

Health status of children

Highlights

- The 20th century has seen a dramatic decline in infant mortality in Canada and an accompanying decline in regional disparities in infant mortality.
- Income-related differences in infant mortality have diminished substantially; however, by 1996, rates in the poorest neighbourhoods were still two-thirds higher than those in the richest neighbourhoods.
- Infant mortality in Canada's poorest neighbourhoods is now significantly lower than the national rate for the United States. However, it is less impressive than what has been attained in parts of Europe, such as France and Sweden. The infant mortality rate in Canada's richest neighbourhoods is currently only about as low as the national rate for Sweden.
- In recent years in Canada, income-related disparities in infant mortality have ceased to diminish, although regional disparities have continued to decline.
- Since 1971, Canada has seen dramatic reductions in child mortality due to most external causes of death (accidents, poisoning and violence). Nevertheless, there has been an increase in suicides among children.
- Most children in Canada are in very good health. However, socioeconomic differences are evident from an early age. The children of parents with a low level of education are more likely to have poorer perceived health and are less likely to enjoy unbroken good health.

Over the past three decades, the rates of infant and child mortality have declined substantially in Canada. These trends represent undisputed progress in efforts to secure the health of Canadian children. The gains made in preventing the principal causes of death among infants (under 1 year of age) as well as children (aged 1 to 14) have been impressive. The greatest gains in reducing infant mortality have been made in the poorest neighbourhoods and most disadvantaged regions. However, there are still important disparities in the health of infants and other children.

This article explores both changes and disparities in the health status of children (see *Methods* and *Definitions*). It reviews trends in infant mortality, low birth weight and child mortality, and examines the declines in principal causes of infant and child mortality. It also explores disparities in measures of health for infants and children according to socioeconomic status (levels of income and education) and region. Finally, it notes recent developments of concern, such as increases in the proportion of low birth weight births to teenage mothers and increases in rates of suicide among children.

The health of infants (measured by infant mortality and low birthweight) is considered separately from the health of other children (measured by child mortality and morbidity), because the patterns for these age groups are different.

Declining infant mortality in Canada

This century has seen a dramatic decline in infant mortality in Canada. In 1901, the infant mortality rate in Canada was 134 per 1,000, meaning that about 1 in 7 newborns died before their first birthday.¹

By 1997, the infant mortality rate in Canada had fallen to 5.5 per 1,000, meaning that only 1 in 182 newborns failed to survive their first year.²

The decline in infant mortality in Canada as a whole has been accompanied by a decline in regional disparities in infant mortality. This can be measured by the absolute difference between the rate for Canada as a whole and the rate for the region with the lowest infant mortality. The difference has fallen from 10 per 1,000 in 1951, to 6 in 1956, to less than 3 in 1966, and to less than 1 in 1981. By 1996, the

Methods

Data sources

The following Statistics Canada data sources were used for this article: live birth and death registration data from the Canadian Vital Statistics Data Base and its derivatives, the Canadian Births Data Base and the Canadian Mortality Data Base; population estimates by age, sex and province; census data on low income by census tract and age; historic life tables for 1901; abridged life tables for 1996; and the National Longitudinal Survey of Children and Youth (NLSCY).

Analytical techniques

Descriptive analyses of the birth and death data show rates, rate differences, rate ratios, and excess events, which are generally done by year (or three-year averages), region and neighbourhood income quintile. International comparisons are also shown for infant mortality.

Morbidity measures from the NLSCY were analyzed through six health variables: 1996/97 perceived health, 1994/95-1996/97 changes in perceived health (improvements or declines), 1996/97 serious injuries, 1994/95-1996/97 repeated serious injuries, and 1996/97 activity limitations. For each of these morbidity measures, a basic logistic regression model was tested and, then, specific explanatory variables were added. The basic model included age and sex of the child, presence of two parents and parent's level of education. Absence of chronic conditions was added to the perceived health model as a specific variable to take into account the health condition of the child. Development of chronic conditions during the 1994/95-1996/97 period and disappearance of chronic conditions during the same period were added as specific variables to the model for 1994/95-1996/97 changes in perceived health.

