	Hospitalization rate	Mortality rate
0-19	7,477	226	7
20-44	4,522	221	25
45-64	3,852	357	32
65-74	4,657	874	32
75+	10,612	3,739	241
All ages	5,473	540	37

As with ED visits, falls-related hospitalization account for the largest proportion among all age groups. While falls account for the highest proportion in the 75+ years group (95%), intentional self-harm and motor vehicle collisions account for the largest proportion in the 20-44-years of age group (27% and 19%, respectively).

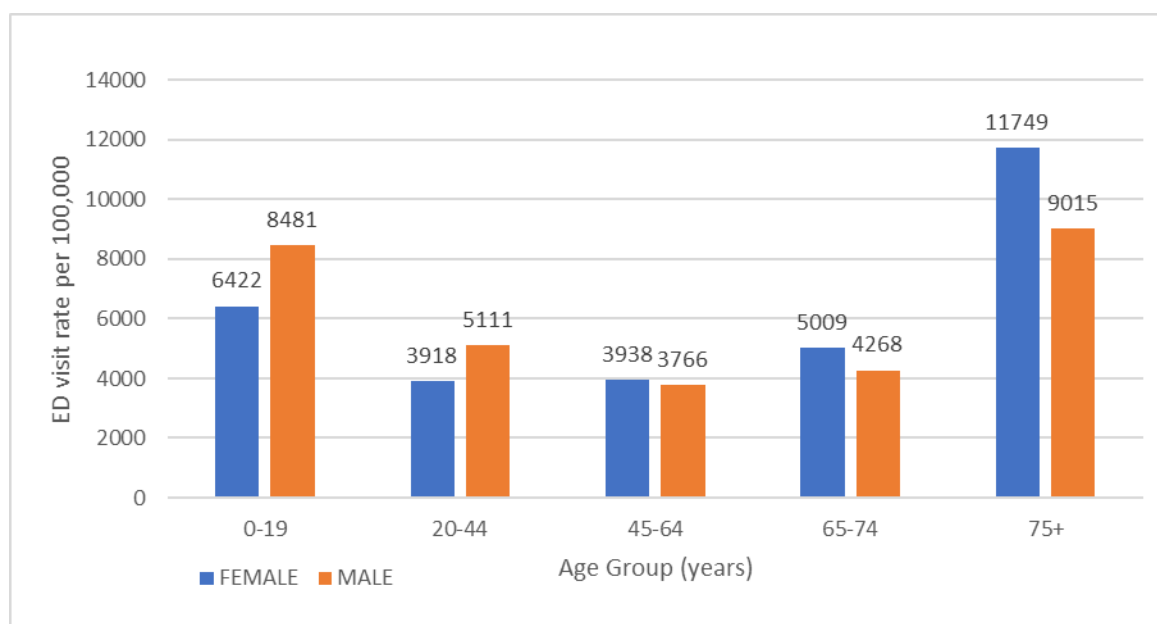
WDG injury mortality rate is 37 per 100,000 and is highest for the 75+years age group (241 per 100,000). The top mortality injury proportion for each age group is highlighted in Table 7 below.

Table 7: Proportion of injury mortality by age group

Injury mortality type	Age group (years)				
	0-19	20-44	45-64	65-74	75+
1. Pedestrian and Cyclist injuries	11%	4%	2%	1%	1%
2. On/Off Road Motor Vehicle	51%	27%	16%	17%	5%
3. Agricultural Machinery and Tools	1%	1%	1%	0%	0%
4. Sports and Recreation injuries	8%	2%	1%	1%	0%
5. Falls injuries	1%	4%	11%	55%	89%
6. Accidental Poisonings	3%	25%	20%	5%	1%
7. Intentional Self-harm	25%	38%	48%	21%	3%

