Injuries and Seniors

The Canadian Context

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Injuries and Seniors

The Canadian Context

A report prepared for Consumer and Corporate Affairs Canada
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Table of Contents

		Page
1.	List of Figures	iii
2.	Highlights of the Report	1
3.	Introduction	3
4.	Death Due to Non-Intentional Injury	3
5.	Hospitalization Due to Non-Intentional Injury	5
6.	Falls	7
7.	Seniors and Home Injuries	8
8.	Discussion and Conclusions	9
9.	Footnotes	12
10.	Bibliography	32

Appendices

Appendix I - Methodology and Data Sources		13
i)	The National Survey on Aging and Independence	14
ii)	The General Social Survey	14
iii)	Canadian Centre for Health Information Data	14
iv)	Age Specific Rates	15
v)	Information on E Codes	15
Appendix II- Tables		16
1.	Leading causes of death by age and sex, Canada, 1989	18
2.	Injury-related death rates for selected causes by age and sex, Canada, 1989	19
3.	Number of injury-related deaths by selected causes, age and sex, Canada, 1989	20

4. Leading causes of hospital separation by age and sex, Canada, 1987-88 21

5. Number of accidental injuries by selected causes, age and sex, Canada, 1987-88 22

6. Injury-related hospitalization rates for selected causes by age and sex, Canada, 1987-88 23

7. Number of accidents by whether the accident resulted in injury by age group, Canada, 1987 24

8. Average days per separation by selected types of separation, sex and age group, Canada, 1988-89 25

9. Number of activity-loss days and rate per 1,000 population attributed to home accidents by age group, Canada, 1987 26

10. Proportion of accident incidents by type of accident, sex and age group, Canada, 1987 26

Appendix III - Home injury questions from the Survey of Aging and Independence 27

Appendix IV - Accident/Injury questions from the 1988 General Social Survey 30

1. List of Figures

Figure 1 Death rates for non-intentional injury-related causes, for selected years, by age group, Canada - page 4

Figure 2 Death rates for non-intentional injury-related causes, for selected years by age group and sex, Canada - page 4

Figure 3 Non-intentional injury rates per 100,000 population by age group and sex, Canada, 1987-88 - page 5

Figure 4 Leading causes of accidental injury for people 65 years of age and over, Canada, 1987-88 - page 6

Figure 5 Fall-related injury rates per 100,000 population by age group, Canada, 1987-88 - page 8

Figure 6 Rates of home injuries per 1,000 population by age group, Canada, 1987 - page 9

Figure 7 Older adults reporting a home injury by age group, Canada, 1991 - page 10

Figure 8 Injuries sustained from most recent home injury for people 65 years and over, Canada, 1991 - page 10

Figure 9 Home injuries by time of occurence for people 65 years of age and over, Canada, 1991 - page 11

2. *Highlights of the Report*

Non-intentional injuries are a leading cause of both death and hospitalization for people of all ages. The following report provides a summary of data on injuries and injury-related deaths reported in Canada. More specifically, it focuses on the situation of older adults with a particular emphasis on home injuries. The sources of data are Statistics Canada's 1991 Special Survey of Aging and Independence, the 1988 General Social Survey and figures on injuries and injury-related deaths provided by the Canadian Centre for Health Information.

Death Due to Non-Intentional Injury (page 3)

- Injuries and poisonings were the seventh leading cause of death for seniors in 1989. Over 3,000 deaths were injury-related.

- Injury-related death rates were higher for older adults than for the rest of the population. The rate for those 0-64 years was 27.6/100,000 compared to 47.7 for those 65-74 and 182.6 for people 75 and over.

- Men aged 65 and over were more likely to die from injury-related deaths while women in this age group were more likely to be hospitalized for injuries.

- Injury-related death rates have generally been declining over the past 20 years but the decline has been slower for the 75 and over age group than for younger groups.

Hospitalization Due to Non-Intentional Injury (page 5)

- While seniors make up roughly 12% of the Canadian population, they account for almost one-quarter of all injury-related hospital separations.

- For older adults, injuries were the sixth leading cause of hospitalization with over 67,000 injury-related separations recorded for 1987-88.

- The rate of hospitalization for injuries increases with age. While the rate for people 0 to 64 years old is 918/100,000, the figure for those 65 to 74 is 1,573 and the rate for those 75 and over is 3,724.

- Older adults use almost 50% of all injury-related hospital days. As the Canadian population continues to age, without intervention, the number of non-intentional injuries and related deaths will continue to rise.

Falls (page 7)

- The likelihood of dying from a fall-related injury also increases with age. For people 75 and over, the rate stood at 119.8 compared to 12.0 for those 65 to 74 years and 1.6 for those 0 to 64 years. Fall-related injury rates follow the same trend (272.8 for those 0-64 years, 958.6 for those 65 to 74 years, versus 3,419.0 for people over 75).

- Recovery time for injuries is slower for seniors than for the rest of the population. Someone 0 to 44 years of age takes on average 6.1 recovery days, in contrast to the figure for those 65 to 74 years - 16.2 days, and 25.3 days for those 75 and over.

- Elderly people were much more likely than younger people to report that injuries made it difficult to carry out their main activity.

Seniors and Home Injuries (page 8)

- Over 160,000 seniors reported at least one home injury over a twelve month period (6% of older adults).

- Home injuries increased with age. The percentages rose from 5% for those aged 65-69 to 8% for people 80 years of age and over.

- Older adults were more likely than the younger population to report an accident or injury in their home and surrounding area.

- Over one-quarter of all home injuries reported by older consumers were product or equipment related.

- Seniors with household incomes of less than $20,000 were more likely to report a home injury than were those with incomes of $20,000 and over.

3. *Introduction*

Non-intentional injuries[1] are a leading cause of both death and hospitalization affecting Canadians of all ages. In 1986, injury-related expenditures were estimated at about $11 billion[2]. This figure is second only to that of $16.8 billion spent on cardiovascular diseases (Wigle, Mao, Wong and Lane 1991). This economic analysis does not include the psychosocial costs associated with the qualitative aspects of life such as pain, loss of independence, limited mobility, fear and anxiety, which are also high.

Injuries are of particular concern to older adults (those aged 65 years and over) due to the severe impact that they can have on their quality of life. For example, due to a reduction of muscle mass and strength which can occur as part of the normal aging process, and the reduced ability of the body to heal itself, an injury can result in long periods of hospitalization for older adults. Therefore, the Product Safety Branch initiated this analysis in order to provide valuable data on injury trends among seniors. The data will be used for the purpose of making decisions and developing effective strategies to prevent product-related injuries and deaths.

This report begins with an overview of injury-related mortality and morbidity in Canada, with an emphasis on older adults. Injury and death due to falls is a particular problem for seniors and a section is dedicated to an examination of this topic. Finally, home injuries reported by seniors are examined in detail. The primary sources of data are the 1991 National Survey on Aging and Independence (SAI), the 1988 General Social Survey (GSS) and vital statistics and hospital morbidity data from Statistics Canada. These sources are described in more detail in Appendix I.

4. *Death Due to Non-Intentional Injury*

Each year, thousands of people living in Canada die as a result of non-intentional injury. As can be seen in Table 1[3], injuries and poisoning were the fourth leading cause of death in 1989, following deaths from diseases of the circulatory system, neoplasms and diseases of the respiratory system. For elderly persons in 1989, approximately 3,000 deaths were injury related.