For the morbidity analyses, education of the parent was selected as the measure of socioeconomic status instead of income because

it is, in general, determined before the birth of a child and is therefore not affected by the child's health. Interpretation of results where income was used as the measure would have been more difficult, since it is possible that parents of very sick children may choose to reduce their income (for example, by changing from a dual-earner to single-earner family) in order to provide care to their children.

Limitations

Vital statistics birth and death data are believed to be quite complete and accurate with respect to birth weight, age of mother, live birth parity, date of death, and major causes of death. In recent years, the marital status of mother has been missing for about 5% of births. Census tract coded from street address and postal code is highly precise in urban areas, but much less precise in rural areas, so the analyses were restricted to residents of census metropolitan areas.

Causal inferences based on cross-sectional data are always hazardous, and income of adults is known to be both a determinant and effect of their ill-health. But for low birth weight and infant mortality outcomes, working with results by income quintiles defined on the basis of neighbourhood income is less problematic, since the neighbourhood of residence of the parents is nearly always determined prior to the birth of the child.

The fact that most children are in very good health makes it difficult to analyze the rare event of morbidity among the population aged 0 to 11. A longer period of observation may be necessary to improve the statistical power to detect associations.

This analysis did not make use of specialized software to take into account the complex sample design of the NLSCY. Instead, normalized weights were used, and an adjustment for the design effect was made. Furthermore, a conservative threshold risk level of 0.01 (instead of the usual 0.05) was considered significant.

difference was only 0.5 per 1,000—about a twentieth of what it had been 45 years earlier.

Looked at in another way, in 1951, there would have been about 3,700 fewer infant deaths if infant mortality in all regions of Canada had been as low as the rate in British Columbia (the lowest regional rate at that time). In 1996, there would have been about 180 fewer infant deaths if infant mortality in

all regions of Canada had been as low as the rate in Québec (the lowest regional rate at that time).

Fewer infant deaths due to perinatal conditions, congenital anomalies and external causes

In 1971, the principal causes of death among infants in Canada, as grouped by chapters of the *International*

Definitions

Infant mortality refers to deaths of infants under 1 year of age. *Infant mortality rates* are the number of deaths of infants under 1 year of age for every 1,000 live births.

Excess infant deaths are defined as the number of infant deaths observed, less the number of infant deaths expected if the rate in the region with the lowest rate, or in the richest neighbourhood income quintile, had been experienced by Canada as a whole.

Causes of death among infants were grouped according to chapters of the *International Classification of Diseases*.^{3,4} *Perinatal conditions* occur during the period just before or just after birth. *Congenital anomalies* are defects present at birth. *Ill-defined conditions* include sudden infant death syndrome (SIDS). *External causes* include all accidents, poisoning and violence.

Low birth weight (LBW) is defined as a birth weight of less than 2,500 grams (about 5.5 pounds). LBW may result from premature birth or restricted growth within the uterus, or a combination of both problems. The *low birth weight rate* is the number of low birth weight infants per 100 live births.

Excess LBW births are defined as the number of LBW births observed, less the number of LBW births expected if the rate in the region with the lowest rate, or in the richest neighbourhood income quintile, had been experienced by Canada as a whole.

Live birth parity is the number of infants born alive to a mother, including the current birth.

Marital status of the mother was based on her legal marital status as shown on the birth registration. *Unmarried* includes never married, separated, divorced and widowed.

Child mortality refers to deaths of children aged 1 to 14. *Child mortality rates* are the number of deaths per million children aged 1 to 14. Rates were calculated for each three-year period as 1,000,000 x the sum of the deaths divided by 3 x the mid-year population of the central year of each period.

Causes of death among children aged 1 to 14 were grouped according to chapters of the *International Classification of*

Diseases.^{3,4} *External causes* include all accidents, poisoning and violence. *Neoplasms* refer to cancer and other tumours. *Congenital anomalies* are defects present at birth. *Nervous system diseases* include diseases of the brain, spinal cord and sense organs. *Circulatory system diseases* include diseases of the heart, stroke and arterial diseases.

