OFFICE OF THE CHIEF MEDICAL EXAMINER
ALBERTA JUSTICE

2009—Annual Review

OVERVIEW

HISTORY

The province of Alberta had a coroner's death investigation system, based upon the British Coroner's system, in place from the time it joined Confederation in 1905 until 1977. Following a review of the entire Alberta justice system, undertaken in the mid-1970's, Alberta changed to a medical examiner death investigation system, under the direction of a Chief Medical Examiner, with proclamation of the *Fatality Inquiries Act* in June 1977.

The primary purpose of the change was to establish a separation between an investigation into the circumstances surrounding a death and the inquisitional or public hearing portion of such an investigation. Traditionally, in the coroner's system, a coroner could conduct an investigation into a death and also preside over a public Coroner's Inquest into the circumstances of the death. Under the *Fatality Inquiries Act*, a medical examiner would be responsible for conducting the initial investigation, a board (the Fatality Review Board) would decide which cases should go to a public hearing (now referred to as a Public Fatality Inquiry), and that hearing would be held before a Provincial Court Judge. The *Fatality Inquiries Act* also stipulated that the Chief Medical Examiner must be a Pathologist.

Dr. John Butt was the first Chief Medical Examiner for the province of Alberta, serving in this position from 1977 to 1993. Under his guidance, two state-of-the-art autopsy/toxicology facilities were built in Edmonton and Calgary and the first medical investigator program in Canada was established.

JURISDICTION AND MANDATE

The Office of the Chief Medical Examiner (OCME) is a branch of Alberta Justice. It's area of jurisdiction is the province of Alberta, with a population of approximately 3.5 million.

The office is responsible for the investigation and certification of certain deaths in Alberta in accordance with the *Fatality Inquiries Act* and the *Vital Statistics Act*.

The Office of the Chief Medical Examiner must be notified in the following circumstances:

- an unexplained natural death,
- an unexpected natural death, when the decedent appeared to be in good health,
- a natural death where the decedent did not have a physician or had not been seen by a physician within the last 14 days,
- A death during an operative procedure or within 10 days of an operative procedure,
- a violent* or unnatural death,
- A death alleged to be a result of negligence,
- a death in custody,
- A death of an involuntary patient or "ward" of the government**, or
- a maternal death.
- All occupational deaths are also investigated.

The time of interval between an individual being injured and his or her death is of no consequence to a Medical Examiner's investigation. If a death can be reasonably linked to an injury, the death must be reported to and investigated by a Medical Examiner, even if that injury occurred decades ago.

* Violent deaths are not limited to homicides, but are actually all deaths not caused by natural diseases (motor vehicle deaths, suicides, and drug-related deaths are common examples).

**This includes patients certified under the *Mental Health Act* and any death of a child in the custody or guardianship of the government under the *Child, Youth, and Family Enhancement Act*

FACILITIES AND STAFF

The OCME is managed from two regional offices—one located in Edmonton and the other in Calgary. The Edmonton office administers all investigations in the northern part of the province, while the Calgary office administers all investigation in the southern part of the province. The boundary between north and south is a line from west to east, beginning south of Highway 16 (south of Jasper) eastward to Highway 2 (south of Hobbema), and further eastward midway between Highway 13 on the north and Highway 12 on the south.

Dr. Graeme Dowling who has served as the Chief Medical Examiner since 1993 works in the Edmonton branch office and is responsible to the Minister of Justice and Attorney General for overseeing the investigation of deaths reported to medical examiners in accordance with the *Fatality Inquiries Act*. By December 2009 there were five Assistant Chief Medical Examiners in each of the two branch offices (two in Calgary and three in Edmonton). Each one of these individuals is a Forensic Pathologist by training. In 2009, 71% of the deaths investigated by the OCME were certified by these four individuals.

A network of 111 fee-for-service medical examiners, all of whom are physicians, investigate the remaining cases with the assistance of the RCMP and municipal police forces. Their continuing support and willingness to perform this valuable service has made it possible to maintain a high quality province-wide death investigation system.

A histology laboratory is located in the Calgary office and a toxicology laboratory is located in Edmonton. Two PhD chemists direct the toxicology laboratory. Additional office staff includes medical investigators, forensic pathology technicians, medico-legal record technicians, histology and toxicology technologists, a radiology technologist, a photographer, a research officer, administrators, and administrative support personnel.

A medical investigator and medical examiner are available at all times for investigations and consultations in the Calgary and Edmonton regional offices. Autopsies and external examinations are performed in these offices on weekdays.

DOCUMENTS/COSTS/FEES

The overall cost of death investigations, including the transportation of bodies from the scene of the death to the site of examination, is borne by the OCME.

The OCME produces written documentation for each case that is reported to a medical examiner, irrespective of whether a complete investigation is conducted. This documentation contains information on the identity of the decedent, together with the cause of death, the manner of death (i.e. natural, homicide, suicide, accident, undetermined, or unclassified), and the circumstances surrounding the death. This information is available to the next of kin, and to certain interested parties, upon written request and payment of fees stipulated in the Fatality Inquiries Regulation.

The majority of the office's documentation is maintained in MEDIC, a database system developed specifically for the OCME, which also serves as the basis for generation of statistical data, including this Annual Review.

EDUCATION

The OCME is associated with the University of Alberta and the University of Calgary and provides training to medical students, pathology residents and other professionals in a number of health and law related disciplines.

In 2009 a Medical Examiner's Symposium was held. Medical Examiner's Symposiums are held every second year in order to provide continuing education to medical examiners, pathologists, medical investigators, police officers, and others who are part of the team effort involved in investigating sudden deaths in Alberta. During the inbetween years, the OCME and Edmonton Police Service host *The Golden Triangle*. *The Golden Triangle* is a five-day seminar on the principles of sudden death investigation, specifically designed for police and medical investigators, which has come to enjoy a nationwide attendance.

TYPES OF CASES

In 2009 a total of 6109 deaths were reported to a Medical Examiner representing approximately 30% of all deaths in Alberta during that year. Investigations were conducted into 3886 deaths or 64% of the deaths reported to the OCME and 18% of all deaths in Alberta.

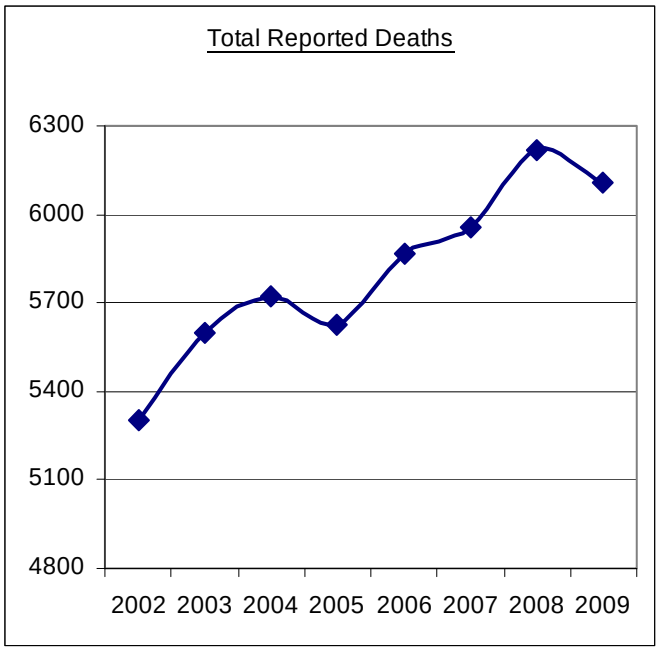
Case Type	#
Acceded*	161
Medical Examiner Case	3725
No Case**	250
Refereed***	1973
Total Cases Reported	**6109**
Total Investigated	**3886**

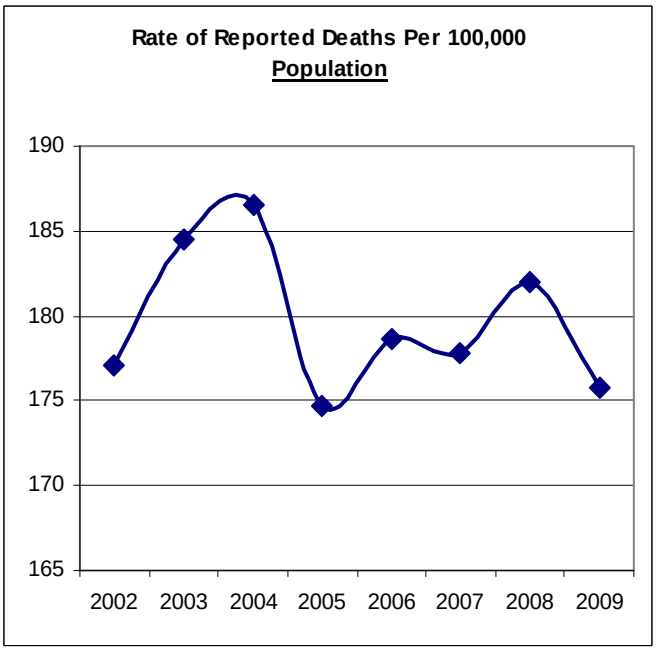
**Acceded: a case that was notifiable to a medical examiner but was not reported at the time of death. Often these cases are late effects of remote injury or disease. These cases are usually captured as OCME cases during the office's routine review of all Medical Certificates of Death signed in Alberta.*

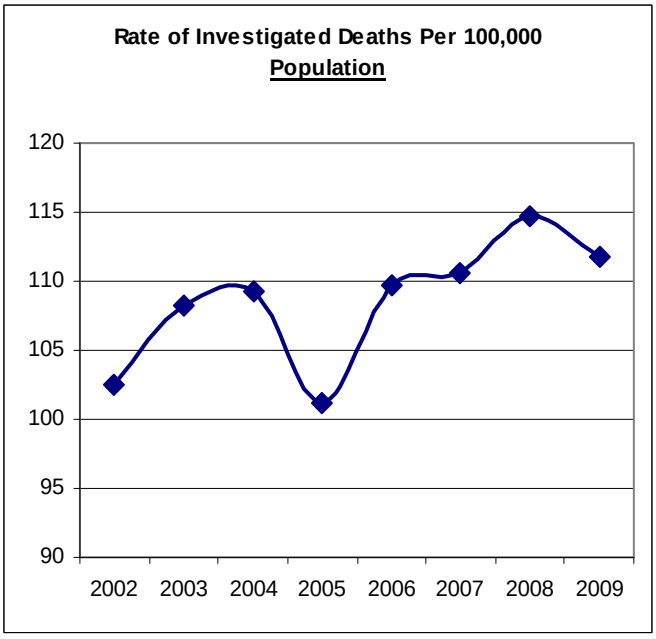
***No Case the medical examiner is required to keep a permanent record of all deaths reported to him including cases where upon after receiving notification of the death, the medical examiner has determined the case does not require investigation under the Fatality Inquiries Act.*

**** Refereed: a case of natural death notifiable to a medical examiner, usually because the attending physician did not see the patient within the 14 days prior to death or because a patient died within 10 days of a surgical procedure. In such cases the attending physician is given permission to sign the Medical Certificate of Death by the medical examiner or a medical investigator.*

TOTAL REPORTED DEATHS AND TOTAL INVESTIGATED DEATHS FOR 2002—2009







MANNERS OF DEATH CERTIFIED BY THE OCME

The manner of death is a statistical classification of deaths that takes into account the circumstances under which the death occurred. In its broadest terms, deaths are divided into those caused by a natural disease (natural manner of death) versus those caused by injury or drugs (unnatural manner of death). The unnatural deaths are further subdivided into accidental, suicidal, homicidal, and undetermined manners of death used in all Canadian provinces and territories. The OCME in the province of Alberta also uses an unclassified manner of death. The majority of natural deaths do not require any involvement of a medical examiner, and the Medical Certificate of Death can be signed by the decedent's attending doctor in these cases. In contrast to this, all unnatural deaths occurring in Alberta must be investigated by a medical examiner and the Medical Certificate of Death can only be completed by a medical examiner.

The manner of death is determined after the cause of death has been established and takes into account the medical examiner's investigation into the medical history of the decedent, the circumstances surrounding the death, the scene findings, and the examination of the body (often supplemented with other tests such as a drug screen). Any ruling on the manner of death can be amended if and when further factual information becomes available to indicate that the manner of death should be changed.

The manners of death used by the OCME in Alberta are as follows:

Natural

The natural manner of death is used when the cause of death is a natural disease, with a couple of the most common examples being heart disease or cancer. Almost half of all deaths investigated by the OCME are caused by natural diseases.

Accident

The accidental manner of death applies when a death is caused by an injury and where there is no obvious intent to cause death either on the part of the decedent or any other individual. Motor vehicle deaths are the most common example of accidental deaths in Alberta.

Suicide

Suicides are deaths that occur when an individual dies as a result of a self-inflicted injury where evidence indicates the person intended to cause their own death.

Homicide

A homicide is a death resulting from an injury caused directly or indirectly by the actions of another person where there is often (but not always) some indication of intent to cause the injury and/or death. Homicide is a neutral term that does not imply fault or guilt.

Unclassified

The unclassified manner of death is used when death is directly caused by a drug of abuse, including alcohol, or caused by the long term effects of alcohol and/or drug abuse.

Undetermined

The undetermined manner of death is used in those cases where a complete investigation does not yield sufficient information to determine which of the previous manners the death should be classified as. An example of this would be the death of a pedestrian following a hit-and-run vehicular incident where there were no witnesses and the driver of the vehicle was never found. In this case there would be insufficient information available to establish whether the driver intentionally struck the pedestrian (homicide), unintentionally struck the pedestrian (accident), or the pedestrian jumped in front of the vehicle (suicide).

TYPES OF POSTMORTEM EXAMINATIONS

There are two types of postmortem examinations conducted by the medical examiners: a full autopsy or an external examination. The decision on which examination will be used in any particular case is made by the medical examiner.