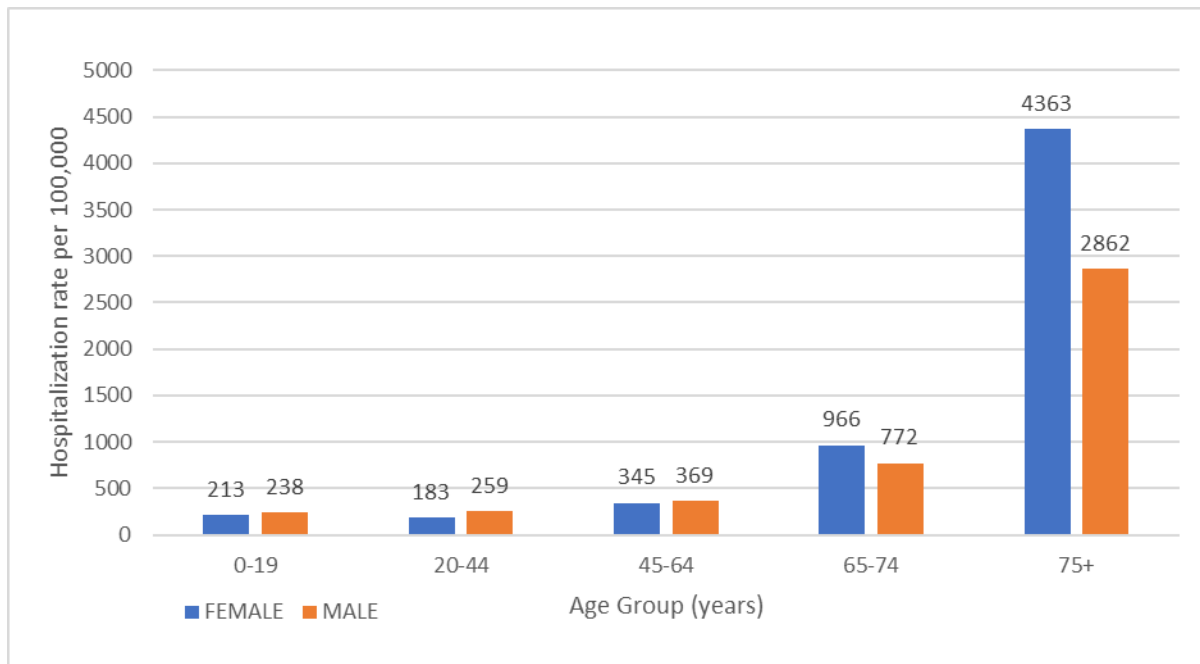
Behavioural differences due to sex plays a role in injury risk. Males tend to take more risks, have higher participation rates in sports and recreational activities, and are more likely to work with agricultural machinery or tools. Females have longer life expectancy, meaning more females are included in the 75+ years age group. These factors put each group at risk for different types of injuries.

When comparing sex by age groups, males in youngest age group (0-19 years), have highest higher rates of ED visits. In the 45-64 year age group, the rates are comparable. In the two older age groups, females have the higher ED visit rate, as shown in Chart 3.

Chart 3. WDG injury ED visit rate by se and age group, 2005-2022

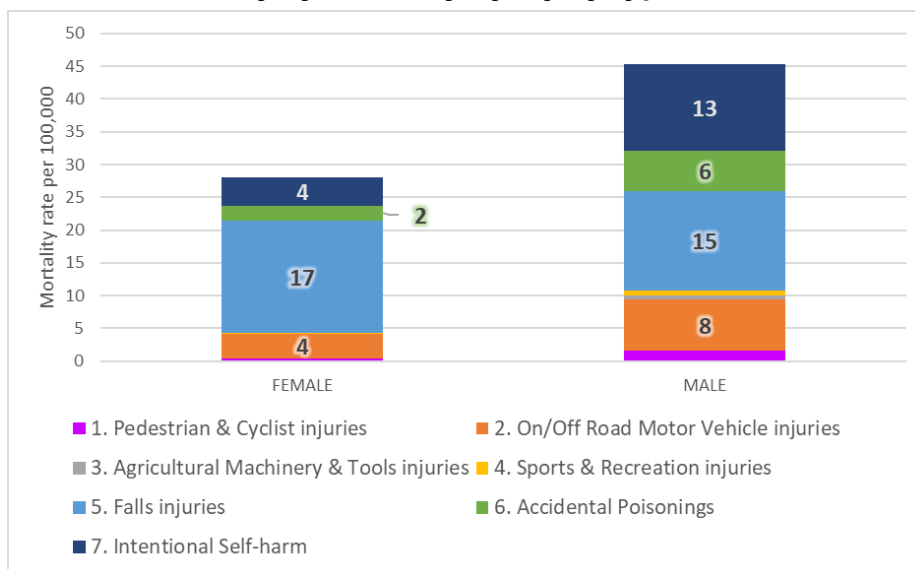
As expected, injury hospitalization is highest for 75+ age group, notably females (Chart 4).

