

# Trends in Vital Events



## Vital Statistics Information Box

### ON A TYPICAL DAY IN BRITISH COLUMBIA IN 2011

#### 121 LIVE BIRTHS OCCURRED IN THE PROVINCE TO BC RESIDENTS:

- 62 males and 59 females were born
  - 1 was stillborn
  - 3 were born to teenage mothers
  - 28 were born to mothers aged 35 years old or more
  - 4 were multiple births
  - 38 were cesarean deliveries
  - 7 were low birth weight babies
  - 9 were pre-term
  - 64 live births involved maternal complications
  - 41 babies had perinatal complications

#### 87 DEATHS OCCURRED IN THE PROVINCE TO BC RESIDENTS:

- 45 males and 42 females died
- 69 deaths were seniors aged 65 years old or more including:
  - 45 deaths aged 80 years old or more
- 6 deaths every 10 days were children less than 15 years old including:
  - 5 infant deaths every 10 days
- 24 deaths were due to diseases of the circulatory system including:
  - 16 from cardiovascular disease
  - 6 from cerebrovascular disease
- 25 deaths were due to malignant neoplasms (cancer) including:
  - 6 from malignant neoplasm of trachea and lung
  - 3 from malignant neoplasm of colon and rectum
  - 2 from malignant neoplasm of female breast
- 9 deaths were due to diseases of the respiratory system including:
  - 3 from pneumonia and influenza
  - 4 from chronic pulmonary disease
- 2 deaths every 10 days were due to HIV disease
- 5 deaths were from external causes including:
  - 1 suicide
  - 1 motor vehicle accident
  - 2 accidental falls
- 5 deaths were alcohol-related:
  - 1 directly due to alcohol and 4 indirectly due to alcohol
- 1 death was drug-induced
- 17 deaths were attributed to smoking

#### 60 MARRIAGES WERE SOLEMNIZED IN THE PROVINCE:

- 38 were civil ceremonies and 22 were performed by religious representatives
- 40 marriages were to couples where both parties were marrying for the first time
- 1 marriage every 10 days was to a couple where both parties were teenagers

## *Trends Introduction*

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The tables and figures in this part of the Annual Report provide a long term historical review of birth, death, and marriage statistics during the past few decades. They provide a broad context for the recent vital event statistics shown in other parts of this report. Long term trends are always useful for evaluating recent events and trends, so the tables and figures are often cross referenced to related tables in subsequent parts of the report.

### **Overview**

This section begins with a review of population, live birth, stillbirth, death, and marriage trends. This is followed by information on natural population increases and vital events by month.

Table 1 summarizes vital events that occurred from 1950 to 2011 and includes the mid-year BC populations. The BC population has shown a steady increase since 1950 so the columns indicating the rates are the most telling of indicators.

The rate of live births to residents increased steadily from 1950 to 1957 (as shown in Table 1). It levelled until 1960, and then dropped quite rapidly during the next ten years after which the decline moderated but generally continued until 2005. Between 2005 and 2007, there was a slight increase in the rate of live births over previous years but it has remained fairly constant in more recent years. The mortality rate has declined from about 10 per 1,000 population in 1950 to about 7 per 1,000 in the mid 1980s and remained at about that level through to 2011.

Marriage information pertains to all marriages solemnized in the province, not only those to residents. The marriage rate was about 10 marriages per 1,000 British Columbians in 1950 but declined to about 7 per 1,000 in 1960, then rose again to almost the 1950 rate by 1970. Since then, the marriage rate has declined to about 5 marriages per 1,000 population in 2011.

Regarding stillbirths, readers should be aware that there was a change in definition which led to the apparent jump in numbers and rates in 1963. That change, and another in 1986, is explained under Stillbirth in the Glossary. Other than the increase in 1963 and irregularities due to small numbers of stillbirths, rates generally declined until the early 1990s and have fluctuated around 7 per 1,000 total births until 2005. The rates since 2006 have increased from 7.99 to 9.93 in 2011.

Table 2 and Figure 4 show the rate of natural population increase (NPI) in BC and Canada since 1950. Natural population growth is explained in the Glossary. Not counting migration into or out of BC, the population grew naturally by 12,215 or at the rate of 2.7 per 1,000 British Columbians in 2011. BC's rate of NPI has been consistently below Canada's except for the first half of the 1980s. Both BC and Canada's rates have gradually declined since the late 1950s.

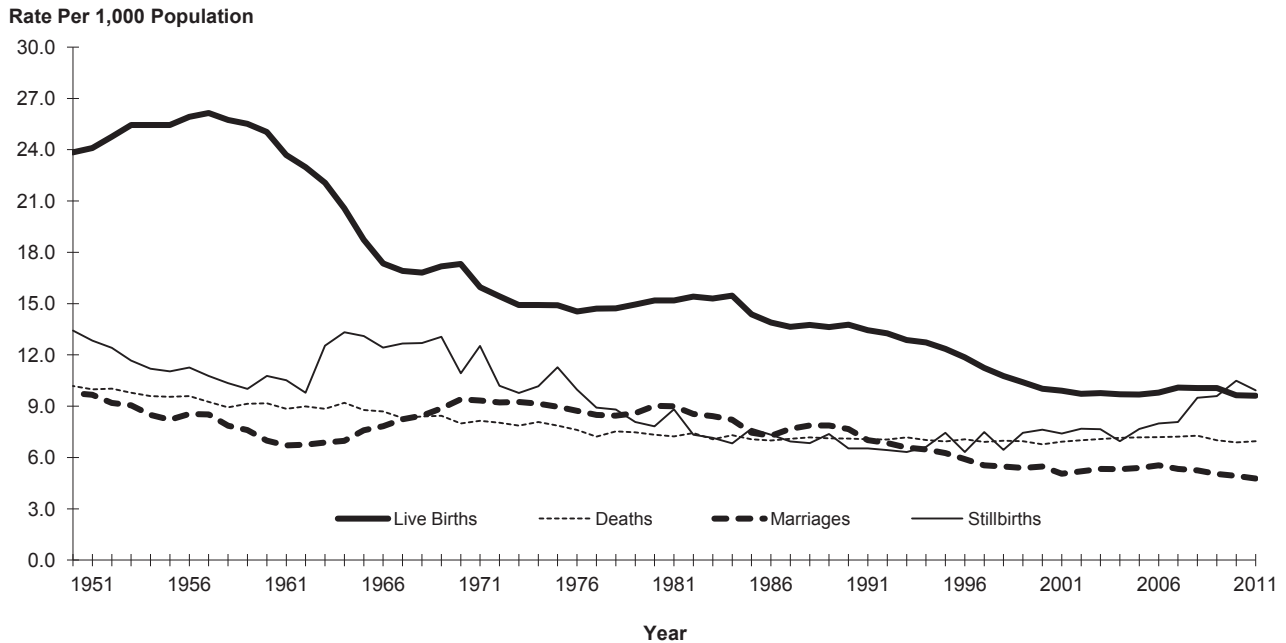
Table 3 and Figure 5 show the number of live births, deaths, marriages, and stillbirths to residents according to the month in which they occurred. The number of marriages each month includes residents and non-residents. The percent columns show the monthly percent of all events to residents, except marriages which show the percent of all marriages. The table also includes the number of live births, deaths and stillbirths to non-residents.

There is continual speculation and anecdotal evidence that vital events tend to occur in particular months or seasons. The data presented in Table 3 and Figure 5 may not put an end to that speculation, but live births and deaths were pretty evenly distributed across the months and seasons in 2011. On the other hand, there was a clear preference to marry during the summer months. Although there were fluctuations in the number and percentage of stillbirths, due to the small number of events, no trend was apparent.

TABLE 1  
**LIVE BIRTHS, DEATHS, MARRIAGES AND STILLBIRTHS**  
 BRITISH COLUMBIA, 1950–2011

Year	Mid-year Population	Live Births		Deaths		Marriages		Stillbirths	
		Number	Rate	Number	Rate	Number	Rate	Number	Rate
1950	1,137,000	27,116	23.85	11,581	10.19	11,110	9.77	369	13.43
1951	1,165,210	28,077	24.10	11,638	9.99	11,272	9.67	365	12.83
1952	1,205,000	29,827	24.75	12,080	10.02	11,081	9.20	375	12.42
1953	1,248,000	31,746	25.44	12,218	9.79	11,298	9.05	375	11.67
1954	1,295,000	32,946	25.44	12,414	9.59	10,991	8.49	373	11.19
1955	1,342,000	34,138	25.44	12,816	9.55	11,011	8.20	381	11.04
1956	1,398,464	36,241	25.91	13,415	9.59	11,950	8.55	413	11.27
1957	1,482,000	38,744	26.14	13,711	9.25	12,620	8.52	422	10.77
1958	1,538,000	39,577	25.73	13,741	8.93	12,094	7.86	414	10.35
1959	1,567,000	39,971	25.51	14,336	9.15	11,910	7.60	404	10.01
1960	1,602,000	40,116	25.04	14,696	9.17	11,203	6.99	437	10.78
1961	1,629,100	38,591	23.69	14,403	8.84	10,935	6.71	410	10.51
1962	1,660,000	38,128	22.97	14,912	8.98	11,196	6.74	377	9.79
1963	1,699,000	37,478	22.06	15,029	8.85	11,677	6.87	476	12.54
1964	1,745,000	35,897	20.57	16,051	9.20	12,158	6.97	485	13.33
1965	1,797,000	33,669	18.74	15,784	8.78	13,639	7.59	447	13.10
1966	1,873,674	32,502	17.35	16,290	8.69	14,682	7.84	409	12.43
1967	1,945,000	32,899	16.91	16,170	8.31	16,026	8.24	422	12.66
1968	2,003,000	33,687	16.82	16,828	8.40	16,914	8.44	433	12.69
1969	2,060,000	35,383	17.18	17,377	8.44	18,284	8.88	468	13.05
1970	2,128,000	36,861	17.32	17,020	8.00	20,020	9.41	407	10.92
1971	2,184,620	34,852	15.95	17,783	8.14	20,389	9.33	442	12.52
1972	2,241,400	34,563	15.42	18,021	8.04	20,659	9.22	356	10.20
1973	2,302,400	34,352	14.92	18,095	7.86	21,303	9.25	339	9.77
1974	2,375,700	35,450	14.92	19,177	8.07	21,734	9.15	364	10.16
1975	2,433,200	36,281	14.91	19,151	7.87	21,824	8.97	414	11.28
1976	2,466,610	35,848	14.53	18,788	7.62	21,536	8.73	361	9.97
1977	2,493,800	36,691	14.71	18,021	7.23	21,156	8.48	330	8.91
1978	2,530,100	37,231	14.72	19,057	7.53	21,388	8.45	331	8.81
1979	2,571,200	38,432	14.95	19,204	7.47	22,087	8.59	313	8.08
1980	2,640,100	40,104	15.19	19,371	7.34	23,830	9.03	316	7.82
1981	2,744,470	41,679	15.19	19,857	7.24	24,694	9.00	371	8.82
1982	2,787,700	42,942	15.40	20,704	7.43	23,831	8.55	317	7.33
1983	2,813,800	43,047	15.30	19,895	7.07	23,692	8.42	310	7.15
1984	2,847,700	44,040	15.47	20,781	7.30	23,394	8.22	303	6.83
1985	2,990,000	42,989	14.38	21,131	7.07	22,270	7.45	333	7.69
1986	3,003,621	41,710	13.89	21,010	6.99	21,847	7.27	308	7.33
1987	3,048,651	41,607	13.65	21,618	7.09	23,420	7.68	291	6.95
1988	3,114,761	42,855	13.76	22,358	7.18	24,520	7.87	295	6.84
1989	3,196,725	43,583	13.63	22,786	7.13	25,179	7.88	324	7.38
1990	3,292,111	45,345	13.77	23,416	7.11	25,225	7.66	298	6.53
1991	3,373,787	45,339	13.44	23,820	7.06	23,667	7.01	298	6.53
1992	3,468,802	46,001	13.26	24,463	7.05	23,760	6.85	298	6.44
1993	3,567,772	45,919	12.87	25,604	7.18	23,483	6.58	292	6.32
1994	3,676,075	46,809	12.73	25,832	7.03	23,776	6.47	312	6.62
1995	3,777,390	46,665	12.35	26,226	6.94	23,638	6.26	350	7.44
1996	3,874,317	45,937	11.86	27,394	7.07	22,882	5.91	292	6.32
1997	3,948,583	44,375	11.24	27,272	6.91	21,884	5.54	335	7.49
1998	3,983,113	42,853	10.76	27,813	6.98	21,778	5.47	278	6.45
1999	4,011,375	41,724	10.40	27,898	6.95	21,629	5.39	313	7.45
2000	4,039,230	40,472	10.02	27,357	6.77	22,096	5.47	311	7.63
2001	4,076,264	40,366	9.90	28,251	6.93	20,575	5.05	301	7.40
2002	4,098,178	39,879	9.73	28,717	7.01	21,265	5.19	309	7.69
2003	4,122,396	40,285	9.77	29,159	7.07	21,984	5.33	311	7.66
2004	4,155,170	40,312	9.70	29,730	7.15	22,090	5.32	282	6.95
2005	4,196,788	40,642	9.68	30,102	7.17	22,638	5.39	314	7.67
2006	4,243,580	41,570	9.80	30,547	7.20	23,519	5.54	335	7.99
2007	4,309,632	43,473	10.09	31,120	7.22	22,974	5.33	354	8.08
2008	4,384,047	44,119	10.06	31,906	7.28	22,982	5.24	423	9.50
2009	4,459,947	44,888	10.06	31,244	7.01	22,476	5.04	435	9.60
2010	4,529,674	43,670	9.64	31,151	6.88	22,317	4.93	463	10.49
2011	4,573,321	43,991	9.62	31,776	6.95	21,831	4.77	441	9.93

FIGURE 3  
**CRUDE RATES OF LIVE BIRTHS, DEATHS,  
 MARRIAGES AND STILLBIRTHS**  
 BRITISH COLUMBIA, 1950-2011



Note: Stillbirth rate per 1,000 total births.

**Notes for Table 1**

Rates shown for live births, deaths and marriages are crude rates per 1,000 population. Stillbirth rate is per 1,000 total births (live births plus stillbirths). The definition of a stillbirth was revised in 1963 and 1986 (see Glossary). Population information from BC Stats, Ministry of Labour and Citizens' Services. Above information includes late registrations and amendments. Gender unknown included. Non-residents are excluded from all data except marriages.

