NON-NATURAL DEATHS IN NEWFOUNDLAND AND LABRADOR 1951 - 1986: MANNER OF DEATH, TEMPORAL AND GEOGRAPHIC RATE VARIATION AND RISK FACTORS

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DAVID F. CRAIG

NON-NATURAL DEATHS IN NEWFOUNDLAND AND LABRADOR 1951 - 1985: MANNER OF DEATH, TEMPORAL AND GEOGRAPHIC RATE VARIATION AND RISK FACTORS

by

David F. Craig

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in partial fulfilment of the
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Abstract

The reported rates of suicide, homicide and traffic accident fatalities in Newfoundland and Labrador have consistently been lower than those in Canada as a whole. Whether the differences in these rates reflect different reporting practices or true differences in the rates of these manners of death has been in some dispute, particularly in the case of suicide. This issue is addressed by developing operational definitions for natural and non-natural deaths and for each manner of non-natural death. The registrations of all non-natural deaths occurring in Newfoundland and Labrador during every fifth year from 1951 - 1986 are reviewed and the operational definitions used to select the non-natural deaths and assign a manner of death to each of them. The numbers and rates of each manner of non-natural death thus determined are compared with those recorded by staff of the Registry of Births, Marriages and Deaths and with Statistics Canada figures. Factors determining which non-natural deaths were registered by non-physicians are briefly reviewed as are the risk factors for each manner of non-natural death.

There is agreement between the manners of death assigned by Vital Statistics personnel and those assigned in this study at at least a "probable" level of confidence in 89.9% of deaths studied and at the "almost undoubted" level

of confidence in 62.6% of deaths studied and disagreement in 3.8 % of deaths studied. Suicides appear under-reported by approximately 20% in Statistics Canada figures; 6% are reported as "unknown" or "undetermined" deaths, 9% are reported as due to other manners of death, chiefly non-traffic accidents and 5% are reported as suicides on death records but do not appear as such in Statistics Canada figures.

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Chapter I - Introduction

Newfoundland's published suicide rates have traditionally been approximately half the Canadian rates (table 1 of appendix A). While these rates have been challenged[1-4], most authors found they remain low even when counting errors are corrected for[1] and when a proportion of "undetermined" deaths are reclassified as suicides[2,3]. However, the authors assumed that all deaths recorded as accidents were true accidents[1-3], an assumption which is questionable in view of the widely recognized under-reporting of suicide[5-13], the abrupt rise in the reported rates of suicide after the present Chief Forensic Pathologist of Newfoundland assumed office in 1986 and began tightening procedures for reporting and investigating "notifiable" deaths[14] and the finding of Aldridge and St. John that only 36 of 63 teenage suicides in Newfoundland were correctly identified as such on death certificates[4].

Comparison of published figures (tables 2 - 6 of appendix A) shows differences in other manners of non-natural deaths which are lower in Newfoundland than in Canada. Newfoundland's rates of motor vehicle accident fatalities (table 2 of appendix A), homicides (table 3 of appendix A) and non-natural deaths as a whole (table 6 of appendix A) have generally been lower than Canadian rates while rates of non-traffic accident fatalities (table 4 of

appendix A) and "undetermined" deaths (table 5 of appendix A) have been similar for Newfoundland and Canada. Many factors have undoubtedly contributed to these differences and the matter warrants further investigation.

The intent of this thesis is: 1) to assess the validity of the reported rates of non-traffic accidental death, traffic accidental death, suicide and homicide in Newfoundland and Labrador from 1951 - 1986, 2) to assess the extent of the investigation of non-natural deaths in Newfoundland and Labrador and 3) to determine the risk factors for each of these manners of non-natural death.

Chapter II - Literature Review: Epidemiology of Non-Natural Deaths

2.1 Introduction

This literature review will begin by briefly introducing the disease concept of injury and how sudden deaths are registered and investigated in Canada. It will then discuss potential sources of error in determining the rates of non-natural manners of death. Next the rates of non-natural death, non-traffic and traffic accidental death, suicide and, homicide and "undetermined" death in Newfoundland and Labrador will be compared with the corresponding Canadian rates. Finally international rates of accidental death, suicide and homicide and risk factors for several manners of non-natural death will be discussed.

2.2 Disease Concept of Injury

In ancient times disease and death were thought to be random events occurring at the will of God over which human beings had no control. With the classical epidemiological studies, however, came the realization that diseases and deaths have definite risk factors, many of which can be modified by changing human behaviour, the environment, or both.

Similarly, until recently, fatal and non-fatal injuries were simply accepted as a cost of modern day living[15]. However, the publishing of reports such as the 1985 report

"Injury in America", led to the concept of injury as a result of interactions between a host, an agent, and the environment[15]. "Injury ... results from the acute, rapid exposure to energy ... or from the absence of specific body needs such as oxygen or heat. The dose, distribution, and duration of the energy, the rapidity with which it is received and the host's response to it determine the occurrence or non-occurrence and severity of the injury received"[15].

2.3 Registration and Investigation of Sudden Death

In Canada, the registration and certification of death are provincial responsibilities. Procedures for doing this vary slightly from province to province[8]. According to the Summary Proceedings Act of Newfoundland (1979)[16], deaths occurring or suspected of occurring "... as a result of violence, misadventure, negligence, misconduct, malpractice or by unfair means, ... in prison or having apparently committed suicide" require judicial inquiry and investigation as do sudden or unexpected deaths and deaths for which the deceased was not under the care of a physician unless a physician certifies in writing that the deceased died solely from natural causes. Other provinces have similar laws.

Under the Coroner's system, in effect in 8 provinces, the coroner is responsible for determining the cause, or

mechanism, of death and the manner, or legal context, of death and has the authority to conduct investigations and hold inquests[8]. The qualifications of coroners vary considerably from province to province with only Ontario requiring that the coroner be a physician[8]. The Medical Examiner's system, used in Alberta and Nova Scotia, requires that medical examiners be physicians and places responsibility for the medical aspects of the investigation of sudden deaths in the hands of the medical examiners and the legal aspects in the hands of provincial judges[8]. The Judicial system, in use in Newfoundland, places responsibility for the investigation of death under the authority of provincial judges[8].

2.4 From Death to Statistics: Potential Errors on the Way

The route from individual deaths to national statistics about rates of each cause and manner of death is fraught with possible errors. While registration of death is virtually complete in most western countries[17-19], the accuracy with which the causes of death are registered is questionable in many cases. While the substantial majority of non-natural deaths are notifiable deaths, procedures for investigating and reporting these deaths may have varied substantially over time and from place to place. Many non-natural deaths are not autopsied and necropsy series have consistently shown major differences between clinical

suspicions and pathological findings in a substantial proportion of autopsied deaths[17,20]. A number of clinical or autopsy findings may not have been entered on the death certificates or may have been entered incorrectly[17,20,21]. Coroners and other physicians and officials have varying degrees of reluctance to certify a death as suicide[5,6,8-13,15,22] and may well have varying propensities to certify other causes and manners of death as well[21]. Vital statistics staff are not normally medically qualified and may err in the coding of underlying causes or manners of death[17,18]. A number of deaths may be registered more than once. Finally, other clerical errors can occur at many stages[17,18].

Fishing related deaths are under-reported in death statistics because many bodies are not recovered, with the result that death certificates are not issued[23]. In one study the addition of missing and presumed drowned persons increased the numbers and rates of fishing related deaths by 48%[23].

Varying degrees of reluctance to assign a verdict of suicide among coroners appear due to concerns about the shame, guilt and embarrassment attendant with the verdict of suicide, concerns about the effects of the verdict on the emotional states of the surviving families, and the religious and insurance consequences of the verdict[8,10,11]. Other sources of under-reporting include concealment of

evidence of suicide by relatives for fear of social or religious disapproval[10], dissimulation by police, physicians or public officials[11] and variations in the diligence with which evidence of suicide is sought[10,11]. Spelman[6] cites the lack of generally accepted standards for determining death by suicide as another factor. Efforts to standardize criteria such as the Operational Criteria for the Determination of Suicide of the International Association of Coroners and Medical Examiners[7] should eventually alleviate this problem.

The extent to which differences between reported suicide rates in different countries reflect differences in true suicide rates remains controversial. Jurisdictions and individuals taking a legalistic approach and where verdicts are public, such as the United Kingdom, tend to require direct evidence of suicidal intent and to rule deaths "undetermined" or "accidental" unless suicide can be proven beyond a reasonable doubt[8]. Jurisdictions such as Denmark, which take a medical approach to suicide and keep the verdict private tend to accept inferential evidence of suicidal intent and to take a "balance of probabilities" approach to the diagnosis. Ovenstone[13] demonstrated that adopting a medical approach to suicide increased the reported rate of suicide in Edinburgh by 32% while McCarthy and Walsh[9] demonstrated a 2 to 4-fold increase in the Irish

suicide rate when the medical approach to the diagnosis is taken. Virtually all of Ovenstone's additional suicides came from officially "undetermined" deaths[13] while McCarthy and Walsh[9] found several suicides among official accidents.

Liberakis[1] shows that the Statistics Canada reports of the rate of suicide in Newfoundland and Labrador may be less than completely reliable. He found 13 unequivocally declared suicides in 1969 death certificates of which Statistics Canada reported only 6. Malla and Hoenig[3] examined the death certificates of all 103 declared suicides in Newfoundland for the years 1974 through 1978 and the forensic pathologist's records of 104 additional "undetermined" deaths and found an additional 14 unequivocal suicides and 58 undetermined and uninvestigated deaths. Aldridge and St. John[4] reviewed the records of all deaths of 10 to 19 year olds examined by pathologists in Newfoundland between 1977 and 1988 and found 63 suicides of which only 36 were recorded as suicides on the death certificates. A major flaw in both Malla and Hoenig's report[3], and that of Liberakis[1] is their assumption that no suicides were misreported as accidental deaths. The low rate of reported suicide in Newfoundland may simply reflect a tradition of reporting a substantial fraction of suicides as accidental deaths.

In summary, although Newfoundland's suicide rates are

probably low and appear to have risen later than those of Canada as a whole, there is evidence that Statistics Canada figures may not be the same as those obtained by counting the number of suicides recorded on death certificates, that suicide may well be under-reported on death certificates and that recent increases in the rate of reported suicides may at least partly reflect improvements in the investigation and reporting of sudden death in Newfoundland.

2.5 Non-Natural Death Rates

According to Statistics Canada figures, non-natural death rates in Newfoundland and Labrador and Canada followed similar trends from 1951 to 1986 (figure 1) increasing slightly between the 1950's and early 1970's and then decreasing from the early 1970's to the mid 1980's. The rates of non-natural deaths in Newfoundland and Labrador averaged approximately two thirds Canadian rates throughout this period. Canadian and Newfoundland and Labrador non-traffic accident fatality rates were similar figure 2) and dropped steadily from 1951 to 1986. Traffic accident fatality rates for both Newfoundland and Labrador and Canada (figure 3) increased from the early 1950's to the mid 1970's and then decreased until 1986; however Newfoundland and Labrador traffic accident fatality rates were only one third Canadian Rates in the early 1950's but rose to two thirds Canadian rates by the mid 1960's. Canadian suicide rates

Figures 1 - 6

Statistics Canada Data: Non-Natural Death Rates in Newfoundland and Canada: 1951 - 1986

Figure 1

Figure 2

Figures 1 - 6 (continued)

Statistics Canada Data: Non-Natural Death Rates in Newfoundland and Canada: 1951 - 1986

Figure 3

Figure 4

Figures 1 - 6 (continued)

Statistics Canada Data: Non-Natural Death Rates

in Newfoundland and Canada: 1951 - 1986

Figure 5

Figure 6

(figure 4) approximately doubled from 7.5 to 14 deaths/ 100,000/ year between 1960 and the mid 1970's and remained stable from then until 1986. Suicide rates in Newfoundland and Labrador were considerably lower than Canadian rates, remaining at approximately 2.5 - 3 deaths/ 100,000/ year from 1951 through 1975 and then rising to between 4 and 6 deaths/ 100,000/ year from 1982 - 1984. The 1990 Annual Review of the Office of the Chief Forensic Pathologist of Newfoundland[14] reports higher rates of suicide for the years 1987 to 1989 than those reported by Statistics Canada. Canadian homicide rates (figure 5) rose from approximately 1 death/ 100,000/ year in the 1950's to approximately 2 deaths/ 100,000/ year from 1970 - 1986. Homicide rates in Newfoundland and Labrador were consistently below Canadian rates, ranging from 0 - 1 death/ 100,000/ year. Finally, Canadian and Newfoundland and Labrador rates of "undetermined" deaths (figure 6), a term which did not appear in the official nomenclature until 1969, were similar.

In Canada, accidents are the fourth leading cause of death and the leading cause of death in under 45 year olds[24]. The 6 major causes of accidental death are motor vehicle accidents and falls which are first and second for both sexes, and drownings, fires, suffocations and poisonings which are third, fourth, fifth and sixth

respectively for men and the sixth, third, fourth and fifth for women[24]. Collectively, they accounted for 84.1 % of female accidental fatalities and 92.5% of male accidental fatalities in 1985[24]. When compared with 5 other countries (the United States, West Germany, England and Wales, Austria and Japan), Canadian accidental death rates are second for fires and poisonings, third for motor vehicle accidents, and fourth for falls[24].

National suicide rates range from 2.9 deaths/ 100,000/ year in Greece to 44.9 deaths/ 100,000/ year in Hungary[8]. Tsuang et al[25] report that the annual suicide rate in the United States has averaged about 12.5 deaths/ 100,000/ year for the past century. Canada's rate of 15.1 deaths/ 100,000/ year lies in the upper half of this range and is well above the international mean of 10 deaths/ 100,000/ year[8]. In general, suicide rates have risen markedly in north-western and central Europe and to a lesser extent in former European colonies and have dropped in Latin countries, both in the Mediterranean and in Latin America. Suicide rates have increased substantially in southeast Asia but have remained stable or decreased in the Far East.

Sakanofsky's studies and those of Jarvis show that 1967 - 1971 suicide rates increased steadily from east to west in Canada with the exception of Nova Scotia and Prince Edward Island where rates were higher than in New Brunswick and

Quebec[8]. By 1979 - 1981, suicide rates had risen substantially in Quebec and New Brunswick and male suicide rates had risen everywhere except in Prince Edward Island[8]. Female suicide rates had gone down in 5 provinces[8]. Rates in western provinces were still higher than those in eastern provinces although differences among rates were less than previously[8]. Increases in economic pressure and reductions in the integration of society were greater in provinces with greater increases in suicide rates as were rates of alcoholism, cirrhosis of the liver and motor vehicle accidents[8].

The United States homicide rate is approximately ten times the Canadian rate[26], making homicide the second leading cause of death in under 20 year olds in that country[24,27,28]. American homicide rates peaked early in the depression, dropped during and shortly after World War II and increased threefold 1960 and 1980[22,27]. This increase can be explained entirely by the increase in firearm homicides which increased fivefold during this period[27]. Hollinger[29] notes that the most important influences on homicide rates are the economy, demographics and war.

2.6 Risk Factors

2.6.1 Accidental Death

With the exception of suicide, which is discussed below, almost nothing has been published about the risk

factors for each manner of non-natural death in Newfoundland and Labrador[30,31]. The distributions of age and sex specific rates for each type of accidental death are similar in Canada and the United States[24]. Approximately half of all trauma deaths occur in people aged 13 through 34[37]. Non-natural fatality rates are lowest among 5 to 14 year olds, rise considerably in 15 to 24 year olds, drop again in 35 to 60 year olds and then rise progressively in the elderly[22]. Motor vehicle injuries are the most common cause of death for ages 1 to 74 and falls the most common cause of death for ages 75 plus[22]. Pedestrian fatalities and fires kill the young and the old[22]. Falls and hypothermia kill the old[22]. Firearms accidents kill adolescents and adults[22]. Plane crashes, being struck with falling objects and accidents involving machinery primarily kill working age people[22]. Work related accidents kill workers at the beginning and end of their working lives, the rates being highest in 16 - 24 year olds and over 65 year olds[33]. Drownings kill young children and adolescents[22]. Poisonings kill small children, adolescents and young adults and the elderly[22]. Finally, natural disasters kill everyone at approximately equal rates[22].

With the exception of falls which affect the sexes about equally, fatality rates for accidents of all causes are greater for males than females at almost all ages, at

times by several-fold[22]. Fatality rates vary inversely with income except for falls which bear little relationship with income and airplane crashes which increase with income[22]. Both motor vehicle and non-motor vehicle accidental fatality rates are much higher in rural areas than urban areas[22]. Most fatal accident rates tend to be higher on weekends and in the summer except for falls which peak during winter months[22].

Alcohol plays a substantial role in many forms of trauma[26,34-37]. Alcohol intoxication is involved in 50% of all fatal motor vehicle accidents[26,38] including 75% of all nighttime single vehicle accidents involving teenage drivers[32]. Over 50% of fatally injured non-elderly adult pedestrians are legally intoxicated at the time of their injuries[22]. The relative risk of a motor vehicle accident rises exponentially with increasing blood alcohol levels[39]. Alcohol intoxication is involved in 50% of fatal head injuries[39], 50% of non-elderly adult deaths in fires[23], 40 to 50% of teenage and adult drownings[26,35], 20% of suicides[40], and a substantial proportion of homicides[41]. Alcohol appears to be a factor in a substantial number of falls although the vast majority of these occur in younger people[15] and contributes to a number of fatal poisonings including some 400 deaths per year from alcohol poisoning[22]. Unlike other accidents, alcohol is not generally thought to

figure prominently in industrial accidents as only 7% of workplace fatalities are intoxicated at the time of injury[33]. However the contribution that alcohol makes to work-related fatalities has been very poorly studied and the extent and epidemiologic features of the problem remain largely unknown[40].

Motor vehicle fatality rates rise sharply beginning in 15 to 19 year olds, peak in 20 to 24 year olds, drop progressively in middle age and rise again after age 65, presumably reflecting an increased case fatality rate among the elderly as injury rates continue to fall in this group[22]. Pedestrian fatality rates are highest in the elderly, partly because of sensory deficits and reduced ability to escape and partly because of higher case fatality rates among the injured elderly[22]. "Back-up" injuries account for 5 to 7% of all pedestrian fatalities and are usually seen in children under 5 years of age[41,42]. "Dart out" injuries are most common in children under 10 years of age[26,42].

Two thirds of fatal injuries to pedestrians occur between 6:00 p.m. and 6:00 a.m. with the highest rate occurring about 1 hour after sunset[22]. Negligence is a factor in most pedestrian accidents, the pedestrian being negligent 60% of the time, the driver 46% of the time and both 25% of the time[22]. In addition, the heavier and faster

the vehicle at the time of impact, the higher the fatality rate[22].

Teenagers have particularly high rates of single vehicle accidents[43]. 58% of fatal accidents involving teenagers occurred on weekends[43] with the highest rate occurring on Saturday[22]. Teenagers also tend to have higher vehicle occupancy rates, one result of which is that 62% of teenage passenger fatalities are driven by teenage drivers[43].

Motor vehicle fatality rates could be reduced by encouraging seat belt use, lowering posted speed limits, raising the minimum legal driving age, restricting legal driving hours for younger drivers, lowering the blood alcohol limit for younger drivers and improving vehicle design[43]. Interestingly, one author claims that driver education programs in schools increase the rate of teenage fatalities, presumably by encouraging earlier onset of driving[43].

The age specific fall related mortality rates and percentage of falls resulting in death increase progressively with age and are higher in men than women at all ages, although the gap between men and women narrows with increasing age[44]. Almost half of all fatal falls occur in people over 75 who comprise 4% of the population[22] and almost 30% in over 85 year olds who comprise less than 1% of

the population[22]. This is at least partly attributable to osteoporosis which increases with age in both sexes and is worse in females than males at any given age[15,22].

Most falls among the elderly occur at home[44]. The most common causes of falls among the elderly are poor balance and weak muscle coordination, psychotropic medications and environmental hazards such as steps and uneven surfaces[15,44]. Prevention efforts should be directed towards these hazards.

Accidental fall fatality rates vary inversely with income levels but the variation is substantially less than for other types of accidents[22]. Urban rates are slightly higher than rural rates due partly to more falls from stairs in buildings in larger cities[22]. Rates are higher in winter than summer[15] and mortality rates have dropped particularly in the elderly most likely as a result of improved medical care[22].

Drowning rates were highest in 1 - 4 year olds, second in over 75 year olds and third in 15 - 24 year olds in Canada and highest in 1 -4 year olds, second in 15 - 24 year olds and third in over 75 year olds in the United States[24]. Up to 90% of childhood drownings in the United States occur in swimming pools[26,35]. Adolescents drown in a variety of non-pool settings and are frequently involved in boating accidents[26].

Fire fatality rates are highest among over 75 year olds

and under 5 year olds in both Canada and the United States because of their reduced ability to escape from burning buildings[22]. Infants are at risk of being unintentionally scalded by excessively hot water baths given by inexperienced caretakers, toddlers from spilling hot liquids, contacting electricity or touching hot surfaces, preschoolers from playing with matches, lighters and stoves and adolescents from playing with gasoline or near high voltage electricity sources[36].

Cigarettes cause 35% of fatal fires[22,36]. The majority of household fire deaths occur between December and March, particularly on weekends and between the hours of midnight and 6:00 a.m.[22]. The rate of household fire deaths and deaths due to scalding could be reduced by modifying cigarettes and other ignition sources, installing sprinkler systems and smoke detectors in houses, reducing the temperature of hot water heaters to 125° F (51.6° C) and installing anti-scald devices set at 110°F (43.3°C) on shower heads and hot water taps[36].

25% of accidental firearms related fatalities occur in under 15 year olds with an additional 30% occurring in 15 - 24 year olds[37]. Most accidental shootings involving children are related to the improper storage or handling of the firearm in the home[37].

Firearms accidents involving adults are mainly hunting

related[34]. Most hunting fatalities occur in rural areas, predominantly affect men and occur during peak hunting times in autumn months[34]. 55 to 76% of fatalities are "two party accidents" in which the victim is mistaken for a game animal or, less commonly, is behind the targeted animal[34]. An additional 15% of fatalities result from carrying loaded weapons in vehicles or "horseplay"[34]. Less than 2% are due to defective weapons[26]. "Self inflicted" accidental deaths from falls, while loading or unloading a weapon, or by catching the trigger on obstacles account for approximately 34% of hunting related accidents[34]. An unknown proportion of hunting "accidents" may be suicides or homicides[34].

Handguns are seldom involved in hunting injuries but are involved in household accidents[22,34]. Handgun related accidents are much less common in Canada than the United States because of stricter gun control laws in this country[22,45]. The rate of firearms fatalities could be reduced by regulating the availability of firearms, locking them in safe places out of the reach of children, installing metal detectors in schools, designing firearms so children cannot easily cause them to fire, developing less lethal ammunition for handguns, and educating parents about firearms safety[45].

Deaths from airway obstruction affect primarily the very young and the elderly[22]. Crib strangulations and

wedging between crib mattresses and frames are most common between 6 and 8 months of age. Most childhood deaths from choking on food occur before age 4, the highest incidence being in children under age 2[22]. Entrapment in refrigerators occurs mostly in 2 to 7 year old children[22] while suffocation by falling rocks is most common in 8 to 12 year olds[22].

Among the elderly, the highest rates of accidental death due to airway obstruction are from choking on food or non-food materials[22]. Poor dentition, diseases affecting motor coordination and mental disorders play a factor in many of these deaths[22]. Among non-elderly adults, alcohol or drug intoxication plays a prominent role and obstruction is most commonly caused by large pieces of meat[22].

Forty per cent of reported child poisonings and 62% of deaths involve medicines of which analgesics were most important followed by antidepressants and cardiovascular drugs[22]. The next largest number of deaths is due to ingestion of petroleum products[22]. Childhood poisoning deaths dropped substantially with the development of child-proof packaging, changes in products and fuels and the development of poison control centres[22]. Among adults, unintentional poisoning from carbon monoxide fumes occurs when cars are parked with the engine running to provide heat for the occupants or less frequently when people work in

enclosed garages or fumes seep into living or working quarters connected to garages[22]. Other adult poisonings result from inadvertent overdoses of opiates or other drugs by drug addicts and others[22]. Among children, unintentional poisonings are more common among boys than girls but adolescent and adult poisonings, particularly non-fatal poisonings, are more common among females.

2.6.2 Suicide

A history of a previous suicide attempt is the single best predictor of future suicidal behaviour[46,47]. Other risk factors include a family history of suicide, previous psychiatric treatment, substance dependence, personality disorder, advanced age, male sex, and co-existing medical illnesses[5,47,48].

Monk reports that the history of any mental disorder increases the risk of suicide by a factor of about 8 and that between 73 and 100% of suicides had a psychiatric history[5]. Black and Winokur found that "roughly half of the suicides were clinically depressed at the time of suicide (and) about one-third ... occurred in chronic alcoholic patients."[25] Conversely, Klerman[49] reports that depressed patients have a 25 to 30% lifetime risk of suicide, schizophrenics a 10 to 20% lifetime risk, alcoholics a 15 to 25% risk, and mentally healthy persons a lifetime risk of less than 1%.

Suicide is rare before age 15. Male suicide rates have a peak in 20 to 24 year olds and a higher peak in over 75 year olds[22,46]. Female suicide rates rise rapidly in late adolescence and early adulthood and peak in the late 40's and early 50's[22,46]. Several authors[5,6,46,48] find suicide approximately 2 to 3 times as common among males as among females. Lester[49] notes that suicide rates are higher in North American Indians than whites which in turn are twice the suicide rates in blacks[25]. Suicide rates rose dramatically among younger age groups, particularly among males and dropped among older age groups between 1950 and 1988[5,49]. As a result, the median age of suicide victims in the United States declined from 47.2 years in 1970 to 39.9 years in 1980[49].

While the correlation between unemployment and suicide is probably well established, a cause effect relationship between unemployment and suicide is not clear[50]. Suicide rates are highest in city centres[51] and are approximately 25% higher in cities than in rural areas[22,51].

Sainsbury and others agree that marriage protects against suicide, especially among males and rates rise progressively among singles, widowed, divorced and separated persons[25,46]. The risk of suicide is particularly high during the first year after the loss of a spouse and remains elevated for the following three years[25]. The presence of

each of the first six but not of any additional children provides additional protection against suicide[25]. Ties to neighbours and relatives in general[46] and other social supports[48] are also protective against suicide. Suicide rates appear higher among Protestants than among Catholics and Jews[25,52]. Other risk factors include sudden falls in socioeconomic status[46,48], although lifelong poverty itself does not appear to be a risk factor for suicide[46].

The acute suicidal episode[48] is often precipitated by acute life events, especially those involving loss of social supports or sudden adverse changes in socioeconomic status. Subsequent suicide attempts are not associated with periods of increased stress but are associated with depressed mood. Feelings of hopelessness, pessimism and helplessness, wishes for death and apparent improvement shortly before a suicide are also common. In the U.S. suicide rates rise during the Spring and Fall and are lowest in December[25]. Suicide rates are lowest on weekends and highest on Mondays[22].

Lester[49] and others report that public health measures aimed at restricting the access to the means of suicide effectively reduce suicide rates. American States with handgun control laws have reduced rates of suicide by firearms in parallel with the strictness of the laws without corresponding increases in suicide by hanging or poisoning[49]. The removal of carbon monoxide from domestic

gas in England and Wales resulted in a significant drop in rates of suicide by inhalation of domestic gas without offsetting increases in other methods of suicide[49]. People intending to commit suicide appear to have definite preferences in the method to be used and removal of one means of suicide does not appear to increase the risk of suicide by other means[49].

Malla and Hoenig[2] report that the suicide rate among Newfoundland males rises with age to the fifth decade and then falls in contrast to most other places where it continues to rise. They also find increased suicide rates in single men aged 20-39 and single women aged 40-49 and 60-69, and in members of lower social classes, the unemployed and housewives.

Aldridge and St. John[4] report teen suicide rates 6.5 times higher among natives living in Labrador and 3.5 times higher among all residents of Labrador than in residents of Newfoundland[4]. All native teenage suicides occurred in northern coastal communities of Labrador. 30% of teenage suicides occurred on a Saturday. Other risk factors include a history of previous suicide attempts or threats, a history of mental illness or of substance abuse, chronic physical illnesses or handicaps and alcohol consumption immediately prior to death.

2.6.3 Homicide

Homicide rates are high during the first 3 years of life, fall among 5 to 10 year olds, rise dramatically in 15 to 19 year olds, peak in 20 to 24 year old females and 25 to 29 year old males and fall progressively thereafter[22,26]. Male homicide rates in the United States are twice female rates for white victims and 3 times female rates for black victims[27]. Black homicide rates in the United States are between 4 and 6 times white rates[27]. Natives accounted for less than 3% of the Canadian population in 1988 but for 17.6% of homicide victims and 22.2% of homicide suspects[37]. Homicide rates are four times as high in large cities as rural areas in the United States[22] but are higher in rural than urban areas in Canada[37].

Homicide offenders are predominantly young males; the sex ratio ranges from 6:1 to 9:1 and 20 to 40 year olds are over-represented among offenders[53]. Studies of homicide offenders reveal backgrounds of extreme parental violence, family disintegration and maladjustment, previous violent behaviour and substance abuse[53]. Among mental disorders, sociopathy, alcoholism and drug dependence are frequently associated with homicide and other serious crimes while the major mental disorders are infrequently associated with homicide[53]. Head injuries are also associated with homicide[53]. Victims of homicide are acquainted with their

offenders 85% of the time and 70% of homicides follow a recent quarrel[53].

Alcohol is frequently involved in homicide. One report indicates that alcohol is involved in 64% of homicides, 44% in both the offender and victim, 11% in the offender and 9% in the victim[53].

