PART II

THE PEOPLE, THEIR HEALTH STATUS

4

The Changing Structure of Population and Income

The amount and type of health services required by a nation, the manner in which these services are organized and the relative roles of individuals, voluntary organizations and governments in the provision and organization of health services all are substantially influenced by what we may call demographic factors along with the distribution of income.

In Canada, we have experienced rapid population growth while at the same time the distribution of this population has changed drastically. Yet, what has not changed is that the population has remained sparse relative to the land mass, while the vastness of the land continues to encompass a succession of regions each having different topographic features and population distributions which must be taken into consideration in any efforts organized to deal effectively with sickness through the provision of adequate health facilities and services. Again, although the incomes of Canadians have risen both in total and on a per person basis there still remains a substantial number of Canadians with incomes that are low by the standards of our age.

In this Chapter we therefore present our population projections on which many of our other projections are based, and discuss the changing levels of income which influence substantially the ability of individual Canadians to purchase health services.

POPULATION GROWTH

There can be no doubt that the number of Canadians will continue to grow. Three hundred years ago this country had a population of 3,215 not including the indigenous inhabitants. In 1991 we expect a total of 35,106,700. We have arrived at this latter estimate through an examination of three basic components of population growth: fertility rates, mortality

rates, and the balance of immigration over emigration, or what is termed, net migration.[1] We present projections for the period 1961 to 1991 in Table 4-1.

With the increased proportion of married persons in the population the number of live births was certain to increase. Thus between 1901 and 1961 the percentage of married persons in the population rose from 34.1 to 40.0 while the rate of marriage has remained high down to the present day, although not as high as in the immediate post-war period. The number of live births per 1,000 population in Canada showed a significant increase after World War II reaching a peak in 1954 of 28.5. This rate has since declined and by 1961 amounted to 26.1. Nevertheless, this was still one of the highest crude birth rates in the world and was higher than in any year between 1930 and 1945.

When measuring population trends the fertility rate, i.e., the number of live births per 1,000 females in the child-bearing age groups, is a more sensitive indicator but the projection of these rates also involves some risk. This demographic factor is one which can change unpredictably, particularly for the main child-bearing age groups 20-29. Demographers see the increase in fertility in the late nineteen forties as compensation for the postponement of child bearing in the depression and war years, but they seem at a loss to explain the continuous increase in fertility in the early nineteen fifties in all (female) age groups except 45-49 years of age.[2] Until recently the combined fertility rate of the three age groups 15-19, 20-24, 25-29 rose continuously; the last few years however have seen a decline from the peak rates of the late fifties.[3]

During the past four decades there has been a strong tendency for the child-bearing period to be concentrated in the first 12 years of marriage, the result being a decline in the fertility rates in the age group 35 and over. In part, this trend is the result of more people marrying at earlier ages. If couples marry at an early age they are more likely to have children and more of them, than couples marrying later. Between 1941 and 1961 the average age at marriage for single women in Canada declined by more than one year, from 24.4 to 22.9. For bachelors the decline was even more pro-

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[1] Like all population estimates ours are not infallible and will have to be revised periodically in the light of new trends, but they do have the advantage of being the most recent, thereby having profited from the over-optimistic or over-pessimistic assumptions of others who have applied themselves to this task before. We were greatly aided by the population counts from the *Census of Canada 1961*. For a technical discussion of the method used in our population estimates see Stukel, A., "Population Projections, 1966-1991", Appendix E in Brown, T. M., *Canadian Economic Growth*, a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

[2] Dominion Bureau of Statistics, *Vital Statistics 1961*, Ottawa: Queen's Printer, 1963, p. 99.

[3] *Ibid.*, p. 99.

TABLE 4-1 ESTIMATED AGE-SPECIFIC FERTILITY RATES PER 1,000 WOMEN, CANADA, 1961-1991

Year	Age Groups							Total Fertility	Gross Reproduction Rate
	15-19	20-24	25-29	30-34	35-39	40-44	45-49		
1961	59.900	229.000	227.000	145.200	85.900	28.000	2.400	3,887	1.889
1966	60.435	228.750	226.200	141.900	84.200	27.100	2.330	3,855	1.874
1971	60.970	228.500	225.000	139.200	82.600	26.200	2.260	3,824	1.858
1976	61.505	227.200	223.000	137.200	81.000	25.400	2.190	3,787	1.841
1981	62.040	225.800	220.500	135.500	79.200	24.600	2.120	3,749	1.822
1986	62.573	221.700	216.300	134.200	77.800	23.800	2.050	3,692	1.795
1991	63.000	219.000	212.000	134.000	76.000	23.000	2.000	3,645	1.772

SOURCE: Stukel, A., "Population Projections, 1966-1991", Appendix E, in Brown, T. M., *Canadian Economic Growth*, a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

nounced, from 27.6 to 25.8.[1] There is a growing tendency for the prospective brides and grooms of today to consider marriage at an earlier age than their parents. Between 1941 and 1961 the percentage of brides and grooms under twenty years of age increased from 20.4 to 34.7 and from 2.7 to 7.4 respectively.[2] One further result of these trends has been a tendency to increase the size of the average family. During the decade 1951 to 1961 while the proportion of families with no children or only one child decreased more than six per cent, that of families with two to eight children increased by the same amount and the average number of persons per family rose from 3.7 to 3.9.[3]

An important feature of population growth is a declining mortality rate. The mortality projections contained in Table 4-2 are based on three major factors: the level of mortality rates, the main causes of death in each age group, and the past rate of change in mortality in Canada and in countries such as Sweden and New Zealand which have enjoyed lower mortality rates than our own. In Canada the number of deaths for every 1,000 population declined from 10.6 in 1921 to 7.7 in 1961.

The decline in mortality rates is most marked for children, especially infants under one year, as more infants live through the dangerous early months.[4] We expect this trend to continue so that by 1991 further substantial declines will be evident. A significant feature of mortality rates for Canadians aged 1 to 30 has been their tendency to converge towards the same level, and this is particularly noticeable for the first five years of life. This convergence is accompanied by a gradual levelling off of the decline in mortality as we succeed in reducing mortality from disease in these age groups. The main cause of death in recent years is accidents of various types which cannot be expected to decrease as the complexity of living in a highly industrial society increases. The mortality rates for those aged 30 to 65 show the least decline over a number of years. In comparison to the rather spectacular reduction of mortality rate among infants the increased life expectancy of older persons will remain more moderate. In 1960 the mortality rate remained below 25 per 1,000 for both sexes. The mortality rates for the five-year age groups beyond age 65 are expected to show more limited declines and generally remain near their present high levels.

The growth of Canada's future population depends not only on future fertility and mortality rates but also on the rate of net migration; that is on the ability of Canada to hold its own people and the extent to

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[1] *Ibid.*, p. 220.
[2] *Ibid.*, p. 221.
[3] Dominion Bureau of Statistics, *Census of Canada 1961*, Vol. II, Part 1, Ottawa: Queen's Printer, p. 43-1.
[4] Dominion Bureau of Statistics, *Vital Statistics 1961, op. cit.*, p. 128.