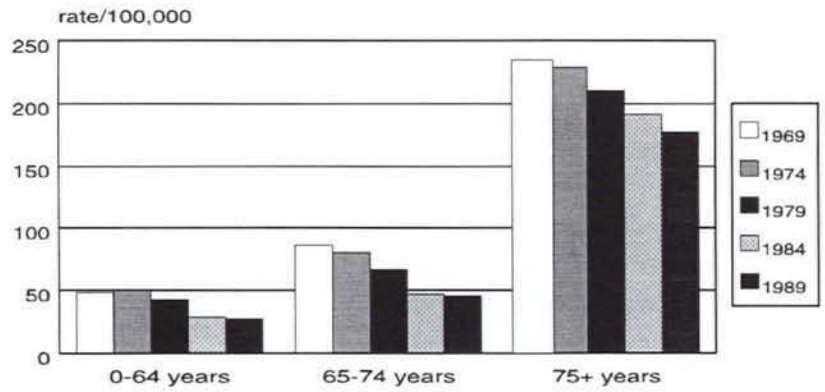
Table 2 provides information on rates for some of the more significant causes of injury-related death. As can be seen in Figure 1, death rates for seniors are higher than for people 0 to 64 years old. For those aged 0 to 64 years, the death rate is 27.6/100,000 and increases to 47.7/100,000 for those 65 to 74 years and 182.6/100,000 for those 75 years of age and over. Death rates for seniors are higher than for people 0 to 64 years old.

A large proportion of the injury-related deaths to those 65 and over are the result of falls, which is discussed in greater detail later in this report (page 7). Seniors were also at greater risk of dying through suffocation, fire and other injuries[4] than were those aged 0 to 64 years. Information on the number of deaths due to selected injury-related causes can be found in Table 3.

For all age groups, the mortality rates for injury-related deaths have been falling over time while rates for those 75 years of age and over have been the slowest to fall (Figure 2). The rate for people 0 to 64 years declined 46% from 1974 to 1989. The 65-74 year group experienced a 47% decline from 1969-1989 and the rate for those 75 and over fell 24% over the same 1969-1989 period.

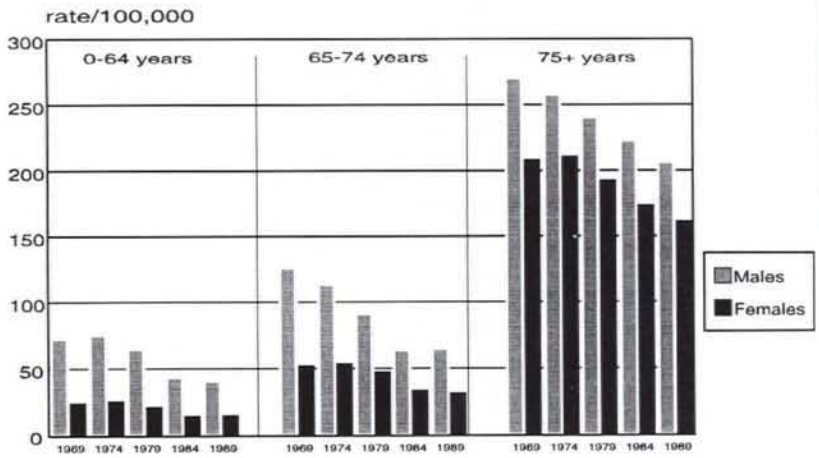
In 1989, the overall rate of injury-related death for men stood at 48.4/100,000 in comparison to the lower rate for women of 23.9/100,000. This gender-based difference exists for all years in question and for all three age groups (Figure 2 and Table 2). The figures for men aged 0-64 are more than double those for women in the same age group for all years in question. The differences between the sexes remain high for the 65-74 year group and decline somewhat for those 75 and over.

Figure 1 - Death rates for non-intentional injury-related causes, for selected years, by age group, Canada



Note: For comparability across years, data for misadventures to patients during surgical and medical care and complications of medical procedures were excluded (E870-878).

Figure 2 - Death rates for non-intentional injury-related causes, for selected years by age group and sex, Canada



Note: For comparability across years, data for misadventures to patients during surgical and medical care and complications of medical procedures were excluded (E870-878).

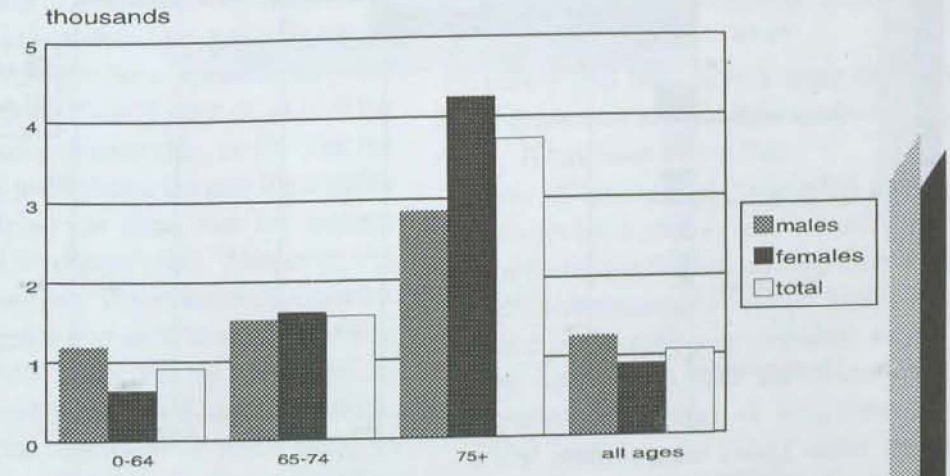
5. *Hospitalization Due to Non-Intentional Injury*

In addition to being responsible for a large number of deaths, numerous incidents resulting in hospital separations[5] can also be attributed to non-intentional injuries. For the period 1987-88, 276,988 injuries resulted in hospitalization. Almost one-quarter of these were accounted for by seniors (67,335). For the total Canadian population, separations for injuries (external causes of injury and poisoning) ranked fifth behind complications of pregnancy, childbirth and puerperium and diseases of the circulatory, digestive and respiratory systems (Table 4). For the period 1987-88, 67,335 separations for injuries were recorded for seniors and injuries rank as the sixth leading cause of hospitalization for the elderly population. For more information on the actual number of hospitalizations due to selected injury-related causes, please see Table 5.

The rate of hospitalization for injuries increases with age, as can be seen in Figure 3 and Table 6. The rate jumps from 918/100,000 for people aged 0 to 64 years to 1,573 for those aged 65 to 74 years of age and to 3,724 for those 75 years of age and over. Some differences by sex are also apparent. For men 0 to 64, the rate is higher than that for women the same age (1,192 versus 642 respectively). Rates for men and women converge for ages 65 to 74 and those for women are higher than the rates for men in the 75 and over age group (2,849 for men and 4,250 for women).