Subcategories of external causes of death among children aged 1 to 14 were grouped based on List A of the *International Classification of Diseases*, 8th Revision³ and the corresponding NCHS List A based on the 9th Revision.⁵

Neighbourhood income was measured by the percentage of the population with income below the Statistics Canada low-income cut-offs within census tracts in urban Canada. The measure is divided into fifths or *quintiles* of the population within each census metropolitan area (CMA). Quintile 1 (Q1), the richest neighbourhoods, comprises census tracts with the lowest percentage of the population with income below the Statistics Canada low-income cut-offs. Quintile 5 (Q5), the poorest neighbourhoods, comprises census tracts with the highest percentage of the population with income below the Statistics Canada low-income cut-offs.

The five *regions* were defined as: Atlantic (Newfoundland, Prince Edward Island, Nova Scotia, New Brunswick), Québec, Ontario, Prairies (Manitoba, Saskatchewan, Alberta) and British Columbia. The Yukon and Northwest Territories were included in the total for Canada, but not in the regional comparisons. For regional analyses of birth weight data, Newfoundland was excluded prior to 1991 because of a lack of data on birth weight and maternal characteristics.

For morbidity analyses, parent's educational attainment was grouped into five levels: (1) less than a high school diploma; (2) high school diploma, but no other education; (3) high school diploma and some postsecondary education without a diploma; (4) diploma from a college, nursing school or any other postsecondary institution excluding university; and (5) university graduation.

Classification of Diseases,³ were perinatal conditions, congenital anomalies, ill-defined conditions, and external causes. From 1971 to 1996, death rates declined markedly for each of the principal causes of death among infants except for ill-defined conditions, which first rose sharply and then declined.

The greatest progress has been made in preventing death due to perinatal conditions, congenital anomalies and external causes. When the average annual mortality rate for the years 1995 to 1997 is compared with the average annual rate for the years 1970 to 1972, there were fewer than one-third as many deaths due to perinatal conditions and congenital anomalies, and only one-tenth as many deaths due to external causes. Perinatal and congenital conditions together accounted for about two-thirds of infant deaths from 1995 to 1997, followed by "all other" causes and ill-defined conditions. External causes accounted for less than 2% of infant deaths from 1995 to 1997.

How does Canada compare internationally?

Other industrialized countries have also seen a decline in their infant mortality rates (Table 1). In 1970, the rates ranged from a low of 11 per 1,000 in Sweden to a high of 20 per 1,000 in the United States. By 1996, the rates had fallen to a low of 4 in Sweden and a high of 8 in the United States. Canada's rate declined from 19 per 1,000 in 1970 to less than 6 per 1,000 in 1996.

In the period from 1970 to 1975, which followed the introduction of universal medical care in Canada,

Table 1
Infant mortality rates, selected countries, 1970 to 1996

	Canada	United States	United Kingdom	France	Sweden
	Infant deaths per 1,000 live births				
1970	18.8	20.0	18.5	18.2	11.0
1975	13.6	16.1	16.0	13.8	8.6
1980	10.4	12.6	12.1	10.0	6.9
1985	7.9	10.6	9.4	8.3	6.8
1990	6.8	9.2	7.9	7.3	6.0
1995	6.1	8.0	6.0	4.9	4.1
1996	5.6	7.8	6.1	4.9	4.0

Data source: Reference 6

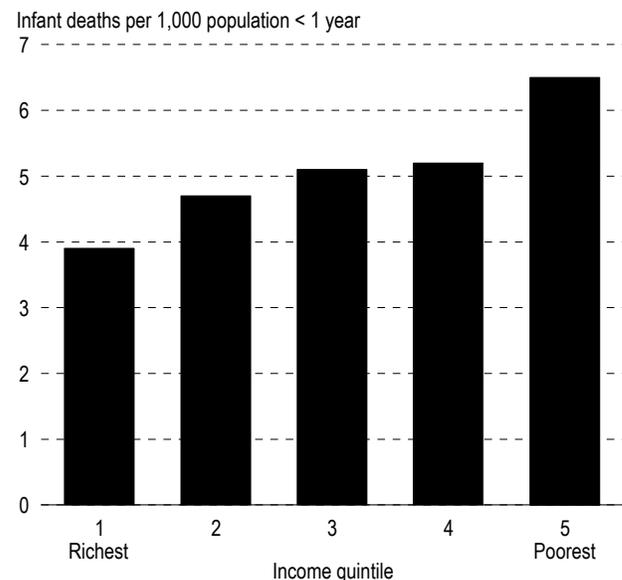
Canada recorded the greatest decrease in infant mortality of all five countries in each of the five-year periods from 1970 to 1995. In recent years, however, the rate of improvement has slowed in Canada compared with the United States, the United Kingdom, France and Sweden. Canada recorded the smallest decrease in infant mortality of the five countries in the 1990-to-1995 period.