TABLE 4-2 ESTIMATED AGE-SEX SPECIFIC MORTALITY RATES PER 1,000 POPULATION, CANADA, 1961-1991

Age	1961-1966		1966-1971		1971-1976		1976-1981		1981-1986		1986-1991	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	30.4000	23.0000	26.2000	19.3000	23.0000	16.7000	20.4000	14.8000	18.7000	13.5000	17.4000	13.1000
1	1.8300	1.5200	1.4200	1.1800	1.1500	0.9800	0.9200	0.8200	0.7800	0.7000	0.7200	0.6500
2	1.0800	0.9700	0.9630	0.8720	0.8660	0.7730	0.7690	0.6750	0.6720	0.5670	0.5760	0.4770
3	0.9800	0.8000	0.8780	0.7140	0.8000	0.6280	0.7220	0.5420	0.6440	0.4560	0.5640	0.3700
4	0.8700	0.5900	0.7880	0.5230	0.7280	0.4560	0.6680	0.3880	0.6080	0.3210	0.5480	0.2540
5–9	0.7800	0.3800	0.7060	0.3460	0.6320	0.3120	0.5580	0.2780	0.4840	0.2440	0.4100	0.2000
10–14	0.5700	0.2800	0.5200	0.2460	0.4700	0.2120	0.4200	0.1780	0.3700	0.1440	0.3200	0.1100
15–19	1.1800	0.4600	1.1080	0.4100	1.0360	0.3600	0.9640	0.3100	0.8920	0.2600	0.8200	0.2100
20–24	1.4400	0.5800	1.3680	0.5400	1.2760	0.5000	1.1940	0.4600	1.1120	0.4200	1.0300	0.3800
25–29	1.4600	0.6900	1.3740	0.6520	1.2880	0.6140	1.2020	0.5760	1.1160	0.5380	1.0300	0.5000
30–34	1.5400	0.8500	1.4560	0.7860	1.3700	0.7220	1.2880	0.6580	1.2040	0.5940	1.1200	0.5300
35–39	2.2000	1.4000	2.0840	1.3260	1.9680	1.2520	1.8520	1.1780	1.7360	1.1040	1.6200	1.0300
40–44	3.2000	2.0200	3.0660	1.9000	2.9320	1.7800	2.7980	1.6600	2.6640	1.5400	2.5300	1.4200
45–49	5.7800	3.3800	5.6540	3.2480	5.5280	3.1160	5.4020	2.9840	5.2700	2.8520	5.1500	2.7200
50–54	9.3100	5.2000	9.1960	5.0280	9.0820	4.8560	8.9680	4.6840	8.8500	4.5120	8.7400	4.3400
55–59	15.4300	7.9100	15.3480	7.6080	15.2660	7.3060	15.1840	7.0040	15.1020	6.7020	15.0200	6.4000
60–64	24.2000	13.0800	24.1800	12.7840	24.1600	12.4880	24.1400	12.1920	24.1200	11.8960	24.1000	11.6000
65–69	35.6000	21.0000	35.4800	20.2400	35.3600	19.4800	35.2400	18.7200	35.1200	17.9600	35.0000	17.2000
70–74	53.8000	34.8000	53.5200	33.8800	53.2400	32.9600	52.9600	32.0400	52.6800	31.1200	52.4000	30.2000
75–79	82.5000	58.6000	82.2000	56.9800	81.9000	55.3600	81.6000	53.7400	81.3000	52.1200	81.0000	50.5000
80–84	130.0000	105.6000	127.7200	104.9200	126.5800	104.2400	126.5800	103.5600	125.4400	102.8800	124.3000	102.2000
85+	228.7000	210.8000	226.9800	208.7600	225.2300	206.7200	223.5040	204.6800	221.7720	202.6400	220.0400	200.6000

SOURCE: Stukel, A., "Population Projections, 1966-1991", Appendix E, in Brown, T. M., *Canadian Economic Growth*, a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

which we attract citizens of other countries to settle here. Past fluctuations in the inflow of immigrants and the outflow of emigrants make it difficult to estimate the size of future net migration, but with a reasonably high level of economic activity there can be little doubt that Canada will gain more people than it will lose. What is at issue is the size of the annual net immigrant inflow. We have had prepared for us a number of population projections based on the assumption that annual net immigrant inflows could be of the following order: 0; 10,000; 25,000; 50,000; and 100,000. The estimates appear in Table 4-3. The impact of these different assumptions is that by 1991, the difference in population is over 4.5 million between the lowest (0), and the highest (100,000) assumptions concerning net immigration inflows.

TABLE 4-3 PROJECTED TOTAL POPULATION OF CANADA, 1966-1991
(thousands)

Net Immigration at Annual Rate of:	1966	1971	1976	1981	1986	1991
	as at June 1					
0	20,021.5	21,983.8	24,253.6	26,858.5	29,714.9	32,785.9
10,000	20,076.6	22,105.0	24,449.6	27,136.1	30,081.0	33,250.1
25,000	20,159.0	22,286.7	24,743.5	27,552.6	30,630.4	33,946.3
50,000	20,296.5	22,589.5	25,233.5	28,246.7	31,545.9	35,106.7
100,000	20,571.3	23,195.3	26,213.2	29,635.0	33,377.0	37,427.5

SOURCE: Stukel, A., "Population Projections, 1966-1991", Appendix E in Brown, T. M., *Canadian Economic Growth*, a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

Throughout this Report, however, we have used a population estimate based on an annual net immigrant inflow of 50,000.[1] This estimate is somewhat lower than that which has characterized the whole post-war period, but this is in accord with the changed economic and political situations which characterize many countries from which Canada has drawn immigrants.

[1] In all the post-war years up to 1957 in all age groups up to 50 there were more male than female immigrants entering Canada. Since 1957 female immigrants have predominated in all ages over 14. For projection purposes, the age distribution of immigrants was assumed to be the average of the years 1950 to 1961. Since the age distribution of emigrants is not available, we assumed it to be the same as that of the population of Canada in any given future quinquennium. Net immigrant age and sex distribution was assumed to be proportionately the same as our population based on the 100,000 net immigration assumption. We assumed further that mortality and fertility rates relating to immigrants were of a similar order as those for the native Canadian population.

Details of the projected growth of our population based on an annual net immigration inflow of 50,000 are specified in Table 4-4, and graphically presented in Chart 4-1.

AGE AND SEX STRUCTURE

With the Canadian population growing from 18.2 million in 1961 to 35.1 million in 1991 we expect that the age-sex structure of the population will undergo change. Implications of this structural change are many, but for our purposes these relate to the significance of various age groups in terms (a) of the health services needed, and (b) labour force projections to supply the personnel to meet these needs, and to provide the basis for a forecast of the growth of income or output.[1]

IMPLICATIONS FOR HEALTH NEEDS

It is apparent that more health facilities and services will have to be provided as the population increases. However, different age categories are subject to different illnesses,[2] and, as there is a shift in the distribution of the population, we will have to provide greater care and treatment for these illnesses. There is a slight increase in the proportion of the population below 19 and above 65, and even if this shift is only a matter of a few percentage points, we can expect a significant increase in terms of absolute numbers. This of course raises the demand for health care, particularly as these groups are the ones which most utilize health facilities and services. Thus, with an increase in population there will be a greater *number* of births for which hospitals and doctors have to be provided. With improvement in life expectancy a significantly greater *number* of the population will be over 65, and we will be faced with meeting the health needs of the aged.

At the same time the young and the aged are least able to pay for their health services. On the average, they have either not as yet entered the labour force, or they have already left it. It should also be noted that women, who form an increasingly larger proportion of the aged, receive generally smaller incomes and are, therefore, in an even more disadvantageous position.

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[1] This latter point is discussed more fully in Chapter 19.

[2] For a detailed discussion of the various types of illness and their incidence, see Chapter 5.