Chart 4. WDG injury hospitalization rate by sex and age group, 2005-2022



However, males have an increased risk of injury mortality, and that risk is 1.6 times greater than females (Chart 5). The risk for males is highest for all injury types, except for falls.

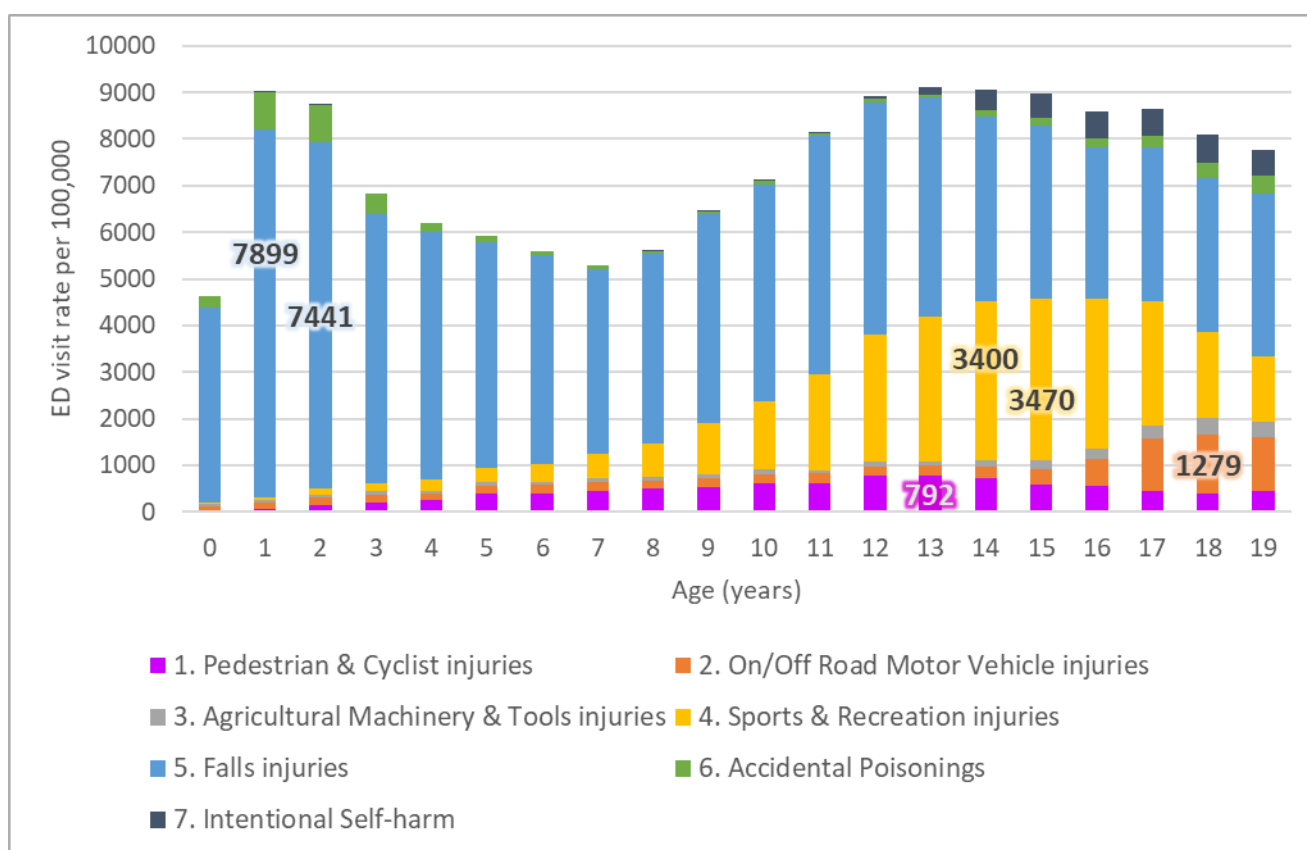
Chart 5. WDG injury mortality by injury type and sex, 2005-2018



Injuries in Youth

Chart 6 below shows youth ED visit rates by age. There are two peaks, at ages 1 and 2 and ages 12-15. The proportion of injury types varies for each individual age. Although falls are common for all ages, they make up a substantial proportion in the younger ages. By age 12 and older, falls make up less than half of ED visits. Sports and recreational injuries increase with age, peaking around 15-years of age, making up about 30% of injury ED visits for that age.