Persistent income-related disparities in infant mortality

Since 1971, the gains made against infant mortality in Canada have been greatest in the poorest urban neighbourhoods. However, infant mortality rates in Canada are still highest in the poorest urban neighbourhoods, and lowest in the richest urban neighbourhoods (Chart 1). In 1996, the infant mortality rate in Canada's poorest neighbourhoods (6.5 per 1,000) was two-thirds higher than that of the richest neighbourhoods (3.9 per 1,000). If the rate for all Canada had been as low as that of the richest neighbourhoods, there would have been about 500 fewer infant deaths in 1996.

The difference between the infant mortality rate for Canada as a whole and the rate for the richest

Chart 1
Infant mortality, by neighbourhood income quintile, urban Canada, 1996



Data source: References 7 and 8 and preliminary tabulations from the 1996 mortality by income study (see Table 2)

urban neighbourhoods fell sharply from 1971 to 1986, and declined further from 1986 to 1991. But progress in reducing this disparity in Canada has slowed in recent years (Table 2). From 1991 to 1996, there was little change in those rate differences.

From 1971 to 1996, income-related disparities in infant mortality rates did not decline as much as regional disparities. In 1971, 1986, and 1991, income-related disparities were at least twice as large as regional disparities. However, from 1991 to 1996, income-related differences in infant mortality remained constant at 1.3 per 1,000, while regional differences diminished to 0.5 per 1,000, so that income-related disparities are now three times as large as regional disparities.

Infant mortality rates of rich and poor neighbourhoods in Canada may be compared with national infant mortality rates of other industrialized countries. Infant mortality rates for Canada's richest neighbourhoods were very close to the Swedish national rates in 1971, 1986 and again in 1996, while the rates for Canada's poorest neighbourhoods resembled the national rates for the United States in both 1971 and 1986 (compare Tables 1 and 2). However, by 1991 and again in 1996, the rates for Canada's poorest neighbourhoods were considerably lower than the corresponding national rates for the United States.

Trends in low birth weight

Low birth weight (LBW) is a major risk factor for perinatal and infant mortality, as well as childhood disability and other health problems.^{9,10} The percentage of LBW births in Canada rose from 7.2% in 1961 to 7.8% in 1966, and then fell to 5.6% in 1986. It remained at 5.6% in 1991, and then rose back to 5.8% in 1996 and 1997.

The initial rise in LBW rates from 1961 to 1966 has been linked to the practice of severely limiting maternal weight gain during pregnancy—a practice recommended by physicians at the time, but since modified to prevent adverse effects on birth weights. Studies suggest that the recent increase in LBW rates may partly be associated with an increasing proportion of multiple births (which are usually born smaller and earlier), and an increase in the reporting of very small and premature babies as live births rather than stillbirths.^{11,12}

Regional and income-related disparities

The difference between the percentage of LBW births in Canada as a whole and the percentage in the region with the lowest rate fell from 0.9 in 1961 to 0.5 in 1971, then rose to 0.8 in 1981 and 1986, and thereafter, fell again to a low of 0.5 in 1997. Thus, regional disparities in LBW were about as large in 1997 as they had been in the early 1970s.

Table 2
Infant mortality rates, by neighbourhood income quintile, urban Canada, 1971, 1986, 1991 and 1996

	Rates by income quintile [†]					Q5 versus Q1		Total versus Q1			
	Total	Q1	Q2	Q3	Q4	Q5	Rate difference	Rate ratio	Rate difference	Rate ratio	Excess deaths [‡]
	Infant deaths per 1,000 population < 1 year										
1971	15.0	10.2	12.4	15.2	16.6	20.0	9.8	1.97	4.8	1.47	2,028
1986	7.5	5.8	5.7	7.7	8.0	10.5	4.8	1.82	1.7	1.29	666
1991	5.8	4.5	5.1	5.0	6.7	7.5	2.9	1.64	1.3	1.29	577
1996	5.2	3.9	4.7	5.1	5.2	6.5	2.6	1.67	1.3	1.33	513

Source: References 7 and 8 and preliminary tabulations from the 1996 mortality by income study.