TABLE 4-4 POPULATION OF CANADA 1961, AND ESTIMATED POPULATION WITH NET IMMIGRATION OF 50,000 PER ANNUM

Age Group	Male		Female		Total	
	Number '000	Per Cent	Number '000	Per Cent	Number '000	Per Cent
	June 1, 1961					
0–4	1,154.1	12.52	1,102.3	12.22	2,256.4	12.37
5–9	1,063.8	11.54	1,015.7	11.26	2,079.5	11.40
10–14	948.2	10.28	907.8	10.07	1,856.0	10.18
15–19	729.1	7.91	703.5	7.80	1,432.6	7.86
20–24	587.1	6.37	596.5	6.61	1,183.6	6.49
25–29	613.9	6.66	595.4	6.60	1,209.3	6.63
30–34	644.4	6.99	627.4	6.96	1,271.8	6.97
35–39	631.1	6.85	639.9	7.09	1,271.0	6.97
40–44	560.0	6.07	559.0	6.20	1,119.0	6.14
45–49	515.5	5.59	499.8	5.54	1,015.3	5.57
50–54	442.9	4.80	420.3	4.66	863.2	4.73
55–59	362.1	3.93	343.7	3.81	705.8	3.87
60–64	292.5	3.17	291.1	3.23	583.6	3.20
65–69	239.7	2.60	247.4	2.74	487.1	2.67
70–74	196.1	2.13	206.1	2.27	402.2	2.21
75+	238.4	2.59	263.5	2.93	501.9	2.74
TOTAL	9,218.9	100.00	9,019.4	100.00	18,238.3	100.00
	June 1, 1971					
0–4	1,382.8	12.17	1,315.0	11.72	2,697.8	11.94
5–9	1,231.2	10.84	1,174.9	10.46	2,406.1	10.65
10–14	1,161.8	10.23	1,113.9	9.92	2,275.7	10.07
15–19	1,072.9	9.45	1,027.6	9.15	2,100.5	9.30
20–24	965.8	8.50	928.4	8.27	1,894.2	8.39
25–29	763.2	6.72	739.9	6.59	1,503.1	6.65
30–34	622.9	5.48	632.8	5.64	1,255.7	5.56
35–39	635.9	5.60	618.7	5.51	1,254.6	5.55
40–44	652.0	5.74	637.8	5.68	1,289.8	5.71
45–49	626.3	5.51	640.2	5.70	1,266.5	5.61
50–54	543.2	4.78	552.3	4.92	1,095.5	4.85
55–59	483.1	4.25	485.5	4.32	968.6	4.29
60–64	394.2	3.47	398.9	3.55	793.1	3.51
65–69	298.5	2.63	313.3	2.79	611.8	2.71
70–74	217.4	1.91	248.5	2.21	465.9	2.06
75+	309.2	2.72	401.4	3.57	710.6	3.15
TOTAL	11,360.4	100.00	11,229.1	100.00	22,589.5	100.00

SOURCE: Dominion Bureau of Statistics, *Census of Canada 1961*, Vol. 1, Part 2, Ottawa: Queen's Printer, 1962, Table 20. Stukel, A., "Population Projections, 1966-1991", Appendix E in Brown, T. M., *Canadian Economic Growth*, a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

TABLE 4-4 POPULATION OF CANADA 1961, AND ESTIMATED POPULATION WITH NET IMMIGRATION OF 50,000 PER ANNUM—*Concluded*

Age Group	Male		Female		Total	
	Number '000	Per Cent	Number '000	Per Cent	Number '000	Per Cent
	June 1, 1981					
0–4	1,833.8	12.94	1,743.2	12.39	3,577.0	12.66
5–9	1,607.9	11.34	1,531.8	10.88	3,139.7	11.12
10–14	1,390.1	9.81	1,327.2	9.43	2,717.3	9.62
15–19	1,240.7	8.75	1,187.1	8.43	2,427.8	8.60
20–24	1,179.1	8.32	1,134.7	8.06	2,313.8	8.19
25–29	1,104.4	7.79	1,063.3	7.56	2,167.7	7.67
30–34	997.9	7.04	963.4	6.85	1,961.3	6.94
35–39	784.3	5.54	762.9	5.42	1,547.2	5.48
40–44	632.1	4.46	644.1	4.58	1,276.2	4.52
45–49	632.6	4.46	620.6	4.41	1,253.2	4.44
50–54	632.9	4.47	630.7	4.48	1,263.6	4.47
55–59	587.2	4.14	622.0	4.42	1,209.2	4.28
60–64	483.8	3.41	525.2	3.73	1,009.0	3.57
65–69	397.9	2.81	443.7	3.15	841.6	2.98
70–74	292.9	2.07	343.4	2.44	636.3	2.25
75+	375.5	2.65	530.3	3.77	905.8	3.21
TOTAL	14,173.1	100.00	14,073.6	100.00	28,246.7	100.00
	June 1, 1991					
0–4	2,204.0	12.52	2,092.4	11.95	4,296.4	12.24
5–9	2,025.4	11.51	1,926.9	11.01	3,952.3	11.26
10–14	1,841.9	10.46	1,755.4	10.03	3,597.3	10.25
15–19	1,617.5	9.19	1,544.2	8.82	3,161.7	9.00
20–24	1,407.4	8.00	1,348.5	7.70	2,755.9	7.85
25–29	1,272.3	7.23	1,223.2	6.99	2,495.5	7.11
30–34	1,210.6	6.88	1,169.5	6.68	2,380.1	6.78
35–39	1,123.1	6.38	1,085.3	6.20	2,208.4	6.29
40–44	1,003.1	5.70	972.9	5.56	1,976.0	5.63
45–49	779.4	4.43	764.2	4.37	1,543.6	4.40
50–54	615.4	3.50	638.4	3.65	1,253.8	3.57
55–59	594.5	3.38	605.0	3.45	1,199.5	3.42
60–64	564.3	3.20	601.9	3.44	1,166.2	3.32
65–69	483.7	2.75	570.9	3.26	1,054.6	3.00
70–74	359.6	2.04	456.2	2.60	815.8	2.32
75+	498.6	2.83	751.0	4.29	1,249.6	3.56
TOTAL	17,600.8	100.00	17,505.9	100.00	35,106.7	100.00

SOURCE: Dominion Bureau of Statistics, *Census of Canada 1961*, Vol. 1, Part 2, Ottawa: Queen's Printer, 1962, Table 20. Stukel, A., "Population Projections, 1966-1991", Appendix E in Brown, T. M., *Canadian Economic Growth*, a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

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IMPLICATIONS FOR LABOUR FORCE PROJECTIONS

As a group, the young and the aged are not directly involved in the provision of health services. However, the 0-19 age group is assuming increasing significance as they are the potential suppliers of health workers.

Two characteristics of the health profession are particularly relevant with respect to population. First there is a strong dependence on women workers. The sex distribution seems to be favourable for providing the needed female workers—particularly the 0-19 age group from which the workers are to be drawn.

Secondly, the health industry requires a large number of skilled professional and technical personnel. As these need a high degree of education we should look at recent trends in this field.

Some indication of the degree to which Canadians have availed themselves of the opportunities for education can be obtained from a comparison of data on elementary and secondary school, and university enrolment. Between 1938 and 1959 there was an increase from nearly 87 per cent to 93 per cent of the school age population from five to fourteen years of age enrolled in elementary schools. During the same period the percentage of the population from 15 to 19 enrolled in secondary schools increased from 26.5 to 53.5. Table 4-5 indicates that between 1961 and 1991 the elementary school age population will increase by 73 per cent, and the secondary school age population by 69 per cent. Since 93 per cent of the former group were enrolled in elementary schools in 1959, only a small proportionate increase in enrolment in these schools can be expected. On the other hand, the proportion of the secondary school age population actually attending these schools could increase substantially from the 1959 figure of 53.5 per cent. It is from those who are trained at these two levels that our skilled and semi-skilled workers are drawn, and it is from among those females attending secondary schools that the majority of nurses and paramedical recruits are found. For others working in the health field, however, a university education is essential.

Table 4-5 also indicates that the age group 20 to 24, from which the university population is drawn, is expected to increase by 88 per cent by 1991. There is no doubt that an increasing proportion of this age group will enrol in our universities. Dr. Edward Sheffield has estimated the size of this increase which is shown in Table 4-6. These estimates, however, refer to a larger age group, 18-24, whereas those in Table 4-5 refer to the age group 20-24.

Dr. Sheffield's estimate was made in 1961. In each of the two years since then, the actual full-time enrolment has exceeded his estimate by over 4,300.[1]

One factor in economic growth is the proportion of the population that is working and providing the resources to support those groups not yet in the labour force (0-19) and those retired (65+). Our projections indicate no significant change in these proportions, so that the downward shift of age group 20-64 is less than 1 per cent over 30 years and can support a growing number of young and old in the population.

