

About Cause-of-death data for Canada

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Part 1 – vital statistics and population censuses

1. Death Count Data

Source of data

Cause-of-death statistics are published and distributed by Statistics Canada. A single electronic file of tabulated death counts by calendar year of occurrence, sex, age group, and medical cause for all years from 1950 to 1999 was provided to the HMD by our colleagues at the University of Canada, Nadine Ouellette and Robert Bourbeau (see Appendix I for details). Cause-of-death data for 2000-2019 were downloaded from the World Health Organization Mortality Database (<https://www.who.int/data/data-collection-tools/who-mortality-database>).

Specific Details (Optional)

The age group format is not the same throughout the period. For most of the years the last age group is 85+ year, only for 2014 and 2015 the last age group is 90+ (see appendix 3).

Raw data treatment

- There was one death of unknown in 2008, cause Q80.9. It was assigned randomly to the age group 45-50 years.
- Secondly, while applying age-specific quality test one inconsistency was detected. Consequently, cause Q00.0 (anencephaly) was recoded into Q89.9 (congenital malformation, unspecified) since this disorder is particular for newborn and cannot be attributed to older ages (see appendix 4).
- Finally, the number of non-UCD (underlined causes of death) were recorded into target cause as shown in appendix 5 since these causes cannot be considered as principal cause of death.

Comparison with the all-cause death counts

The total number of deaths (all causes, both sex and all ages) by calendar year in the cause-of-death statistics was compared with the total number of deaths by calendar year in the all-cause HMD input database. There are discrepancies between the two data sets in spite of the

fact that they are processed by the same agency (Statistics Canada) due to delays in registering the cause of death in a sizeable number of cases. Differences are expected between the two data series because in Canada, as in many other countries, there are some situations which result in the delayed registration of death. More specifically, deaths considered unexpected, accidental or suspicious are referred to a coroner who may order a post mortem or carry out a full inquest to ascertain the reasons for the death and rule out foul play. In most countries, the coroner can only register the death once an investigation has concluded as to the exact cause and circumstances of the death. It is not uncommon, at least for a small proportion of all deaths, for such registration delays to extend into several years. However, the fact that for many years, there is a larger number of total death count in the cause-of-death data than in the all-cause mortality file (see Appendix 2 for the exact numbers) is highly suspicious. For instance, in 1976, there were 686 more deaths recorded in the cause-of-death file than in the all-cause file. The largest difference is in 2011, when there were 1,437 more deaths in the all-cause data than in the cause-specific data. Consequently, the user should consider the current series as preliminary while we are working with our country experts to clarify this issue.

Part II –information on CoD coding

Death statistics are published in Canada by the underlying cause of death defined as the disease that directly leads to death. The exact definition adopted by the Canadian vital statistic system follows international recommendations. It is « (a) the disease or injury which initiated the chain of events leading directly to death, or (b) the circumstances of the accident or violence which produced the fatal injury » (World Health Organization, 1975). Causes of death are classified according to the International Classification of Disease (ICD). Canada has adopted the third revision to the ICD scheme in 1921 and has since implemented its successive revisions up to the 10th one in 2000, currently in use. Table 1 presents the periods of implementation of each ICD revision in the country.

Table 1. Periods of implementation of each ICD revision in Canada

ICD Revision	Years Covered
3 rd	1921-1930
4 th	1931-1940
5 th	1941-1949
6 th	1950-1957
7 th	1958-1968
8 th	1969-1978
9 th	1979-1999
10 th	2000-present

Appendixes

This background information is relative to cause-of-death data for the period 1950 to the present. For general information about mortality statistics in Canada, the reader should refer to the general Background and Documentation file

[<http://www.mortality.org/hmd/CAN/InputDB/CANcom.pdf>].

Appendix 1. Data used for the cause-of-death database

Period	Type of Data	Age Grouping	Comments	RefCode(s) [†]
1950-1999	Annual number of deaths, by sex, age group, and medical cause-of-death coded to the 4 th digit of the ICD.	0, 1-4, 5-9, ...,95-99, 100+,unknown		30
2000-2019	Annual number of deaths, by sex, age group, and medical cause-of-death coded to the 4 th digit of the ICD.	0, 1-4, 5-9, ...,80-84, 85+,unknown		50

[†] The reference code is used in the raw data files (Input Database) to link data with sources.