Note: For comparability with the 1971 baseline data (and because coding of births to census tract was still incomplete for 1996), infant mortality was calculated as number of infant deaths (< 1 year) divided by the corresponding census population aged < 1 year.

[†] Quintile 1 defined as neighbourhoods with lowest percentage of population below Statistics Canada's low-income cut-offs; Quintile 5 defined as neighbourhoods with highest percentage of population below cut-offs.

[‡] Excess deaths estimated for Canada as a whole, based on rate ratios for urban Canada applied to rates and births for all Canada.

Table 3
Low birth weight (LBW) rates, by neighbourhood income quintile, urban Canada, 1986, 1991 and 1996

	Rates by income quintile [†]					Q5 versus Q1		Total versus Q1			
	Total	Q1	Q2	Q3	Q4	Q5	Rate difference	Rate ratio	Rate difference	Rate ratio	Excess LBW [‡]
	% of live births < 2,500 grams										
1986	5.7	4.9	4.9	5.6	6.1	6.9	2.0	1.41	0.8	1.16	2,359
1991	5.7	4.8	5.1	5.4	5.9	6.7	1.9	1.40	0.9	1.19	3,620
1996	5.8	4.9	5.4	5.8	6.1	7.0	2.1	1.44	0.9	1.20	3,004

Sources: Reference 13 and preliminary tabulations of the births by income data

Note: For 1996 only, coding to census tract was incomplete for Newfoundland and Manitoba in these preliminary tabulations. At the urban Canada level, this should have minimal effect on the LBW rates by quintile.

[†] Quintile 1 defined as neighbourhoods with lowest percentage of children younger than 18 below Statistics Canada's low income cut-offs; Quintile 5 defined as neighbourhoods with highest percentage of children younger than 18 below Statistics Canada's low-income cut-offs.

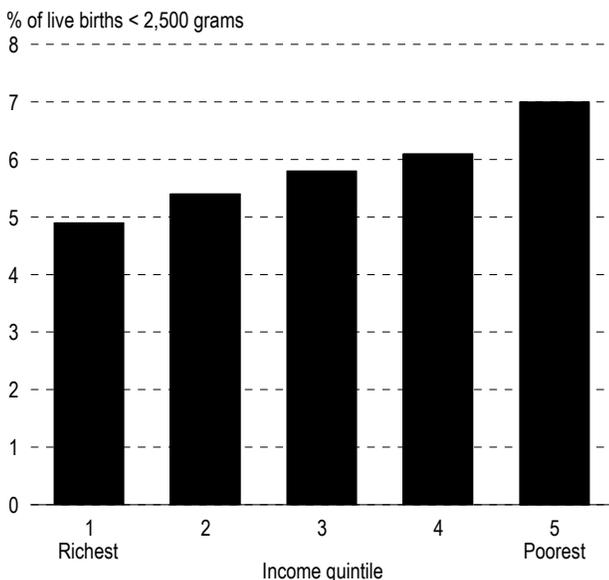
[‡] Excess LBW estimated for Canada as a whole, based on rate ratios for urban Canada applied to rates and births for all Canada.

On the other hand, income-related disparities in LBW have increased somewhat in recent years. In 1986, the rates per quintile varied from a low of 4.9% in the richest urban neighbourhoods to a high of 6.9% in the poorest urban neighbourhoods (Table 3). By 1996, the rate in the richest urban neighbourhoods was again at 4.9%, while the rates had increased in all but one of the other quintiles. The disparity between the rate for the richest

neighbourhoods and the rate for Canada as a whole increased from 0.8 in 1986 to 0.9 in 1996 (an increase of 13%). The average birth weight of babies born in Canada's poorest urban neighbourhoods is currently about 120 grams (one-quarter pound) less than that of babies born in the richest neighbourhoods.

