

Violence

Every week, two Ontarians are killed by violence. Every day, 6 Ontarians are hospitalized with violence-related injuries. The majority of those hospitalized or killed are male.

Results

Interpersonal violence encapsulates many different types of violence, such as child maltreatment, bullying, intimate partner violence, elder abuse, and acquaintance and stranger assault.

In Ontario, there were 373 injury deaths resulting from interpersonal violence from 1997-1999, representing approximately 3% of all injury deaths in the province (Table 1). The number of injury deaths from interpersonal violence increased by 10% over the three-year period compared to a 12% increase for all other causes of injury death.

There were 11,536 injury hospitalizations resulting from interpersonal violence from 1997/98-2001/02, accounting for about 3% of all injury hospitalizations in Ontario (Table 2). There was a 16% decrease in the number of injury hospitalizations resulting from interpersonal violence over the five-year period compared to a 1% decrease for all other injury hospitalizations. About 1% of persons that were admitted to hospital with an injury resulting from interpersonal violence died during their hospital stay (Appendix A, Table A1). In-hospital deaths are included in all hospitalization analyses.

Males accounted for about 66% of injury deaths and 81% of injury hospitalizations resulting from interpersonal violence (Figures 1 & 2). Interpersonal violence injury hospitalizations peaked among young males 17-23 years of age and infants of both sexes. A consistent number of hospitalizations was seen among females 14-44 years of age. Detailed numbers by age group and sex are provided in Table A2 of Appendix A.

Table 1. Number of injury deaths resulting from interpersonal violence by year (Ontario, 1997-1999)

Calendar Year	Male	Female	Total
1997	85	34	119
1998	83	40	123
1999	80	51	131
Three year total	248	125	373

Table 2. Number of injury hospitalizations resulting from interpersonal violence by year (Ontario, 1997/98-2001/02)

Fiscal Year	Male	Female	Total
1997/98	2,056	525	2,581
1998/99	1,973	485	2,458
1999/00	1,779	435	2,214
2000/01	1,723	397	2,120
2001/02	1,773	390	2,163
Five year total	9,304	2,232	11,536

Figure 1. Injury deaths resulting from interpersonal violence by age and sex (Ontario, 1997-1999)

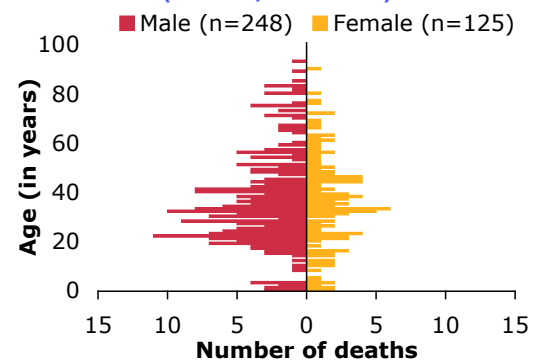


Figure 2. Injury hospitalizations resulting from interpersonal violence by age and sex (Ontario, 1997/98-2001/02)

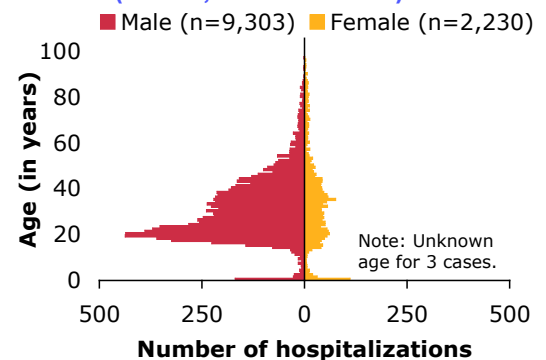


Table 3. Injury deaths and hospitalizations resulting from interpersonal violence by month

Month	Deaths (1997-1999)		Hospitalizations (1997/98-2001/02)	
	Number	% of total	Number	% of total
January	40	11	789	7
February	31	8	749	6
March	33	9	853	7
April	49	13	934	8
May	30	8	1,010	9
June	27	7	1,039	9
July	48	13	1,149	10
August	32	9	1,096	10
September	26	7	1,050	9
October	14	4	1,037	9
November	20	5	964	8
December	23	6	865	7
Total	373	100	11,535	100

Note: Unknown month for 1 hospitalization.

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The highest numbers of injury deaths resulting from interpersonal violence were observed in April and July (Table 3). Hospitalized injuries were most frequent in July and August.