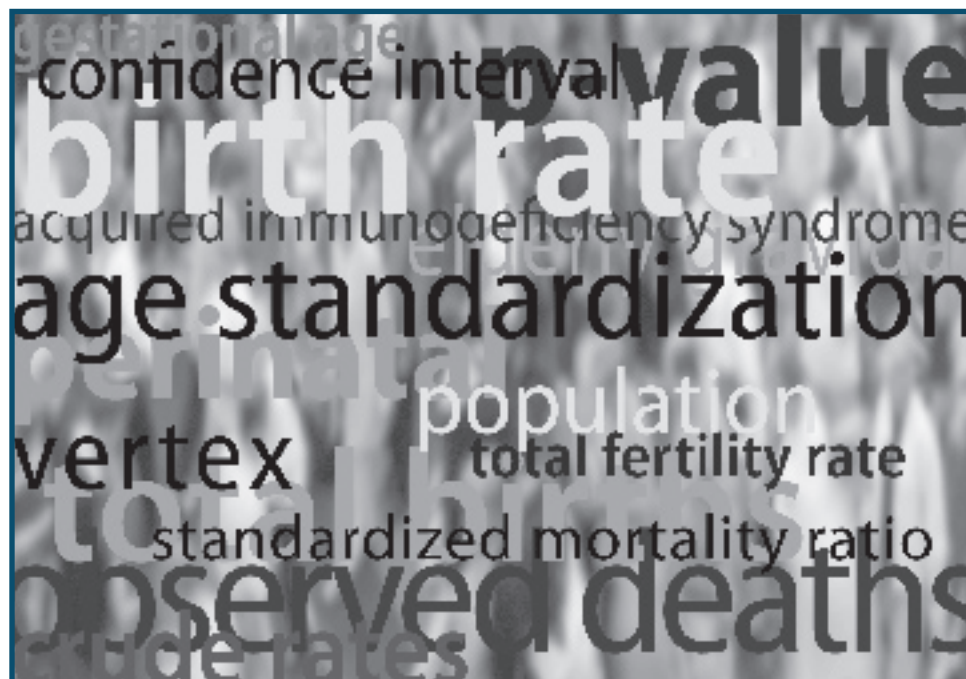


TABLE 2  
**NATURAL POPULATION INCREASES**  
 BRITISH COLUMBIA AND CANADA, 1950–2011

Year	Rate		Year	Rate	
	BC	Canada		BC	Canada
1950	13.7	18.0	1981	8.0	8.0
1951	14.1	18.2	1982	8.0	7.9
1952	14.7	19.2	1983	8.2	7.8
1953	15.6	19.5	1984	8.2	7.8
1954	15.9	20.3	1985	7.3	7.5
1955	15.9	20.0	1986	6.9	7.2
1956	16.3	19.8	1987	6.6	7.0
1957	16.9	20.0	1988	6.6	7.0
1958	16.8	19.6	1989	6.5	7.4
1959	16.4	19.4	1990	6.7	7.7
1960	15.9	19.0	1991	6.4	7.4
1961	14.8	18.4	1992	6.2	7.1
1962	14.0	17.6	1993	5.7	6.4
1963	13.2	16.8	1994	5.7	6.1
1964	11.4	15.9	1995	5.4	5.7
1965	10.0	13.7	1996	4.8	5.2
1966	8.7	11.9	1997	4.3	4.4
1967	8.6	10.8	1998	3.8	4.1
1968	8.4	10.2	1999	3.4	3.8
1969	8.7	10.3	2000	3.2	3.9
1970	9.3	10.1	2001	3.0	3.5
1971	7.8	9.5	2002	2.7	3.4
1972	7.4	8.5	2003	2.7	3.4
1973	7.1	8.1	2004	2.5	3.4
1974	6.8	8.0	2005	2.5	3.4
1975	7.0	8.5	2006	2.6	3.7
1976	6.9	8.4	2007	2.9	3.9
1977	7.5	8.4	2008	2.8	4.1
1978	7.2	8.1	2009	3.1	4.2
1979	7.5	8.4	2010	2.8	4.1
1980	7.9	8.3	2011	2.7	3.9

Note: Rates shown are rates of natural population increase per 1,000 population. Canadian rates from Statistics Canada. Non-residents are excluded.

FIGURE 4  
**TRENDS OF NATURAL POPULATION GROWTH**  
 BRITISH COLUMBIA AND CANADA, 1950–2011

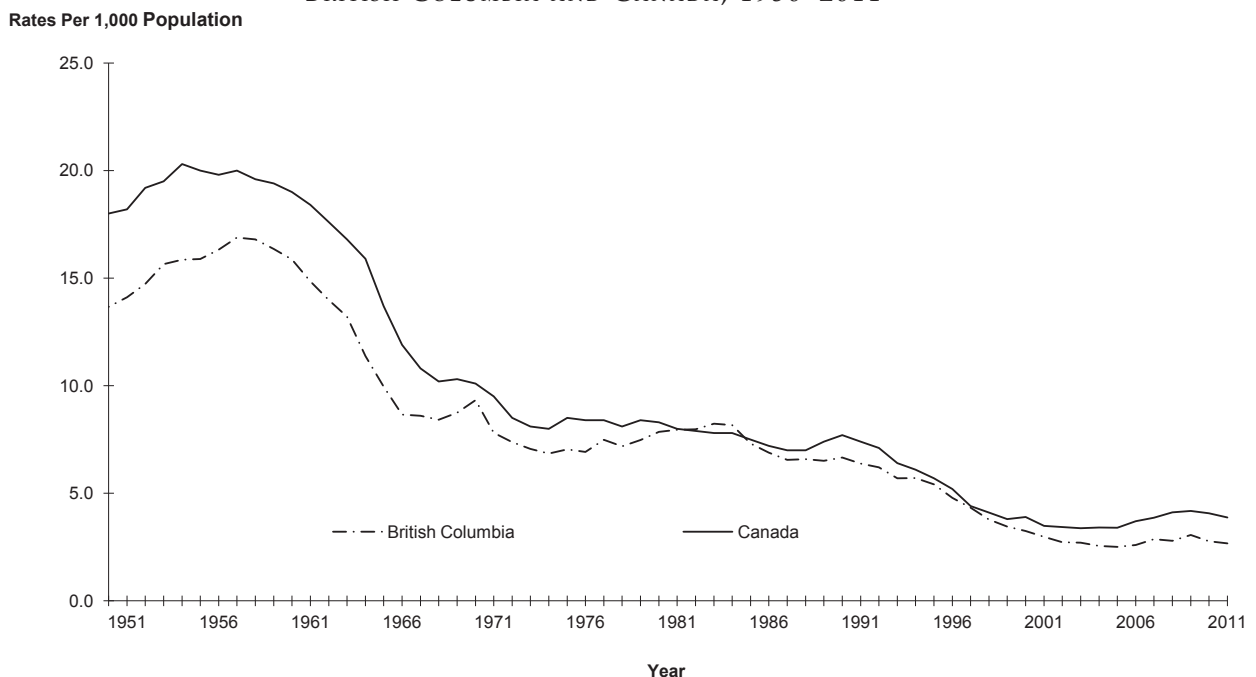


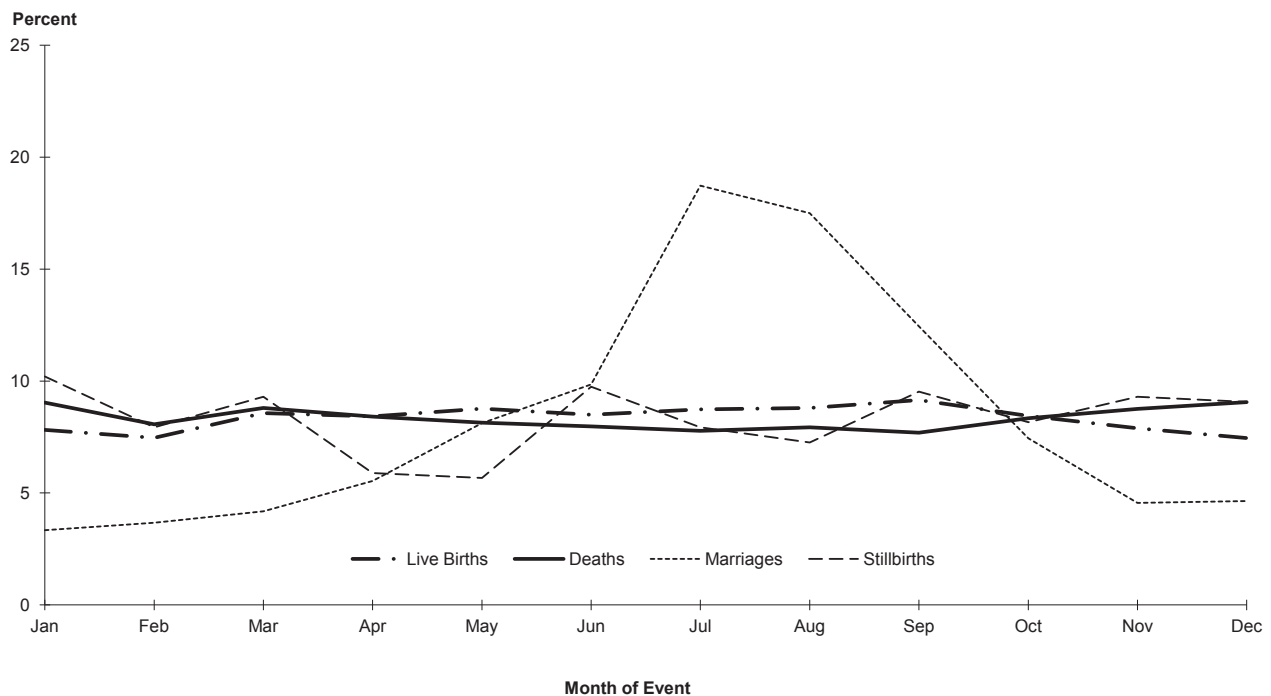
TABLE 3  
LIVE BIRTHS, DEATHS, MARRIAGES AND STILLBIRTHS BY MONTH  
BRITISH COLUMBIA, 2011

Month	Live Births		Deaths		Marriages		Stillbirths	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
January	3,441	7.8	2,871	9.0	729	3.3	45	10.2
February	3,285	7.5	2,565	8.1	801	3.7	35	7.9
March	3,769	8.6	2,797	8.8	912	4.2	41	9.3
April	3,705	8.4	2,674	8.4	1,209	5.5	26	5.9
May	3,856	8.8	2,587	8.1	1,772	8.1	25	5.7
June	3,737	8.5	2,535	8.0	2,150	9.8	43	9.8
July	3,843	8.7	2,471	7.8	4,088	18.7	35	7.9
August	3,870	8.8	2,521	7.9	3,819	17.5	32	7.3
September	4,024	9.1	2,445	7.7	2,717	12.4	42	9.5
October	3,713	8.4	2,650	8.3	1,626	7.4	36	8.2
November	3,471	7.9	2,782	8.8	994	4.6	41	9.3
December	3,277	7.4	2,878	9.1	1,014	4.6	40	9.1
Residents*	43,991	100.0	31,776	100.0	21,831	100.0	441	100.0
Non-residents	212		251		*		25	
<b>Total</b>	<b>44,203</b>		<b>32,027</b>		<b>21,831</b>		<b>466</b>	

Note: Total percentage may not add up to 100 due to rounding.

\*Marriage counts by month are based on event place and include non-residents.

FIGURE 5  
LIVE BIRTHS, DEATHS, MARRIAGES AND STILLBIRTHS BY MONTH  
BRITISH COLUMBIA, 2011



## Fertility and Live Birth Trends

The Total Fertility Rate (TFR) in Table 4 is the number of births 1,000 women can expect during their child bearing years, that is, from 15 to 44 years of age. It is described more fully in the Glossary and an example of the calculation method is shown in the Methodology section.

The fertility rate in BC today is about half the 1950s rate. Shortly after World War II, fertility began to increase, commonly referred to as the post war baby boom. As shown in Table 4, fertility rates increased from 1950 to 1960 after which there was a sharp decline until the late 1970s. This declining trend continued more slowly, with some fluctuations, until 2002. Since then, the fertility rates have increased until 2007 and levelled off in recent years at approximately 100 more births per 1,000 women compared with the 2002 rates. Figure 6 shows the fertility rates for the last two decades. Fertility by LHA and among teenagers is analysed in Table 10 and Figure 29 respectively.

In addition to trends in Total Fertility Rates, this section discusses trends in maternal age, multiple births, low birth weight, and cesarean section deliveries.

Figure 7 shows annual percentages of live births to women in three age groups for the years 1986 to 2011. The oldest group (aged 35 years or more) is gradually increasing its percentage compared to the 2 younger groups (less than 20 years and 20 to 34 years old). The average age at which women are bearing children is increasing, but still about three quarters of live births are to women in the 20 to 34 years age group. Maternal age is related to other important birth characteristics and is a component of several tables in the birth related statistics section of this report.

As illustrated by Figure 8, the percentage of births that are multiple births has increased substantially between 1986 and 2011. Multiple birth infants have a higher risk of being preterm, having low birth weight, or suffering perinatal death or illness than singletons. Multiple birth infants accounted for 1.9 percent of all live births in 1986 and 3.1 percent in 2011. This was a statistically significant increase at the 95 percent level.

Figures 9 and 10 both illustrate the occurrence of Low Birth Weight (LBW) live births (those births with a birth weight of less than 2,500 grams) over the period 1986 to 2011. Figure 9 shows both the counts of LBW live births and the rates per 1,000 live births for all mothers. Figure 10 shows the rate per 1,000 live births for mothers 35 years and older. Low Birth Weight rates increased gradually from 46.9 in 1986 to 56.1 per 1,000 live births in 2011. The rate in older mothers has increased more sharply from 44.9 in 1986 to 70.8 per 1,000 live births in 2011. The trend in each of these graphs is statistically significant at the 95 percent level.

Three relevant indicators are presented in Figures 11, 12, and 13. The upward trend in the cesarean section rates since 1986 (Figure 11) is statistically significant at the 95 percent level. The rates appear to have levelled somewhat in the last several years. Cesarean sections by Health Service Delivery Area (HSDA) varied considerably in 2011 (Figure 12) from a low of 23.9 percent of live births to residents of HSDA 51 - Northwest to a high of 34.2 percent of live births to residents of HSDA 22 - Fraser North.

An important consideration regarding cesarean sections is the age of the mother. There were clear differences between age groups (Figure 13), with cesarean rates highest for mothers aged 35 or older and lowest for teen mothers. All age groups showed upward trends that were statistically significant at the 95 percent level. The difference between rates also appears to be increasing over the last two decades.

Cesarean deliveries are shown in relation to other modes of delivery in Table 11 and by LHA in Table 12 and Figure 30 in the Birth-related Statistics section of this report.

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<sup>1</sup>[http://www.multiplebirthscanada.org/english/documents/low\\_birth\\_bro\\_final2005.pdf](http://www.multiplebirthscanada.org/english/documents/low_birth_bro_final2005.pdf).