Overall, there was little change in LBW by income quintile from 1986 to 1996, whereas there were continuing reductions in infant mortality by income quintile in the same period. Nevertheless, income-related disparities persist for both these measures of health in infancy. The lower the neighbourhood income, the higher the rates of LBW and infant mortality (Charts 1 and 2).

Chart 2
Low birth weight rates, by neighbourhood income quintile, urban Canada, 1996



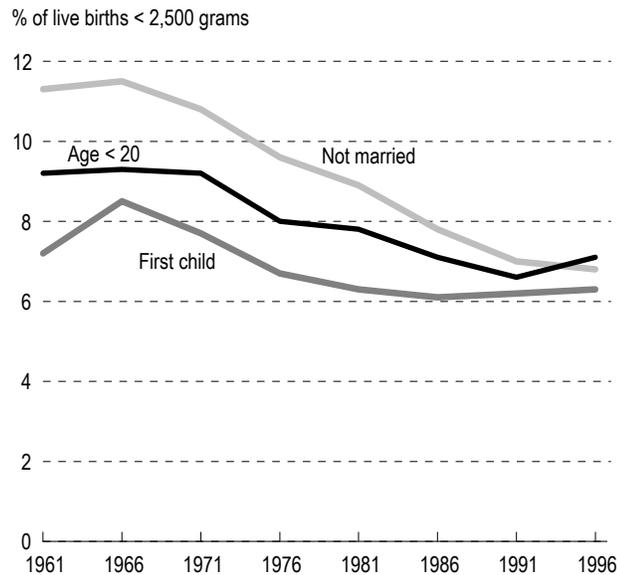
Data source: Preliminary tabulations of births by income data

Characteristics of mothers

From 1971 to 1991, there was a decline in the proportion of LBW births among unmarried mothers, mothers under the age of 20, and mothers giving birth to their first child (Chart 3). However, from 1991 to 1996, the rate of LBW births increased among teenage mothers from 6% to over 7%, so that it exceeded that of unmarried mothers who, historically, have had the highest rates of LBW births.

The decline in LBW rates for unmarried mothers was influenced by the fact that the majority of children in Québec are born to mothers who are not legally married, although they are usually living in a common-law relationship with the child's father.

Chart 3
Low birth weight rates, by maternal characteristics, Canada, 1961 to 1997



Data source: References 2, 14, 15, and Canadian Births Data Base

So unmarried motherhood has become the norm, and it no longer carries the high degree of excess risk often associated with marginal characteristics.

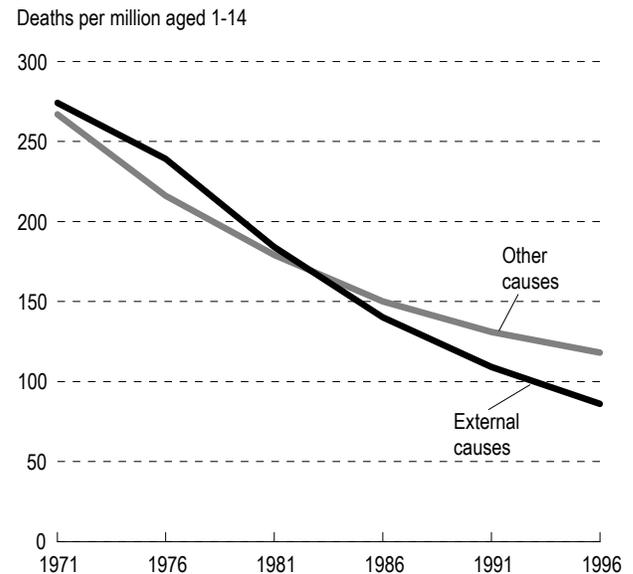
The increase in LBW rates for teenage mothers occurred at the same time as smoking prevalence rates among teenagers increased significantly, from 22.6% to 29.1%.¹⁶ Simulations show that such an increase in smoking prevalence could account for half to two-thirds of the observed increase in LBW rates among teenage mothers from 1991 to 1996. That is because smoking a pack of cigarettes per day is known to lower average birth weights by about 150 to 200 grams (one-third pound).¹⁷⁻¹⁹