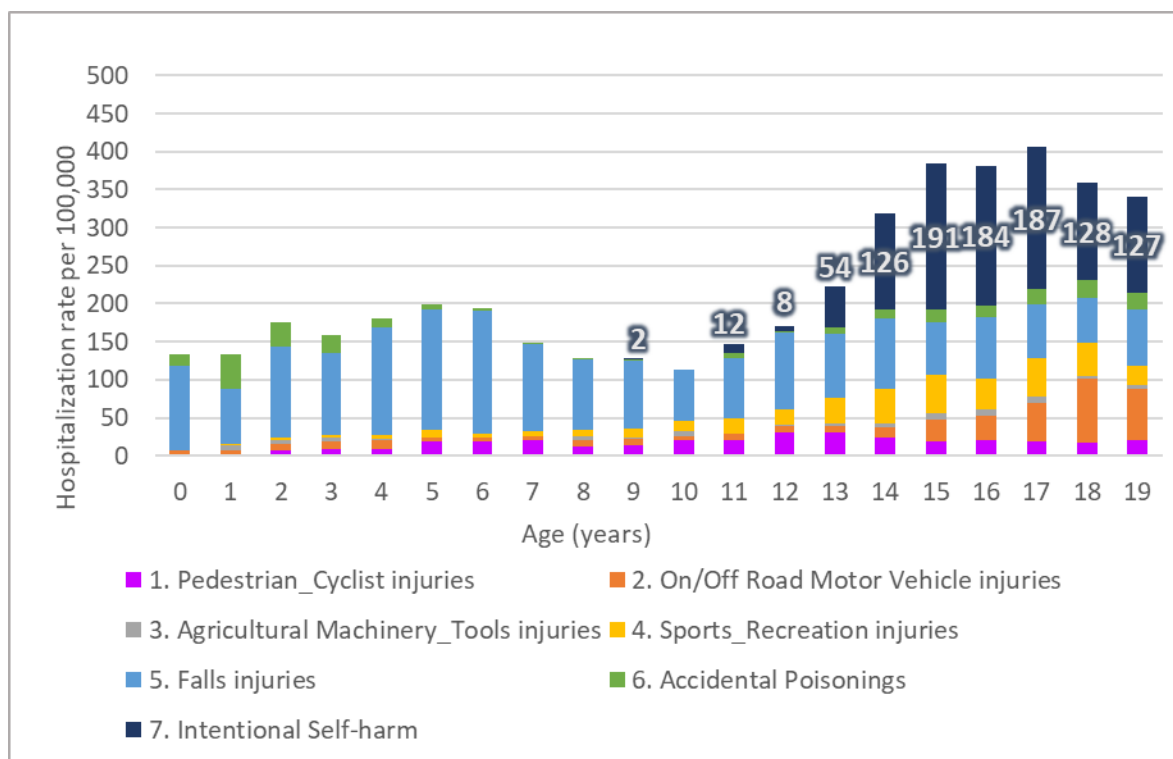
Chart 6. WDG youth ED visit rate by injury type and age, 2005-2022



Pedestrian and cyclist injury ED visits increase around age 2, plateau between 5-9 and peak around 13-years of age, coinciding with increasing growth and development. Motor vehicle injuries are present in the 0-19-year age range but there is an increase during the teenage years due to inexperience and peaks at 18-years of age. Accidental poisonings ED visit rates are highest in those 5-years and younger and the second highest group are teenagers. Intentional self-harm ED visit rates are highest in 17-year-olds.

Injury hospitalization by age distribution (Chart 7) below has two peaks, one at ages 5 and a second one at 18-years. Until 12-years of age, falls injuries comprise most of the injury hospitalization. However, in the 4-years and younger, accidental poisonings hospitalization rates are also high.