The immediate availability of weapons is of concern as shooting and stabbing are among the most popular methods of homicide[53]. A European study suggested that firearms associated homicide rates increase with increasing firearms availability and without corresponding decreases in rates of homicide by other means[37]. In an international study Killias found positive correlations between rates of gun ownership and both the proportions of homicides committed with a gun and overall homicide rates without negative correlations between gun ownership rates and rates of homicide by other means, suggesting that the presence of a gun in the home increases the likelihood of homicide[54]. However, Centerwall failed to find significant differences in homicide rates between Canadian provinces and adjoining U.S. states despite 3 to 10-fold differences in the rates of handgun ownership and concluded that Canadians substituted other means of committing homicide for handguns[55].

2.7 Summary

As discussed above, several potential sources of error

including incomplete investigation of deaths, failure to accurately and completely record the causes and circumstances of death on death records, varying degrees of reluctance to assign certain manners of death, particularly suicide, duplicate registrations or failure to register a death and clerical errors may reduce the validity of reported non-natural death rates. Previous studies show that Newfoundland and Labrador's reported suicide rate may be less than reliable and that poor reporting of suicide may have contributed to the historically low rates of reported suicides.

However, while trends in the rates of various manners of non-natural death over time between 1951 and 1986 in Newfoundland and Labrador approximately parallel those in Canada, the overall rate of non-natural deaths and the rates of traffic accident fatalities and of homicides are lower than corresponding Canadian rates while non-traffic accident fatality rates and "undetermined" death rates approximate Canadian rates. By ascertaining the validity of these reported rates and assessing the risk factors for each manner of non-natural death in Newfoundland and Labrador, we hope to verify the differences in these rates and to shed some light on the reasons for these differences.

With the exception of suicide, almost nothing has been published about the risk factors for each manner of non-

natural death in Newfoundland. Information about the risk factors for non-natural deaths in Canada and the United States is discussed above.

An assessment of the extent of misrepresentation on death registrations, unintentional or otherwise, of non-natural deaths as natural deaths would require reviewing the medical records and/or interviewing the surviving relatives or physicians of large numbers of people who died years or decades ago and is therefore impractical. However, an assessment of the remaining potential sources of discrepancy between the real and published rates of various forms of natural death can be made.

The intent of this thesis is: 1) to assess the validity of the reported rates of each manner of non-natural death in Newfoundland and Labrador, 2) to partly assess the extent of the investigation of non-natural deaths in Newfoundland and Labrador by ascertaining the proportions of non-natural deaths registered by physicians and non-physicians and which factors predict a non-natural death having been registered by a non-physician; and 3) to assess some demographic factors associated with each manner of non-natural death in Newfoundland and Labrador.

Chapter 3 - Aims, Objectives and Hypotheses of the Study

The aims of this study are as follows:

1. To assess the validity of the reported rates of each manner of non-natural death in Newfoundland and Labrador, comparing our "study" rates with those obtained by vital statistics staff and with figures published by Statistics Canada.

   Objectives:

   1.1 To create operational definitions of natural and non-natural death and of each manner of non-natural death.

   1.2 To select the non-natural deaths and extract the date, place, circumstances and causes of each death, the demographic and health related data about the deceased, the profession of the person registering the death, and the manner of death assigned by vital statistics personnel (the "assigned" manner of death) .

   1.3 To assign a "study" manner of death to each death based on the causes and circumstances of death recorded on the registration of death by

applying the operational definitions of each manner of death.

1.4 To measure the extent of agreement and disagreement between the "assigned" and "study" manners of death.

1.5 To compare the rates of each "study" manner of death with the rates published by Statistics Canada.

1.6 To determine the crude and age and sex adjusted rates of each "study" manner of death during each year studied for Newfoundland as a whole and for each Census District within Newfoundland.

Hypotheses:

1a There will be discrepancies between the "study", "assigned" and published rates of each manner of death.

1b The "study" suicide rate will be greater than the published rate because a number of "study" suicides will have been recorded as

accidental or "undetermined" deaths.

2. To assess the extent of the investigation of non-natural deaths in Newfoundland and Labrador.

   Objectives:
   - 2.1 To ascertain the proportions of non-natural deaths registered by physicians and non-physicians from the information recorded in objective 1.2.
   - 2.2 To determine which factors predict a non-natural death having been registered by a non-physician.

3. To assess the risk factors for each manner of non-natural death.

   Hypotheses:
   - 3a There will be temporal, geographic and demographic variation in the rates of each manner of non-natural death in Newfoundland and Labrador.

Chapter IV - Method: Collection and Analysis of Death Record Data

4.1 Consent

Permission to undertake this study and access to the relevant documentation were kindly granted by the Government of Newfoundland. The research proposal was reviewed and approved by the Human Investigation Committee of the Faculty of Medicine at Memorial University and was then examined by the Departments of Health and Justice before being presented to Cabinet for approval.

4.2 Scope of the Study

As Newfoundland's Confederation with Canada in 1949 marked the onset of what were presumably major changes for the province, many of which might well have affected the rates of suicide and other forms of non-natural death, it was felt appropriate to review the changes in these rates since 1949. As time and manpower limitations dictated an approximately 20% survey of this period, it was decided to review the non-natural deaths of every fifth year choosing the census years 1951, 1956, 1961, 1966, 1971, 1976, 1981, and 1986. The data collection finished with the 1986 records as these were the most recent records available at the beginning of the study.

4.3 Data Source: Death Certificates/Returns of Death

The registrations of all deaths occurring in

Newfoundland and Labrador are kept in the Registry of Births, Marriages and Deaths in the East Block of the Confederation Building in St. John's. The registrations for each year are stored in hard cover binders, each of which contains 1,000 registrations and are numbered consecutively beginning with the number 1001. The order in which the registrations are kept is neither chronological by day of death nor alphabetical and is assumed to be the order in which they were registered.

The forms on which deaths were registered changed in 1976. Deaths which occurred before 1976 are registered either on pre-1976 "Death Certificate" forms which were completed by physicians or on "Return of Death" forms which were completed by non-physicians, usually clergy. Deaths occurring after 1976 were registered on new "Death Certificate" forms which were completed by physicians. Deaths which occurred during 1976 are registered on any of the 3 forms. Copies of the Return of Death form, the old Death Certificate form and the new Death Certificate form are shown in tables 1, 2 and 3 of appendix B.

The information requested differs slightly from form to form. The Return of Death form includes a space for the religion of the deceased but neither the old nor the new Death Certificate forms contain this space. However the religion of the deceased is often entered on the margins of

the latter forms, particularly for deaths which occurred during or before 1976. A single space is provided for the cause of death on the Return of Death form. The old Death Certificate form has spaces for the immediate and the antecedent causes of death while the new Death Certificate form has spaces for the immediate and antecedent causes of death and other significant conditions. The new Death Certificate form, but neither the old Death Certificate form nor the Return of Death form includes spaces for specifying the manner of other than natural deaths, for entering a brief description of the incident causing death (although this is seldom completed), for indicating whether an autopsy was performed or not and for indicating whether the physician signing the certificate was the last attending physician of the deceased or a medical examiner. Fortunately, information about the circumstances leading up to the death of a deceased is often written in the margins of the earlier forms, either by the person responsible for completing the record or by the staff at the Registry of Births, Marriages and Deaths.

A number of practices by Registry staff have changed over the years. Staff processing the death registrations in 1951 and 1956 usually wrote the relevant ICD code(s) on each registration, thus making it easy to determine the "assigned" manner of each death. By 1961, staff no longer

followed this practice but instead usually wrote "accident", "suicide", or "homicide" on the registrations of some but not all non-natural deaths. The practice changed again part way through 1966 when staff began marking a large "A" on the reverse side of registrations of non-natural deaths regardless of whether these deaths were accidents, suicides or homicides. This remained the practice until the old forms were replaced by the new Death Certificate forms in 1976. While the new Death Certificate form has a space for recording the manner of other than natural deaths, in practice this space was frequently left blank.

Death registrations were often incomplete. With the exceptions of the place and date of death, the name and sex of the deceased and the signature of the person completing the form, virtually every piece of information is missing from a number of death registrations. The age and marital status of the deceased is almost always present but other information, particularly about the occupation and birthplace of the deceased, is often missing. The employment status of the deceased is more often absent than not. The descriptions of the cause of death vary from the very general (eg "accident") to detailed descriptions of multiple pathological findings. Finally, the terminology used to describe the cause of death is far from uniform. For example, drowning is referred to in various death

registrations as "drowning", asphyxia by drowning", "asphyxia by submersion", "submersion in water" etc.

4.4 Operational Definitions of Natural and Non-Natural Deaths

The death registrations for each study year were individually inspected in the order in which they appear in the register of each year to determine whether the death appears to have been due to natural or non-natural causes. In making this determination, the following definitions were used:

Underlying cause of death (from ICD9[56]): The disease or injury which initiated the chain of events leading directly to death or the circumstances of the accident or violence which produced the fatal injury.

Manner of death (from Jaffe F.A.[57], p 10): the legal context in which death occurred, whether natural or unnatural and, if the latter, whether accidental, suicidal or homicidal.

Natural death (from Webster's dictionary[58]): Death occurring in the course of nature and from natural causes (such as age or disease) as opposed to accident or violence.

The operational definitions for "almost undoubted natural" death, "probable natural" death, "almost undoubted non-natural" death and "probable non-natural" death shown in

table 4 of appendix B were developed and adopted. In order to test the validity of these operational definitions, 25 deaths were selected at random from the records of the office of the Chief Forensic Pathologist of each of 4 consecutive years (1988 - 1991). The listed cause(s) of each death were extracted and listed consecutively on the form shown in table 5 of appendix B. The author and the Deputy Forensic Pathologist each independently applied the operational definitions to determine whether each death was an "almost undoubted natural" death, a "probable natural" death, an "almost undoubted non-natural" death or a "probable non-natural" death based only on the listed cause(s) of death, thus closely paralleling the method to be used to select the "probable natural", "almost undoubted non-natural" and "probable non-natural" deaths from the total deaths of the study years.

The author and the Deputy Forensic Pathologist were in complete agreement in the cases of 97 deaths of which 41 were "almost undoubted natural" deaths, 55 were "almost undoubted non-natural" deaths and 1 was a "probable non-natural" death. They disagreed about whether 2 deaths were "probable natural" or "almost undoubted natural" deaths and whether 1 death was a "probable natural" death or an "almost undoubted non-natural" death. The corrected-for-chance kappa[59] inter-rater reliability (and validity, assuming one

accepts the opinion of the Deputy Forensic Pathologist as a "gold standard") is 0.92.

4.5 Collection of Data from Death Registrations

The "probable natural", "probable non-natural" and "almost undoubted non-natural" deaths were entered into the study. Data about these deaths were recorded on a standard form, a copy of which appears in table 6 of appendix B. The data were then entered into a computer using the Paradox 5.1[R] computer program.

In order to protect the identity of each deceased, the date of death was recorded by day of the week, month and year of death only, the communities of death, residence and birth by code numbers, the population to the nearest 1,000 and the date of birth by month and year only.

The need to standardize the cause(s) of death quickly became apparent in view of: 1) the large number of relatively minor differences between similar causes of death (eg. inter-trochanteric vs. sub-trochanteric vs. intra-capsular hip fracture or brain laceration vs. fractured skull vs. subdural haematoma, etc.); and 2) the large number of terms used to describe the same cause(s) of death. The causes of death were therefore standardized to simplify and enhance their understandability without sacrificing important detail. For example, all head injuries except gunshot wounds were termed "head injury", all gunshot wounds

"gunshot wound to (body part)", all drownings "drowning", etc. Medical conditions, mental disorders and substance abuse disorders were recorded as absent unless there was some indication of their presence on the death registration. Terms used to describe these conditions were also standardized. For example, "CVA", "cerebrovascular accident", "ischemic stroke", "thrombotic stroke", "haemorrhagic stroke", "stroke" etc. are all recorded as "CVA". Similarly, "Alzheimer's Disease", "dementia of the Alzheimer's type", "dementia", "senile dementia", "senility", etc. are all recorded as "dementia".

"Additional information obtained from death certificate" includes comments by the completer of the death registration, information added by Vital Statistics staff such as the international classification of disease, 6th, 7th, 8th or 9th edition (ICD) code or comments such as "doctor says ..." or "RCMP investigation indicates ...", and the existence of multiple fatalities arising from a single incident deduced by looking at other death registrations.

The "designation of physician certifying death" is specified on the new Death Certificate form but not on the old one. For deaths registered on the old Death Certificate forms, the status of all physicians except those who were clearly medical examiners was recorded as "attending physician". The status of people completing the returns of

death was recorded as "other". Finally, whenever the letters "R.N." or "B.N." followed the signature of the person completing the death certificate or return of death, that person's status was recorded as "nurse". As a result, the "attending physicians" probably include several medical examiners while most, if not all "others" are presumably clergymen.

The "assigned" manner of death was determined as follows: whenever an ICD code was written on the death registration, the corresponding manner of death was entered as the "assigned" manner of death. Whenever one of the words "accident", "suicide", "homicide" or (after 1969) "undetermined" appeared on the death registration in handwriting other than that of the person completing the death registration, that term was entered as the "assigned" manner of death. When neither of the above appear on the death registration but the manner of death reported to Statistics Canada (based on comparison with the reported manners of similar deaths) appeared both obvious and unequivocal, that "assigned" manner of death was assigned, preceded by the words "almost undoubted" When neither of the above appeared on the death registration and no manner of death appears both obvious and unequivocal, but one manner of death appeared significantly more likely to have been reported to Statistics Canada (based on comparison with

the reported manners of similar deaths) than every other manner of death, that "assigned" manner of death was recorded, preceded by the word "probable". Finally, when neither of the above appeared on the death registration and no manner of death appeared significantly more likely to have been reported to Statistics Canada than all other manners of death, the "assigned" manner of death was recorded as "unknown". For deaths with "probable ___" or "unknown" "assigned" manners of death, the reasonable alternative "assigned" manners of death were also recorded.

The data thus collected were entered into a Paradox 5.1[R] computer program. The external cause of death was coded into a maximum of 4 external causes depending on the circumstances of a particular death. For example, a "motor vehicle accident - driver (drowning)" would be assigned external cause 1 "MVA driver" and external cause 2 "drowning" while a fatality resulting from a fire aboard a ship at sea would be assigned external cause 1 "accident at sea", external cause 2 "other fire" and specific external cause "fire aboard ship". Up to 2 medical conditions, 2 mental disorders and 3 substances of abuse were assigned to each death.

After the data entry was completed, the files were edited to check for errors and to ensure consistency in the terminology used.

4.5.1 Removal of Duplicate Files

The names of the deceased were ordered alphabetically together with their dates of death and checked for duplicate names and dates of death. Files corresponding to deceased persons with identical names but different dates of death held widely differing information about the deceased and the circumstances of their deaths and were therefore assumed to represent separate deaths of people with identical names. All files corresponding to deceased persons with identical names and dates of death had almost identical information about the deceased and the circumstances of their deaths and were therefore assumed to have resulted from duplicate registrations of death. The information from each of these duplicate files was therefore combined into one file and the second file was erased.

4.6 Operational Definitions of each Manner of Non-Natural Death.

Operational definitions for "almost undoubted" and "probable" "natural death", "non-traffic accident (death)", "traffic accident (death)", "suicide", "homicide", "other (death)" and "unknown" death shown in table 7 of appendix B were developed and adopted.

In order to assess the reliability of these operational definitions, after the data entry and editing of the files were completed, 100 files were selected at random by using

the Epi-Info 5.1 program. A computer entry was made of the age and sex of each of these deceased and the information about his/her death and significant medical, psychiatric and substance abuse history on a form generated using the Paradox 5.1[R] computer program. A copy of this form appears in table 8 of appendix B. The spaces for the "assigned manner of death" and "alternatives" were left empty. A third year medical student was given minimal training in the assignment of manners of death using these operational definitions. The "assigned manner of death" for each of these 100 files was then independently completed by the student and the author while each was blind to the other's choices.

The student and the author agreed both about the manner of death and whether it was "almost undoubted" or "probable" 77% of the time agreed about the manner of death but disagreed about whether it was "almost undoubted" or "probable" 16% of the time, disagreed whether the manner of death was "unknown" or "probable x" 4% of the time and disagreed between 2 "probable" manners of death 3% of the time. After discussion between the student and the author, it was agreed that a substantial proportion of the disagreement was due to errors in the application of the operational definitions which would not have been made had the student been given further training. Once these errors

were corrected, the rate of complete agreement rose to 95%, with disagreement about whether an agreed manner of death was "almost undoubted" or "probable" remaining at 3%, disagreement about whether the manner of death was "unknown" or 'probable x" at 1% and disagreement between 2 "probable" manners of death at 1%. The corrected-for-chance kappa coefficient of reliability[59] of the operational definitions was 0.93 which was considered sufficient to allow the use of these definitions to assign the "study" manner of death to the remaining files in the study.

4.7 Assignment of "Study" Manners of Death

After the data entry and editing of the files were completed, the file numbers, age and sex of each deceased and the information about his/her death and significant medical, psychiatric and substance abuse history were copied onto the form which appears in table 8 of appendix B. The "study" manner of death was then assigned by applying the operational definitions in table 7 of appendix B and was entered into the "assigned manner of death" space on the form. The reasonable alternative manner(s) of death were then entered in the "alternatives" space(s) for all "probable" or "unknown" deaths.

4.8 Data Analysis

The data were then analyzed using the Epi Info 5.1[R] computer program to determine the numbers and geographic and

temporal distributions of the non-natural deaths entered into the study, the non-natural deaths studied which were registered by physicians, nurses and "others" and the non-natural deaths studied for which the "assigned" and "study" manners of death were "undetermined" or unknown, for which there was disagreement between the "assigned" and "study" manners of death, for which there was agreement between the "assigned" and "study" manners of death at at least the "probable" level of confidence and for which the agreement was at the "almost undoubted" level of confidence.

The numbers of deceased males and females in each of the age groups 0 - 4, 5 - 9, 10 - 14, 15 - 19, 20 - 24, 25 - 34, 35 - 44, 45 - 54, 55 - 64, 65 - 74 and 75 + years who died in each census district of Newfoundland and Labrador and in the province as a whole during each year studied by each non-natural "study" manner of death were calculated from our data with the help of the Epi Info 5.1[R] computer program. The total populations and the numbers of males and females in each of the above age groups in each census district in the province as a whole in each year studied were obtained from Statistics Canada as were the population and numbers of males and females in each of the above age groups in Canada in 1986. (These populations are shown in tables 1 - 13 of appendix D.) The crude rates of each "study" manner of death were calculated by dividing the

number of deaths due to each "study" manner of death in each census district/ province during each year by the population of that census district/province for that year. These rates were then simultaneously adjusted for age and sex via the direct method of standardization[60] taking the 1986 Canadian population as the reference population to yield the age and sex-adjusted death rates for each "study" manner of death. These calculations were made using a Quattro Pro 5.00[R] computer spreadsheet program.

The distributions of deaths due to each "study" manner of death by age and sex, occupation, employment status, marital status and religion were then determined using an Epi Info 5.1[R] computer program.

Chapter V - Results

5.1 Number of Deaths Entered into Study

As shown in table 1 of appendix C, 26,011 deaths were registered during the 8 selected years of this study and were screened for non-natural death. Of these, 1948 death certificates/returns of death appeared to correspond to non-natural deaths and so were initially selected for study. Of these 1948 registrations, 9 were determined to be duplicate registrations of death, 3 had both a "natural" or "almost undoubted natural" "assigned" manner of death and an "almost undoubted natural" "study" manner of death and 1 occurred in Greenland, leaving 1935 deaths in the study. The temporal and geographic distribution of these deaths is shown in table 2 of appendix C. The number of deaths per year studied increased from 162 in 1951 to 318 in 1976 before decreasing to 236 in 1986. The distribution of these deaths by "assigned" and "study" manners of death is shown in table 3 of appendix C.

5.2 Extent of Agreement between the "Assigned" and "Study" Manners of Death

The "assigned" manner of death was "undetermined" for 43 deaths and "unknown" for an additional 20 deaths. (Note: the "undetermined" manner of death entered the official nomenclature with the adoption of ICD-8 in 1968.) 57 of these 63 deaths occurred in 1976, 1981 or 1986 of which 31

occurred in 1981. The distribution of these deaths by "study" manner of death is shown in table 4 of appendix C. 21 of these deaths were "study 'unknown'" deaths. The recorded causes of these deaths are invariably vague terms such as "head injury", "exsanguination" or "under investigation" and the records lack any information which would clarify the manner of death. Of the remaining 42 deaths, 25 "study 'almost undoubted' or 'probable non traffic accidents'", 10 were "study 'probable suicides'", 5 were "study 'natural'" deaths and 2 were "study 'probable traffic accident fatalities'".

Conversely, the "study" manner of death was "unknown" for 79 deaths. 53 of these 79 deaths occurred during 1976, 1981 or 1986. The distribution of these deaths by "assigned" manner of death is shown in table 5 of appendix C. Approximately one quarter of these deaths were "assigned 'undetermined' or 'unknown'" deaths, half "assigned 'non-traffic accidents', 'almost undoubted non-traffic accidents' or 'probable traffic accidents'" and one sixth "assigned 'traffic accidents' or 'probable traffic accidents'".

There was disagreement between the "assigned" and "study" manners of 74 deaths. The distribution of these deaths by "assigned" and "study" manners of death is shown in table 6 of appendix C. Approximately two thirds of these deaths were "assigned 'natural', 'almost undoubted

natural' or 'probable natural'" deaths but "study 'almost undoubted probable non-traffic accidents'" and approximately one fifth were "assigned 'non-traffic accidents', "almost undoubted non-traffic accidents' or 'probable non-traffic accidents'" but "study 'almost undoubted or probable suicides'".

There was agreement between the "assigned" and "study" manners of death at at least the "probable" level of confidence in the cases of 1740 deaths, of which 6 were "probable" or "almost undoubted" natural deaths, 1045 were "probable" or "almost undoubted" non-traffic accidental deaths, 529 were "probable" or "almost undoubted" traffic accidental deaths, 149 were "probable" or "almost undoubted" suicides, 10 were "probable" or "almost undoubted" homicides and 1 was an "almost undoubted" "other" death.

There was agreement at the "almost undoubted" level of confidence in the cases of 1212 deaths of which 787 were "almost undoubted" non-traffic accidental deaths, 293 were "almost undoubted" traffic accidental deaths, 124 were "almost undoubted" suicides, 7 were "almost undoubted" homicides and 1 was an "almost undoubted" "other" death.

The expected number of deaths due to each "known" "study" manner of death for which the "assigned" manner of death is either "unknown" or "undetermined" is the proportion of all deaths for which the "study" manner of

death is known that are due to that "study" manner of death times the number of "assigned" "unknown" or "undetermined" deaths for which the "study" manner of death is not "unknown". (ie expected # of dead with study manner of death Y and "assigned" manner of death either "unknown" or "undetermined" = proportion of all deaths due to study manner of death Y minus [# of "assigned" "unknown"/ "undetermined" deaths minus # of "assigned" "unknown"/ "undetermined" deaths whose "study" manner of death is also "unknown"]). The expected numbers of "assigned" "unknown" or "undetermined" deaths due to each "study" manner of death are therefore 24.4 non-traffic accidents, 12.1 traffic accidents, 4.1 suicides, and 0.3 homicides. Similarly, the expected number of deaths due to each "known" "study" manner of death for which there is disagreement between the "assigned" and "study" manners of death is the proportion of all deaths for which the "study" manner of death is known that are due to that "study" manner of death times the number of death for which there is disagreement between the "assigned" and "study" manners of death. The expected numbers of these deaths due to each "study" manner of death are therefore 45.0 "non-traffic accidents, 21.4 traffic accidents, 6.8 suicides and 0.4 homicides. Thus "assigned" "unknown" and "undetermined" deaths include the expected number of "study" "non-traffic accidents, one sixth the

expected number of "study" "traffic accidents", and 2.5 times the expected number of "study" suicides". Similarly the deaths for which there is disagreement between the "assigned" and "study" manners of death include 1.13 times the expected number of "study" "non-traffic accidents", 0.04 times the expected number of "study" "traffic accidents" and 2.4 times the expected number of "study" "suicides" (2.8 times the expected number of "study" "suicides" if one includes the "assigned" "homicides". The slight over-representation of "study" "non-traffic accidents" appears due to misunderstandings about what constitutes death due to natural causes vs accidental death. Traffic accident fatalities are more reliably reported as such than are other manners of non-natural death. Conversely suicides appear under-reported by 26/178 or approximately 15% with approximately 40% of under-reported suicides being reported as "unknown" or "undetermined" deaths and 60% being reported as other manners of death, chiefly non-traffic accidents. Reasons for these mis-representations are presumably similar to those outlined in the literature review section of this paper.

In summary, there is agreement between the "assigned" and "study" manners of death at at least the "probable" level of confidence in 89.9% of deaths studied and at the "almost undoubted" level of confidence in 62.6% of deaths

studied. The "assigned" manner of death was either "unknown" or "undetermined" in 3.3% of deaths. The "study" manner of death was "unknown" in 4.1% of deaths. The "assigned" manner of death was either "unknown" or "undetermined" and the "study" manner of death "unknown" in 1.1% of deaths. Finally, there was disagreement between the "assigned" and "study" manners of death in 3.8% of deaths.

It was determined that the level of agreement between the "assigned" and "study" manners of death was satisfactory. For the remainder of the analysis, therefore, the "study" manner of death was accepted as the manner of death and the distinction between the "probable" and "almost undoubted" levels of confidence was disregarded.

5.3 Comparison of "Study" and Statistics Canada Figures for Each Manner of Non-Natural Death

The figures published by Statistics Canada for the numbers of non-natural deaths by manner of non-natural death in Newfoundland and Labrador and Canada for the years 1951 - 1986 and the rates obtained by dividing these numbers by the relevant populations are shown in tables 14 - 20 of appendix D and tables 1 - 6 of appendix A. The discrepancies between the Statistics Canada and "study" figures for each manner of non-natural death are shown in figures 7 - 12. Unfortunately, we cannot explain these discrepancies as we do not have access to Statistics Canada raw data and so

cannot determine how they obtained their figures.

The discrepancies between the Statistics Canada and "study" figures for non-natural deaths range from +10.2% to -23.3%; the Statistics Canada figures being higher than the "study" figures during the first 3 years studied but lower during the last 5 years studied.

The discrepancies between the Statistics Canada and "study" figures for non-traffic accident fatalities range from +18.1% to -37.5%; Statistics Canada figures being higher than "study" figures during the first 5 years studied but lower during the last 3 years studied. Although these discrepancies are generally greater than those for non-natural deaths, the pattern of discrepancies is similar to that of the non-natural deaths. Disagreements between "assigned" and "study" manners of death cannot explain these differences as the discrepancies between Statistics Canada and "assigned" figures for non-traffic accident fatalities are greater than those between the corresponding Statistics Canada and "study" figures.

The discrepancies between the Statistics Canada and "study" figures for traffic accident fatalities range from +10.8% to -7.7% and are generally smaller than those for non-natural deaths. This is consistent with our finding that traffic accident fatalities seem more reliably recorded as such than do other manners of non-natural death.

Figures 7 - 12

Per Cent Discrepancy* between Statistics Canada and "Study" Figures for each Manner of Non-Natural Death

Figure 7

Figure 8

Figure 9

Figure 10

Figure 11

Figure 12

Note: Per cent Discrepancy = [(Statistics Canada figure minus "study" figure)/Statistics Canada figure] x 100

Statistics Canada figures for suicide are consistently lower than "study" figures, the discrepancies ranging from -5.2% to -50%. As discussed in section 5.2, discrepancies between the "assigned" and "study" manners of death account for the majority of these differences (29 deaths) but the remainder (9 deaths) cannot thus be explained.

Discrepancies between Statistics Canada figures for homicide and those recorded by "study" manner of death range from +100% to -50%. However due to the small numbers involved, with one exception, these large relative discrepancies translate into absolute discrepancies of one or fewer deaths per year and can therefore easily be accounted for by the limitations of the study methodology.

Discrepancies between Statistics Canada and "assigned" figures for "undetermined" deaths range from +100% to -7%. Once again, due to the small numbers involved small absolute discrepancies appear as large relative discrepancies. The 12 discrepancies over the last 4 years studied are attributable to the difficulties encountered in determining the "assigned" manner of deaths occurring during the later years studied.

5.4 Numbers and Crude and Age and Sex Adjusted Non-Natural Fatality Rates.

By "study" manner of death, there were 1923 non-natural fatalities during the 8 years of this study. Of these 1923

non-natural fatalities, 28 were non-traffic accidents involving crews of foreign ships offshore whose only connection to Newfoundland and Labrador was that they happened to be in Newfoundland waters at the time of their deaths. It was felt that these deaths should be deleted from the "gross" non-natural fatality numbers and rates. The resulting geographic and temporal distributions of "net" non-natural fatality numbers and crude and age and sex adjusted rates are shown in tables 13 through 15 of appendix C. As shown in figures 13 and 14, the crude "net" non-natural fatality rate for the province ranged from 40.8 deaths/ 100,000/ year in 1986 to 54.1 deaths/ 100,000/ year in 1966. The age and sex adjusted rates, shown in figure 14, ranged from 44.5 deaths/ 100,000/ year in 1986 to 63.2 deaths/ 100,000/ year in 1966. By census district, the average crude "net" non-natural death rate was highest in census district 10 at 101.8 deaths/ 100,000/ year, almost twice the rate of the next highest census district, and lowest in census district 8 at 33.8 deaths/ 100,000/ year. The average age and sex adjusted "net" non-natural fatality rate, shown in figure 16, ranges from 112.8 deaths/ 100,000/ year in census district 10 to 36.4 deaths/ 100,000/ year in census district 8.

