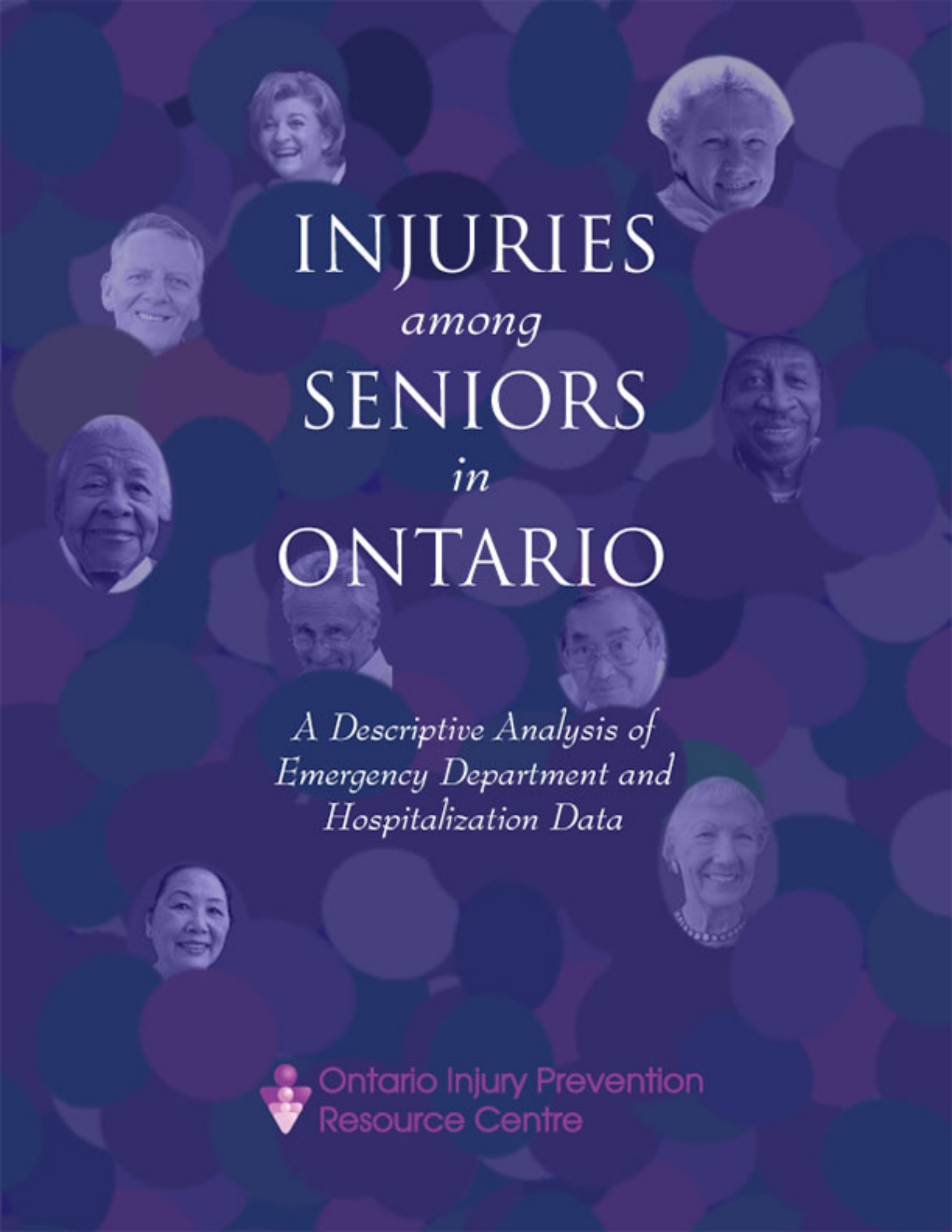

INJURIES *among* SENIORS *in* ONTARIO

A Descriptive Analysis of Emergency Department and Hospitalization Data

Ontario Injury Prevention Resource Centre

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A Descriptive Analysis of Emergency Department and Hospitalization Data

Produced by

Ontario Injury Prevention Resource Centre

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Executive Summary

Injury among seniors is an important issue that will become even more critical as the population continues to age. This report outlines the magnitude of the issue and recurrent patterns of injury among seniors in Ontario. It is our hope that this report will provide data to help all those working to prevent injuries among seniors.

Two sources of injury data were used herein: emergency department data from the National Ambulatory Care Reporting System (NACRS) and acute care hospitalization data from the Discharge Abstract Database (DAD) at the Canadian Institute for Health Information (CIHI) for the 2004/05 fiscal year. It is important to note that this report does not represent the entire spectrum of injuries. Rather, it includes two windows of surveillance: emergency department visits and acute care hospital admissions.

The key findings include:

- In 2004/05, there were over 1.3 million emergency department visits due to injury in Ontario. Adults 65 years of age and older accounted for 11% of these visits, totalling over 146,000 visits.

- There were a total of 76,444 injury hospitalizations in Ontario during the 2004/05 fiscal year. Seniors accounted for 40% of these hospitalizations, which amounts to almost 31,000 injury hospitalizations.

- Thus, every four minutes, at least one senior visits an emergency department with an injury. Every 20 minutes, at least one senior is hospitalized with an injury and on any given day, seniors who have been injured occupy more than 1,000 acute care beds in hospitals across the province.

- Falls were by far the most common type of injury for seniors, followed by transport incidents (e.g., motor vehicle and pedestrian).

This report also presents patterns of emergency visits and hospitalizations for a variety of factors, such as age, sex, month of admission, cause of injury, and discharge status. In addition, injury patterns are broken down by region and Local Health Integration Network.

With the proportion of the senior population expected to nearly double by 2031, this report concludes that unless concerted efforts are taken to prevent injury, the province will need to build an additional five hospitals with 200 acute care beds each to care for all its hospitalized, injured seniors. Managing the risks

for injury and employing effective strategies and methods aimed at preventing injuries before they happen is of utmost importance.

It is our hope that this report will provide background information and a foundation to inform the development of new programs and to support existing or ongoing injury prevention initiatives and strategies in the province of Ontario.

Introduction

This report was designed to support the injury prevention efforts of all those who work on programs, policies, initiatives, and research surrounding Ontarians aged 65 years and older. This report highlights patterns of injury among seniors in Ontario using emergency department data from the National Ambulatory Care Reporting System (NACRS) and hospitalization data from the Discharge Abstract Database (DAD) at the Canadian Institute for Health Information (CIHI).

The results are divided into sections, beginning with a general overview of injury patterns, followed by a detailed analysis for falls, and regional breakdowns.

It is our hope that this report will provide background information and a foundation to inform the development of new programs and to support existing or ongoing injury prevention initiatives and strategies.

Potential Uses of this Report

This report provides data and statistics related to patterns of injury among seniors in Ontario. Many potential uses for these data might be made among those who work in the area of older adults, including:

- To support existing or ongoing injury prevention initiatives and strategies aimed at seniors. For example, this report may provide data that can be used to support the ongoing need for a specific program.

- To provide background data for use in the development of new injury prevention programs for seniors. For example, statistics can be used as baseline data for a specific program or as supporting information in funding proposals for injury prevention initiatives.

- To raise awareness about the frequency of injuries among seniors and the common patterns. Statistics can be used to highlight the magnitude of the problem and the types of injuries happening.

- To identify local and regional similarities and differences. For example, to highlight geographical areas that may have a comparable or similar injury issue which could lead to potential collaboration or sharing of ideas about strategies for injury prevention.

Methods

Sources of injury data

Two sources of injury data were used in this report: emergency department data from the National Ambulatory Care Reporting System (NACRS) and acute care hospitalization data from the Discharge Abstract Database (DAD) at the Canadian Institute for Health Information (CIHI).

All emergency departments in Ontario are required to submit data to NACRS. In the 2004/05 fiscal year, data from 177 emergency departments were submitted.[1]

DAD contains data on hospital discharges across Canada. The data are obtained directly from the participating hospitals.

Variables contained in NACRS and DAD include:

- demographic information about the patient (e.g., age, sex, region of residence)
- information about the injury (e.g., external cause of injury, nature of injury)
- information about the hospital admission (e.g., date of visit, discharge status).

Records from NACRS and DAD are classified according to the International Classification of Diseases, 10th Revision (ICD-10). External cause and nature of injury are categorized according to this coding system.

Refer to www.cihi.ca for more information about NACRS and DAD.

Inclusion criteria

All injury records for seniors (65+ years of age) who visited an emergency department, or were admitted to an acute care hospital in the province of Ontario during the 2004/05 fiscal year, were included in the analysis.

Population estimates

Population estimates from Statistics Canada by age, sex, region, and Local Health Integration Network (LHIN) were used for calculating injury rates. Regional population data were based on 2004 estimates and LHIN population data were based on 2001 Census data and LHIN boundaries as of June 2005.

Analysis

Patterns of injury among seniors were described in this report using data from NACRS and DAD. Variables such as age, sex, cause of injury, nature of injury, discharge status, and region, were examined using frequencies, cross-

tabulations, and averages. Percentages may not total 100% due to rounding. Rates of injury were calculated by age, sex, region, and LHIN. Results were presented using tables and figures.

Limitations

It is important to note that this report does not represent the entire spectrum of injuries. Rather, it includes two windows of surveillance: emergency department visits and acute care hospital admissions. Not all injured persons are treated in an emergency department or are admitted to hospital. For example, data for deaths occurring outside of the hospital setting or persons that visit their family physician or a walk-in clinic would not be included in this report.

The hospitalization data contained in this report cannot merely be considered as a subset of the emergency department data. Some persons are seen in an emergency department and then admitted to hospital; however visiting an emergency department is not a requirement for hospital admission. Persons can be admitted to hospital via routes other than the emergency department.

NACRS and DAD are large population-based data sources; however, these data may include possible errors in injury coding and a general lack of specific information about the injuries, such as a lack of detail about potential contributing factors (e.g., alcohol and drug use). Another limitation of this report is that it focuses on a single year of data and there may be slight fluctuations in injury patterns over time. For example, during the 2003/04 fiscal year, there were a total of 4.8 million visits to an emergency department in Ontario for all types of health concerns, compared to 5.1 million visits during the 2004/05 fiscal year. This difference was, in part, related to the Severe Acute Respiratory Syndrome (SARS) breakout during the 2003/04 fiscal year that resulted in fewer visits to an emergency department.[1]

Results

Overall injury patterns

In 2004/05, there were over 1.3 million emergency department visits due to injury in Ontario. More than one-tenth of these visits occurred among adults 65 years of age and older (Table 1). There were a total of 76,444 injury hospitalizations during the 2004/05 fiscal year. Two-fifths of these hospitalizations occurred among seniors.

Key Findings

Seniors represent 11% of all visits to an emergency department and 40% of admissions to hospital due to an injury.