Family members may object to an autopsy being performed on their loved one for personal or religious reasons; however, under the provisions of the *Fatality Inquiries Act,* a medical examiner does not require permission from the next-of-kin to proceed with the autopsy. The OCME will take the family's concerns into consideration, but ultimately the final decision will rest with the medical examiner.

Not all cases investigated by a medical examiner require a full autopsy. In many instances, documentation of the medical history, the circumstances of the death, and the scene findings provide sufficient information about the identity of the decedent and the cause and manner of death that an external examination of the body, with collection of appropriate toxicology specimens, is all that is needed to complete the investigation.

An external examination can be performed by any medical examiner in the province. An autopsy, ordered by a medical examiner, is only performed by a Forensic Pathologist working in the Edmonton or Calgary OCME facilities. Autopsies were performed in 36.5% of all cases investigated by the OCME in 2009.

Type of OCME Examination Performed by Manner of Death, 2009
Medical Examiner Cases Only*

Manner of Death	Autopsy	External Only	None**	Total	% Autopsy
Accidental	150	575	7	732	20.5%
Homicide	85	9	0	94	90.4%
Natural	705	1197	7	1909	36.9%
Suicide	96	385	5	486	19.8%
Unclassified	321	96	0	417	77.0%
Undetermined	60	24	0	84	71.4%
Unidentified Skeletal Remains	2	1	0	3	66.7%
Total	1419	2287	19	3725	38.1%

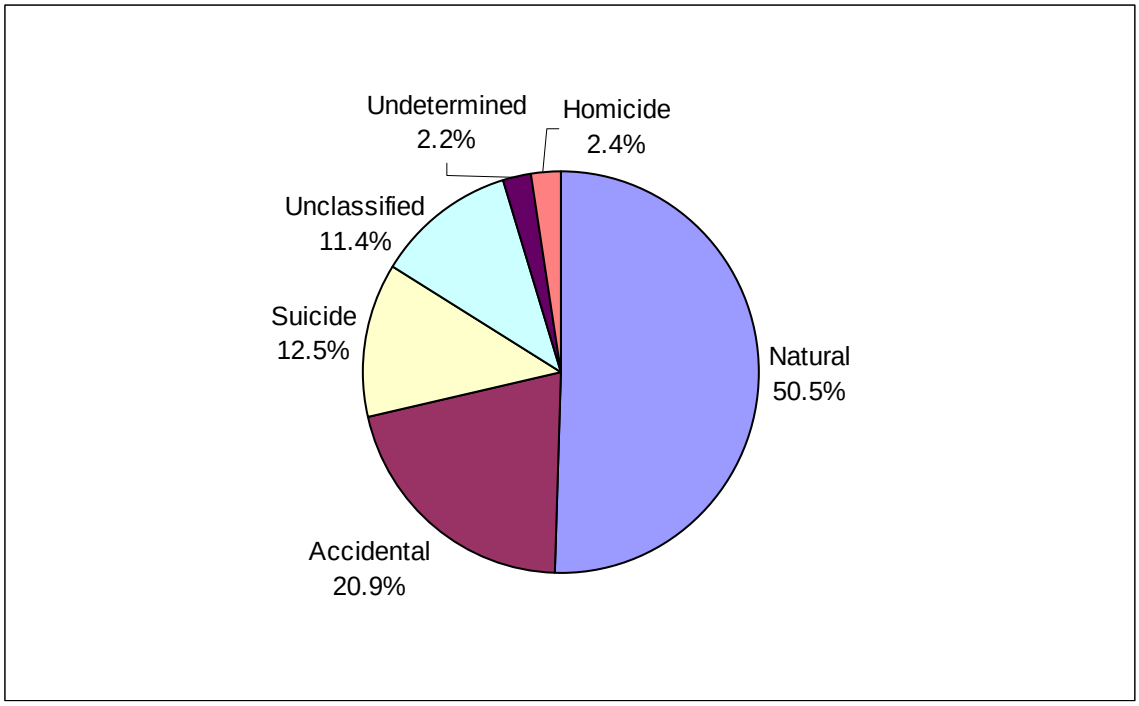
** Acceded cases are often identified following burial and therefore the OCME is unable to examine the body.*
***Autopsy was done in hospital or no examination required as there was sufficient medical documentation as a result of a longstanding condition.*

Caseload Statistics

Total Cases

Manner of Death	Total Cases	Percentage of Investigated Cases
Natural	1960	50.4%
Accidental	813	20.9%
Suicide	487	12.5%
Unclassified	443	11.4%
Undetermined	86	2.2%
Homicide	94	2.4%
Unidentified Skeletal Remains	3	0.1%
Other Cases*	2223	
Total	**6109**	

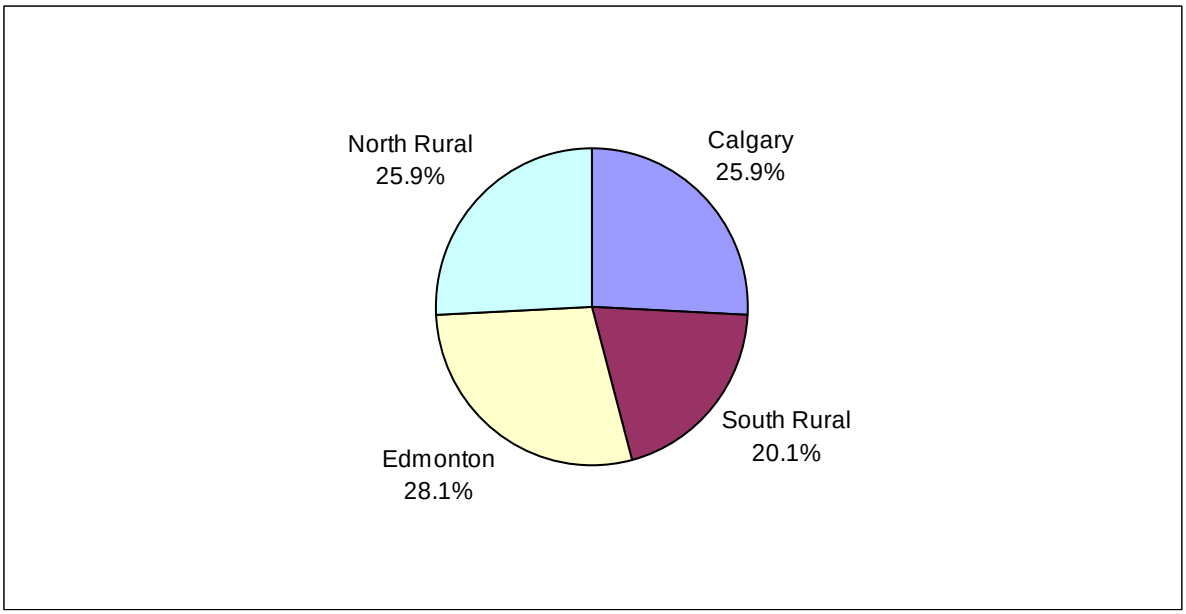
**Cases that are reported but do not require a full investigation.*



Caseload Statistics

Regional Distribution of Cases

	Calgary	South Rural	Edmonton	North Rural	Total	Percent
Natural	557	362	580	461	1960	50.4%
Accidental	169	183	184	277	813	20.9%
Suicide	103	105	129	150	487	12.5%
Unclassified	124	101	143	75	443	11.4%
Undetermined	24	19	21	22	86	2.2%
Homicide	27	9	36	22	94	2.4%
Unidentified Skeletal Remains	2	1	0	0	3	0.1%
Total	**1006**	**780**	**1093**	**1007**	**3886**	**100%**

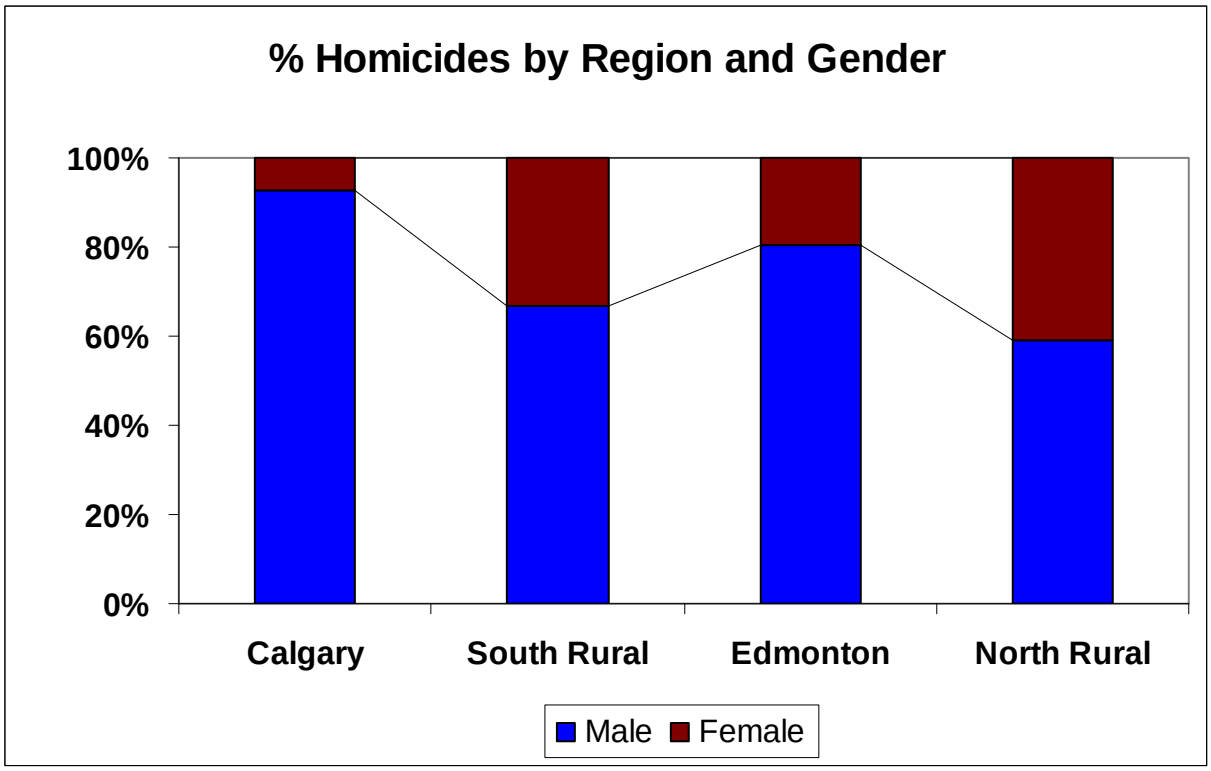


2009 Statistics by Manner of Death

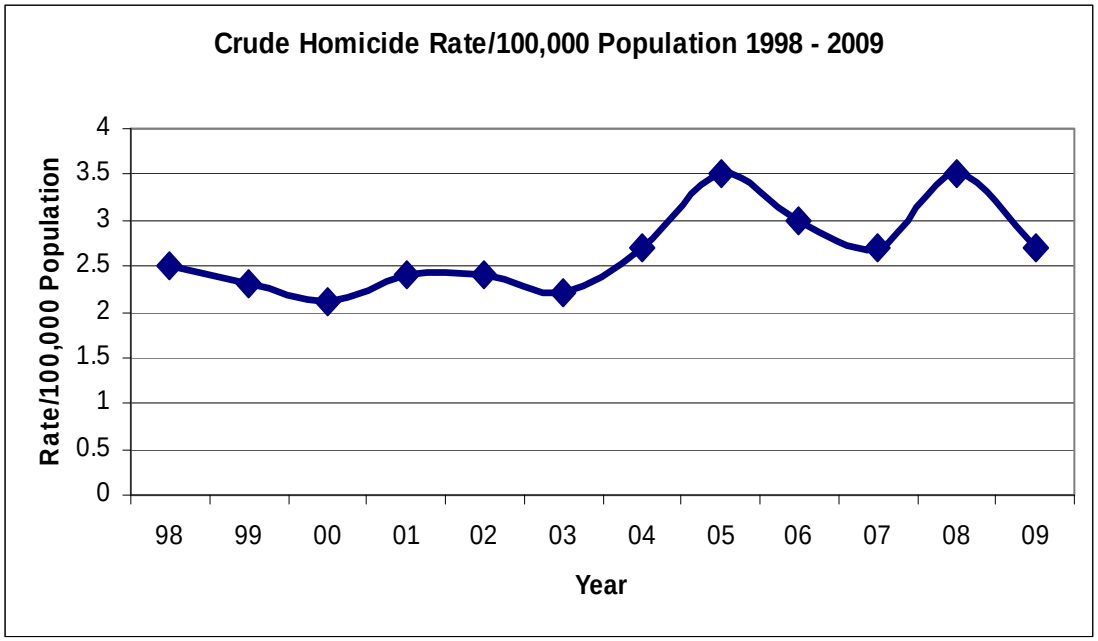
Homicide

Gender and Regional Distribution

Region	Male	Female	Total	Percentage
Calgary	25	2	27	28.7%
South Rural	6	3	9	9.6%
Edmonton	29	7	36	38.3%
North Rural	13	9	22	23.4%
Total	**73**	**21**	**94**	**100%**