Figures 13 & 14

Crude and Age and Sex Adjusted "Net" Non-Natural Fatality Rates; Newfoundland and Labrador 1951 - 1986, by Year of Death

Figure 13

Figure 14

Figures 15 & 16

Average Crude and Age and Sex Adjusted "Net" Non-Natural Fatality Rates; Newfoundland and Labrador 1951 - 1986, by Census District

Figure 15

Figure 16

5.5 Numbers and Crude and Age and Sex Adjusted Non-Traffic Accident Fatality Rates.

There were 1122 non-traffic accident fatalities during the 8 years of this study of whom 28 were "foreign" fatalities and 1094 were "domestic" fatalities. The geographic and temporal distributions of these "domestic" non-traffic accidental fatalities and of the corresponding crude and age and sex adjusted rates are shown in tables 16 - 18 of appendix C. 186 of these "domestic" non-traffic accident fatalities were due to hip fractures. The geographic and temporal distribution of these hip fracture related fatalities are shown in table 19 of appendix C. Given the estimate that only 40% of fall related fatalities among the elderly are so recorded on death certificates[39] and that a substantial proportion of these victims probably sustained their hip fracture in one census district and were hospitalized and died in another, it was felt appropriate to delete these deaths from the "domestic" non-traffic accident fatality numbers and rates. The resulting geographic and temporal distributions of "net" non-traffic accident fatality numbers and crude and age and sex adjusted rates are shown in tables 20 - 22 of appendix C. As shown in figure 17, the crude "net" non-traffic accident fatality rate dropped progressively from approximately 28 deaths/ 100,000/ year during the 1950's to 14.4 deaths/ 100,000/

Figures 17 & 18

Crude and Age and Sex Adjusted "Net" Non-Traffic Accident Fatality Rates; Newfoundland and Labrador 1951 - 1986, by Year of Death

Figure 17

Figure 18

Figures 19 & 20

Average Crude and Age and Sex Adjusted "Net" Non-Traffic Accident Fatality Rates; Newfoundland and Labrador 1951 - 1986, by Census District

Figure 19

Figure 20

year in 1986. The age and sex adjusted "net" non-traffic accident fatality rate, shown in figure 18, remained stable at about 27 deaths/ 100,000/ year from 1951 through 1976 before dropping to 15.4 deaths/ 100,000/ year in 1986. The average crude "net" non-traffic accident fatality rate ranged from 18.9 deaths/ 100,000/ year in census district 8 to 28.8 deaths/ 100,000/ year in census district 3 and 77.6 deaths/ 100,000/ year in census district 10. The average age and sex adjusted rate ranged from 17.9 deaths/ 100,000/year in census district 8 to 30 deaths/ 100,000/ year in census district 3 and 82.6 deaths/ 100,000/ year in census district 10.

5.6 Numbers and Crude and Age and Sex Adjusted Traffic Accident Fatality Rates.

There were 532 traffic accident fatalities during the 8 years of this study. The geographic and temporal distributions of these non-natural fatalities and of the corresponding crude and age and sex adjusted traffic accidental fatality rates are shown in tables 23 through 25 of appendix C. As shown in figure 21, the crude traffic accident fatality rate rose from 7.5 deaths/ 100,000/ year in 1951 to approximately 18 deaths/ 100,000/ year in 1966 and 1971 and then dropped progressively to 10.2 deaths/ 100,000/ year in 1986. The age and sex adjusted traffic accident fatality rate, shown in figure 22, rose from 8

Figures 21 & 22

Crude and Age and Sex Adjusted Traffic

Accident Fatality Rates; Newfoundland and Labrador

1951 - 1986, by Year of Death

Figure 21

Figure 22

Figures 23 & 24

Average Crude and Age and Sex Adjusted Traffic

Accident Fatality Rates; Newfoundland and Labrador

1951 - 1986, by Census District

Figure 23

Figure 24

deaths/ 100,000/ year in 1951 to 20.4 deaths/ 100,000/ year in 1966 and then progressively dropped to 10.2 deaths/ 100,000/ year in 1986. The average crude traffic accident fatality rates, shown in figure 23, ranged from 7.6 deaths/ 100,000/ year in census district 9 to 22.3 deaths/ 100,000/ year in census district 4. The average age and sex adjusted rates, shown in figure 24, ranged from 6.8 deaths/ 100,000/ year in census district 9 to 27.4 deaths/ 100,000/ year in census district 4.

5.7 Numbers and Crude and Age and Sex Adjusted Suicide Rates.

There were 178 suicides during the 8 years of this study. The geographic and temporal distribution of these "minimum" suicides and of the corresponding crude and age and sex adjusted "minimum" suicide rates are shown in tables 26 - 28 of appendix C. As shown in figure 25, the crude "minimum" suicide rate averaged about 4 deaths/ 100,000/ year from 1951 through 1976 and rose to about 6 deaths/ 100,000/ year during 1981 and 1986. The age and sex adjusted "minimum" suicide rate, shown in figure 26, rose from about 5 deaths/ 100,000/ year in the 1950's and 1960's to about 6.8 deaths/ 100,000/ year in the 1980's. The average crude "minimum" suicide rates, shown in figure 27, ranged from 2.5 deaths/ 100,000/ year in census district 8 to 5 deaths/ 100,000/ year in census districts 1 and 4 and

Figures 25 & 26

Crude and Age and Sex Adjusted "Minimum"

Suicide Rates; Newfoundland and Labrador

1951 - 1986, by Year of Death

Figure 25

Figure 26

Figures 27 & 28

Average Crude and Age and Sex Adjusted "Minimum"

Suicide Rates; Newfoundland and Labrador

1951 - 1986, by Census District

Figure 27

Figure 28

9.4 deaths/ 100,000/ year in census district 10 The average age and sex adjusted "minimum" suicide rates, shown in figure 28, ranged from 3.2 deaths/ 100,000/ year in census district 8 to 5.9 deaths/ 100,000/ year in census district 1 and 13.1 deaths/ 100,000/ year in census district 10.

A review of the 79 "unknown" deaths (discussed in section 5.2) reveals that the possibility of suicide could not reliably be excluded for 68 of these deaths. These 68 deaths were therefore added to the 178 "minimum" suicides to produce the "maximum" suicide numbers and crude and age and sex adjusted rates which are shown in tables 29 - 31 of appendix C. As shown in figure 29, the crude "maximum" suicide rate rose from approximately 5 deaths/ 100,000/ year in the 1950's and 1960's to approximately 9 deaths/ 100,000/year during the 1980's. The age and sex adjusted "maximum" suicide rate, shown in figure 30, rose from approximately 6 deaths/100,000/year in the 1950's and 1960's to approximately 10 deaths/ 100,000/ year in the 1980's. The increased rate of increase over time is attributable to a substantial increase in the numbers of "unknown" deaths during the latter years of the study period. The distribution of average crude and age and sex adjusted "maximum" suicide rates, shown in figures 31 and 32 is similar to that of the "minimum" suicide rates.

Figures 29 & 30

Crude and Age and Sex Adjusted "Maximum"

Suicide Rates; Newfoundland and Labrador

1951 - 1986, by Year of Death

Figure 29

Figure 30

Figures 31 & 32

Average Crude and Age and Sex Adjusted "Maximum"

Suicide Rates; Newfoundland and Labrador

1951 - 1986, by Census District

Figure 31

Figure 32

5.8 Numbers and Crude and Age and Sex Adjusted Homicide Rates.

There were 11 homicides during the 8 years of this study. The geographic and temporal distributions of these homicide and of the corresponding crude and age and sex adjusted homicide rates are shown in tables 32 - 34 of appendix C. The crude and age and sex adjusted rates for the province and the average crude and age and sex adjusted rates for each census district are shown in figures 33 - 36. Very little can be said about these rates because of the small numbers involved. The maximum number of homicides during any study year was 3 and, with one exception, no census district had more than one homicide during any study year.

5.9 Number of Deaths Registered by Physicians, Nurses and Clergy and Predictors of Registration of Non-Natural Deaths by Non-Physicians

As shown in tables 35 through 37 of appendix C, of the 1935 deaths in the study, 1816 were registered by a physician, 11 by a nurse, and 108 by an "other" person, usually a clergyman. The proportions of deaths registered by non-physicians dropped steadily from 0.23 in 1951 to 0.01 in 1986 and were highest in census districts 2,3,9, and 10, all of which were remote and relatively sparsely populated areas of the province.

Figures 33 & 34

Crude and Age and Sex Adjusted

Homicide Rates; Newfoundland and Labrador

1951 - 1986, by Year of Death

Figure 33

Figure 34

Figures 35 & 36

Average Crude and Age and Sex Adjusted

Homicide Rates; Newfoundland and Labrador

1951 - 1986, by Census District

Figure 35

Figure 36

As shown in table 39 of appendix C, of the 119 deaths registered by non-physicians, according to the "study" manner of death, 93 were non-traffic accidents, 13 were traffic accidents, 6 were suicides, 5 were "unknown" deaths, 1 was a homicide and 1 was due to natural causes. As shown in table 40 of appendix C, according to the "assigned" manner of death, 88 of these deaths were non-traffic accidents, 9 were traffic accidents, 9 were due to natural causes, 4 were suicides, 2 were "unknown" or "undetermined" deaths and 1 was a homicide.

Finally, as shown in table 41 of appendix C, non-physicians registered 6% of all deaths studied but only 3% of "assigned" "unknown" or undetermined deaths and 14% of deaths (ie 10 deaths) for which there was disagreement between the "assigned" and "study"manners of death. Of these 10 deaths, 8 were "assigned" natural or "almost undoubted" natural deaths but "study" "almost undoubted" or "probable" non-traffic accidents, 1 was an "assigned" natural death but "study" "almost undoubted" suicide, and 1 was an "assigned" "probable" non-traffic accident but "study" "probable" suicide.

In summary, non-physicians registered 6% of deaths studied, most commonly during the earlier years of the study and in remote areas of the province. "Study" non-traffic accidents were more likely to be registered by non-

physicians than were other manners of non-natural death. "Undetermined" and "unknown" deaths were less likely to have been registered by non-physicians than were other manners of non-natural death. Non-physicians accounted for a disproportionately large percentage of deaths for which there was disagreement between the "assigned" and "study" manners of death. Most of these "disagreed" deaths were "assigned" natural deaths but "study" non-traffic accidents.

5.10 Risk Factors for each Manner of Non-Natural Death

5.10.1 Age and Sex

5.10.1.1 ""Net" Non-Natural Deaths

The age-sex specific average "net" non-natural death rates are shown in figure 37. The average male rate of 70 deaths/ 100,000/ year is approximately 3 times the average female rate of 24.5 deaths/ 100,000/ year. Male age-specific rates are higher than female age-specific rates for all age groups except over 75 year olds, often by several-fold. Male age-specific rates increase in late adolescence and early adulthood and again in old age while female rates remain relatively low until late adulthood.

5.10.1.2 Hip Fractures

As shown in figure 38, hip-fracture-related fatalities affect the elderly almost exclusively. The overall male rate of 2.8 deaths/ 100,000/ year is less than half the average overall female rate of 6.5 deaths/ 100,000/ year.

Figures 37 - 46

Rates of each Manner of Non-Natural Death, Newfoundland and Labrador, by Age Group and Sex

Figure 37

Figure 38

Figure 39

Figure 40

Figures 37 - 46 (continued)

Rates of each Manner of Non-Natural Death,

Newfoundland and Labrador, by Age Group and Sex

Figure 41

Figure 42

Figure 43

Figure 44

Figures 37 - 46 (continued)

Rates of each Manner of Non-Natural Death,

Newfoundland and Labrador, by Age Group and Sex

Figure 45

Figure 46

Hip fracture- related fatalities account for approximately 75% of all non-natural deaths in over 74 year old females and almost half of all non-natural deaths in over 74 year old males.

5.10.1.3 "Net" Non-Traffic Accident Fatalities

The age-sex specific "net" non-traffic accident fatality rates (ie those due to other than hip fractures) are shown in figure 39. The overall male rate of 38 deaths/ 100,000/ year is approximately 4 1/2 times the overall female rate of 8.5 deaths/ 100,000/ year. Male age-specific rates were higher than female age-specific rates for all age groups. Male age-specific rates peaked in early childhood, early adulthood and old age. Female age-specific rates were highest at the extremes of life, particularly during old age.

Because of possible heterogeneity of age and sex-specific fatality rates for various kinds of non-traffic accidents, the age-sex distributions of fatality rates due several types of non-traffic accidents were calculated and are shown in tables 44a - 44k of appendix C. These tables show that fatalities due to accidental drowning, accidents at sea, recreational vehicle accidents, industrial accidents, hypothermia and aircraft accidents are almost exclusively male phenomena, killing (predominantly adolescent and early to middle aged adult) men at rates at

least 8 times those of women. Accidental firearms fatalities and "other" non-traffic accidental fatalities were predominantly male phenomena, killing men at a rate 3 to 4 times that of women. The male average accidental fall fatality rate (excluding hip fracture-related fatalities) was approximately 3 times the average female rate. Rates in both sexes rose progressively with age. Accidental poisoning killed men at about 1.7 times that of women. Finally, accidental fires killed men and women at equal rates of 3.5 deaths/ 100,000/ year. Fire related death rates were highest among the elderly and second among the very young.

5.10.1.4 Traffic Accident Fatalities

The age-sex specific traffic accident fatality rates for each year studied are shown in figure 40. The overall male rate of 19.6 deaths/ 100,000/ year was approximately 3 times the average overall female rate of 6.5 deaths/ 100,000/ year. Male rates were higher than female rates for all age groups and peaked in early adulthood and again in late adulthood. The age and sex-specific traffic accident fatality rates to drivers, passengers. pedestrians and unspecified victims are shown in figures 41 - 44. As shown in figure 41, the male:female motor vehicle driver accidental fatality ratio is approximately 6:1. Male driver fatality rates peak in 20 - 24 year olds and fall

progressively thereafter. Female driver fatality rates are much lower and fail to show much of a peak at any age. As shown in figure 42, the male:female passenger traffic accident fatality ratio is slightly over 2:1. The fatality rates in both sexes peak in late adolescence and early adulthood and again in late adulthood. as shown in figure 43, the male:female pedestrian traffic accident fatality ratio is also slightly over 2:1. Here the age-specific fatality rate pattern is quite much different, with peaks in childhood and late adulthood and a trough in late adolescence to middle adulthood. Finally, as shown in figure 44, the pattern of age and sex specific unspecified traffic accident fatality rates is similar to that of traffic accidents as a whole.

5.10.1.5 "Minimum" Suicides

The age-sex specific "minimum" suicide rates for each year studied are shown in figure 45. The overall male rate of 7.1 deaths/ 100,000/ year was approximately 4 1/2 times the average overall female rate of 1.6 deaths/ 100,000/ year. There were no suicides in 0 to 14 year olds. Male age-specific rates were higher than female age-specific rates for all other age groups, particularly during late adolescence and early adulthood. Rates in both sexes remain relatively stable throughout adult life. Contrary to the reports of the literature, the rate of suicide among elderly

males does not appear higher than that among other adult males.

5.10.1.6 Homicides

The age-sex specific homicide rates for each year studied are shown in figure 46. The overall male and female average rates were approximately equal at 0.3 and 0.2 deaths/ 100,000/ year respectively. There were too few homicides to make any other meaningful comparisons.

5.10.2 Other Risk Factors

The distributions of proportions of the "net" non-natural deaths in 18+ year olds by manner of death and occupation, employment status and marital status are shown in tables 48 - 50 of appendix C. The distribution of the proportions of the "net" non-natural deaths by manner of death and religion are shown in table 51 of appendix C. The occupation, employment status, marital status and religion of the deceased were unknown in 30%, 56%, 3% and 18% of cases respectively.

Not being a member of the labour force or having an unknown occupational status, being retired or having an unknown employment status and being widowed all increased the risk of dying of a fractured hip relative to dying by other non-natural means. However all the above are attributable to the age and sex distribution of the population affected.

Similarly, being a farmer, fisher or miner and being employed increased the risk of dying of a non-traffic accident relative to dying of other non-natural means, presumably reflecting the hazardous natures of these professions and the prevalence of work-related accidents. These same groups were at less risk of dying of traffic accidents relative to dying of other non-natural means for reasons which are not clear. No occupation is either greatly over-represented or under-represented among suicide victims relative to victims of other non-natural manners of death.

The unemployed and the single, separated or divorced are over-represented among suicide victims relative to victims of other non-natural deaths, which is consistent with the literature. However the numbers of separated and divorced deceased studied (7 and 21 respectively) are too low to allow confidence in the significance of this finding.

No religion appears to have either increased or decreased the risk of dying of any manner of non-natural death relative to any other manner of non-natural death.

The number of homicide victims (11) is too low to allow any meaningful discussion about the risk factors for this group.

Chapter VI - Discussion

6.1 Limitations of the Study

6.1.1 Validity of the Rates of each Manner of Non-Natural Death

As was true of Malla and Hoenig's study[3] and that of Liberakis and Hoenig[1], both of which assumed that all declared accidental deaths were truly accidental, this study relies on the assumption that the causes and circumstances of death were recorded on the death records with sufficient accuracy and completeness that all apparent natural deaths were true natural deaths. This assumption is not entirely correct. It has been estimated that only 40% of hip fracture related deaths are so recorded on death certificates[44]. The remaining 60% of these deaths are presumably recorded as due to pneumonia, ischemic heart disease, cerebrovascular disease, or some other natural disease state without mention of the hip fracture and so would have been excluded from this study. It is also well established that a substantial proportion of autopsies reveal causes of death that are entirely unsuspected prior to the performance of the autopsy[17,20]. Presumably a (hopefully) small proportion of these missed causes of death would be unsuspected accidents, suicides or homicides. Finally, while it is assumed that the substantial majority of people registering the deaths studied recorded the causes

of death honestly, it must be anticipated that a small number of causes of death may have been mis-represented for a variety of reasons such as those discussed in the literature review in order to disguise the true manner of death. While most of these disguised deaths would presumably have been suicides disguised as accidents, some may well have been non-natural deaths disguised as natural deaths. While an estimate of the number of non-natural deaths missed in these ways is beyond the scope of this thesis, it is expected and hoped to be small.

There is also some uncertainty about the degree of mis-identification of non-natural deaths due to one manner of death as due to another non-natural death. In addition to the possibility that information on death certificates was deliberately falsified to disguise the true manner of death, the lack of information was sufficient to make it impossible to assign a "study" manner of death to 4% of deaths studied and to reduce the level of confidence with which the "study" manner of death was assigned to "probable" in an additional 10% of deaths studied. Finally, the assignment of a "study" manner of death at the "almost undoubted" level of confidence rests on a number of assumptions outlined in table 7 of appendix B. While the these assumptions are presumably safe in the substantial majority of cases, they cannot be expected to be 100% accurate 100% of the time.

The author expects and hopes that in excess of 90% of the "probable" "study" manners of death and in excess of 95% of the study" "almost undoubted" manners of death are correct but has no way of knowing this without reviewing the relevant autopsy and Justice Department files. The Department of Justice kindly granted the author permission to do so but, after reviewing a few of these files the author concluded that given the passage of time, the amount of work involved and the likely low yield of new information, his efforts would more usefully be reserved for a future study of death records and autopsy/justice files of more recent deaths.

A second problem adversely affecting the validity of the rates of each manner of non-natural death is due to the distribution of hospital services in Newfoundland and Labrador. While primary hospitals are located throughout the province, the secondary hospitals are confined to census districts 5, 6 and 9 and the tertiary hospitals to census district 1. A number of deceased were undoubtedly injured in one census district and hospitalized in another where they died, thus artefactually inflating the death rate in the census district in which they died and reducing it in the district in which they were injured. This difficulty could perhaps have been partly circumvented by analyzing the deaths studied by the places of residence of the deceased.

However the information about the places of residence of the deceased was less complete than that of their places of death. In addition this analysis would have removed the deceased who lived outside the province from the study without recording any information about the residents of Newfoundland and Labrador who died non-natural deaths elsewhere and whose deaths are therefore not recorded in the death registry of this province. For these reasons it was felt best to analyze the deaths studied by location of death and to accept the limitations imposed by this method.

Another difficulty arose from the facts that Newfoundland and Labrador contains over 1,000 communities, a number of which were evacuated during the "resettlement" of the 1950's and 1960's and that it is not uncommon for 2, 3 or 4 of these communities to have similar or identical names. Fortunately the author was provided with an index of place names in Newfoundland and Labrador, including the names of most of the "resettled" communities and, by using this index, was able to resolve the confusion in all but a few cases.

The above limitations are shared by all studies which fail to review the autopsy or police/justice files of deaths to ensure the accuracy and completeness of the information on death records. With the exception of the study by Aldridge and St. John[4], the author is unaware of any

epidemiological study of non-natural deaths which has done so. Thus the validity of the "study" rates of each manner of death reported in this study is believed to be comparable to those of similar studies.

As discussed in the methods section of this thesis, information about the manner assigned to each death varied considerably and deteriorated over time. The ICD codes of each death were clearly documented on each death record during the earlier years of the study. Unfortunately this practice was largely discarded in the 1960's and the documentation of the "assigned" manner of death deteriorated steadily thereafter. Fortunately the manner of death was documented on enough death records to enable the retrieval "assigned" manners of death at the "almost undoubted" level of confidence for a number of records by comparing them to records of deaths occurring in the same year with virtually identical listed causes and circumstances of death. Thus the "assigned" manner of death was determined either directly from the death record or with an "almost undoubted" level of confidence in 86% of deaths studied. The "assigned" manner of death was listed as "undetermined" on the death records of an additional 2% of deaths studied.

The causes and circumstances of a substantial number of deaths only approximated those of other records which included a recorded manner of death, thus reducing the

level of confidence of the "assigned" manners of death to "probable" in 11% of deaths studied. Finally, the information about the causes, circumstances and recorded manners of death of approximately 1% of deaths studied was so poor as to preclude the determination of an "assigned" manner of death.

Without access to the information transmitted to Statistics Canada officials, it is impossible to ascertain the accuracy of the determination of the "almost undoubted" and "probable" "assigned" manners of death. The author postulates that the error rate for "almost undoubted" "assigned" manners of death is below 10% and that of "probable" "assigned' manners of death below 20%, the reason being that errors in either the "assigned" or the "study" manners of death are more likely to lead to spurious disagreement than spurious agreement between the "assigned" and "study" manners of death. The 89.8% rate of agreement between the "assigned" and "study" manners of death suggest that the upper estimates of the possible error rates of the "assigned" and "study" manners of death are high, particularly given the additional 6% of "assigned" and "study" unknown and undetermined deaths.

6.1.2 Validity of the Risk Factor Analysis

As reported in the "Methods" and "results" sections, the demographic information about the deceased studied

varies considerably from death registration to death registration. The date and place of death and the age and sex of the deceased are virtually always recorded. Information about the places of residence and birth of each deceased is less complete than that about the place of death. For this reason and those discussed above, the deaths studied were studied by place of death and not by the places of birth and residence.

The age and sex stratified populations of the province and of each census district during each year studied were available, thus allowing the calculation and reporting of the rate of each manner of non-natural death for each age and sex group. However, the numbers of people of each occupation, marital status or religion and the employment rates were not available. In addition, as noted in the results section, the occupation, employment status, marital status and religion was not recorded for substantial proportions of the deceased studied. Thus we cannot report the rates of each manner of non-natural death by occupation, employment status, marital status, and religion but only the chances that a non-natural death was due to one manner of death relative to other manners of death and this only very approximately.

The presence or absence of significant medical conditions, mental disorders or substance abuse disorders

was so seldom recorded as to preclude any analysis of this data. It was therefore determined that these data were essentially worthless.

6.2 Conclusions

Bearing the above limitations in mind the following can be concluded:

In order to assess the validity of the reported rates of each manner of non-natural death in Newfoundland and Labrador, operational definitions for "almost undoubted" natural, "probable" natural, "almost undoubted" non-natural and "probable" non-natural deaths and for "almost undoubted" non-traffic accidental death, "probable" non-traffic accidental death, "almost undoubted" traffic accidental death, "probable" traffic accidental death, "almost undoubted" suicide, "probable" suicide, "almost undoubted" homicide, "probable" homicide, "almost undoubted" "other" death, "probable" "other" death, and "unknown" death were developed. These operational definitions are listed in tables 4 and 7 of appendix B of this thesis. They were demonstrated to have a corrected-for-chance inter-rater reliability of 0.93.

All 26,011 death records for the 8 years studied were screened for non-natural deaths and yielded 1935 other than "almost undoubted natural" deaths. The available demographic and health-related data about these 1935

deceased and the causes and circumstances of their deaths and the "assigned" manner of death were recorded. A "study" manner of death was assigned to each deceased by examining the data recorded and applying the operational definitions of each manner of death. The rates of each "study" manner of non-natural death were then calculated for each year studied.

The "study" manner of death agreed with that "assigned" by vital statistics staff approximately 90% of the time. The remaining 10% of deaths were approximately equally divided into deaths for which the "study" manner of death was "unknown", the "assigned" manner of death was either "undetermined" or "unknown" or the "study" and "assigned" manners of death differed. The 10% of deaths for which there was no agreement between the "study" and "assigned" manners of death included approximately the expected numbers of "study" homicides and non-traffic accidents but 2 1/2 times the expected number of "study" suicides and only a small fraction of the expected numbers of "study" traffic accidents.

Comparison between the figures generated by this study and those of Statistics Canada show considerable discrepancies between the two sets of figures. We are unable to explain these discrepancies but note that those for traffic accidents are less than for other manners of

non-natural death while Statistics Canada figures for suicide are consistently less by an average of 20% than "study" figures for suicide. This latter finding was as expected prior to beginning the study. Thus traffic accidents appear more reliably reported as such both on death records and on official statistics than do other manners of non-natural death. Approximately 80% of suicides in Newfoundland and Labrador were reported as such in Statistics Canada figures. Of the remaining 20% of suicides, 6% are reported as "undetermined" deaths and 9% as "non-traffic accidents or natural deaths on death records, and 5% appear as suicides on death records but not on Statistics Canada figures.

Trends in the crude "net" non-natural fatality rates for Newfoundland and Labrador over time parallel those in Canada during the period studied, ranging from 40.8 to 52.5 deaths / 100,000/ year in comparison with Canadian rates which range from 54.2 - 71.2 deaths/ 100,000/ year. The average "net" non-natural fatality rates range from 33.8 - 54.0 deaths/ 100,000/ year in census districts 1 - 9 but are approximately twice as high at 101.8 deaths/ 100,000/ year in census district 10. Thus, with the exception of census district 10 where the non-natural fatality rates are approximately 1 1/2 times the Canadian average, non-natural fatality rates are lower in the Province than in the country

as a whole.

Crude "net" non-traffic accident fatality rates for Newfoundland and Labrador as a whole decreased more or less steadily from 28.5 deaths/ 100,000/ year in 1951 to 14.4 deaths/ 100,000/ year in 1986. They closely parallelled crude Canadian non-traffic accident fatality rates which from 38.3 deaths/ 100,000/ year in 1951 to 19.8 deaths/ 100,000/year during the same period. Interestingly, the age-and-sex adjusted "net" non-traffic accident fatality rates for Newfoundland and Labrador remain almost steady at approximately 27 deaths/ 100,000/ year from 1951 - 1976 before gradually dropping to 15.4 deaths/ 100,000/ year in 1986. The average rates ranged from 18.9 - 28.8 deaths/ 100,000/ year in census districts 1 - 9 but were almost 3 times as high at 77.6 deaths/ 100,000/ year in census district 10. Thus the trend in crude non-traffic accident fatality rates in Newfoundland and Labrador mirrors that in Canada. Rates for the province are about one third lower than those for the country except in census district 10 where they are several times Canadian rates.

Crude traffic accident fatality rates in Newfoundland and Labrador rose from about 10 deaths/ 100,000/ year in 1951 - 1961 to about 18 deaths/ 100,000/ year in 1966 - 1971 before falling progressively to 10.2 deaths/ 100,000/ year

in 1986. This trend is similar to that of Canada as a whole where crude traffic accidental fatality rates rose form 19.0 deaths/ 100,000/ year in 1951 to 27.0 deaths/ 100,000/ year in 1966 before falling progressively to 16.1 deaths/ 100,000/ year in 1986. Average crude traffic accident fatality rates ranged from 7.6 - 22.3 deaths/ 100,000/ year and were highest in census districts, 4, 5 and 6. This is presumably because the Trans Canada Highway is a major transportation route in these districts. Provincial rates are between half and two thirds national rates; however rates in census districts 4, 5 and 6 approximately equal Canadian rates.

Crude "minimum" suicide rates for Newfoundland and Labrador rose from approximately 4 deaths/ 100,000/ year during the 1950's and 1960's to approximately 6 deaths/ 100,000/year during the 1980's. Average crude "minimum" suicide rates range from 2.5 - 5.0 deaths/ 100,000/ year in census districts 1 - 9 but are almost twice as high at 9.4 deaths/ 100,000/ year in census district 10. Crude "maximum" suicide rates for Newfoundland and Labrador rose from approximately 4.5 deaths/ 100,000/ year in the 1950's and 1960's to approximately 9 deaths/ 100,000/ year in the 1980's. Average crude "maximum" rates range from 3.3 - 6.5 deaths/ 100,000/ year in census districts 1 - 9 but are 1.8 times as high at 11.4 deaths/ 100,000/ year in census

district 10. The increased rate of increase in crude "maximum" suicide rates relative to crude "minimum" rates is believed almost entirely artefactual as study "unknown" deaths, which account for the differences between "minimum" and "maximum" suicide rates, occur much more commonly during the later years studied than the earlier ones. We expect that most of these "unknown" deaths are not suicides. The age and sex adjusted "minimum" suicide rates for Newfoundland and Labrador rose from approximately 4.5 deaths/ 100,000/ year in the 1950's and 1960's to approximately 6.5 deaths/ 100,000/ year in the 1980's. The average "minimum" and "maximum" age and sex adjusted suicide rates range from 3.2 - 6.4 deaths/ 100,000/ year in census districts 1 -9 but are twice as high at 13.1 deaths/ 100,000/ year in census district 10.