**TABLE 4**  
**TOTAL FERTILITY RATES**  
BRITISH COLUMBIA, 1950–2011

Year	Total Fertility		Year	Total Fertility	
	Rate	Live Births		Rate	Live Births
1950	3,074	27,116	1981	1,718	41,679
1951	3,201	28,077	1982	1,749	42,942
1952	3,327	29,827	1983	1,751	43,047
1953	3,542	31,746	1984	1,781	44,040
1954	3,656	32,946	1985	1,642	42,989
1955	3,748	34,138	1986	1,603	41,710
1956	3,875	36,241	1987	1,606	41,607
1957	3,921	38,744	1988	1,635	42,855
1958	3,900	39,577	1989	1,637	43,583
1959	3,958	39,971	1990	1,670	45,345
1960	3,949	40,116	1991	1,660	45,339
1961	3,785	38,591	1992	1,655	46,001
1962	3,709	38,128	1993	1,632	45,919
1963	3,564	37,478	1994	1,639	46,809
1964	3,284	35,897	1995	1,609	46,665
1965	2,710	33,669	1996	1,544	45,937
1966	2,442	32,502	1997	1,479	44,375
1967	2,307	32,899	1998	1,445	42,853
1968	2,228	33,687	1999	1,418	41,724
1969	2,223	35,383	2000	1,386	40,472
1970	2,185	36,861	2001	1,385	40,366
1971	1,994	34,852	2002	1,379	39,879
1972	1,890	34,563	2003	1,408	40,285
1973	1,751	34,352	2004	1,415	40,312
1974	1,735	35,450	2005	1,428	40,642
1975	1,682	36,281	2006	1,455	41,570
1976	1,618	35,848	2007	1,499	43,473
1977	1,636	36,691	2008	1,491	44,119
1978	1,620	37,231	2009	1,485	44,888
1979	1,721	38,432	2010	1,418	43,670
1980	1,716	40,104	2011	1,418	43,991

Note: Total Fertility Rate – Sum of age-specific fertility rates multiplied by the number of years in each age group (see Glossary for definition). Rates per 1,000 women age 15 to 44. Non-residents are excluded.

**FIGURE 6**  
**TOTAL FERTILITY RATES AND NUMBER OF LIVE BIRTHS**  
BRITISH COLUMBIA, 1986–2011

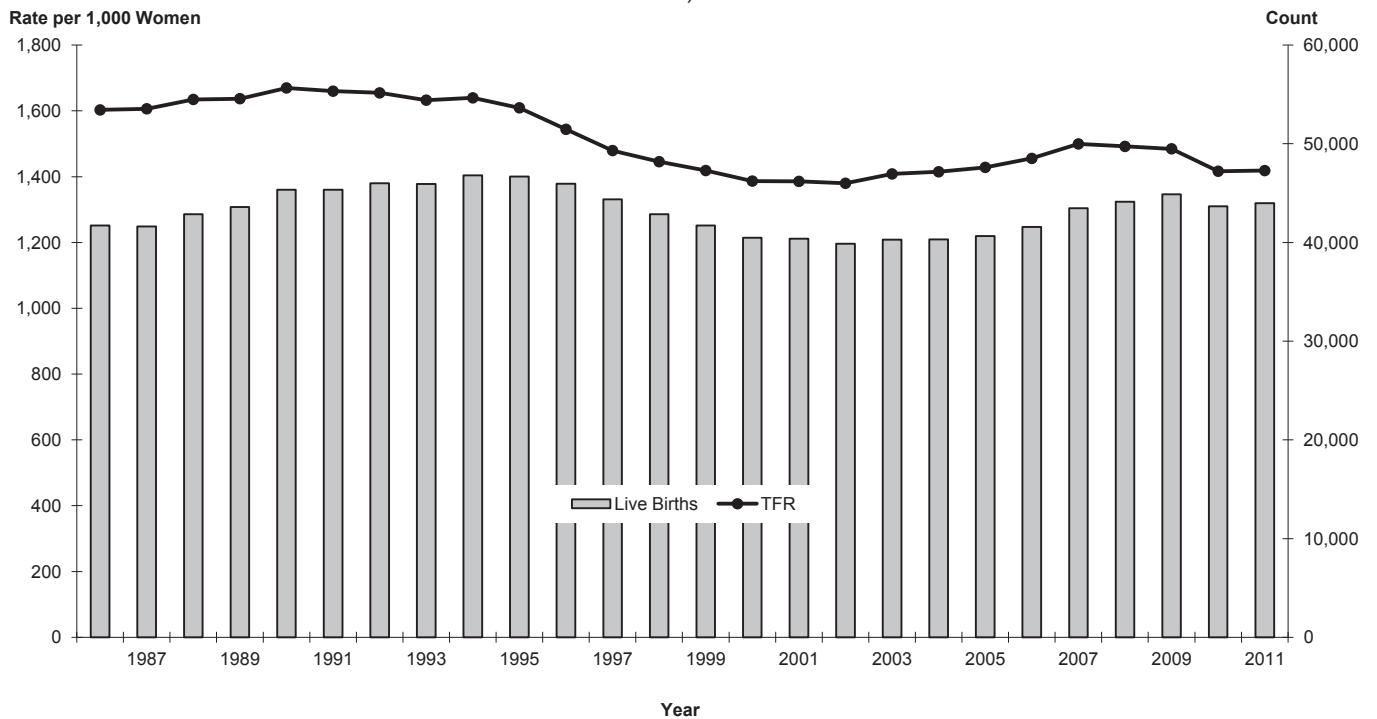


FIGURE 7  
**LIVE BIRTHS BY AGE OF MOTHER**  
 BRITISH COLUMBIA, 1986-2011

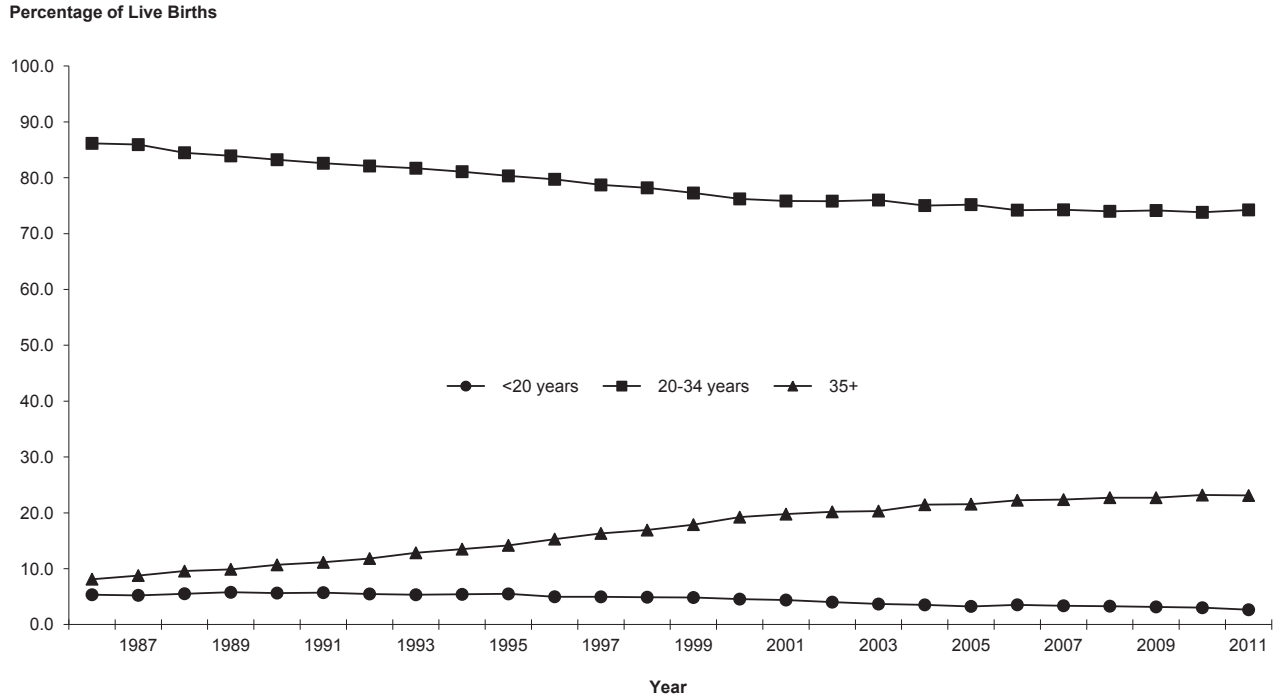
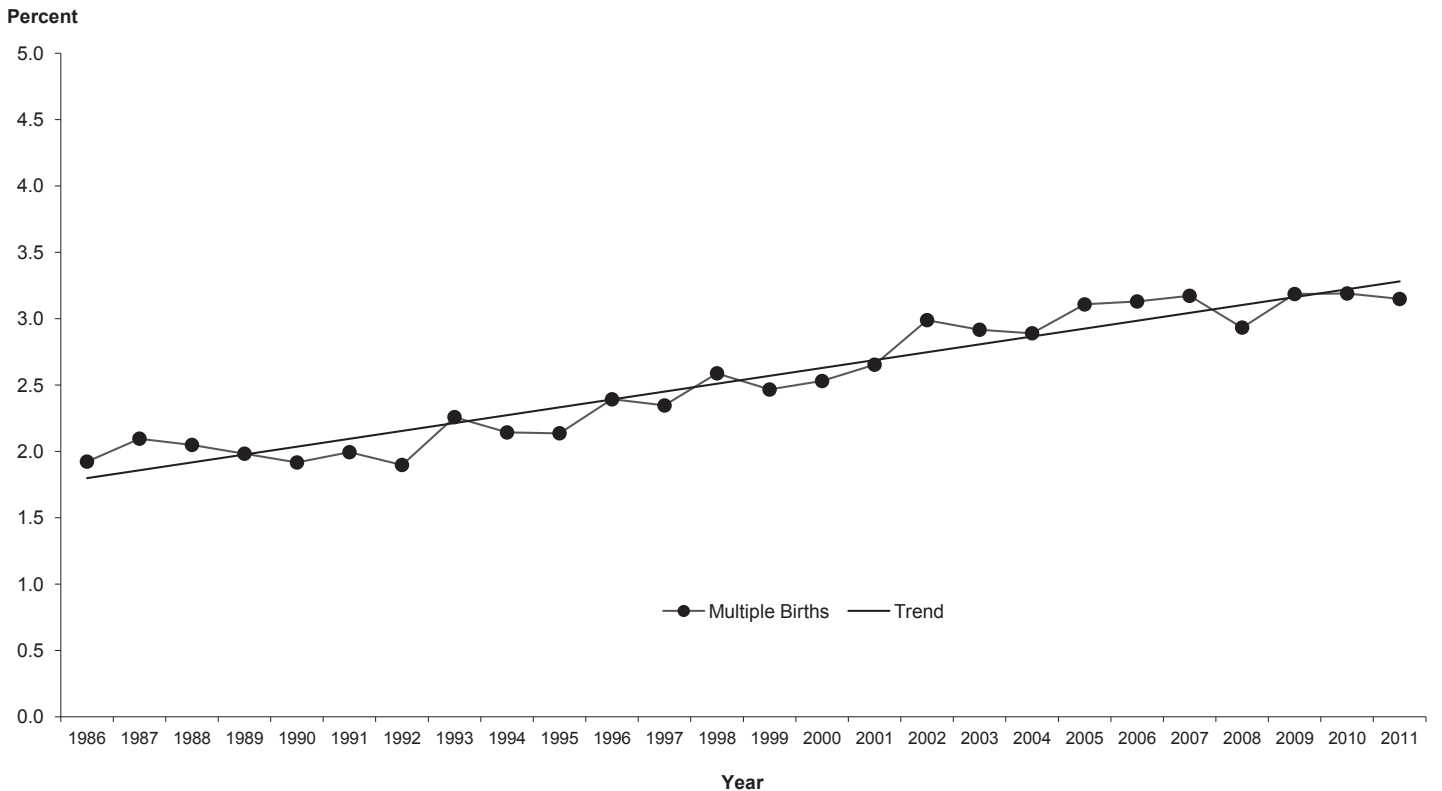
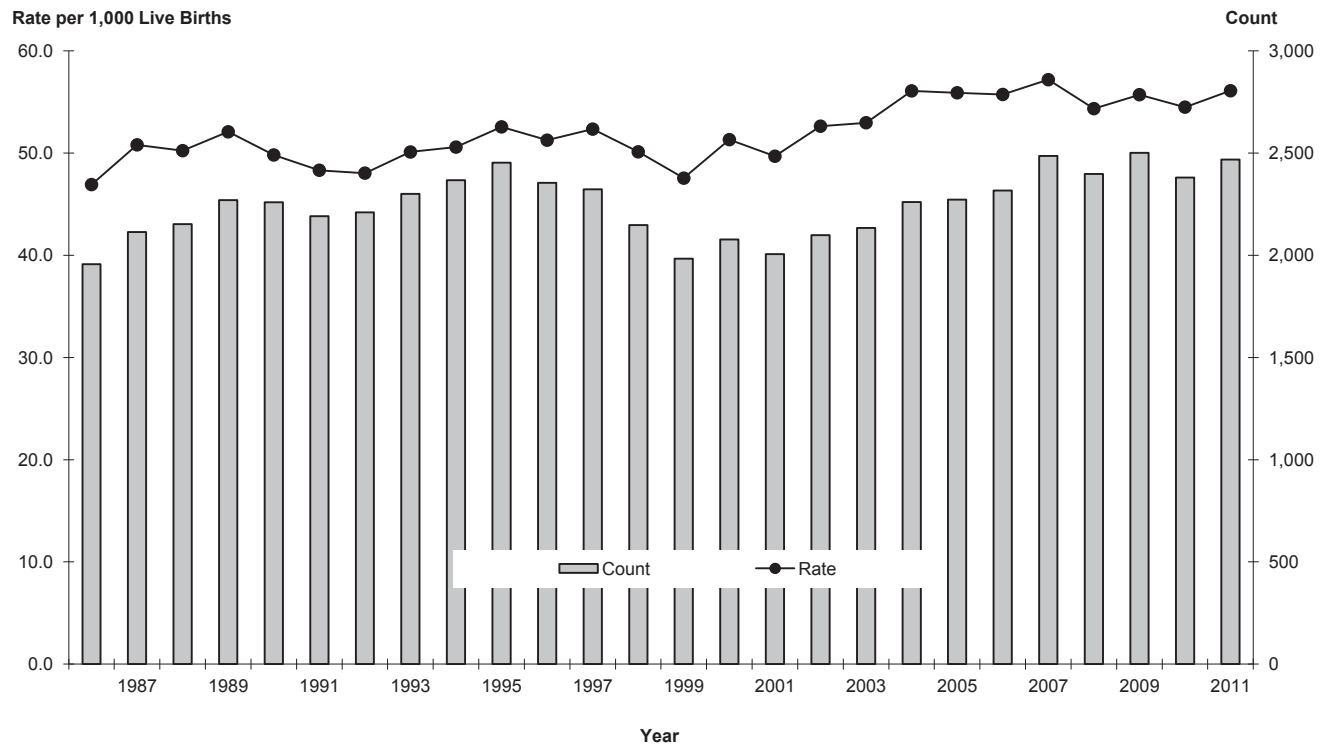