Homicide Rates

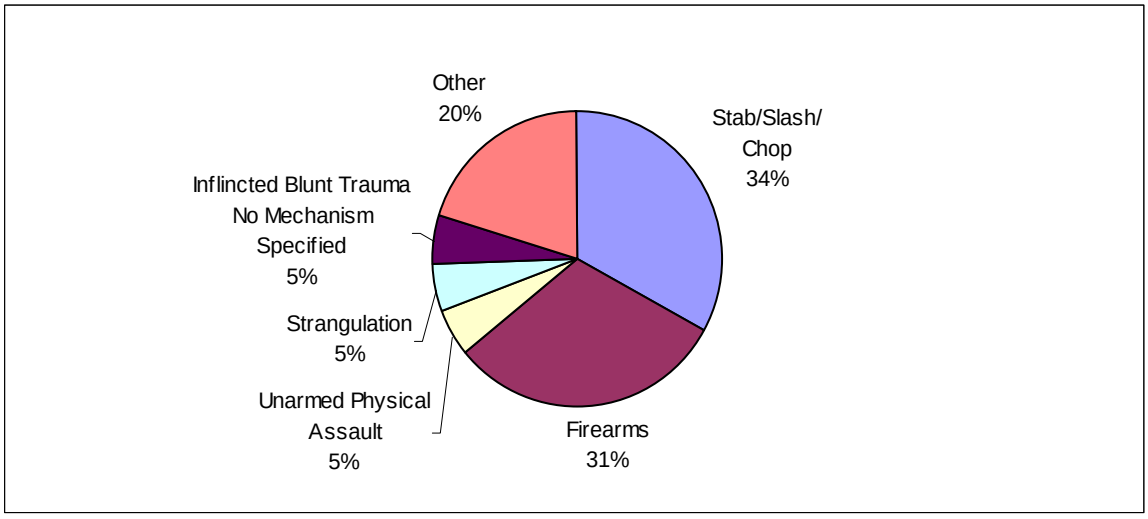


2009 Alberta homicide rate = 2.7 homicides in Alberta per 100,000 population.
Female rate: 1.2/100,000 Female Population
Male rate: 4.2/100,000 Male Population

Crude rate per 100000 population based on the 2008 Alberta population of 3,475,192 as per Population Projections for Alberta and It's Health Regions—Health Surveillance & Environmental Health Branch, Alberta Health and Wellness, 2007

Homicides by Circumstance of Injury

Circumstance of Injury	Edmonton	Calgary	North Rural	South Rural	Total
Stab/Slash/Chop	13	9	6	3	***31***
Firearm	9	9	8	3	***29***
Unarmed Physical Assault	4	1	0	0	***5***
Strangulation	1	2	2	0	***5***
Inflicted Blunt Trauma No Mechanism Specified	1	2	2	0	***5***
Inflicted Trauma by Blunt and Sharp Objects	0	1	0	3	***4***
Inflicted Trauma to Head of Infant/ Preschool Child	2	2	0	0	***4***
Pushed/Shoved/Hit Resulting in Head Striking Ground	2	1	0	0	***3***
Struck by Blunt Object(s)	0	0	2	0	***2***
Inflicted Blunt Trauma and Gunshot Wounds	0	0	2	0	***2***
Carbon Monoxide Poisoning	1	0	0	0	***1***
Late Effect of Previous Assault	1	0	0	0	***1***
Inflicted Trauma By Blunt Object(s) and Strangulation	1	0	0	0	***1***
Undetermined	1	0	0	0	***1***
Total	***36***	***27***	***22***	***9***	***94***



2009 Statistics by Manner of Death

Suicides

In 2009 there were 487 suicides investigated by the Alberta Office of the Chief Medical Examiner, 4 of which were from out of province or of no identifiable address. Any of the data below that presents regional data or rates will be based only on the 483 Albertans. The remaining data will include all cases investigated.

Gender and Regional Distribution

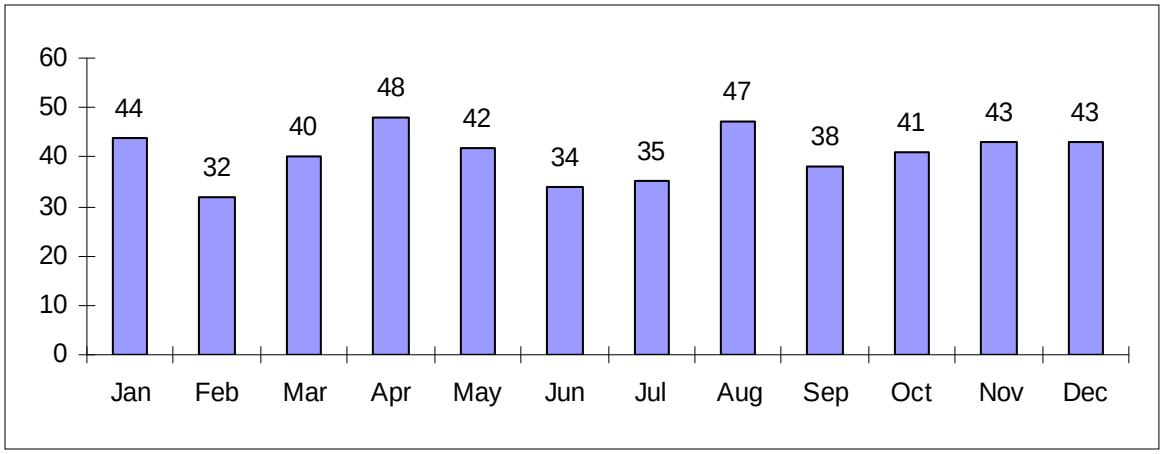
Region	Female	Male	Total
Calgary	12	91	103
South Rural	26	79	105
Edmonton	36	93	129
North Rural	33	117	150
Total	**107**	**380**	**487**

Suicide Rates by Age and Gender per 100,000 Population

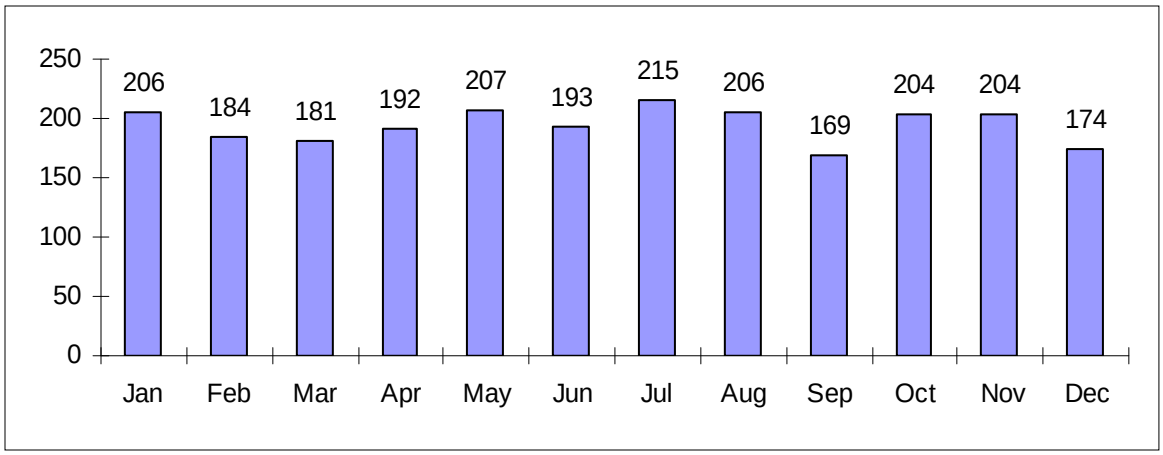
Age Range	Female	Male	Total	Rate/100,000 Population
Age 10-14	1	4	5	2.3
Age 15-19	10	20	30	12.4
Age 20-24	10	31	41	16.0
Age 25-29	7	33	40	15.2
Age 30-34	7	23	30	11.9
Age 35-39	11	27	38	15.3
Age 40-44	10	48	58	23.2
Age 45-49	14	50	64	22.6
Age 50-54	16	47	63	23.6
Age 55-59	8	38	46	21.6
Age 60-64	2	20	23	13.9
Age 65-69	2	9	11	9.4
Age 70-74	2	11	13	14.4
Age 75-79	2	5	7	9.4
Age 80-84	2	6	8	15.1
Age 85-89	1	3	4	12.8
Age 90 +	0	2	2	13.2
Total	**106**	**377**	**483**	**13.9**

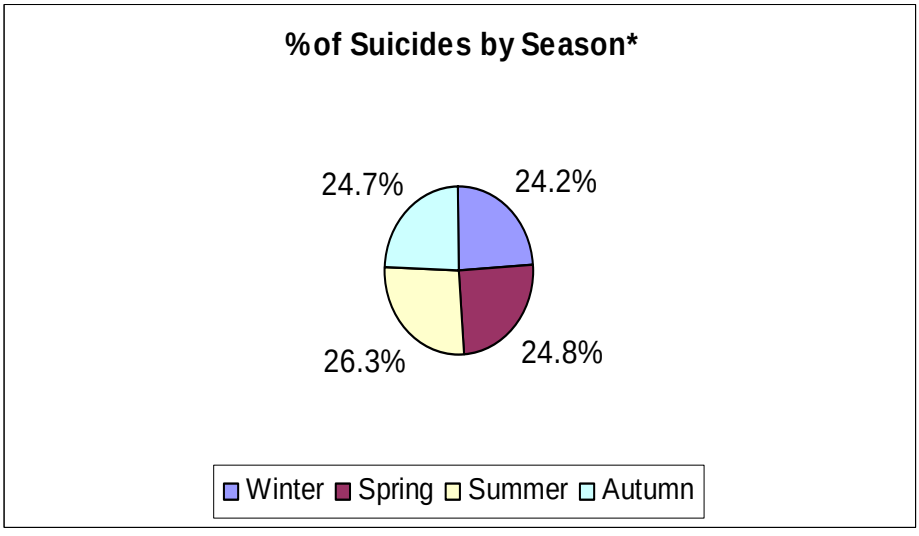
* Rate calculated as per 100,000
Populations based on Alberta Health and Wellness Population Projections for 2009 by Age Group

Suicides by Month, 2009



Suicides by Month, 5 Years Combined 2005 through 2009



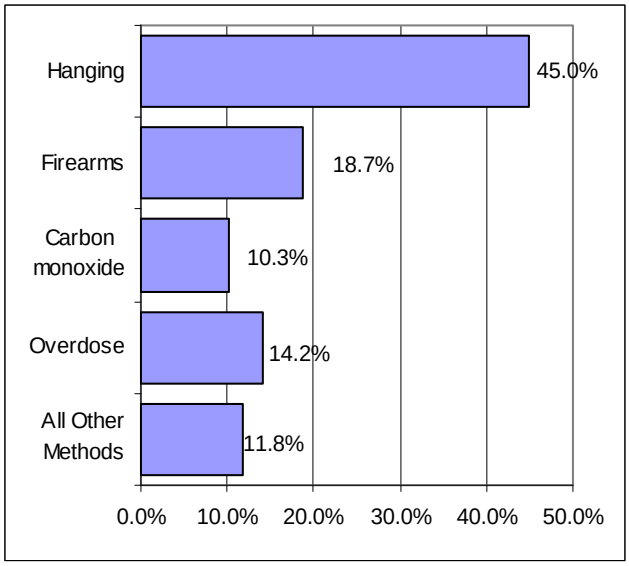


*based on data from 2005-2009. The following month combinations were used to create a season category: December, January and February is Winter; March, April and May is Spring; June, July and August is Summer, September, October and November is Autumn.

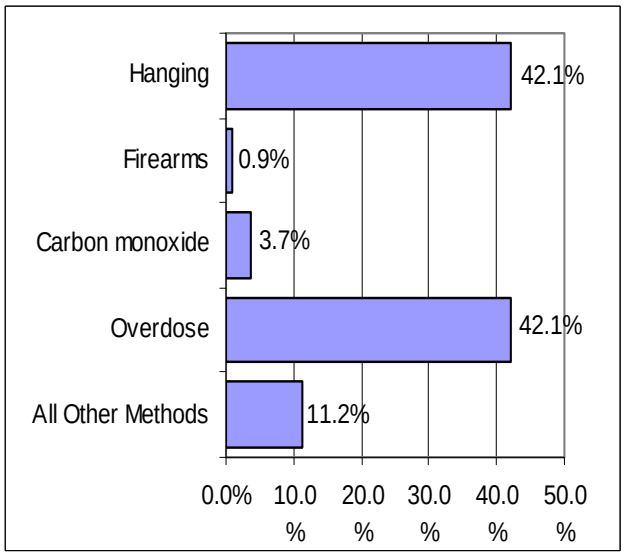
Suicides by Method

Method	Female	% Female	Male	% Male	Total	% Total
Hanging/Strangulation	45	20.8%	171	79.2%	216	44.4%
Overdose	45	45.5%	54	54.5%	99	20.3%
Firearm	1	1.4%	71	98.6%	72	14.8%
Carbon Monoxide	4	9.3%	39	90.7%	43	8.8%
Stab/Slash	1	8.3%	11	91.7%	12	2.5%
Jump From Height/Fall	2	20.0%	8	80.0%	10	2.1%
Drowning	5	50.0%	5	50.0%	10	2.1%
Smoke/Fire/Burns	2	40.0%	3	60.0%	5	1.0%
Gas Asphyxiation	0	0.0%	4	100.0%	4	0.8%
Motor Vehicle Crash—Driver	0	0.0%	4	100.0%	4	0.8%
Plastic Bag Asphyxiation	1	33.3%	2	66.7%	3	0.6%
Other, Not Elsewhere Classified	0	0.0%	2	100.0%	2	0.4%
Pedestrian (Train)	0	0.0%	2	100.0%	2	0.4%
Substance Poisoning	0	0.0%	2	100.0%	2	0.4%
Hypothermia	1	50.0%	1	50.0%	2	0.4%
Pedestrian Struck By Motor Vehicle	0	0.0%	1	100.0%	1	0.2%
Total	**107**	**22.0%**	**380**	**78.0%**	**487**	**100.0%**