TABLE 1

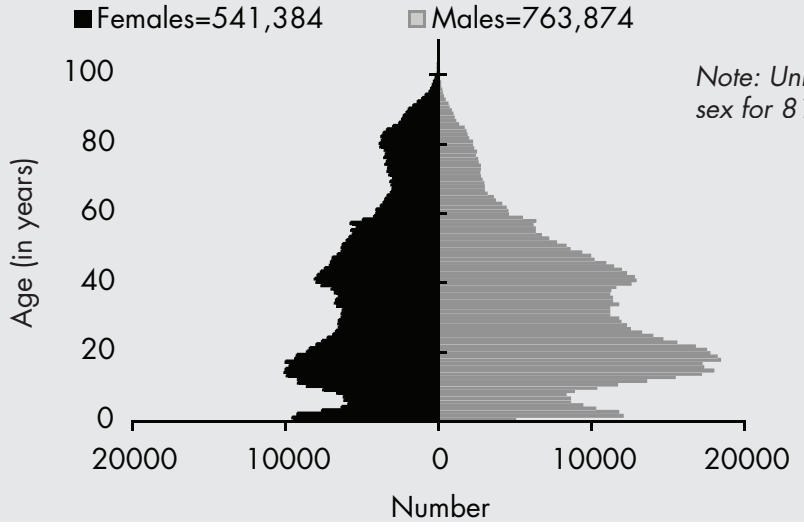
Number of emergency department visits and hospitalizations for injury
(Ontario 2004/05)

Source of data	*Total number (all ages)*	*Number 65+ years (%)*
Emergency Department Visits	1,305,339	146,236 (11%)
Hospitalizations	76,444	30,893 (40%)

The age and sex distributions of injuries varied for emergency department visits and hospitalizations. For emergency department visits, there were several large peaks in the numbers of injuries, especially among males 10-39 years of age (Figure 1).

FIGURE 1

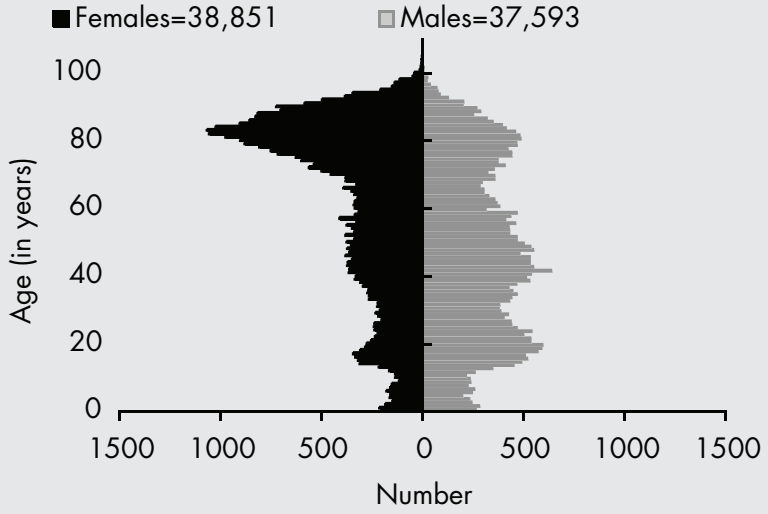
Number of emergency department visits for injury by age and sex
(Ontario 2004/05)



For hospitalizations, a large peak in the number of injuries was observed among females 75-90 years of age (Figure 2).

FIGURE 2

Number of injury hospitalizations by age and sex
(Ontario 2004/05)



In terms of overall injury rates by age group, the highest rates of emergency department visits were seen among those 90 years of age and older (Table 2). In particular, females 90 years and older experienced the highest injury rates for emergency department visits.

Compared to other age groups, injury hospitalization rates were highest among seniors (Table 3). Specifically, the highest injury hospitalization rates were seen among those 90 years of age and older for both males and females.

TABLE 2

Number and rate of emergency department visits for injury by age group and sex (Ontario 2004/05)

	Sex					
	Males		Females		Total	
Age group	Number	Rate*	Number	Rate*	Number	Rate*
0-4 years	48,422	13,953.2	37,064	11,145.6	85,501	12,581.5
5-9 years	44,614	11,232.5	32,316	8,429.9	76,937	9,856.9
10-14 years	75,753	17,721.7	46,925	11,527.5	122,682	14,700.7
15-19 years	88,719	20,853.9	48,266	11,943.5	136,996	16,514.5
20-24 years	78,327	18,184.4	39,824	9,587.0	118,157	13,964.3
25-29 years	61,587	14,745.3	33,108	8,003.3	94,700	11,391.1
30-34 years	56,502	12,514.4	32,333	7,187.3	88,839	9,856.1
35-39 years	57,811	11,793.5	34,575	7,045.6	92,392	9,418.9
40-44 years	61,206	11,251.5	39,019	7,234.9	100,228	9,252.1
45-49 years	48,795	10,167.5	33,932	6,969.0	82,732	8,557.2
50-54 years	36,141	8,861.8	30,008	7,106.6	66,150	7,969.1
55-59 years	28,723	8,082.6	25,919	7,112.1	54,650	7,592.3
60-64 years	20,175	7,621.6	18,960	6,834.0	39,139	7,219.3
65-69 years	14,782	6,862.6	15,672	6,695.8	30,456	6,776.2
70-74 years	13,358	7,114.8	16,285	7,656.2	29,643	7,402.4
75-79 years	11,768	8,220.2	17,682	9,482.6	29,450	8,934.3
80-84 years	9,386	10,359.0	18,241	12,683.4	27,627	11,785.0
85-89 years	5,062	13,768.2	12,256	16,725.8	17,318	15,737.6
90+ years	2,743	18,414.3	8,999	21,249.1	11,742	20,511.5

**Age-specific rate per 100,000 population.*

Note: Total number of injuries does not total the sum of males and females due to unknown/unspecified sex for 81 cases.

TABLE 3

Number and rate of injury hospitalizations by age group and sex
(Ontario, 2004/05)

	Sex					
	Males		Females		Total	
Age group	Number	Rate*	Number	Rate*	Number	Rate*
0-4 years	1,210	348.7	896	269.4	2,106	309.9
5-9 years	1,190	299.6	773	201.6	1,963	251.5
10-14 years	1,753	410.1	966	237.3	2,719	325.8
15-19 years	2,769	650.9	1,594	394.4	4,363	525.9
20-24 years	2,565	595.5	1,230	296.1	3,795	448.5
25-29 years	2,081	498.2	1,141	275.8	3,222	387.6
30-34 years	2,089	462.7	1,192	265.0	3,281	364.0
35-39 years	2,374	484.3	1,482	302.0	3,856	393.1
40-44 years	2,779	510.9	1,804	334.5	4,583	423.1
45-49 years	2,590	539.7	1,824	374.6	4,414	456.6
50-54 years	2,210	541.9	1,787	423.2	3,997	481.5
55-59 years	2,077	584.5	1,771	486.0	3,848	534.6
60-64 years	1,728	652.8	1,676	604.1	3,404	627.9
65-69 years	1,587	736.8	1,836	784.4	3,423	761.6
70-74 years	1,820	969.4	2,659	1,250.1	4,479	1,118.5
75-79 years	2,226	1,554.9	3,789	2,032.0	6,015	1,824.8
80-84 years	2,226	2,456.8	5,030	3,497.5	7,256	3,095.2
85-89 years	1,466	3,987.4	4,111	5,610.3	5,577	5,068.1
90+ years	853	5,726.4	3,290	7,768.6	4,143	7,237.2

**Age-specific rate per 100,000 population.*

Overall injury patterns for seniors

There were a total of 146,236 emergency department visits for injury and 30,893 injury hospitalizations among those 65 years and older.

Key Findings

Every four minutes in Ontario, at least one senior visits an emergency department with an injury.

Every 20 minutes in Ontario, at least one senior is admitted to hospital due to an injury.

Among seniors in each age group, females had a higher number of injuries compared to males for both emergency department visits and hospitalizations (Figures 3 & 4). For females, the number of injury-related visits to an emergency department and admissions to hospital peaked among the 80-84 year age group. Among senior males, the number of visits to an emergency department for an injury declined with age. In contrast, the highest number of injury hospitalizations was seen among males in the 75-79 year and 80-84 year age groups.

FIGURE 3

Number of emergency department visits for injury among seniors by age group and sex (Ontario 2004/05)

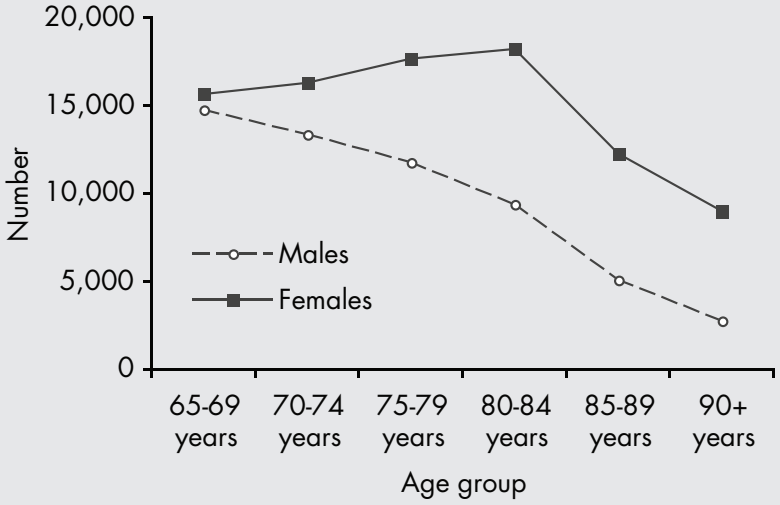
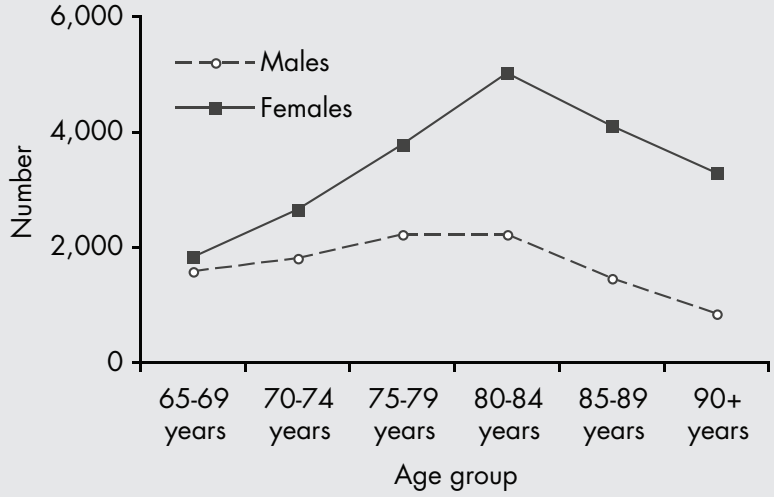


FIGURE 4

Number of injury hospitalizations among seniors by age group and sex
(Ontario, 2004/05)



Rates of injury for both emergency department visits and hospitalizations increased with age (Figures 5 & 6). This increase was observed for both males and females. Refer to Tables 2 and 3 in the previous section for the specific numbers and rates of injury presented in Figures 3-6.