Appendix 2. Differences between the all-cause HMD series and the cause-specific series in the raw data

Year	HMD	COD	HMD-COD
1950	124008	124011	-3
1951	125805	125808	-3
1952	126371	126366	5
1953	127789	127788	1
1954	124641	124633	8
1955	128237	128237	0
1956	131790	131791	-1
1957	136404	136371	33
1958	135036	135037	-1
1959	139717	139715	2
1960	139540	139539	1
1961	140870	140870	0
1962	143547	143570	-23
1963	147291	147266	25
1964	145750	145749	1
1965	148832	148832	0
1966	149764	149763	1
1967	150205	150206	-1

Year	HMD	COD	HMD-COD
1985	181308	181308	0
1986	184225	184225	0
1987	184953	184953	0
1988	190124	190124	0
1989	190961	190961	0
1990	191973	191973	0
1991	195567	195568	-1
1992	196537	196535	2
1993	204912	204912	0
1994	207077	207077	0
1995	210740	210740	0
1996	212874	212874	0
1997	215669	215669	0
1998	218091	218138	-47
1999	219530	219710	-180
2000	218061	218062	-1
2001	219535	219538	-3
2002	223625	223603	22

1968	153028	153028	0
1969	154418	154418	0
1970	155872	155874	-2
1971	157205	157205	0
1972	162348	162346	2
1973	163954	163955	-1
1974	167124	167125	-1
1975	167209	167206	3
1976	167813	168499	-686
1977	167522	167532	-10
1978	168164	168163	1
1979	168134	168137	-3
1980	171438	171439	-1
1981	171005	171004	1
1982	174612	174612	0
1983	174465	174465	0
1984	175711	175711	0

2003	226165	226169	-4
2004	226580	226584	-4
2005	230129	230132	-3
2006	228066	228079	-13
2007	235212	235217	-5
2008	238612	238617	-5
2009	238416	238418	-2
2010	240075	240075	0
2011	243511	242074	1437
2012	246596	246596	0
2013	252338	252338	0
2014	258821	258821	0
2015	264333	264333	0
2016	267213	267213	0
2017	276689	276689	0
2018	283706	283706	0
2019	284082	284082	0

Appendix 3. Age -group format.

Year	Age-group format	
2000	1	
2001	1	
2002	1	
2003	1	
2004	1	
2005	1	
2006	1	
2007	1	
2008	1	
2009	1	
2010	1	
2011	1	
2012	1	
2013	1	
2014		2
2015		2
2016	1	
2017	1	
2018	1	
2019	1	
2020	1	
2021	1	
2022	1	

Appendix 4. Recoded age –specific causes.

year	sex	orig.cause	cause	d15	d25	d55	d75
2000	2	Q000	Q899		1		
2008	1	Q000	Q899				1
2009	2	Q000	Q899	1			
2014	2	Q000	Q899			1	

Appendix 5. Recorded non-UCD codes.

Original cause	Target cause	Type
A09_	A099	obsolete
A90_	A979	obsolete
B485	B488	dragger
C80_	C809	obsolete
C832	C839	obsolete
C834	C839	obsolete
C836	C839	obsolete
C843	C849	obsolete
C850	C859	obsolete
C945	C947	obsolete
C961	C969	obsolete
C97_	C969	non-UCD
D463	D469	obsolete
D752	D759	obsolete
D760	D763	obsolete
F100	X45_	non-UCD
F110	X42_	non-UCD
F140	X42_	non-UCD
F150	X41_	non-UCD
F190	X40_	non-UCD
G903	G909	obsolete
G907	G909	obsolete
H547	H549	obsolete
I150	I139	non-UCD
I220	I212	non-UCD
I221	I212	non-UCD
I228	I212	non-UCD
I229	I212	non-UCD
I252	I258	non-UCD
I48_	I489	obsolete
I848	K649	obsolete
I849	K649	obsolete
J987	J989	error
K350	K358	obsolete

K351	K358	obsolete
K359	K358	obsolete
K553	K559	error
K588	K580	error
K85_	K859	obsolete
L89_	L899	obsolete
M725	M729	obsolete
N180	N189	obsolete
N188	N189	obsolete
O60_	O600	obsolete
O96_	O969	obsolete
O97_	O979	obsolete
R003	R008	error
R170	R17_	error
R95_	R959	obsolete
U049	U04_	special