With the Canadian population growing from 18.2 million in 1961 to 35.1 million in 1991 we expect the civilian labour force to increase from 6.5 million to 13.1 million in the same period.[2] The data in Table 4-5 indicate that with an annual net migration of 50,000 we can expect the age group 15-64, from which the labour force is drawn, to increase from 10.6 million in 1961 to 20.1 million in 1991. We estimate that in the same period the numbers in the labour force recruiting age 15-24 will rise from 2.6 million to 5.9 million.[3]

In the general population there will be slight differences between males and females in their numerical and percentage increase in the 15-24 or the 15-64 age groups for the period 1961-1991. In the former age group males will increase from 1.3 million to 3.0 million or by nearly 131 per cent while females will grow from 1.3 million to 2.9 million or 123 per cent. In the 15-64 age group males will rise from 5.4 million to 10.1 million or 87 per cent while females will increase from 5.2 million to 9.9 million or just over 90 per cent.

An increasing proportion of Canada's labour force is now made up of women. A similar trend is taking place in all modern industrial nations. The increase was obvious during the two world wars when male labour in Canada was in short supply, and women, both single and married, learned

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[1] Dominion Bureau of Statistics, *Survey of Higher Education Part I: 1962-63*, Ottawa: Queen's Printer, 1963, p. 13.

[2] See Table 19-1.

[3] Since our projection of population has been prepared for five year intervals it has been necessary to classify age groups on a 0-4 basis continuing with 5-9, 10-14, 15-19, etc. As a consequence there is a difference between the classification used here and that used in Table 19-1. In Table 4-5 the population of working age includes all individuals aged 15-65. In Table 19-1, the category that corresponds most closely is the civilian non-institutional population age 14 and over. This latter table, while based on the data presented in Table 4-4, includes the age group 14 which is still classified as part of the labour force potential in the Dominion Bureau of Statistics, Labour Force Survey, but excludes the institutionalized population. The inclusion of the age group 14 to 18 may not be representative of the pattern of the future. It is highly reasonable to expect more and more of this group to be found in school and therefore the labour force to be drawn mainly from persons aged 19 and over.

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TABLE 4-5 PROJECTED POPULATION OF CANADA, SELECTED AGE GROUPS, 1961-1991

(net immigration—50,000 per annum 1966-1991)*

Population Group	Age Group	June 1, 1961					
		Male		Female		Total	
		Number '000	Per Cent	Number '000	Per Cent	Number '000	Per Cent
Pre-school	0–4	1,154.1	12.52	1,102.3	12.22	2,256.4	12.37
Elementary School	5–14	2,012.0	21.82	1,923.5	21.33	3,935.5	21.58
High School	15–19	729.0	7.91	703.5	7.80	1,432.6	7.86
University	20–24	587.1	6.37	596.5	6.61	1,183.6	6.49
Labour Force Recruiting	15–24	1,316.2	14.28	1,300.0	14.41	2,616.2	14.35
Population of Working Age	15–64	5,378.7	58.34	5,276.5	58.50	10,655.2	58.43
Elderly	65+	674.1	7.31	717.0	7.95	1,391.2	7.62
Dependants	0–14, 65+	3,840.2	41.66	3,742.8	41.50	7,583.1	41.57
Main Family Formation Ages	20–29	1,201.0	13.03	1,191.9	13.21	2,392.9	13.12
		June 1, 1966					
Pre-school	0–4	1,227.7	12.00	1,169.2	11.62	2,396.9	11.81
Elementary School	5–14	2,225.6	21.76	2,129.6	21.15	4,355.2	21.46
High School	15–19	952.8	9.31	913.4	9.07	1,866.2	9.20
University	20–24	743.0	7.26	718.8	7.14	1,461.8	7.20
Labour Force Recruiting	15–24	1,695.8	16.58	1,632.2	16.21	3,328.0	16.40
Population of Working Age	15–64	6,035.7	59.00	5,935.1	58.96	11,970.8	58.98
Elderly	65+	740.5	7.24	833.1	8.28	1,573.6	7.75
Dependants	0–14, 65+	4,193.8	41.00	4,131.9	41.04	8,325.7	41.02
Main Family Formation Ages	20–29	1,351.1	13.21	1,336.6	13.28	2,687.7	13.24
		June 1, 1971					
Pre-school	0–4	1,382.8	12.17	1,315.0	11.72	2,697.8	11.94
Elementary School	5–14	2,393.0	21.06	2,288.8	20.38	4,681.8	20.73
High School	15–19	1,072.9	9.45	1,027.6	9.15	2,100.5	9.30
University	20–24	965.8	8.50	928.4	8.27	1,894.2	8.39
Labour Force Recruiting	15–24	2,038.7	17.95	1,956.0	17.42	3,994.7	17.68
Population of Working Age	15–64	6,759.5	59.50	6,662.1	59.33	13,421.6	59.42
Elderly	65+	825.1	7.26	963.2	8.58	1,788.3	7.92
Dependants	0–14, 65+	4,600.9	40.50	4,567.0	40.67	9,167.9	40.58
Main Family Formation Ages	20–29	1,729.0	15.22	1,668.3	14.86	3,397.3	15.04
		June 1, 1976					
Pre-school	0–4	1,604.7	12.66	1,526.2	12.15	3,130.9	12.41
Elementary School	5–14	2,621.3	20.69	2,502.0	19.92	5,123.3	20.30
High School	15–19	1,166.4	9.20	1,119.6	8.91	2,286.0	9.06
University	20–24	1,085.7	8.57	1,042.6	8.30	2,128.3	8.43
Labour Force Recruiting	15–24	2,252.1	17.77	2,162.2	17.21	4,414.3	17.49
Population of Working Age	15–64	7,510.5	59.27	7,411.0	59.00	14,921.5	59.13
Elderly	65+	935.3	7.38	1,122.5	8.94	2,057.8	8.16
Dependants	0–14, 65+	5,161.3	40.73	5,150.7	41.00	10,312.0	40.87
Main Family Formation Ages	20–29	2,070.5	16.34	1,991.7	15.86	4,062.2	16.10

TABLE 4-5 PROJECTED POPULATION OF CANADA, SELECTED AGE GROUPS, 1961-1991—*Concluded*
(net immigration—50,000 per annum 1966-1991)*

Population Group	Age Group	June 1, 1981					
		Male		Female		Total	
		Number '000	Per Cent	Number '000	Per Cent	Number '000	Per Cent
Pre-school	0–4	1,833.8	12.94	1,743.2	12.39	3,577.0	12.66
Elementary School	5–14	2,998.0	21.15	2,859.0	20.31	5,857.0	20.74
High School	15–19	1,240.7	8.75	1,187.1	8.43	2,427.8	8.60
University	20–24	1,179.1	8.32	1,134.7	8.06	2,313.8	8.19
Labour Force Recruiting	15–24	2,419.8	17.07	2,321.8	16.50	4,741.6	16.79
Population of Working Age	15–64	8,275.0	58.39	8,154.0	57.94	16,429.0	58.16
Elderly	65+	1,066.3	7.52	1,317.4	9.36	2,383.7	8.44
Dependants	0–14, 65+	5,898.1	41.61	5,919.6	42.06	11,817.7	41.84
Main Family Formation Ages	20–29	2,283.5	16.11	2,198.0	15.62	4,481.5	15.87
		June 1, 1986					
Pre-school	0–4	2,022.1	12.78	1,921.0	12.21	3,943.1	12.50
Elementary School	5–14	3,449.7	21.81	3,287.1	20.90	6,736.8	21.36
High School	15–19	1,394.8	8.82	1,333.0	8.48	2,727.8	8.65
University	20–24	1,253.5	7.92	1,202.4	7.64	2,455.9	7.79
Labour Force Recruiting	15–24	2,648.3	16.74	2,535.4	16.12	5,183.7	16.43
Population of Working Age	15–64	9,152.5	57.85	8,986.7	57.15	18,138.9	57.50
Elderly	65+	1,195.8	7.56	1,531.3	9.74	2,727.1	8.64
Dependants	0–14, 65+	6,667.6	42.15	6,739.4	42.85	13,407.1	42.50
Main Family Formation Ages	20–29	2,451.2	15.49	2,357.8	14.99	4,809.0	15.24
		June 1, 1991					
Pre-school	0–4	2,204.0	12.52	2,092.4	11.95	4,296.4	12.24
Elementary School	5–14	3,867.3	21.97	3,682.3	21.03	7,549.6	21.50
High School	15–19	1,617.5	9.19	1,544.2	8.82	3,161.7	9.00
University	20–24	1,407.4	8.00	1,348.5	7.70	2,755.9	7.85
Labour Force Recruiting	15–24	3,024.9	17.19	2,892.7	16.52	5,917.6	16.86
Population of Working Age	15–64	10,187.6	57.88	9,953.1	56.86	20,140.7	57.37
Elderly	65+	1,341.9	7.62	1,778.1	10.16	3,120.0	8.89
Dependants	0–14, 65+	7,413.2	42.12	7,552.8	43.14	14,966.0	42.63
Main Family Formation Ages	20–29	2,679.7	15.22	2,571.7	14.69	5,251.4	14.96

*Se footnote 3, p. 117.