Methods of Suicide—% Males



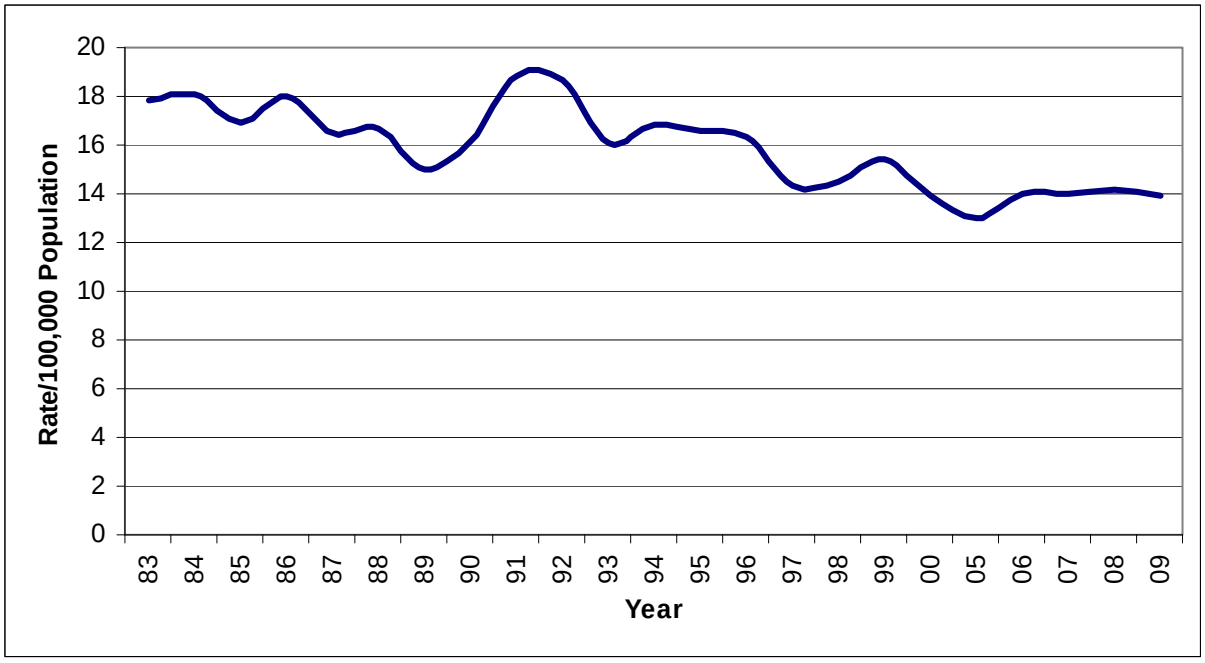
Methods of Suicide — % Females



Alberta Suicides from 1975 - 2009

Region	1975	1980	1985	1990	1995	2000	2005	2006	2007	2008	2009
Calgary	78	103	105	93	110	107	101	98	102	117	103
South Rural	69	91	88	83	101	106	100	112	142	104	105
Edmonton	68	99	102	115	114	99	124	116	118	134	129
North Rural	72	107	100	109	132	106	102	132	111	135	150
Total	**287**	**400**	**395**	**400**	**457**	**418**	**427**	**458**	**473**	**490**	**487**

Alberta Suicide Rates/100,000 Population (1983 - 2009)



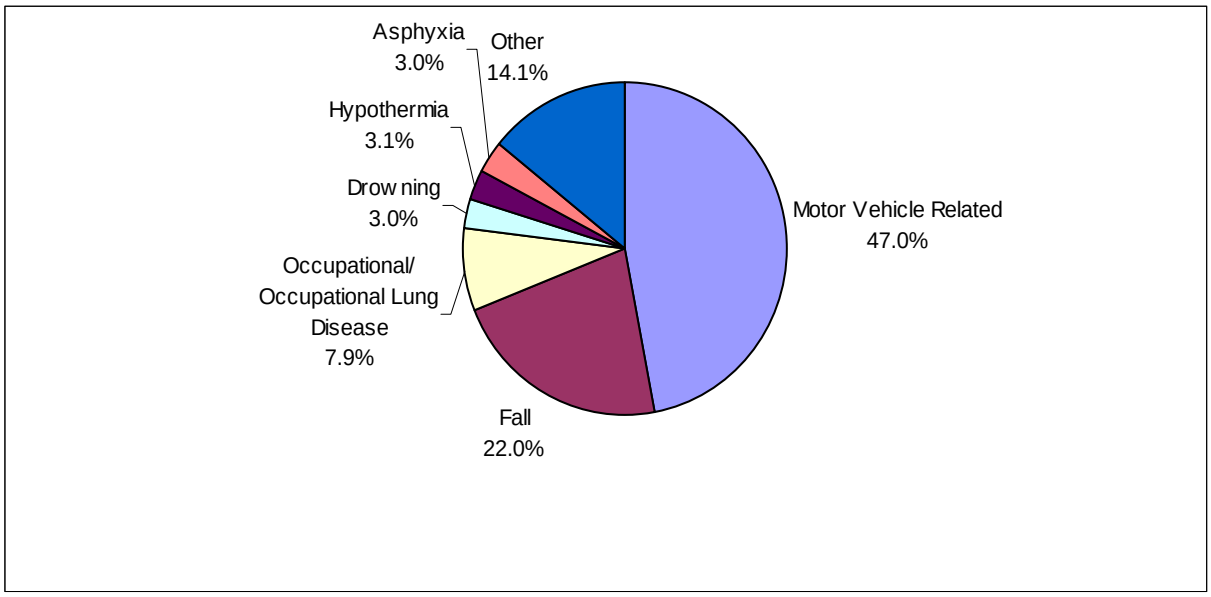
2009 Statistics by Manner of Death

Accidental Deaths

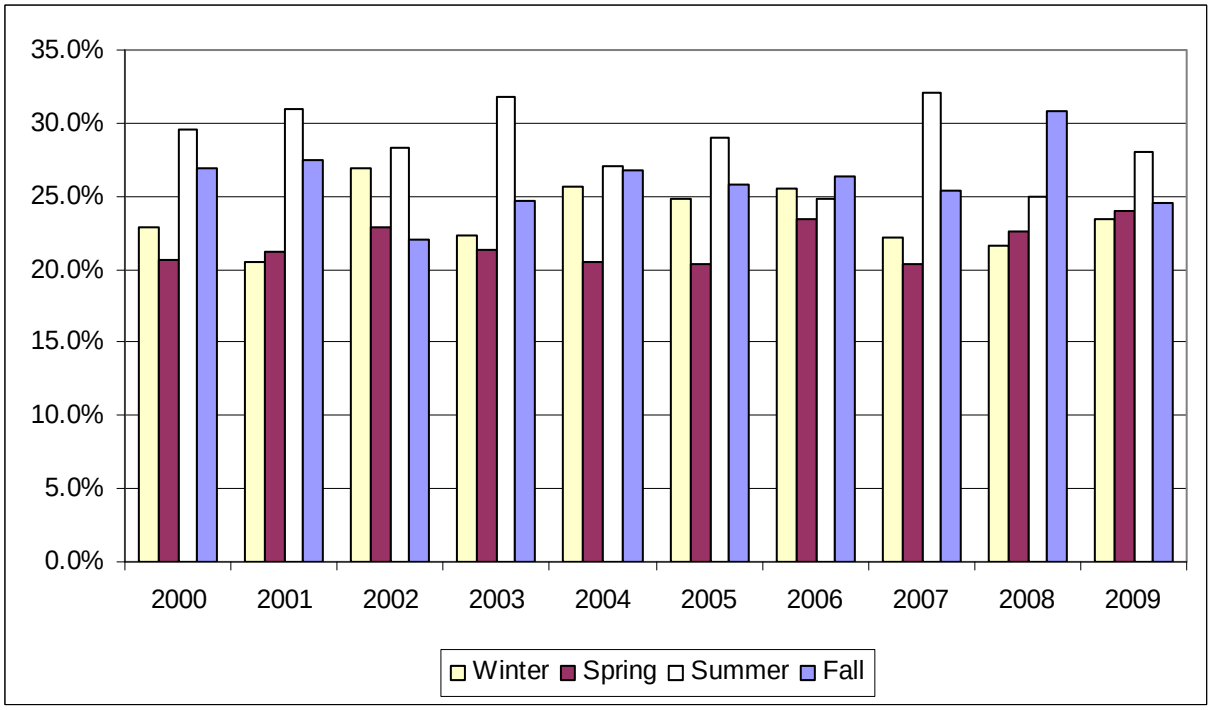
Accidental Deaths by Circumstance Type and Region

Accident Type	Calgary	South Rural	Edmonton	North Rural	Total
Motor Vehicle Related *(includes farm & occupational)*	47	98	54	183	382
Fall	72	33	57	17	179
Asbestos/Other Occupational Lung Disease	10	6	19	9	44
Hypothermia	1	7	6	11	25
Drowning *(excludes motor vehicle related & occupational)*	3	8	2	11	24
Asphyxia	5	4	7	8	24
Late Effects (of all accident types)	7	3	5	8	23
Occupational *(excludes ATV and motor vehicle related)*	4	3	4	9	20
Fire *(excludes motor vehicle related)*	4	3	4	5	16
Farm *(not all deaths occurring on a farm only those related to farming excluding drowning and ATV)*	1	4	5	5	15
Head Injury of Unknown Etiology	2	3	5	2	12
Sporting/Recreation *(excludes drowning, ATV, snowmobiling)*	4	3	2	3	12
Medical/Surgical/Drug Misadventures	0	0	8	2	10
Complications of Fracture Not Otherwise Classifiable	1	3	1	0	5
Firearms	0	2	1	1	4
Unintentional Carbon Monoxide	0	1	1	1	3
Explosion	3	0	0	0	3
Burns/Scalds	1	0	1	0	2
Struck by Falling or Moving Object	1	0	0	1	2
Animal	1	1	0	0	2
Non-Vehicular Crush Injury	1	0	0	1	2
Aircrash	0	1	0	0	1
Other Unclassifiable Injury	1	0	1	0	2
Electrocution	0	0	1	0	1
Total	**169**	**183**	**184**	**277**	**813**

Percentage of Accidental Deaths by Circumstance Type



Percentage of Accidental Deaths by Season*
Trended 2000—2009



*Season groupings by month

- Winter: December, January, February
- Spring: March, April, May
- Summer: June, July, August
- Fall: September, October, November

Details of Motor Vehicle Related Accidental Deaths

	Calgary	South Rural	Edmonton	North Rural	Total
Occupant of a moving vehicle					
Driver	18	48	22	95	183
Passenger	7	23	11	37	78
Unknown if decedent was driver or passenger	0	4	1	3	8
Subtotal	**25**	**75**	**34**	**135**	**269**
Struck by a moving vehicle					
Pedestrian	6	4	9	10	29
While bicycling	0	0	2	0	2
Subtotal	**6**	**4**	**11**	**10**	**31**
Train-related accidents					
Pedestrian struck by a train	1	1	0	1	3
Subtotal	**1**	**1**	**0**	**1**	**3**
Other motor vehicle accidents					
Motorcycle	6	13	3	15	37
Snowmobile	1	0	0	4	5
All terrain vehicle	1	3	3	14	21
Crushed by vehicle	3	2	2	2	9
Other vehicle related	4	0	1	2	7
Subtotal	**15**	**18**	**9**	**37**	**79**
Total motor vehicle accidents	**47**	**98**	**54**	**183**	**382**

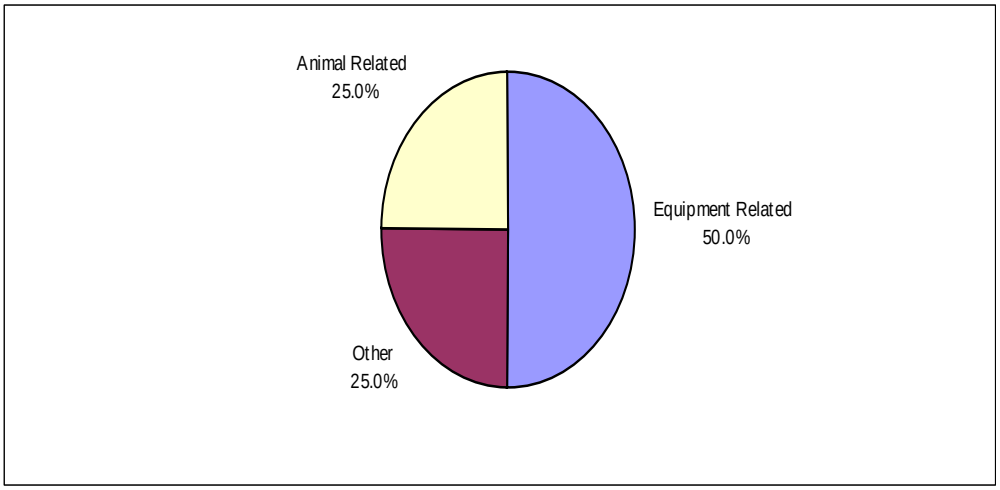
Details of Selected Groups of Accidental Death

Farm Deaths

In 2009 the OCME investigated 16* accidental deaths related to farming.

- All but one of the decedents were male.
- One of the decedents was aged less than 18 at the time of their death (6.3%).
- Seven of the decedents were aged 65 or greater at the time of their death (43.8%).
- The decedent was the owner/operator of the farm in 75% of the cases, a family member in 12.5% of the cases and an employee in 12.5% of the cases.