Crude Canadian suicide rates range from 7.4 deaths/ 100,000/ year in 1951 to 14.5 deaths/ 100,000/ year in 1986. Thus both crude and age and sex adjusted "minimum" suicide rates for Newfoundland and Labrador are approximately half those for Canada while crude and age and sex adjusted "maximum" suicide rates are approximately two thirds Canadian rates. However crude and age and sex adjusted "minimum" rates in census district 10 approximately equal Canadian rates. We are confident that the study methodology is sufficiently robust to eliminate all sources of under-reporting of suicide other than mis-representation of suicides as natural deaths or other manners of non-natural death on death registrations. Thus, unless a substantial number of suicides are deliberately being mis-reported on death registrations, Newfoundland's historically low rates of reported suicide reflect truly low rates of suicide, not artefacts of misreporting.

Crude homicide rates range from 0 to 0.6 deaths/ 100,000/ year for Newfoundland and Labrador as a whole while average crude homicide rates for each census district range from 0 to 2 deaths/ 100,000/ year. Crude Canadian homicide rates range from 1.0 - 2.4 homicides/ 100,000/ year. Thus homicide rates in Newfoundland and Labrador appear lower than those in Canada as a whole.

6% of deaths studied were reported by non-physicians.

Most of these deaths occurred during the earlier years of the study and in the more remote areas of the province. Non-physicians were slightly more likely to report non-traffic accidents than other manners of non-natural death and were half as likely to report deaths the manner of which is either unknown or "undetermined" but 2.3 times as likely to report deaths for which there is disagreement between the "assigned" and "study" manners of death. However, they account for only a small proportion of these deaths.

With few exceptions, male rates of each manner of non-natural death are several times female rates and both the rate of each manner of non-natural death and the ratio of male: female age-specific rates increase from birth to early adulthood. The age-specific rates but not the male: female ratio usually rises again in late adulthood and old age.

Hip fracture-related fatalities affect the elderly almost exclusively, kill women at a rate 2.3 times that of men, and account for 75% of non-natural fatalities among elderly women but less than 50% of those among elderly men. Thus hip fracture-related fatalities account for most of the steep rise in non-natural fatality rates as women age beyond 74 years and for the low male; female ratio of age-specific "net" non-natural fatality rates in over-74 year olds. That these factors are attributable to osteoporosis which is most prevalent in elderly caucasian females is well recognized[16].

The male:female ratio of "net" non-traffic accident fatalities is 4.5:1. This ratio rises from 2:1 in 0 - 4 year olds to 20:1 in 20 - 24 year olds and then drops progressively thereafter. However the age-specific rate distribution and male:female ratio vary considerably from one type of non-traffic accident to another.

The male:female ratio of traffic accident fatalities is 3.2:1. This ratio rises to 6:1 for fatalities to drivers and drops to 2.3 - 2.3: 1 for fatalities to non-drivers. Rates in both sexes drop in late childhood, are highest in late adolescence and early adulthood, drop in middle adulthood and rise again in late adulthood. Age-specific fatality rates for pedestrians are highest at the extremes of life.

The male: female ratio of "minimum" suicides is approximately 4.5:1. There were no suicides in under-15 year olds of either sex. Age-specific suicide rates in males rose steadily from 6.4 suicides/ 100,000 15 - 19 year olds/ year to 14 - 15 suicides/ 100,000 45 - 74 year olds/ year and then dropped to about 9 suicides / 100,000 over-74 year olds/ year. In contrast to other published reports, there is neither a drop in suicide rates in middle adulthood nor a rise in suicide rates in late adulthood. Thus the age-specific pattern of suicide rates in males in Newfoundland and Labrador appears different from that

elsewhere. Whether this pattern repeats itself in the 1987 - 1996 decade would be interesting to discover. Rates in females peaked at 4.7 suicides/ 100,000 35 - 44 year olds/ year and then dropped progressively to 2.6 suicides/ 100,000 over-74 year olds/ year. Thus the male and female age-specific patterns of suicide rates are similar. The male; female ratio rose from 7:1 in 15 - 19 year olds to 20:1 in 20 - 24 year olds and then dropped to 2 - 4:1 in over-34 year olds.

The male: female homicide ratio was 1.5:1. All homicide victims were between 20 and 74 years of age. Little else can be said about the risk factors for homicide due to the small numbers involved.

As noted above, geography appears to be a considerable risk factor for many types of non-natural death. Rates of non-natural death, non-traffic accidental death, suicide and homicide were higher in census district 10 than in other census districts, often by several-fold. This census district (Labrador) is geographically and culturally separate from the remainder of the province, being physically part of the "mainland", having been settled much more recently than the remainder of the province, having a different economic base, a larger aboriginal population and fewer roads.

A review of occupational factors reveals that hip

fracture related fatalities are over-represented, relative to those dying other manners of non-natural deaths, among those not in the labour force and those whose occupation was unknown. This is as expected as most elderly women were presumably housewives and therefore not in the labour force and most elderly men had presumably retired several years before their deaths, thus reducing the likelihood of having their occupations recorded on their death records. Farmers, fishermen and miners are over-represented among victims of non-traffic accidents and under-represented among victims of traffic accidents relative to victims of non-natural deaths as a whole. This is presumably attributable to the dangerous nature of these types of work and a reduced likelihood of travelling extensively by road. No other occupational group appears either over-represented or under-represented among the victims of any manner of non-natural death relative to non-natural deaths as a whole.

The employment status of all victims of hip fracture-related fatalities is retired, non labour force or unknown. As discussed above, this is attributable to the age and sex distribution of the population affected. The proportion of victims of each manner of non-natural death of each employment status approximates that of non-natural deaths as a whole except that the employed are over-represented among non-traffic accident fatalities and the unemployed are over-

represented among suicides. The former is presumably attributable to job-related fatalities while the latter is as expected from the literature.

The widowed, comprising 14% of the deceased studied, account for 56% of those dying of hip fractures. This is explained by the age and sex distribution of these deceased and the fact that women usually outlive their husbands. Single people appear slightly over-represented, relative to non-natural deaths, among victims of traffic accidents and suicides. The former may well be attributable to the age distribution of traffic accident victims while the latter is as expected from the literature.

With the exception of hip fracture-related fatalities, among whom those whose religion is unknown are under-represented, no religious group is either over-represented or under-represented among the victims of any one manner of non-natural death relative to non-natural deaths as a whole. Thus, at least in our series, religious affiliation does not have any effect on the likelihood of one's non-natural death being due to any given manner of death.

In summary, operational definitions were developed and used to assess the validity of the reported rates of non-natural deaths in Newfoundland and Labrador between 1951 and 1986. "Study" manners of death agreed with those previously assigned by vital statistics personnel approximately 90% of

the time and disagreed approximately 4% of the time. Comparison of the "study" rates of each manner of death with those published by Statistics Canada revealed that the discrepancies between the two sets of figures for traffic accidents are less than those for other manners of non-natural death and that approximately 20% of "study" suicides do not appear in Statistics Canada figures. Trends in the rates of each manner of non-natural death in the Province parallel those in Canada as a whole, the average rates of non-natural death, traffic accidental death, suicide and homicide being lower than Canadian rates while non-traffic accidental death rates are similar to Canadian rates. Rates of non-natural death, non-traffic accident, suicide and homicide are considerably higher in census district 10 (Labrador) than elsewhere. The influences of age and sex are consistent with the reports of the literature as are the influences of marital status, occupation and employment status. However these latter influences are difficult to ascertain due to the limited data available.

Chapter VII - Future Plans

There have been a number of developments in the investigation and recording of non-natural deaths in Newfoundland and Labrador since 1986. Chief among these, from the perspective of this study, have been the appointment of a new Chief Forensic Pathologist in 1986, substantial improvements and standardization of the investigation of notifiable deaths including the forwarding of copies of the reports of all forensic autopsies/ external examinations to a central registry, a substantial (and alarming) rise in the number of suicides reported and increasing discrepancies between the number of suicides reported by the Office of the Chief Forensic Pathologist and those recorded by Statistics Canada.

We hope, if given permission to do so, to take advantage of these developments to update the information obtained in this study by reviewing the registrations of death of those dying in Newfoundland and Labrador between 1987 and 1996, selecting those whose deaths appear to be other than "almost undoubted natural" deaths for further study, abstracting demographic and other data about these deceased, the causes and circumstances of their deaths using essentially the same methodology described in this paper. We then hope to inspect the autopsy records of the notifiable deaths for these years and abstract additional

information about the relevant medical and psychiatric histories of the deceased whose notifiable deaths were due to other than natural causes, the causes and circumstances of their deaths, and additional risk factors such as intoxication with alcohol or drugs, the use or non-use of seat belts, unsafe practices, etc. It is hoped that we will thus be able to update the information in this paper, substantially reduce the uncertainties about the manners of these deaths, and gain substantial information about the risk factors for these deaths thus hopefully pointing to ways of reducing such deaths in the future.

Chapter VIII - References

1. Liberakis EA, Hoenig J: Recording of Suicide in Newfoundland, Psychiatric J U Ottawa 1978;3:254-9.
2. Malla A, Hoenig J: Suicide in Newfoundland and Labrador. Can J Psychiatry 1979;24:139-46.
3. Malla A, Hoenig J: Differences in Suicide Rates: An Examination of Under-reporting. Can J Psychiatry 1983;28:291-3.
4. Aldridge D, St. John K: Adolescent and Pre-adolescent Suicide in Newfoundland and Labrador. Can J Psychiatry 1991;36:432-6.
5. Monk M: Epidemiology of Suicide. Epidemiologic Reviews, 1987; 9:51-69.
6. Spelman JW: Suicide: A Medical Examiner's View. In Wecht CH, Editor: Legal Medicine, 1969. New York; Meredith; 1969:165-184.
7. MMWR: Operational criteria for determining suicide. JAMA 1989; 261: 360,366.
8. National Task Force on Suicide in Canada: Suicide in Canada. Ottawa: National Health and Welfare; 1987.
9. McCarthy PD, Walsh D: Suicide in Dublin: the under-reporting of suicide and the consequences for national statistics. Br. J. Psychiat. 1975; 126: 301-08.
10. Atkinson MW, Kessel N, Dalgaard JB: The comparability of suicide rates. Br. J. Psychiat. 1975; 127: 247-56.

11. Farberow N, MacKinnon DR, Nelson FL: Suicide: who's counting? Public Health Rep. 1977; 92: 223-32.

12. Walsh B, Walsh D, Whelan B: Suicide in Dublin: the influence of some social,and medical factors on coroner's warrants Br. J. Psychiat. 1975; 126: 309-12.

13. Ovenstone IMK: A psychiatric approach to the diagnosis of suicide and its effect upon the Edinburgh statistics. Br. J. Psychiat. 1973; 123: 15-21.

14. Hutton CJ, Avis S: Annual Review 1990 - Office of Chief Forensic Pathologist. Department of Justice, Newfoundland and Labrador.

15. Sattin RW: Falls Among Older Persons: A Public Health Perspective. Annu. Rev. Publ. Health 1992;13:489-508.

16. The Summary Proceedings Act. Government of Newfoundland; 1979.

17. Ashley JSA, Cole SK, Kilbane MPJ: Health Information Resources: United Kingdom - Health and Social Factors. In Oxford Textbook of Public Health, 2nd Edition, Volume 2: Methods of Public Health. Oxford: Oxford University Press 1991;29-53.

18. Barker DJP, Rose G: Epidemiology in Medical Practice. Edinburgh: Churchill Livingston Press, 1984;13-15.

19. Mausner JS, Kramer S: Epidemiology - An Introductory Text. Philadelphia: WB Saunders Co. 1985;70-76.

20. Alderson MR, Bayliss RIS, Clarke CC, Whitfield AGW: Death Certification. Br Med J 1981;287:444-5.

21. Edgington B: Health, Disease and Medicine in Canada: A Sociological Perspective. Toronto: Butterworths 1989:96.

22. Baker SP, O'Neill B, Karpf RS: The Injury Fact Book. Lexington: Lexington Books 1984.

23. Sartwell PE, Last JM: Epidemiology. in Last JM (editor) Public health and preventive medicine; eleventh edition. New York: Appleton Century Crofts;1980; 25 - 26.

24. Riley R, Paddon P: Accidents in Canada: mortality and hospitalization. Health Rep 1988;1:23 - 50.

25. Tsuang MT, Simpson JC, Fleming JA: Epidemiology of suicide. Int Rev Psychiatr 1992;4:117-129.

26. Rodriguez JG, Brown ST: Childhood Injuries in the United States. AJDC 1990;144:627-46.

27. Christoffel KK: Violent Death and Injury in U.S. Children and Adolescents. AJDC 1990;144:697-706.

28. Guyer B, Ellers B: Childhood Injuries in the United States: Mortality, Morbidity and Cost. AJDC 1990;144:649-52.

29. Hollinger PL: Suicide and Violent Death: Longitudinal Studies. In Lester D: Current Concepts of Suicide. Philadelphia: Charles Press; 1990, p: 29-39.

30. Hunter I, Wotherspoon S: A bibliography of Health Care in Newfoundland. St. John's: Memorial University Faculty of Medicine; 1986.

31. Medline[R] search 1981 - 1995.

32. Paulson JA: The Epidemiology of Injuries in Adolescents. Pediatr. Ann. 1988;17:84-6, 89-96.

33. Robinson CC, Kuller LH, Perper J: An Epidemiologic Study of Sudden Death at Work in an Industrial County, 1979-1982. Am J Epidemiol 1988;128:806-20.

34. Carter GL: Accidental Firearm Fatalities and Injuries Among Recreational Hunters. Ann Emerg Med 1989; 18:406-9.

35. Wintemute GJ: Childhood Drowning and Near-Drowning in the United States. AJDC 1990;144:663-9.

36. McLoughlin E, McGuire A: The Causes, Cost and Prevention of Childhood Burn Injuries. AJDC 1990;144:677-83.

37. Chapdelaine A, Samson E, Kimberley MD, Viau L: Firearm related injuries in Canada: issues for prevention. Can Med Assoc J 1991;145:1217 - 23.

38. Mann RE, Anglin L Wilkins K, Vingilis ER, MacDonald S: Mortality in a sample of convicted drinking drivers. Addiction 1993;88:643-7.

39. Kraus JF, Rock A, Hemyari P: Brain Injuries Among Infants, Children, Adolescents and Young Adults. AJDC 1990;144:684-91.

40. Stallones L, Kraus JF: The occurrence and epidemiologic features of alcohol-related occupational injuries. Addiction 1993; 88: 945 - 51.

41. Gudjonsson GH, Petursson H: Homicide in the Nordic Countries. Acta Psychiatrica Scand 1990;82:49-54.

42. Rivara FP: Child Pedestrian Injuries in the United States: Current Status of the Problem, Potential Interventions, and Future Research Needs. AJDC 1990;144:692-6.

43. Agran P, Castillo D, Winn D: Childhood Motor Vehicle Occupant Injuries. AJDC 1990;144:653-62.

44. Riley R: Accidental falls and injuries among seniors. Health Rep 1992; 4: 341 - 54.

45. Shannon A, Feldman W: Childhood gunshot injuries in the Ottawa area. Can J Public Health 1993;84:159 - 62.

46. Sainsbury P: The Epidemiology of Suicide. In Roy A (ed): Suicide Baltimore:Williams and Wilkins; 1986, 17-40.

47. Moller HJ: Suicide Risk and Treatment Problems in Patients who have Attempted Suicide. In Lester D: Current Concepts of Suicide. Philadelphia: Charles Press; 1990, p: 168-181.

48. Klerman GL: Clinical Epidemiology of Suicide. J Clin Psychiatry 1987; 48:33-8.

49. Lester D: The Prevention of Suicide: Public Health Approaches. In Lester D: Current Concepts of Suicide. Philadelphia: Charles Press; 1990, p: 182-193.

50. Diekstra RFW: Suicide, Depression and Economic Conditions. In Lester D: Current Concepts of Suicide. Philadelphia: Charles Press;1990, p: 71-94.

51. Moksony F: Ecological Analysis of Suicide: Problems and Prospects. In Lester D: Current Concepts of Suicide. Philadelphia: Charles Press; 1990, p: 121-138.

52. Durkheim E: Suicide: A Study in Sociology. Spaulding JA, Simpson G, Translators. New York: Free Press;1951.

53. Bourget D, Labelle A: Homicide, infanticide and filicide. Psychiatr Clin North Am 1992;15:661-73.

54. Killias M: International correlations between gun ownership and rates of homicide and suicide. Can Med Assoc J 1993;148:1721 - 5.

55. Centerwall BS: Homicide and the prevalence of handguns: Canada and the United States. Am J Epidemiol 1991; 134: 1245 - 60.

56. Manual of the international statistical classification of diseases, injuries and causes of death. Geneva: World Health Organization; 1977, 763.

57. Jaffe FA: A guide to pathological evidence for lawyers and police officers. Toronto: Carswell Company; 1983.

58. Gove PB, Editor: Webster's third new international dictionary of the English language unabridged. Springfield: Merriam Webster Inc.: 1986.

59. Fleiss JL: Statistical methods for rates and proportions, second edition. New York: John Wiley & Sons; 1981: 212 - 19.

60. Colton T: Statistics in Medicine. Boston: Little & Brown; 1974.

APPENDIX A

Statistics Canada Data:
Non-Natural Death Rates
in Newfoundland and Canada;
1951 - 1936

TABLE 1

SUICIDE RATES (/100000/YEAR)

Year	Newfoundland			Canada		
	Female	Male	Total	Female	Male	Total
1951	1.1	5.4	3.3	3.6	11.1	7.4
1952	0.6	3.6	2.1	3.4	11.1	7.3
1953	0.5	4.1	2.3	3.2	11.0	7.1
1954	1.0	2.9	2.0	3.5	10.9	7.3
1955	0.5	2.4	1.5	3.4	10.7	7.1
1956	1.0	3.3	2.2	3.5	11.7	7.6
1957	0.5	5.9	3.3	3.3	11.7	7.5
1958	0.0	4.9	2.5	3.0	11.8	7.5
1959	0.5	5.6	3.1	3.1	11.5	7.4
1960	0.5	4.6	2.6	3.0	12.0	7.6
1961	1.3	6.0	3.7	3.0	11.9	7.5
1962	0.0	3.7	1.9	3.1	11.2	7.2
1963	2.1	4.5	3.3	3.8	11.4	7.6
1964	0.4	6.4	3.5	4.1	12.3	8.2
1965	0.8	8.2	4.6	4.5	12.9	8.8
1966	0.0	6.0	3.0	4.3	12.8	8.6
1967	0.8	3.1	2.0	4.8	13.2	9.0
1968	0.0	2.3	1.2	5.2	14.2	9.7
1969	0.4	1.9	1.2	6.2	15.5	10.9
1970	0.8	8.7	4.8	6.4	16.2	11.3
1971	1.6	5.6	3.6	6.4	17.3	11.9
1972	1.5	4.1	2.8	6.9	17.4	12.2
1973	1.5	8.0	4.8	7.1	18.0	12.6
1974	0.8	3.6	2.2	7.1	18.7	12.9
1975	0.4	6.4	3.5	6.8	17.8	12.3
1976	1.1	6.4	3.8	7.2	18.4	12.8
1977	0.7	6.6	3.7	7.3	21.2	14.2
1978	1.4	3.9	2.7	7.3	22.3	14.8
1979	0.4	8.4	4.4	7.0	21.4	14.1
1980	0.4	6.3	3.4	6.8	21.2	14.0
1981	1.4	7.0	4.2	6.8	21.3	14.0
1982	0.7	11.2	6.0	6.4	22.4	14.3
1983	2.1	10.5	6.3	6.9	23.5	15.1
1984	1.4	12.2	6.8	6.2	21.6	13.8
1985	0.0	8.0	4.0	5.4	20.6	13.0
1986	2.1	6.0	4.0	6.4	22.8	14.5

TABLE 2
TRAFFIC ACCIDENT FATALITY RATES (/100000/YEAR)

Year	Newfoundland			Canada		
	Female	Male	Total	Female	Male	Total
1951	3.4	10.8	7.2	8.7	29.0	19.0
1952	5.5	7.8	6.7	10.0	32.0	21.2
1953	2.7	10.7	6.8	10.6	31.4	21.2
1954	4.1	11.7	8.0	9.8	27.7	18.9
1955	5.5	16.5	11.2	9.8	29.0	19.5
1956	6.0	15.9	11.1	11.0	33.0	22.1
1957	5.8	11.8	8.9	10.4	33.8	22.3
1958	3.3	17.2	10.5	10.1	30.8	20.6
1959	3.7	15.5	9.8	11.1	30.9	21.1
1960	5.4	15.1	10.5	10.8	30.4	20.8
1961	3.1	17.0	10.3	10.5	31.9	21.3
1962	4.4	15.8	10.2	11.9	34.4	23.3
1963	9.4	23.5	16.6	12.4	34.5	23.6
1964	12.1	23.8	18.1	13.3	37.0	25.3
1965	8.2	21.2	14.9	13.9	37.5	25.8
1966	6.6	30.5	18.8	14.3	39.6	27.0
1967	12.3	26.6	19.6	15.1	39.0	27.1
1968	9.3	20.9	15.2	14.4	38.4	26.5
1969	9.9	28.2	19.3	14.2	39.8	27.0
1970	9.8	21.6	15.8	13.3	36.3	24.8
1971	12.9	22.9	18.0	14.8	37.9	26.4
1972	14.2	29.9	22.2	15.1	42.7	28.9
1973	10.9	25.8	18.5	16.4	42.7	29.5
1974	11.6	36.2	24.1	15.3	41.1	28.2
1975	12.6	25.0	18.9	14.2	37.5	25.9
1976	8.4	19.4	14.0	12.1	32.9	22.5
1977	6.5	22.0	14.4	12.2	33.1	22.6
1978	7.6	18.3	13.0	12.2	31.9	22.0
1979	9.3	28.1	18.8	13.4	36.7	25.0
1980	8.6	25.6	17.1	12.7	33.6	23.1
1981	7.1	25.9	16.6	11.3	33.6	22.4
1982	5.3	23.2	14.3	9.4	25.1	17.2
1983	11.2	24.7	18.0	9.4	25.7	17.5
1984	5.6	15.0	10.3	9.0	24.3	16.5
1985	5.6	17.5	11.5	9.8	24.0	16.8
1986	4.6	18.3	11.4	9.2	23.1	16.1

TABLE 3
HOMICIDE RATES (/100000/YEAR)

Year	Newfoundland			Canada		
	Female	Male	Total	Female	Male	Total
1951	0.6	0.0	0.3	0.8	1.3	1.0
1952	0.0	0.5	0.3	0.7	1.3	1.0
1953	1.1	0.5	0.8	0.9	1.4	1.1
1954	0.5	0.0	0.3	0.9	1.3	1.1
1955	0.0	0.0	0.0	0.8	1.4	1.1
1956	0.0	0.5	0.2	1.0	1.3	1.1
1957	0.5	0.9	0.7	0.8	1.3	1.0
1958	0.5	0.4	0.5	1.0	1.4	1.2
1959	0.0	0.4	0.2	0.6	1.4	1.0
1960	0.0	0.8	0.4	1.1	1.7	1.4
1961	0.0	0.4	0.2	0.9	1.5	1.2
1962	0.0	0.0	0.0	1.0	1.8	1.4
1963	1.3	0.8	1.0	1.0	1.6	1.3
1964	1.3	0.4	0.8	1.0	1.5	1.3
1965	0.8	0.8	0.8	1.1	1.6	1.3
1966	0.0	0.8	0.4	0.9	1.6	1.3
1967	0.0	0.0	0.0	1.3	1.8	1.5
1968	0.4	0.8	0.6	1.2	2.0	1.6
1969	1.2	0.8	1.0	1.1	2.5	1.8
1970	0.0	0.0	0.0	1.5	2.5	2.0
1971	0.0	0.4	0.2	1.5	2.9	2.2
1972	0.4	0.4	0.4	1.7	3.0	2.4
1973	1.1	0.4	0.7	1.7	3.2	2.4
1974	1.1	0.7	0.9	1.8	3.1	2.5
1975	0.4	1.1	0.7	1.8	3.6	2.7
1976	0.7	0.7	0.7	1.6	3.3	2.4
1977	0.0	0.7	0.4	1.7	3.5	2.6
1978	0.4	0.4	0.4	1.5	3.5	2.5
1979	0.4	1.1	0.7	1.7	3.2	2.4
1980	0.0	0.0	0.0	1.3	2.7	2.0
1981	0.4	0.0	0.2	1.7	2.9	2.3
1982	0.0	0.0	0.0	1.6	3.3	2.4
1983	0.0	0.3	0.2	1.7	3.1	2.4
1984	0.4	0.7	0.5	1.5	3.2	2.3
1985	0.4	0.0	0.2	1.5	2.7	2.1
1986	0.7	0.7	0.7	1.4	2.7	2.0

TABLE 4
NON-TRAFFIC ACCIDENT FATALITY RATES (/100,000/YEAR)

Year	Newfoundland			Canada		
	Female	Male	Total	Female	Male	Total
1951	19.3	52.9	36.5	21.9	54.4	38.3
1952	25.3	44.2	35.0	21.1	56.1	38.8
1953	15.6	52.3	34.5	21.4	53.0	37.4
1954	15.6	46.8	31.7	20.9	51.4	36.3
1955	28.0	52.8	40.8	21.3	52.4	37.1
1956	23.4	53.8	39.0	21.9	48.7	35.5
1957	22.3	51.9	37.6	21.6	49.8	35.9
1958	27.4	52.5	40.4	19.2	46.6	33.1
1959	30.5	56.7	44.1	19.1	46.5	33.0
1960	23.1	50.4	37.2	19.4	44.3	32.0
1961	21.1	48.1	34.9	18.7	44.1	31.6
1962	19.7	47.7	34.0	19.3	42.5	31.0
1963	14.5	47.9	31.6	18.4	42.8	30.7
1964	15.9	43.7	30.1	17.6	41.5	29.6
1965	18.1	49.8	34.3	18.9	41.5	30.3
1966	16.6	48.4	32.8	17.5	43.0	30.3
1967	16.8	49.7	33.6	18.3	41.2	29.8
1968	18.1	41.7	30.2	18.0	39.8	28.9
1969	7.9	36.6	22.6	16.7	40.1	28.5
1970	13.8	43.9	29.2	17.8	38.9	28.4
1971	15.2	36.5	26.0	18.1	40.7	29.4
1972	15.3	39.1	27.4	18.2	43.4	30.8
1973	15.8	48.3	32.4	17.2	43.0	30.1
1974	10.9	34.4	22.9	17.7	41.3	29.5
1975	15.2	41.8	28.8	18.3	40.4	29.3
1976	20.4	33.2	26.9	15.9	37.0	26.4
1977	10.5	32.2	21.5	16.0	35.0	25.4
1978	9.0	29.2	19.2	16.0	35.0	25.5
1979	11.5	28.8	20.2	15.7	34.9	25.2
1980	8.9	33.7	21.4	15.1	32.7	23.8
1981	10.6	31.2	21.0	14.4	37.4	25.8
1982	5.7	33.4	19.6	14.3	28.6	21.4
1983	10.5	30.0	20.3	13.6	26.6	20.0
1984	9.8	30.3	20.1	14.6	28.0	21.2
1985	7.4	31.8	19.6	13.8	26.3	20.0
1986	8.8	22.2	15.5	14.9	24.9	19.8

TABLE 5
"UNDETERMINED" DEATH RATES (/100000/YEAR)

	Female	Male	Total	Female	Male	Total
1951						
1952						
1953						
1954						
1955						
1956						
1957						
1958						
1959						
1960						
1961						
1962						
1963						
1964						
1965						
1966						
1967						
1968						
1969	0.0	0.4	0.2	0.5	0.9	0.7
1970	0.4	0.0	0.2	0.8	1.3	1.0
1971	0.0	0.4	0.2	1.2	1.5	1.3
1972	0.4	0.0	0.2	1.4	1.8	1.6
1973	0.8	4.0	2.4	1.3	1.7	1.5
1974	0.4	2.5	1.5	1.7	2.4	2.1
1975	0.0	2.1	1.1	1.5	2.9	2.2
1976	0.7	3.9	2.3	1.7	3.5	2.6
1977	1.1	4.9	3.0	2.4	5.3	3.8
1978	1.1	7.0	4.1	2.2	5.1	3.7
1979	0.4	3.2	1.8	1.9	3.7	2.8
1980	0.7	3.2	1.9	1.9	3.1	2.5
1981	2.1	7.7	4.9	1.8	3.5	2.7
1982	2.5	3.9	3.2	1.5	3.0	2.2
1983	1.8	2.1	1.9	1.1	2.4	1.8
1984	0.7	2.8	1.7	1.6	2.8	2.2
1985	1.4	2.4	1.9	0.9	2.0	1.4
1986	0.4	2.8	1.6	0.9	2.7	1.8

TABLE 6
NON-NATURAL DEATH RATES (/100000/YEAR)

Year	Newfoundland			Canada		
	Female	Male	Total	Female	Male	Total
1951	24.4	69.2	47.3	35.0	95.9	65.8
1952	31.4	56.2	44.1	35.2	99.2	67.6
1953	19.9	67.6	44.4	36.1	96.9	66.9
1954	21.3	61.4	42.0	35.1	91.5	63.7
1955	34.1	71.6	53.4	35.3	93.4	64.7
1956	30.3	73.4	52.5	37.3	94.8	66.4
1957	29.1	70.6	50.5	36.1	96.6	66.8
1958	31.2	75.0	53.9	33.3	90.6	62.4
1959	34.7	78.2	57.2	33.9	90.3	62.5
1960	28.9	71.0	50.8	34.3	88.5	61.8
1961	25.6	71.5	49.1	33.0	89.5	61.6
1962	24.0	67.2	46.2	35.3	90.0	62.9
1963	27.3	76.6	52.6	35.6	90.2	63.2
1964	29.7	74.3	52.5	36.0	92.4	64.4
1965	28.0	80.0	54.6	38.4	93.5	66.2
1966	23.2	85.7	55.1	37.0	97.0	67.2
1967	29.9	79.5	55.2	39.4	95.2	67.4
1968	27.8	65.7	47.1	38.8	94.5	66.8
1969	19.5	67..9	44.2	38.8	98.8	68.9
1970	24.8	74.2	50.0	39.7	95.3	67.6
1971	30.1	65.4	48.1	42.0	100.3	71.2
1972	31.8	73.4	53.0	43.3	106.6	74.9
1973	30.1	86.5	58.8	43.7	108.5	76.1
1974	24.8	77.5	51.6	43.6	106.7	75.1
1975	28.6	76.4	53.0	42.6	102.2	72.4
1976	31.4	63.5	47.7	38.6	95.1	66.8
1977	18.8	66.8	43.2	39.6	98.1	68.7
1978	19.5	58.8	39.4	39.3	97.9	68.4
1979	21.9	69.9	46.1	39.8	99.8	69.6
1980	18.5	68.7	43.8	37.9	93.4	65.4
1981	21.6	71.8	46.9	36.1	98.7	67.1
1982	14.2	71.7	43.1	33.2	90.7	61.7
1983	25.7	67.6	46.7	32.8	81.4	56.8
1984	17.9	61.0	39.5	32.8	79.8	56.1
1985	14.7	59.7	37.3	31.5	75.7	53.3
1986	16.5	49.9	33.3	32.7	76.2	54.2

TABLE 1

THE "RETURN OF DEATH" FORM

In the case of Stillbirth, please write the word STILLBORN in the space for given name.