Cutting or piercing was the most common type of interpersonal violence injury death followed by assault with a firearm or explosives (Figure 3). Detailed numbers by type of injury and age group are provided in Table A3 of Appendix A.

The most frequent type of interpersonal violence injury hospitalization was a fight, brawl, or sexual assault followed by cutting or piercing and being struck by a blunt or thrown object (Figure 4). The leading types of interpersonal violence injury hospitalizations differed by age group. Abuse (including neglect and Shaken Baby Syndrome) was the leading type of interpersonal violence injury among infants whereas a fight, brawl, or sexual assault was the most frequent among all other age groups (Appendix A, Table A4).

Open wounds of the chest, head, or neck were the most frequent nature of injury for violent deaths from cutting or piercing (Table 4). For firearm or explosive injury deaths, open wounds of the head were most common.

Fractures were the most frequent nature of injury for fights, brawls, or sexual assaults. In particular, fractures of the jaw accounted for 67% of fractures resulting from a fight, brawl, or sexual assault. Open wounds and internal injuries were common for violence by cutting or piercing. Areas typically affected were the chest

and neck. Intracranial injury and fractures of the skull and face were the most common nature of injury for persons intentionally being struck by a blunt or thrown object. The most responsible diagnosis for persons admitted to hospital due to child abuse or other maltreatment was commonly adverse effects of abuse or maltreatment.

Figure 3. Type of interpersonal violence injury death (Ontario, 1997-1999)

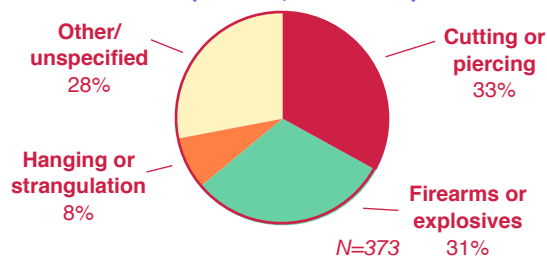


Figure 4. Type of interpersonal violence injury hospitalization (Ontario, 1997/98-2001/02)

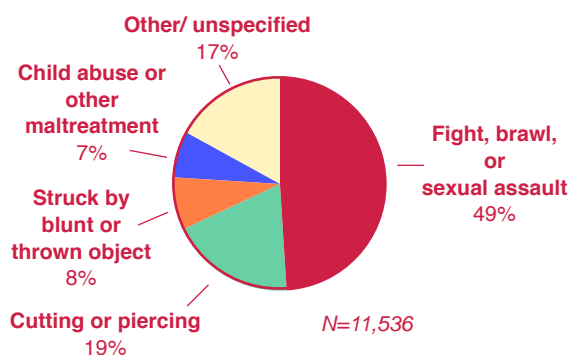


Table 4. Type of interpersonal violence injury death by nature of injury (Ontario, 1997/98-2001/02)

Nature of injury	Cutting or piercing	Firearm or explosives	Hanging or strangulation	Other/unspecified	Total
Open wound	91	85	0	<5	179
Head or neck	23	41	0	<5	65
Chest (wall)	32	26	0	0	58
Multiple (sites unspecified)	27	8	0	<5	37
Other/unspecified	9	10	0	0	19
Intracranial injury	0	10	0	58	68
Internal injury	21	14	0	10	45
Heart or lung	17	7	0	0	24
Other/unspecified	<5	7	0	10	21
Asphyxiation or strangulation	0	0	29	<5	31
Other/unspecified	11	6	0	33	50
Total	123	115	29	106	373

Table 5. Type of interpersonal violence injury hospitalization by diagnosis/nature of injury (Ontario, 1997/98-2001/02)

Nature of injury/diagnosis	Fight, brawl, or sexual assault	Cutting or piercing	Struck by blunt or thrown object	Child abuse or other maltreatment	Other/unspecified	Total
Fracture	3,160	100	533	129	588	4,510
Open wound	260	1,050	66	13	348	1,737
Internal injury	233	768	53	19	144	1,217
Intracranial injury	701	22	196	63	188	1,170
Contusion with intact skin	282	5	40	38	41	406
Other/unspecified	1,024	247	80	504	641	2,496
Total	5,660	2,192	968	766	1,950	11,536

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Table 6. Comparison of interpersonal violence injury deaths and hospitalizations in Ontario by region of residence