Type of Death	# of Deaths
Animal Related (subtotal)	**4**
Equipment Related (subtotal)	**8**
Tractor—Rollover/Runover/Flip/Fall From	*2*
Struck by Object/Equipment	*2*
Crushed by Vehicle	*2*
Rolled a CAT	*1*
Tractor MVA on Public Road	*1*
Other Farming Related (subtotal)	**4**
Tripped in Barn	*1*
Crushed by Cattle Shoot	*1*
ATV	*1*
"Controlled" Grass Fire	*1*
Total Farming Related	**16**



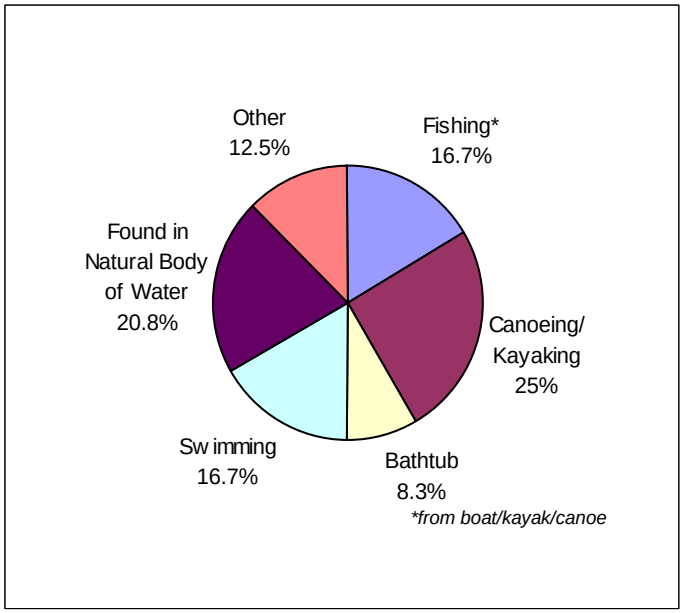
**One of the deaths was a result of an ATV crash and was included with the Motor Vehicle Related deaths on the summary sheet.*

Accidental Drowning *(does not include MVC related or Occupational drowning)*

In 2009, the OCME investigated 24 accidental drowning deaths (this does not include drowning related to motor vehicle crashes, or occupational drowning).

- 12.5% of the decedents were children aged less than 18 at the time of their death
- Boating/Kayaking/Canoeing (with or without fishing) accounted for the largest number of drowning deaths. (41.7%)
- Toxicology testing for ethanol or drugs was done on all 21 decedents who were 18 years old or greater at the time of their death. Of those tested, 23.8% had a blood ethanol level exceeding 80 milligrams of ethanol in 100 milliliters of blood.
- 54.2% of the drowning deaths occurred in the months of June, July and August.

Place of Drowning	# of Deaths
Lake	10
River	7
Public Swimming Pool	3
Bathtub	2
Private Dugout/Pond	2
Total Accidental Drowning	**31**



Occupational Deaths

(does not include Motor Vehicle Related Deaths or Farming Related Deaths)

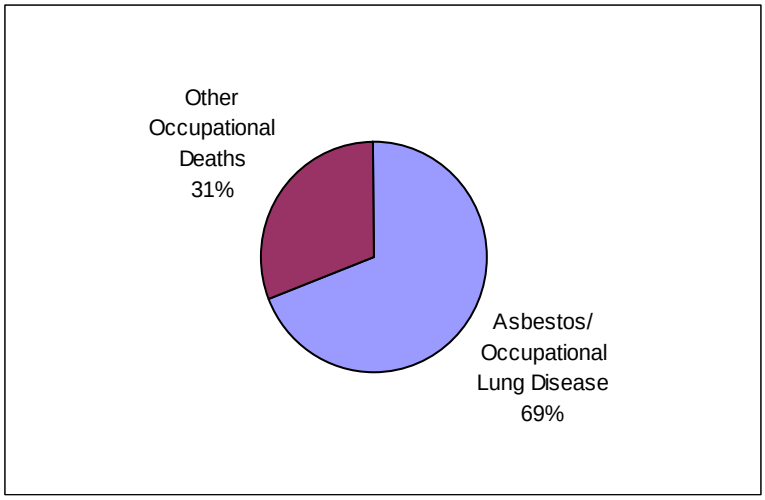
Asbestos/Occupational Lung Disease Deaths

- 97.7% Male
- Minimum Age: 53
- Maximum Age: 97
- Average Age: 70.4

Occupational Deaths Not Attributed to Asbestos/Lung Disease

- 80% Male
- Minimum Age: 22
- Maximum Age: 80
- Average Age: 40.6
- Percentage Tested for Ethanol/Drugs: 90
- Percent Intoxicated by Ethanol/Drugs: 28

Type of Injury	# of Deaths	% of Occupational Deaths
Asbestos/Other Occupational Lung Disease	44	68.8%
Struck by Falling or Moving Object	6	9.4%
Fall	6	9.4%
Crush Injury—Non Vehicular	2	3.1%
Electrocution	2	3.1%
Equipment/Machinery Related	2	3.1%
Drowning	1	1.6%
Occupational Exposure to Chemicals	1	1.6%
Total	64	100%

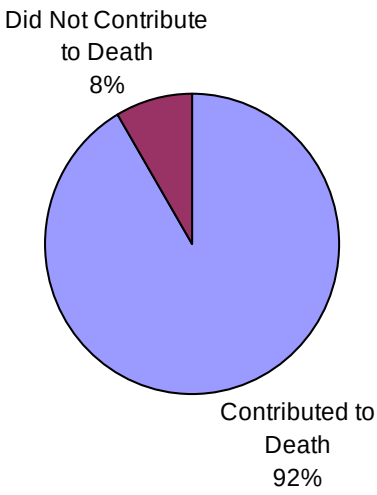


Hypothermia Deaths

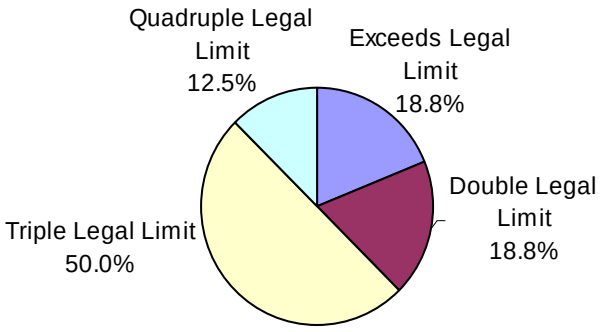
In 2009 the Office of the Chief Medical Examiner investigated 25 accidental deaths attributed to hypothermia

- Males accounted for 88% of the accidental deaths attributed to hypothermia.
- The ages of the decedents ranged from 14 through 72, with the average age being 43.
- Almost two-thirds of the decedents were found dead between January 1, 2009 and March 31, 2009.
- 68% of the decedents were found dead in Edmonton or the northern region of Alberta.

Role of Ethanol/Drugs



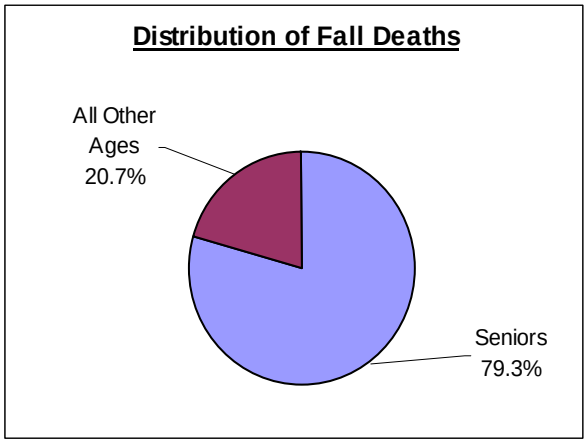
Breakdown of Hypothermic Deaths with Positive Ethanol Intoxication by Intoxication Level



Exceeds legal limit (.8 g/l to 1.59 g/l)
Exceeds double the legal limit (1.6 g/l to 2.39 g/l)
Exceeds triple the legal limit (2.4 g/l to 3.59 g/l)
Exceeds quadruple the legal limit (3.6 g/l or higher)

Deaths Due to Accidental Falls

In 2009, there were 179 accidental fall-related deaths. Falls were the second leading cause of injury deaths, accounting for 22% of the cases with an accidental manner of death.



Falls—Age Less than 65

20.7% of the deaths attributed to falls in 2009 were among people aged less than 65 at the time of their death.

The rate of deaths due to falls among people in this age range was 1.3/100,000 population.

73% of the decedents were men.

62.2% of the decedents were between the ages of 50 and 64.

No children died due to injuries sustained in falls in 2009.

Head injuries caused 83.8% of the deaths.

Toxicology testing was done on 70.3% of the decedents. Among those tested, 57.7% tested positive for the presence of drugs or ethanol, and of those who tested positive, 86.7% were intoxicated.

Falls—Age 65 and Greater

79.3% of all accidental fall deaths investigated by the OCME in 2009 were among seniors aged 65 and greater.

The rate of deaths due to falls among people aged 65 and greater was 37.3 per 100,000 population.

52% of all unintentional injury deaths among seniors aged 65 or greater were attributed to falls (to compare, the next highest cause of unintentional injury deaths in this age group were motor vehicle related accounting for 17.6% of the deaths).

Head injuries caused 71.1% of the deaths.

17.6% of the decedents had toxicology testing done, . Among those tested, 20% were intoxicated by ethanol.

Oral anticoagulants (excluding ASA) were mentioned among the medications in 22.5% of the decedents.

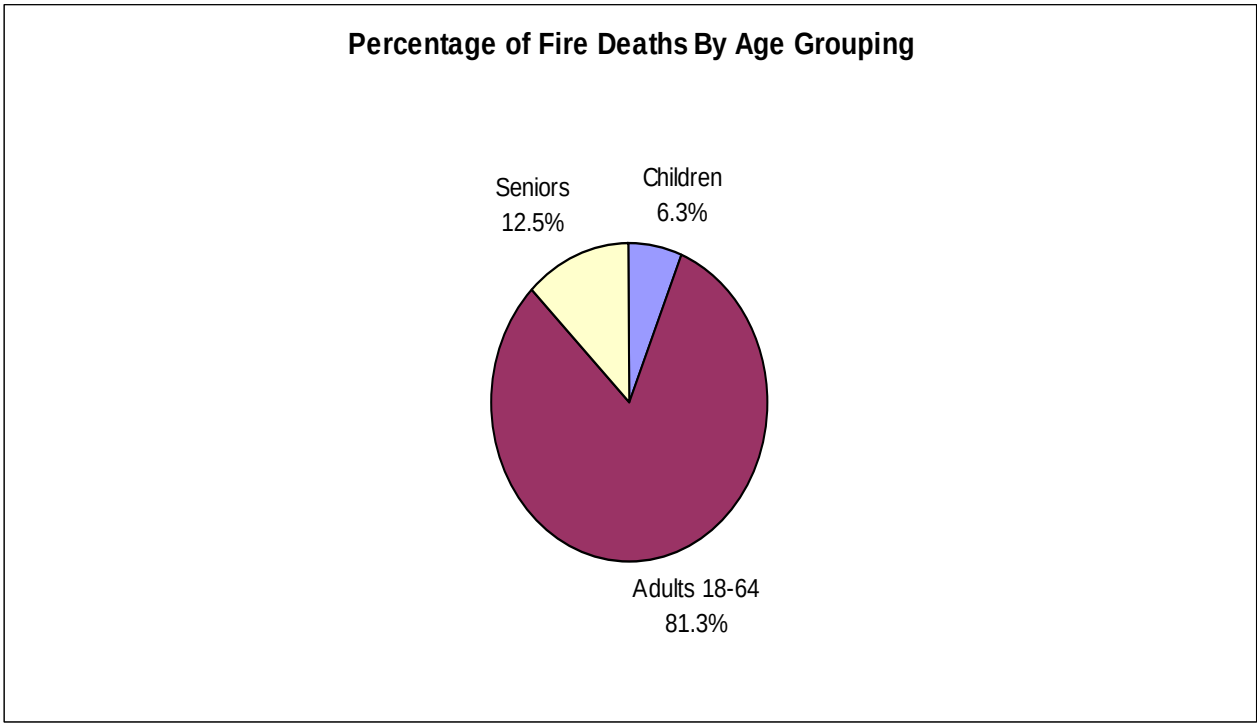
Type of Fall	% of Fall Deaths In This Age Range
Same Level—Not Otherwise Specified	45.9%
Stairs/Escalator	32.4%
From a Height	8.1%
Other Falls	8.1%
On Ice	5.4%

Age Range	Rate/10,000 Population
Age 65-69	1.0
Age 70-74	1.0
Age 75-79	2.8
Age 80-84	5.5
Age 85-89	9.9
Age 90+	26.4

Fire Deaths (does not include fires as a result of motor vehicle collisions)

In 2009 the Office of the Chief Medical Examiner investigated 16 deaths due to fire.

- 56.3% of the decedents were male
- 56.3% of the fire incidents which resulted in these deaths occurred in “rural” Alberta, which for the purpose of this statement is any place in Alberta excluding the cities of Calgary or Edmonton.
- Toxicology testing was done on 81.3% of the decedents. Among those tested, 69.2% tested positive for the presence of drugs or ethanol, and 61.5% were intoxicated.