Table 6 illustrates that the cause of injury sustained also varies with age. For seniors, injuries from falls are responsible for the largest number of injury-related hospital admissions as will be discussed in greater detail in the next section (Figure 4). Other injuries are also significant for seniors with a rate of 216.2. Moreover, older adults are much more likely to suffer injuries due to both

Figure 3 - Non-intentional injury rates per 100,000 population by age group and sex, Canada, 1987-88



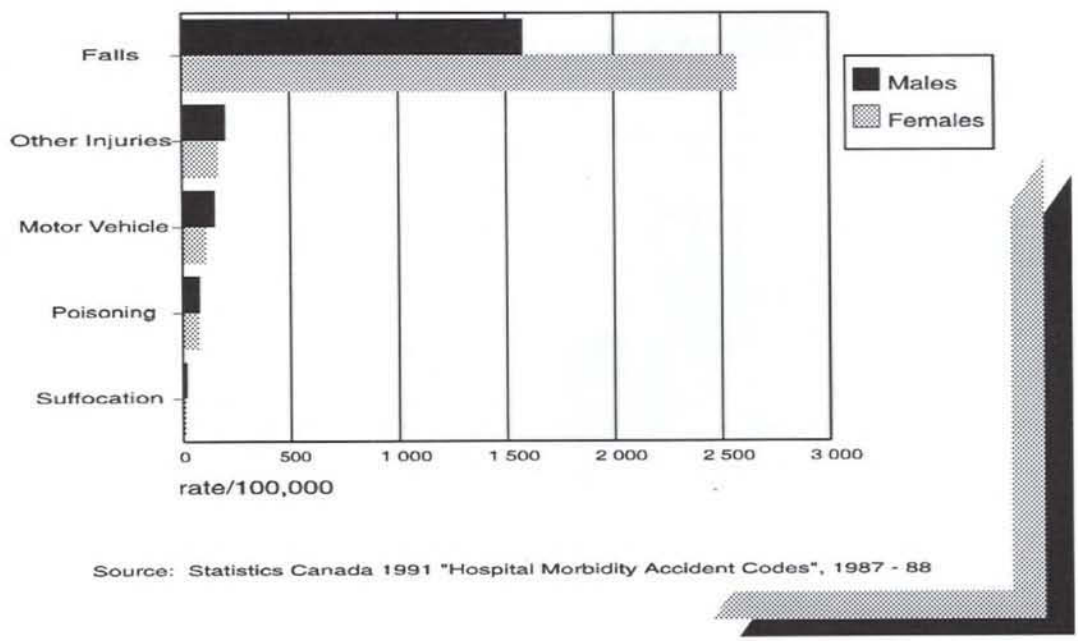
Source: Based on data from Statistics Canada, Health Reports, Supplement 1 V.3(1), Hospital Morbidity 1987-88.

poisoning and suffocation than are those in the younger age group. Table 6 shows that rates of separation for poisonings and suffocation are much higher for seniors than for the younger population. For poisonings, the rate for those 0 to 64 years of age was 36.6 in contrast to 96.7 for those 75 and over. The trend is the same for injury resulting from suffocation (5.4 and 26.5 for those 0 to 64 and 75 years and over respectively).

Data from the 1987 General Social Survey (GSS) point to the fact that accidents[6] occurring to people 65 years of age and over are more likely to result in injury than are those occurring to the younger population (Table 7). For people of all ages, 79% of all accidents resulted in some type of injury. The figure for seniors is 86%. It is important to note that for the entire population, 37% of all accidents required out-patient medical treatment and 8% resulted in an in-patient hospital stay.

Recovery time for all types of illness, including injuries, is slower for seniors in comparison to the younger population. This prolonged recovery time is illustrated in Table 8, which provides information on the average days stay per hospitalization for major categories of illness[7]. This list is not exhaustive but rather focuses on selected illness categories. The average hospital stay for seniors was much longer than for other age groups for non-intentional injuries. Some of this difference can be accounted for by reduced muscle mass of seniors (Waller, 1988), more severe fractures and bones that are slower to mend (Riley and Paddon, 1989). While the average time spent in hospital recovering from an injury was 6.1 days for persons aged 0 to 44 years, the figure jumps to 25.3 days for those 75 years of age and over. These figures are very close to those listed for all diagnoses. Based on the number of hospital separations and the average stay, it is estimated that 1,459,568 hospital days were used by seniors in the treatment of non-intentional injuries.

Figure 4 - Leading causes of accidental injury for people 65 years of age and over, Canada, 1987-88



Source: Statistics Canada 1991 "Hospital Morbidity Accident Codes", 1987 - 88

Differences by sex also emerge from the information on average number of days spent in hospital due to injuries. For the 45 to 64, the 65 to 74 and the 75 and over age groups, women on average account for a slightly larger number of hospital days than do their male counterparts. This again follows the trend for all diagnoses of illness (Table 8).

6. *Falls*

Falls are responsible for a large number of both injuries and deaths. In 1989, 1,994 people had a fall-related death (7.6 per 100,000) and the likelihood of dying from a fall-related injury escalates with age. The death rate increases from 1.6 for those 0 to 64 years to 12.0 for people aged 65 to 74 and peaks at 119.8 for those 75 years of age and over (Table 2). Regardless of age, differences in the rate by sex are small.

The rate of hospitalization for all age groups during the period 1987-88 was higher for falls than for motor vehicle (traffic) injuries. Table 6 shows that the rate for motor vehicle accidents stood at 156.3 in comparison to 452.0 for falls. Like death rates, fall-related injury rates increase with age as they jump from 272.8 for those aged 0 to 64 years to 958.6 for people 65-74 to a high of 3419.0 for those aged 75 years and over (Figure 5). For the population aged 0 to 64 years, the rate for injuries due to falls is higher for men than for women (323.2 versus 221.9 respectively). However, the reverse is true for seniors. For example, the rate for women aged 75 years and over stood at 4,040 in comparison to 2,386 for men of the same age. In a study conducted by Downton and Andrews (1991), it was observed that women were more likely to fall than were men and were also more likely to suffer injury, perhaps due to a greater incidence of osteoporosis among the female elderly population.

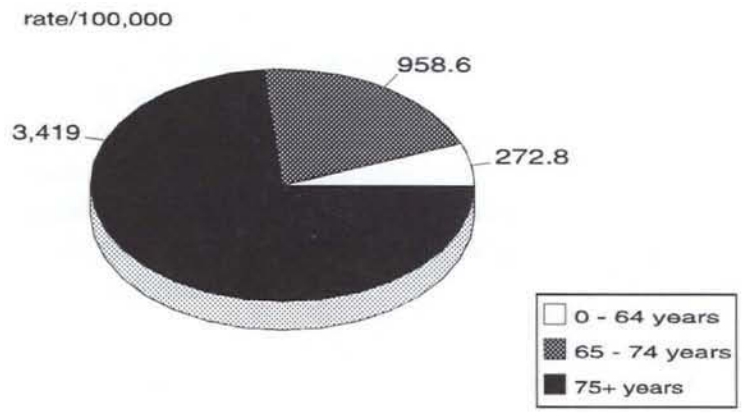
It is important to remember that the data on hospital separations represent cases that resulted in a hospital discharge. All cases treated at home, in a physician's office or in an emergency room are excluded. It is likely that the percentage of elderly fallers who are eventually admitted to hospital is small. It has been estimated that 2% of seniors who experience a fall are hospitalized (Josephson, Fabacher and Rubenstein, 1991). Surveys that have been conducted among the elderly residing outside of institutions have shown that 23.1% to 39.2% of this population had fallen on at least one occasion during the year in question (as cited in Ryynanen et al, 1991).

There are several physiological changes that may affect the older population and make them more susceptible to fall-related injury and death. Mobility can become increasingly difficult with age as the gait of an older person may change with the normal aging process and he/she can often have less balance than that of younger people. The reflexes of seniors may slow down, muscles often become weaker, while bones sometimes grow increasingly brittle and joints increasingly stiff. An alteration of the senses, most notably vision, hearing and memory, can also play a part in falls among older adults (Josephson et al, 1991).

It is likely that falls have a more negative emotional impact on seniors than on those aged 0 - 64 years. It has been stated that:

> "Fear of falling and the postfall syndrome have been reported to result in self-imposed functional limitations among home living and institutionalized elderly. Loss of confidence in the ability to ambulate safely can thus result in further functional decline, depression, feelings of helplessness, and social isolation for many older persons" (Josephson et al, 1991:709).