SOURCE: Dominion Bureau of Statistics, *Census of Canada 1961*, Vol. 1, Part 2, Ottawa: Queen's Printer, 1962, and Stukel, A., "Population Projections, 1966-1991", Appendix E in Brown, T. M., *Canadian Economic Growth*, a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

new skills. Despite this more than sixfold increase since 1901 we still fall behind Britain and the United States in this respect.

Of the number of women now working, a large proportion are married. This is a relatively recent development; in 1931 only 10 per cent of the women working were married, but thirty years later this figure had risen to 48.0 per cent, and as we indicate in Chapter 19, this trend is likely to continue. Under certain circumstances this may have significant implications for the health and welfare of the children of working mothers, but systematic investigations to test this claim are notable for their scarcity.

TABLE 4-6 FULL-TIME ENROLMENT IN CANADIAN UNIVERSITIES AND COLLEGES, BY SEX, AND AS A PERCENTAGE OF THE POPULATION 18 TO 24 YEARS OF AGE, 1950-51 TO 1960-61, PROJECTED TO 1970-71

Academic Year	Full-time Enrolment as Per Cent of Population 18 to 24		
	Male	Female	Total
1950–51	7.02	1.88	4.44
1951–52	6.65	1.80	4.21
1952–53	6.50	1.76	4.13
1953–54	6.53	1.80	4.17
1954–55	6.86	1.90	4.40
1955–56	7.25	2.02	4.65
1956–57	7.69	2.18	4.95
1957–58	8.17	2.38	5.31
1958–59	8.85	2.59	5.72
1959–60	9.14	2.80	6.01
1960–61	9.84	3.21	6.57
1961–62	10.39	3.34	6.92
1962–63	11.03	3.62	7.38
1963–64	11.70	3.93	7.89
1964–65	12.41	4.26	8.42
1965–66	13.17	4.62	8.98
1966–67	13.97	5.02	9.59
1967–68	14.82	5.44	10.23
1968–69	15.72	5.90	10.92
1969–70	16.68	6.40	11.65
1970–71	17.69	6.94	12.44

SOURCE: Sheffield, Edward F., *Enrolment in Canadian Universities and Colleges to 1970-71 (1961 projection)* Ottawa: Canadian Universities Foundation, 1962, p. 13.

URBAN—RURAL DISTRIBUTION

The rapid growth of population in Canada is accompanied by a tendency for our people to live in urban centres and this trend is not likely to change. Slightly more than 37 per cent of Canadians lived in urban areas in 1901. Sixty years later the proportion was nearly 70 per cent. Looking ahead, we expect that a still larger proportion of our population will be living in cities and other urban areas in 1991.

This concentration of population in urban centres has required a similar concentration of service facilities, among them health services, and has also promoted the growth of large hospitals serving as medical centres for treatment, teaching and research. The availability of these and other health services has stimulated their increased utilization. On the other hand, the decreasing proportionate size of our rural population has accentuated problems in the provision of an acceptable standard of health services in rural areas. The metropolitan area, the rural areas that surround our urban centres, the Newfoundland outports which can be reached only by sea, the isolated settlements on the Alaska Highway, the sparsely settled northern areas of the provinces, and the growing population in the Arctic regions, all must be provided with health care. Outlying settlements, however, cannot provide the resources to support an adequate level of services and facilities; help must be sought elsewhere. The problems of distance, then, are compounded by the relative emptiness of the land as we move northward from Canada's southern boundary. This can make the provision of services, whether health or any other, a costly undertaking. Services and facilities are concentrated in the areas with a relatively high population density.

These problems are increased by the mobility of the population. The ability of industrialized centres to attract labour depends not only on the present location of the work force, but also on its mobility and growth potential. There is little doubt that Canadians are a mobile people especially intra-provincially. In 1948, for example, 17.4 per cent of all families receiving family allowances moved from one residence to another in the same province. In 1961 this proportion was 24.6 per cent.[1] If we combine interprovincial and intra-provincial family movement these proportions are increased from 19.1 per cent for 1948 to 26.2 per cent in 1961. These are conservative estimates if applied to labour force mobility since they do not take account of the highly mobile single person. This mobility, while essential to achieving a satisfactory rate of economic growth, raises problems of the

[1]Central Mortgage and Housing Corporation, *Canadian Housing Statistics, 1961*, Ottawa: The Corporation, 1962, Table 68, p. 44.

provision and continuity of health care, and the portability of hospital and medical care and social security benefits across provincial boundaries.

The tabulation below shows that between 1956 and 1961 seven provinces experienced a net loss of population due to interprovincial mobility, while the remainder showed a net gain.[1] It should also be noted that the three provinces which experienced a net gain had the highest per capita incomes.

Province of Origin	Net Migration	
	Loss	Gain
Newfoundland	19,781	
Prince Edward Island	2,725	
Nova Scotia	24,492	
New Brunswick	32,539	
Quebec	24,716	
Ontario		127,738
Manitoba	29,046	
Saskatchewan	63,496	
Alberta		30,613
British Columbia		27,394
Northwest Territories and Yukon		11,050

CHANGING INCOMES OF CANADIANS

Canadians have improved their economic position substantially over their history and this has been particularly true in the period since the great depression. Moreover this improvement has extended to almost all Canadians whether their incomes were low or high. Despite this improvement there still remain a large number of Canadians with low incomes—incomes that are too low to provide themselves or their families with the health services they need.

It is not necessary for us to emphasize that the incomes of almost all Canadians have risen substantially from the low levels of the great depression. Thus in 1931 of the families where the head was a salaried or wage worker, 43 per cent earned less than $2,000 a year. In 1951, after eliminating the effects of price change, this percentage had fallen to 20 per cent. Between 1951 and 1959 the *real* income of all urban residents,

[1] Estimated from Department of National Health and Welfare, *Family Allowance and Old Age Security Statistics,* June 1956-May 1961.

whether in or out of the labour force, rose by a further 25 per cent, and there has been some increase since that date.[1] Moreover this improvement has been achieved with a substantial increase in leisure as the length of the work year and the working life has declined. Although our knowledge of level of income among agricultural families is less precise, there is no doubt that they too have improved their situation appreciably from the dark days of the depression. Meanwhile the steady decline in the number of farm families, and the increased size of farms as well as mechanization of farm operations, and increasing use of scientific farming methods has meant increased productivity, and with it rising farm incomes. As a consequence, subsistence farming yielding low incomes has become less significant than it was a generation ago.

The significant increase in real income experienced since the end of World War II has brought a large and growing proportion of Canada's population closer to a level of affluence which makes it possible for many workers to abandon occupations in low-paid sectors of the economy, such as marginal agriculture, for higher paid employment in urban areas. In addition, advances in medical science and the investment of resources in health services have contributed to a decline in mortality and morbidity in many areas, thus reducing the number of families with low income due to the loss of the bread-winner. The general increase in the amount of education made available to the younger generation has made them more productive, more mobile and therefore raised incomes generally.[2] Finally, until recently, the relative scarcity of labour in a period of high demand, the consequence of the low birth and immigration rates of the depression period, and the willingness to use part-time help, have made it possible for a great many more people—particularly married women and young adults—to find employment, so that in many cases households now have two or three income-earners whereas they formerly only had one or none. Rising social security expenditures have bolstered family income. Young married couples both work until the arrival of children. Married women return to work when their families enter school or leave home. The contribution of married women to the nursing staff of hospitals is only one instance of this development.