FIGURE 5

Rates of injury for emergency department visits among seniors by age group and sex
(Ontario, 2004/05)

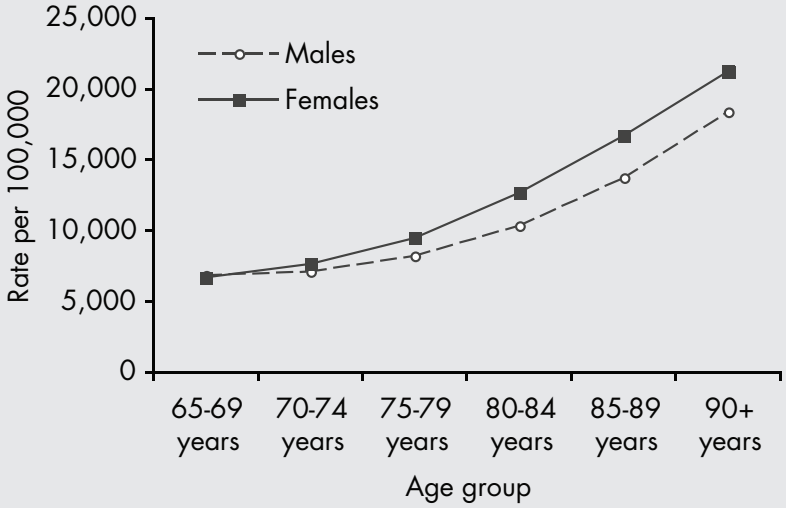
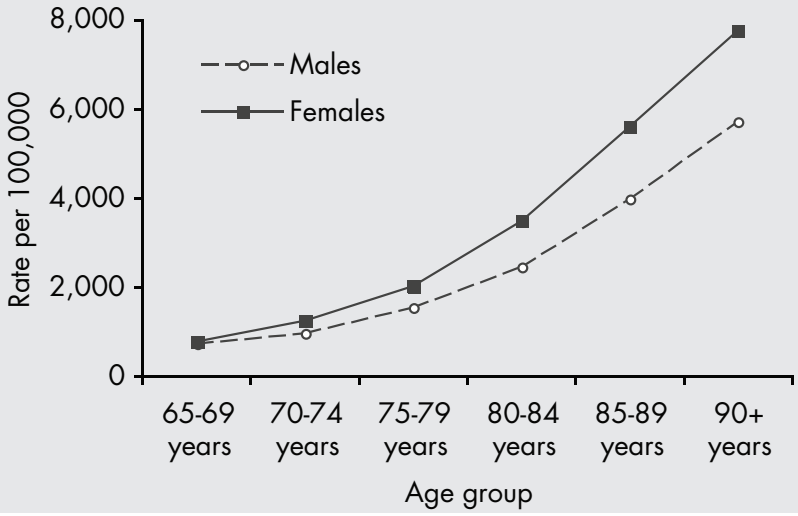


FIGURE 6

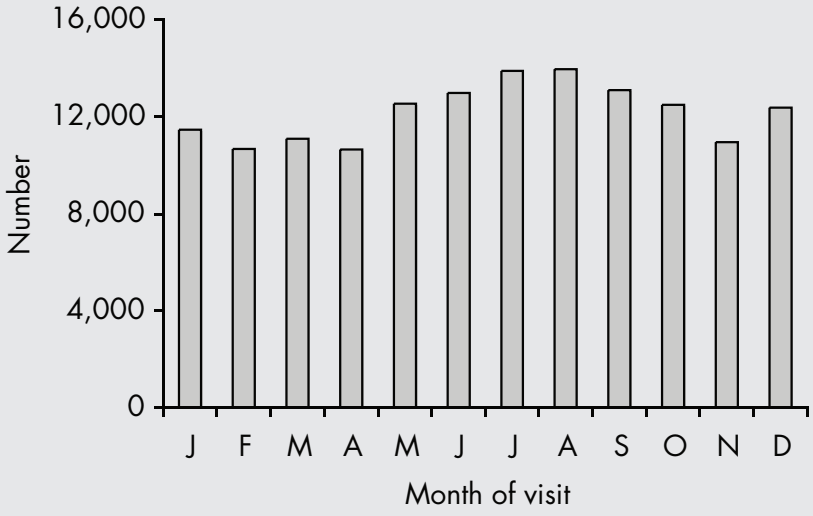
Injury hospitalization rates among seniors by age group and sex
(Ontario, 2004/05)



The temporal pattern of injuries among seniors varied for emergency department visits and hospitalizations. For emergency department visits, August was the most common month of injury, followed closely by July (Figure 7).

FIGURE 7

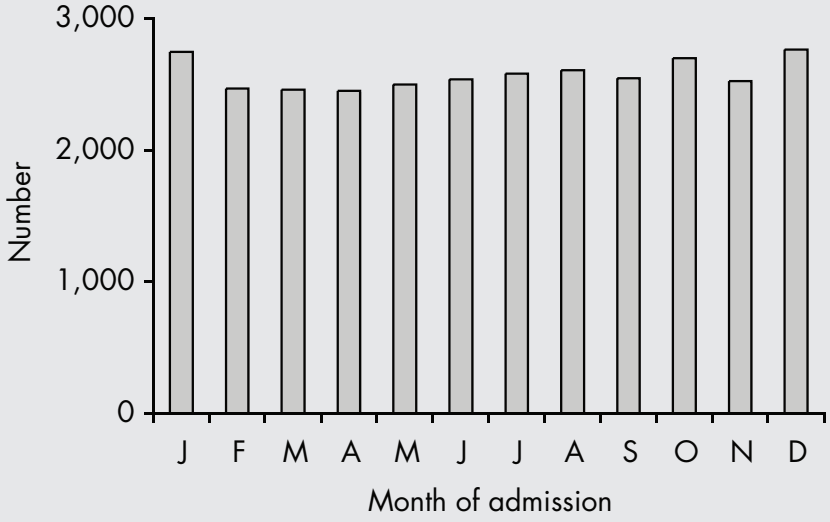
Month of visit for emergency department visits for injury among seniors
(Ontario, 2004/05)



For hospitalizations, the highest number of injuries occurred in December, followed closely by January (Figure 8).

FIGURE 8

Month of admission for injury hospitalizations among seniors
(Ontario, 2004/05)



Injuries among seniors peaked during the day. More than two-fifths of injured people visited an emergency department between 10:00 a.m. and 3:59 p.m. and 30% visited an emergency department between 4:00 p.m. and 9:59 p.m. (Table 4). In particular, 10:00 a.m. to 11:59 a.m. was the busiest time.

TABLE 4

Time of registration at an emergency department for injury among seniors
(Ontario, 2004/05)

Time of day	*Number*	*%*
10:00 AM-3:59 PM	66,664	46
4:00 PM-9:59 PM	44,317	30
10:00 PM-3:59 AM	12,367	8
4:00 AM-9:59 AM	22,888	16
Total	146,236	100

Nearly four-fifths of seniors who visited an emergency department with an injury were discharged to their place of residence (Table 5). About 17% were admitted to the hospital where they were seen as an inpatient and another 2% were transferred to another hospital or facility. Fewer than 1% of injured seniors died during their visit to an emergency department.

TABLE 5

Discharge status of emergency department visits for injury among seniors (Ontario, 2004/05)

Discharge status	***Number***	***%***
Place of residence	116,230	79
Admitted to hospital as inpatient	24,129	17
Transferred to another hospital/facility	2,949	2
Left without being seen/treated	1,998	1
Death after arrival	139	<1
Other	791	<1
Total	146,236	100

Persons visiting an emergency department in Ontario are triaged according to the Canadian ED Triage and Acuity Scale (CTAS). About 1% of seniors who visited an emergency department with an injury were categorized as needing immediate resuscitation (CTAS 1) and 7% as emergent (CTAS 2) (Figure 9).

Among hospitalized cases, 42% were discharged to their place of residence (includes seniors who were discharged home with home care services) (Table 6). Almost one-quarter of seniors were transferred to another inpatient facility and 23% were transferred to a long-term care facility. About 7% of seniors died during their hospital stay.

The 30,893 seniors who were admitted to hospital with an injury in Ontario accounted for more than 400,000 days in acute care hospitals, with an average length of acute care hospital stay of 13 days.

On any given day, seniors who have been injured occupy more than 1,000 acute care beds in hospitals across the province.

FIGURE 9

Triage level for emergency department visits for injury among seniors
(Ontario, 2004/05)

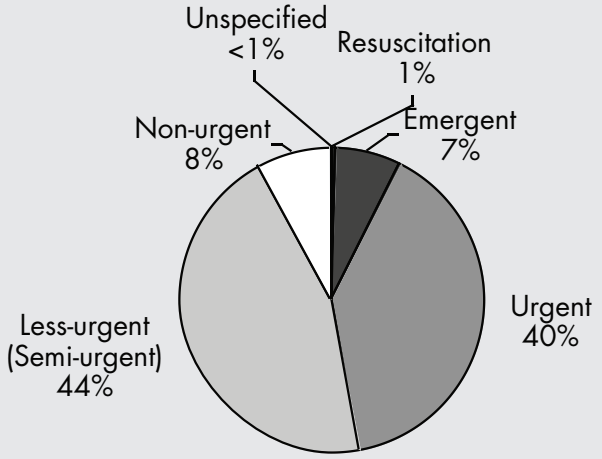


TABLE 6

Discharge status of injury hospitalizations among seniors
(Ontario, 2004/05)

Discharge status	*Number*	*%*
Discharged to place of residence	13,100	42
Transferred to another inpatient facility	7,451	24
Transferred to a long-term care facility	7,245	23
In-hospital death	2,280	7
Other/unspecified	817	3
Total	30,893	100

The types of injuries seniors sustained were categorized according to reason or problem that was most responsible for their visit to the emergency department or hospitalization. The upper limb was the most frequent site of injury for emergency department visits among seniors, followed by injuries to the lower limb and head or neck (Table 7). In particular, open wounds of the head, face, or hand and fractures of the hip, forearm, or lower leg were most common. For hospitalizations, the lower limb was the most common site of injury. Hip fractures were by far the most frequent type of injury resulting in hospitalization.

TABLE 7

Site of injury for emergency department visits and hospitalizations among seniors (Ontario, 2004/05)

	Emergency department visits		Hospitalizations	
Site of injury	**Number**	**%**	**Number**	**%**
Upper limb	38,390	26	2,492	8
Wrist, hand	17,892	12	163	1
Shoulder, upper arm	10,097	7	1,327	4
Elbow, forearm	10,401	7	1,002	3
Lower limb	36,949	25	13,485	44
Hip, thigh	15,300	10	11,199	36
Knee, lower leg	12,750	9	2,099	7
Ankle, foot	8,899	6	187	1
Head, neck	25,889	18	2,264	7
Thorax	8,709	6	1,198	4
Abdomen, lower back, lumbar spine, pelvis	6,995	5	2,026	7
Other/unspecified	29,304	20	9,428	31
Total	146,236	100	30,893	100

Unintentional injuries dominated among seniors, accounting for 99% of emergency department visits and 98% of hospitalizations (Table 8). Falls were by far the most common type of injury for both emergency department visits and hospitalizations, followed by transport incidents. For more details on falls refer to the next section of this report.

Falls are the leading cause of injury among seniors, accounting for 59% of injury-related emergency department visits and 80% of injury hospitalizations in this age group.

Transport incidents were categorized according to the person who was injured in the incident. For both emergency department visits and hospitalizations among seniors, the occupant of a motor vehicle was the most common person injured in a transport incident, followed by pedestrians and cyclists (Figures 10 & 11).