Figure 5 - Fall-related injury rates per 100,000 population by age group, Canada, 1987 - 88



Source: Statistics Canada 1991 "Hospital Morbidity Accident Codes", 1987 - 88

In addition, injuries, and in particular those stemming from falls, may result in reduced mobility, loss of independence and institutionalization.

7. *Seniors and Home Injuries*

According to the 1988 General Social Survey, the home accident rate for seniors was 34 per 1,000 population. Figure 6 shows that this rate is just slightly higher than that for Canada (33/1,000) while rates for this type of accident are highest for those aged 15 to 24 years (44/1,000). The risk of experiencing a home accident is not as great for seniors as for those aged 15 to 24.

However, the rate of activity-loss days[8] stemming from home injuries is much higher for elderly people. While the rate for those aged 15 to 24 stands at 352/1,000, the corresponding figure for people 65 and over is 775/1,000 (Table 9).

The 1991 Survey on Aging and Independence (SAI) showed that 160,111 seniors reported at least one home and surrounding area injury during the past 12 months. This represents 6% of older adults (5% of males and 7% of females) and can be compared to 4% of seniors having an injury away from home. According to the GSS, seniors were more likely to experience a home accident than any other type (including motor vehicle and traffic, work and sports related) and in fact, older adults were more likely than people in any other age group to report an accident in their home or surrounding area. Forty-five percent of all accidents reported by seniors took place in the home or surrounding area (Table 10) which can be compared to 8% for those 15-24, 13% for people aged 25-44 and 18% for the population 45-64 years of age. Studies have found that most falls resulting in death to seniors take place in the home (see Baker et al, 1984).

Figure 6 - Rates of home injuries per 1,000 population by age group, Canada, 1987

Source: Millar and Adams, 1991. pg. 72

While 5% of persons aged 65-69 had an injury of this type, the figure for those 80 years of age and over rose to 8% (Figure 7). The types of injuries sustained in the home vary. Almost one-quarter of home injuries to seniors result in bruises (Figure 8). A large percentage (20%) of people in this age group also suffer fractures.

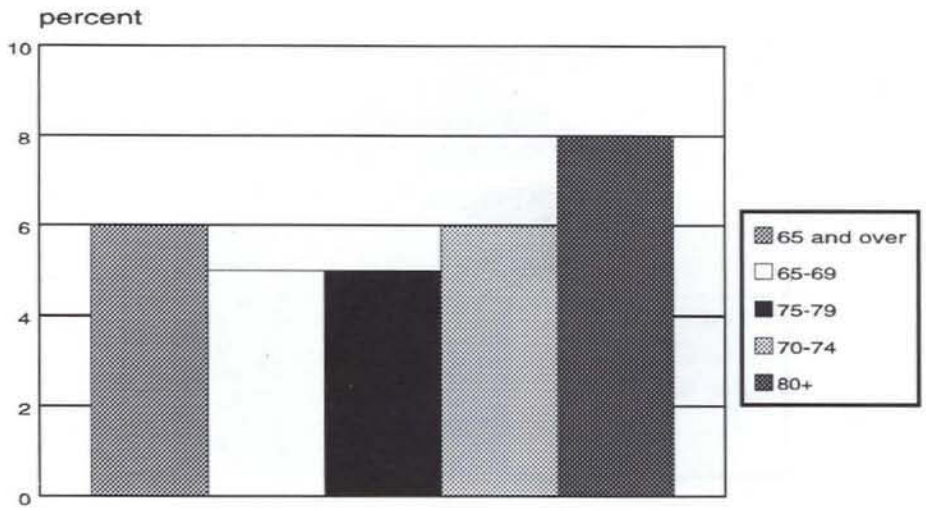
Additional findings from the SAI showed that over one-quarter (28%) of all home and surrounding area injuries reported by older adults were product or equipment related. For seniors, more incidents occurred in the kitchen than in any other room in the house (14%) and a significantly larger percentage of injuries of this type occurred indoors rather than outdoors. Injuries in and around the home were most likely to occur in the afternoon (Figure 9). According to the 1991 SAI, the majority of home accidents occurred during the summer months (34%). Seniors in rural areas were as likely as those in urban centres to report a home injury.

Finally, some differences existed according to income[9]. Four percent of seniors with an annual household income of less than $20,000 reported a home injury while the figure for older adults whose household income was $20,000 or more was 1%[10].

8. *Discussion and Conclusions*

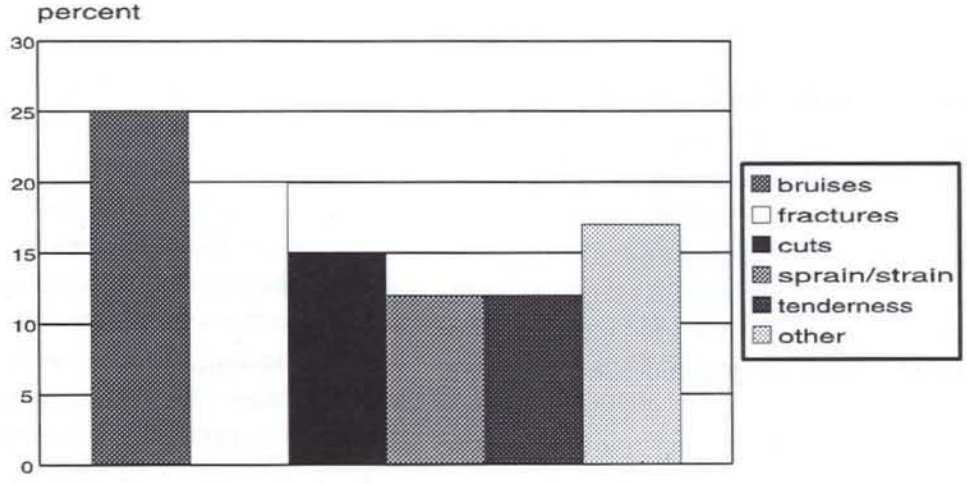
Thousands of Canadians annually either die or are hospitalized as a result of non-intentional injuries. Although people of all ages are at risk, injuries are of special concern to older adults as they can pose a threat to the senior's quality of life. Due to the reduced healing capacity that may accompany the aging process, the average hospital stay is longer for seniors. Injuries to older adults may also pose a threat to their independence and increase the likelihood of institutionalization.

Figure 7 - Older adults reporting a home injury by age group, Canada, 1991



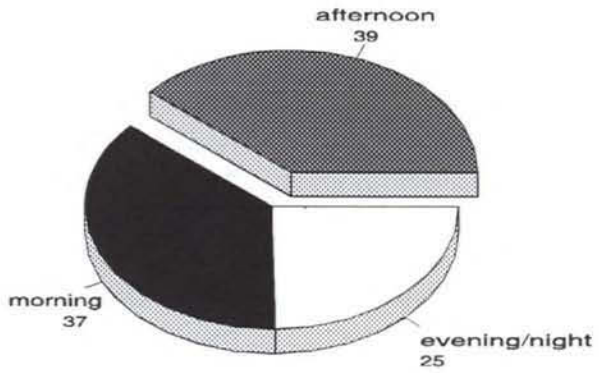
Source: Statistics Canada, 1991 Survey of Aging and Independence

Figure 8 - Injuries sustained from most recent home injury for people 65 years of age and over, Canada, 1991



Source: Statistics Canada, 1991 Survey of Aging and Independence
Note: percentages may not sum to 100 due to rounding

Figure 9 - Home injuries by time of occurence for people 65 years of age and over, Canada, 1991



Source: 1991 Survey of Aging and Independence.
Figures do not sum to 100% due to rounding

Canada's population is aging at a rapid rate and it has been projected that by the year 2021, approximately 1 in 5 persons will be 65 years of age or over (Statistics Canada, 1985). In the late 1980s, seniors comprised about 12% of the total population but accounted for approximately one-quarter of all accident-related deaths and hospital separations. In addition, older adults use almost 50% of all injury-related hospital days. As the Canadian population continues to age, without intervention, the number of non-intentional injuries and related deaths will continue to rise.