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
Deaths (1997-1999)								
Total number	42	26	39	26	143	40	45	373
Average number/year	14	9	13	9	48	13	15	124
Rate per 100,000 ^a	1.0	0.8	0.7	0.5	2.0	0.9	1.7	1.1
Average age (in years)	38.0	41.4	34.8	31.8	34.5	35.9	40.2	36.4
% male	71.4	65.4	56.4	57.7	67.1	70.0	62.2	66.5
Hospitalizations (1997/98-2001/02)								
Total number	1,667	1,261	1,288	1,153	2,902	1,161	1,927	11,536
Average number/year	333	252	258	231	580	232	385	2,307
Rate per 100,000 ^a	23.7	23.8	13.2	13.3	23.5	16.0	47.4	21.1
Average age (in years)	30.6	31.4	28.2	30.9	32.5	30.7	31.6	31.1
% male	80.3	80.1	82.9	80.7	83.8	81.6	74.2	80.7

a. Annual age-standardized rate per 100,000 population.

Note: Numbers for regions will not sum to Ontario total. Region of residence was outside of Ontario or unknown for 177 hospitalizations and 12 deaths; unknown age for 3 hospitalizations.

The longest lengths of hospital stay were observed for interpersonal violence injuries resulting from firearms or explosives (average 9.9 acute care hospital days) and child abuse or other maltreatment (average 8.7 acute care hospital days) (Appendix A, Table A5).

By region, the highest number and rate of interpersonal injury deaths was observed in Toronto (Table 6). The lowest numbers were seen in Central South and Central East and the lowest rate was observed in Central East. For injury hospitalizations resulting from interpersonal violence, the highest number was seen in Toronto and the highest rate was observed in the North. The lowest numbers were observed in Central East and East and the lowest rates were seen in Central West and Central East. Detailed regional hospitalization data are provided in Tables A6 & A7 of Appendix A. Detailed regional data for interpersonal violence injury deaths are not shown due to small numbers.

Discussion

This Compass outlines patterns of interpersonal violence injury deaths and hospitalizations in Ontario and its regions. Interpersonal violence injuries were common among young males and infants. Cutting or piercing was a common cause of death whereas fighting was the most frequent type of hospitalization. Past provincial studies have typically focused on specific types of violence or demographic groups.^{9,10-15}

While this analysis provides injury data on both deaths and hospitalizations associated with interpersonal violence, it highlights only one aspect of the problem. The magnitude of interpersonal violence is much larger, as many incidents do not result in death or hospitalization.

An ecological model for violence was adopted by the World Health Organization that suggests a variety of risk factors play a role, including factors associated with: the individual (e.g., psychological/personality disorders, substance

abuse, history of abuse/aggression); family/relationship (e.g., family dysfunction, parental/marital conflict); community (e.g., high residential mobility or unemployment); and society (e.g., cultural norms or economic and social policies).⁶

Managing the risk

The World Health Organization identified the following themes for primary prevention of interpersonal violence injuries:

- ❖ Investing in interventions for children and youth
- ❖ Increasing involvement of adults and parents
- ❖ Strengthening community participation
- ❖ Changing social and cultural norms
- ❖ Reducing income inequality
- ❖ Improving criminal justice and social systems

Specific examples of prevention programs based on these themes include:

- ❖ School-based programs that are developmentally tailored, such as enrichment, incentives to complete secondary school, and social development programs (e.g., Roots of Empathy)
- ❖ Relationship or family programs, such as mentoring for youth, family therapy, home visitation, and parenting programs (e.g., Upstate New York Shaken Baby)
- ❖ Community-based efforts, such as policing or availability of extracurricular activities
- ❖ Public awareness campaigns and provision of accurate public information about violence including causes, risks, and consequences

For Further Information

World Health Organization. Violence publications.
http://www.who.int/violence_injury_prevention/violence/world_report/en/
Weir E. Preventing violence in youth. *CMAJ* 2005;172:1291-2.
<http://www.cmaj.ca/cgi/content/full/172/10/1291>

The Ontario Network of Sexual Assault and Domestic Violence Care and Treatment Centres
<http://www.sacc.to/gylb/satc/Listing.asp?ProvinceID=9>

SMARTRISK Catalogue of Best Practices
<http://www.smartrisk.ca/ListingSections.aspx?dd=4&sd=207>

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- Paglia A, Adlaf EM. Secular trends in self-reported violent activity among Ontario students, 1983-2001. *Can J Public Health* 2003;94:212-7.
- Liss GM, Craig CA. Homicide in the workplace in Ontario: occupations at risk and limitations of existing data sources. *Can J Public Health* 1990;81:10-5.
- Domestic Violence Death Review Committee. *Annual report to the Chief Coroner: Case reviews of domestic violence deaths, 2002*. Available at: <http://www.mpss.jus.gov.on.ca/english/home/pubs.html>.
- Krug EG, Dahlberg LL, Mercy JA, Zwi AB, Lozano R, editors. *World report on violence and health*. Geneva: World Health Organization; 2002.