It is evident, however, that rising levels of employment and improved productivity, along with the increased real income that accompany them, may not directly affect the aged, the blind, the disabled and those living in

[1] Goldberg, S. A., Podoluk, Jenny R., "Income Size Distribution Statistics in Canada", a Survey and some analysis, in *Income & Wealth Series VI*, International Association for Research in Income and Wealth. London: Bowes and Bowes, 1957 and Dominion Bureau of Statistics, *Distribution of Non-Farm Incomes in Canada by Size 1959*, Ottawa: Queen's Printer, 1962, pp. 11 and 16.

[2] In making this general observation we are not unmindful of the fact that we still have in Canada a large number of young people with inadequate training and skills contributing the highest proportion of any age group to the ranks of the unemployed.

areas of declining economic activity, since they either are not in the labour force or in the main stream of economic growth. Here social policy has helped by distributing the fruits of economic progress more broadly. Rising social security expenditures have meant that the present productive generation has transferred income from themselves to the young or to the old in the expectations that this process will continue as one generation replaces another. Yet the growth of government transfer payments has not changed the pattern of income distribution materially. In fact, the tendency has been for low income families, particularly single person householders, to increase in numbers since higher incomes received by the aged now permit them to maintain their own household rather than live with their relatives, and more younger people live away from home. From 1929 to 1950 the ratio of families in lower income brackets declined somewhat, but since 1951 the trend appears to have been reversed. For example, urban families comprising 40 per cent of income earners in the lower income strata made up 13.6 per cent of total income earners in 1951 as against 16.2 per cent in 1959.[1]

While it is true that on the average people are now better off materially than ever before, there still remains a significant proportion of the Canadian population with low incomes or earnings.[2] Where the line defining low incomes or earnings should be drawn is a matter of debate. In part it depends on the size of the family that must be supported, and in part it depends on the needs of this family. A young single person, in good health and living at home earning $2,000 a year could not be considered a low earning or a low income person. A family of six with such earnings could hardly be considered as anything but living at the margin of subsistence. Again a young couple with an income of $2,000 to live on while they acquire a professional education can borrow against their potential earning power to finance a higher level of living in the present. A low income in this instance would not indicate a low level of living. On the other hand, an aged couple with the same income, but with few assets and high expenses for health care could well be classed as a low income family.

Lack of comprehensive and detailed statistics on the low income families in Canada has made it difficult to estimate what proportion

[1] That refers to families in the two lowest income quintiles (See Dominion Bureau of Statistics, *Distribution of Non-Farm Incomes in Canada, by Size 1959, op. cit., p.* 12.)

[2] In a discussion of income distribution we must keep in mind the distinction between earnings and income. By earnings, we mean "the total amount of money received by wage earners as cash wages and salary, Armed forces and Reserve Units' pay commission, tips, or piece rate payments from all employers—before deductions for such items as income tax, unemployment insurance, medical plans, union dues, pension plans or insurance plans". By income we mean earnings *plus* all other income such as that from business or professional practice, family allowances, old-age assistance and security payments, other government transfer payments, retirement pensions, bond and bank interest and dividends, other investment income and all other money income. Dominion Bureau of Statistics, *Census of Canada 1961,* Vol. III, Part 3, Ottawa: Queens' Printer, 1963.

of the Canadian population should be classed as low income or low earning families, but the data available do suggest that if $2,000 is taken to represent low earnings or income, a sizeable percentage of our people fall into this category. This can be seen from an examination of the income data presented in Tables 4-7 to 4-9. These data are divided into a) the incomes of families and persons not in families, in urban and rural non-farm areas and b) farm families and individuals.

If we take $2,000 as a low income in 1961, Table 4-7 indicates that almost 13 per cent of all families of 2 or more persons, rural non-farm and urban, had incomes of less than this amount. The number of families in this classification approached one-half a million families. If we were to include all families with incomes of less than $3,000, these families would account for nearly 25 per cent of total families.

For persons not in families in 1961, 804,056 persons, or 57 per cent of all persons in this category had incomes of less than $2,000, while almost 38 per cent had incomes of less than $1,000.

If all persons in families with incomes of less than $2,000 a year were combined with individuals not in families earning less than this amount, almost 2.3 million Canadians can be said to be in a low income family or nearly 15 per cent of all persons living in urban and rural non-farm areas. As we have indicated, low income families and individuals may be young people just beginning their working life, but the size of the group suggests that a large number are families with children or elderly persons with incomes sufficient to maintain life, but insufficient to provide even a moderately comfortable standard of living or a margin against the uncertainties of illness or accident.[1]

Data relating to the income of farm families are limited and are indicative only of the relative magnitude of the size of the low income population. Table 4-8 presents data for the year 1958, the most recent data now available. In that year families and individuals not in families, with incomes of less than $2,000 a year, accounted for over three-quarters of a million persons or 35 per cent of all persons living on farms. Many changes have occurred since 1958 and the proportion of persons in low income families would almost certainly be less in 1961. However, it is likely that the proportion would be still higher than in urban areas. Thus Table 4-9 indicates that nearly 26 per cent of rural non-farm families had less than this amount of income compared with 10 per cent of urban families. For individuals not living in families, the percentages were 75.5 and 53.6 per cent respectively.

[1] Information relating to the low income families and individuals by age is available for non-farm families and individuals in 1959. See Dominion Bureau of Statistics, *Distribution of Non-Farm Incomes in Canada by Size, 1959, passim, op. cit.* In that year, of all families receiving incomes of less than $1,000, 38 per cent were 65 or over, while in the income class $1,000 to $1,499, 53 per cent were over 65. On the other hand, between 40 and 50 per cent of the families receiving less than $2,000 were in the age group 30-64.

TABLE 4-7 A. INCOME DISTRIBUTION OF FAMILIES AND PERSONS NOT IN FAMILIES, RURAL NON-FARM AND URBAN, FOR CANADA, 1961*

Item	Total	Under $1,000†	$1,000-1,999	$2,000-2,999	$3,000-3,999	$4,000-4,999	$5,000-5,999	$6,000-7,999	$8,000-9,999	$10,000- and over
Families and Persons not in Families	15,376,213	1,048,348	1,218,591	1,596,044	2,320,886	2,495,551	2,069,221	2,365,474	1,054,156	1,207,942
Cumulative Aggregate	—	1,048,348	2,266,939	3,862,983	6,183,869	8,679,420	10,748,641	13,114,115	14,168,271	15,376,213
Per Cent	100	6.8	7.9	10.4	15.1	16.2	13.5	15.4	6.9	7.8
Cumulative Per Cent	—	6.8	14.7	25.1	40.2	56.4	69.9	85.3	92.2	100.0

B. INCOME DISTRIBUTION OF FAMILIES, RURAL NON-FARM AND URBAN, FOR CANADA, 1961*

Family (2 or more persons)	3,656,968	163,590	302,115	382,235	557,366	603,192	502,464	596,134	262,787	287,085
Cumulative Aggregate	—	163,590	465,705	847,940	1,405,306	2,008,498	2,510,962	3,107,096	3,369,883	3,656,968
Per Cent	100	4.5	8.3	10.4	15.2	16.5	13.7	16.3	7.2	7.9
Cumulative Per Cent	—	4.5	12.8	23.2	38.4	54.9	68.6	84.9	92.1	100.0

C. INCOME DISTRIBUTION OF PERSONS NOT IN FAMILIES, FOR CANADA, 1961*

Persons not in Families	1,407,276	530,340	273,716	216,676	195,073	92,774	43,761	31,800	9,991	13,145
Cumulative Aggregate	—	530,340	804,056	1,020,732	1,215,805	1,308,579	1,352,340	1,384,140	1,394,131	1,407,276
Per Cent	100	37.7	19.4	15.4	13.9	6.6	3.1	2.3	0.7	0.1
Cumulative Per Cent	—	37.7	57.1	72.5	86.4	93.0	96.1	98.4	99.1	100.0

*These statistics for 1961 do not include families and persons not in families, resident in the following households: (1) farm (2) institutions (3) collective households (e.g., hotels) (4) Northwest Territories (5) transient and those living abroad and (6) military personnel stationed abroad.