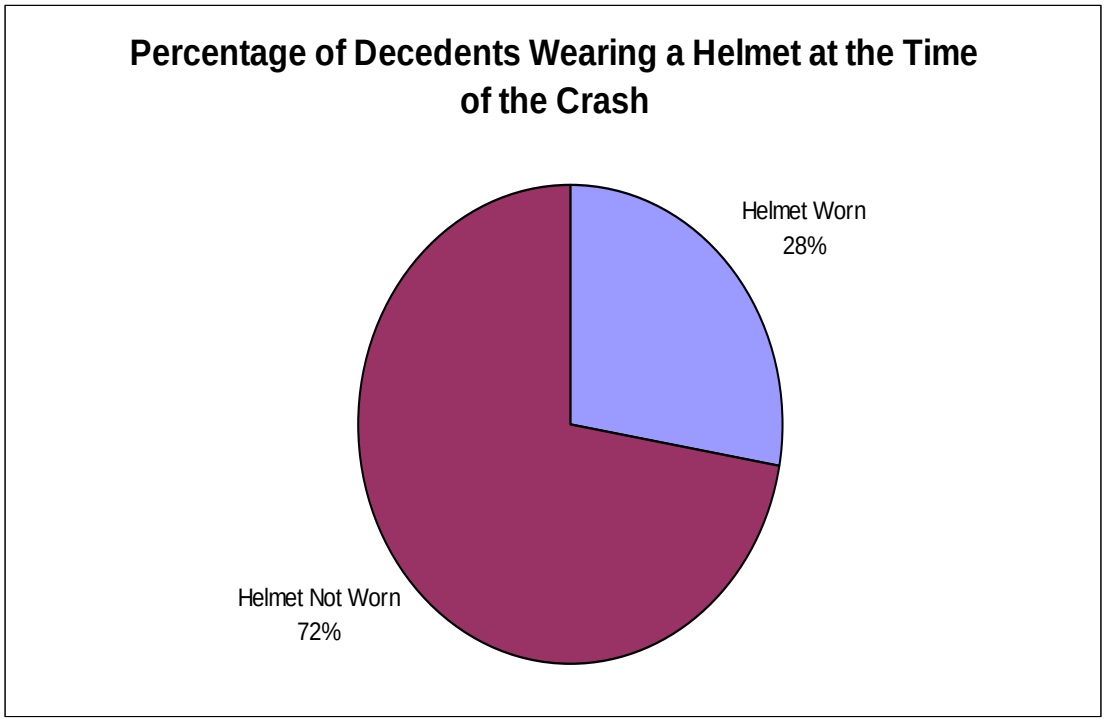
All Terrain Vehicle* Deaths

In 2009 the Office of the Chief Medical Examiner investigated 21 accidental deaths involving ATV's.

- 90.5% of the decedents were males.
- 14.3% of the decedents were children aged less than 18 at the time of their death.
- 90.5% of the decedents, were identified as the driver of the ATV, 9.5% were passengers.

  57.1% of the decedents in an ATV crash died as a result of head injuries; 19% of the decedents died as a result of blunt chest trauma.
- Toxicology testing was done on 71.4% of the decedents involved in ATV deaths. Where toxicology testing was done, the decedent was legally impaired in 46.7% of all the ATV deaths.
- Rollovers were the most common type of ATV crash accounting for 55% of the deaths.
- Two-thirds of the deaths occurred in northern Alberta.
- Three of the decedents (14.3%) were riding on a rhino style quad.

** includes, quads, trikes, & rhino (side-by-side) all terrain vehicles*



Accidental Deaths Due To Asphyxia

In 2009 the Office of the Chief Medical Examiner investigated 24 deaths due to asphyxia.

- 29.2% of the decedents were aged less than 18 at the time of their death.
- 20.8% of the decedents were seniors, aged 65 or greater at the time of their death.
- Toxicology testing was done on 52.9% of the decedents 5 years of age or greater at the time of their death. 44.4% of those tested positive for intoxicating levels of ethanol or drugs.

Type of Asphyxiation	# Deaths	% of Asphyxia Deaths
Choking	12	50.0%
Positional Asphyxia	5	20.8%
Smothering	2	8.3%
Accidental Hanging	1	4.2%
Manual Strangulation	1	4.2%
Plastic Bag Suffocation	1	4.2%
Traumatic Asphyxia	1	4.2%
Autoerotic Asphyxia	1	4.2%
Total	**24**	**100.0%**

Role of Ethanol in Accidental Deaths

In 2009, toxicology testing for ethanol was performed on 60.5% of the accidental deaths investigated by the OCME.

44.1% of those tested, tested positive for the presence of ethanol. Positive does not mean impaired, it just means that among the decedents tested, analysis showed that there was the presence of ethanol in their body at the time of their death. 36.2% of the decedents ethanol levels exceeded the legal limit to operate a motor vehicle in Alberta.

Of the decedents who tested positive for the presence of ethanol, 82.0% of them tested at levels that exceeded the legal limit to operate a motor vehicle in Alberta.

The toxicology testing is only done on the decedents whose deaths were investigated by the Office of the Chief Medical Examiner, therefore, it would not include a case where a sober passenger in a motor vehicle died as a result of the actions of an impaired driver.

The decision to request toxicological testing is made by the medical examiner, and certain types of accidental deaths are more likely to have toxicology testing done. For instance, toxicology testing is done on almost all individuals who were determined to be the drivers of a motorized vehicle that crashed resulting in their death.

Please note, that this does not take into account the role of drugs, such as cannabis or cocaine in accidental deaths.

- *Section 253(b) of the Criminal Code defines the offence of "Over 80".* It makes it an offence for a person to operate a motor vehicle with blood alcohol level exceeding 80 milligrams of alcohol in 100 milliliters of blood.

Accidental Manners of Death Where Toxicology Results Were Positive for the Presence of Ethanol

Accident Type	# Deaths	% Tested For Ethanol	% * Positive For Ethanol	%** Legally Impaired
Motor Vehicle Related *(includes farm & occupational)*	382	79.3%	46.2%	39.6%
Fall	179	28.5%	47.1%	35.3%
Asbestos/Other Occupational Lung Disease	44	2.3%	0.0%	0.0%
Hypothermia	25	96.0%	79.2%	66.7%
Drowning *(excludes motor vehicle related)*	24	100.0%	41.7%	20.8%
Asphyxia	24	62.5%	20.0%	20.0%
Late Effects	23	21.7%	0.0%	0.0%
Occupational *(excludes ATV and motor vehicle related)*	20	90.0%	11.1%	5.6%
Fire *(excludes motor vehicle related)*	16	81.3%	69.2%	61.5%
Farm *(not all deaths occurring on a farm only those related to farming excluding drowning and ATV)*	15	53.3%	12.5%	12.5%
Head Injury of Unknown Etiology	12	41.7%	100.0%	60.0%
Sporting/Recreation *(excludes drowning, ATV, snowmobiling)*	12	66.7%	0.0%	0.0%
Medical/Surgical/Drug Misadventures	10	40.0%	0.0%	0.0%
Complications of Fracture Not Otherwise Classifiable	5	20.0%	0.0%	0.0%
Firearms	4	75.0%	0.0%	0.0%
Unintentional Carbon Monoxide	3	100.0%	66.7%	66.7%
Explosion	3	66.7%	0.0%	0.0%
Other Unclassifiable Injury	2	0.0%	n/a	n/a
Burns/Scalds	2	100.0%	50.0%	0.0%
Struck by Falling or Moving Object	2	0.0%	n/a	n/a
Animal	2	0.0%	n/a	n/a
Non-Vehicular Crush Injury	2	50.0%	0.0%	0.0%
Aircrash	1	100.0%	100.0%	100.0%
Electrocution	1	0.0%	n/a	n/a
Total	813	60.5%	44.1%	36.2%

**The percentage of decedents who tested positive for the presence of ethanol when toxicology testing was completed. The decedent's levels ethanol were not necessarily at impairing levels.*

*** Section 253(b) of the Criminal Code defines the offence of "Over 80". It makes it an offence for a person to operate a motor vehicle with blood alcohol level exceeding 80 milligrams of alcohol in 100 milliliters of blood.*

Accidental Motor Vehicle Related Deaths Where Toxicology Results Were Positive for the Presence of Ethanol

In 2009, 79.3% of all decedents in motor vehicle related crashes which were determined to be of an accidental manner of death, were tested for ethanol. Of those tested 46.2% tested positive for ethanol, and 39.6% were legally impaired by ethanol at the time of their death.

14% of the decedents who tested positive for ethanol were under the legal limit of 80 mg of ethanol per 100 ml of blood, however, 10% of these decedents also tested positive for the presence of drugs (such as cannabis or cocaine). 15% of the decedents who tested negative for ethanol, tested positive for drugs.

	# Decedents	% Tested for Ethanol	% Positive for Ethanol	% 80 mg/100 ml or Greater
Occupant of a moving vehicle				
Driver	183	94.5	44.5	40.5
Passenger	78	38.5	46.7	36.7
Unknown if decedent was driver or passenger	8	100.0	50.0	50.0
Subtotal	269	78.4	45.0	40.3
Struck by a moving vehicle				
Pedestrian	29	79.3	60.9	60.9
While bicycling	2	100.0	100.0	100.0
Subtotal	31	80.6	64.0	64.0
Train-related accidents				
Pedestrian struck by a train	3	66.7	50.0	50.0
Subtotal	3	66.7	50.0	50.0
Other motor vehicle accidents				
Motorcycle	37	89.2	42.4	21.2
Snowmobile	5	100.0	80.0	60.0
All terrain vehicle	21	71.4	53.3	46.7
Crushed by vehicle	9	88.9	12.5	0.0
Other vehicle related	7	57.1	25.0	25.0
Subtotal	79	82.3	43.1	27.7
Total motor vehicle accidents	382	79.3	46.2	39.6

Positive Toxicology Results for Decedents With Motor Vehicle Related Accidental Manners of Death

	Ethanol Present but Does Not Exceed Legal Limit		Exceeds Legal Limit (may or may not also have the presence of drugs)			
	Negative for Drugs*	Positive for Drugs*	Exceeds Legal Limit (>.8 to 1.6)	Doubles Legal Limit >1.6 to 2.4	Triples Legal Limit >2.4 to 3.2	Quadruples Legal Limit >3.2 to 4.0
Occupant of a moving vehicle						
Driver	6.5%	2.6%	20.8%	44.2%	23.8%	2.6%
Passenger	21.4%	0.0%	21.4%	21.4%	28.6%	7.1%
Unknown if decedent was driver or passenger	0.0%	0.0%	0.0%	25.0%	50.0%	25.0%
Subtotal	**8.4%**	**2.1%**	**20.0%**	**40.0%**	**25.3%**	**4.2%**
Struck by a moving vehicle						
Pedestrian	0.0%	0.0%	0.0%	57.1%	35.7%	7.1%
While bicycling	0.0%	0.0%	0.0%	50.0%	50.0%	0.0%
Subtotal	**0.0%**	**0.0%**	**0.0%**	**56.3%**	**37.5%**	**6.3%**
Train-related accidents						
Pedestrian struck by a train	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
Subtotal	**0.0%**	**0.0%**	**100.0%**	**0.0%**	**0.0%**	**0.0%**
Other motor vehicle accidents						
Motorcycle	50.0%	0.0%	35.7%	14.3%	0.0%	0.0%
Snowmobile	25.0%	0.0%	50.0%	25.0%	0.0%	0.0%
All terrain vehicle	12.5%	0.0%	25.0%	62.5%	0.0%	0.0%
Crushed by vehicle	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Other vehicle related	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Subtotal	**35.7%**	**0.0%**	**32.1%**	**28.6%**	**0.0**	**3.6%**
Total	**12.9%**	**1.4%**	**20.7%**	**39.3%**	**21.4%**	**4.3%**

**drugs : non-prescribed, nor medically administered (cocaine, cannabis, MDMA, etc)*

2009 Statistics by Manner of Death

Unclassified Manner of Death

The unclassified manner of death is used when death is directly caused by a drug of abuse, including alcohol, or caused by the long term effects of alcohol and/or drug abuse. This manner does not include deaths where drugs or alcohol contribute to the death, but are not the actual underlying cause of death (e.g. impaired driving).

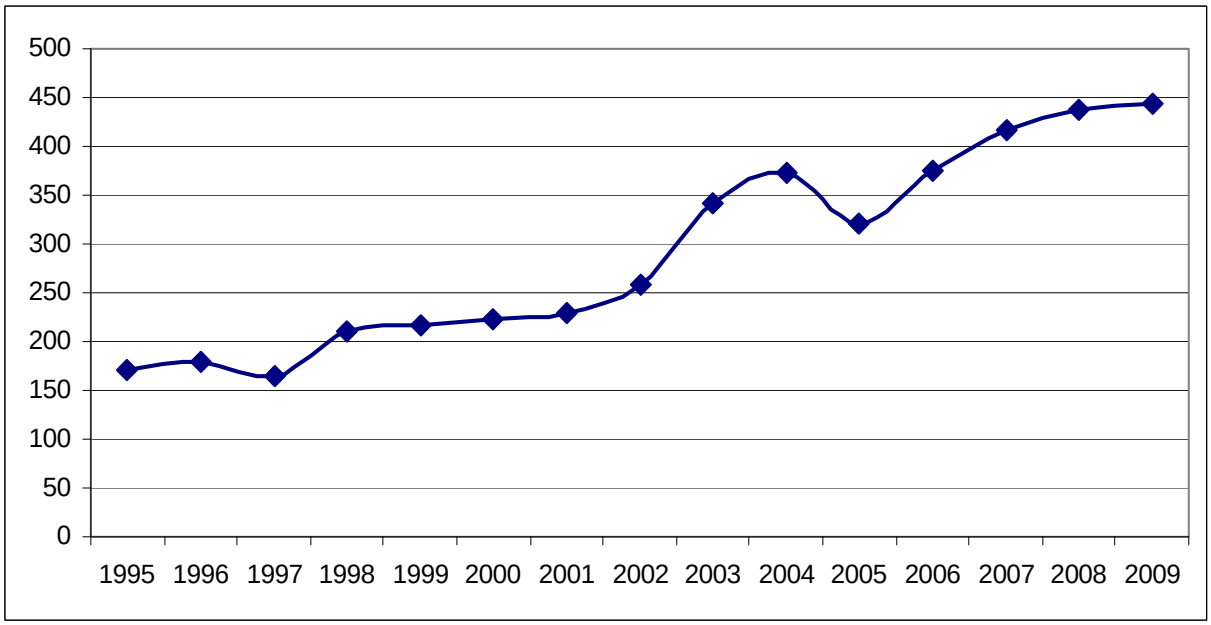
In 2009, the OCME investigated 443 cases where the manner of death was determined to be unclassified.

- 68.4% of the unclassified deaths were due to an acute toxicity.
- two-thirds of the decedents were male.
- 60% of the unclassified deaths were among people aged between 40 and 59.
- The average age of the decedents with unclassified manners of death in 2009 was 45.