H-520

Department of Health
Vital Statistics Division

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

RETURN OF DEATH

1. Place of Death { Town or Village .....
   District of .....

2. NAME OF DECEASED .....
   (given names) (surname)

3. Residence .....

4. Sex	5. AGE	Years	Months	Days	If less than one Day	6. Single .....
.....		.....	.....	.....	.....Hrs. or .....Mins.	Married .....
						Widowed .....

7. Occupation
   .....

8. Date of Death
   ..... 19 .....
   (month) (day) (year)

9. Birthplace
   .....

10. Place of Burial
    .....

11. Religious Denomination
    .....

12. Name of Attendant Physician
    .....

13. CAUSE OF DEATH
    .....
    .....

The above particulars are true according to the best of my knowledge and belief.

The ..... Parish of .....

Dated this ..... day of ..... 19..... .....
Signature of Registering Officer.

REMARKS:

DATE OF REGISTRATION

TABLE 2

THE PRE-1976 DEATH CERTIFICATE FORM

Form H620 Dept. of Health
Vital Statistics Division

GOVERNMENT OF NEWFOUNDLAND AND LABRADOR

Certificate of Registration of Death

1. Name of Deceased _____

2. Residence _____

3. Place of Death _____ | _____
(If in hospital or institution, give date of admission)

MEDICAL CERTIFICATE OF DEATH

4. I Hereby Certify that _____

died on _____ 19___ and that to the best of my knowledge and belief the cause of death was as herein stated.

IMMEDIATE CAUSE _____

DUE TO _____

Signed by _____ M.D.
(A registered Medical Practitioner)

Address _____ Date _____

5. Sex	6. AGE in	Years	Months	Days	If less than one day	7. Single ____ Married ____ Widowed ____
					___Hrs. or ___Mins.	

8. Occupation	9. Birthplace	10. If married give name of husband or maiden name of wife
11. Name of father	12. Maiden name of mother	
13. Place of burial	14. Funeral director	15. Registration Date

TABLE 3

THE POST-1976 DEATH CERTIFICATE FORM

FORM H-1

PROVINCE OF
NEWFOUNDLAND (Canada)
Department of Health
Vital Statistics Division
Office of the Registrar General, St. John's

REGISTRATION OF
DEATH

Registration No. (Department use only)

THIS IS A PERMANENT LEGAL RECORD
PLEASE TYPE OR PRINT PLAINLY AND COMPLETE ALL ITEMS

This record must be completed and filed with the Registrar General

NAME OF DECEASED
1. Surname of deceased (print or type) — All given names (in order) (print or type) — 2. SEX — Social Insurance Number (if available)

PLACE OF DEATH
3. Name of hospital or institution (otherwise give exact location where death occurred) — City, town, or other place (by name) — M. C. P. Number

USUAL RESIDENCE
4. Complete address. If rural give exact location (not Post Office or Rural Route address) — City, town, or other place (by name) — Province (or country)

MARITAL STATUS
5. Single, married, widowed, or divorced (specify) — 6. If married, widowed, or divorced, give full name of husband or full maiden name of wife

OCCUPATION
7. Type of work done during most of working life
8. Type of business or industry in which worked

BIRTHDATE
9. Month (by name), day, year of birth

AGE
10. Age (years) — (Months) If under 1 year — (Days) — (Hours) If under 1 day — (Minutes)

BIRTHPLACE
11. City or place — Province (or country) of birth

FATHER
12. Surname and given names of father (print or type)
13. BIRTHPLACE – City or place — Province (or country)

MOTHER
14. Maiden surname and given names of mother (print or type)
15. BIRTHPLACE – City or place — Province (or country)

SIGNATURE OF INFORMANT
16. Signature of informant
17. Postal address of informant
18. Relationship to deceased — 19. Date signed: (month, day, year)

DISPOSITION
20. Burial, cremation or other disposition (specify) — 21. Date of burial or disposition: Month (by name), day, year
22. Name and address of cemetery or place of disposition

FUNERAL DIRECTOR
23. Name and address of funeral director (or person in charge of remains)

MEDICAL CERTIFICATE OF DEATH

Before completing medical certificate see instructions on reverse

24. DATE OF DEATH: Month (by name), day, year — Approx. interval between onset & death

25. CAUSE OF DEATH

Part I

Immediate cause of death (a) ..... due to, or as a consequence of

Antecedent causes, if any, giving rise to the immediate cause (a) above, stating the underlying cause last (b) ..... due to, or as a consequence of (c) .....

Part II

Other significant conditions contributing to death but not causally related to the immediate cause (a) above

26. Autopsy? Yes ☐ No ☐
27. Does the cause of death stated above take account of autopsy findings? Yes ☐ No ☐
28. May further information relating to the cause of death be available later? Yes ☐ No ☐
29. If accident, suicide, homicide or undetermined (specify)
30. Place of injury (e.g. home, highway, place of employment, etc.)
31. Date of injury?
32. How did injury occur? (describe circumstances)
33. I certify that the above named person died on the date and from the causes stated herein: Signature (attending physician, medical examiner)
34. Designation: Last attending physician ☐ Medical examiner ☐ — Date certified: Month (by name), day, year
35. Name of last attending physician or medical examiner (print or type) — Address:

For Office Use Only

CERTIFICATION OF DIVISION REGISTRAR

I certify this return was made to me –

at ..... NFLD.

this ..... day of ..... 19 ...

..... Signature of Registrar General

8-2370-42.1: 22-3-88

TABLE 4

OPERATIONAL DEFINITIONS FOR "ALMOST UNDOUBTED" NATURAL DEATH "PROBABLE" NATURAL DEATH, "ALMOST UNDOUBTED" NON-NATURAL DEATH AND "PROBABLE" NON-NATURAL DEATH

"Almost Undoubted" Natural Death:

Death for which the registration of death and/or other documentation indicates the cause(s) of death:

1). are exclusively natural disease processes including "senility", "old age" or similar terms, or

2). include a surgical or medical procedure (or complication thereof) for a natural disease process unless an unforeseen medical misadventure (such as inadvertently cutting a major artery) contributed to the death, or

3). include non-disease process(es) which were clearly agonal event(s) in what would otherwise be natural disease process(es), or

4). is otherwise unexplained "asphyxia", "overlying" or "aspiration" or similar term(s) in infants under 1 year of age (ie what would be termed Sudden Infant Death Syndrome [S.I.D.S.] today), or

5). is otherwise unexplained "natural causes" or

similar term(s).

"Probable" Natural Death:

Death for which the registration of death and/or other documentation indicates the cause(s) of death:

1). include(s) mention of non-natural disease process(es) (such as a remote fracture) which appear(s) unlikely to have contributed to what would otherwise be considered an "almost undoubted" natural death (ie there is a break in the continuity between an initiating injury and death itself).

"Almost Undoubted" Non-Natural Death:

Death for which the registration of death and/or other documentation clearly indicates that death clearly resulted from:

1). any form of trauma except the inevitable result of a natural disease process (e.g. pathological fracture resulting from bony metastases due to a malignancy), or

2). poisoning (including botulism or tetanus), or

3). asphyxia except that resulting directly from a natural disease process (eg acute asthma) or otherwise unexplained "asphyxia". "overlying", "aspiration" or similar term(s) in an infant under

TABLE 4 (continued)

one year of age (ie what would be termed S.I.D.S. today), or

4). natural disease process(es) arising as complication(s) of non-disease process(es) (eg pneumonia or a pulmonary embolus secondary to a hip fracture), or

5). otherwise unexplained "accident", "suicide", "homicide" or similar term(s).

"Probable" Non-Natural Death:

Death for which the registration of death and/or other documentation indicates the cause(s) of death:

1). include(s) both natural disease process(es) and non-natural disease process(es) (such as a fracture)which appears likely but less than certainly to have contributed to death.

TABLE 5

FORM USED FOR TESTING THE RELIABILITY OF OPERATIONAL DEFINITIONS OF NATURAL AND NON-NATURAL DEATHS

Cause of Death	Manner of Death
1. _____ _____	a.u. nat. p. nat. a.u. non-nat. p. non-nat.
2. _____ _____	a.u. nat. p. nat. a.u. non-nat. p. non-nat.
3. _____ _____	a.u. nat. p. nat. a.u. non-nat. p. non-nat.
4. _____ _____	a.u. nat. p. nat. a.u. non-nat. p. non-nat.
5. _____ _____	a.u. nat. p. nat. a.u. non-nat. p. non-nat.
6. _____ _____	a.u. nat. p. nat. a.u. non-nat. p. non-nat.
7. _____ _____	a.u. nat. p. nat. a.u. non-nat. p. non-nat.
8. _____ _____	a.u. nat. p. nat. a.u. non-nat. p. non-nat.
9. _____ _____	a.u. nat. p. nat. a.u. non-nat. p. non-nat.
10. _____ _____	a.u. nat. p. nat. a.u. non-nat. p. non-nat.
11. _____ _____	a.u. nat. p. nat. a.u. non-nat. p. non-nat.
12. _____ _____	a.u. nat. p. nat. a.u. non-nat. p. non-nat.
13. _____ _____	a.u. nat. p. nat. a.u. non-nat. p. non-nat.
14. _____ _____	a.u. nat. p. nat. a.u. non-nat. p. non-nat.

TABLE 6

DEATH RECORD DATA ENTRY FORM

SUICIDES IN NEWFOUNDLAND: DATA TO BE COLLECTED

Data from Death Certificates

1. File Number (eg 001)_____

2. Date of death (day of week/month/year) ____ ____ __

3. Place of death: a: community[1] (by alphanumeric code) __

   b: size of community[2] (to the nearest 1,000) ____

   c: census division[3] ____

   or

   d: at sea near census division[3] ____

   or elsewhere (specify _____

   _____

   near census division[3] ____

   or

   not available ____

4. Place of Residence: same as (3) ____

   or

   a: community[1] (by alphanumeric code) ____

   b: size of community[2] (to the nearest 1,000) ____

   c: census division[3] ____

   or (1 Maritimes, 2 elsewhere in Canada, 3 United States, 4 Europe, 5 elsewhere) ____

   or

   not available ____

TABLE 6, (continued)

5. Place of Birth: same as (3) ____
or
same as (4), different from 3 ____
or
a: community[1] (by alphanumeric code)
b: size of community[2] (to nearest 1,000) ____
c: census division[3] ____
or (1 Maritimes, 2 elsewhere in Canada, 3 United States, 4 Europe, 5 elsewhere) ____
or
d: Newfoundland, location not specified ____
or
not available ____

6. Age: (in years) ____
or
not known(?) ____

7. Date of Birth: (month/year) _____
or
not known ____

8. Sex: M/F/? ____

9. Occupation
Professional/technical ____
Management/clerical ____
Tradesman/foreman ____
Farming/mining/fishing ____
Unskilled/semi-skilled Labour ____
Not in labour force ____
Not known ____

10. Employment Status[4]
Employed ____
Unemployed ____
Retired ____
Not in labour force ____
Not known ____

TABLE 6, (continued)

11. Marital Status[4]	Single	____
	Married	____
	Separated	____
	Divorced	____
	Widowed	____
	Unknown	____
12. Religion:	Roman Catholic	____
	Anglican	____
	United Church	____
	Pentecostal	____
	Salvation Army	____
	Other Christian	____
	specify _____	
	Other	____
	specify _____	
	Nil	____
	Not known	____

TABLE 6, (continued)

13. Cause of Death:
Mechanism _____

_____

External Cause
Motor vehicle accident - driver ___
- passenger ___
- pedestrian ___
- unspecified ___
- driver (drowning) ___
- passenger (drowning) ___
- unspecified (drowning) ___
- other (specify below) ___
Motor cycle accident - driver ___
- passenger ___
- pedestrian ___
- unspecified ___
- other (specify below) ___
Other road traffic accident (specify below) ___
Aircraft accident ___
Recreational vehicle accident (specify below) ___
Accident at sea (specify below) ___
Industrial accident (specify below) ___
House fire ___
Other fire (specify below) ___
Drowning ___
Fracture - hip ___
Fracture - other (specify below) ___
Falls/jumping ___
Hypothermia ___
Poisoning - carbon monoxide ___
- drugs (specify below) ___
- other (specify below) ___
Hanging ___
Firearms ___
Stabbing ___
Other Assault (specify below) ___
Other non-natural causes (specify below) ___
Natural causes (specify below) ___
Specify _____

Significant Medical Conditions? Yes/No ___
Specify _____

_____

Mental Disorder? Yes/No ___
Specify _____
Substance Abuse/Dependence? Yes/No ___
Specify _____

TABLE 6, (continued)

14. Additional Information Obtained from Death Certificate:

_____

_____

_____

15. Designation of Physician Certifying Death:

Attending Physician ___
Medical Examiner ___
Unspecified ___
Non-Physician ___
specify status below
_____

16. Was an autopsy done? Yes/No/Unknown ___

17. Is a Justice file obtainable? Yes ___

No file ever made ___
File not available ___

18. If other than "yes", is sufficient information available from the death certificate to enable this death to be reliably classified?

Yes ___
No ___

19. If "no", is an autopsy file available?

Yes ___
No ___

TABLE 6, (continued)

20. Reported Nature of Death:

Natural Causes	____
Traffic Accident	____
Non-traffic Accident	____
Suicide	____
Homicide	____
Undetermined	____
Not specified	____
Other	____

If "not specified", For Statistics Canada purposes, this death was:

Almost undoubtedly classified as Natural	____
" " " " Traffic Accident	____
" " " " Non-traf. Accident	____
" " " " Suicide	____
" " " " Homicide	____
Probably classified as Natural	____
" " " Traffic Accident	____
" " " Non-traf. Accident	____
" " " Suicide	____
" " " Homicide	____
Unable to say with confidence	____

If "probably" or "unable to say" the alternative(s)/reasonable possibilities include

Natural	____
Traffic Accident	____
Non-traf. Accident	____
Suicide	____
Homicide	____

TABLE 7

DEVELOPMENT OF OPERATIONAL DEFINITIONS FOR EACH MANNER OF NON-NATURAL DEATH

Development of Definitions

The operational definitions listed in figure 9a and the following definitions were used:

Accidental death(from Webster's dictionary[31]):- death by accidental means, usually sudden and violent, or death occurring as the unforseen and chance result of an intended act. Accidental deaths are divided into traffic accidents or non-traffic accidents depending on whether they involved a bicycle, automobile, truck, motorcycle or bus in the process of being driven or not.

Suicide (from Webster's dictionary[31]): any death resulting from the act or an instance of taking one's life voluntarily and intentionally or the deliberate and intentional destruction of his own life by a person of years of discretion and of sound mind. For purposes of this study, all fatal suicide attempts and gestures are considered suicides.

Homicide: any death resulting from the deliberate act(s) of another(s) whenever death was or ought to have been a foreseeable consequence of the act(s) whether intended or not. (Note: The issue of legal

TABLE 7 (continued)

culpability for a death does not enter into the decision whether that death is classified as a homicide or not.)

"Other" death: any death resulting from circumstances other than as defined above. For example, deaths arising from acts of war are considered "other" deaths.

The following assumptions were made:

1. In the absence of evidence to the contrary, any deceased under age 11 was assumed not to have deliberately provoked his/her own death.
2. Deaths resulting from attempts to rescue others were assumed to have been unintended.
3. Physicians or others registering a death who were satisfied that manner of death was either suicide or homicide were assumed to have been correct in this matter.
4. In the absence of evidence to the contrary, fires were assumed not to have been deliberately set.
5. In the absence of evidence to the contrary, incidents involving multiple fatalities, or, in the case of vehicular accidents, more than one vehicle. were assumed not to have been deliberately caused.
6. In the absence of evidence to the contrary, falls

TABLE 7 (continued)

from heights of less than one building story (4 meters) were assumed not to have been deliberate.

7. In the absence of evidence to the contrary, deaths due to excessive consumption of alcohol alone were assumed not to have been intended.

Operational Definitions

The following operational definitions were developed and adopted:

"Almost Undoubted" Traffic Accident:

(Note: the specifications under 2 of this section are designed to exclude the possibility of suicide.)

"Almost undoubted" non-natural death for which the death registration and/or other documentation indicates:

1). death was caused by a moving bicycle, motorcycle, automobile, truck or bus which:

a) struck the deceased, or

b) struck another object causing the death of the deceased, or

c) left the roadway or overturned causing the death of the deceased, and

2). if the deceased was:

a) the driver of a vehicle

i) was one of at least 2 fatalities

TABLE 7 (continued)

resulting from the incident, or

ii) collided with another vehicle (other than a train) or was struck by an object which had been hit by another vehicle, or

iii) had at least one passenger in the vehicle at the time of the incident, or

iv) collided with an animal, or

v) was hit by falling object(s), or

vi) the fatal incident resulted from attempt(s) to avoid an accident, or

vii) mechanical defects in the vehicle or hazardous road/weather conditions contributed to the incident, or

viii) attempted to avoid the fatal incident

b) a passenger

i) was under age 11, or

ii) does not appear to have jumped/fallen out of the vehicle (except during horseplay or to avoid an

TABLE 7 (continued)

accident)

c) a pedestrian

i) was under age 11, or

ii) was one of at least 2 fatalities resulting from the incident, or

iii) was accompanied by another pedestrian at the time of the fatal incident, or

iv) appeared unaware of the approaching vehicle at the time of the fatal incident, or

v) was struck by a bicycle, or

vi) was clearly attempting to cross the roadway, or

vii) attempted to avoid the fatal incident, or

viii) was otherwise shown not to have intended the incident.

d) a bicyclist

i) was under age 11, or

ii) appeared not to have intended the incident.

e) of unknown/unspecified status

i) was under age 11, or

TABLE 7 (continued)

ii) was one of at least 2 people involved in the fatal incident, or

iii) was involved in a collision between 2 vehicles, neither of which was a train, or with an object which had just been hit by another object, or

iv) the driver attempted to avoid the incident, and

3. The deceased does not appear to have caused or deliberately provoked the fatal incident, and

4. "Foul play" does not appear to have been suspected, and

5. The death does not appear to have been a direct,indirect or delayed consequece of war, civil unrest, similar activities or judicial execution.

"Probable" Traffic Accident:

1. A "probable" non-natural death which would otherwise qualify as an "almost undoubted" traffic accident, or

2. A "probable" or "almost undoubted" non-natural death for which the death registration and/or other documentation indicates:

a) death was caused by a moving bicycle, motorcycle, automobile, truck or bus which:

TABLE 7 (continued)

i) struck the deceased, or

ii) struck another object causing the death of the deceased, or

iii) left the roadway or overturned causing the death of the deceased, and

b) the deceased does not appear to have deliberately caused or provoked the fatal incident, and

c) "Foul play" does not appear to have been suspected, and

d) the death does not appear to have been a direct, indirect or delayed consequence of war, civil unrest, similar activities or judicial execution.

<u>"Almost Undoubted" Non-Traffic Accident:</u>

(Note: the specifications under 2 of this section are designed to exclude the possibility of suicide.)

"Almost undoubted" non-natural death for which the death registration and/or other documentation indicates:

1 The fatal incident did not involve a moving bicycle, motorcycle, automobile, truck or bus, and

2 The fatal incident is documented to have involved:

a) a deceased under age 11, or

b) more than one person, or

TABLE 7 (continued)

c) a fall with a vertical drop of not more than 1 storey of a building (4 meters), or

d) the sinking of a commercial or fishing vessel, an incident at sea arising directly from a storm, or being dragged overboard by fishing or other gear, or

e) an incident, other than a fall, arising in the course of one's employment, or

f) an otherwise unexplained hip fracture, or

g) a fire which does not appear to have been deliberately set, or

h) a recreational vehicle such as a snowmobile, all terrain vehicle, boat, canoe or raft, or

i) the deceased being struck by a piece of equipment or by a falling object, or

j) a medical or surgical misadventure, or

k) the eating of tainted food, or

l) ethyl alcohol poisoning or aspiration complicating alcohol intoxication, or

m) Choking, or

n) An attempt to escape danger or to rescue other(s) from danger, or

o) a deceased who was apparently at play or engaged in sporting activities (excluding

hunting), or

p) the apparently unintended result of autoerotic sexual activity, or

q) a witnessed incident, or

r) hypothermia, or

s) a military aircraft, or

t) attack by animal(s), or

u) is otherwise shown to have been unintended

3). The deceased did not appear to have caused or deliberately provoked the fatal incident, and

4). "Foul play" does not appear to have been suspected, and

5). The death does not appear to have been a direct, indirect or delayed consequence of war, civil unrest, similar activities or judicial execution.

"Probable" Non-Traffic Accident:

1). "Probable" non-natural death which would otherwise qualify as an "almost undoubted" non-traffic accident, or

2). "Almost undoubted" or "probable" non-natural death for which the death registration and/or other documentation indicates:

a) the fatal incident did not involve a moving bicycle, motorcycle, automobile, truck or bus,

TABLE 7 (continued)

b) the deceased appears not to have caused or deliberately provoked the fatal incident,

c) "foul play" does not appear to have been suspected, and

d) The death does not appear to have been a direct, indirect or delayed consequence of war, civil unrest, similar activities or judicial execution.

"Almost Undoubted" Suicide:

(Note: The criteria under 2 are the Operational Criteria for the Determination of Suicide of the International Association of Coroners and Medical Examiners[7].)

"Almost undoubted" non-natural death for which the death registration and/or other documentation indicates:

1). The person registering and/or investigating the death was satisfied that the death was self-inflicted, or

2). Both of the following:

(a) death resulted from a deliberate act which was almost undoubtedly that of the deceased for which a fatal outcome was or ought to have been foreseeable.

(b) there is evidence of intent to die such as:

i) preparation(s) for death, or

TABLE 7 (continued)

ii) expression(s) of farewell or of the desire to die, or

iii) expression(s) of hopelessness or great distress, or

iv) effort(s) to learn about means of death or to rehearse fatal behaviour, or

v) precautions to avoid rescue, or

vi) evidence of recognition of potential lethality of action or use of a highly lethal method such as hanging, shooting or jumping from a high place, or

vii) previous suicide attempt(s) or threat(s), or

viii) stressful event(s) or major loss(es), or

ix) serious depression or mental disorder.

Probable Suicide:

1. "Probable" non-natural death which would otherwise qualify as an "almost undoubted" suicide, or

2. "Almost undoubted" or "probable" non-natural death for which the death registration and/or other documentation indicates:

a) death resulted from an act which was most likely that of the deceased for which a fatal outcome was or

ought to have been foreseeable, and

b) the act appears more likely than not to have been deliberate.

Almost Undoubted Homicide:

"Almost undoubted" non-natural death for which the death registration and/or other available documentation indicates:

1. Death resulted from "homicide", "foul play" or similar terms, or

2. Death resulted directly or indirectly from assault upon the deceased by another person, or

3. Death resulted from a deliberate act(s) by someone other than the deceased for which fatal consequences were or ought to have been foreseen, and

4. The death does not appear to have been a direct, indirect or delayed consequence of war, civil unrest, similar activities or judicial execution.

Note: The issue of legal culpability for death is irrelevant to the issue of whether that death is a homicide or not.

Probable Homicide:

1. "Probable" non-natural death which would otherwise qualify as a "almost undoubted" homicide.

2. "Almost undoubted" or "probable" non-natural death for which the death registration and/or other documentation

TABLE 7 (continued)

indicates:

a) death appears more likely than not but less than certain to have resulted from the deliberate act(s) of other(s), and

b) a fatal outcome was or ought to have been foreseeable by

the person(s) committing the act(s).

c) the death does not appear to have been a direct, indirect or delayed consequence of war, civil unrest, similar activities or judicial execution.

Almost Undoubted "Other" Death:

"Almost undoubted" non-natural death for which the death registration and/or other available documentation indicates that death occurred as a direct, indirect or delayed consequence of war, civil unrest, similar activities, or judicial execution.

Probable "Other" Death:

1). "Probable" non-natural death which would otherwise qualify as an "almost undoubted" other death, or

2). "Almost undoubted" or "probable" non-natural death for which it appears more likely than not but less than certain that death occurred as a direct, indirect or delayed consequence of war, civil unrest, similar activities, or judicial execution.

TABLE 7 (continued)

"Unknown" Death:

A death which cannot be placed into any of the above categories.

TABLE 8

FORM USED FOR DETERMINING "STUDY" MANNER OF DEATH

File #: Age: Sex:

Mechanism of death:

External causes of death:

Specify:

Significant medical conditions?:

Specify: tuberculosis

Mental disorder?:

Specify:

Substance abuse?: Specify:

Additional information:

Assigned manner of death: _____. Alternatives: ____, ____, _

,____, ____.

APPENDIX C

Tables of Results

TABLE 1

DEATH REGISTRATIONS EXAMINED AND ENTERED INTO THE STUDY

	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Total
Total Death Registrations	3296	3075	3063	3098	3201	3417	3264	3597	26011
Registrations Selected	166	202	205	276	256	322	285	236	1948
Duplicate Registrations	2		1	1		4	1		9
Natural Deaths	1	1	1						3
Death in Greenland	1								1
Deaths Studied	162	201	203	275	256	318	284	236	1935

TABLE 2

DISTRIBUTION OF DEATHS STUDIED BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Total
1	70	93	72	110	99	152	117	114	827
2	3	7	8	15	14	7	10	14	78
3	12	9	8	12	17	8	11	9	86
4	8	7	17	13	13	14	14	20	106
5	13	21	28	30	23	18	16	17	166
6	16	21	18	23	27	32	14	17	168
7	13	10	9	19	21	22	28	7	129
8	12	9	14	23	19	21	24	9	131
9	8	6	6	7	7	13	24	11	82
10	7	18	23	23	16	30	25	18	160
Unknown						1	1		2
Total	162	201	203	275	256	318	284	236	1935

TABLE 3

DISTRIBUTION OF DEATHS STUDIED BY "ASSIGNED" AND "STUDY" MANNERS OF DEATH

Manner of Death	# of "Study" Deaths	# of "Assigned" Deaths
natural/"almost undoubted natural"	1	52
"probable natural"	11	13
NTA/"almost undoubted NTA"	960	940
"probable NTA"	162	157
TA/"almost undoubted TA"	294	528
"probable TA"	238	14
suicide/"almost undoubted suicide"	127	142
"probable suicide"	51	10
homicide/ "almost undoubted homicide"	7	13
"probable homicide"	4	2
other/"almost undoubted other"	1	1
"probable other"		
"undetermined"/ unknown	79	63

TABLE 4

DISTRIBUTION OF "ASSIGNED" "UNDETERMINED" AND "UNKNOWN" DEATHS BY "STUDY" MANNER OF DEATH

"Study" Manner of Death	# of Deaths
Natural Causes	5
Non-Traffic Accident	25
Traffic Accident	2
Suicide	10
Homicide	0
"Other"	0
Unknown	21
Total	63

TABLE 5

DISTRIBUTION OF "STUDY" "UNKNOWN" DEATHS BY "ASSIGNED" MANNER OF DEATH

"Assigned" Manner of Death	# of Deaths
Natural Causes	4
Non-Traffic Accident	37
Traffic Accident	13
Suicide	2
Homicide	2
Other	0
Unknown	21
Total	79

TABLE 8

COMPARISON OF "STUDY" AND STATISTICS CANADA FIGURES

FOR NON-TRAFFIC ACCIDENT FATALITIES DURING EACH YEAR STUDIED

Data Source	Year Studied							
	1951	1956	1961	1966	1971	1976	1981	1986
Study "Gross"	113	140	131	155	135	186	141	121
Study "Net"	103	117	110	126	115	139	116	82
Statistics Canada	133	162	160	162	136	150	119	88
Discrepancy[1]	+20	+22	+29	+ 7	+ 1	-36	-22	-33
per cent Discrepancy[2]	+15.0	+13.6	+18.1	+ 4.3	+ 0.7	-24.0	-18.5	-37.5

1 = Statistics Canada figure - Study "Gross" figure.
2 = (Statistics Canada figure - Study "Gross" figure)/ Statistics Canada figure x 100.