This has serious implications for those concerned with the treatment and prevention of injuries and injury-related deaths among older adults. For older women, 35% of all accidents were perceived by the victim as being preventable (General Social Survey 1988).

It is becoming increasingly important to develop strategies aimed at reducing the risk of non-intentional injury and related death among seniors. The majority of injuries reported by these people occur within their own homes and hence, the development of projects aimed at home injury prevention is of prime importance. A growing amount of information exists on what can be done to successfully modify seniors' home environment to better meet their needs. Examples include the provision of adequate lighting and the installation of functional handrails in hallways and grab bars in bathtubs (see Jacobs, 1981, Josephson et al, 1991, U.S. Consumer Product Safety Commission).

It is also of notable significance that over one-quarter of all home and surrounding area injuries suffered by seniors are product or equipment related. To reduce injuries and related deaths, attention must not only be paid to the environment but also to the products which causes injuries. Any action taken to make products safe for seniors will make them safe for the Canadian population at large. Safety built into products at the design and

manufacturing stages of product development is an effective means of preventing injuries associated with products. Much can be done by designers and manufacturers to make products safer with universal appeal. "Companies that serve the changing physical needs of an aging population with practical, aesthetically pleasing products will boom" (Dychtwald et al, 1989:326).

Not only will efforts in this direction save millions of dollars annually through the reduction of costs associated with the treatment of injuries, but the quality of life of this growing segment of the population will be improved.

9. Footnotes

[1] Unless otherwise indicated, figures in this report are for death and injury resulting from unintentional causes. Data for suicides, homicides, legal intervention and injuries undetermined, accidentally or purposely inflicted, are excluded.

[2] This figure includes both direct and indirect costs such as hospital care, medical care provided by physicians, nurses and other health professionals, drugs, research and other related areas. Value of lost productivity due to illness and disability and the value of future earnings lost due to death is also included.

[3] The reader is directed to Appendix II for a complete list of tables that are referred to throughout the text.

[4] Other injuries include the following: struck by falling objects, striking against or struck by objects or persons, caught in or between objects, caused by machinery, cutting, piercing instruments, explosion of pressure vessel, firearm missile, explosive material, hot substance or object, caustic or corrosive material and steam, electric currents, overexertion and strenuous movements and other environmental.

[5] A separation in this case represents the discharge of an inpatient. Frequency counts show individual cases separated, not persons separated. For the purposes of this report, the word "hospitalization" is often used as a substitute for "separation".

[6] In the GSS, an accident may or may not have resulted in personal injury (see Appendix I for further information).

[7] These figures include both non-intentional and intentional injuries (suicides, homicides, legal intervention and injuries undetermined, whether accidentally or purposely inflicted).

[8] If the respondent answered 'yes' to the following, an activity-loss day was noted: "As a result of the accident, did you find it difficult or impossible to carry out your main activity during the week of the accident for all or most of a day?".

[9] Respondents were asked to provide their best estimate of household income from all sources in 1990.

[10] Note: As mentioned earlier, almost 6% of seniors responding to the SAI reported a home injury in the 12 months preceding the survey. The income figures above sum up to 5% as some older adults with an injury either refused to state or did not know their income. These people are excluded from the figures.

Appendix I

Methodology and Data Sources

Methodology and Data Sources

i) The National Survey on Aging and Independence (SAI)

The SAI was conducted in September 1991 by Statistics Canada on behalf of a number of government departments[1]. The objective of this survey was to measure the factors that contribute to the quality of life and independence of today's and tomorrow's non-institutionalized Canadian seniors. In 90% of the cases, the questionnaire was administered by phone while the remaining respondents were interviewed face-to-face in their homes. The SAI was based on a sub-sample of approximately 25,000 persons aged 45 years and over who had been former respondents to the Labour Force Survey. Persons living in the Yukon, Northwest Territories, residents of Indian reserves, full-time members of the Canadian Armed Forces and inmates of institutions are excluded. The national level response rate was 81% with an attained sample of 20,076.

If the respondent was 65 years of age or over, he/she was asked the following question:

> Thinking about the past 12 months, were you injured in an accident around your home? We are looking for any injury that altered your routine for at least a day.

Respondents to the SAI were asked to provide information solely on their **most recent** home injury. Additional questions asked concerning home injuries can be found in Appendix III. Readers requiring further information are referred to the SAI microdata file documentation. A publication available from the Seniors Secretariat entitled "The Survey of Aging and Independence: An Overview Report" is also recommended as additional reference material.

ii) The General Social Survey

The third General Social Survey (GSS) was carried out in January and February 1988 and focused on personal risk resulting from accidents and criminal victimization. Areas covered included attitudes to various components of the justice system, awareness of victim services, perception of risk with regard to accidents and crime incidents, and information on the kind and number of times the respondent had been involved in an accident or a crime incident during 1987. In total 9,870 people age 15 and over were interviewed by telephone with a final response rate of 82%.

In the GSS, respondents were asked to give a record of **all** accidents that happened to them during 1987. Information was collected on 2,404 accidents and 3,808 crimes. These accidents had to have disrupted their normal activities for at least half a day **or** resulted in out of pocket expenses of $200 or more. As a result, these accidents **may or may not** have resulted in personal injury. For example, 79% of accident incidents reported in the GSS resulted in injury. Some of the accident related questions from the GSS can be found in Appendix IV. Those seeking more information are referred to the microdata file documentation for the 1988 General Social Survey and to the publication by Millar and Adams entitled Accidents in Canada.

iii) Canadian Centre for Health Information Data

This report draws widely on data published by the Canadian Centre for Health Information (CCHI). The mortality data are derived from vital statistics at Statistics Canada and are based on the underlying cause of death.

Morbidity data are based on information taken from the hospital separation forms from general

and allied special hospitals in Canada (excluding the Yukon and Northwest Territories). A separation takes place whenever an individual either is discharged or dies. The data represent a count of inpatient cases, discharged during the year in question. Hence, the morbidity figures reported by CCHI are a count of cases rather than a count of persons to whom the injuries occur. Only inpatient cases are recorded and consequently, cases treated in emergency rooms without formal admission are excluded as are cases treated in physician's offices. According to the 1988 General Social Survey, 45% of all accidents resulted in hospital care. Outpatient treatment was required for 37% of all accidents with the remaining 8% resulting in an over-night hospital stay.

iv) Age Specific Rates

The rates produced in this report are age and sex specific. An age-sex specific death rate is the number of deaths (or injuries) to males (or females) in a selected age group per 1,000 or 100,000 male (or female) population in that age group.

v) Information on E Codes

The E code system is used to classify external causes of injuries and injury-related deaths. This classification system is based on information from the International Classification of Diseases (ICD), World Health Organization. **Unless otherwise indicated**, for the purposes of this report, the following E codes have been excluded from calculations contained in this report:

E950-959 Suicide and self-inflicted injury
E960-969 Homicide and injury purposely inflicted by other persons
E970-978 Legal intervention
E980-989 Injury undetermined, accidentally or purposely inflicted

Footnote

[1] Health and Welfare Canada, the Seniors Secretariat, Fitness and Amateur Sport, Consumer and Corporate Affairs Canada, Canada Mortgage and Housing Corporation, Veterans Affairs Canada, the Department of the Secretary of State and Communications Canada.