Methods

Interpersonal violence injuries were defined using codes E960-E968 in the International Classification of Diseases, 9th revision (ICD-9). Death data for the calendar years of 1997-1999 and hospitalization data for the fiscal years of 1997/98-2001/02 were used in this analysis. The source of death data was the Vital Statistics-Death Database at Statistics Canada. This database contains records on all deaths across Canada. The hospitalization data were obtained from the Discharge Abstract Database at the Canadian Institute for Health Information. This database contains data on hospital discharges across Canada. The hospitalization data include deaths that occurred in hospital. For hospitalized cases, the most responsible diagnosis for their hospital stay is presented. Regions were defined according to the Ontario Ministry of Health Region Code. Percentages may not add up to 100% due to rounding.

Appendix A: Detailed Tables

Table A1. Discharge status for interpersonal violence injury hospitalizations (Ontario, 1997/98-2001/02)

	Discharge status	
	Alive	Death in hospital
Number (%)	11,416 (99%)	120 (1%)
% male	81%	79%
Average age (in years)	31	45

Note: Unknown age for 3 cases.

Table A2. Number of interpersonal violence injury deaths and hospitalization by age group and sex (Ontario)

Age group (in years)	Deaths (1997-1999)			Hospitalizations (1997/98-2001/02)*		
	Male	Female	Total	Male	Female	Total
<20	38	24	62	1,961	516	2,477
20-29	60	18	78	3,034	494	3,528
30-39	57	33	90	2,175	514	2,689
40-49	40	22	62	1,308	327	1,635
50-59	23	12	35	471	117	588
60+	30	16	46	354	262	616
Total	248	125	373	9,303	2,230	11,533

* Unknown age for 3 cases.

Table A3. Number of injury deaths resulting from interpersonal violence by age group and type of injury (Ontario, 1997-1999)

Age group (in years)	Type of interpersonal violence injury				Total
	Cutting or piercing	Firearms or explosives	Hanging or strangulation	Other/ unspecified	
<20	17	16	6	23	62
20-29	30	32	<5	13	78
30-39	36	33	7	14	90
40-49	21	15	<5	22	62
50-59	8	9	<5	14	35
60+	11	10	5	20	46
Total	123	115	29	106	373

Note: Numbers less than 5 are not presented.

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Table A4. Number of interpersonal violence injury hospitalizations by age group and type of injury (Ontario, 1997/98-2001/02)

Age group (in years)	Type of interpersonal violence injury					Total
	Fight, brawl, or sexual assault	Cutting or piercing	Struck by blunt or thrown object	Child abuse or other maltreatment	Other/ unspecified	
Number (% of total for age group)						
<1	<5 (<1%)	<5 (<1%)	<5 (<1%)	257 (92%)	19 (7%)	280 (100%)
1-14	187 (39%)	26 (5%)	15 (3%)	181 (38%)	72 (15%)	481 (100%)
15-19	916 (53%)	400 (23%)	135 (8%)	44 (3%)	221 (13%)	1,716 (100%)
20-24	1094 (52%)	493 (24%)	162 (8%)	27 (1%)	316 (15%)	2,092 (100%)
25-29	711 (50%)	304 (21%)	122 (8%)	28 (2%)	271 (19%)	1,436 (100%)
30-34	679 (50%)	283 (21%)	159 (12%)	30 (2%)	214 (16%)	1,365 (100%)
35-39	664 (50%)	245 (19%)	128 (10%)	32 (2%)	255 (19%)	1,324 (100%)
40-49	872 (53%)	279 (17%)	143 (9%)	54 (3%)	287 (18%)	1,635 (100%)
50-59	288 (49%)	93 (16%)	60 (10%)	26 (4%)	121 (21%)	588 (100%)
60+	245 (40%)	68 (11%)	43 (7%)	87 (14%)	173 (28%)	616 (100%)
Total	5,658 (49%)	2,192 (19%)	968 (8%)	766 (7%)	1,949 (17%)	11,533 (100%)

Note: Numbers less than 5 are not presented; unknown age for 3 cases.