TABLE 9

COMPARISON OF "STUDY" AND STATISTICS CANADA FIGURES

FOR TRAFFIC ACCIDENT FATALITIES DURING EACH YEAR STUDIED

Data Source	Year Studied							
	1951	1956	1961	1966	1971	1976	1981	1986
Study	27	48	45	91	93	84	86	58
Statistics Canada	26	46	47	93	94	78	94	65
Discrepancy[1]	-1	-2	+2	+2	+1	-6	+8	+7
per cent Discrepancy[2]	-3.8	-4.3	+4.3	+2.1	+1.1	-7.7	+8.5	+10.8

1 = Statistics Canada figure - Study figure.
2 = (Statistics Canada figure - Study figure)/ Statistics Canada figure x 100.

TABLE 6

DISTRIBUTION OF DEATHS FOR WHICH THERE IS DISAGREEMENT BETWEEN THE "ASSIGNED" AND "STUDY" MANNERS OF DEATH BY "ASSIGNED" AND "STUDY" MANNERS OF DEATH

Assigned Manner of Death	Study Manner of Death					
	Natural	N.T.A.	T.A.	Suicide	Homicide	Total
Natural		51		2	1	54
N.T.A.	1		1	14		16
T.A.						
Suicide		1				1
Homicide				3		3
Total	1	52	1	19	1	74

TABLE 7

COMPARISON OF "STUDY" AND STATISTICS CANADA FIGURES FOR NON-NATURAL DEATHS DURING EACH YEAR STUDIED

Data Source	Year Studied							
	1951	1956	1961	1966	1971	1976	1981	1986
Study "Gross"	159	201	202	275	256	313	284	233
Study "Net"	159	200	201	267	256	299	281	232
Statistics Canada	171	218	225	272	251	266	266	189
Discrepancy[1]	+12	+17	+23	- 3	- 5	-47	-18	-44
per cent Discrepancy[2]	+ 7.0	+ 7.7	+10.2	- 1.1	- 2.0	-17.7	- 6.8	-23.3

1 = Statistics Canada figure - Study "Gross" figure.
2 = (Statistics Canada figure - Study "Gross" figure)/ Statistics Canada figure x 100.

TABLE 10

COMPARISON OF "STUDY" AND STATISTICS CANADA FIGURES

FOR SUICIDE DURING EACH YEAR STUDIED

Data Source	Year Studied							
	1951	1956	1961	1966	1971	1976	1981	1986
Study "minimum"	15	11	20	16	20	26	36	34
Study "maximum"	17	12	26	24	24	38	56	49
Statistics Canada	12	9	17	15	19	21	24	23
Discrepancy[1]	-3	-2	-3	-1	-1	-5	-12	-11
per cent Discrepancy[2]	-25.0	-22.2	-17.6	- 6.7	- 5.2	-23.8	-50.0	-47.8

1 = Statistics Canada figure - Study "minimum" figure.
2 = (Statistics Canada figure - Study "minimum" figure)/ Statistics Canada figure x 100.

TABLE 11

COMPARISON OF "STUDY" AND STATISTICS CANADA FIGURES

FOR HOMICIDE DURING EACH YEAR STUDIED

Data Source	Year Studied							
	1951	1956	1961	1966	1971	1976	1981	1986
Study	1	1	0	3	1	3	0	2
Statistics Canada	1	1	1	2	1	4	1	4
Discrepancy[1]	0	0	+1	-1	0	+1	+1	+2
per cent Discrepancy[2]	0	0	+100	- 50	0	+ 25	+100	+ 50

1 = Statistics Canada figure - Study figure.
2 = (Statistics Canada figure - Study figure)/ Statistics Canada figure x 100.

TABLE 12

COMPARISON OF "ASSIGNED" AND STATISTICS CANADA FIGURES FOR "UNDETERMINED" DEATHS DURING EACH YEAR STUDIED

Data Source	Year Studied							
	1951	1956	1961	1966	1971	1976	1981	1986
Assigned					0	8	30	5
Statistics Canada					1	13	28	9
Discrepancy[1]					+1	+5	-2	+4
per cent Discrepancy[2]					+100	+38	-7	+44

1 = Statistics Canada figure - Study figure.
2 = (Statistics Canada figure - Study figure)/ Statistics Canada figure x 100.

TABLE 13

DISTRIBUTION OF "NET" NON-NATURAL DEATHS BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Total
1	70	92	72	104	99	136	117	111	801
2	3	7	8	15	14	7	10	14	78
3	12	9	7	12	17	8	11	9	85
4	8	7	17	13	13	14	14	20	106
5	12	21	27	30	23	18	16	16	163
6	15	21	18	23	27	31	14	17	166
7	12	10	9	19	21	22	28	7	128
8	12	9	14	23	19	21	24	9	131
9	8	6	6	7	7	12	21	11	78
10	7	18	23	21	16	30	25	18	158
Unknown							1		1
Total	159	200	201	267	256	299	281	232	1895

TABLE 14

DISTRIBUTION OF CRUDE "NET" NON-NATURAL DEATH RATES (/100,000/YEAR) BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
1	46.8	53.7	38.1	52.4	46.2	59.6	48.9	45.1	48.9
2	13.4	29.2	32.3	58.4	51.3	23.6	32.9	46.2	35.9
3	58.7	41.5	30.0	47.0	69.4	31.0	42.0	35.0	44.3
4	50.1	35.7	70.3	51.4	45.8	46.4	50.4	73.3	52.9
5	42.7	59.6	69.1	70.9	51.2	38.8	34.1	35.1	50.2
6	53.6	62.2	47.3	54.4	67.3	72.4	33.3	41.8	54.0
7	34.0	26.2	22.7	48.3	51.8	50.8	64.5	16.1	39.3
8	32.6	22.2	31.3	46.4	37.5	39.5	44.0	16.6	33.8
9	46.9	30.0	27.6	29.5	30.2	48.1	81.6	42.4	42.0
10	88.7	166.5	169.9	99.3	56.8	90.8	79.8	62.6	101.8
Nfld.	44.0	48.2	43.9	54.1	49.0	53.6	49.5	40.8	47.9

TABLE 15

DISTRIBUTION OF AGE AND SEX ADJUSTED "NET" NON-NATURAL DEATH RATES (/100,000/YEAR) BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
1	49.4	66.0	46.1	61.7	52.0	69.4	52.8	48.3	55.7
2	11.4	31.4	47.3	60.1	57.6	23.2	42.9	52.1	40.8
3	66.3	56.2	34.8	47.3	67.3	30.7	43.3	32.2	47.3
4	55.5	31.2	91.2	50.7	54.1	68.1	60.7	80.4	61.5
5	54.3	56.5	74.5	109.0	68.5	45.9	38.5	38.4	60.7
6	54.5	52.7	78.3	61.4	84.0	97.8	44.3	52.3	65.7
7	39.1	30.6	23.7	52.4	57.6	56.3	67.4	16.3	42.9
8	37.6	17.4	33.4	46.5	44.9	41.1	52.1	18.3	36.4
9	54.8	32.5	31.3	43.7	35.0	64.4	88.4	56.4	50.8
10	102.9	123.5	202.8	100.6	90.9	136.9	78.1	66.6	112.8
Nfld.	47.6	54.6	53.3	63.2	56.7	64.0	55.2	44.5	54.9

TABLE 16

DISTRIBUTION OF "DOMESTIC" NON-TRAFFIC ACCIDENT DEATHS

BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Total
1	46	60	44	43	52	81	59	59	444
2	3	6	5	11	4	2	4	6	41
3	11	7	6	9	13	3	3	4	56
4	5	5	7	7	6	6	4	9	49
5	6	16	17	15	13	9	7	7	90
6	9	9	13	14	9	15	6	9	84
7	10	10	5	13	11	10	14	2	75
8	11	6	8	14	11	16	11	6	83
9	7	5	5	3	6	10	14	6	56
10	5	15	20	18	10	20	15	12	115
Unknown						1			1
Nfld.	113	139	130	147	135	172	138	120	1094

TABLE 17

DISTRIBUTION OF CRUDE "DOMESTIC" NON-TRAFFIC ACCIDENT DEATH RATES (/100,000/YEAR) BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
1	30.8	35.0	23.3	21.7	24.3	35.5	24.6	24.0	27.3
2	13.4	25.0	20.2	42.8	14.6	6.8	13.2	19.8	19.5
3	53.8	32.3	30.0	35.3	53.1	11.6	11.4	15.5	30.4
4	31.3	25.5	28.9	27.7	21.2	19.9	14.4	33.0	25.2
5	21.4	45.4	43.5	35.5	29.0	19.4	14.9	15.3	28.1
6	32.2	26.7	34.2	33.1	22.4	35.0	14.3	22.1	27.5
7	28.3	26.2	12.6	33.1	27.1	23.1	32.2	4.6	23.4
8	29.9	14.8	17.9	28.2	21.7	30.1	20.2	11.1	21.7
9	41.1	25.0	23.0	12.6	25.9	40.1	54.4	23.1	30.5
10	63.4	138.7	147.8	85.1	35.5	60.5	47.9	41.8	77.8
Nfld.	31.3	33.5	28.6	29.8	25.9	30.8	24.4	21.1	28.1

TABLE 18

DISTRIBUTION OF AGE AND SEX ADJUSTED "DOMESTIC" NON-TRAFFIC ACCIDENT DEATH RATES (/100,000/YEAR) BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
1	30.3	45.4	29.9	27.6	27.3	44.2	27.6	26.1	33.0
2	11.4	26.4	29.8	36.6	18.4	6.4	17.1	21.7	21.0
3	59.8	43.3	34.2	36.2	48.0	10.8	14.7	14.7	32.7
4	38.1	21.9	21.4	26.2	23.4	31.8	16.3	38.5	27.2
5	29.3	37.9	50.0	52.2	42.3	25.8	18.8	17.8	34.3
6	34.2	16.2	63.3	33.4	44.2	56.2	21.9	31.5	37.6
7	32.1	30.7	12.4	34.7	28.3	23.6	31.8	4.9	24.8
8	33.9	8.6	20.2	27.2	25.6	33.2	22.8	11.9	22.9
9	47.3	24.1	29.0	23.4	27.9	59.6	65.7	35.3	39.0
10	55.8	96.5	183.1	77.9	41.1	102.5	44.9	48.8	81.0
Nfld.	32.7	38.6	36.4	35.7	30.5	39.4	28.2	23.8	33.4

TABLE 19

DISTRIBUTION OF HIP FRACTURE RELATED DEATHS

BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Total
1	4	19	12	12	12	19	15	23	116
2			1						1
3		1						1	2
4	1				1				3
5	1	1	2	2	3	2	1	4	16
6			2	2	2	5	3	9	23
7	2	1		4					7
8	1		2		2	4	2		11
9	1		1	1		3	1	1	8
10									
Unknown									
Total	10	22	20	21	20	33	22	38	186

TABLE 20

DISTRIBUTION OF "NET" NON-TRAFFIC ACCIDENT DEATHS

BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Total
1	42	41	32	31	40	62	44	36	328
2	3	6	4	11	4	2	4	6	40
3	11	6	6	9	13	3	3	3	54
4	4	5	7	7	5	6	4	9	47
5	5	15	15	13	10	7	6	3	74
6	9	9	11	12	7	10	3		61
7	8	9	5	9	11	10	14	2	68
8	10	6	6	14	9	12	9	6	72
9	6	5	4	2	6	7	13	5	48
10	5	15	20	18	10	20	15	12	115
Unknown							1		1
Total	103	117	110	126	115	139	116	82	908

TABLE 21

DISTRIBUTION OF CRUDE "NET" NON-TRAFFIC ACCIDENT DEATH RATES (/100,000/YEAR) BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
1	28.1	23.9	16.9	15.6	18.7	27.2	18.4	14.6	20.4
2	13.4	25.0	16.1	42.8	14.6	6.8	13.2	19.8	19.0
3	53.8	27.7	25.8	35.3	53.1	11.6	11.4	11.7	28.8
4	25.0	25.5	28.9	27.7	17.6	19.9	14.4	33.0	24.0
5	17.8	42.6	38.4	30.7	22.3	15.1	12.8	6.6	23.3
6	32.2	26.7	28.9	28.4	17.5	23.3	7.1		20.5
7	22.7	23.6	12.6	22.9	27.1	23.1	32.2	4.6	21.1
8	27.2	14.8	13.4	28.2	17.7	22.6	16.5	11.1	18.9
9	35.2	25.0	18.4	8.4	25.9	28.0	50.5	19.3	26.3
10	63.4	138.7	147.8	85.1	35.5	60.5	47.9	41.8	77.6
Nfld.	28.5	28.2	24.0	25.5	22.2	24.9	20.4	14.4	23.5

TABLE 22

DISTRIBUTION OF AGE AND SEX ADJUSTED "NET" NON-TRAFFIC ACCIDENT DEATH RATES (/100,000/YEAR) BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Total
1	26.4	25.1	19.3	18.7	18.9	32.0	19.3	15.3	21.9
2	11.4	26.4	20.7	36.6	18.4	6.4	17.1	21.7	19.8
3	59.8	32.6	27.8	36.2	48.0	10.8	14.7	10.1	30.0
4	17.7	21.9	21.4	26.2	12.6	31.8	16.3	38.5	23.3
5	11.4	31.1	39.7	33.3	28.0	16.5	14.7	5.6	22.5
6	34.2	16.2	41.2	18.5	26.1	27.1	8.6	0.0	21.5
7	22.6	26.0	12.4	20.3	28.3	23.6	31.8	4.9	21.2
8	27.6	8.6	12.0	27.2	18.7	19.5	17.3	11.9	17.9
9	32.3	24.1	18.8	7.1	27.9	24.4	55.8	27.4	27.2
10	55.8	96.5	183.1	77.9	51.1	102.5	44.9	48.8	82.6
Nfld.	27.2	27.3	27.4	26.5	23.6	28.8	22.2	15.4	24.8

TABLE 23

DISTRIBUTION OF TRAFFIC ACCIDENT DEATHS

BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Total
1	15	25	15	45	36	32	30	22	220
2		1	2	4	8	2	4	4	25
3				2	4	2	7	2	17
4	2	2	9	5	5	8	6	9	46
5	4	5	8	11	6	7	8	7	56
6	4	12	3	8	18	12	3	7	67
7	1		2	3	9	8	9	2	34
8			4	9	4	5	12	2	36
9			1	4		2	6	2	15
10	1	3	1		3	6	1	1	16
Total.	27	48	45	91	93	84	86	58	532

TABLE 24

DISTRIBUTION OF CRUDE TRAFFIC ACCIDENT DEATH RATES (/100,000/YEAR) BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
1	10.0	14.6	7.9	22.7	16.8	14.0	12.5	8.9	13.4
2		4.2	8.1	15.6	29.3	6.8	13.2	13.2	11.3
3				7.8	16.3	7.7	26.7	7.8	8.3
4	12.5	10.2	37.2	19.8	17.6	26.5	21.6	33.0	22.3
5	14.2	14.2	20.5	26.0	13.4	15.1	17.1	15.3	17.0
6	14.3	35.6	7.9	18.9	44.9	28.0	7.1	17.2	21.7
7	2.8		5.0	7.6	22.2	18.5	20.7	4.6	10.2
8			9.0	18.1	7.9	9.4	22.0	3.7	8.8
9			4.6	16.8		8.0	23.3	7.7	7.6
10	12.7	27.7	7.4		10.7	18.2	3.2	3.5	10.4
Nfld.	7.5	11.6	9.8	18.4	17.8	15.1	15.1	10.2	13.2

TABLE 25

DISTRIBUTION OF AGE AND SEX ADJUSTED TRAFFIC ACCIDENT DEATH RATES (/100,000/YEAR) BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
1	11.5	15.4	8.4	23.1	17.8	13.5	12.8	9.0	14.0
2		5.2	13.3	23.5	26.6	4.2	17.8	14.9	13.2
3				6.4	19.3	6.6	23.9	6.5	7.8
4	9.9	9.3	61.2	19.3	21.9	36.3	27.8	33.6	27.4
5	16.0	18.6	15.1	45.1	14.6	17.3	17.5	15.2	19.9
6	13.0	36.5	7.9	24.7	39.8	29.4	6.6	17.6	21.9
7	3.2		2.8	9.8	26.8	21.3	22.7	5.0	11.5
8			7.1	19.2	7.7	7.9	27.3	4.3	9.2
9			2.3	0.2		4.8	19.0	8.0	6.8
10	10.3	27.0	5.6		8.2	16.8	2.9	3.5	16.0
Nfld.	8.0	12.0	9.8	20.4	118.8	15.1	15.9	10.3	13.8

TABLE 26

DISTRIBUTION OF "MINIMUM" SUICIDES

BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Total
1	8	5	9	8	7	14	16	17	84
2			1		2	1	1	3	8
3		2	1			1	1	3	8
4	1		1	1	2		4	1	10
5	2		2	3	3	1		1	12
6	2		2			3	4		11
7			1	1	1	3	3	2	11
8	1	3	1		3			1	9
9	1	1					1	3	6
10			2	3	2	3	6	3	19
Total	15	11	20	16	20	26	36	34	178

TABLE 27

DISTRIBUTION OF CRUDE "MINIMUM" SUICIDE RATES (/100,000/YEAR) BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
1	5.3	2.9	4.8	4.0	3.3	6.1	6.7	6.9	5.0
2			4.0		7.3	3.4	3.3	9.9	3.5
3		9.2	4.3			3.9	3.8	11.7	4.1
4	6.3		4.1	4.0	7.1		14.4	3.7	5.0
5	7.1		5.1	7.1	6.7	2.2		2.2	3.8
6	7.2		5.3			7.0	9.5		3.6
7			2.5	2.5	2.5	6.9	6.9	4.6	3.2
8	2.7	7.4	2.2		5.9			1.8	2.5
9	5.9	5.0					3.9	11.6	3.3
10			14.8	14.2	7.1	9.1	19.2	10.4	9.4
Nfld.	4.2	2.7	4.4	3.2	3.8	4.7	6.3	6.0	4.4

TABLE 28

DISTRIBUTION OF AGE AND SEX ADJUSTED "MINIMUM" SUICIDE RATES (/100,000/YEAR) BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
1	6.7	3.9	5.4	4.9	4.4	7.0	6.9	7.6	5.9
2			4.2		12.6	5.8	3.5	11.9	4.8
3		12.9	7.0			6.0	4.8	11.1	5.2
4	7.5		8.7	5.2	8.8		16.6	4.1	6.4
5	9.1		9.4	10.0	8.7	1.4		2.5	5.1
6	7.3		7.1			8.9	10.9		4.3
7			4.4	2.3	2.6	8.8	8.5	4.5	3.9
8	3.7	8.8	2.6		8.5			2.2	3.2
9	7.4	8.4					3.7	13.1	4.1
10			14.0	22.7	23.9	12.3	23.3	8.5	13.1
Nfld.	5.3	3.5	5.8	4.3	5.2	5.8	7.0	6.5	5.4

TABLE 29

DISTRIBUTION OF "MAXIMUM" SUICIDES

BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Total
1	9	6	13	13	9	21	27	26	124
2			1		2	3	2	4	12
3		2	1			2	1	3	9
4	1		1	1	2		4	2	11
5	2		2	4	3	2	1	2	16
6	2		2			4	5	1	14
7	1		2	3	1	3	5	2	17
8	[illegible]	3	2		4		1	1	12
9	1	1			1		1	3	7
10			2	3	2	3	9	5	24
Nfld.	17	12	26	24	24	38	56	49	246

TABLE 30

DISTRIBUTION OF CRUDE "MAXIMUM" SUICIDE RATES (/100,000/YEAR) BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
1	6.0	3.5	6.9	6.5	4.2	9.2	11.3	10.6	6.5
2			4.0		7.3	10.1	6.6	13.2	5.2
3		9.2	4.3			7.7	3.8	11.7	4.6
4	6.3		4.1	4.0	7.1		14.4	7.3	5.4
5	7.1		5.1	9.5	6.7	4.3	2.1	4.4	4.9
6	7.2		5.3			9.3	11.9	2.5	4.5
7	2.8		5.0	7.6	2.5	6.9	11.5	4.6	5.1
8	2.7	7.4	4.5		7.9		1.8	1.8	3.3
9	5.9	5.0			4.3		3.9	11.6	3.8
10			14.8	14.2	7.1	9.1	28.7	17.4	11.4
Nfld.	4.7	2.9	5.7	4.9	4.6	6.8	9.9	8.6	6.0

TABLE 31

DISTRIBUTION OF AGE AND SEX ADJUSTED "MAXIMUM" SUICIDE RATES (/100,000/YEAR) BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
1	7.6	4.5	7.8	7.9	5.6	10.7	11.8	11.5	8.4
2			4.2		12.6	12.6	8.0	15.5	6.6
3		12.9	7.0			8.7	4.8	11.1	5.6
4	7.5		8.7	5.2	8.8		16.6	8.3	6.9
5	9.1		9.4	11.7	8.7	2.7	2.2	5.4	6.2
6	7.3		7.1			12.2	15.8	3.2	5.7
7	3.7		8.6	7.9	2.6	8.8	12.9	4.5	6.1
8	3.7	8.8	6.1		11.6		2.0	2.2	4.3
9	7.4	8.4			6.7		3.7	13.1	4.9
10			14.0	22.7	23.9	12.3	30.3	14.4	14.7
Nfld.	6.0	3.7	7.5	6.1	6.3	8.3	10.8	9.4	7.3

TABLE 32

DISTRIBUTION OF HOMICIDES

BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Total
1		1		1	1			2	5
2									
3				1		1			2
4									
5									
6				1					1
7						1			1
8									
9									
10	1					1			2
Total	1	1		3	1	3		2	11

TABLE 33

DISTRIBUTION OF CRUDE HOMICIDE RATES (/100,000/YEAR) BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
1		0.6		0.5	0.5			0.8	0.3
2									
3				3.9		3.9			1.0
4				2.4					0.3
5									
6									
7						2.3			0.3
8									
9									
10	12.7					3.0			2.0
Nfld.	0.3	0.2		0.6	0.2	0.5		0.4	0.3

TABLE 34

DISTRIBUTION OF AGE AND SEX ADJUSTED HOMICIDE RATES (/100,000/YEAR) BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
1		0.7		0.7	0.7			0.9	0.4
2									
3				4.7		4.7			1.2
4									
5									
6				3.2					0.4
7						2.7			0.3
8									
9									
10	21.3					3.9			3.2
Nfld.	0.5	0.3		0.8	0.3	0.7		0.4	0.4

TABLE 35

NUMBER OF DEATHS REGISTERED BY PHYSICIANS

BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Total
1	65	92	72	103	99	146	113	114	804
2	1	5	8	12	13	4	9	14	66
3	2	7	3	12	17	8	11	9	69
4	6	6	17	13	12	14	13	19	100
5	10	21	27	29	23	18	16	17	161
6	16	20	18	23	27	32	13	17	166
7	6	9	8	19	21	21	26	7	117
8	8	8	13	23	19	21	24	9	125
9	4	2	4	6	6	12	23	10	67
10	6	11	23	16	13	28	24	18	139
Unknown						1	1		2
Total	124	181	193	256	250	305	273	234	1816

TABLE 36

NUMBER OF DEATHS REGISTERED BY NURSES, BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Total
1				1					1
2									
3									
4									
5									
6									
7	1								1
8									
9	1	2	2		1				6
10	1				1	1			3
Unknown									
Total	3	2	2	1	2	1			11

TABLE 37

NUMBER OF DEATHS REGISTERED BY OTHERS, BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Total
1	5	1		6		6	4		22
2	2	2		3	1	3	1		12
3	10	2	5						17
4	2	1			1		1	1	6
5	3		1	1					5
6		1					1		2
7	6	1	1			1	2		11
8	4	1	1						6
9	3	2		1		1	1	1	9
10		7		7	2	1	1		18
Unknown									
Total	35	18	8	18	4	12	11	2	108

TABLE 38

PROPORTION OF DEATHS REGISTERED BY NON-PHYSICIANS, BY CENSUS DISTRICT AND YEAR OF DEATH

Census District	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Total
1	.07	.01		.06		.04	.03		.03
2	.67	.29		.20	.07	.43	.10		.27
3	.83	.22	.63						.20
4	.25	.14			.08		.07	.05	.06
5	.23		.04	.03					.03
6		.05					.07		.01
7	.46	.10	.11			.05	.07		.09
8	.33	.11	.07						.05
9	.50	.67	.33	.14	.14	.08	.04	.09	.18
10	.14	.39		.30	.19	.07	.04		.13
Unknown									
Total	.23	.10	.05	.07	.02	.04	.04	.01	.06

TABLE 39

NUMBERS OF DEATHS REGISTERED BY NON-PHYSICIANS

BY "STUDY" MANNER OF DEATH AND YEAR OF DEATH

"Study" Manner of Death	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Tot.
Natural Causes	1								1
Non-Traffic Accident	33	17	8	18	4	5	8		93
Traffic Accident	1	1	2	1	1	4	2	1	13
Suicide	1	2			1	1	1		6
Homicide	1								1
Other									
Unknown	1					3		1	5
Total	38	20	10	19	6	13	11	2	119

TABLE 40

NUMBERS OF DEATHS REGISTERED BY NON-PHYSICIANS

BY "ASSIGNED" MANNER OF DEATH AND YEAR OF DEATH

"Assigned" Manner of Death	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Tot.
Natural Causes	1	7				1			9
Non-Traffic Accident	34	10	8	18	4	6	8		88
Traffic Accident	1	1	2	1	1	6	2	1	15
Suicide		2			1		1		4
Homicide	1								1
Other									
Unknown	1							1	2
Total	38	20	10	19	6	13	11	2	119

TABLE 41

COMPARISON OF THE EXTENT OF AGREEMENT BETWEEN THE "ASSIGNED" AND "STUDY" MANNERS OF DEATHS REGISTERED BY PHYSICIANS AND NON-PHYSICIANS

Extent of Agreement	Deaths Registered by Physicians	Deaths Registered by Non-Physicians	Total Deaths	Proportion Registered by Physicians	Proportion Registered by Non-Physicians
"Assigned" Manner Unknown or Undet.	61	2	63	0.97	0.03
"Study" Manner Unknown	74	5	79	0.94	0.06
Disagreed Deaths	64	10	74	0.86	0.14
Agreement at "Probable" Level	1637	103	1740	0.94	0.06
Agreement at "Almost Undoubted" Level	1138	74	1212	0.94	0.06
Total	1816	119	1935	0.94	0.06

TABLE 42

DISTRIBUTION OF RATES OF "NET" NON-NATURAL DEATHS IN EACH AGE-SEX GROUP (/100000/YEAR) BY AGE-SEX GROUP AND YEAR OF DEATH

Age-sex Group	Study Year								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
0 - 4 F	31.3	25.4	15.0	51.1	16.5	10.7	4.2	4.7	19.9
0 - 4 M	69.9	53.2	46.5	70.8	35.0	30.3	12.0	9.1	40.9
5 - 9 F	13.0	20.4		12.2	33.3	6.5	10.9		12.0
5 - 9 M	47.0	49.7	36.8	38.1	37.5	46.7	17.1	20.4	36.7
10 - 14 F		8.7	6.8	6.4	12.5	9.2	10.0	18.6	9.0
10 - 14 M	38.2	56.3	36.4	28.0	39.1	20.4	6.4	10.5	29.4
15 - 19 F		16.9	22.8	11.1	20.3	45.7	25.8	14.0	19.6
15 - 19 M	52.1	89.6	59.2	88.1	56.5	77.9	90.5	63.9	72.2
20 - 24 F	7.5	7.0		5.5	13.3	30.6	15.4	3.9	10.4
20 - 24 M	52.2	108.0	104.7	130.2	90.6	76.8	131.8	66.7	95.1
25 - 34 F	8.5	12.3	4.0	7.7	19.6	9.9	21.2	14.4	12.2
25 - 34 M	75.0	90.0	95.1	134.8	75.6	79.3	86.9	63.9	87.6
35 - 44 F	5.1	4.5	21.6	8.6	25.5	19.9	39.4	2.6	15.9
35 - 44 M	86.7	39.3	69.7	101.1	97.1	92.8	90.0	46.2	77.9
45 - 54 F	7.4	13.4	16.3		32.8	22.7	8.9	25.4	15.9
45 - 54 M	62.6	68.5	90.5	117.0	89.6	98.4	88.0	40.4	81.9
55 - 64 F	29.1	35.0	41.7	14.8	54.8	47.2	5.0	14.7	30.3
55 - 64 M	54.9	68.0	55.0	99.2	81.5	105.2	63.2	111.5	79.8
65 - 74 F	26.8	38.1	23.5	21.3	39.0	42.9	27.2	90.1	38.6
65 - 74 M	98.1	143.6	82.0	99.5	102.6	104.7	122.7	131.3	110.6
75+ F	224.7	324.7	310.4	379.0	199.1	531.4	202.7	208.4	297.6
75+ M	233.2	141.4	239.4	57.9	234.2	158.0	283.5	266.3	202.2
Avg. F	17.6	23.9	19.3	23.2	28.9	36.1	24.7	22.9	24.5
Avg. M	69.2	71.1	67.3	83.7	68.4	70.6	74.6	58.7	70.5

TABLE 43

DISTRIBUTION OF RATES OF DEATHS DUE TO HIP FRACTURES IN EACH AGE-SEX GROUP(/100000/YEAR) BY AGE-SEX GROUP AND YEAR OF DEATH