TABLE 8

Cause of injury for emergency department visits and hospitalizations among seniors (Ontario, 2004/05)

	Emergency department visits		*Hospitalizations*	
Cause of injury	***Number***	***%***	***Number***	***%***
Unintentional injuries	144,364	99	30,139	98
Falls	*86,820*	*59*	*24,647*	*80*
Transport	*8,011*	*5*	*1,435*	*5*
Struck by object	*6,584*	*5*	*320*	*1*
Overexertion, strenuous movements	*6,501*	*4*	*362*	*1*
Foreign body, choking	*6,030*	*4*	*570*	*2*
Poisoning	*1,802*	*1*	*637*	*2*
Other/unspecified	*28,616*	*20*	*2,168*	*7*
Violence	511	<1	80	<1
Self-harm	461	<1	336	1
Other/unspecified injuries	900	1	338	1
Total	146,236	100	30,893	100

FIGURE 10

Injured person in transport incident for emergency department visits among seniors (Ontario, 2004/05)

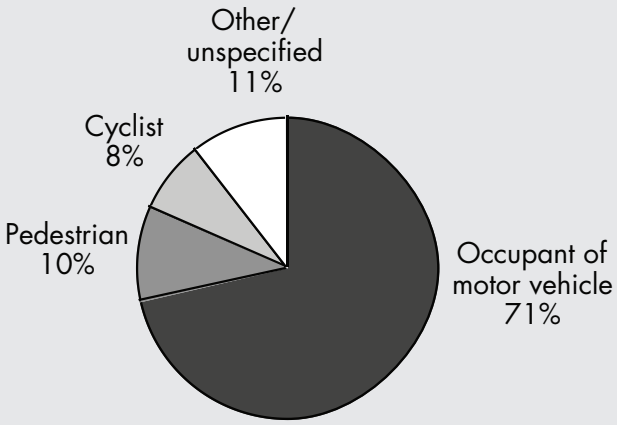
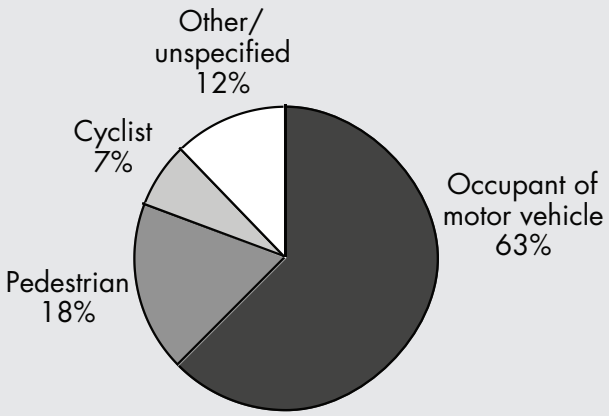


FIGURE 11

Injured person in transport incident for hospitalizations among seniors
(Ontario, 2004/05)



Injury patterns for falls among seniors

There were a total of 86,820 emergency department visits and 24,647 injury hospitalizations due to a fall among those 65 years and older. Among seniors, falls accounted for 59% of all visits to an emergency department for an injury and 80% of all injury-related hospitalizations (Table 9).

Note that the information about falls in this section refers to unintentional falls only.

Key Findings

Every 10 minutes in Ontario, at least one senior visits an emergency department due to a fall.

Every 30 minutes in Ontario, at least one senior is admitted to hospital due to a fall.

TABLE 9

Number and percentage of emergency department visits and hospitalizations due to falls among seniors
(Ontario 2004/05)

Source of data	*Total number (all injuries)*	*Number (%) (falls)*
Emergency Department Visits	146,236	86,820 (59%)
Hospitalizations	30,893	24,647 (80%)

Among seniors, the numbers and rates of fall-related injuries were higher among females compared to males for both emergency department visits and hospitalizations (Table 10). Higher numbers and rates for falls among females were also observed by age group (Tables 11 & 12).

In general for emergency department visits and hospitalizations, the highest numbers of fall-related injuries were observed among the 80-84 year age group (Tables 11 & 12). This pattern was observed for both males and females. One exception was emergency department visits among males, where the highest number of falls occurred among males 75-79 years of age. Rates of fall-related injury among seniors increased with age, with the highest rates reported for those 90 years of age and older. This pattern was seen for both emergency department visits and hospitalizations.

TABLE 10

Number and rate of emergency department visits and hospitalizations for falls among seniors by sex
(Ontario, 2004/05)

Source of data	*Number*	*Rate**
Emergency department visits		
Males 65+ years	28,381	3,897.2
Females 65+ years	58,439	6,086.0
Total 65+ years	86,820	5,135.3
Hospitalizations		
Males 65+ years	7,343	981.5
Females 65+ years	17,304	1,733.8
Total 65+ years	24,647	1,409.6

*Age-standardized rate per 100,000 population.

TABLE 11

Number and rate of emergency department visits for falls among seniors by age group and sex
(Ontario, 2004/05)

	Sex					
	Males		*Females*		*Total*	
Age group	*Number*	*Rate**	*Number*	*Rate**	*Number*	*Rate**
65-69 years	5,181	2,405.3	7,938	3,391.5	13,119	2,918.9
70-74 years	5,689	3,030.1	9,234	4,341.3	14,923	3,726.5
75-79 years	6,012	4,199.5	11,314	6,067.5	17,326	5,256.2
80-84 years	5,841	6,446.5	13,012	9,047.5	18,853	8,042.2
85-89 years	3,547	9,647.5	9,526	13,000.2	13,073	11,880.0
90+ years	2,111	14,171.6	7,415	17,508.9	9,526	16,640.5

*Age-specific rate per 100,000 population.

TABLE 12

Number and rate of hospitalizations due to falls among seniors by age group and sex (Ontario, 2004/05)

	Sex					
	Males		Females		Total	
Age group	Number	Rate*	Number	Rate*	Number	Rate*
65-69 years	895	415.5	1,290	551.1	2,185	486.1
70-74 years	1,191	634.4	2,032	955.3	3,223	804.8
75-79 years	1,625	1,135.1	3,099	1,661.9	4,724	1,433.1
80-84 years	1,708	1,885.1	4,251	2,955.8	5,959	2,542.0
85-89 years	1,202	3,269.3	3,631	4,955.2	4,833	4,392.0
90+ years	722	4,846.9	3,001	7,086.2	3,723	6,503.5

*Age-specific rate per 100,000 population.

For emergency department visits, falls were most common in December, followed by January (Figure 12). For hospitalizations, the highest number of fall-related injuries occurred in December, followed closely by January (Figure 13).

FIGURE 12

Month of visit for emergency department visits for falls among seniors (Ontario, 2004/05)

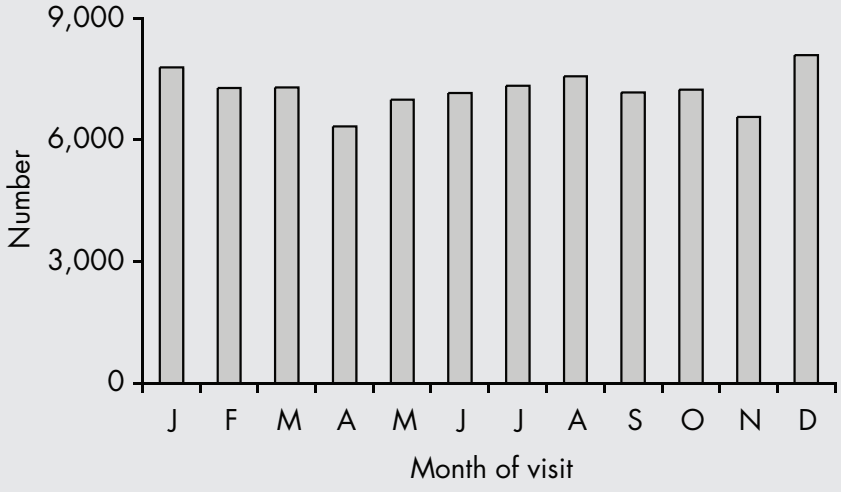
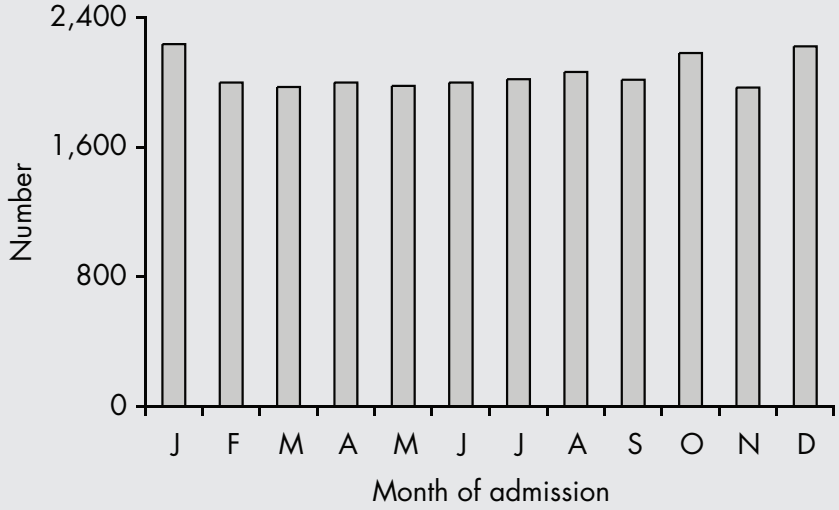


FIGURE 13

Month of admission for hospitalizations for falls among seniors
(Ontario, 2004/05)



Among seniors, the highest number of visits to an emergency department for falls occurred from 10:00 a.m. to 3:59 p.m., followed by the time period from 4:00 p.m. and 9:59 p.m. (Table 13). In particular, 10:00 a.m. to 11:59 a.m. was the busiest time period when seniors registered in an emergency department with a fall.

TABLE 13

Time of registration at an emergency department for falls among seniors
(Ontario, 2004/05)

Time of day	*Number*	*%*
10:00 AM-3:59 PM	39,342	45
4:00 PM-9:59 PM	25,626	30
10:00 PM-3:59 AM	7,991	9
4:00 AM-9:59 AM	13,861	16
Total	86,820	100

Nearly three-quarters of seniors who visited an emergency department due to a fall were discharged to their place of residence (Table 14). About 22% were admitted to the hospital where they were seen as an inpatient and another 2% were transferred to another hospital or facility. Fewer than 1% of seniors who visited an emergency department due to a fall died during their visit to an emergency department.

TABLE 14

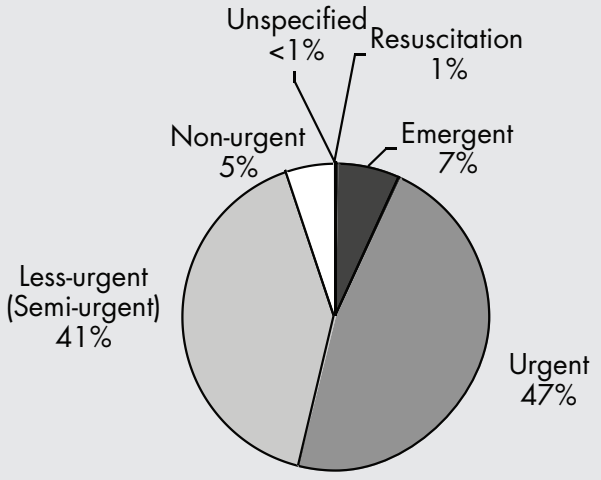
Discharge status of emergency department visits for falls among seniors (Ontario, 2004/05)

Discharge status	*Number*	*%*
Place of residence	63,879	74
Admitted to hospital as inpatient	19,507	22
Transferred to another hospital/facility	2,157	2
Left without being seen/treated	825	1
Death after arrival	56	<1
Other	396	<1
Total	86,820	100

Persons visiting an emergency department in Ontario are triaged according to the Canadian ED Triage and Acuity Scale (CTAS). About 1% of seniors who visited an emergency department due to a fall were categorized as needing immediate resuscitation (CTAS 1) and 7% as emergent (CTAS 2) (Figure 14).