Decreasing child mortality in Canada

Mortality among children aged 1 to 14 is now exceptionally rare in Canada. For children who survived infancy in 1996, only 1 in 366 is expected to die before their 15th birthday.²⁰ By comparison, in 1901, the risk of dying among children aged 1 to 14 was 1 in 7.¹

From 1971 to 1996, the average number of deaths per year among children aged 1 to 14 decreased from 541 per million to 204 per million (Chart 4). In absolute numbers, there were about 2,150 fewer

Chart 4
Mortality rates, children aged 1 to 14, Canada, 1970-1972 to 1995-1997



Data source: Reference 21 and Canadian Mortality Data Base

deaths per year, on average, in this age group in the years 1995 to 1997 than in the years 1970 to 1972. (There were between 5 and 6 million children of that age in Canada throughout this period; the number of deaths and deaths per million per year are averaged over three-year intervals.)

Fewer deaths due to external causes

Throughout this period, the most common causes of death among children aged 1 to 14, as grouped by chapters of the *International Classification of Diseases*,^{3,4} were external causes, followed distantly by neoplasms, congenital anomalies and nervous system diseases. Each of these major causes declined by at least 50% between 1971 and 1996, but external causes declined the most, from 274 per million to 86 per million—a decrease of 70% (Chart 4).

The extent of decline in mortality rates due to external causes has varied for different causes (Table 4). The mortality rates for child pedestrians hit by motor vehicles fell by almost 90%, from 76 per million in 1971 to just 9 per million in 1996. The rate of accidental drownings fell by 77%, from 48 per million in 1971 to 11 per million in 1996. Death

Table 4
External causes[†] of death, children aged 1 to 14, Canada, 1970-1972 to 1995-1997

Average annual number of deaths from external causes	Mortality rate from external causes									
	Total	Motor vehicle accident		Drowning	Poisoning	Suicide [‡]	Homicide	Fire	Other	
		Occupant	Pedestrian							
Average annual deaths per million children aged 1-14										
1970-1972	1,666	274	52	76	48	5	3	6	31	53
1975-1977	1,338	239	58	45	39	4	5	8	26	55
1980-1982	952	184	50	30	29	2	5	7	24	36
1985-1987	717	140	44	20	18	1	5	8	16	29
1990-1992	587	109	35	14	14	2	6	7	11	20
1995-1997	483	86	26	9	11	1	8	7	7	18

Source: Reference 21 and Canadian Mortality Data Base

Notes: Rates calculated for each three-year period as $1,000,000 \times$ the sum of deaths divided by $3 \times$ the mid-year population of the central year of each period. Cause groupings were from List A of the International Classification of Diseases, 8th Revision (World Health Organization, 1967) (used for mortality coding in Canada from 1969 to 1978) and the corresponding List A based on the 9th Revision (World Health Organization, 1975) (used for mortality coding in Canada from 1979 to 1999).

[†] External causes include all accidents, poisoning and violence.

[‡] As there were few, if any, suicides among children aged 1-9, the suicide death rates would be approximately three times as high if restricted to the 10-14 age group.

rates due to accidental fires also fell by 77%, from 31 per million in 1971 to 7 per million in 1996. Deaths to child passengers in motor vehicle crashes fell by 50%, from 52 per million in 1971 to 26 per million in 1996. Deaths due to poisoning, relatively less common than the preceding causes, fell from 5 per million in 1971 to 1 per million in 1996.

Increase in suicides among children

While deaths among children due to most external causes and diseases have declined considerably since 1971, the mortality rate due to suicide increased over 2.5 times, from 3 per million in 1971 to 8 per million in 1996. Since few, if any, suicide deaths occur among children aged 1 to 9, the suicide death rate would be approximately three times as high if the calculations were restricted to the 10-to-14 age group.

The mortality rate due to homicide also increased marginally, from 6 per million in 1971 to 7 per million in 1996.

Factors associated with poorer perceived health

The analysis of infant mortality rates and low birth weight rates in Canada indicates that income-related disparities persist in these measures of health. Is

there any evidence of an association between socioeconomic status and measures of the health of children as they grow older?