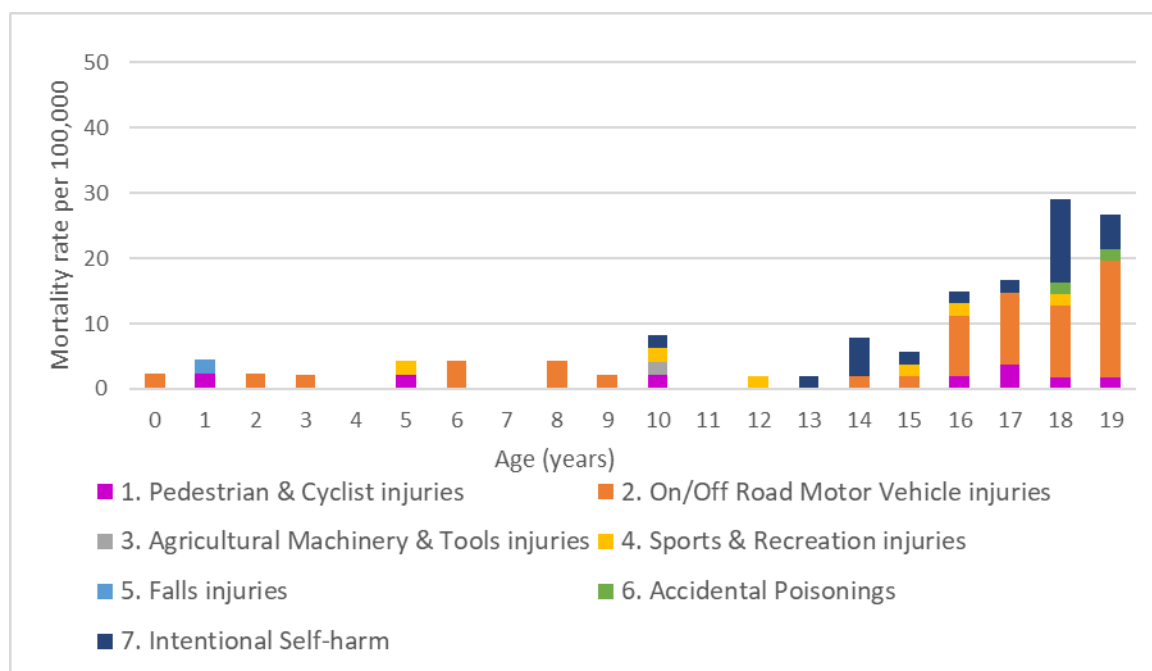
Chart 7. WDG youth hospitalization rate by injury type and age, 2005-2022



In the teen years, intentional self-harm is the highest injury category, followed by motor vehicle accidents, falls, sports and recreational injuries and accidental poisonings.

Overall, mortality rates in youth are low, but it does increase for the oldest ages, as shown in Chart 8. Motor vehicle accidents mortality are present for most ages, with low rates for younger ages, but increase in the early driving years, 16 to 19-years.

Chart 8. WDG youth mortality rate by injury type and age, 2005-2018



In the teen years, intentional self-harm represented the majority followed by motor vehicle accidents, falls, sports and recreational injuries and accidental poisonings. Overall, for the 0-19-year age group, ages 1-5 and 13-19 are at the highest risk of injury.

Agricultural Machinery and Tools Injuries

A considerable proportion of Wellington-Dufferin-Guelph's geographic area is rural, where agricultural activities are prevalent. This may explain why Ontario has a lower agricultural machinery and tools injury rate when compared to Wellington-Dufferin-Guelph. The ED visit rates are 158 vs 244 per 100,000 for Ontario and WDG, respectively for combined years 2005-2022. In the table below, the rural areas are those with the highest injury rate compared to the rest of WDG.

Table 8: Highest risk groups for agricultural machinery tools injury, rates per 100,000

Groups	ED visit	Hospitalization	Mortality
ON rate	158	3	0.11
WDG rate	244	5	0.26
WDG region	Wellington - 333	Wellington - 8	Wellington - 0.48 Dufferin - 0.47
Wellington municipalities	Wellington North - 534 Minto - 508	Wellington North - 15 Mapleton - 14	Mapleton - 2.03
Dufferin municipalities	Grand Valley - 388 Melancthon - 351	Melancthon - 11 East Garafraxa - 8	East Garafraxa - 2.72
Age groups	20-44-years - 325	65-74-years - 6	45-64-years - 0.47
Youth (0-19-years)	18-year-olds - 340	15-year-olds - 7	10-year-olds - 2.06
Sex groups	Males - 392	Males - 9	Males - 0.52

It is noted that the risk group identified as having highest rates are somewhat consistent across ED visit, hospitalization and mortality for WDG, Wellington municipalities and sex groups. However, it is not consistent for Dufferin municipalities, age group, or youth. Since agricultural machinery and tools injuries have small counts, rate calculations should be interpreted with caution.