Appendix II

Tables

Notes: This note refers to Tables 2 and 3.

1. Figures in brackets refer to the external causes of injury and poisoning classification number (E code numbers) that have been included in the calculations. Additional information on the E code system and on which codes were excluded from calculations for this report are found in Appendix I.

2. Motor vehicle non-traffic injury-related deaths include those involving motor-driven snow vehicles, off-road motor vehicles, collisions with pedestrians and stationary objects etc.

3. Environmental injury-related deaths include those due to natural and environmental factors. These are due to excessive heat and cold, high and low air pressure, hunger, thirst, exposure and neglect, toxic reactions, animal injuries, lightning and cataclysmic earth movements and eruptions.

4. Other injuries are comprised of the following:
-struck by falling object
-striking against or struck by objects or persons
-caught in or between objects
-caused by machinery
-cutting, piercing instruments
-explosion of pressure vessel
-firearm missile
-explosive material
-hot substance or object, caustic or corrosive material and steam
-electric current
-overexertion and strenuous movements
-other environmental causes

Notes: This note refers to Tables 5 and 6.

1. Figures in brackets refer to the external causes of injury and poisoning classification number (E code numbers) that have been included in the calculations. Additional information on the E code system and on which codes were excluded from calculations for this report are found in Appendix I.

2. Motor vehicle non-traffic injuries include those involving motor-driven snow vehicles, off-road motor vehicles, collisions with pedestrians and stationary objects etc.

3. Environmental injuries include those due to natural and environmental factors. These are due to excessive heat and cold, high and low air pressure, hunger, thirst, exposure and neglect, toxic reactions, animal injuries, lightning and cataclysmic earth movements and eruptions.

4. Other injuries are comprised of the following:
-struck by falling object
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-caught in or between objects
-caused by machinery
-cutting, piercing instruments
-explosion of pressure vessel
-firearm missile
-explosive material
-hot substance or object, caustic or corrosive material and steam
-electric current
-overexertion and strenuous movements
-other environmental causes

Table 1 - Leading causes of death by age and sex, Canada, 1989

CAUSE		AGE GROUP 0-44	45-64	65+	TOTAL
circulatory system	m	1047	8070	31542	40659
	f	442	2963	33599	37004
	t	1489	11033	65141	77663
neoplasms	m	1224	8163	19286	28673
	f	1429	6389	15486	23304
	t	2653	14552	34772	51977
respiratory system	m	241	882	8120	9243
	f	195	584	6135	6914
	t	436	1466	14255	16157
external causes of injury and poisoning (accidents)	m	3660	1119	1480	6259
	f	1210	429	1537	3176
	t	4870	1548	3017	9435
digestive system	m	258	1133	2393	3784
	f	131	499	2724	3354
	t	389	1632	5117	7138
endocrine, nutritional and metabolic	m	138	519	1683	2340
	f	127	306	2287	2720
	t	265	825	3970	5060
nervous system and sense organs	m	301	326	1675	2302
	f	209	259	1932	2400
	t	510	585	3607	4702

Source: Statistics Canada 1991. Health Reports Supplement 11 3(1). Cause of Death

Table 2 - Injury-related death rates for selected causes by age and sex, Canada 1989

per 100,000 population CAUSE		AGE GROUP 0- 64	65 - 74	75+	TOTAL
Motor Vehicle	m	21.7	24.6	41.4	22.5
(Traffic)	f	9.0	15.3	13.4	9.7
(E810 - 819)	t	15.4	19.4	23.9	16.1
Motor Vehicle	m	1.0	0.6	1.3	1.0
(Non-traffic)	f	0.1	0.2	0.3	0.1
(E820 - 825) *2	t	0.6	0.4	0.7	0.6
Poisoning	m	2.8	2.6	2.2	2.8
(E850 - 869)	f	1.2	1.6	1.6	1.2
	t	2.0	2.1	1.9	2.0
Falls	m	2.4	17.7	118.5	7.4
(E880 - 888)	f	0.6	7.4	120.5	7.8
	t	1.6	12.0	119.8	7.6
Fire	m	1.9	3.4	8.5	2.2
(E890 - 899)	f	0.8	1.6	3.6	1.0
	t	1.3	2.4	5.5	1.6
Environmental	m	0.7	1.1	4.7	0.9
(E900 - 909) *3	f	0.2	0.7	2.0	0.3
	t	0.4	0.9	3.0	0.6
Drowning	m	2.3	2.1	3.8	2.3
(E910)	f	0.6	1.0	0.9	0.6
	t	0.4	1.5	2.0	1.5
Suffocation	m	1.4	4.3	13.0	2.0
(E911 - 913)	f	0.6	1.8	9.0	1.1
	t	1.0	2.9	10.5	1.6
Other Injuries	m	3.7	5.3	5.8	3.9
(E916 - 928) *4	f	0.4	0.2	3.6	0.5
	t	2.1	2.5	4.5	2.2
All Non-Intentional	m	40.9	67.1	212.6	48.4
Injury-Related	f	14.2	32.1	164.6	23.9
Deaths	t	27.6	47.7	182.6	36.0

Source: Statistics Canada 1991 Health Reports - Cause of Death Supplement 11 3 (1)

* Please see Notes at beginning of Appendix II

Table 3 - Number of injury-related deaths by selected causes, age and sex, Canada, 1989

CAUSE		AGE GROUP 0- 64	65 - 74	75+	TOTAL
Motor Vehicle (Traffic) (E810 - 819)	m	2533	196	184	2914
	f	1046	151	99	1296
	t	3579	347	283	4210
Motor Vehicle (Non-traffic) (E820 - 825)	m	115	5	6	126
	f	15	2	2	19
	t	130	7	8	145
Poisoning (E850 - 869)	m	331	21	10	362
	f	133	16	12	161
	t	464	37	22	523
Falls (E880 - 888)	m	286	141	527	954
	f	74	73	893	1040
	t	360	214	1420	1994
Fire (E890 - 899)	m	223	27	38	288
	f	88	16	27	131
	t	311	43	65	419
Environmental (E900 - 909)	m	81	9	21	111
	f	21	7	15	43
	t	102	16	36	154
Drowning (E910)	m	267	17	17	301
	f	67	10	7	84
	t	334	27	24	385
Suffocation (E911 - 913)	m	168	34	58	260
	f	67	18	67	152
	t	235	52	125	412
Other Injuries (E916 - 928)	m	438	42	26	507
	f	41	2	27	70
	t	479	44	53	577
All Non-Intentional Injury-Related Deaths	m	4779	535	945	6259
	f	1639	317	1220	3176
	t	6418	852	2165	9435

Source: Statistics Canada 1991. Health Reports Supplement 11 3(1) Causes of Death 1989