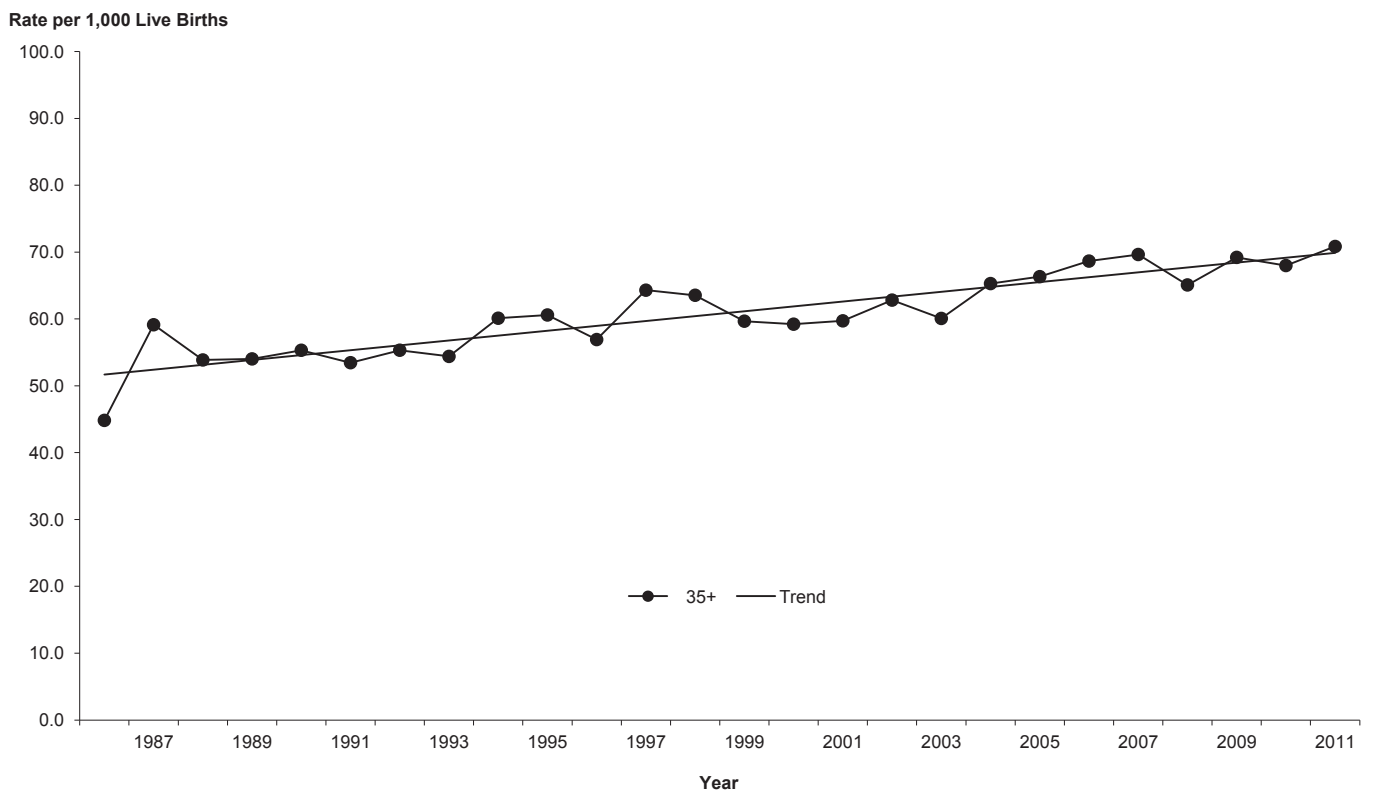
FIGURE 8  
**MULTIPLE BIRTHS AS A PERCENTAGE OF LIVE BIRTHS**  
 BRITISH COLUMBIA, 1986-2011



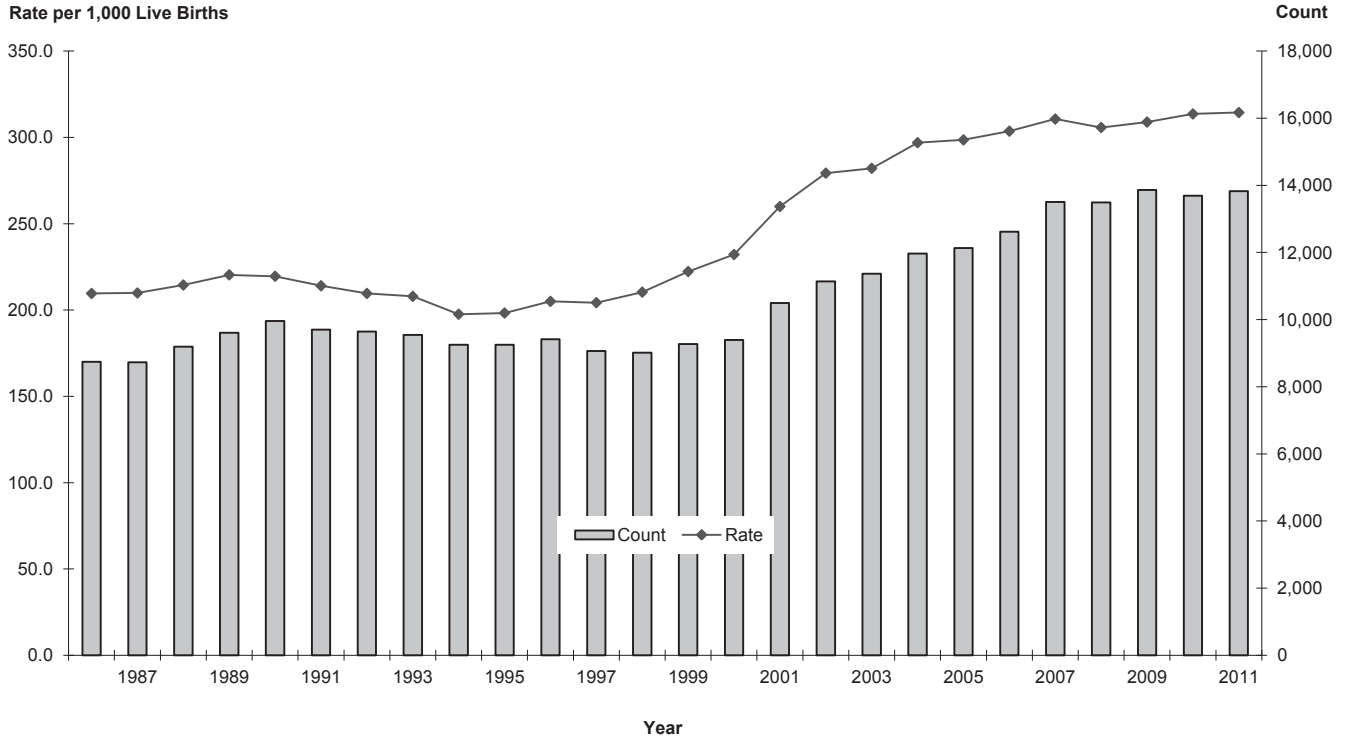
**FIGURE 9**  
**LOW BIRTH WEIGHT LIVE BIRTHS**  
 BRITISH COLUMBIA, 1986–2011



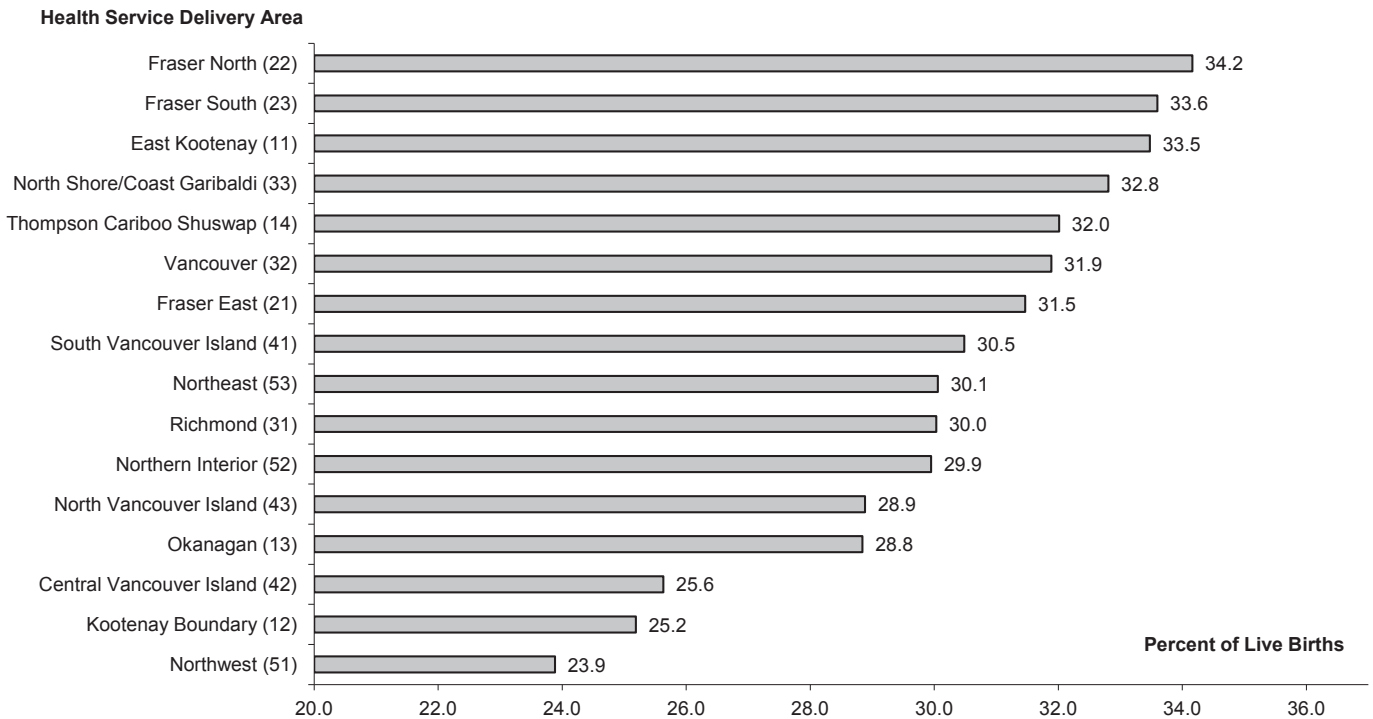
**FIGURE 10**  
**LOW BIRTH WEIGHT LIVE BIRTHS FOR MOTHERS AGED 35+**  
 BRITISH COLUMBIA, 1986–2011



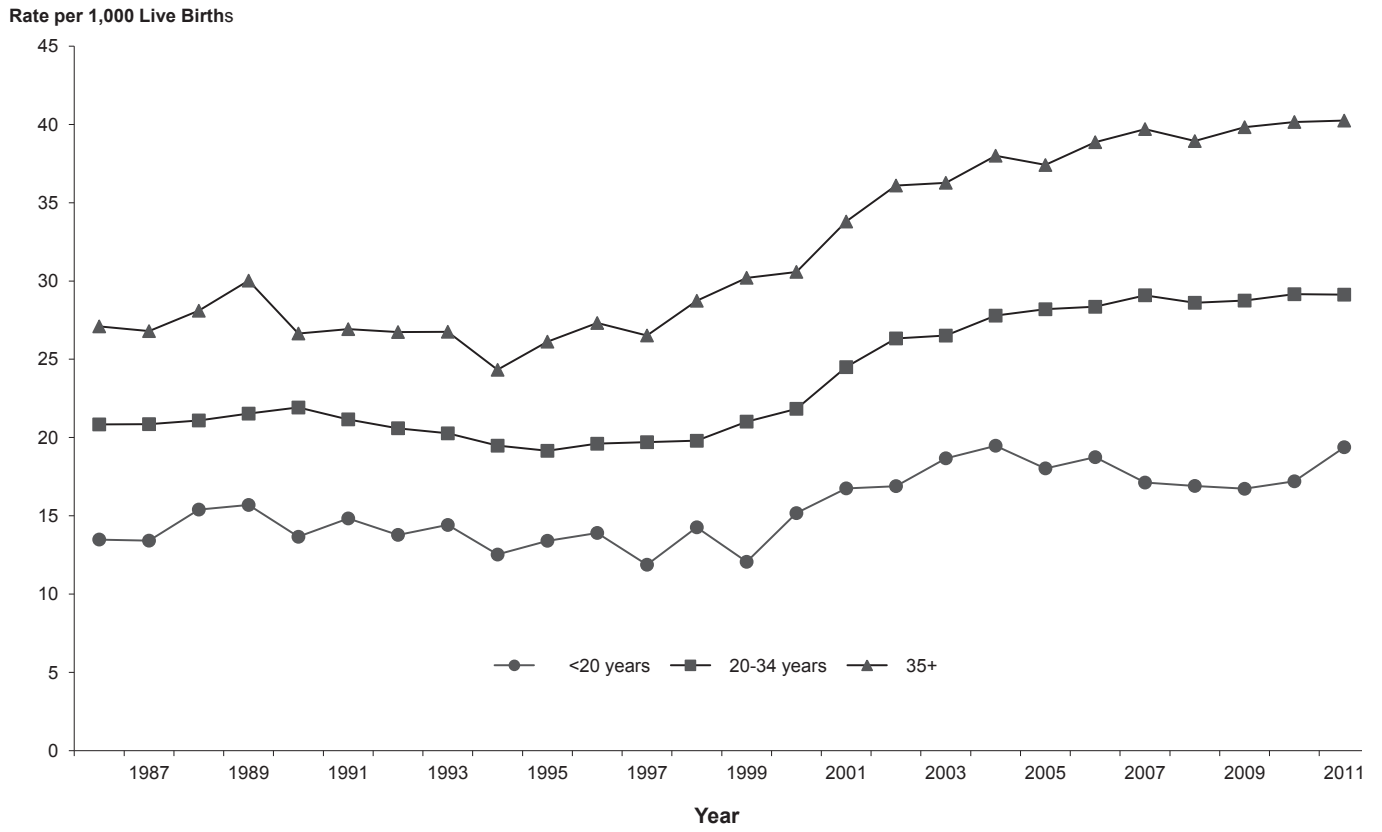
**FIGURE 11**  
**CESAREAN SECTIONS**  
 BRITISH COLUMBIA, 1986–2011



**FIGURE 12**  
**CESAREAN SECTIONS BY HEALTH SERVICE DELIVERY AREA**  
 BRITISH COLUMBIA, 2011



**FIGURE 13**  
**CESAREAN SECTIONS BY AGE OF MOTHER**  
 BRITISH COLUMBIA, 1986-2011



### Infant Mortality Trends

Table 5 shows the number of infants in BC who died before their first birthday in the years 1965 to 2011. Also shown are the rates at which these deaths occurred per 1,000 live births and similar rates for Canada. The infant death rate in Canada and BC decreased to around one fifth of the 1965 level by 2011. This table shows clearly that over half of infant deaths occur in the first six days of life. The Glossary defines the various divisions of infant deaths according to the infant’s age.

For most of the time period covered by Table 5, there are comparable data at the Canadian level. Until 1991, Canada and BC’s infant mortality rates were similar. Since then, BC’s rate of infant mortality has been lower than the overall Canadian rate.

Figure 14 illustrates the downward trends in both the number and the rate of infant deaths over the past 26 years. Both trends are statistically significant at the 95 percent level.