†Includes families and/or individuals without income.

SOURCE: Based on Dominion Bureau of Statistics, *Summary Family Income Statistics*, Ottawa: Queen's Printer, 1963, and supplementary data.

TABLE 4-8 FARM INCOME DISTRIBUTION OF FAMILIES AND PERSONS NOT IN FAMILIES, FOR CANADA, 1958

Item	Total	Under* $1,000	$1,000-1,999	$2,000-2,999	$3,000-3,999	$4,000-4,999	$5,000-5,999	$6,000-7,999	$8,000-9,999	$10,000 and over
Families and Persons not in Families	2,275,137	364,391	422,885	454,265	375,518	240,382	149,472	148,644	58,826	60,754
Cumulative Aggregate	—	364,391	787,276	1,241,541	1,617,059	1,857,441	2,006,913	2,155,557	2,214,583	2,275,137
Per Cent	100	16.0	18.6	20.0	16.5	10.6	6.6	6.5	2.5	2.7
Cumulative Per Cent	—	16.0	34.6	54.6	71.1	81.7	88.3	94.8	97.3	100.0

*Includes those without income.

SOURCE: Based on Dominion Bureau of Statistics, *Farm Income and Expenditure Survey, 1958*, Central Research Division, and supplementary data.

TABLE 4-9 PERCENTAGE DISTRIBUTION OF FAMILIES AND PERSONS NOT IN FAMILIES WITH INCOMES LESS THAN $2,000, RURAL NON-FARM AND URBAN, 1961*

Province	Families		Persons not in Families	
	Number	Per Cent	Number	Per Cent
Canada				
Rural Non-farm	182,174	25.9	170,309	75.5
Urban	283,531	9.6	633,747	53.6
TOTAL	465,705	12.8	804,056	57.2
Newfoundland				
Rural Non-farm	19,408	47.1	9,662	89.4
Urban	9,052	20.0	9,983	71.9
TOTAL	28,460	32.9	19,645	79.6
Prince Edward Island				
Rural Non-farm	2,473	35.9	2,521	88.6
Urban	1,226	16.4	2,470	66.4
TOTAL	3,699	25.7	4,991	76.0
Nova Scotia				
Rural Non-farm	18,039	30.3	18,237	84.0
Urban	12,646	14.5	23,817	62.7
TOTAL	30,685	20.9	42,054	70.4
New Brunswick				
Rural Non-farm	16,692	33.0	12,585	82.4
Urban	7,559	12.6	15,592	63.7
TOTAL	24,251	21.9	28,177	71.0
Quebec				
Rural Non-farm	40,376	27.8	32,990	80.1
Urban	83,282	9.8	177,424	55.7
TOTAL	123,658	12.4	210,414	58.5
Ontario				
Rural Non-farm	33,505	17.2	41,855	71.9
Urban	96,308	8.2	240,783	50.5
TOTAL	129,813	9.4	282,638	52.8
Manitoba				
Rural Non-farm	10,511	31.6	9,231	74.4
Urban	13,835	9.8	32,514	54.7
TOTAL	24,346	13.9	41,745	58.2
Saskatchewan				
Rural Non-farm	16,576	34.8	14,268	72.6
Urban	12,367	13.1	23,380	55.7
TOTAL	28,943	20.4	37,648	61.0

TABLE 4-9 PERCENTAGE DISTRIBUTION OF FAMILIES AND PERSONS NOT IN FAMILIES WITH INCOMES LESS THAN $2,000, RURAL NON-FARM AND URBAN, 1961*—*Concluded*

Province	Families		Persons not in Families	
	Number	Per Cent	Number	Per Cent
Alberta				
Rural Non-farm	10,292	25.0	10,838	68.8
Urban	17,657	8.9	38,834	48.8
TOTAL	27,949	11.7	49,676	52.1
British Columbia				
Rural Non-farm	14,024	17.3	17,804	65.6
Urban	29,531	10.2	68,757	55.1
TOTAL	43,555	11.9	86,561	57.0
Yukon				
Rural Non-farm	278	16.6	314	52.0
Urban	68	6.0	193	31.8
TOTAL	346	12.3	507	41.9

*Excludes families and persons not in families resident in farm households.

Income includes:

(*a*) Gross cash wages, salaries, commissions and tips (before deduction for income tax, pensions, unemployment insurance, etc.).
(*b*) Net income (gross income less operating expenses) earned from own business or from a professional practice.
(*c*) Family allowances.
(*d*) Old-age assistance and old-age security payments.
(*e*) Other government transfer payments, e.g., unemployment insurance, workmen's compensation, veterans' pensions and allowances, disability pensions, mothers' allowance, etc.
(*f*) Retirement pensions.
(*g*) Bond and bank interest and dividends.
(*h*) Other investment income, e.g., net rents, mortgage interest, estate income, etc.
(*i*) All money income, e.g., annuities, income from roomers and boarders, alimony, etc.

Family income is the total of the above sources of income reported by all members of the family 15 years of age and over.

SOURCE: Dominion Bureau of Statistics, *Summary Family Income Statistics*, Ottawa: Queen's Printer, 1963.

The data presented in Table 4-9 also indicate that there are a sizeable number of low income families and individuals in every province. The percentage of low income families, however, differs significantly between provinces. Newfoundland has the highest proportion of families and individuals, both rural non-farm and urban, with incomes below $2,000, while Ontario, Alberta and British Columbia have the lowest proportions.

Similar results to those presented above are obtained from data relating to the earnings of wage-workers, evident in Tables 4-10 to 4-12. It must be emphasized that the statistics are limited to wage-earners only and do not

include the self-employed such as farmers and professional men; or the retired, permanently disabled, or persons who, for one reason or another, are not considered as members of the labour force. The financial status of those groups excluded from the category of wage-earners can be seen to some extent from the data presented above on income distribution.

Table 4-10 indicates that in current dollars there was a significant decline in the percentage of wage earners earning less than $2,000 between the years 1951 and 1961. While 44.3 per cent of all male wage earners earned less than this amount in 1951, by 1961 the percentage had been reduced to 21.2 per cent. In the case of female wage earners the reduction was from 85.9 to 50.3 per cent. For all wage earners, while it is obvious that there has been a substantial drop during the decade, a significant percentage, nearly 30 per cent, remained in this low earning range.

So far, our analysis has been presented in current dollar terms. But we know that prices have risen between 1951 and 1961 and as a result the purchasing power of the Canadian dollar has been somewhat reduced.

Between 1951 and 1961 the general price level in Canada has risen by 23.6 per cent.[1] Hence the purchasing power of the Canadian dollar has declined by a corresponding proportion during the decade. If we wish to

TABLE 4-10 PERCENTAGE OF WAGE EARNERS EARNING LESS THAN $2,000 PER YEAR, BY SEX, PROVINCES AND CANADA, 1951 AND 1961

Province	1951			1961		
	Male	Female	Total	Male	Female	Total
Canada	44.3	85.9	54.9	21.2	50.3	29.6
Newfoundland	69.1	96.0	74.3	36.8	72.2	44.3
Prince Edward Island	75.9	97.2	81.7	46.6	73.8	54.9
Nova Scotia	58.5	93.3	65.9	29.8	64.4	38.5
New Brunswick	64.2	93.2	71.2	34.3	64.2	42.3
Quebec	50.5	98.4	60.3	22.4	53.2	31.0
Ontario	35.4	81.0	47.5	16.3	45.9	25.3
Manitoba	46.2	90.6	58.6	20.9	53.2	31.1
Saskatchewan	57.0	90.8	66.6	27.1	50.6	34.2
Alberta	45.4	87.3	55.7	20.5	50.0	29.2
British Columbia	35.1	84.3	46.9	17.0	46.5	25.4
Yukon	29.7	65.7	34.2	15.6	42.1	21.5

SOURCE: Based on Table 4-6.