*Please see Notes at beginning of Appendix II

Table 4 - Leading causes of hospital separation by age and sex, Canada, 1987-88

CAUSE		AGE GROUP 0-44	45-64	65+	TOTAL
complications of	m	0	0	0	0
pregnancy, childbirth,	f	511972	297	0	512269
puerperium	t	511972	297	0	512269
circulatory	m	24674	91539	125780	241993
system	f	17881	46738	126743	191362
	t	42555	138277	252523	433355
digestive system	m	94923	61253	56528	212704
	f	95136	50664	60657	206457
	t	190059	111917	117185	419161
respiratory system	m	134653	23929	50015	208597
	f	110666	21192	39697	171555
	t	245319	45121	89712	380152
external causes of	m	110617	26081	23225	159923
injury and poisoning	f	52810	20145	44110	117065
	t	163427	46226	67335	276988
neoplasms	m	14035	37357	63364	114756
	f	35958	48710	52067	136735
	t	49993	86067	115431	251491
nervous system	m	31983	16992	30072	79047
and sense organs	f	30780	18182	47234	96196
	t	62763	35174	77306	175243

Source: Statistics Canada 1990. Health Reports Supplement 2 (2). Hospital Morbidity 1987-88

Table 5 - Number of accidental injuries by selected causes, age and sex, Canada, 1987 - 88

CAUSE		AGE GROUP 0- 64	65 - 74	75+	TOTAL
Motor Vehicle	m	23,872	1,036	681	25,589
(Traffic)	f	12,403	1,228	821	14,452
(E810 - 819)	t	36,275	2,264	1,502	40,041
Motor Vehicle	m	4,452	95	80	4,627
(Non-traffic) (1)	f	1,109	58	75	1,242
(E820 - 825)	t	5,561	153	155	5,869
Poisoning	m	4,513	438	421	5,372
(E850 - 869)	f	3,834	487	631	4,952
	t	8,347	925	1,052	10,324
Falls	m	37,068	5,912	9,752	52,732
(E880 - 888)	f	25,208	10,429	27,450	63,087
	t	62,276	16,341	37,202	115,819
Fire	m	1,304	71	71	1,445
(E890 - 899)	f	475	40	52	567
	t	1,779	110	123	2,012
Environmental (2)	m	2,275	189	113	2,577
(E900 - 909)	f	1,261	101	118	1,480
	t	3,536	290	231	4,057
Drowning	m	313	14	10	337
(E910)	f	163	5	4	172
	t	476	19	14	509
Suffocation	m	717	83	125	925
(E911 - 913)	f	524	69	163	756
	t	1,241	152	288	1,681
Other Injuries	m	43,241	1,363	913	45,517
(E916 - 928)	f	11,985	1,099	1,439	14,523
	t	55,226	2,462	2,352	60,040
All Non-Intentional	m	136,698	11,580	11,645	159,923
Injury-Related	f	72,955	15,234	28,876	117,065
Deaths	t	209,653	26,814	40,521	276,988

Source: Statistics Canada 1991, "Hospital Morbidity Accident Codes" 1987 - 1988

( )Please see Notes at beginning of Appendix II

Table 6 - Injury-related hospitalization rates for selected causes by age and sex, Canada, 1987 - 88

per 100,000 population CAUSE		AGE GROUP 0- 64	65 - 74	75+	TOTAL
Motor Vehicle (Traffic) (E810 - 819)	m	208.1	135.9	166.6	223.1
	f	109.2	130.3	87.1	111.3
	t	158.9	132.8	138.0	156.3
Motor Vehicle (Non-traffic) (E820 - 825) (2)	m	38.8	12.5	19.6	36.6
	f	9.8	6.2	11.0	9.6
	t	24.4	9.0	14.3	22.9
Poisoning (E850 - 869)	m	39.3	57.5	103.0	42.5
	f	33.7	51.7	92.9	38.1
	t	36.6	54.3	96.7	40.3
Falls (E880 - 888)	m	323.2	775.4	2386.1	417.2
	f	221.9	1106.9	4040.3	485.9
	t	272.8	958.6	3419.0	452.0
Fire (E890 - 899)	m	11.4	9.2	17.4	11.4
	f	4.2	4.2	7.7	4.4
	t	7.8	6.5	11.3	7.9
Environmental (E900 - 909) (3)	m	19.8	24.8	27.7	20.4
	f	11.1	10.7	17.4	11.4
	t	15.5	17.0	21.2	15.8
Drowning (E910)	m	2.7	1.8	2.4	2.6
	f	1.4	0.5	0.6	1.3
	t	2.1	1.1	1.2	2.0
Suffocation (E911 - 913)	m	6.3	10.9	30.6	7.3
	f	4.6	7.3	24.0	5.8
	t	5.4	8.9	26.5	6.6
Other Injuries (E916 - 928) (4)	m	377.0	178.8	223.4	360.1
	f	105.5	116.6	211.8	111.9
	t	241.9	144.4	216.2	234.3
All Non-Intentional Injuries	m	1191.8	1518.9	2849.3	1265.0
	f	642.1	1616.9	4250.2	901.6
	t	918.2	1573.0	3724.0	1080.9

Source: Statistics Canada 1991, "Hospital Morbidity Accident Codes" 1987 - 1988

( )Please see Notes at beginning of Appendix II

Table 7 - Number of accidents by whether the accident resulted in injury by age group, Canada, 1987

(numbers in thousands)	total accidents		number with injuries		no injury		not stated	
	No.	%	No.	%	No.	%	No.	%
All age groups	5127	100	4044	79	1032	20	—	—
15-24	2170	100	1728	80	410	19	—	—
25-44	2150	100	1681	78	454	21	—	—
45-64	603	100	459	76	141	23	—	—
65+	204	100	176	86	—	—	—	—

Note: — amount too small to be expressed.
Source: Millar, W. and O. Adams, 1991. pg. 42

Table 8 - Average days per separation by selected types of separation, sex and age group, Canada, 1988-89

CAUSE		AGE GROUP 0-44	45-64	65-74	75+	TOTAL
external causes of injury and poisoning	m	6.4	10.7	14.9	21.0	8.8
	f	5.7	10.9	17.1	27.1	12.9
	t	6.1	10.8	16.2	25.3	10.6
diseases of the circulatory system	m	7.8	11.0	16.6	27.5	16.3
	f	9.3	12.1	19.5	39.5	24.9
	t	8.5	11.4	17.8	34.2	20.1
neoplasms	m	11.5	14.4	15.5	19.5	15.7
	f	8.2	12.4	17.0	25.3	14.6
	t	9.2	13.3	16.2	22.1	15.1
diseases of the respiratory system	m	3.5	10.8	15.9	23.3	8.5
	f	3.5	9.7	16.0	26.5	8.8
	t	3.5	10.3	15.9	24.8	8.7
diseases of the digestive system	m	4.8	7.3	9.6	12.0	7.1
	f	5.5	8.2	10.2	14.1	8.2
	t	5.2	7.7	9.9	13.2	7.6
diseases of the nervous system and sense organs	m	13.0	22.3	24.6	35.1	21.7
	f	11.6	25.5	20.3	30.4	21.5
	t	12.3	24.0	22.1	32.0	21.6
mental disorders	m	17.8	26.8	50.7	85.4	29.3
	f	18.9	24.8	40.9	110.0	34.7
	t	18.3	25.7	45.0	100.7	32.3
diseases of the musculo-skeletal system and connective tissue	m	5.9	8.8	14.1	23.2	9.2
	f	6.5	10.2	16.6	32.0	13.7
	t	6.2	9.5	15.7	29.3	11.6
TOTAL - all diagnoses	m	6.7	11.2	15.5	24.5	12.1
	f	5.5	11.5	17.1	32.9	11.8
	t	5.9	11.3	16.3	29.2	11.9

Source: Statistics Canada 1991. Hospital Morbidity 1988-89. Health Reports supplement 1 3(1).