Figures 15 and 16 show that historically infant mortality rates have been relatively high among teenage mothers, although only a small proportion of total infant deaths in 2011 were babies born to these young women. A downward trend in infant mortality rates in all age groups is seen in Figure 15. Each of these trends is statistically significant at the 95 percent level.

More information about infant mortality can be seen in the infant mortality section of death related statistics in this report.

FIGURE 14  
**INFANT MORTALITY**  
 BRITISH COLUMBIA, 1986–2011

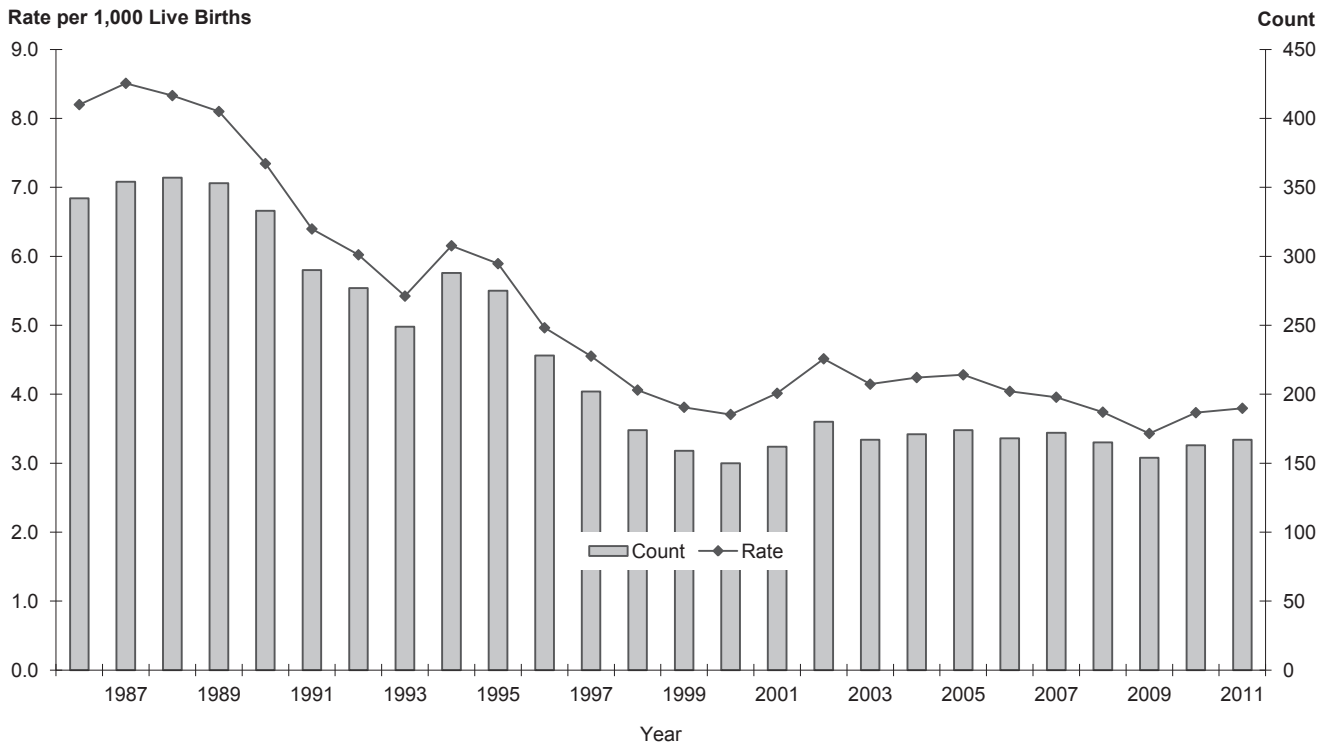


TABLE 5  
**INFANT MORTALITY**  
 BRITISH COLUMBIA AND CANADA, 1965-2011

Year	British Columbia Age at Death (in Days)								Canada	
	0-6 Days		0-27 Days		28-364 Days		N.S.	Total		Rate
	Number	Rate	Number	Rate	Number	Rate		Number	Rate	
1965	415	12.33	453	13.45	227	6.74	3	683	20.29	24.0
1966	435	13.38	494	15.20	263	8.09	4	761	23.41	23.1
1967	429	13.04	470	14.29	218	6.63	1	689	20.94	22.0
1968	375	11.13	438	13.00	214	6.35	4	656	19.47	21.0
1969	329	9.30	374	10.57	199	5.62	-	573	16.19	19.0
1970	369	10.01	416	11.29	193	5.24	2	611	16.58	19.0
1971	409	11.74	450	12.91	185	5.31	-	635	18.22	17.5
1972	322	9.32	373	10.79	195	5.64	1	569	16.46	17.0
1973	317	9.23	363	10.57	185	5.39	3	551	16.04	16.0
1974	310	8.74	348	9.82	196	5.53	2	546	15.40	15.0
1975	278	7.66	321	8.85	169	4.66	1	491	13.53	14.3
1976	292	8.15	324	9.04	152	4.24	2	478	13.33	13.5
1977	246	6.70	276	7.52	200	5.45	-	476	12.97	12.4
1978	245	6.58	286	7.68	178	4.78	-	464	12.46	12.0
1979	196	5.10	239	6.22	167	4.35	-	406	10.56	10.9
1980	188	4.69	235	5.86	186	4.64	-	421	10.50	10.4
1981	232	5.57	259	6.21	140	3.36	3	402	9.65	9.6
1982	217	5.05	251	5.85	150	3.49	-	401	9.34	9.1
1983	193	4.48	212	4.92	145	3.37	2	359	8.34	8.5
1984	184	4.18	205	4.65	150	3.41	1	356	8.08	8.1
1985	180	4.19	198	4.61	133	3.09	-	331	7.70	8.0
1986	164	3.93	195	4.68	147	3.52	-	342	8.20	7.9
1987	158	3.80	194	4.66	160	3.85	-	354	8.51	7.3
1988	191	4.46	220	5.13	137	3.20	-	357	8.33	7.2
1989	186	4.27	215	4.93	138	3.17	-	353	8.10	7.3
1990	183	4.04	221	4.87	112	2.47	-	333	7.34	6.8
1991	140	3.09	164	3.62	126	2.78	-	290	6.40	6.4
1992	153	3.33	173	3.76	104	2.26	-	277	6.02	6.1
1993	121	2.64	139	3.03	110	2.40	-	249	5.42	6.3
1994	175	3.74	198	4.23	90	1.92	-	288	6.15	6.3
1995	158	3.39	181	3.88	94	2.01	-	275	5.89	6.1
1996	133	2.90	160	3.48	68	1.48	-	228	4.96	5.6
1997	125	2.82	146	3.29	56	1.26	-	202	4.55	5.5
1998	94	2.19	114	2.66	60	1.40	-	174	4.06	5.3
1999	87	2.09	108	2.59	51	1.22	-	159	3.81	5.3
2000	84	2.08	105	2.59	45	1.11	-	150	3.71	5.3
2001	103	2.55	126	3.12	36	0.89	-	162	4.01	5.2
2002	98	2.46	126	3.16	54	1.35	-	180	4.51	5.4
2003	104	2.58	120	2.98	47	1.17	-	167	4.15	5.3
2004	108	2.68	122	3.03	49	1.22	-	171	4.24	5.3
2005	104	2.56	124	3.05	50	1.23	-	174	4.28	5.4
2006	83	2.00	118	2.84	50	1.20	-	168	4.04	5.0
2007	98	2.25	114	2.62	58	1.33	-	172	3.96	5.1
2008	87	1.97	107	2.43	58	1.31	-	165	3.74	5.1
2009	91	2.03	106	2.36	48	1.07	-	154	3.43	4.9
2010	110	2.52	129	2.95	34	0.78	-	163	3.73	*
2011	98	2.23	106	2.41	61	1.39	-	167	3.80	*

Note: Rates per 1,000 live births in the specified year.

N.S. - Not stated.

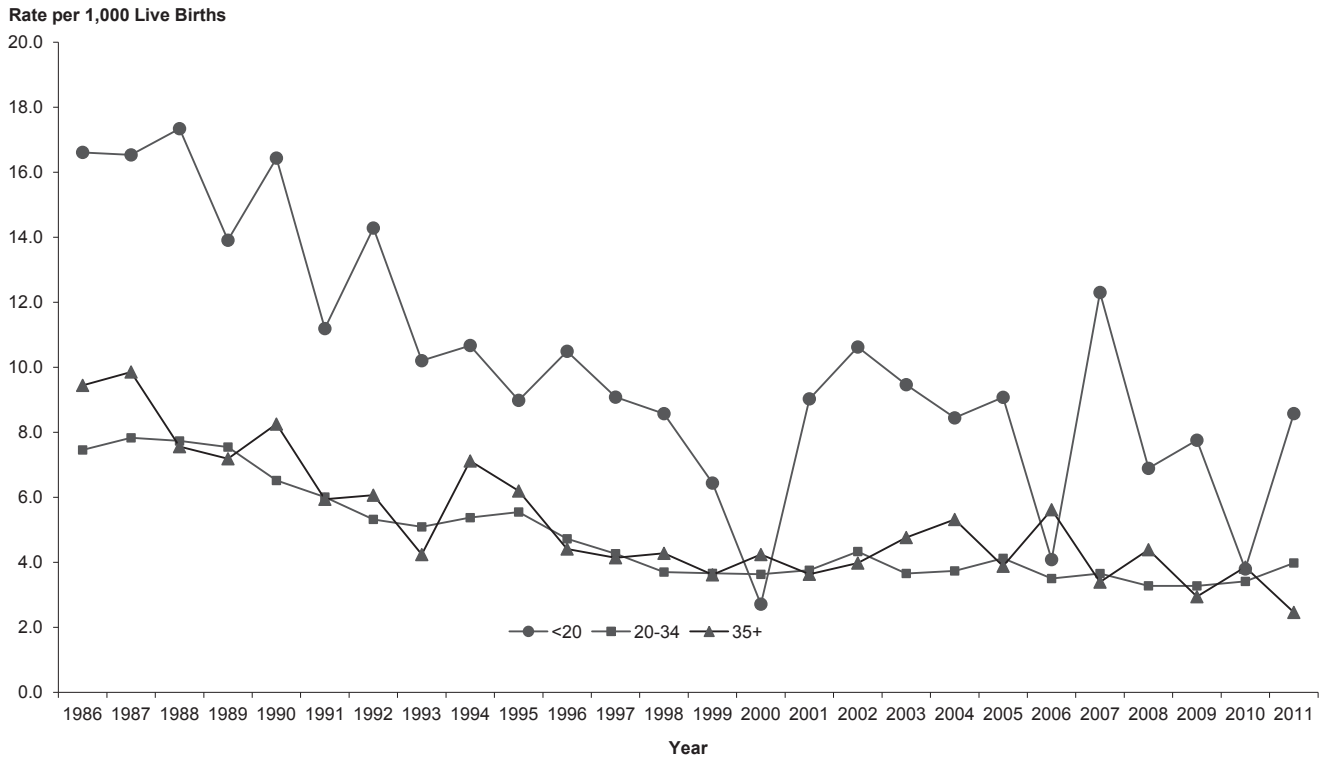
Above information includes late registrations and amendments.

Canadian rates from Statistics Canada.

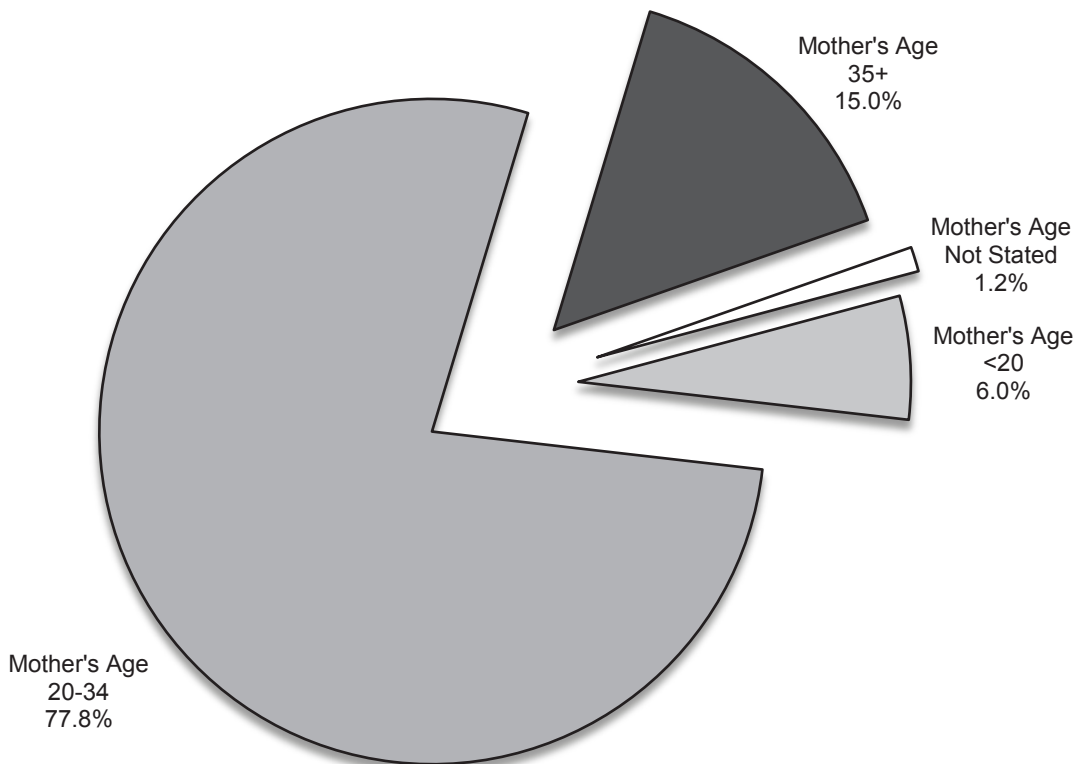
\*Rates were not available.

Non-residents are excluded.

**FIGURE 15**  
**INFANT MORTALITY BY AGE OF MOTHER**  
 BRITISH COLUMBIA, 1986-2011



**FIGURE 16**  
**PERCENTAGE OF INFANT MORTALITY BY AGE OF MOTHER**  
 BRITISH COLUMBIA, 2011





## Death Trends

This section begins with an examination of counts and rates for all causes of death since 1986. This is followed by information on the average age at death, and cause of death trends for malignant neoplasms (cancer), endocrine, nutritional and metabolic diseases, nervous system diseases, cardiovascular diseases, cerebrovascular diseases, and motor vehicle accidents.

All causes are based on the Underlying Cause of Death (UCOD), which is explained in the Glossary. While other causes may have contributed to the death, the underlying cause is defined as the condition or injury that initiated the chain of events leading directly to death.

While Figure 17 shows an increase in the absolute number of deaths from 1986 to 2011, the provincial Age-Standardized Mortality Rate (ASMR) has been on a downward trend since 1986. The trend is not only statistically significant at the 95 percent level, but reached a historic low in 2011.

The rates are quoted per 10,000 population and have been age-standardized to the 1991 Canada census population distribution. See the Glossary for an explanation of ASMR and the Methodology section for an example of the calculation method.