FIGURE 14

Triage level for emergency department visits for falls among seniors (Ontario, 2004/05)



Among seniors who were hospitalized due to a fall, 38% were discharged to their place of residence (includes seniors who were discharged home with home care services) (Table 15). More than one-quarter of seniors were transferred to another inpatient facility and another 26% were transferred to a long-term care facility. About 7% of seniors died during their hospital stay.

The 24,647 seniors who were admitted to hospital due to a fall in Ontario accounted for more than 248,000 days in acute care hospitals, with an average length of acute care hospital stay of 10 days.

TABLE 15

Discharge status of hospitalizations for falls among seniors
(Ontario, 2004/05)

Discharge status	*Number*	*%*
Discharged to place of residence	9,378	38
Transferred to another inpatient facility	6,517	26
Transferred to a long-term care facility	6,304	26
In-hospital death	1,758	7
Other/unspecified	817	3
Total	24,647	100

The types of injuries seniors sustained were categorized according to reason or problem that was most responsible for their visit to the emergency department or hospitalization. For both fall-related emergency department visits and hospitalizations among seniors, the lower limb was the most common site of injury, followed by injuries to the upper limb (Table 16). More specifically, for emergency department visits, hip fractures, open wounds to the head or face, and forearm fractures were most frequent. Hip fractures were by far the most common type of injury responsible for hospitalizations.

TABLE 16

Site of injury for emergency department visits and hospitalizations for falls among seniors (Ontario, 2004/05)

	Emergency department visits		Hospitalizations	
Site of injury	**Number**	**%**	**Number**	**%**
Lower limb	24,285	28	12,318	50
Hip, thigh	13,438	15	10,522	43
Knee, lower leg	7,410	9	1,673	7
Ankle, foot	3,437	4	123	0
Upper limb	21,742	25	2,147	9
Wrist, hand	5,693	7	82	0
Shoulder, upper arm	7,877	9	1,185	5
Elbow, forearm	8,172	9	880	4
Head, neck	18,304	21	1,837	7
Thorax	5,889	7	823	3
Abdomen, lower back, lumbar spine, pelvis	4,803	6	1,679	7
Other/unspecified	11,797	14	5,843	24
Total	86,820	100	24,647	100

For both emergency department visits and hospitalizations, slips and trips on the same level were the most frequent type of fall among seniors, followed by falls on stairs or steps (Table 17).

TABLE 17

Type of fall for emergency department visits and hospitalizations among seniors (Ontario, 2004/05)

	Emergency department visits		Hospitalizations	
Type of fall	**Number**	**%**	**Number**	**%**
Slip/trip on same level	26,422	30	7,417	30
Stairs/steps	8,316	10	2,019	8
Involving furniture	5,417	6	1,927	8
Slip/trip on snow or ice	5,355	6	1,089	4
Other/unspecified	41,310	48	12,195	49
Total	86,820	100	24,647	100

Injury patterns among seniors by region

Regional results for injuries among seniors are presented for seven regions in Ontario: South West, Central South, Central West, Central East, Toronto, East, and North. All injuries were categorized according to the region of residence for the injured person. The results revealed that there were regional variations in the overall numbers, rates, and patterns of injury.

For both emergency department visits and hospitalizations, the Toronto region experienced the highest numbers of injuries and the North region had the lowest numbers of injuries among seniors (Tables 18 & 19). This pattern was observed for females and males.

Key Findings

The highest numbers of injuries were seen in the Toronto region.

The North region had the lowest numbers of injuries but the highest injury rates.

Falls were the leading cause of injury in all seven regions.

TABLE 18

Number and rate of emergency department visits for injury among seniors by sex and region
(Ontario, 2004/05)

	Males 65+ years		*Females 65+ years*		*Total 65+ years*	
Region	***Number***	***Rate****	***Number***	***Rate****	***Number***	***Rate****
South West	8,189	8,346.6	12,199	9,159.8	20,388	8,816.5
Central South	6,907	8,661.3	10,693	9,856.5	17,601	9,345.4
Central West	6,540	6,342.1	10,773	8,072.7	17,314	7,326.4
Central East	9,409	8,221.7	14,134	9,768.7	23,543	9,095.6
Toronto	9,901	6,401.5	17,514	8,272.1	27,415	7,464.8
East	9,065	9,279.6	14,162	10,635.7	23,227	10,063.7
North	6,234	10,659.5	8,376	11,456.2	14,610	11,125.2

*Age-standardized rate per 100,000 population.

Note: Region of residence unknown/outside of Ontario for 2,138 emergency department visits. Total number of injuries does not total the sum of males and females due to unknown/unspecified sex for 2 emergency department visits.

TABLE 19

Number and rate of injury hospitalizations among seniors by sex and region (Ontario, 2004/05)

	Males 65+ years		Females 65+ years		Total 65+ years	
Region	**Number**	**Rate***	**Number**	**Rate***	**Number**	**Rate***
South West	1,606	1,541.9	3,346	2,329.6	4,952	1,991.8
Central South	1,163	1,371.4	2,416	2,099.1	3,579	1,786.0
Central West	1,275	1,211.4	2,822	2,055.7	4,097	1,691.1
Central East	1,618	1,376.0	3,279	2,193.0	4,897	1,839.0
Toronto	1,842	1,122.7	3,659	1,622.3	5,501	1,407.3
East	1,509	1,480.8	3,017	2,128.3	4,526	1,854.0
North	1,079	1,811.7	2,036	2,708.7	3,115	2,319.6

*Age-standardized rate per 100,000 population.

Note: Region of residence unknown/outside of Ontario for 226 hospitalizations.

In contrast, rates of injury among seniors were the highest for the North region for both emergency department visits and hospitalizations (Figure 15, Tables 18 & 19). The lowest rates of injury for emergency department visits among seniors were observed for the Central West region and the lowest injury hospitalization rates were seen in the Toronto region.

By region, unintentional injuries accounted for between 98% and 99% of emergency department visits among seniors (Table 20). Falls were the leading cause of injury among seniors in all seven regions, ranging from a low of 55% of all injury-related emergency department visits for seniors in the North region to a high of 61% in the Central West region.

Unintentional injuries represented between 97% and 98% of all injury hospitalizations among seniors across the seven regions in the province (Table 21). In all regions, falls were by far the most frequent cause of injury.

FIGURE 15

Overall injury rates for emergency department visits and hospitalizations among seniors by region

(Ontario, 2004/05)

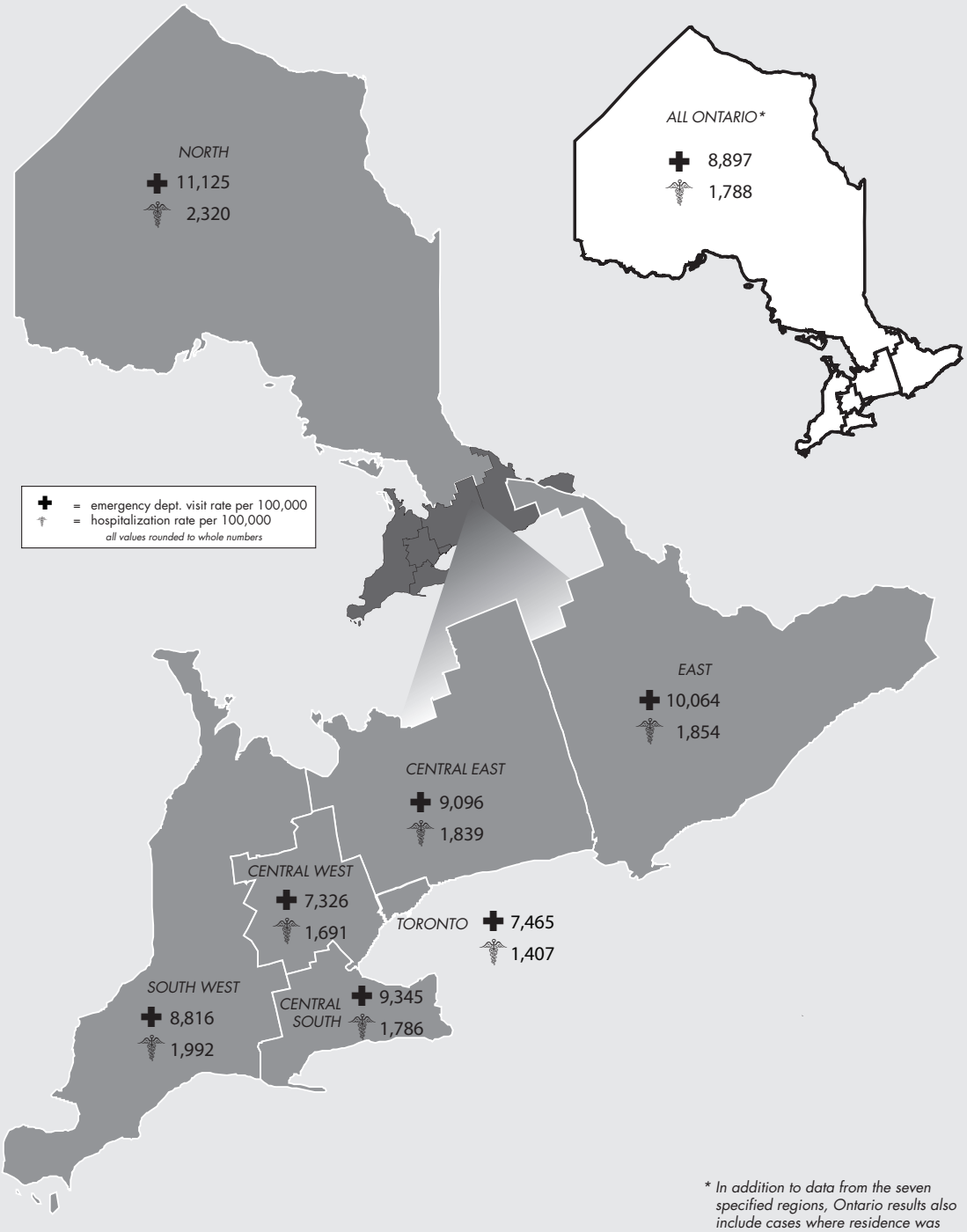


TABLE 20

Cause of injury for emergency department visits among seniors by region
(Ontario, 2004/05)

	Region Number (%)						
Cause of injury	***South West***	***Central South***	***Central West***	***Central East***	***Toronto***	***East***	***North***
Unintentional injuries	20,223 (99%)	17,367 (99%)	17,143 (99%)	23,208 (99%)	26,971 (98%)	22,961 (99%)	14,372 (98%)
Falls	11,499 (56%)	10,331 (59%)	10,480 (61%)	13,996 (59%)	17,341 (63%)	14,046 (60%)	7,992 (55%)
Transport	1,072 (5%)	1,018 (6%)	1,023 (6%)	1,369 (6%)	1,486 (5%)	1,110 (5%)	711 (5%)
Struck by object	1,131 (6%)	781 (4%)	763 (4%)	1,024 (4%)	947 (3%)	1,089 (5%)	752 (5%)
Overexertion, strenuous movements	956 (5%)	754 (4%)	656 (4%)	1,132 (5%)	964 (4%)	1091 (5%)	834 (6%)
Foreign body, choking	979 (5%)	693 (4%)	660 (4%)	965 (4%)	829 (3%)	1,052 (5%)	756 (5%)
Poisoning	220 (1%)	244 (1%)	240 (1%)	306 (1%)	280 (1%)	273 (1%)	217 (1%)
Other/unspecified	4,366 (21%)	3,546 (20%)	3,321 (19%)	4,416 (19%)	5,124 (19%)	4,300 (19%)	3,110 (21%)
Violence	49 (<1%)	89 (1%)	37 (<1%)	61 (<1%)	163 (1%)	59 (<1%)	50 (<1%)
Self-harm	52 (<1%)	63 (<1%)	58 (<1%)	65 (<1%)	114 (<1%)	74 (<1%)	31 (<1%)
Other/unspecified injuries	64 (<1%)	82 (<1%)	76 (<1%)	209 (1%)	167 (1%)	133 (1%)	157 (1%)
Total	20,388 (100%)	17,601 (100%)	17,314 (100%)	23,543 (100%)	27,415 (100%)	23,227 (100%)	14,610 (100%)

Note: Region of residence unknown/outside of Ontario for 2,138 emergency department visits.