Age-sex Group	Study Year								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
0 - 4 F									
0 - 4 M									
5 - 9 F									
5 - 9 M									
10 - 14 F									
10 - 14 M									
15 - 19 F									
15 - 19 M									
20 - 24 F									
20 - 24 M									
25 - 34 F									
25 - 34 M									
35 - 44 F			4.3						0.5
35 - 44 M									
45 - 54 F									
45 - 54 M									
55 - 64 F		17.5	8.3						3.2
55 - 64 M					5.4			4.8	1.3
65 - 74 F	13.4	25.4	11.8	10.6	9.8		6.8	12.0	11.2
65 - 74 M	12.3	23.9		33.2		8.7	7.2	39.4	15.6
75+ F	149.8	301.5	206.9	306.8	168.5	337.0	157.7	151.6	223.4
75+ M	51.8	70.7	139.7	0.0	126.1	105.4	94.5	173.1	95.2
Avg. F	4.0	8.5	5.8	7.5	4.7	9.5	5.3	6.3	6.5
Avg. M	1.6	2.3	2.3	1.2	3.0	2.5	2.5	7.0	2.8

TABLE 44

DISTRIBUTION OF RATES OF "NET" NON-TRAFFIC ACCIDENT DEATHS IN EACH AGE-SEX GROUP (/100000/YEAR) BY AGE-SEX GROUP AND YEAR OF DEATH

Age-sex Group	Study Year								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
0 - 4 F	24.3	22.3	15.0	30.1	6.6	10.7		4.7	14.2
0 - 4 M	56.6	34.4	34.9	42.5	25.5	16.8	8.0	4.5	27.9
5 - 9 F	13.0	10.2		3.0	21.2	3.2	7.3		7.5
5 - 9 M	42.7	36.5	21.5	23.5	26.0	31.1	10.3	12.3	22.8
10 - 14 F		4.4		6.4	3.1	3.1	6.7	7.4	3.9
10 - 14 M	32.7	47.7	16.5	24.8	27.0	11.6	3.2	3.5	20.9
15 - 19 F		5.6	9.1	3.7	3.4	9.8	3.2	3.5	4.8
15 - 19 M	52.1	72.8	27.3	44.0	23.3	34.3	37.5	23.5	39.4
20 - 24 F						7.6	7.7		1.9
20 - 24 M	29.8	50.8	52.3	62.3	27.2	34.6	43.9	23.5	40.6
25 - 34 F	4.2	12.3	4.0		3.3	2.5	6.3	4.1	4.6
25 - 34 M	35.5	54.0	73.2	72.8	37.8	43.2	46.6	29.8	49.3
35 - 44 F			13.0	4.3	12.8	4.0	20.0		6.8
35 - 44 M	59.3	35.3	46.5	58.3	66.1	52.0	45.0	28.3	45.3
45 - 54 F			5.4		14.0	9.1	8.9	12.7	6.3
45 - 54 M	41.8	62.8	57.2	47.6	51.2	55.6	25.1	8.1	43.7
55 - 64 F	9.7		16.7		6.1	31.5		4.9	8.6
55 - 64 M	18.3	25.5	23.6	33.1	32.6	55.1	29.2	53.3	33.8
65 - 74 F			11.8	10.6	19.5	8.6	6.8	18.0	9.4
65 - 74 M	36.8	71.8	11.7	33.2	30.8	61.1	50.5	32.8	41.1
75+ F	74.9	23.2	82.8	36.1	15.3	168.5	11.3	47.4	57.4
75+ M	155.4	47.1	79.8		72.1	35.1	126.0	39.9	69.4
Avg. F	8.5	8.0	8.5	7.5	8.6	12.4	7.8	6.3	8.5
Avg. M	47.5	47.2	38.7	42.8	34.9	37.1	32.9	22.5	38.0

TABLE 44a

DISTRIBUTION OF AVERAGE ANNUAL DROWNING RATES (/100000/YEAR) BY AGE-SEX GROUP

Age-sex Group	Average death rate (/100000/year)
0 - 4 F	3.0
0 - 4 M	15.0
5 - 9 F	3.0
5 - 9 M	15.8
10 - 14 F	1.3
10 - 14 M	10.4
15 - 19 F	0.5
15 - 19 M	15.5
20 - 24 F	
20 - 24 M	8.7
25 - 34 F	0.8
25 - 34 M	10.2
35 - 44 F	1.0
35 - 44 M	5.9
45 - 54 F	0.6
45 - 54 M	11.1
55 - 64 F	1.6
55 - 64 M	3.8
65 - 74 F	2.3
65 - 74 M	14.2
75+ F	
75+ M	13.8
Average F	1.4
Average M	11.3

TABLE 44b

DISTRIBUTION OF AVERAGE ANNUAL FIRE FATALITY RATES (/100000/YEAR) BY AGE-SEX GROUP

Age-sex Group	Average death rate (/100000/year)
0 - 4 F	7.8
0 - 4 M	5.8
5 - 9 F	2.2
5 - 9 M	3.3
10 - 14 F	1.8
10 - 14 M	3.0
15 - 19 F	2.0
15 - 19 M	2.4
20 - 24 F	6.2
20 - 24 M	1.9
25 - 34 F	1.5
25 - 34 M	2.5
35 - 44 F	2.4
35 - 44 M	3.2
45 - 54 F	2.5
45 - 54 M	1.2
55 - 64 F	4.9
55 - 64 M	3.8
65 - 74 F	2.3
65 - 74 M	7.1
75+ F	22.9
75+ M	16.1
Average F	3.5
Average M	3.6

TABLE 44c

DISTRIBUTION OF AVERAGE ANNUAL ACCIDENT AT SEA FATALITY RATES (/100000/YEAR) BY AGE-SEX GROUP

Age-sex Group	Average death rate (/100000/year)
0 - 4 F	
0 - 4 M	
5 - 9 F	
5 - 9 M	0.4
10 - 14 F	
10 - 14 M	0.4
15 - 19 F	
15 - 19 M	1.9
20 - 24 F	
20 - 24 M	5.0
25 - 34 F	
25 - 34 M	8.7
35 - 44 F	
35 - 44 M	6.8
45 - 54 F	
45 - 54 M	3.5
55 - 64 F	
55 - 64 M	0.8
65 - 74 F	
65 - 74 M	
75+ F	
75+ M	
Average F	
Average M	3.0

TABLE 44d

DISTRIBUTION OF AVERAGE ANNUAL RECREATIONAL VEHICLE ACCIDENT FATALITY RATES (/100000/YEAR) BY AGE-SEX GROUP

Age-sex Group	Average death rate (/100000/year)
0 - 4 F	0.4
0 - 4 M	1.3
5 - 9 F	
5 - 9 M	2.1
10 - 14 F	
10 - 14 M	0.4
15 - 19 F	
15 - 19 M	8.2
20 - 24 F	
20 - 24 M	9.3
25 - 34 F	
25 - 34 M	7.3
35 - 44 F	
35 - 44 M	4.5
45 - 54 F	
45 - 54 M	3.5
55 - 64 F	
55 - 64 M	3.8
65 - 74 F	
65 - 74 M	2.4
75+ F	
75+ M	6.9
Average F	0.1
Average M	4.3

* Note: This includes all terrain vehicles and recreational boats but not aircraft.

TABLE 44e

DISTRIBUTION OF AVERAGE ANNUAL ACCIDENTAL POISONING FATALITY RATES (/100000/YEAR) BY AGE-SEX GROUP

Age-sex Group	Average death rate (/100000/year)
0 - 4 F	1.3
0 - 4 M	
5 - 9 F	0.9
5 - 9 M	0.4
10 - 14 F	
10 - 14 M	
15 - 19 F	1.5
15 - 19 M	1.5
20 - 24 F	0.6
20 - 24 M	1.9
25 - 34 F	1.5
25 - 34 M	2.2
35 - 44 F	1.5
35 - 44 M	3.6
45 - 54 F	0.6
45 - 54 M	5.8
55 - 64 F	0.8
55 - 64 M	3.1
65 - 74 F	
65 - 74 M	
75+ F	1.9
75+ M	
Average F	1.0
Average M	1.7

TABLE 44f

DISTRIBUTION OF AVERAGE ANNUAL INDUSTRIAL ACCIDENT* FATALITY RATES (/100000/YEAR) BY AGE-SEX GROUP

Age-sex Group	Average death rate (/100000/year)
0 - 4 F	
0 - 4 M	
5 - 9 F	
5 - 9 M	
10 - 14 F	
10 - 14 M	0.4
15 - 19 F	
15 - 19 M	1.0
20 - 24 F	
20 - 24 M	6.8
25 - 34 F	
25 - 34 M	5.8
35 - 44 F	
35 - 44 M	10.4
45 - 54 F	
45 - 54 M	7.6
55 - 64 F	
55 - 64 M	6.9
65 - 74 F	
65 - 74 M	1.2
75+ F	
75+ M	
Average F	
Average M	3.8

* Note: This does not include accidents at sea, aircraft accidents or motor vehicle accidents.

TABLE 44g

DISTRIBUTION OF AVERAGE ANNUAL FIREARMS ACCIDENT* FATALITY RATES (/100000/YEAR) BY AGE-SEX GROUP

Age-sex Group	Average death rate (/100000/year)
0 - 4 F	
0 - 4 M	0.4
5 - 9 F	0.4
5 - 9 M	
10 - 14 F	
10 - 14 M	
15 - 19 F	
15 - 19 M	1.5
20 - 24 F	
20 - 24 M	0.6
25 - 34 F	
25 - 34 M	
35 - 44 F	
35 - 44 M	0.9
45 - 54 F	0.6
45 - 54 M	
55 - 64 F	
55 - 64 M	
65 - 74 F	
65 - 74 M	
75+ F	
75+ M	
Average F	0.1
Average M	0.4

* Note: This does not include homicides or suicides involving firearms.

TABLE 44h

DISTRIBUTION OF AVERAGE ANNUAL ACCIDENTAL FALL* FATALITY RATES (/100000/YEAR) BY AGE-SEX GROUP

Age-sex Group	Average death rate (/100000/year)
0 - 4 F	0.9
0 - 4 M	
5 - 9 F	
5 - 9 M	0.8
10 - 14 F	
10 - 14 M	0.9
15 - 19 F	0.5
15 - 19 M	1.0
20 - 24 F	
20 - 24 M	0.6
25 - 34 F	
25 - 34 M	
35 - 44 F	
35 - 44 M	1.8
45 - 54 F	0.6
45 - 54 M	2.3
55 - 64 F	
55 - 64 M	2.3
65 - 74 F	3.5
65 - 74 M	4.7
75+ F	5.7
75+ M	16.1
Average F	0.5
Average M	1.4

* Note: This does not include homicides or suicides by jumping.

TABLE 44i

DISTRIBUTION OF AVERAGE ANNUAL RATES OF ACCIDENTAL DEATH DUE TO HYPOTHERMIA (/100000/YEAR) BY AGE-SEX GROUP

Age-sex Group	Average death rate (/100000/year)
0 - 4 F	
0 - 4 M	
5 - 9 F	
5 - 9 M	
10 - 14 F	
10 - 14 M	0.9
15 - 19 F	
15 - 19 M	0.5
20 - 24 F	
20 - 24 M	2.5
25 - 34 F	
25 - 34 M	0.7
35 - 44 F	0.5
35 - 44 M	1.8
45 - 54 F	1.6
45 - 54 M	2.3
55 - 64 F	
55 - 64 M	0.8
65 - 74 F	
65 - 74 M	2.4
75+ F	
75+ M	2.3
Average F	0.1
Average M	1.1

TABLE 44j

DISTRIBUTION OF AVERAGE ANNUAL AIRCRAFT ACCIDENT* FATALITY RATES (/100000/YEAR) BY AGE-SEX GROUP

Age-sex Group	Average death rate (/100000/year)
0 - 4 F	
0 - 4 M	
5 - 9 F	
5 - 9 M	0.4
10 - 14 F	0.5
10 - 14 M	0.4
15 - 19 F	
15 - 19 M	0.5
20 - 24 F	
20 - 24 M	0.6
25 - 34 F	
25 - 34 M	5.1
35 - 44 F	0.5
35 - 44 M	3.6
45 - 54 F	
45 - 54 M	1.8
55 - 64 F	
55 - 64 M	2.3
65 - 74 F	
65 - 74 M	
75+ F	
75+ M	
Average F	0.1
Average M	1.9

* Note: Includes accidents involving military aircraft.

TABLE 44k

DISTRIBUTION OF AVERAGE ANNUAL "OTHER" NON-TRAFFIC ACCIDENT FATALITY RATES (/100000/YEAR) BY AGE-SEX GROUP

Age-sex Group	Average death rate (/100000/year)
0 - 4 F	1.7
0 - 4 M	6.7
5 - 9 F	0.9
5 - 9 M	2.1
10 - 14 F	0.5
10 - 14 M	2.6
15 - 19 F	0.5
15 - 19 M	2.9
20 - 24 F	1.2
20 - 24 M	1.2
25 - 34 F	0.8
25 - 34 M	4.7
35 - 44 F	1.0
35 - 44 M	4.5
45 - 54 F	1.3
45 - 54 M	3.5
55 - 64 F	0.8
55 - 64 M	7.7
65 - 74 F	1.2
65 - 74 M	5.9
75+ F	7.6
75+ M	11.5
Average F	1.1
Average M	4.2

TABLE 45

DISTRIBUTION OF RATES OF TRAFFIC ACCIDENT FATALITIES IN EACH AGE-SEX GROUP (/100000/YEAR) BY AGE-SEX GROUP AND YEAR OF DEATH

Age-sex Group	Study Year								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
0 - 4 F	7.0	3.2		18.0	9.9		4.2		5.3
0 - 4 M	13.3	18.8	11.6	25.5	9.5	10.1	4.0	4.5	12.2
5 - 9 F		10.2		9.1	12.1	3.2	3.6		4.8
5 - 9 M	4.3	13.3	15.3	14.7	11.5	15.6	6.8	4.1	10.7
10 - 14 F		4.4	6.8		9.4	6.1		3.7	3.8
10 - 14 M	5.5	8.7	16.5	3.1	12.0	8.7	3.2	7.0	8.1
15 - 19 F		11.2	13.7	7.4	16.9	29.4	12.9	3.5	11.9
15 - 19 M		5.6	18.2	36.7	29.9	34.3	34.3	33.6	24.1
20 - 24 F	7.5	7.0		5.5	13.3	15.3	7.7	3.9	7.5
20 - 24 M		50.8	32.7	56.6	58.9	38.4	51.9	31.4	40.1
25 - 34 F				7.7	13.0	7.4	6.3	4.1	4.8
25 - 34 M	15.8	28.8	11.0	43.7	22.1	21.6	25.4	23.4	24.0
35 - 44 F	5.1				4.3	4.0	6.7		2.5
35 - 44 M	13.7	3.9	7.7	31.1	23.3	18.6	22.5	2.6	15.4
45 - 54 F		6.7	5.4		9.4	9.1		4.2	4.4
45 - 54 M	13.9		14.3	26.0	21.3	21.4	37.7	16.1	18.8
55 - 64 F	9.7	17.5	8.3	14.8	30.5	10.5	5.0		12.0
55 - 64 M	27.4	34.0	23.6	52.9	27.2	10.0	24.3	19.4	27.4
65 - 74 F		12.7			9.8	25.7	6.8	30.0	10.6
65 - 74 M	36.8	23.9	35.1	22.1	30.8	26.2	57.8	26.3	32.4
75+ F				36.1	15.3	13.0	11.3	9.5	10.7
75+ M	25.9		20.0	38.6	36.0		15.7		17.0
Avg. F	2.8	6.0	3.1	7.5	12.5	10.2	5.7	4.2	6.5
Avg. M	11.9	16.8	16.2	29.0	22.9	19.8	24.5	16.2	19.6

TABLE 45a

DISTRIBUTION OF AVERAGE ANNUAL MVA DRIVER ACCIDENT FATALITY RATES (/100000/YEAR) BY AGE-SEX GROUP

Age-sex Group	Average death rate (/100,000/year
0 - 4 F	
0 - 4 M	0.4
5 - 9 F	
5 - 9 M	
10 - 14 F	
10 - 14 M	
15 - 19 F	0.5
15 - 19 M	4.8
20 - 24 F	1.2
20 - 24 M	12.4
25 - 34 F	1.5
25 - 34 M	8.0
35 - 44 F	1.5
35 - 44 M	4.5
45 - 54 F	
45 - 54 M	4.7
55 - 64 F	
55 - 64 M	4.6
65 - 74 F	1.2
65 - 74 M	
75+ F	
75+ M	
Average F	0.6
Average M	3.8

TABLE 45b

DISTRIBUTION OF AVERAGE ANNUAL MVA PASSENGER ACCIDENT FATALITY RATES (/100000/YEAR) BY AGE-SEX GROUP

Age-sex Group	Average death rate (/100000/year)
0 - 4 F	1.7
0 - 4 M	2.1
5 - 9 F	0.9
5 - 9 M	0.4
10 - 14 F	
10 - 14 M	
15 - 19 F	5.5
15 - 19 M	8.7
20 - 24 F	1.9
20 - 24 M	11.2
25 - 34 F	0.8
25 - 34 M	2.5
35 - 44 F	
35 - 44 M	1.4
45 - 54 F	0.6
45 - 54 M	3.5
55 - 64 F	3.3
55 - 64 M	4.6
65 - 74 F	1.2
65 - 74 M	8.3
75+ F	5.7
75+ M	2.3
Average F	1.6
Average M	3.6

TABLE 45c

DISTRIBUTION OF AVERAGE ANNUAL MVA PEDESTRIAN ACCIDENT FATALITY RATES (/100000/YEAR) BY AGE-SEX GROUP

Age-sex Group	Average death rate (/100000/year)
0 - 4 F	3.9
0 - 4 M	9.6
5 - 9 F	4.3
5 - 9 M	9.6
10 - 14 F	3.6
10 - 14 M	7.3
15 - 19 F	2.5
15 - 19 M	2.9
20 - 24 F	2.5
20 - 24 M	2.5
25 - 34 F	0.4
25 - 34 M	4.4
35 - 44 F	
35 - 44 M	5.0
45 - 54 F	2.5
45 - 54 M	4.7
55 - 64 F	4.9
55 - 64 M	11.5
65 - 74 F	5.8
65 - 74 M	13.0
75+ F	3.8
75+ M	9.2
Average F	2.8
Average M	6.7

TABLE 45d

DISTRIBUTION OF AVERAGE ANNUAL MVA UNSPECIFIED ACCIDENT FATALITY RATES (/100000/YEAR) BY AGE-SEX GROUP

Age-sex Group	Average death rate (/100000/year)
0 - 4 F	
0 - 4 M	0.8
5 - 9 F	
5 - 9 M	1.2
10 - 14 F	0.5
10 - 14 M	0.9
15 - 19 F	4.5
15 - 19 M	10.7
20 - 24 F	2.5
20 - 24 M	15.5
25 - 34 F	2.6
25 - 34 M	9.1
35 - 44 F	1.0
35 - 44 M	4.1
45 - 54 F	1.3
45 - 54 M	7.0
55 - 64 F	3.3
55 - 64 M	5.4
65 - 74 F	4.6
65 - 74 M	11.8
75+ F	1.9
75+ M	4.6
Average F	1.8
Average M	5.9

TABLE 46

DISTRIBUTION OF "MINIMUM" SUICIDE RATES IN EACH AGE-SEX GROUP (/100000/YEAR) BY AGE-SEX GROUP AND YEAR OF DEATH

Age-sex Group	Study Year								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
0 - 4 F									
0 - 4 M									
5 - 9 F									
5 - 9 M									
10 - 14 F									
10 - 14 M									
15 - 19 F								7.0	0.9
15 - 19 M		5.6	13.7		3.3	6.2	15.6	6.7	6.4
20 - 24 F						3.8			0.5
20 - 24 M	22.4	6.4	13.1	5.7	4.5		28.0	11.8	11.5
25 - 34 F	4.2						4.2		1.1
25 - 34 M	15.8	7.2	3.7	14.6	12.6	9.6	8.5	6.4	9.8
35 - 44 F		4.5	4.3		8.5	4.0	13.3	2.6	4.7
35 - 44 M	13.7		15.5	3.9	7.8	18.6	16.1	10.3	10.7
45 - 54 F	7.4	6.7	5.4					8.5	3.5
45 - 54 M	7.0		14.3	30.3	12.8	21.4	25.1	8.1	14.9
55 - 64 F			8.3		12.2	5.2		4.9	3.8
55 - 64 M		8.5	7.9	6.6	16.3	30.1		29.1	12.3
65 - 74 F	13.4							12.0	3.2
65 - 74 M	12.3	24.0	23.4	11.1	20.5	8.7		19.7	15.0
75+ F			20.7						2.6
75+ M		23.6		19.3			31.5	39.9	9.3
Avg. F	1.7	1.5	1.8		1.6	1.1	2.1	2.8	1.6
Avg. M	6.5	3.7	6.8	6.3	6.0	8.1	10.5	9.1	7.1

TABLE 47

DISTRIBUTION OF HOMICIDE RATES IN EACH AGE-SEX GROUP (/100000/YEAR) BY AGE-SEX GROUP AND YEAR OF DEATH

Age-sex Group	Year of Death								
	1951	1956	1961	1966	1971	1976	1981	1986	Avg.
0 - 4 F									
0 - 4 M									
5 - 9 F									
5 - 9 M									
10 - 14 F									
10 - 14 M									
15 - 19 F									
15 - 19 M									
20 - 24 F									
20 - 24 M				5.7					0.7
25 - 34 F									
25 - 34 M						2.4			0.3
35 - 44 F						4.0			0.5
35 - 44 M				3.9				2.6	0.8
45 - 54 F						4.5			0.6
45 - 54 M		5.7							0.7
55 - 64 F	9.7							4.9	1.8
55 - 64 M				6.6					0.8
65 - 74 F									
65 - 74 M					10.3				1.4
75+ F									
75+ M									
Avg. F	0.6					0.7		0.4	0.2
Avg. M		0.5		1.2	0.4	0.4		0.4	0.3

TABLE 48

DISTRIBUTION OF PROPORTIONS OF EACH MANNER OF "NET" NON-NATURAL DEATH IN 18+ YEAR-OLDS BY OCCUPATION

Manner of Death	Occupation						
	p/t	m/c	t/f	f/f/m	us/ss	nlf	unk
Hip fracture	.02	.02	.07	.05	.06	.35	.42
Other Non-Traffic Accident	.05	.04	.22	.18	.16	.13	.21
Traffic Accident	.03	.03	.17	.06	.20	.14	.37
Suicide	.05	.05	.16	.08	.16	.15	.35
Homicide					.18	.36	.45
Total "Net" Non-Natural Deaths	.04	.04	.18	.11	.16	.17	.30

Legend:
- p/t professional or technical
- m/c management or clerical
- t/f skilled tradesman or foreman
- f/f/m farming, fishing (hunting) or mining
- us/ss unskilled or semi-skilled labourer
- nlf not in the labour force
- unk unknown

TABLE 49

DISTRIBUTION OF PROPORTIONS OF EACH MANNER OF "NET" NON-NATURAL DEATH IN 18+ YEAR-OLDS BY EMPLOYMENT STATUS

Manner of Death	Employment Status				
	e	u	ret	nlf	unk
Hip fracture			.15	.35	.50
Other Non-Traffic Accident	.30	.02	.06	.13	.50
Traffic Accident	.12	.03	.04	.14	.66
Suicide	.10	.09	.05	.15	.61
Homicide		.09		.36	.55
Total "Net" Non-Natural Deaths	.17	.03	.06	.17	.56

Legend: e employed
u unemployed
r retired
nlf not in the labour force
unk unknown

TABLE 50

DISTRIBUTION OF PROPORTIONS OF EACH MANNER OF "NET" NON-NATURAL DEATH IN 18+ YEAR-OLDS BY MARITAL STATUS

Manner of Death	Marital Status						
	s	m	cl	se	d	w	unk
Hip fracture	.10	.32			.01	.56	.01
Other Non-Traffic Accident	.31	.54			.01	.09	.04
Traffic Accident	.39	.50			.01	.07	.03
Suicide	.37	.48		.02	.03	.05	.04
Homicide	.27	.55			.09	.09	
Total "Net" Non-Natural Deaths	.31	.49			.01	.14	.03

Legend:
- s single
- m married
- cl common-law
- se separated
- d divorced
- w widowed
- unk unknown

TABLE 51

DISTRIBUTION OF PROPORTIONS OF EACH MANNER OF "NET" NON-NATURAL DEATH BY RELIGION

Manner of Death	Religion							
	ang	pent	rc	sa	uc	othc	nil	unk
Hip fracture	.25	.04	.31	.06	.18	.02		.03
Other Non-Traffic Accident	.21	.04	.34	.04	.15	.04		.19
Traffic Accident	.18	.05	.39	.05	.13	.02		.17
Suicide	.22	.02	.37	.03	.13	.04	.01	.19
Homicide	.27		.27		.18			.27
Total "Net" Non-Nat. Deaths	.21	.04	.36	.04	.15	.03		.18

Legend: ang Anglican
pent Pentecostal
rc Roman Catholic
sa Salvation Army
uc United Church
othc Other Christian
nil No religious affiliation
unk Unknown

Note: There were no instances of recorded non-Christian religions among the death records studied.