Figure 18 shows that the average age at death among British Columbians has reached an all time high in 2011 at 76.4 years. The trend indicates an increase over the 1986 to 2011 time period, and this trend is statistically significant at the 95 percent level. It should be noted that average age at death is the arithmetic average of the age in years at which people died and is not equivalent to life expectancy which is explained in the Glossary.

Figures 19 through 27 refer to selected major causes of death categories. Figures 19, 20, and 21 illustrate trends in cancer death and rates. The death rates are expressed as ASMRs.

Figure 19 shows that in the years 1986 to 2011, while the number of deaths due to all types of cancer (malignant neoplasms, ICD-10 codes C00-C97) steadily climbed, the ASMR fell. While cancer death incidence climbed, the size of the British Columbian population climbed at an even faster pace.

Figure 20 is a similar graph showing incidence and death rates due to lung cancer (malignant neoplasms of trachea and lung, ICD-10 codes C33-C34). The lung cancer death rate in BC has been falling while the number of lung cancer deaths has increased since 1986.

Figure 21 provides further detail by gender for the lung cancer information shown in Figure 20. The falling trend in lung cancer death rate is being driven by the decline in the rate for men, as there is a gradually increasing trend in the rate of lung cancer deaths among women. The declining trend in lung cancer death rate for men and the increasing trend in the rate for women are both statistically significant at the 95 percent level.

Deaths due to endocrine, nutritional and metabolic diseases in Figure 22 (ICD-10 codes E00-E89) include diseases such as diabetes and cystic fibrosis. A comprehensive list of diseases in this category is provided in Appendix 2 - Detailed Cause of Death by Age and Gender. The death rates and counts for these conditions increased during the period from 2000 to 2005 with a decline between 2006 and 2011.

Diabetes mellitus mortality in 2011, as shown in Figure 23, is 4.3 times that of 1986 in absolute numbers, but the ASMR is only 1.9 times greater over the period. Still, there was a pronounced increase in both count and rate over the previous year. This does not reflect an actual increase in deaths from diabetes mellitus, but rather a change in medical coding practice since January 2011 which now recognizes the association between heart disease and diabetes<sup>2</sup>. Some deaths from diabetes in 2011 would previously have been coded to some form of cardiac or cardiovascular disease.

Deaths due to diseases of the nervous system are shown in Figure 24 and include causes such as Alzheimer's disease, Parkinson's disease, and multiple sclerosis. A comprehensive list of diseases in this category appears in Appendix 2 under ICD-10 codes G00-G99. The number and rate of these deaths increased between 1986 and 2001. From 2001 to 2005, the number levelled off and the rate declined followed by a slight increase for both the number and rate through to 2008. In 2011, while the number of deaths remains fairly consistent, the rate is similar to the 1999 level. The increasing overall trend from 1986 to 2011 is statistically significant at the 95 percent level.

Figure 25 shows numbers of cardiovascular disease deaths (ICD-10 codes I00-I51) and death rates per 10,000 standard population from 1986 to 2011. While the incidence rose from 1986 to 1996 and then generally declined, the death rate has been steadily falling since 1986. This declining trend is statistically significant at the 95 percent level. Cardiovascular disease is a common complication of diabetes. Since January 2011, deaths where there is a documented association between diabetes and cardiovascular disease are now attributed to diabetes rather than cardiovascular disease. This accounts for some of the apparently steeper decline in cardiovascular mortality in 2011. See Tables 22 and 23 to compare cardiovascular disease deaths in the context of other causes of death.

Cerebrovascular diseases shown in Figure 26 include ICD-10 codes I60-I69. While the number of people dying from these diseases increased, the standardized rate gradually decreased between 1986 and 2011. This decreasing ASMR trend is statistically significant at the 95 percent level.

In Figure 27, the incidence and death rates for motor vehicle accidents over the period 1986 to 2011 declined. The downward ASMR trend is statistically significant at the 95 percent level. Although motor vehicle deaths have accounted for about 1.3 percent of all deaths (on average since 2000), a substantial share of deaths due to motor vehicle accidents are among young British Columbians, and as such, they remain a concern. (See Tables 34 and 35).

Coroners' investigations into externally caused deaths can be lengthy, resulting in delays in determining the final causes. For this reason, recent year external cause counts and rates may be underestimated and therefore should be interpreted with caution.

<sup>2</sup> The ICD10 automated coding system allows for linkage between diabetic complications such as renal disease, peripheral vascular disease, diabetic neuropathy, diabetic retinopathy, etc. These linked conditions are combined and diabetes becomes the cause of death. Although cardiovascular disease is also a very common diabetic complication, the system did not previously facilitate linkage between them. Prior to 2011, many such diabetes deaths were instead coded to some form of cardiac or cardiovascular disease.