TABLE 21

Cause of injury for hospitalizations among seniors by region
(Ontario, 2004/05)

	Region Number (%)						
Cause of injury	***South West***	***Central South***	***Central West***	***Central East***	***Toronto***	***East***	***North***
Unintentional injuries	4,837 (98%)	3,465 (97%)	3,995 (98%)	4,802 (98%)	5,348 (97%)	4,429 (98%)	3,042 (98%)
Falls	3,881 (78%)	2,815 (79%)	3,248 (79%)	4,013 (82%)	4,434 (81%)	3,632 (80%)	2,468 (79%)
Transport	235 (5%)	167 (5%)	186 (5%)	225 (5%)	245 (4%)	205 (5%)	144 (5%)
Struck by object	77 (2%)	36 (1%)	33 (1%)	41 (1%)	46 (1%)	36 (1%)	42 (1%)
Overexertion, strenuous movements	74 (1%)	49 (1%)	43 (1%)	57 (1%)	46 (1%)	49 (1%)	40 (1%)
Foreign body, choking	78 (2%)	63 (2%)	76 (2%)	84 (2%)	119 (2%)	94 (2%)	50 (2%)
Poisoning	98 (2%)	75 (2%)	78 (2%)	118 (2%)	92 (2%)	94 (2%)	76 (2%)
Other/unspecified	394 (8%)	260 (7%)	331 (8%)	264 (5%)	366 (7%)	319 (7%)	222 (7%)
Violence	11 (<1%)	13 (<1%)	9 (<1%)	14 (<1%)	18 (<1%)	5 (<1%)	10 (<1%)
Self-harm	43 (1%)	46 (1%)	55 (1%)	45 (1%)	72 (1%)	43 (1%)	29 (1%)
Other/unspecified injuries	61 (1%)	55 (2%)	38 (1%)	36 (1%)	63 (1%)	49 (1%)	34 (1%)
Total	4,952 (100%)	3,579 (100%)	4,097 (100%)	4,897 (100%)	5,501 (100%)	4,526 (100%)	3,115 (100%)

Note: Region of residence unknown/outside of Ontario for 226 hospitalizations.

For emergency department visits and hospitalizations among seniors, the Toronto region experienced the highest number of fall-related injuries and the North region had the lowest number (Tables 22 & 23). This pattern was observed for females and males.

In general, rates of fall-related injuries among seniors were the highest for the North region for both emergency department visits and hospitalizations (Tables 22 & 23). One exception was noted for emergency department visits due to a fall among senior males in which the highest rate was observed in the East region. The lowest rates of fall-related injuries for emergency department visits among seniors were observed for the Central West region and the lowest injury hospitalization rates for falls were seen in the Toronto region.

TABLE 22

Number and rate of emergency department visits for falls among seniors by sex and region
(Ontario, 2004/05)

	Males 65+ years		*Females 65+ years*		*Total 65+ years*	
Region	***Number***	***Rate****	***Number***	***Rate****	***Number***	***Rate****
South West	3,769	3,679.6	7,730	5,603.4	11,499	4,768.6
Central South	3,388	4,033.7	6,943	6,212.8	10,331	5,269.1
Central West	3,341	3,190.9	7,139	5,281.4	10,480	4,372.4
Central East	4,671	4,013.6	9,325	6,358.7	13,996	5,327.3
Toronto	5,530	3,430.1	11,811	5,438.4	17,341	4,572.7
East	4,599	4,584.6	9,447	6,884.6	14,046	5,896.3
North	2,721	4,581.5	5,271	7,117.6	7,992	5,998.4

*Age-standardized rate per 100,000 population.

Note: Region of residence unknown/outside of Ontario for 1,135 emergency department visits.

TABLE 23

Number and rate of hospitalizations for falls among seniors by sex and region
(Ontario, 2004/05)

	Males 65+ years		*Females 65+ years*		*Total 65+ years*	
Region	***Number***	***Rate****	***Number***	***Rate****	***Number***	***Rate****
South West	1,116	1,049.6	2,765	1,900.9	3,881	1,535.1
Central South	811	938.9	2,004	1,722.3	2,815	1,384.4
Central West	913	862.7	2,335	1,691.1	3,248	1,333.2
Central East	1,222	1,031.6	2,791	1,857.0	4,013	1,498.3
Toronto	1,366	816.1	3,068	1,344.2	4,434	1,116.8
East	1,096	1,062.3	2,536	1,767.8	3,632	1,467.8
North	766	1,275.6	1,702	2,256.6	2,468	1,828.4

*Age-standardized rate per 100,000 population.

Note: Region of residence unknown/outside of Ontario for 156 hospitalizations.

Injury patterns among seniors by Local Health Integration Network

Injuries among seniors in Ontario were also categorized according to Local Health Integration Networks (LHINs) based on the LHIN of residence for all injured persons. Note that the 14 LHINs and the seven regions are not equivalent as they are based on different geographical divisions. For example, the number of injuries for the North East LHIN and the North West LHIN do not total the number of injuries for the North region. Variations in the numbers, rates, and general patterns of injury were noted by LHIN.

The highest numbers of injuries, for both emergency department visits and hospitalizations among seniors, were observed in the Hamilton Niagara Haldimand Brant LHIN, followed by the Central East LHIN (Tables 24 & 25). Among seniors, the lowest numbers of injuries for emergency department visits and hospitalizations were seen in the North West LHIN. These patterns were seen for females and males.

Key Findings

The highest numbers of injuries were seen in the Hamilton Niagara Haldimand Brant LHIN and the Central East LHIN.

The North West LHIN had the lowest numbers of injuries.

In general, injury rates were the highest for the North East LHIN and the lowest for the Central West LHIN.

In all LHINs, falls were the most frequent cause of injury.

In general, rates of injury among seniors were the highest for the North East LHIN for emergency department visits and hospitalizations (Figure 16, Tables 24 & 25). One exception was senior males, in which the North West LHIN experienced the highest injury hospitalization rate. The lowest rates of injury for emergency department visits and hospitalizations among seniors were observed for the Central West LHIN. One exception was for senior females, where the Toronto Central LHIN had the lowest injury hospitalization rate.

TABLE 24

Number and rate of emergency department visits for injury among seniors by sex and Local Health Integration Network
(Ontario, 2004/05)

	Males 65+ years		Females 65+ years		Total 65+ years	
LHIN	**Number**	**Rate***	**Number**	**Rate***	**Number**	**Rate***
1-Erie St. Clair	2,870	7,538.3	4,654	8,201.8	7,524	8,267.6
2-South West	5,206	8,976.6	7,376	8,836.0	12,582	9,210.1
3-Waterloo Wellington	2,366	6,849.3	3,863	7,648.6	6,230	7,648.3
4-Hamilton Niagara Haldimand Brant	7,413	8,544.7	11,609	9,181.7	19,023	9,297.1
5-Central West	1,622	5,648.6	2,670	6,684.3	4,292	6,553.0
6-Mississauga Halton	2,936	6,891.8	4,834	8,087.0	7,770	8,007.8
7-Toronto Central	4,208	6,209.4	7,454	7,365.8	11,662	7,218.7
8-Central	5,077	6,784.2	8,590	8,187.3	13,667	7,958.0
9-Central East	6,525	7,870.1	10,239	8,645.3	16,764	8,669.9
10-South East	3,423	10,250.5	5,060	10,783.4	8,483	10,985.6
11-Champlain	5,539	8,792.1	8,921	9,362.6	14,460	9,565.4
12-North Simcoe Muskoka	2,642	10,291.9	3,637	10,448.4	6,279	10,886.4
13-North East	4,237	11,011.2	5,611	10,866.3	9,848	11,443.9
14-North West	1,396	9,853.3	2,016	10,146.7	3,412	10,481.2

*Age-standardized rate per 100,000 population.

Notes: LHIN of residence unknown/outside of Ontario for 4,240 emergency department visits. Total number of injuries does not total the sum of males and females due to unknown/unspecified sex for 2 emergency department visits.

TABLE 25

Number and rate of hospitalizations for injury among seniors by sex and Local Health Integration Network
(Ontario, 2004/05)

	Males 65+ years		Females 65+ years		Total 65+ years	
LHIN	**Number**	**Rate***	**Number**	**Rate***	**Number**	**Rate***
1-Erie St. Clair	606	1,541.6	1,143	2,045.7	1,749	1,831.4
2-South West	1,001	1,616.8	2,145	2,505.5	3,146	2,125.4
3-Waterloo Wellington	472	1,303.4	1,054	2,139.0	1,526	1,782.4
4-Hamilton Niagara Haldimand Brant	1,253	1,367.7	2,653	2,135.3	3,906	1,806.2
5-Central West	302	1,044.5	655	1,744.7	957	1,441.4
6-Mississauga Halton	521	1,215.0	1,177	2,127.1	1,698	1,733.7
7-Toronto Central	879	1,244.8	1,646	1,657.9	2,525	1,481.2
8-Central	880	1,137.9	1,830	1,818.2	2,710	1,524.5
9-Central East	1,131	1,300.5	2,284	1,972.2	3,415	1,683.3
10-South East	548	1,584.8	1,040	2,249.9	1,588	1,962.1
11-Champlain	933	1,421.2	1,929	2,054.0	2,862	1,789.3
12-North Simcoe Muskoka	470	1,782.1	915	2,776.6	1,385	2,342.6
13-North East	698	1,804.7	1,353	2,778.7	2,051	2,359.4
14-North West	265	1,816.6	453	2,369.3	718	2,125.7