APPENDIX D

Other Statistics Canada Data

TABLE 1

POPULATIONS IN NEWFOUNDLAND AND LABRADOR

BY CENSUS DISTRICT AND YEAR STUDIED

Census District	Year							
	1951	1956	1961	1966	1971	1976	1981	1986
1	149543	171213	188904	198514	214360	228345	239395	246145
2	22366	23980	24779	25672	27310	29610	30385	30285
3	20434	21675	23299	25530	24500	25835	26215	25735
4	15983	19631	24185	25286	28360	30200	27760	27270
5	28089	35215	39086	42297	44885	46335	46910	45640
6	27968	33738	38045	42249	40095	42845	41990	40710
7	35294	38209	39652	39318	40570	43315	43420	43610
8	36799	40629	44659	49621	50705	53185	54525	54230
9	17051	19970	21710	23752	23155	24960	25750	25965
10	7890	10814	13534	21157	28165	33050	31315	28735
Nfld.	361416	415074	457853	493396	522210	557735	567685	568355

TABLE 2

AGE-SEX STRATIFIED POPULATION

CENSUS DISTRICT # 1 YEARS 1951 - 1986

Age-sex group	Year							
	1951	1956	1961	1966	1971	1976	1981	1986
0 - 4 f	10993	11996	12670	12365	10840	10370	9825	9070
0 - 4 m	11449	12232	13042	12927	11195	11055	10230	9480
5 - 9 f	9220	11308	12240	12411	12575	11315	10550	9770
5 - 9 m	9403	11743	12566	12759	13030	11645	11285	10230
10 - 14 f	7009	9317	11548	12058	12350	12740	11330	10515
10 - 14 m	7344	9482	11886	12445	12830	13150	11755	11260
15 - 19 f	6324	7333	9408	11075	12320	12530	12815	11350
15 - 19 m	5765	7113	9120	10618	12190	12775	12945	11565
20 - 24 f	5745	6076	6429	7765	9785	11130	11670	11865
20 - 24 m	4844	5977	6134	6724	9560	10850	10895	11665
25 - 34 f	10282	10298	10428	10330	12675	17050	20510	21905
25 - 34 m	10308	10879	10637	10404	13085	17185	20165	20890
35 - 44 f	8935	10406	10269	9957	10010	10505	13010	17045
35 - 44 m	9397	11042	10947	10265	10120	10980	13435	17055
45 - 54 f	6022	6778	8681	9747	9750	9690	9855	10305
45 - 54 m	5881	7338	9298	10261	10330	9825	9815	10415
55 - 64 f	4896	5326	5562	6321	8040	9175	9275	9140
55 - 64 m	4687	4965	5378	6533	8345	9095	9120	8810
65 - 74 f	3680	3893	4170	4547	5060	5725	7315	8265
65 - 74 m	3636	3712	3787	3891	4320	5060	6300	6920
75+ f	1961	2099	2454	2813	3480	4000	4530	5410
75+ m	1762	1900	2250	2298	2470	2495	2765	3235

TABLE 3

AGE-SEX STRATIFIED POPULATION

CENSUS DISTRICT # 2 YEARS 1951 - 1986

Age-sex group	Year							
	1951	1956	1961	1966	1971	1976	1981	1986
0 - 4 f	1905	1752	1771	1736	1755	1630	1485	1230
0 - 4 m	1878	1917	1765	1815	1885	1780	1515	1205
5 - 9 f	1468	1847	1763	1767	1765	1800	1595	1445
5 - 9 m	1535	1770	1874	1734	1840	1960	1745	1445
10 - 14 f	1242	1397	1834	1727	1720	1740	1730	1565
10 - 14 m	1202	1439	1784	1802	1710	1845	1925	1700
15 - 19 f	845	1069	1187	1499	1570	1565	1675	1625
15 - 19 m	891	1039	1281	1535	1620	1630	1720	1810
20 - 24 f	644	663	651	840	1185	1325	1320	1275
20 - 24 m	647	782	672	942	1250	144[illegible]	1260	1290
25 - 34 f	1360	1262	1069	1129	1420	2080	2455	2455
25 - 34 m	1327	1324	1200	1192	1550	2210	2600	2485
35 - 44 f	1176	1192	1224	1117	1045	1170	1430	1945
35 - 44 m	1311	1379	1285	1183	1215	1235	1550	2095
45 - 54 f	927	919	1034	1048	1115	1110	990	1080
45 - 54 m	961	1072	1192	1202	1100	1095	1100	1135
55 - 64 f	661	756	741	783	880	950	1025	1020
55 - 64 m	705	721	791	894	990	1025	940	945
65 - 74 f	517	484	513	566	565	645	760	820
65 - 74 m	569	561	531	542	560	665	765	770
75+ f	294	315	283	317	310	395	450	535
75+ m	301	320	334	302	260	315	350	410

TABLE 4

AGE-SEX STRATIFIED POPULATION

CENSUS DISTRICT # 3 YEARS 1951 - 1986

Age-sex group	Year							
	1951	1956	1961	1966	1971	1976	1981	1986
0 - 4 f	1590	1699	1765	1894	1685	1440	1150	905
0 - 4 m	1790	1717	1749	1886	1695	1550	1230	950
5 - 9 f	1297	1579	1640	1750	1695	1655	1420	1100
5 - 9 m	1278	1690	1697	1751	1690	1695	1530	1185
10 - 14 f	1017	1211	1503	1632	1555	1635	1610	1335
10 - 14 m	1013	1210	1644	1661	1570	1650	1610	1475
15 - 19 f	832	959	1092	1409	1340	1355	1515	1515
15 - 19 m	966	920	1097	1557	1375	1425	1495	1525
20 - 24 f	723	682	736	927	1020	1120	1105	1165
20 - 24 m	858	810	757	952	1015	1165	1145	1145
25 - 34 f	1214	1204	1168	1265	1385	1755	2060	2065
25 - 34 m	1402	1392	1388	1381	1390	1895	2170	2115
35 - 44 f	993	1010	1096	1152	1040	1100	1320	1625
35 - 44 m	1178	1255	1258	1290	1170	1160	1330	1730
45 - 54 f	813	810	863	920	920	1000	995	1030
45 - 54 m	835	889	1045	1149	1055	1060	1060	1065
55 - 64 f	649	677	680	701	680	770	825	910
55 - 64 m	680	666	670	775	770	880	935	930
65 - 74 f	399	404	477	503	455	485	555	630
65 - 74 m	453	434	477	479	455	490	555	645
75+ f	242	243	235	248	275	290	335	365
75+ m	212	214	262	248	265	260	265	325

TABLE 5

AGE-SEX STRATIFIED POPULATION

CENSUS DISTRICT # 4 YEARS 1951 - 1986

Age-sex group	Year							
	1951	1956	1961	1966	1971	1976	1981	1986
0 - 4 f	1481	1951	2277	2038	1835	1575	1190	1095
0 - 4 m	1518	1863	2365	2162	1900	1645	1160	1160
5 - 9 f	1147	1515	2009	2135	2165	1855	1435	1185
5 - 9 m	1174	1594	1978	2266	2255	1950	1525	1155
10 - 14 f	903	1165	1561	1911	2140	2165	1730	1395
10 - 14 m	917	1169	1631	1885	2215	2250	1760	1505
15 - 19 f	708	895	1171	1353	1760	1970	1805	1530
15 - 19 m	767	926	1153	1358	1770	2070	1755	1575
20 - 24 f	545	723	834	787	1110	1375	1230	1210
20 - 24 m	659	786	788	668	1090	1280	1145	1155
25 - 34 f	943	1108	1289	1284	1520	1980	2190	2290
25 - 34 m	1182	1267	1490	1233	1395	1995	2125	2145
35 - 44 f	682	872	1056	1040	1120	1360	1435	1745
35 - 44 m	911	1104	1201	1179	1360	1415	1410	1790
45 - 54 f	396	482	688	828	980	1025	1055	1185
45 - 54 m	591	621	866	965	1065	1170	1215	1200
55 - 64 f	339	358	375	466	640	795	885	900
55 - 64 m	386	431	513	599	780	880	940	1015
65 - 74 f	178	198	284	331	355	415	550	640
65 - 74 m	271	297	312	377	425	475	590	680
75+ f	127	136	137	186	240	285	330	375
75+ m	157	170	207	235	240	270	300	340

TABLE 6

AGE-SEX STRATIFIED POPULATION

CENSUS DISTRICT # 5 YEARS 1951 - 1986

Age-sex group	Year							
	1951	1956	1961	1966	1971	1976	1981	1986
0 - 4 f	2471	3155	3174	2914	2530	2235	1955	1640
0 - 4 m	2505	3017	3213	3252	2625	2330	1995	1695
5 - 9 f	1871	2716	2991	3067	2865	2490	2225	1925
5 - 9 m	1854	2598	3067	3082	3100	2640	2335	1915
10 - 14 f	1549	2041	2512	2853	2935	2790	2450	2150
10 - 14 m	1540	1803	2589	2999	2995	3045	2585	2260
15 - 19 f	1343	1747	1901	2335	2790	2755	2635	2265
15 - 19 m	1296	1536	1733	2284	2835	2795	2860	2370
20 - 24 f	1234	1521	1424	1646	1910	2250	2225	1910
20 - 24 m	1242	1372	1427	1460	1860	2225	2065	1935
25 - 34 f	1821	2305	2463	2434	2670	3380	3950	3955
25 - 34 m	2017	2431	2507	2485	2765	3400	3910	3625
35 - 44 f	1482	1865	1884	2036	2265	2280	2570	3195
35 - 44 m	1687	1942	2037	2182	2365	2390	2610	3210
45 - 54 f	916	1104	1420	1631	1730	1920	2135	2160
45 - 54 m	1129	1315	1564	1749	1895	1955	2150	2220
55 - 64 f	507	695	807	981	1205	1455	1550	1740
55 - 64 m	675	854	953	1134	1360	1495	1630	1790
65 - 74 f	327	391	446	571	725	825	1055	1255
65 - 74 m	341	419	499	647	715	800	965	1120
75+ f	144	182	232	274	385	505	625	775
75+ m	138	206	243	281	360	375	430	530

TABLE 7

AGE-SEX STRATIFIED POPULATION

CENSUS DISTRICT # 6 YEARS 1951 - 1986

Age-sex group	Year							
	1951	1956	1961	1966	1971	1976	1981	1986
0 - 4 f	2512	2806	3075	2988	2310	2130	1635	1395
0 - 4 m	2628	2830	3296	3243	2425	2195	1745	1520
5 - 9 f	1821	2534	2836	2950	2595	2310	2020	1590
5 - 9 m	1871	2611	2888	3209	2805	2435	2120	1710
10 - 14 f	1406	1775	2473	2738	2560	2560	2265	1940
10 - 14 m	1456	1914	2600	2857	2845	2745	2365	2045
15 - 19 f	1235	1528	1758	2494	2400	2545	2345	2050
15 - 19 m	1409	1597	1787	2323	2345	2690	2450	2155
20 - 24 f	1166	1234	1361	1653	1765	2085	1910	1775
20 - 24 m	1343	1465	1355	1478	1660	2060	1840	1735
25 - 34 f	1939	2100	2306	2508	2590	3220	3575	3485
25 - 34 m	2239	2590	2436	2515	2530	3175	3415	3345
35 - 44 f	1469	1724	1882	2041	1960	2155	2505	2875
35 - 44 m	1596	2045	2108	2229	2100	2240	2450	2805
45 - 54 f	834	1031	1362	1657	1595	1765	1825	1995
45 - 54 m	986	1417	1555	1698	1695	1835	1945	2030
55 - 64 f	506	648	729	936	1110	1300	1400	1505
55 - 64 m	625	798	889	1148	1195	1305	1455	1545
65 - 74 f	293	351	440	514	545	700	985	1115
65 - 74 m	364	390	440	535	520	685	840	940
75+ f	141	167	233	273	285	430	530	705
75+ m	129	183	236	262	260	310	370	450

TABLE 8

AGE-SEX STRATIFIED POPULATION

CENSUS DISTRICT # 7 YEARS 1951 - 1986

Age-sex group	Year							
	1951	1956	1961	1966	1971	1976	1981	1986
0 - 4 f	2626	2495	2451	2388	2190	2060	1695	1540
0 - 4 m	2807	2639	2604	2428	2220	2235	1770	1520
5 - 9 f	2062	2618	2534	2397	2450	2330	2050	1710
5 - 9 m	2134	2774	2683	2551	2490	2370	2195	1815
10 - 14 f	1620	2021	2614	2484	2470	2475	2270	2070
10 - 14 m	1598	2078	2777	2568	2580	2460	2370	2205
15 - 19 f	1358	1434	1714	1962	2115	2170	2250	2140
15 - 19 m	1414	1506	1882	2256	2325	2455	2260	2240
20 - 24 f	1118	1111	1037	1102	1305	1645	1590	1695
20 - 24 m	1192	1330	1093	1065	1450	1745	1745	1730
25 - 34 f	2134	2101	2002	1873	2080	2755	3175	3355
25 - 34 m	2372	2429	2098	1871	1995	2900	3260	3325
35 - 44 f	1845	2040	2052	1920	1865	1875	2140	2715
35 - 44 m	2230	2374	2341	2156	1985	1945	2180	2880
45 - 54 f	1499	1563	1682	1838	1880	1875	1885	1840
45 - 54 m	1533	1887	2096	2151	2110	2075	1985	1865
55 - 64 f	1230	1256	1287	1352	1525	1805	1880	1850
55 - 64 m	1301	1283	1390	1585	1865	1985	2020	1945
65 - 74 f	980	1011	1000	972	1115	1235	1435	1620
65 - 74 m	1143	1108	1039	1055	1120	1400	1545	1645
75+ f	543	559	592	653	700	800	935	1005
75+ m	547	592	684	691	735	720	785	900

TABLE 9

AGE-SEX STRATIFIED POPULATION

CENSUS DISTRICT # 8 YEARS 1951 - 1986

Age-sex group	Year							
	1951	1956	1961	1966	1971	1976	1981	1986
0 - 4 f	3070	3130	3319	3477	3415	2975	2360	2040
0 - 4 m	3242	3260	3489	3842	3615	3095	2455	2085
5 - 9 f	2399	3024	3199	3387	3395	3360	2995	2350
5 - 9 m	2489	3141	3303	3572	3560	3575	3095	2370
10 - 14 f	1788	2307	2978	3171	3260	3265	3305	2930
10 - 14 m	1914	2358	3113	3364	3435	3520	3520	3090
15 - 19 f	1429	1670	2095	2707	2705	2800	2940	2980
15 - 19 m	1601	1816	2233	2839	2910	3060	3220	3255
20 - 24 f	1199	1252	1311	1710	1935	2115	2185	2155
20 - 24 m	1368	1493	1461	1828	1890	2200	2185	2275
25 - 34 f	2233	2182	2182	2442	2775	3480	4095	4255
25 - 34 m	2427	2584	2646	2700	2810	3640	4120	4170
35 - 44 f	1842	1981	2055	2144	2100	2265	2705	3405
35 - 44 m	2114	2234	2405	2559	2460	2480	2820	3485
45 - 54 f	1353	1423	1642	1856	1900	1965	1990	2130
45 - 54 m	1512	1712	1951	2162	2125	2235	2345	2375
55 - 64 f	1054	1120	1160	1280	1495	1665	1865	1925
55 - 64 m	1221	1263	1326	1494	1725	1885	2000	2065
65 - 74 f	768	807	801	919	930	1060	1355	1480
65 - 74 m	930	960	962	1009	1045	1210	1490	1575
75+ f	407	448	478	568	575	690	765	935
75+ m	439	464	550	591	645	645	715	900

TABLE 10

AGE-SEX STRATIFIED POPULATION

CENSUS DISTRICT # 9 YEARS 1951 - 1986

Age-sex group	Year							
	1951	1956	1961	1966	1971	1976	1981	1986
0 - 4 f	1522	1721	1675	1751	1525	1370	1090	1030
0 - 4 m	1588	1708	1744	1924	1585	1455	1160	1070
5 - 9 f	1263	1583	1730	1668	1580	1565	1345	1055
5 - 9 m	1251	1612	1697	1736	1750	1640	1435	1155
10 - 14 f	943	1254	1528	1729	1500	1555	1575	1315
10 - 14 m	976	1228	1588	1659	1610	1710	1645	1380
15 - 19 f	709	868	1091	1388	1405	1370	1440	1480
15 - 19 m	842	947	1139	1462	1365	1525	1625	1545
20 - 24 f	606	632	625	839	920	1150	1175	1265
20 - 24 m	683	840	777	887	905	1160	1215	1260
25 - 34 f	1039	1119	1070	1128	1280	1725	2065	2185
25 - 34 m	1195	1321	1343	1356	1330	1720	2035	2235
35 - 44 f	765	899	1013	1017	920	985	1300	1655
35 - 44 m	909	1148	1206	1181	1140	1240	1405	1640
45 - 54 f	541	570	673	828	850	905	885	935
45 - 54 m	607	688	841	1002	1060	1020	1065	1165
55 - 64 f	341	433	464	502	570	715	805	825
55 - 64 m	443	518	550	597	730	855	910	890
65 - 74 f	239	251	268	351	345	385	485	595
65 - 74 m	330	347	355	382	395	450	575	660
75+ f	119	127	142	158	180	220	260	325
75+ m	140	156	191	207	210	240	255	300

TABLE 11

AGE-SEX STRATIFIED POPULATION

CENSUS DISTRICT # 10 YEARS 1951 - 1986

Age-sex group	Year							
	1951	1956	1961	1966	1971	1976	1981	1986
0 - 4 f	605	736	1116	1693	2165	2280	1705	1310
0 - 4 m	651	750	1135	1822	2275	2395	1790	1360
5 - 9 f	460	645	840	1385	1970	2100	1870	1430
5 - 9 m	436	637	869	1430	2120	2230	1960	1475
10 - 14 f	320	426	658	1029	1445	1775	1775	1660
10 - 14 m	369	402	643	959	1510	1955	1895	1725
15 - 19 f	262	296	471	833	1130	1565	1570	1585
15 - 19 m	407	461	516	1020	1345	1650	1695	1685
20 - 24 f	326	377	542	1039	1590	1950	1640	1300
20 - 24 m	576	892	824	1664	1400	1920	1540	1320
25 - 34 f	571	764	981	1449	2260	3025	3185	2735
25 - 34 m	866	1547	1587	2320	2880	3490	3355	2575
35 - 44 f	317	412	619	884	1165	1380	1645	2090
35 - 44 m	570	942	1026	1495	1820	1850	1930	2245
45 - 54 f	213	237	315	429	660	820	870	955
45 - 54 m	334	585	575	746	1000	1105	1200	1310
55 - 64 f	129	154	192	217	280	415	425	515
55 - 64 m	209	261	274	367	640	540	610	700
65 - 74 f	87	89	110	129	145	200	210	240
65 - 74 m	119	127	139	129	190	220	210	270
75+ f	28	36	47	51	65	105	120	130
75+ m	35	38	55	67	110	80	115	120

TABLE 12

AGE-SEX STRATIFIED POPULATION

NEWFOUNDLAND & LABRADOR YEARS 1951 - 1986

Age-sex group	Year							
	1951	1956	1961	1966	1971	1976	1981	1986
0 - 4 f	28775	31411	33293	33224	30245	28075	24080	21260
0 - 4 m	30056	31933	34402	35301	31425	29730	25060	22040
5 - 9 f	23008	29369	31782	32917	33055	30780	27520	23555
5 - 9 m	23425	30170	32622	34090	34640	32145	29230	24465
10 - 14 f	17797	22914	29209	31332	31930	32705	30030	26875
10 - 14 m	18329	23083	30255	32199	33290	34335	31425	28640
15 - 19 f	15045	17799	21888	27055	29530	30630	30985	28525
15 - 19 m	15358	17861	21941	27252	30085	32080	32030	29735
20 - 24 f	13306	14271	14950	18308	22525	26145	26050	25630
20 - 24 m	13412	15747	15288	17668	22080	26045	25035	25500
25 - 34 f	23536	24443	24958	25842	30670	40445	47260	48675
25 - 34 m	25335	27764	27332	27457	31730	41630	47170	46915
35 - 44 f	19506	22401	23150	23308	23495	25085	30050	38305
35 - 44 m	21911	25465	25814	25719	25735	26935	31125	38935
45 - 54 f	13514	14917	18360	20782	21360	22050	22495	23610
45 - 54 m	14369	17524	20983	23085	23430	23375	23870	24775
55 - 64 f	10312	11423	11997	13539	16410	19050	19930	20345
55 - 64 m	10932	11760	12734	15126	18400	19960	20555	20620
65 - 74 f	7468	7879	8509	9403	10245	11660	14705	16655
65 - 74 m	8156	8355	8541	9046	9750	11465	13850	15230
75+ f	4006	4312	4883	5541	6530	7715	8880	10555
75+ m	3860	4243	5012	5182	5550	5695	6350	7510

TABLE 13

AGE-SEX STRATIFIED POPULATION

CANADA - 1986

Age-sex group	Population
0 - 4 f	882415
0 - 4 m	927775
5 - 9 f	874865
5 - 9 m	920105
10 - 14 f	870050
10 - 14 m	916750
15 - 19 f	939600
15 - 19 m	985250
20 - 24 f	1121890
20 - 24 m	1131455
25 - 34 f	2278395
25 - 34 m	2248755
35 - 44 f	1818905
35 - 44 m	1821995
45 - 54 f	1269055
45 - 54 m	1276160
55 - 64 f	1204255
55 - 64 m	1124070
65 - 74 f	911215
65 - 74 m	738875
75+ f	653025
75+ m	394460

TABLE 14
STATISTICS CANADA FIGURES: POPULATIONS OF NEWFOUNDLAND AND CANADA: 1951 - 1986 (IN THOUSANDS)

Year	Newfoundland			Canada		
	Female	Male	Total	Female	Male	Total
1951	176.3	185.1	361.4	6920.6	7088.9	14009.5
1952	181.8	192.2	374.0	7104.5	7300.5	14405.0
1953	186.2	196.8	383.0	7281.3	7474.7	14756.0
1954	192.9	205.1	398.0	7485.0	7683.0	15168.0
1955	199.7	212.3	412.0	7689.7	7883.3	15573.0
1956	201.2	213.9	415.1	7928.9	8151.9	16080.8
1957	206.4	219.6	426.0	8173.5	8415.5	16589.0
1958	211.3	226.7	438.0	8402.3	8645.7	17048.0
1959	216.2	232.8	449.0	8598.4	8843.6	17442.0
1960	221.1	238.0	459.1	8786.5	9027.5	17814.0
1961	222.9	235.0	457.9	9019.4	9218.9	18238.3
1962	229.0	241.0	470.0	9192.9	9377.1	18570.0
1963	234.4	246.6	481.0	9361.6	9534.4	18896.8
1964	239.2	251.8	491.0	9536.6	9698.4	19235.0
1965	242.9	255.1	498.0	9708.1	9862.9	19571.0
1966	241.3	252.1	493.4	9960.5	10054.4	20014.9
1967	244.5	255.5	500.0	10157.2	10247.8	20405.0
1968	248.3	258.7	507.0	10334.1	10409.9	20744.0
1969	251.8	262.2	514.0	10497.4	10563.6	21061.0
1970	254.0	264.0	518.0	10664.4	10712.6	21377.0
1971	256.0	266.1	522.1	10772.9	10795.4	21568.3
1972	261.0	271.0	532.0	10906.8	10913.7	21820.5
1973	265.5	275.3	540.8	11050.5	11044.2	22094.7
1974	266.3	276.2	542.5	11229.4	11216.9	22446.3
1975	269.5	280.0	549.5	11413.7	11385.9	22799.6
1976	274.3	283.4	557.7	11543.1	11449.5	22992.6
1977	276.5	286.0	562.5	11702.1	11589.0	23291.1
1978	277.3	284.2	561.5	11827.8	11689.2	23517.0
1979	278.8	284.7	563.5	11954.2	11793.1	23747.3
1980	280.4	285.2	565.6	12113.2	11929.3	24042.5
1981	282.0	285.7	567.7	12274.1	12067.6	24341.7
1982	281.6	284.6	566.2	12406.8	12176.3	24583.1
1983	284.5	286.9	571.4	12521.8	12265.4	24787.2
1984	285.3	287.0	572.3	12630.6	12347.6	24978.2
1985	285.2	286.3	571.5	12737.6	12427.8	25165.4
1986	284.0	284.4	568.4	12844.9	12508.1	25353.0

TABLE 15
STATISTICS CANADA FIGURES: NON-NATURAL DEATHS IN NEWFOUNDLAND AND CANADA: 1951 - 1986

Year	Newfoundland			Canada		
	Female	Male	Total	Female	Male	Total
1951	43	128	171	2424	6798	9222
1952	57	108	165	2501	7243	9744
1953	37	133	170	2628	7242	9870
1954	41	126	167	2624	7033	9657
1955	68	152	220	2713	7366	10079
1956	61	157	218	2960	7725	10685
1957	60	155	215	2952	8133	11085
1958	66	170	236	2800	7831	10631
1959	75	182	257	2921	7983	10904
1960	64	169	233	3013	7993	11006
1961	57	168	225	2978	8251	11229
1962	55	162	217	3243	8438	11681
1963	64	189	253	3337	8601	11938
1964	71	187	258	3436	8960	12396
1965	66	204	272	3731	9226	12957
1966	56	216	272	3690	9756	13446
1967	73	203	276	4002	9759	13761
1968	69	170	239	4013	9842	13855
1969	49	178	227	4070	10438	14508
1970	63	196	259	4239	10204	14443
1971	77	174	251	4527	10824	15351
1972	83	199	282	4722	11629	16351
1973	80	238	318	4834	11978	16812
1974	66	214	280	4892	11969	16861
1975	77	214	291	4863	11636	16499
1976	86	180	266	4460	10891	15351
1977	52	191	243	4635	11366	16001
1978	54	167	221	4645	11442	16087
1979	61	199	260	4755	11774	16529
1980	52	196	248	4586	11138	15724
1981	61	205	266	4436	11906	16342
1982	40	204	244	4120	11045	15165
1983	73	194	267	4102	9986	14088
1984	51	175	226	4146	9855	14001
1985	42	171	213	4013	9404	13417
1986	47	142	189	4209	9532	13741

TABLE 16
STATISTICS CANADA FIGURES: NON-TRAFFIC ACCIDENT DEATHS IN NEWFOUNDLAND AND CANADA: 1951 - 1986

Year	Newfoundland			Canada		
	Female	Male	Total	Female	Male	Total
1951	34	98	133	1514	3858	5372
1952	46	85	131	1501	4093	5594
1953	29	103	132	1556	3965	5521
1954	30	96	126	1561	3952	5513
1955	56	112	168	1639	4132	5771
1956	47	115	162	1739	3973	5712
1957	46	114	160	1768	4193	5961
1958	58	119	177	1615	4025	5640
1959	66	132	198	1640	4112	5752
1960	51	120	171	1701	4002	5703
1961	47	113	160	1688	4070	5758
1962	45	115	160	1773	3986	5759
1963	34	118	152	1727	4077	5804
1964	38	110	148	1681	4021	5702
1965	44	127	171	1834	4095	5929
1966	40	122	162	1741	4323	6064
1967	41	127	168	1857	4217	6074
1968	45	108	153	1859	4146	6005
1969	20	96	116	1756	4239	5995
1970	35	116	151	1894	4172	6066
1971	39	97	136	1952	4389	6341
1972	40	106	146	1980	4737	6717
1973	42	133	175	1900	4745	6645
1974	29	95	124	1986	4634	6620
1975	41	117	158	2086	4595	6681
1976	56	94	150	1840	4239	6079
1977	29	92	121	1873	4054	5927
1978	25	83	108	1897	4096	5993
1979	32	82	114	1880	4113	5993
1980	25	96	121	1825	3897	5722
1981	30	89	119	1773	4511	6284
1982	16	95	111	1777	3487	5264
1983	30	86	116	1704	3262	4966
1984	28	87	115	1848	3455	5303
1985	21	91	112	1756	3269	5025
1986	25	63	88	1916	3111	5027

TABLE 17
STATISTICS CANADA FIGURES: TRAFFIC ACCIDENT DEATHS IN NEWFOUNDLAND AND CANADA: 1951 - 1986

Year	Newfoundland			Canada		
	Female	Male	Total	Female	Male	Total
1951	6	20	26	605	2057	2662
1952	10	15	25	710	2337	3047
1953	5	21	26	775	2346	3121
1954	8	24	32	736	2131	2867
1955	11	35	46	754	2283	3037
1956	12	34	46	870	2689	3559
1957	12	26	38	852	2842	3694
1958	7	39	46	852	2665	3517
1959	8	36	44	956	2731	3687
1960	12	36	48	953	2747	3700
1961	7	40	47	945	2937	3882
1962	10	38	48	1095	3230	4325
1963	22	58	80	1164	3287	4451
1964	29	60	89	1269	3593	4862
1965	20	54	74	1353	3696	5049
1966	16	77	93	1424	3986	5410
1967	30	68	98	1530	3992	5522
1968	23	54	77	1486	4002	5488
1969	25	74	99	1492	4204	5696
1970	25	57	82	1422	3890	5312
1971	33	61	94	1599	4091	5690
1972	37	81	118	1648	4660	6308
1973	29	71	100	1810	4712	6522
1974	31	100	131	1718	4607	6325
1975	34	70	104	1621	4275	5896
1976	23	55	78	1402	3770	5172
1977	18	63	81	1424	3831	5255
1978	21	52	73	1440	3730	5170
1979	26	80	106	1603	4323	5296
1980	24	73	97	1544	4012	5556
1981	20	74	94	1389	4054	5443
1982	15	66	81	1171	3061	4232
1983	32	71	103	1181	3153	4334
1984	16	43	59	1138	2995	4133
1985	16	50	66	1254	2980	4234
1986	13	52	65	1181	2891	4072

TABLE 18
STATISTICS CANADA FIGURES: SUICIDES IN NEWFOUNDLAND AND CANADA: 1951 - 1986

Year	Newfoundland			Canada		
	Female	Male	Total	Female	Male	Total
1951	2	10	12	248	785	1033
1952	1	7	8	240	810	1050
1953	1	8	9	232	820	1052
1954	2	6	8	261	841	1102
1955	1	5	6	259	844	1103
1956	2	7	9	274	952	1226
1957	1	13	14	266	981	1247
1958	0	11	11	249	1022	1271
1959	1	13	14	270	1017	1287
1960	1	11	12	266	1084	1350
1961	3	14	17	268	1098	1366
1962	0	9	9	283	1048	1331
1963	5	11	16	353	1083	1436
1964	1	16	17	392	1194	1586
1965	2	21	23	441	1274	1715
1966	0	15	15	432	1283	1715
1967	2	6	10	488	1353	1841
1968	0	6	6	540	1481	2021
1969	1	5	6	650	1641	2291
1970	2	23	25	681	1732	2413
1971	4	15	19	693	1866	2559
1972	4	11	15	757	1900	2657
1973	4	22	26	788	1985	2773
1974	2	10	12	799	2103	2902
1975	1	18	19	778	2030	2808
1976	3	18	21	827	2108	2935
1977	2	19	21	858	2459	3317
1978	4	11	15	865	2610	3475
1979	1	24	25	836	2519	3355
1980	1	18	19	824	2531	3355
1981	4	20	24	833	2570	3403
1982	2	32	34	797	2726	3523
1983	6	30	26	870	2885	3755
1984	4	35	39	779	2661	3440
1985	0	23	23	693	2566	3259
1986	6	17	23	820	2850	3670

TABLE 19
STATISTICS CANADA FIGURES: HOMICIDES IN NEWFOUNDLAND AND CANADA: 1951 - 1986

Year	Newfoundland			Canada		
	Female	Male	Total	Female	Male	Total
1951	0	1	1	57	89	146
1952	1	0	1	50	98	148
1953	1	2	3	65	101	166
1954	0	1	1	66	102	168
1955	0	0	0	61	107	168
1956	1	0	1	77	104	181
1957	2	1	3	66	106	172
1958	1	1	2	84	117	201
1959	1	0	1	55	120	175
1960	2	0	2	93	155	248
1961	1	0	1	77	140	217
1962	0	0	0	92	167	259
1963	2	3	5	93	151	244
1964	1	3	4	94	147	241
1965	2	2	4	103	156	259
1966	2	0	2	93	158	251
1967	0	0	0	127	189	316
1968	2	1	3	128	210	338
1969	2	3	5	120	261	381
1970	0	0	0	161	272	433
1971	1	0	1	159	314	473
1972	1	1	2	184	329	513
1973	1	3	4	189	351	540
1974	2	3	5	201	350	551
1975	3	1	4	206	407	613
1976	2	2	4	189	374	563
1977	2	0	2	198	409	607
1978	1	1	2	181	405	586
1979	3	1	4	204	377	581
1980	0	0	0	163	327	490
1981	0	1	1	214	346	560
1982	0	0	0	194	398	592
1983	1	0	1	207	385	592
1984	2	1	3	184	396	580
1985	0	1	1	197	340	537
1986	2	2	4	175	338	513

TABLE 20
STATISTICS CANADA FIGURES: "UNDETERMINED" DEATHS IN NEWFOUNDLAND AND CANADA: 1951 - 1986

Year	Newfoundland			Canada		
	Female	Male	Total	Female	Male	Total
1951						
1952						
1953						
1954						
1955						
1956						
1957						
1958						
1959						
1960						
1961						
1962						
1963						
1964						
1965						
1966						
1967						
1968						
1969	0	1	1	52	90	142
1970	1	0	1	81	134	215
1971	0	1	1	124	161	285
1972	1	0	1	153	198	351
1973	2	11	13	147	184	331
1974	1	7	8	188	274	462
1975	0	6	6	172	327	499
1976	2	11	13	202	397	599
1977	3	14	17	282	611	893
1978	3	20	23	262	598	860
1979	1	9	10	232	441	673
1980	2	9	11	230	369	599
1981	6	22	28	227	423	650
1982	7	11	18	181	370	551
1983	5	6	11	140	299	439
1984	2	8	10	197	346	543
1985	4	7	11	113	247	360
1986	1	8	9	117	342	459