**FIGURE 17**  
**DEATHS AND DEATH RATES, ALL CAUSES OF DEATH**  
BRITISH COLUMBIA, 1986–2011

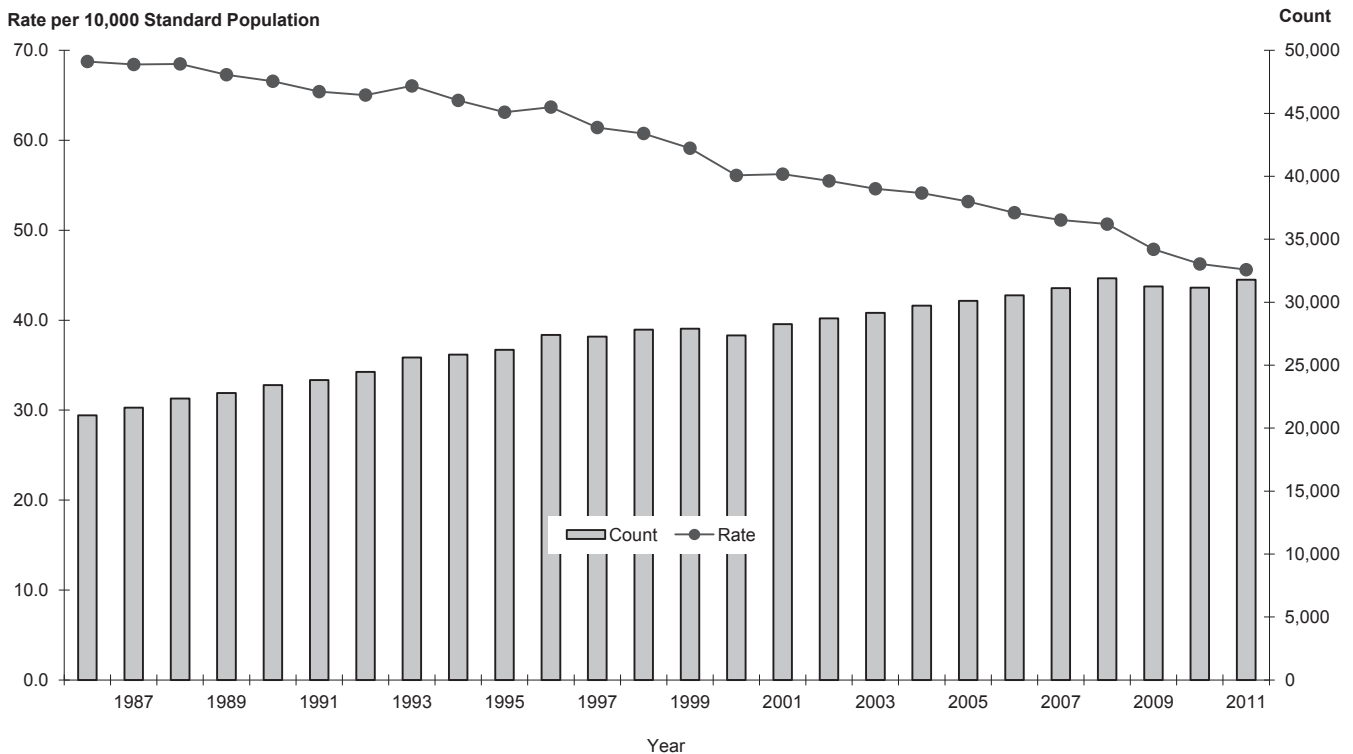


FIGURE 18  
**AVERAGE AGE AT DEATH**  
 BRITISH COLUMBIA, 1986-2011

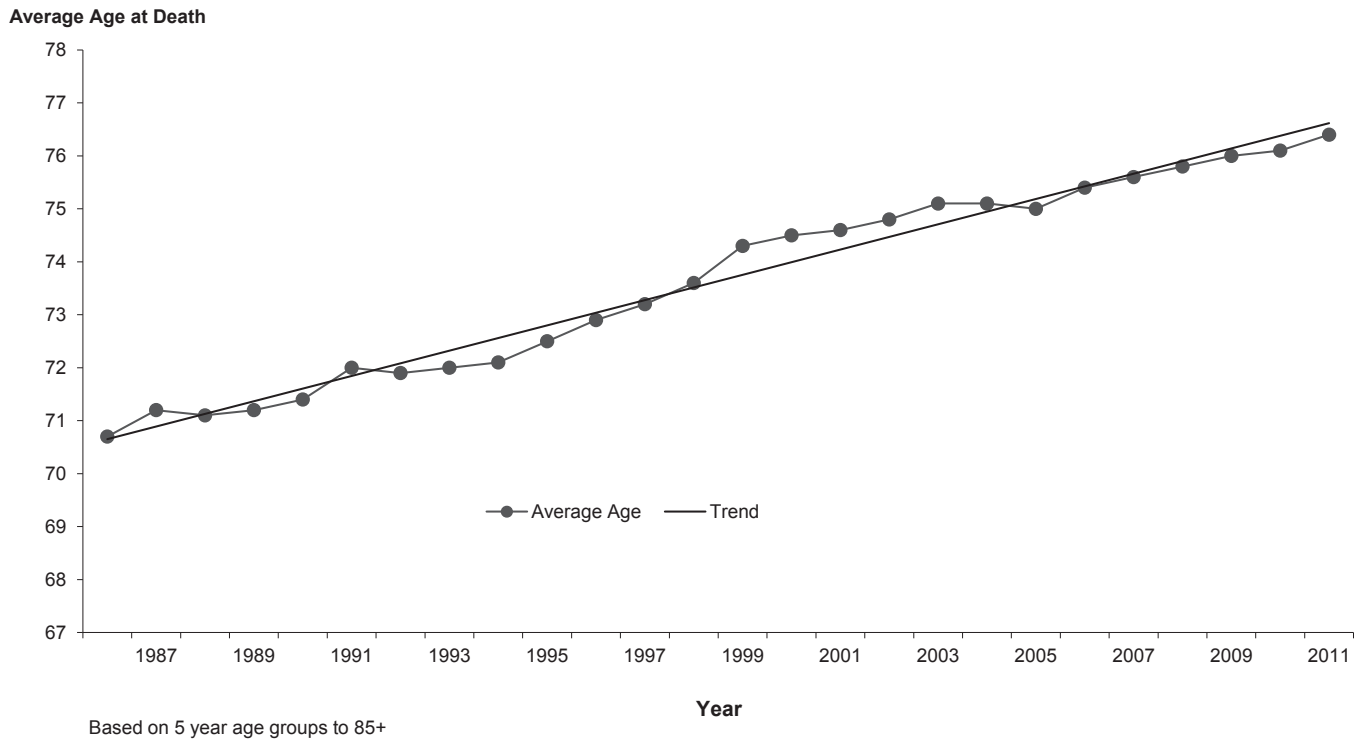


FIGURE 19  
**DEATHS AND DEATH RATES, MALIGNANT NEOPLASMS (CANCER)**  
 BRITISH COLUMBIA, 1986-2011

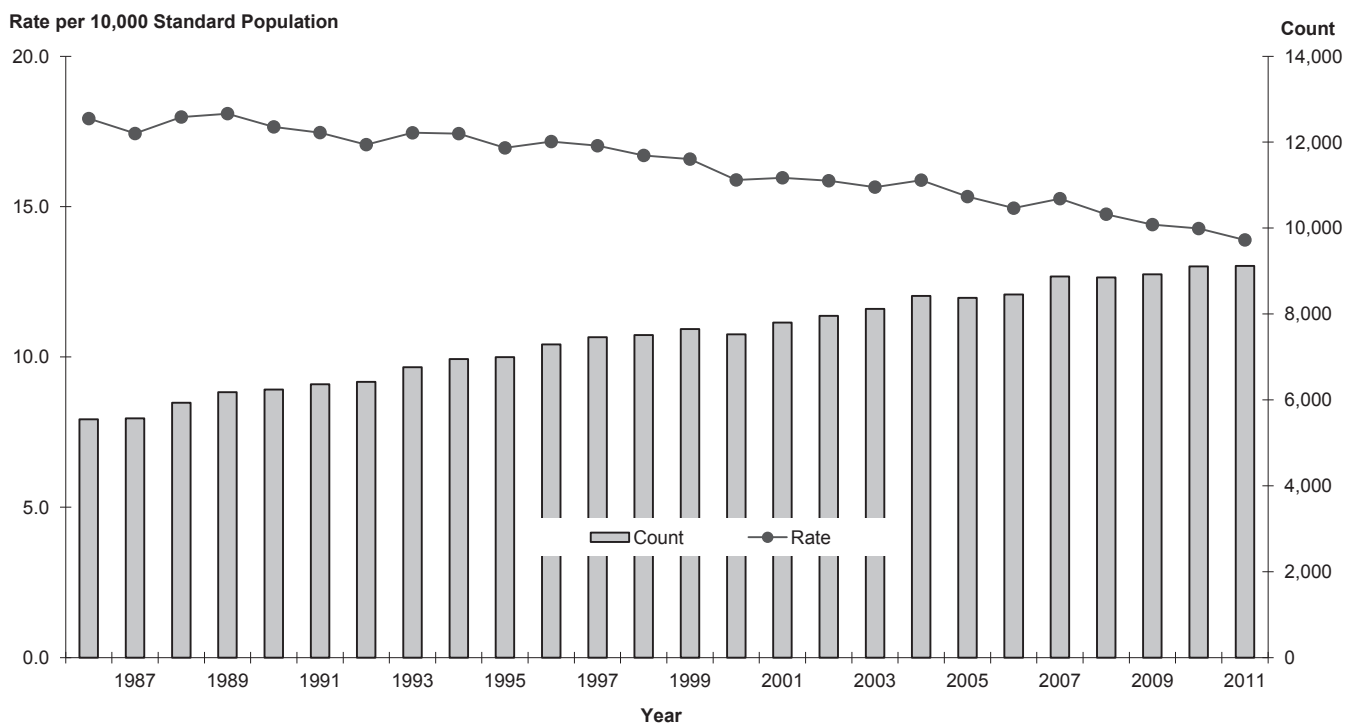


FIGURE 20  
**DEATHS AND DEATH RATES, MALIGNANT NEOPLASM OF LUNG**  
 BRITISH COLUMBIA, 1986-2011

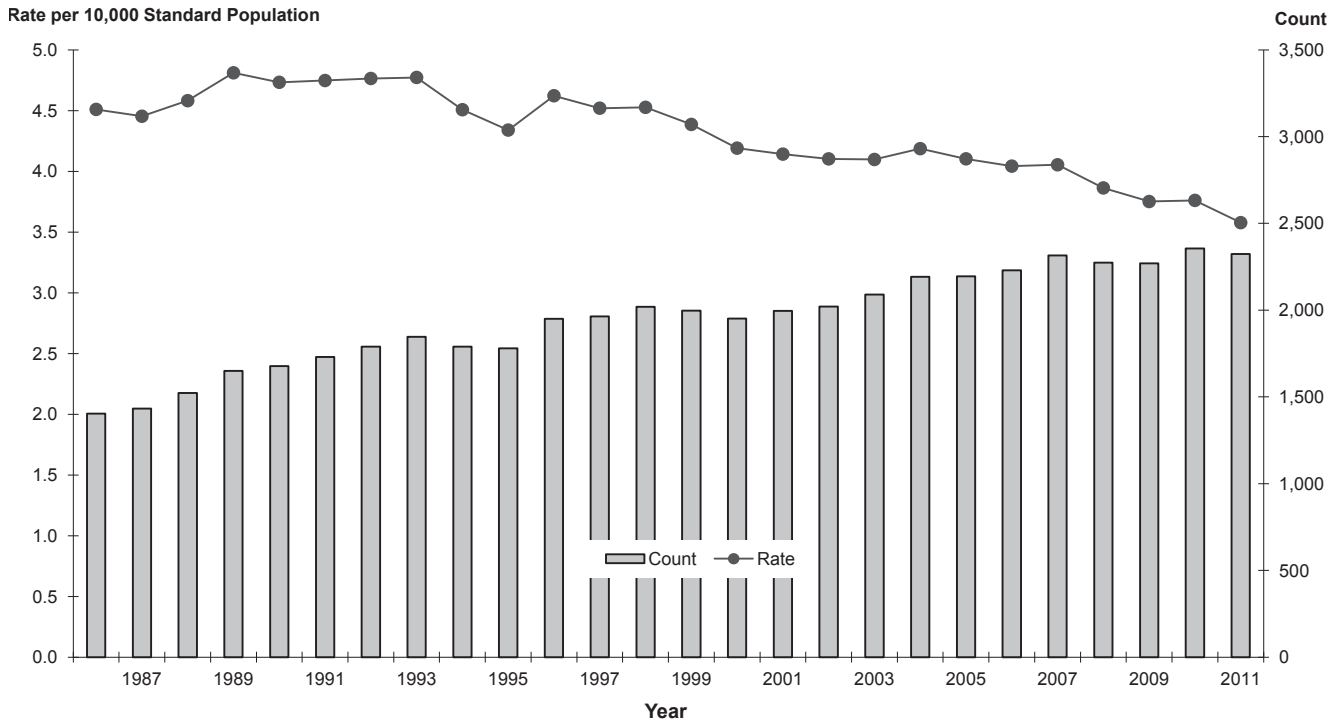


FIGURE 21  
**DEATH RATES BY GENDER, MALIGNANT NEOPLASM OF LUNG**  
 BRITISH COLUMBIA, 1986-2011

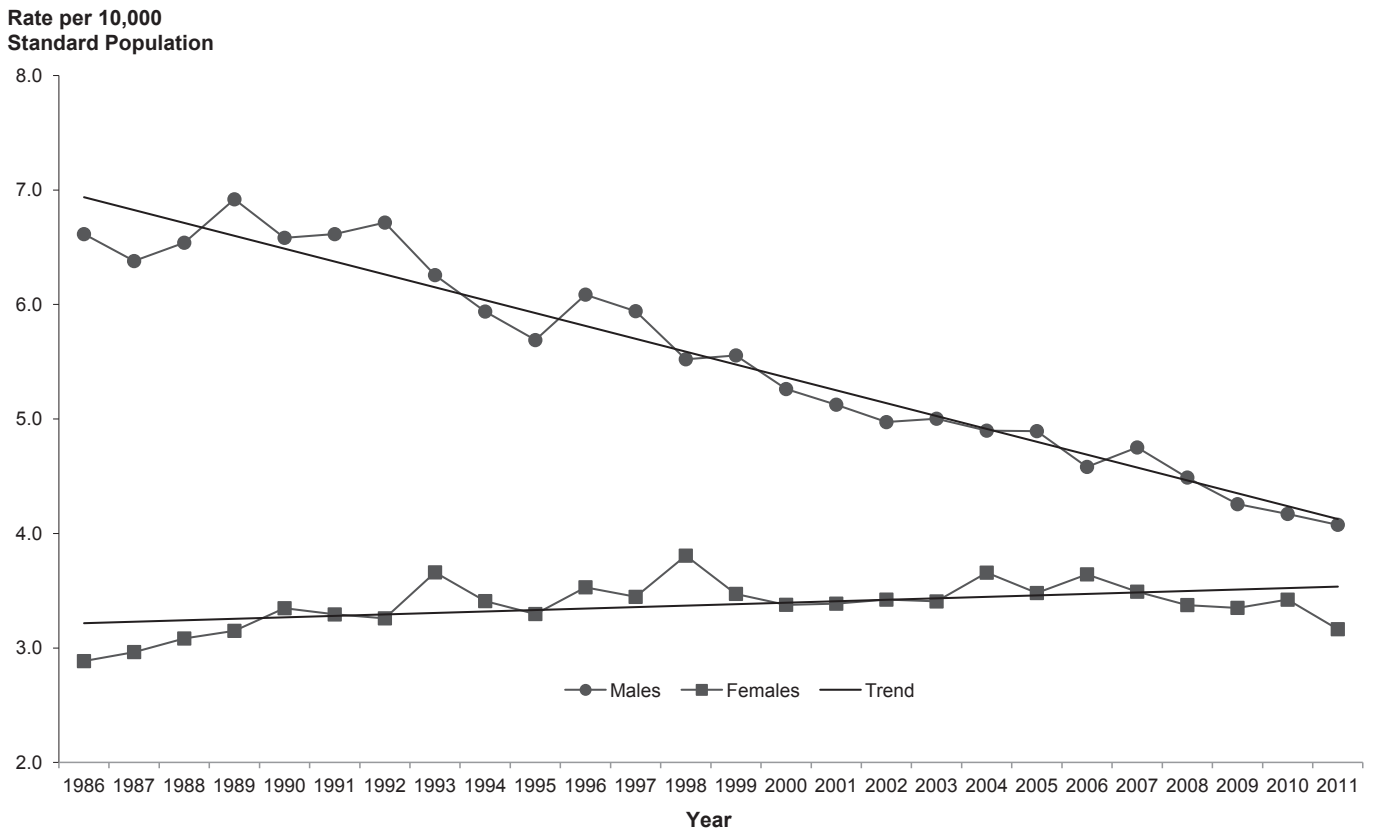


FIGURE 22  
**DEATHS AND DEATH RATES, ENDOCRINE,  
 NUTRITIONAL AND METABOLIC DISEASES**  
 BRITISH COLUMBIA, 1986-2011

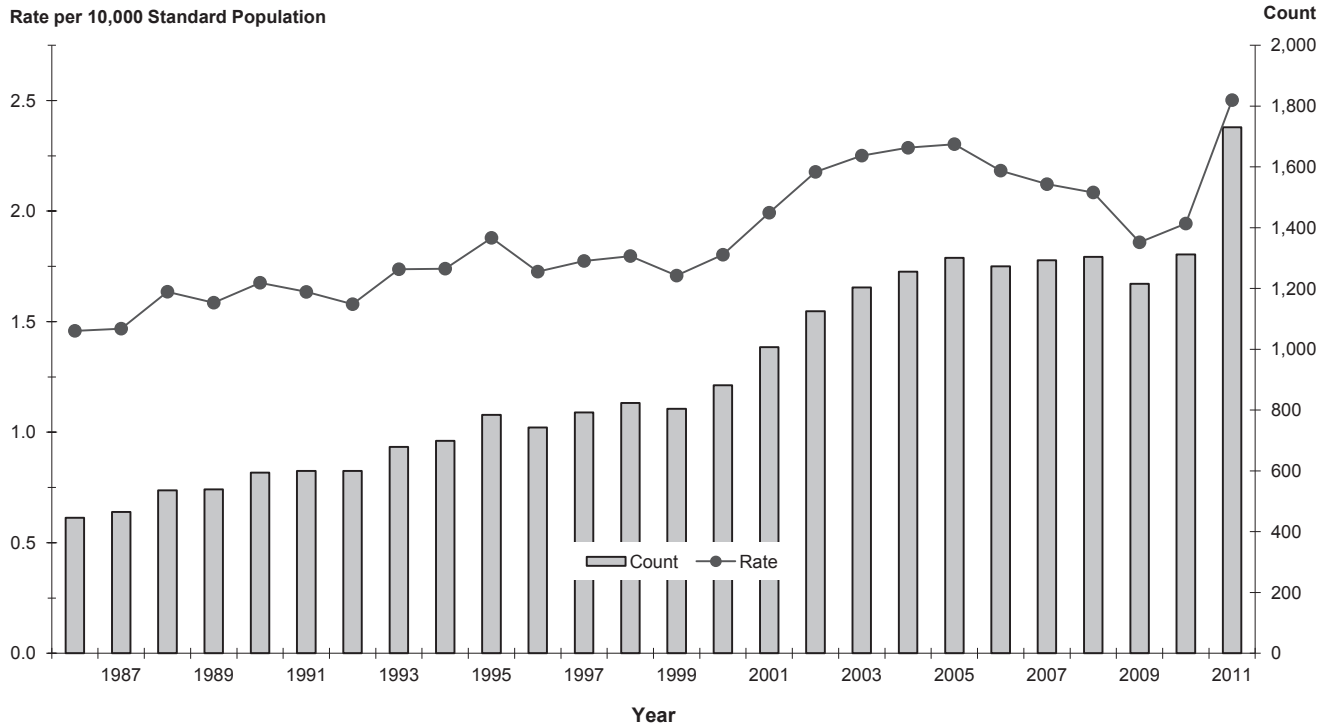
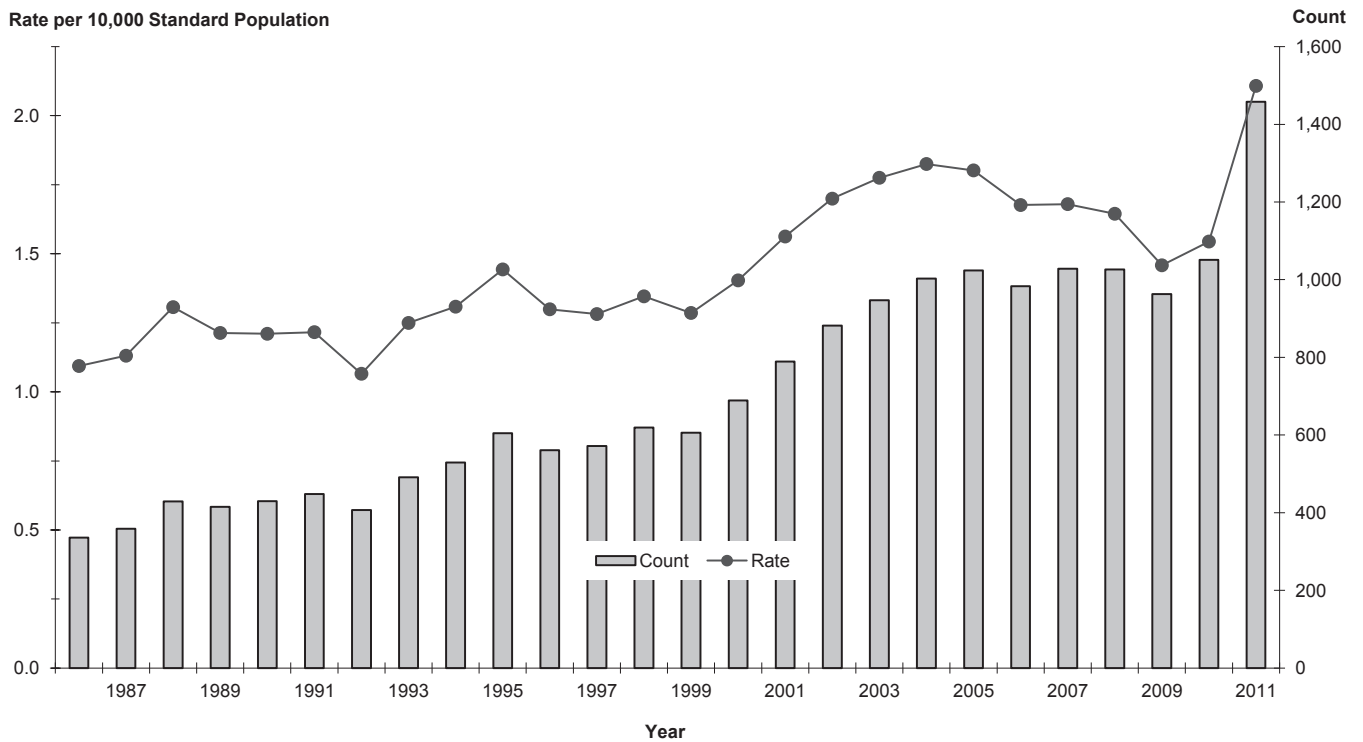
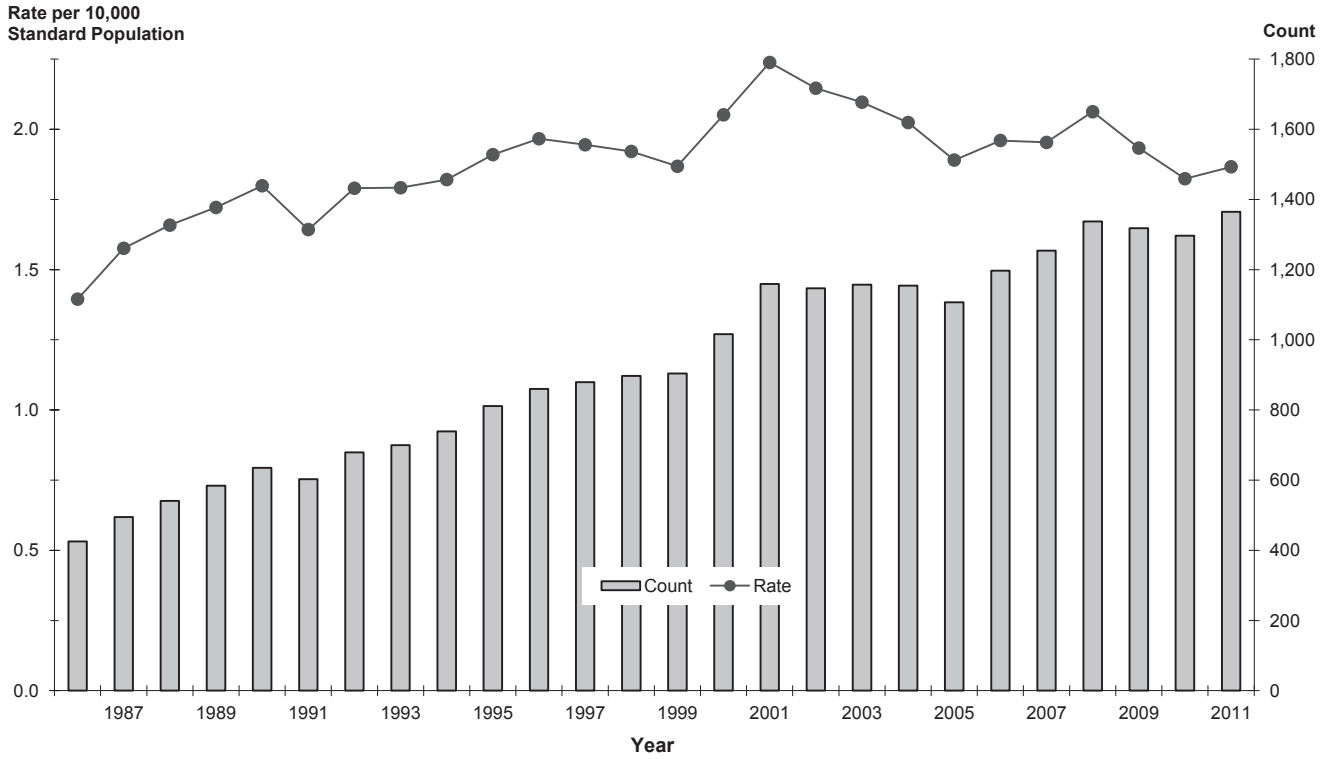