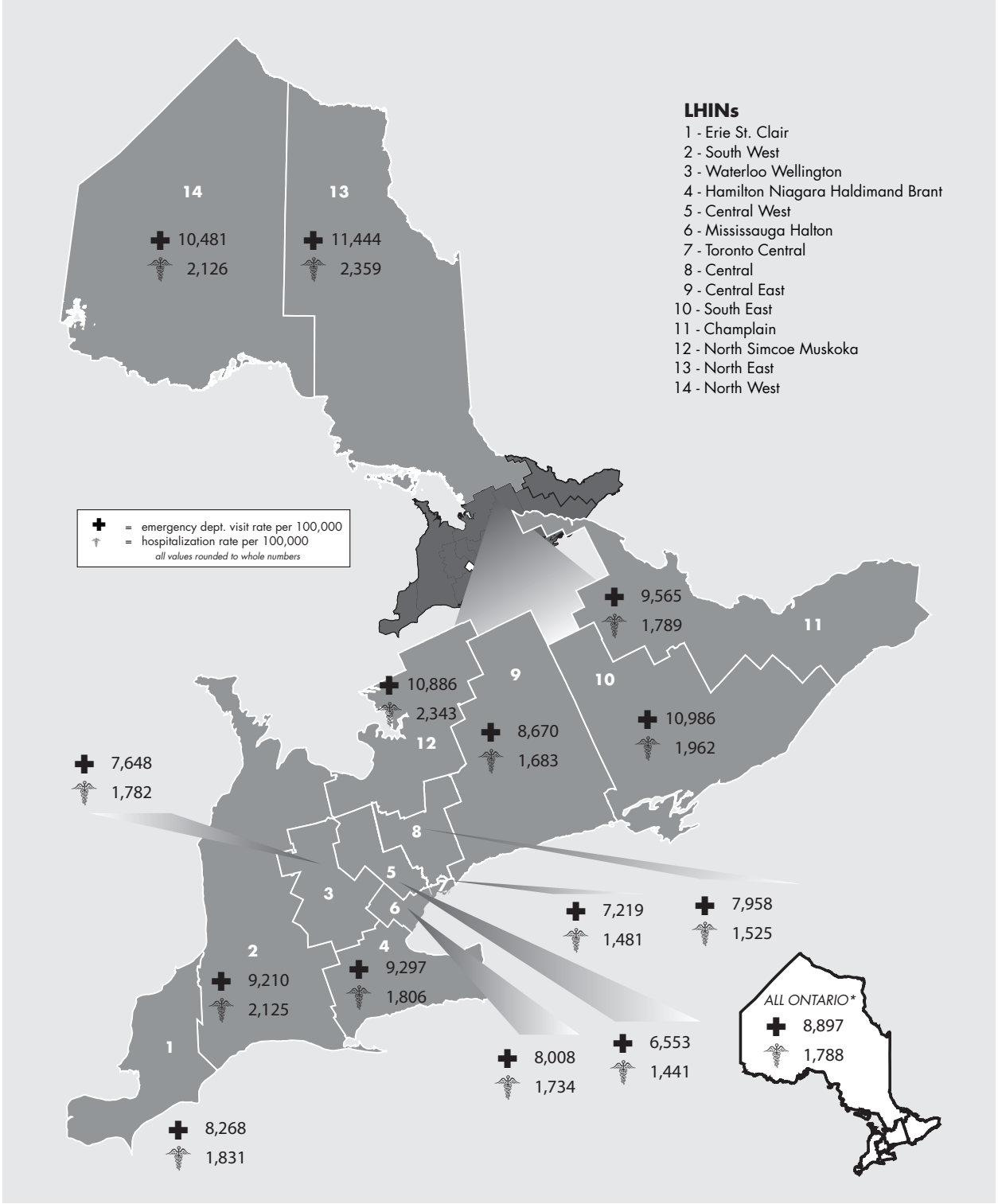
*Age-standardized rate per 100,000 population.

Note: LHIN of residence unknown/outside of Ontario for 657 hospitalizations.

FIGURE 16

Overall injury rates for emergency department visits and hospitalizations among seniors by Local Health Integration Network

(Ontario, 2004/05)



Unintentional injuries were by far the most common cause of injury among seniors in each LHIN (Tables 26 & 27). In all LHINs, falls were the most frequent cause of injury among seniors.

The highest numbers of fall-related injuries among seniors, for both emergency department visits and hospitalizations, were seen in the Hamilton Niagara Haldimand Brant LHIN and the lowest numbers were observed for the North West LHIN (Tables 28 & 29). These patterns were seen for both females and males.

Rates of emergency department visits due to fall-related injuries among seniors were the highest for the South East LHIN (Table 28). For hospitalizations, the highest rates for falls were seen in the North Simcoe Muskoka LHIN, with the exception of senior males where the highest rate was observed in the North West LHIN (Table 29). In general, the lowest rates of fall-related injuries for both emergency department visits and hospitalizations among seniors were observed for the Central West LHIN (Tables 28 & 29). One exception was seen for hospitalizations among senior females, where the lowest rate of falls was seen in the Toronto Central LHIN.

TABLE 26

Cause of injury for emergency department visits among seniors by Local Health Integration Network
(Ontario, 2004/05)

	Local Health Integration Network (LHIN) Number (%)													
Cause of injury	1 Erie St. Clair	2 South West	3 Waterloo Wellington	4 Hamilton Niagara Haldimand Brant	5 Central West	6 Mississauga Halton	7 Toronto Central	8 Central	9 Central East	10 South East	11 Champlain	12 North Simcoe Muskoka	13 North East	14 North West
Unintentional injuries	7,469 (99%)	12,473 (99%)	6,170 (99%)	18,785 (99%)	4,257 (99%)	7,678 (99%)	11,437 (98%)	13,488 (99%)	16,579 (99%)	8,396 (99%)	14,286 (99%)	6,101 (97%)	9,712 (99%)	3,356 (98%)
Falls	4,474 (59%)	6,842 (54%)	3,800 (61%)	11,233 (59%)	2,569 (60%)	4,637 (60%)	7,447 (64%)	8,498 (62%)	10,213 (61%)	4,994 (59%)	8,839 (61%)	3,533 (56%)	5,342 (54%)	1,901 (56%)
Transport	443 (6%)	606 (5%)	368 (6%)	1,079 (6%)	311 (7%)	414 (5%)	528 (5%)	875 (6%)	943 (6%)	370 (4%)	728 (5%)	327 (5%)	478 (5%)	176 (5%)
Struck by object	370 (5%)	758 (6%)	249 (4%)	849 (4%)	184 (4%)	353 (5%)	373 (3%)	535 (4%)	637 (4%)	427 (5%)	656 (5%)	369 (6%)	518 (5%)	143 (4%)
Overexertion, strenuous movements	313 (4%)	629 (5%)	270 (4%)	797 (4%)	149 (3%)	275 (4%)	380 (3%)	587 (4%)	743 (4%)	424 (5%)	664 (5%)	325 (5%)	529 (5%)	243 (7%)
Foreign body, choking	311 (4%)	666 (5%)	251 (4%)	741 (4%)	156 (4%)	290 (4%)	327 (3%)	418 (3%)	675 (4%)	476 (6%)	572 (4%)	317 (5%)	489 (5%)	181 (5%)
Poisoning	96 (1%)	122 (1%)	77 (1%)	262 (1%)	52 (1%)	121 (2%)	141 (1%)	149 (1%)	166 (1%)	105 (1%)	164 (1%)	111 (2%)	136 (1%)	55 (2%)
Other/ unspecified	1,462 (19%)	2,850 (23%)	1,155 (19%)	3,824 (20%)	836 (19%)	1,588 (20%)	2,241 (19%)	2,426 (18%)	3,202 (19%)	1,600 (19%)	2,663 (18%)	1,119 (18%)	2,220 (23%)	657 (19%)
Violence	16 (<1%)	32 (<1%)	15 (<1%)	85 (<1%)	12 (<1%)	19 (<1%)	84 (1%)	41 (<1%)	62 (<1%)	18 (<1%)	40 (<1%)	14 (<1%)	32 (<1%)	15 (<1%)
Self-harm	18 (<1%)	33 (<1%)	19 (<1%)	69 (<1%)	13 (<1%)	23 (<1%)	54 (<1%)	35 (<1%)	64 (<1%)	29 (<1%)	42 (<1%)	16 (<1%)	18 (<1%)	12 (<1%)
Other/unspecified injuries	21 (<1%)	44 (<1%)	26 (<1%)	84 (<1%)	10 (<1%)	50 (1%)	87 (1%)	103 (1%)	59 (<1%)	40 (<1%)	92 (1%)	148 (2%)	86 (1%)	29 (1%)
Total	7,524 (100%)	12,582 (100%)	6,230 (100%)	19,023 (100%)	4,292 (100%)	7,770 (100%)	11,662 (100%)	13,667 (100%)	16,764 (100%)	8,483 (100%)	14,460 (100%)	6,279 (100%)	9,848 (100%)	3,412 (100%)

Note: LHIN of residence unknown/outside of Ontario for 4,240 emergency department visits.

TABLE 27

Cause of injury for hospitalizations among seniors by Local Health Integration Network (Ontario, 2004/05)

	Local Health Integration Network (LHIN) Number (%)													
Cause of injury	1 Erie St. Clair	2 South West	3 Waterloo Wellington	4 Hamilton Niagara Haldimand Brant	5 Central West	6 Mississauga Halton	7 Toronto Central	8 Central	9 Central East	10 South East	11 Champlain	12 North Simcoe Muskoka	13 North East	14 North West
Unintentional injuries	1,701 (97%)	3,081 (98%)	1,486 (97%)	3,788 (97%)	940 (98%)	1,656 (98%)	2,441 (97%)	2,651 (98%)	3,349 (98%)	1,556 (98%)	2,798 (98%)	1,352 (98%)	1,998 (97%)	705 (98%)
Falls	1,380 (79%)	2,450 (78%)	1,234 (81%)	3,092 (79%)	723 (76%)	1,345 (79%)	2,014 (80%)	2,224 (82%)	2,806 (82%)	1,237 (78%)	2,328 (81%)	1,111 (80%)	1,611 (79%)	580 (81%)
Transport	80 (5%)	153 (5%)	63 (4%)	173 (4%)	67 (7%)	75 (4%)	114 (5%)	111 (4%)	155 (5%)	75 (5%)	128 (4%)	66 (5%)	83 (4%)	37 (5%)
Struck by object	19 (1%)	60 (2%)	11 (1%)	36 (1%)	6 (1%)	17 (1%)	24 (1%)	18 (1%)	27 (1%)	13 (1%)	23 (1%)	18 (1%)	26 (1%)	11 (2%)
Overexertion, strenuous movements	30 (2%)	44 (1%)	16 (1%)	51 (1%)	18 (2%)	11 (1%)	20 (1%)	30 (1%)	35 (1%)	21 (1%)	27 (1%)	20 (1%)	23 (1%)	11 (2%)
Foreign body, choking	31 (2%)	48 (2%)	25 (2%)	68 (2%)	23 (2%)	36 (2%)	61 (2%)	54 (2%)	59 (2%)	37 (2%)	55 (2%)	15 (1%)	33 (2%)	14 (2%)
Poisoning	35 (2%)	62 (2%)	26 (2%)	77 (2%)	12 (1%)	44 (3%)	49 (2%)	52 (2%)	62 (2%)	44 (3%)	49 (2%)	39 (3%)	60 (3%)	15 (2%)
Other/unspecified	126 (7%)	264 (8%)	111 (7%)	291 (7%)	91 (10%)	128 (8%)	159 (6%)	162 (6%)	205 (6%)	129 (8%)	188 (7%)	83 (6%)	162 (8%)	37 (5%)
Violence	<5 (<1%)	9 (<1%)	5 (<1%)	13 (<1%)	0 (0%)	<5 (<1%)	10 (<1%)	9 (<1%)	11 (<1%)	<5 (<1%)	<5 (<1%)	<5 (<1%)	7 (<1%)	<5 (<1%)
Self-harm	13 (1%)	29 (1%)	18 (1%)	50 (1%)	13 (1%)	22 (1%)	35 (1%)	23 (1%)	38 (1%)	16 (1%)	26 (1%)	17 (1%)	18 (1%)	8 (1%)
Other/unspecified injuries	33 (2%)	27 (1%)	17 (1%)	55 (1%)	<5 (<1%)	16 (1%)	39 (2%)	27 (1%)	17 (<1%)	14 (1%)	35 (1%)	15 (1%)	28 (1%)	<5 (<1%)
Total	1,749 (100%)	3,146 (100%)	1,526 (100%)	3,906 (100%)	957 (100%)	16,98 (100%)	2,525 (100%)	2,710 (100%)	3,415 (100%)	1,588 (100%)	2,862 (100%)	1,385 (100%)	2,051 (100%)	718 (100%)

Note: LHIN of residence unknown/outside of Ontario for 657 hospitalizations.