Note: Figures for external causes of injuries and poisoning include data for both intentional and unintentional injury

Table 9 - Number of activity-loss days and rate per 1,000 population attributed to home accidents by age group, Canada, 1987.

	number	rate (1)
All age groups	7098	352
15-24	1270	312
25-44	2200	259
45-64	1575	317
65+	2053	775

Notes:
(1) For a small number of incidents, the number of days is not known, however, the total population has been included in the calculation of rates

Source: Millar, W. and O. Adams, 1991. pg. 73

Table 10 - Proportion of accident incidents by type of accident, sex and age group, Canada, 1987

sex and age group	total accidents	motor vehicle/ traffic	work related	sports related	home and surroundings	unclassified
both sexes	%	%	%	%	%	%
all ages	100	33	21	23	13	10
15-24	100	36	13	34	8	10
25-44	100	32	29	18	13	7
45-64	100	34	23	--	18	16
65+	100	--	--	--	45	--
males						
all ages	100	35	25	25	8	8
15-24	100	38	15	33	--	8
25-44	100	31	34	21	7	6
45-64	100	37	33	--	--	--
65+	--	--	--	--	--	--
females						
all ages	100	31	14	20	21	14
15-24	100	31	--	34	12	13
25-44	100	34	21	14	23	--
45-64	100	31	--	--	--	--
65+	100	--	--	--	--	--

Source: Millar, W. and O. Adams, 1991. pg. 21
Note: -- amount too small to be expressed

Appendix III

Home injury questions from the
Survey of Aging and Independence

H.15 Many new products available today contribute to an independent life. The next questions are on some electronic devices that you may have in your home.

Do you own or use a ...			In the next year, do you intend to acquire this? Yes	No
1.Microwave oven?				
01	○	Yes		
02	○	no..... ▶	04○	05○
03	○	Don't know		
2.Cable TV?				
06	○	Yes		
07	○	No..... ▶	10○	11○
08	○	Not available		
09	○	Don't know		
3. Pay TV?				
12	○	Yes		
13	○	No..... ▶	16○	17○
14	○	Not available		
15	○	Don't know		
4. VCR?				
18	○	Yes		
19	○	No..... ▶	21○	22○
20	○	Don't know		
5.Computer?				
23	○	Yes		
24	○	No..... ▶	26○	27○
25	○	Don't know		
6. Satellite dish?				
28	○	Yes		
29	○	No..... ▶	31○	32○
30	○	Don't know		

Accident and Safety

H.16 Interviewer check item:

1. ○ *If respondent is 65 years or over, (see A.3 & A4)* ▶ *Go to H.17*

2 ○ *Otherwise* ▶ *Go to SECTION J (page 17)*

I am now going to ask you some questions about safety in and around your home.

H.17 Thinking about the past twelve months, were you injured in an accident around your home? We are looking for an injury that altered your routine for at least a day.

3 ○ Yes

4 ○ No ▶ *Go to H.25*

H.18 Thinking about the most recent accident, what injuries did you have? *(Mark all that apply)*

01 ○ Cut
02 ○ Bruises
03 ○ Dislocations
04 ○ Fractures
05 ○ Spain/Strain
06 ○ Choking/Suffocation
07 ○ Swelling
08 ○ Burns
09 ○ Scalds
10 ○ Poisoning
11 ○ Concussion
12 ○ Tenderness

H.19 Where did the accident happen?

13 ○ Kitchen
14 ○ Basement stairs
15 ○ Basement
16 ○ Driveway
17 ○ Frontyard
18 ○ Backyard
19 ○ Path or sidewalk
20 ○ Stairs
21 ○ Living room
22 ○ Dining room
23 ○ Bathroom
24 ○ Bedroom
25 ○ Hallway
26 ○ Entrance way
27 ○ Other

H.20 Did any equipment or product contribute to the accident?

1 ○ Yes

2 ○ No ▶ *Go to H.22*

H.21 What was it?

3 ○ Kitchen equipment
4 ○ Bathroom fixtures
5 ○ Chemicals
6 ○ Electrical equipment
7 ○ Carpet or stairs
8 ○ Other

H.22 What time of day did the accident happen?...

1 ○ Morning
2 ○ Afternoon
3 ○ Evening
4 ○ During the night

H.23 Did you get treatment from a health care professional, such as a doctor, or did you treat the injury yourself?

5 ○ Health care professional
6 ○ Self
7 ○ Both

H.24 Did this accident happen in the ...

1 ○ Fall?
2 ○ Winter?
3 ○ Spring?
4 ○ Summer?

H.25 In the past twelve months, were you injured in an accident away from your home (excluding automobile accident)? We are looking for an injury that altered your routine for at least a day.

5. ○ *Yes*

6. ○ *No* ▶ *Go to SECTION J (next page)*

H.26 Thinking about the most recent accident, what injuries did you have? *(Mark all that apply)*

01 ○ Cuts
02 ○ Bruises
03 ○ Dislocations
04 ○ Fractures
05 ○ Sprain/Strain
06 ○ Choking/Suffocation
07 ○ Swelling
08 ○ Burns
09 ○ Scalds
10 ○ Poisoning
11 ○ Concussion
12 ○ Tenderness

H.27 What time of the day did the accident happen?...

1 ○ Morning
2 ○ Afternoon
3 ○ Evening
4 ○ During the night

H.28 Did you get treatment from a health care professional, such as a doctor, or did you treat the injury yourself?

5 ○ Health care professional
6 ○ Self
7 ○ Both

H.29 Did this accident happen in the ...

1 ○ Fall?
2 ○ Winter?
3 ○ Spring?
4 ○ Summer?

Appendix IV

Accident/Injury questions from the
1988 General Social Survey

Accident/Injury questions from the

1988 General Social Survey

C5. (Other than any accidents already mentioned), during 1987 did you:
a) Have a fall which resulted in an injury?
b) Suffer burns, smoke inhalation or other fire-related accidents
c) Suffer from poisoning by any substances or liquids, including drugs?
d) Cut yourself seriously with a knife, broken glass or other object?
e) Have other accidents which involved an injury to you?

C11. In order to determine your longer term exposure to accidents, the next four questions ask about the type of accidents you have had during the last three years, that is, during the period since January 1985.
d) How many other accidents did you have during the last three years, such as those involving falls, burns, poisons, cuts etc.?

The following questions were asked about all accidents that occurred during 1987:

F2. In what month did this accident happen?

F3. About what time of the day did it happen?
8 a.m. - 12 noon
12 noon - 6 p.m.
don't know
6 p.m. - 12 midnight
12 midnight - 8 a.m.
don't know

F6. Did this incident take place in a city, town, village or a rural area?
City
Town
Village
Rural area

F15. Where did this accident take place? For example, was it at home, on a street or at school? (mark all that apply)

Inside respondent's own home/apartment
Inside garage or other building on respondent's property
Outside respondent's home, including yard, driveway or in shared areas related to home such asapartment hallway or laundry room.
In parking lot of respondent's home/apartment

On sidewalk/street/highway in respondent's neighbourhood

F16. Did this accident result in any injury to you?

F17. What type of injury? Was it... (mark all that apply)
Broken or fractured bone(s)?
Burn or scald?
Dislocation, sprain, strain or bruise?
Cut or scrape?
Loss of consciousness?
Poisoning by substance or liquid?
Internal injury?

F18. Where were you injured? Was it your... (mark all that apply)
Eyes?
Head or neck (excluding eyes)?
Arms or hands?
Legs or feet?
Back or spine?
Trunk (excluding back or spine)

10. Bibliography

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