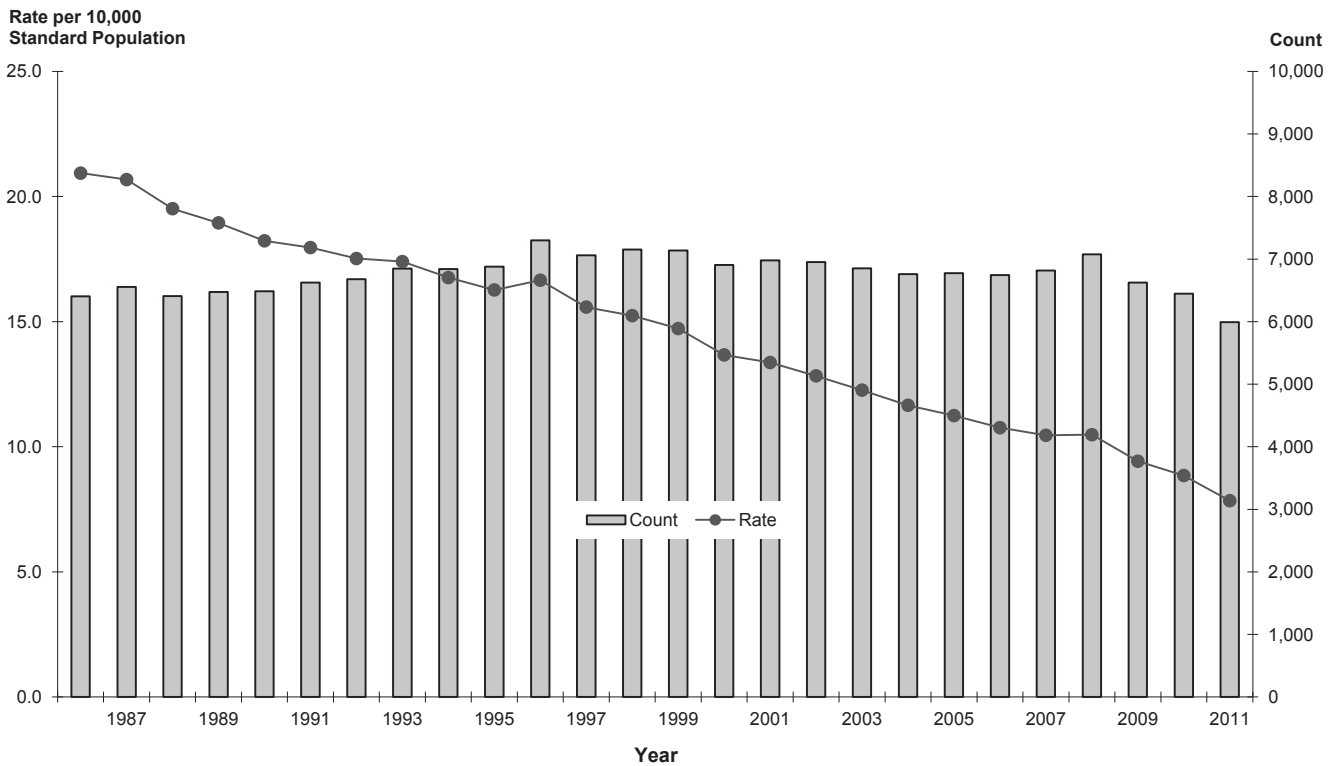
FIGURE 23  
**DEATHS AND DEATH RATES, DIABETES MELLITUS**  
 BRITISH COLUMBIA, 1986-2011



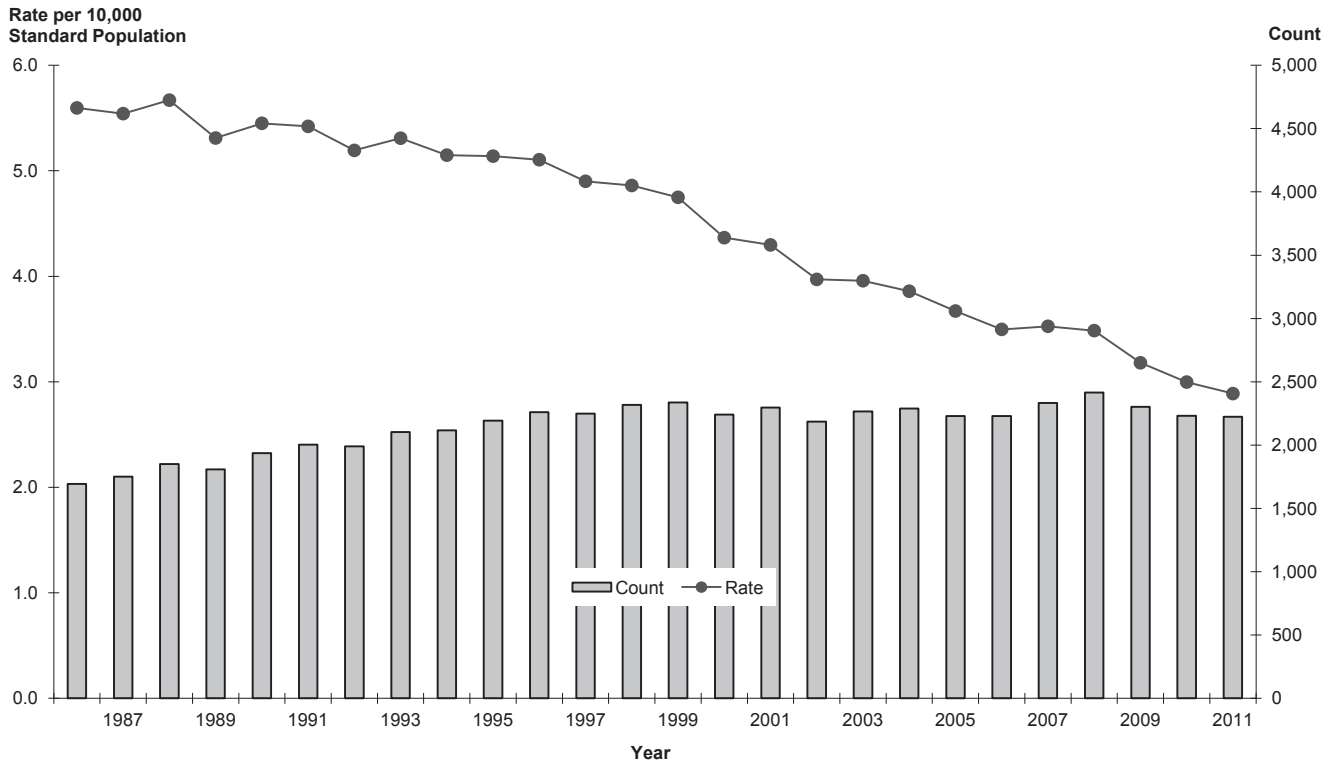
**FIGURE 24**  
**DEATHS AND DEATH RATES, NERVOUS SYSTEM DISEASES**  
 BRITISH COLUMBIA, 1986-2011



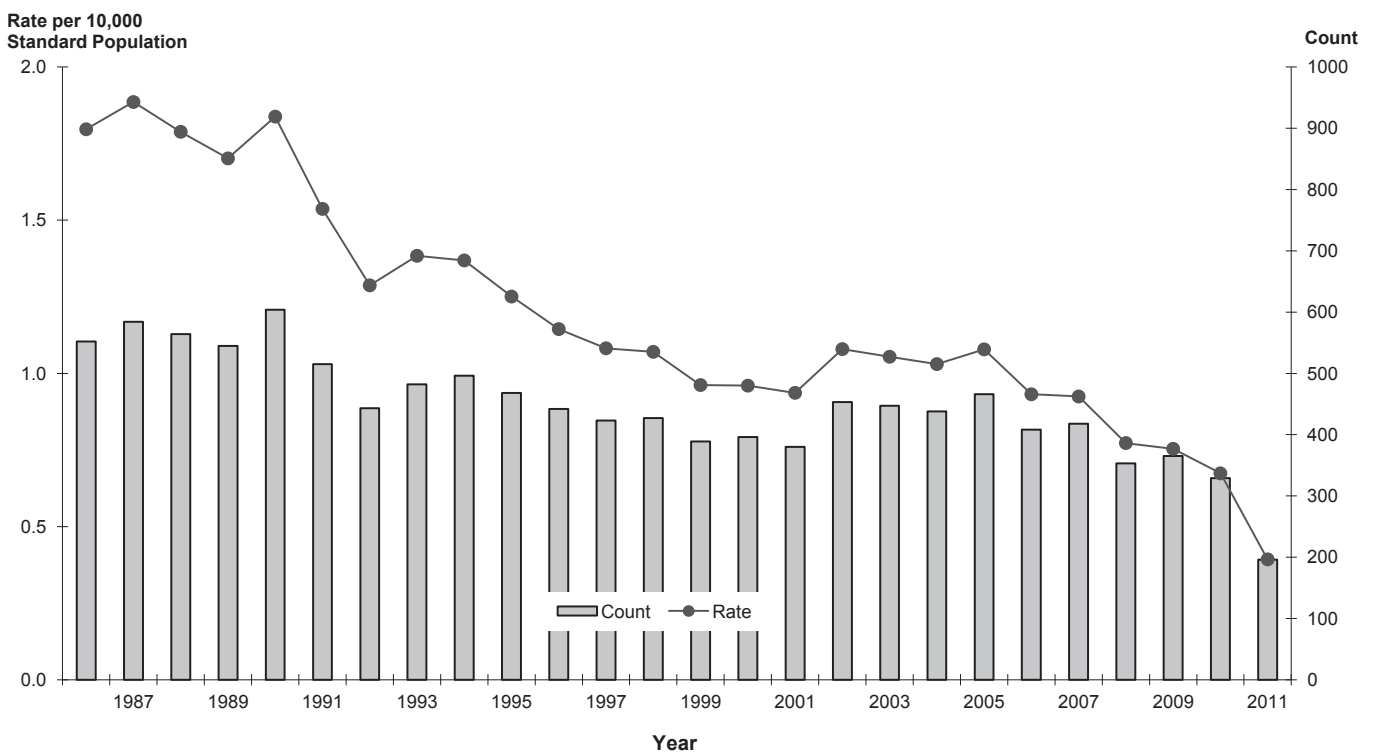
**FIGURE 25**  
**DEATHS AND DEATH RATES, CARDIOVASCULAR DISEASE**  
 BRITISH COLUMBIA, 1986-2011



**FIGURE 26**  
**DEATHS AND DEATH RATES, CEREBROVASCULAR DISEASES**  
 BRITISH COLUMBIA, 1986-2011



**FIGURE 27**  
**DEATHS AND DEATH RATES, MOTOR VEHICLE ACCIDENTS**  
 BRITISH COLUMBIA, 1986-2011



\*Note: Coroner's investigations into externally caused deaths can be lengthy, resulting in delays in determining the final causes. For this reason, recent year external cause counts and rates may be underestimated and therefore should be interpreted with caution.

**Marriage Trends**

Table 6 and Figure 28 display the average age at which men and women get married. Between 1977 and 2011, the average age for first marriages increased by 6.6 years for men and by 7.3 years for women.

The average age for all marriages increased from 29.3 years to 36.0 years for men and from 26.2 years to 33.4 years for women over the last 35 years.

Over that same time period, the average age of men marrying tended to be two to three years older than the average age of women marrying. Generally, the age difference at which men and women marry has been greater for all marriages than for first marriages.

**TABLE 6**  
**AGE OF FIRST AND ALL MARRIAGES**

BRITISH COLUMBIA, 1977–2011

Year of Marriage	Average Age (in Years)				Year of Marriage	Average Age (in Years)			
	First Marriage		All Marriages			First Marriage		All Marriages	
	Males	Females	Males	Females		Males	Females	Males	Females
1977	25.2	22.5	29.3	26.2	1995	29.4	27.3	33.9	31.2
1978	25.2	22.7	29.3	26.3	1996	29.7	27.6	34.5	31.7
1979	25.5	22.9	29.6	26.6	1997	29.9	27.8	34.6	31.8
1980	25.5	23.1	29.6	26.6	1998	30.1	28.0	34.9	32.1
1981	25.7	23.2	29.7	26.7	1999	30.3	28.2	35.2	32.3
1982	26.0	23.6	30.0	26.9	2000	30.5	28.4	35.3	32.6
1983	26.3	23.9	30.3	27.3	2001	30.6	28.4	35.5	32.7
1984	26.6	24.2	30.8	27.7	2002	30.7	28.6	35.8	33.0
1985	26.8	24.5	31.1	28.0	2003	31.4	29.2	36.1	33.4
1986	27.1	24.7	31.6	28.5	2004	31.5	29.5	36.2	33.7
1987	27.6	25.1	32.3	29.3	2005	31.5	29.5	36.2	33.7
1988	27.6	25.3	32.2	29.2	2006	31.6	29.6	36.2	33.7
1989	27.8	25.6	32.5	29.5	2007	31.5	29.5	36.0	33.5
1990	28.0	25.7	32.6	29.6	2008	31.4	29.5	36.0	33.4
1991	28.2	26.1	32.8	29.9	2009	31.5	29.5	35.9	33.3
1992	28.6	26.4	33.0	30.1	2010	31.7	29.7	36.0	33.3
1993	29.2	27.0	33.6	30.8	2011	31.8	29.8	36.0	33.4

**FIGURE 28**  
**AGE OF FIRST AND ALL MARRIAGES**

BRITISH COLUMBIA, 1977–2011