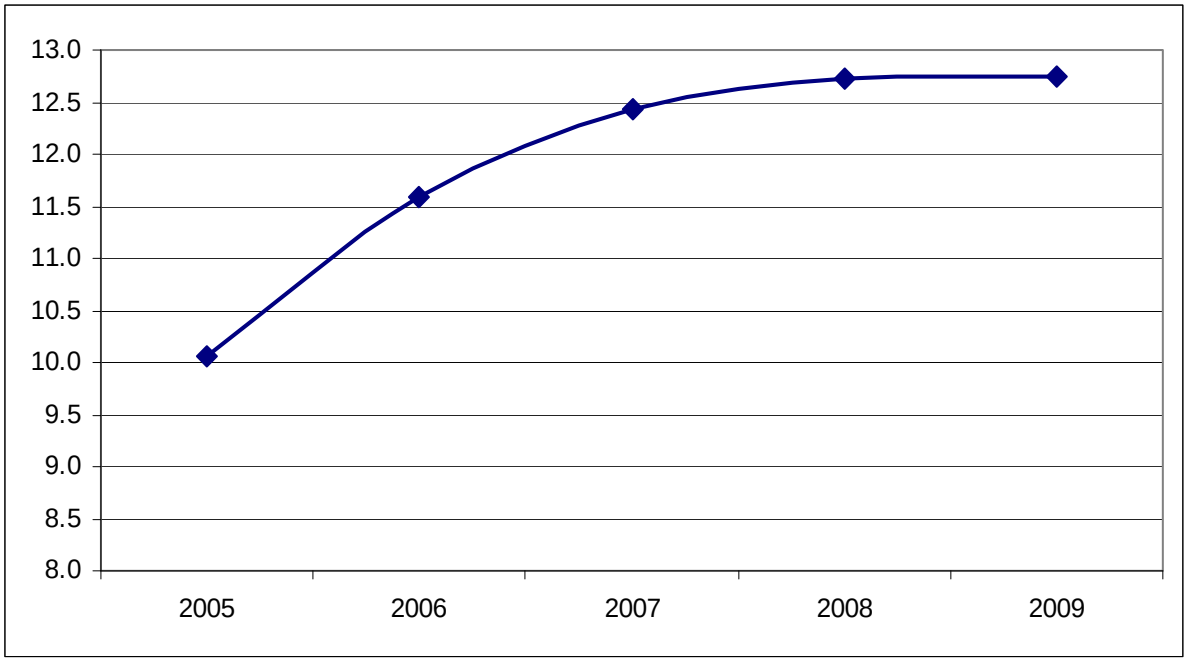
Unclassified Deaths by Cause of Death and Region of Death

	Calgary	South Rural	Edmonton	North Rural	Total
Acute Drug Toxicity (with or without chronic drug/ ethanol abuse)	60	47	63	32	202
Acute Ethanol and Drug Toxicity (with or without chronic drug/ethanol abuse)	15	8	27	23	73
Acute Ethanol Toxicity	5	5	7	7	24
Chronic Ethanol Abuse	30	34	23	10	97
Chronic Drug Abuse / Complications of IV Drug Abuse (with or without ethanol)	12	6	22	2	42
Isopropanol or Methanol Toxicity	2	1	1	0	4
Other	0	0	0	1	1
Total	124	101	143	75	443

Number of Unclassified Deaths Trended; 1995-2009



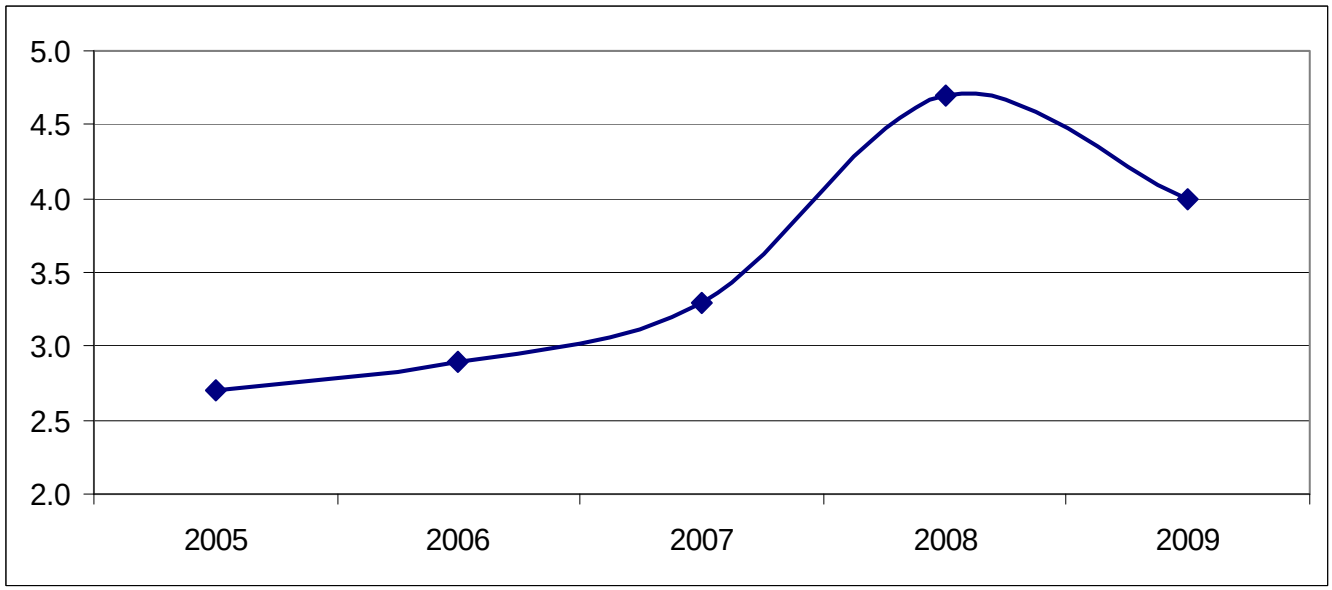
Rate of Unclassified Deaths per 100,000 Population Trended; 2005-2009



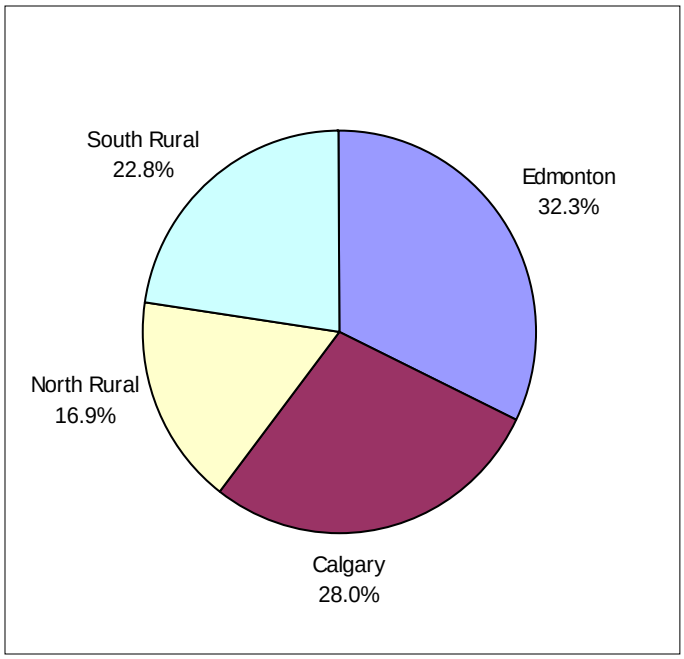
Unclassified Manner of Death

Unclassified deaths include deaths due to acute ethanol or drug toxicity as well as deaths due to chronic abuse of ethanol or drugs. The table below presents the rates per 100,000 Alberta population of only those cases where the death was attributed to chronic ethanol or chronic drug abuse.

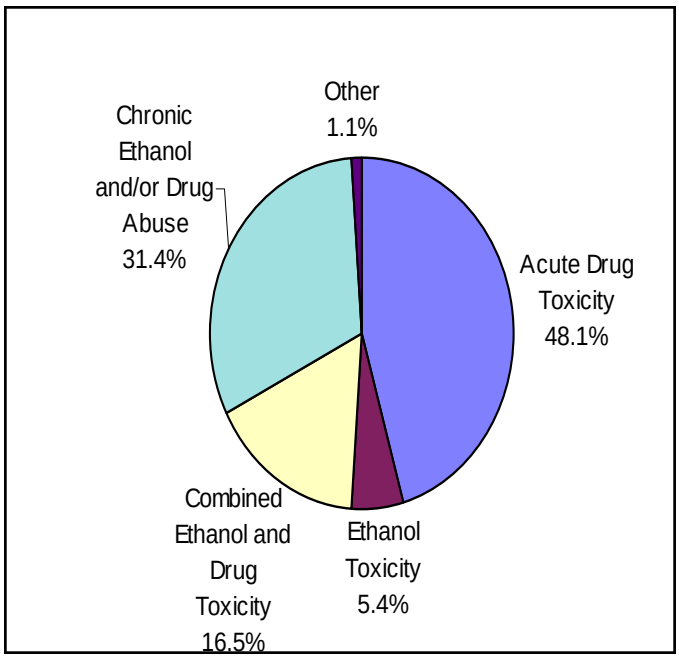
Rate of Unclassified Deaths due to Chronic Ethanol or Drug Abuse per 100,000 Population Trended; 2005-2009



Unclassified Deaths by Region of Death



Unclassified Deaths by Cause of Death

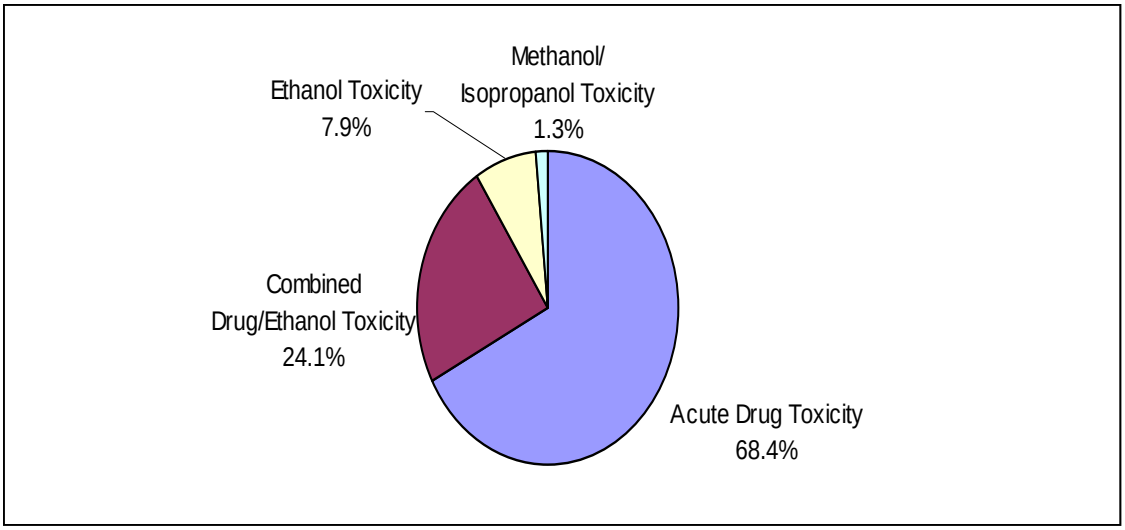


Acute Toxicity Deaths

In 2009, 68.4% of all of the deaths attributed to the unclassified manner of death were determined to have been caused by an acute toxicity. Acute drug toxicity accounted for two-thirds of all of the acute toxicities.

In 62.4% of the drug toxicity deaths, the toxicology shows the presence of multiple drugs simultaneously, as opposed to a large concentration of a single drug. A multiple drug toxicity means that the toxicology reports identify two or more different drugs. Each drug identified, could be of a toxic concentration, or only one of the drugs present may be at a toxic concentration and the others while present are not individually at toxic concentrations. Another possibility is that each drug identified would not in itself be at toxic or potentially life threatening level, however when combined with the other drugs the result is fatal.

Acute Toxicities by Substance



Acute Drug Toxicity by Drug Type

Drug Type	%
Multidrug Toxicity	62.4%
Cocaine	7.4%
Methadone	4.5%
Acetaminophen	4.5%
Morphine	4.0%
Oxycodone	3.0%
All Other Single Drug Toxicities	8.4%

2009 Statistics by Manner of Death

Undetermined Manner of Death

The undetermined manner of death is used in those cases where a complete investigation does not yield sufficient information to determine which of the previous manners the death should be classified as. An example of this would be the death of a pedestrian following a hit-and-run vehicular incident where there were no witnesses and the driver of the vehicle was never found. In this case there would be insufficient information available to establish whether the driver intentionally struck the pedestrian (homicide), unintentionally struck the pedestrian (accident), or the pedestrian jumped in front of the vehicle (suicide). In 2009 both the cause and the manner of death could not be determined in 1% of the deaths investigated by the OCME.

Description	Calgary	South Rural	Edmonton	North Rural	Total
Undetermined Cause of Death	13	4	11	11	39
Drug Toxicity	3	6	2	0	11
Motor Vehicle Crash—Driver	0	3	0	2	5
Motor Vehicle Crash—Pedestrian	1	2	1	0	4
Blunt Cranial Trauma Unknown Etiology	1	0	0	2	3
Blunt Trauma Unknown Etiology	1	1	1	0	3
Drowning	1	0	2	0	3
Fire	0	1	0	2	3
Carbon Monoxide Poisoning	0	1	0	1	2
Hypothermia	1	0	1	0	2
Sudden Undetermined Infant Death	1	0	0	1	2
Fall	0	0	1	0	1
Hanging	0	0	0	1	1
Jump From Moving Car	1	0	0	0	1
Pedestrian Struck By Train	0	0	0	1	1
Stab Wounds	1	0	0	0	1
Crush Injury	0	1	0	0	1
Other Not Elsewhere Classifiable Injury	0	0	1	0	1
Septicemia	0	0	0	1	1
Sequelae of Hypoglycemia	0	0	1	0	1
Total	**24**	**19**	**21**	**22**	**86**

2009 Infant, Child and Youth Deaths

In 2009 the OCME investigated the deaths of 137 children and teens aged less 18 at the time of their death, accounting for 3.5% of all deaths investigated by this office. Children accounted for 9.8% of all injury deaths investigated by the OCME during this time period.