Table A5. Average length of hospital stay by type of interpersonal violence injury (Ontario, 1997/98-2001/02)

Type of interpersonal violence injury	Number of cases	Average length of stay
Firearms or explosives	364	9.9 days
Child abuse or other maltreatment	766	8.7 days
Struck by blunt or thrown object	968	5.3 days
Cutting or piercing	2,192	4.2 days
Fight, brawl, or sexual assault	5,660	4.0 days
Other/unspecified	1,585	6.1 days
All interpersonal violence injuries	11,536	4.9 days

Table A6. Annual rate of interpersonal violence injury hospitalizations in Ontario by age group, sex, and region of residence (1997/98-2001/02)

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
Hospitalization Rate for Males (per 100,000)								
<1 year	58.8	71.3	43.2	34.8	25.6	67.6	59.7	49.3
1-14 years	6.4	7.9	4.2	4.5	4.2	5.6	8.8	5.5
15-19 years	80.5	82.6	64.3	48.0	100.0	49.7	116.2	75.7
20-24 years	108.4	88.2	65.1	60.1	111.6	67.2	203.2	94.8
25-29 years	66.3	69.6	36.8	39.7	56.8	52.8	140.9	59.4
30-34 years	57.5	59.4	27.1	30.2	53.2	29.8	134.0	49.0
35-39 years	46.6	46.4	22.6	26.5	51.0	31.4	77.2	40.5
40-49 years	30.4	32.6	14.1	16.7	41.2	23.6	62.0	29.7
50-59 years	15.7	18.8	5.8	7.8	20.0	11.7	31.7	14.8
60+ years	9.0	9.3	5.6	5.2	9.7	5.4	15.3	8.4
Hospitalization Rate for Females (per 100,000)								
<1 year	45.7	81.1	32.9	15.1	18.6	29.1	35.1	33.8
1-14 years	4.3	5.2	2.1	2.4	2.1	2.9	8.0	3.4
15-19 years	13.3	11.2	7.1	9.0	12.6	7.7	33.7	12.1
20-24 years	14.6	10.0	8.6	6.9	12.9	8.5	57.1	14.2
25-29 years	15.0	11.6	4.4	4.7	7.9	8.1	58.1	11.5
30-34 years	10.8	10.0	6.5	6.4	7.9	9.8	38.3	10.3
35-39 years	13.1	10.4	5.6	4.3	12.0	7.5	37.0	10.8
40-49 years	8.6	9.6	3.3	4.5	7.0	5.3	21.0	7.3
50-59 years	3.1	3.6	1.1	3.9	4.4	3.7	6.5	3.6
60+ years	5.0	6.3	3.2	4.8	6.1	2.1	7.5	4.9

Note: Region of residence was outside of Ontario or unknown for 177 hospitalizations; unknown age for 3 cases.

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Table A7. Number of injury hospitalizations resulting from interpersonal violence in Ontario by age group, sex, and region of residence

	South West	Central South	Central West	Central East	Toronto	East	North	Ontario
Male Hospitalizations (Total Number from 1997/98-2001/02)								
<1 year	26	23	29	19	20	29	14	169
1-14 years	47	43	44	44	45	41	37	302
15-19 years	220	164	231	163	370	130	192	1,490
20-24 years	280	165	231	177	482	175	290	1,829
25-29 years	167	130	135	111	306	142	191	1,205
30-34 years	158	126	116	105	312	91	204	1,129
35-39 years	147	112	107	112	301	110	145	1,046
40-49 years	173	141	110	125	377	144	216	1,308
50-59 years	66	61	32	41	127	53	84	471
60+ years	54	45	33	33	93	32	57	354
Female Hospitalizations (Total Number from 1997/98-2001/02)								
<1 year	19	25	21	8	14	12	8	111
1-14 years	30	27	21	22	21	20	32	179
15-19 years	35	21	24	29	44	19	53	226
20-24 years	36	18	29	19	56	21	77	263
25-29 years	36	21	16	13	44	21	77	231
30-34 years	29	21	28	23	46	29	59	236
35-39 years	41	25	26	19	69	26	69	278
40-49 years	49	42	26	34	68	33	72	327
50-59 years	13	12	6	20	31	17	17	117
60+ years	38	39	23	36	76	16	33	262

Note: Numbers less than 5 are not presented. Regions will not sum to Ontario total. Region of residence was outside of Ontario or unknown for 177 hospitalizations; unknown age for 3 cases.