The National Longitudinal Survey of Children and Youth (NLSCY), which follows a cohort of 23,000 children under age 12 at the beginning of the study, sheds some light on this question. Data are available from two waves of the NLSCY, conducted in 1994/95 and 1996/97.²²

According to special tabulations from the NLSCY, the vast majority of children—88% in 1996/97—are in excellent or very good health as perceived by their parents. For those whose health is poorer (whose health is perceived to be good, fair or poor), several factors appear to be significant. One is chronic illness. Children with a chronic condition have over three times the odds (3.6) of poorer perceived health, and the disappearance of a chronic condition is the most important factor contributing to an improvement in perceived health.

Socioeconomic status (particularly the education level of the parents) is also a factor. Children of parents who did not graduate from high school have almost three times the odds (2.75) of poorer perceived health than children of parents with a university diploma. And among children whose perceived health changed, children of parents who

did not graduate from high school also had greater odds of perceiving a decline in health than children of parents with university graduation.

Factors associated with injuries and activity limitations

A further analysis was conducted on factors associated with injuries and activity limitations among children. There was no significant association between parent's level of education and children's injuries or activity limitations. However, girls, younger children (less than 10 years old) and children with two parents at home were less likely to have had repeated serious injuries (injuries reported in 1994/95 and 1996/97) and activity limitations.

Concluding remarks

The 20th century in Canada has been a time of tremendous progress against infant mortality. What was once a relatively common occurrence has become a rare event. Regional differences in infant mortality are now quite small in absolute terms, and only a small fraction of what they had been in the early 1950s. Income-related differences in infant mortality have also diminished substantially, although by 1996 they were still nearly three times as large as regional differences. Nevertheless, infant mortality in Canada's poorest neighbourhoods is now significantly lower than the national rate for the United States.

The single most important modifiable risk factor for low birth weight is maternal smoking.²³ Thus, future reductions in rates of low birth weight may depend, in large part, on the success or failure of programs and policies to prevent young women from becoming smokers and to encourage smokers to quit. Also, since smoking is most common among the least well-educated women, it is the children of such women who would have the most to gain.

Although Canada's progress against infant mortality looks good from a North American perspective, it is less impressive than what has been attained in parts of Europe, such as France and Sweden. The infant mortality rate in Canada's richest

neighbourhoods is currently only about as low as the national rate for Sweden. International comparisons also indicate that during the 1990s the decline in infant mortality in Canada has not kept pace with that of France, Sweden or Britain. Thus, the evolution of infant mortality in Canada raises grounds for concern as well as reasons for a sense of accomplishment.

Similarly, the dramatic reductions in child mortality due to external causes of death attests to the overwhelming success of a host of regulatory, policy, educational, and product safety improvements over time. While it was not possible to apportion the mortality declines to specific interventions, it is likely that the reduction in child deaths in motor vehicle crashes, for example, was related to changes in the design and use of seatbelts, infant seats, air bags, improvements in tires and brakes, vehicle safety design and helmets for bicyclists, as well as increased school bussing, improved emergency treatment of trauma, and stricter enforcement of laws against speeding and drunk driving. Analogous regulatory, policy, educational, emergency treatment and product safety improvements also apply to the prevention of child deaths due to drownings, fires and poisoning. At the same time, the increase in suicide deaths among children in Canada stands in sharp contrast to the gains that have been made in reducing childhood deaths due to fatal unintentional injuries.

In recent years in Canada, income-related disparities in infant mortality have ceased to diminish, although regional disparities have continued to decline. At the same time, income-related disparities in low birth weight have increased somewhat. This suggests that changes in the socioeconomic environment in recent years may have negatively affected prospects for improved health and survival of our youngest citizens.

Since most children are in very good health, a longer period of observation may be necessary to improve the statistical power of factors associated with illness and disability among children. However, perceived health status and changes in perceived health status show a strong relationship with socioeconomic status as defined by parents'

education level. Children of parents with a low level of education are more likely to have poorer perceived health and are less likely to enjoy unbroken good health. ●

For more information, contact Russell Wilkins (1-613-951-5305; wilkrus@statcan.ca) or Christian Houle (1-613-951-3927; houlchr@statcan.ca), Social and Economics Studies Division, Statistics Canada.

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