According to the *Fatality Inquiry Act*, all deaths to children as defined in the *Child Youth and Family Enhancement Act* must be investigated by the OCME. 7.3% of the infant, child and youth deaths investigated by the OCME were under the custody of the Director of Alberta Child and Youth Services at the time of their death.

In 2009, the OCME investigated 47 natural deaths among infants, children and youth. Forty percent of those natural deaths were attributed to Sudden Infant Death Syndrome.

Both the Edmonton and Calgary offices host multidisciplinary pediatric death review committees. These committees are committed to comprehensive reviews of child deaths to better understand why children die and to use those findings to prevent other deaths and to improve the health, safety and well-being of all children in Alberta.

Regional Distribution of Infant, Child and Youth Deaths

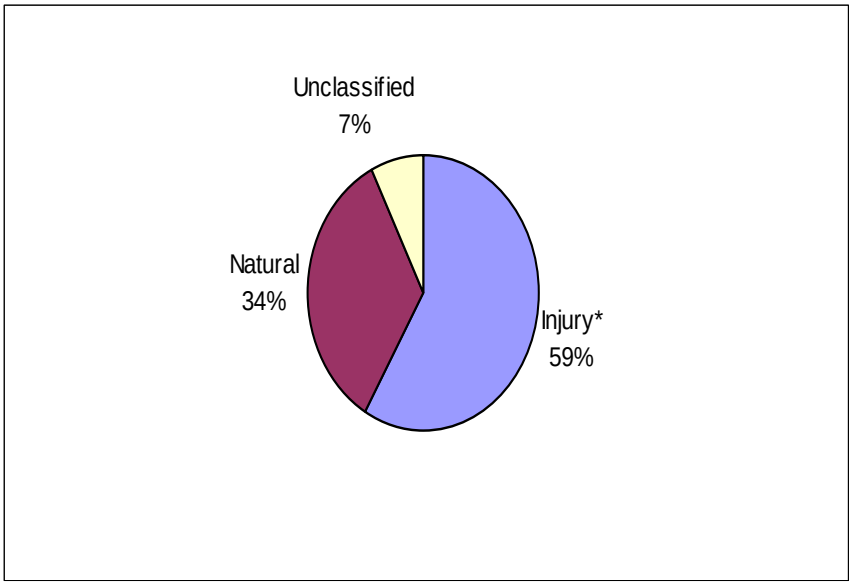
Region	# Deaths
Calgary	25
South Rural	29
Edmonton	38
North Rural	45
Total	**137**

Manner of Death by Age Range

Age Range	Accidental	Homicide	Natural	Suicide	Unclassified	Undetermined	Total	% By Age Range
Age < 1	4	1	31	0	0	3	39	28.5%
Age 1-4	11	3	6	0	0	4	24	17.5%
Age 5-9	10	2	1	0	0	1	14	10.2%
Age 10-14	5	2	4	5	3	0	19	13.9%
Age 15-17	18	2	5	12	2	2	41	29.9%
Total	**48**	**10**	**47**	**17**	**5**	**10**	**137**	**100.0%**
% by Manner	**35.0%**	**7.3%**	**34.3%**	**12.4%**	**3.6%**	**7.3%**	**100.0%**	

2009 Infant, Child and Youth Deaths

Breakdown by Manner of Death Groupings



**in this report injury refers to the following manners of death: accidental, suicide, homicide & unclassified*

Circumstances of Deaths Classified to an Accidental Manner of Death

Circumstance of Injury	# Deaths
Motor Vehicle Related Total	26
Passenger (12) *Driver (8)* *ATV (3)* *Pedestrian (3)*	
Asphyxia	7
Drowning	3
Firearm	3
Struck by Falling or Moving Object	2
Hypothermia	2
Farming Related	1
Fire	1
Head Injury Unknown Etiology	1
Late Effect of Old Injury	1
Non-Vehicular Crush Injury	1
Total	**48**

2009 Infant, Child and Youth Deaths

Injury Deaths in Children and Youth Age 1 through 17

- Injuries are the leading cause of death among children and teens aged 1 through 17. Injury deaths include the accidental, homicidal, suicidal and unclassified manners of death.
- In 2009, injury deaths accounted for 76.5% of the child and youth deaths investigated by the OCME.
- 43.3% percent of all injury related deaths among children and youth occurred in teens aged between 15 and 17 at the time of their death.
- Males accounted for 53.3% of all injury deaths among children and youth.
- 50% of the children and youth that died due to injuries were tested for ethanol or drugs. Of those tested 18.2% were intoxicated at the time of their death.
- 58.7% of the injury deaths among children and youth were accidental.
- Injuries from motor vehicle crashes were the leading cause of accidental death in children and youth accounting for 59% of the deaths.
    - Toxicology testing was done on 7 of the 8 of the youth drivers killed in motor vehicle crashes.
    - All of the drivers tested were negative for any ethanol or drugs.
- 34.7% of the injury deaths were intentional (homicide and suicide).
    - Suicides accounted for 65.3% of the intentional injury deaths.
    - In 2008 hanging accounted for 71% of the suicides among the child and youth population compared to 44% of the suicides among all age groups in Alberta.
    - Females accounted for 41.2% of the suicides among children and youth as compared to the general population where 22% of the suicides were female.

2009 Infant, Child and Youth Deaths

Natural Deaths Among Infants, Children and Youths

34.3% of all deaths among infants, children and youth investigated by the OCME in 2009 were determined to be deaths due to natural causes. The majority of the natural deaths occurred among infants less than one year of age (66%). Among youth aged 15-19 only 12.2% of the deaths investigated were determined to be natural.

Overall 40.4% of the natural deaths were attributed to Sudden Infant Death Syndrome, or SIDS; however if you take into account that only infants less than one year of age can be given a cause of death of SIDS, the percentage increases to 61.3%.

Nineteen cases, or 48.7% percent of the 39 deaths among infants aged less than one year investigated by the OCME in 2009 were determined to be due to SIDS.

Sudden Infant Death Syndrome (SIDS)

Sudden Infant Death Syndrome is defined as the sudden death of an infant less than one year of age that remains unexplained after a thorough case investigation, including the performance of a complete autopsy, examination of the scene of death, and review of the clinical history. The actual reason why these previously healthy infants die suddenly and unexpectedly is not currently known however research is ongoing.

In Alberta, the Medical Examiner's Office considers the manner of death in SIDS to be natural. If there is any concern that the death is not natural, the cause and manner of death are both classified as undetermined.

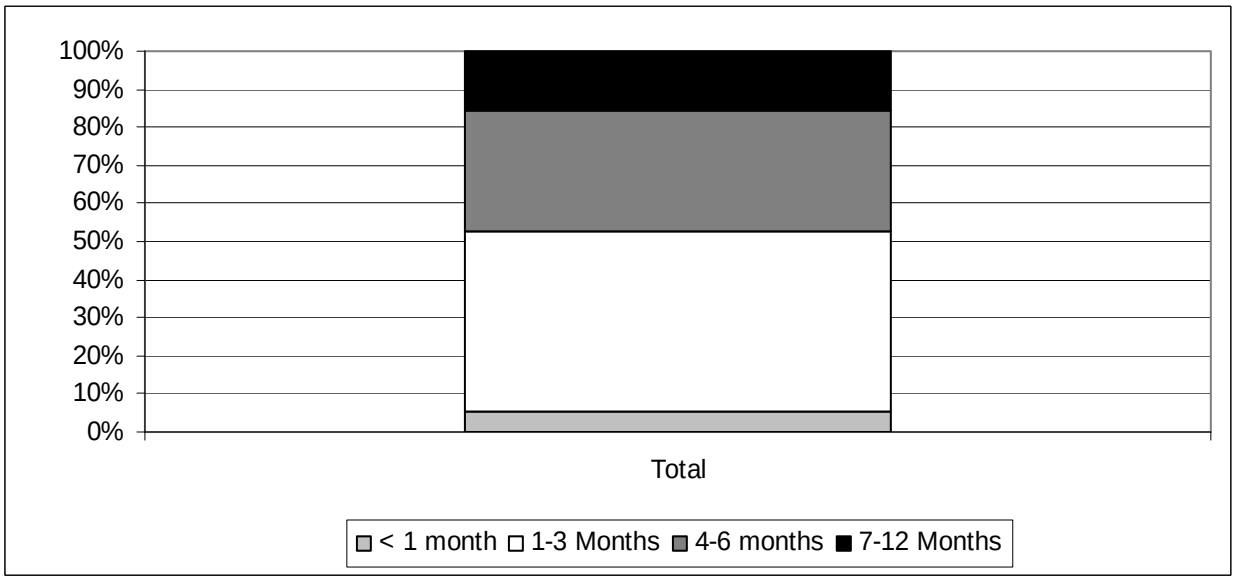
There has been a worldwide decline in the incidence of SIDS since the early 1990s. This trend has also been noted in Alberta.

SIDS Cases by Age and Region

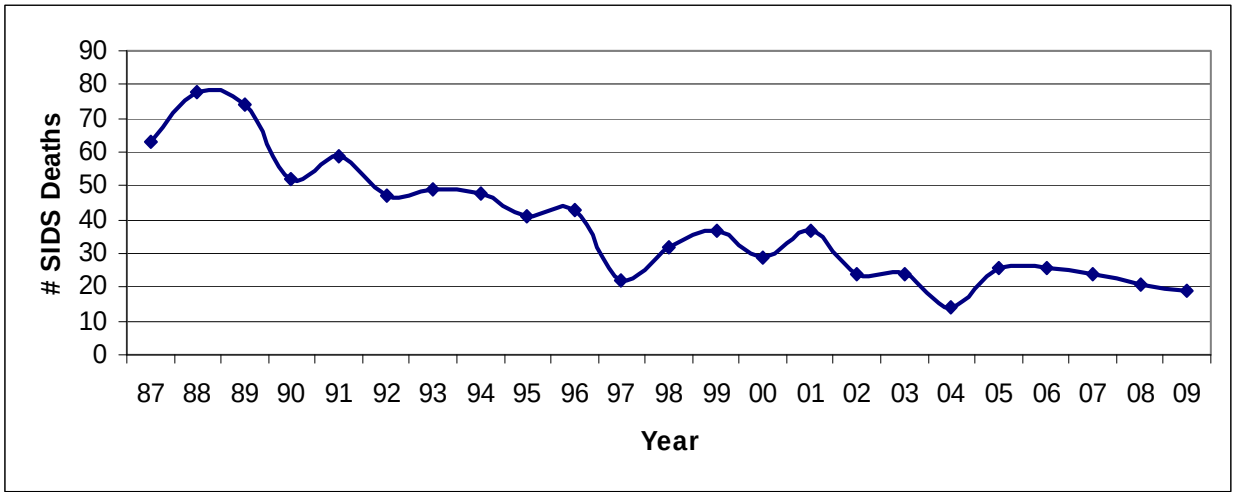
Age	Calgary	South Rural	Edmonton	North Rural	Total
<1 month	0	0	1	0	1
1-3 months	0	0	5	4	9
4-6 months	0	0	3	3	6
7-12 months	1	0	2	0	3
Total	**1**	**0**	**11**	**7**	**19**

2009 Infant, Child and Youth Deaths

SIDS Cases by Age Group



SIDS Cases in Alberta Between 1988—2009



FATALITY REVIEW BOARD/PUBLIC FATALITY INQUIRIES

The Fatality Review Board (FRB) is an independent link between the Office of the Chief Medical Examiner and the Public Fatality Inquiries that are run by a Provincial Court Judge.

The Fatality Review Board's duties are defined in section 4 of the *Fatality Inquiries Act*, however, the primary role of the FRB is to look at a proportion of the cases investigated by medical examiners, and recommend which of the deaths are of sufficient public interest to proceed to a Public Fatality Inquiry.

All deaths caused by a police officer in the line of duty go to Public Fatality Inquiry. In addition, all deaths of certified patients under the *Mental Health Act*, children in the custody or guardianship of the government under the *Child, Youth and Family Enhancement Act*, and individuals in custody or in jail automatically go to Public Fatality Inquiry unless the death was due entirely to natural causes, was not preventable, and the Fatality Review Board feels that the public interest would not be served by an Inquiry.

A Public Fatality Inquiry is held before a Provincial Court judge and is primarily intended to make the circumstances surrounding a death public. The judge cannot make any legal findings of blame or responsibility for the death, but may make recommendations for the prevention of similar deaths in the future.

Public Fatality Inquiry reports are available to the public on the Internet at:
http://justice.alberta.ca/programs_services/fatality/Pages/fatality_reports.aspx

Public Fatality Inquiries Completed During 2009

Manner of Death	Given	Not Given	Total
Natural	0	2	2
Homicide	1	1	2
Suicide	3	0	3
Accidental	6	2	8
Undetermined	1	0	1
Total	**11**	**5**	**16**

Types of Fatality Inquiries Completed During 2009

Manner of Death	Deaths in psychiatric facility or hospital	Deaths involving police	Deaths of children who are in custody of child welfare	Deaths while incarcerated	Other Reason For Inquiry
Natural	1	0	1	0	0
Homicide	0	1	0	1	0
Accidental	0	1	0	0	7
Suicide	2	0	1	0	0
Unclassified/ Undetermined	0	0	0	0	1
Total	**3**	**2**	**2**	**1**	**8**

Data presented in the 2009 Annual Review is accurate as of April 2011