TABLE 28

Number and rate of emergency department visits for falls among seniors by sex and Local Health Integration Network
(Ontario, 2004/05)

	Males 65+ years		Females 65+ years		Males 65+ years	
LHIN	**Number**	**Rate***	**Number**	**Rate***	**Number**	**Rate***
1-Erie St. Clair	1,416	3,614.2	3,058	5,610.1	4,474	4,754.8
2-South West	2,291	3,774.4	4,551	5,580.3	6,842	4,797.8
3-Waterloo Wellington	1,208	3,372.8	2,592	5,394.8	3,800	4,522.9
4-Hamilton Niagara Haldimand Brant	3,667	4,053.5	7,566	6,260.9	11,233	5,308.3
5-Central West	795	2,746.1	1,774	4,774.8	2,569	3,890.9
6-Mississauga Halton	1,519	3,543.6	3,118	5,674.7	4,637	4,750.7
7-Toronto Central	2,442	3,492.1	5,005	5,242.5	7,447	4,490.9
8-Central	2,700	3,535.8	5,798	5,893.8	8,498	4,866.1
9-Central East	3,351	3,907.4	6,862	6,093.2	10,213	5,144.2
10-South East	1,670	4,886.4	3,324	7,380.2	4,994	6,291.8
11-Champlain	2,855	4,416.1	5,984	6,592.4	8,839	5,667.4
12-North Simcoe Muskoka	1,241	4,754.8	2,292	7,051.4	3,533	6,037.6
13-North East	1,794	4,643.5	3,548	7,359.5	5,342	6,164.7
14-North West	645	4,462.2	1,256	6,697.1	1,901	5,704.2

*Age-standardized rate per 100,000 population.

Note: LHIN of residence unknown/outside of Ontario for 2,498 emergency department visits.

TABLE 29

Number and rate of hospitalizations for falls among seniors by sex and Local Health Integration Network
(Ontario, 2004/05)

	Males 65+ years		Females 65+ years		Total 65+ years	
LHIN	**Number**	**Rate***	**Number**	**Rate***	**Number**	**Rate***
1-Erie St. Clair	427	1,073.7	953	1,689.2	1,380	1,427.7
2-South West	686	1,079.8	1764	2,033.2	2,450	1,624.0
3-Waterloo Wellington	346	938.1	888	1,784.9	1,234	1,423.4
4-Hamilton Niagara Haldimand Brant	880	947.0	2,212	1,765.4	3,092	1,413.8
5-Central West	199	686.3	524	1,388.3	723	1,083.8
6-Mississauga Halton	380	886.6	965	1,739.6	1,345	1,372.2
7-Toronto Central	635	883.4	1,379	1,377.9	2,014	1,166.1
8-Central	665	852.7	1,559	1,537.4	2,224	1,241.4
9-Central East	870	985.3	1,936	1,658.9	2,806	1,368.8
10-South East	372	1,061.4	865	1,846.8	1,237	1,506.3
11-Champlain	701	1,057.0	1,627	1,715.3	2,328	1,439.0
12-North Simcoe Muskoka	342	1,292.8	769	2,324.4	1,111	1,871.6
13-North East	493	1,269.3	1,118	2,291.6	1,611	1,849.2
14-North West	194	1,310.5	386	2,006.0	580	1,698.7

*Age-standardized rate per 100,000 population.

Note: LHIN of residence unknown/outside of Ontario for 512 hospitalizations.

Conclusions

This report outlines patterns of injury among seniors using two windows of surveillance: emergency department visits and hospitalizations. The magnitude of the issue is shocking when one considers that:

- Every four minutes in Ontario, at least one senior visits an emergency department with an injury.
- Every 20 minutes in Ontario, at least one senior is admitted to hospital due to an injury.
- On any given day, seniors who have been injured occupy more than 1,000 acute care beds in hospitals across the province.

These statistics become even more alarming when the age structure of the population is considered. In 2007, about 13% (or about 1.6 million) of Ontario's population was 65 years of age and older; this percentage will almost double to nearly 25% (or about 3.5 million) in 2031.[2]

To put this in perspective, if the rate of injury among seniors remains the same, the number of injuries would almost double by 2031. In 2031, there would be more than 277,000 seniors visiting an emergency department and more than 58,500 seniors hospitalized in Ontario due to an injury. Injured seniors would place an increased burden on the healthcare system, such as increased wait times in the emergency department. In addition, by 2031, there would need to be the equivalent of five new acute care hospitals built, each with 200 beds, solely to accommodate the additional seniors hospitalized with an injury.

The magnitude of the injury issue might be easier to come to terms with if there was nothing that could be done to reduce it, but effective interventions aimed at preventing injuries among seniors do exist. The use of best practices aimed at primary prevention is of utmost importance. For example, effective strategies surrounding the prevention of falls among seniors have been identified and outline using a multifactorial/multidisciplinary approach that considers a range of risk factors in the population, including biological, behavioural, social, economic, and environmental factors.[3-8] Refer to Appendix A for more information about best practices.

Falls are by far the most common cause of injury. The magnitude or frequency of falls among Ontario's seniors is shocking in itself but the fact that these injuries are also associated with substantial economic costs is noteworthy. A recent report highlights falls as the most costly cause of injury, with annual costs estimated at more than $1.9 billion in Ontario.[9] Adults 55 years of age

and older accounted for $962 million, or almost half of the costs for falls. It is important to remember that while falls dominate in terms of all injuries experienced by seniors, other types of injuries also merit further consideration.

In conclusion, injury among seniors in this province is an important issue that demands continued support and attention. It is our hope that this report will provide background information and a foundation to inform the development of new programs, and to support existing or ongoing injury prevention initiatives and strategies in the province of Ontario.

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Appendix A. Information about Best Practices

Key to the prevention of injuries is an enhanced understanding of the scope and nature of injuries combined with evidence for best practices.

Several interventions have been identified as best practices for preventing injuries. The Ontario Injury Prevention Resource Centre (OIPRC) has partnered with the Ontario Neurotrauma Foundation (ONF) to abstract and web-enable 36 best practices from the ONF's initial four compendium volumes of best practices in neurotrauma prevention. The Catalogue of Best Practices is a listing of interventions that have been deemed to be best practices, by researchers or organizations that have conducted systematic reviews of the relevant literature. The initial catalogue features a set of practices identified and reviewed by Ontario researchers with funding from the ONF. One specific section of the catalogue is targeted at best practices among older adults.

See Table 30 for the listing of best practices related to older adults included in this Catalogue.

TABLE 30

Best practices among older adults		
Best Practice	***Area of injury prevention***	***Program Goals***
DriveABLE Assessment Centres	Motor and Other Road Vehicle	To assess the driving fitness of an individual whose competence to drive is questionable due to the onset or progression of a medical condition. Florida's Elder Roadway User Program worked in conjunction with the DriveAble Assessment Centres to distinguish the safe from the unsafe driver.
Florida Elder Roadway User Program	Motor and Other Road Vehicle	To maintain safe driving conditions by focusing on roadway designs and improvements to compensate for the natural effects of aging associated with driving. Florida's Elder Roadway User Program worked in conjunction with the DriveAble Assessment Centres to distinguish the safe from the unsafe driver.

MECRS (Melbourne Extended Care & Rehabilitation Service) Fall Prevention Project	Fall Related Injuries	Melbourne Extended Care & Rehabilitation Service (MECRS) (Melbourne, Australia) – A multidimensional initiative to design, implement, and empirically test a balance and multi-pronged program for reducing falls in health care settings.
No Falls! No Fear! Falls Prevention Project	Fall Related Injuries	Queensland, Australia: A multicomponent falls prevention intervention program focusing on well, older, community dwellers – to reduce the number of falls and the resulting injuries.
Stay on Your Feet	Fall Related Injuries	To increase awareness that falls are preventable and not just a sign of aging; To decrease the number and severity of injuries resulting from falls experienced by older adults using multifaceted and measurable interventions that are also cost-effective and sustainable.
Tai Chi and Computerized Balance Training for Falls Prevention in Older Adults	Fall Related Injuries	The Atlanta FICSIT trials (Frailty and Injuries: Cooperative Studies on Intervention Techniques) incorporate two fall prevention strategies for older adults that diminish the effects of physical deficits that contribute to falls.

For more detailed information about these Best Practices and the Catalogue, visit www.OnInjuryResources.ca and select the Best Practices tab. This Catalogue is an initial listing and should not be considered a definitive list of all best practices among seniors.

Key factors important to injury prevention programs, which emerge from these best practices include using multifactorial interventions and selecting the appropriate approaches based on the setting or target population.

Multifactorial interventions

Effective strategies surrounding the prevention of falls among seniors have been identified and outlined using a multifactorial/multidisciplinary approach that considers a range of risk factors in the population, including biological, behavioural, social, economic, and environmental factors.[3-8] A combination of assessment tools and interventions can be used, including an exercise program, education about risk factors and ways to prevent falls, medication management, nutrition review, and environmental hazard assessment and modification.[3-8] Targeting risk factors associated with the population of interest is very important.

Community-based programs

Interventions should be tailored to the target population. Approaches for active seniors who live in their own home would be different from frail seniors who live in a long-term care facility, due to differences in needs and abilities.

Specifically in the area of falls among seniors, there are several risk factors that can be examined. For example, in the Smart Moves Toolkit, four key messages are highlighted:

- **Plan Ahead**: Talk to your health care provider about osteoporosis and fall prevention.
- **Be Active**: Exercise every day to keep your muscles and bones in good condition.
- **Look First**: Be aware of your surroundings and hazards that might cause a fall.
- **Choose Smart**: When taking medications, think clearly and manage fall risks.

These messages have also been incorporated into a Falls Prevention Seminar developed by the Ontario Seniors' Secretariat. This seminar is available by request from seniors in any community in the province. For more information, see: www.citizenship.gov.on.ca/seniors/english/seminars.htm

Finally, a comprehensive Canadian Falls Prevention Curriculum, based upon best practices, has been developed by a coalition of Canadian researchers and practitioners. Under the leadership of the British Columbia Injury Research and Prevention Unit and its partners, it is currently being pilot tested in various communities.

For additional sources of best practices, refer to:

Cochrane Injuries Group
www.cochrane-injuries.lshtm.ac.uk

BC Injury Prevention and Research Unit
www.injuryresearch.bc.ca

Public Health Agency of Canada, Division of Aging and Seniors
www.phac-aspc.gc.ca/seniors-aines

Veterans Affairs Canada
www.vac-acc.gc.ca