WDG Public Health Partnerships and Community Response

As WDGPH emerges from the pandemic and resumes regular programming, concerted efforts have been made to re-engage with community partners to resume initiatives aimed at reducing the burden of preventable injuries. Two examples of ongoing collaboratives include Safe Communities Wellington County and the City of Guelph Vision Zero Steering Committee.

Safe Communities Wellington County

Safe Communities Wellington County (SCWC) is a multi-sectoral table with the overarching vision to make Wellington County the safest and healthiest place in which to live, learn, work and thrive in Canada.¹¹ It consists of partners from municipal councils, emergency services, school boards and other organizations that share an interest in making Wellington County a safe place to live. Since 2012 WDG Public Health has supported this group by providing research evidence, local data, and evaluation support. Current priority action areas of this group include:

1. Reducing motor vehicle collisions throughout Wellington County
2. Reducing instances of falls in the older population
3. Providing easier access to mental health supports and decreasing the escalating numbers of intentional self harm
4. Decreasing the number of accidental poisonings throughout Wellington County¹²

Later this month Public Health will be attending SCWC's priority setting meeting to present an analysis of relevant local data to support decision making. More information about WDG Public Health's collaboration with this group is available in a [2018 Board of Health Report](#).

City of Guelph Vision Zero Steering Committee

As an outcome of the City of Guelph's Transportation Master Plan, the city is applying a Vision Zero strategy to design roads and related infrastructure (e.g. traffic calming, signals, red light cameras) to reduce the risk of fatalities and serious injury from collisions.¹³ As a member of the City of Guelph's Vision Zero Steering Committee which was formed in January 2023, WDG Public Health contributes to providing evidence on road safety and built environment measures, and guidance on road safety interventions to support a vision where all road users (people on bikes, in vehicles and on foot) safely use roadways without conflict, severe injury or fatality.¹⁴

Health Equity Implications

Certain populations are particularly vulnerable to injuries, including children and youth, older adults and the indigenous population. Health equity principles are being applied across all WDGPH injury-related products, projects and collaborations with the goal of reducing differences in injury-related harms between population groups.

One particular example is WDGPH's WHY survey which collects detailed data on mental health and self-harm. This survey has revealed that non-binary youth are at significantly higher risk of committing self-harm, when compared with binary youth, as reported in WHY survey update BH.01.MAR0123.R08. This information is widely shared by WDGPH with community partners, health care providers, school staff, parents, students and the public.

Conclusion

Rates of injury ED visits, hospitalization, and mortality have been increasing in the Wellington-Dufferin-Guelph health region. Falls account for more than 60% of injury ED visits and hospitalizations, and more than 40% of injury mortality. The 75+ age group has the highest rate of injury ED visits, hospitalization and mortality.

Although injuries can have a significant impact on WDG residents, research has shown that many injuries are preventable through the implementation of evidence-based prevention strategies, such as safety regulations, education and environmental modifications.

WDGPH collaborates with several local community partners to reduce the impact of impact of injuries through data analysis, research evidence and evaluation support.

Ontario Public Health Standards

Foundational Standards

- ☒ Population Health Assessment
- ☐ Health Equity
- ☐ Effective Public Health Practice
- ☐ Emergency Management

Program Standards

- ☐ Chronic Disease Prevention and Well-Being
- ☐ Food Safety
- ☐ Healthy Environments
- ☐ Healthy Growth and Development
- ☐ Immunization
- ☐ Infectious and Communicable Diseases Prevention and Control
- ☐ Safe Water
- ☐ School Health
- ☒ Substance Use and Injury Prevention

2023 WDGPH Strategic Directions

☐ **People & Culture:** WDGPH has an organizational culture of engagement, inclusion and agility.

☒ **Partner Relations:** WDGPH collaborates with partners to address priority health issues in the community.

☐ **Health System Change:** WDGPH is positioned to be an agent of change within the broader health sector.

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