[1] This percentage is based on the implicit price index of Gross National Expenditure which rose from 86.3 in 1951 to 106.7 in 1961 (Base of Index: 1957=100). The data are from Dominion Bureau of Statistics, *National Accounts Income and Expenditure by Quarters, 1947-1961*, Ottawa: Queen's Printer, 1962, pp. 75 and 77.

obtain a rough indication of how many dollars a person had to earn in 1961 to purchase as many goods and services as a person earning $2,000 in 1951, we have to add 23.6 per cent. This works out to earnings of $2,472 in 1961 which are equivalent to the purchasing power of earnings of $2,000 in 1951.

To make a comparison of earnings distribution between 1951 and 1961 in terms of purchasing power of the earnings in these two years the comparison must be made between persons earning less than $2,000 in 1951 and those earning $2,499[1] or less in 1961. Table 4-11 indicates that in 1951 there were 44.3 per cent of male wage earners in the labour force earning less than $2,000 while in 1961, 28.4 per cent were earning less than $2,500. The corresponding figures for female wage earners are 86.0 per cent and 65.7 per cent. The data suggest that in real terms the earnings position of low wage earners has improved at a notably lesser rate than is indicated by current dollar figures.

Nor can it be said that the average wage earner has reached the stage where he could be considered affluent. Thus in 1961, as shown in Table 4-11, the *median* earnings in *current* dollars of wage earners in Canada amounted to $3,625 for males and $1,990 for females,[2] while the proportion earning more than $6,000, although up significantly from 1951, still accounted for only 12.4 per cent of male wage earners and 1.2 per cent of female wage earners.

Canadian averages can conceal significant differences both between provinces and between regions. In 1961, for example, only about 16 per cent of male wage earners in Ontario and British Columbia earned less than $2,000, in the Atlantic Provinces the percentage ranged between 29.8 per cent and 46.6 per cent. Such comparisons are limited by the fact that the data generally exclude those whose incomes are earned in agriculture or other occupations not characterized by wage earning and by differences in the price structure between regions, but they are sufficiently reliable to indicate that low incomes are much more characteristic in certain regions of Canada than in others.

Regional differences in earnings are also evident from Table 4-12 where in 1961, in every province the proportion of male earners in rural areas earning less than $2,000 a year was twice that of urban areas. For female wage earners the rural urban difference is even greater.

Although there are still a large number of Canadian wage earners with low earnings this would be of little social significance if such wage earners were unmarried, young, healthy men or women just beginning their working life, or if they were married women with husbands earning an adequate

[1] We have added the $2,000-2,499 group in 1961 to obtain comparable data in real terms between 1951 and 1961, to take account of the effect of a 23.6 per cent increase in the general price level during the decade referred to above.

[2] Median earnings are defined as that level of earnings which divides the earning group in half. Fifty per cent earned more and 50 per cent earned less than this amount.

TABLE 4-11 WAGE EARNERS, REPORTING EARNINGS, 15 YEARS OF AGE AND OVER, BY SEX, SHOWING MEDIAN EARNINGS, AND NUMBER AND PERCENTAGE DISTRIBUTION BY AMOUNT OF EARNINGS, DURING THE 12 MONTHS PRIOR TO THE CENSUS DATE, CANADA, PROVINCES, AND TERRITORIES, 1951 AND 1961

Province	Year	Median Earnings		Total Number Reporting Earnings*	
		Male	Female	Male	Female
		$	$		
Canada	1951	2,127	1,221	2,897,997	993,645
	1961	3,625	1,990	3,622,033	1,475,113
Newfoundland	1951	1,342	587	60,458	14,347
	1961	2,645	1,256	71,786	19,445
Prince Edward Island	1951	1,193	694	12,719	4,790
	1961	2,134	1,179	14,655	6,469
Nova Scotia	1951	1,777	857	130,346	35,551
	1961	2,957	1,499	145,665	50,175
New Brunswick	1951	1,601	893	90,056	28,088
	1961	2,723	1,519	107,265	39,050
Quebec	1951	1,986	1,150	803,202	277,276
	1961	3,367	1,904	1,015,267	388,224
Ontario	1951	2,308	1,372	1,113,934	398,148
	1961	3,935	2,137	1,378,061	601,081
Manitoba	1951	2,080	1,159	144,765	56,301
	1961	3,546	1,889	171,136	78,854
Saskatchewan	1951	1,794	1,137	101,556	39,824
	1961	3,304	1,978	126,112	55,059
Alberta	1951	2,098	1,897	163,624	53,033
	1961	3,679	1,999	241,668	101,142
British Columbia	1951	2,300	1,285	271,723	85,586
	1961	4,126	2,116	342,182	133,518
Yukon	1951	2,596	1,592	3,166	455
	1961	4,556	2,321	4,142	1,202
Northwest Territories	1951	2,594	1,198	2,448	246
	1961	4,520	2,240	4,094	894

TABLE 4-11 WAGE EARNERS, REPORTING EARNINGS, 15 YEARS OF AGE AND OVER, BY SEX, SHOWING MEDIAN EARNINGS, AND NUMBER AND PERCENTAGE DISTRIBUTION BY AMOUNT OF EARNINGS, DURING THE 12 MONTHS PRIOR TO THE CENSUS DATE, CANADA, PROVINCES, AND TERRITORIES, 1951 AND 1961—*Continued*

Province	Year	Wage Earners Reporting Earnings by Amount of Earnings					
		-$500		$500–999		$1,000–1,499	
		Male	Female	Male	Female	Male	Female
		%	%	%	%	%	%
Canada	1951	7.3	18.9	8.6	19.7	11.9	25.9
	1961	4.8	13.4	4.8	11.8	5.6	12.4
Newfoundland	1951	17.6	45.1	21.1	28.2	16.4	15.2
	1961	7.3	19.2	8.7	19.7	11.6	21.6
Prince Edward Island	1951	20.9	39.0	21.7	28.2	19.2	23.5
	1961	10.9	27.5	12.8	17.0	12.6	15.4
Nova Scotia	1951	11.2	32.0	13.0	25.2	15.3	23.5
	1961	6.4	19.6	6.9	15.4	8.3	15.0
New Brunswick	1951	11.1	31.2	15.9	23.9	19.3	25.3
	1961	7.5	19.9	8.9	15.3	9.9	14.2
Quebec	1951	7.0	17.3	9.6	24.5	14.8	27.2
	1961	4.3	10.9	5.1	11.7	6.4	14.1
Ontario	1951	5.7	15.8	5.9	16.0	9.2	24.4
	1961	4.2	12.8	3.8	10.9	4.2	11.3
Manitoba	1951	8.0	19.8	9.2	20.3	11.5	31.0
	1961	5.0	13.9	4.9	12.0	5.6	13.1
Saskatchewan	1951	12.7	25.3	13.9	17.2	13.2	27.5
	1961	7.1	16.1	6.8	12.3	7.1	9.9
Alberta	1951	7.6	21.5	9.2	18.3	12.0	27.4
	1961	5.4	15.4	4.9	12.0	5.3	11.4
British Columbia	1951	5.7	18.4	5.9	16.5	8.8	26.5
	1961	4.5	14.7	4.0	11.7	4.4	10.7
Yukon	1951	3.8	19.6	4.5	14.3	8.3	12.7
	1961	3.1	12.3	4.0	11.2	4.2	9.7
Northwest Territories	1951	2.7	13.8	4.5	26.8	9.2	23.6
	1961	3.6	13.5	4.1	12.8	4.4	8.9

TABLE 4-11 WAGE EARNERS, REPORTING EARNINGS, 15 YEARS OF AGE AND OVER, BY SEX, SHOWING MEDIAN EARNINGS, AND NUMBER AND PERCENTAGE DISTRIBUTION BY AMOUNT OF EARNINGS, DURING THE 12 MONTHS PRIOR TO THE CENSUS DATE, CANADA, PROVINCES, AND TERRITORIES, 1951 AND 1961—*Continued*

Province	Year	Wage Earners Reporting Earnings by Amount of Earnings					
		$1,500–1,999		$2,000–2,499		$2,500–2,999	
		Male	Female	Male	Female	Male	Female
		%	%	%	%	%	%
Canada	1951	16.5	21.5	22.6	9.8	15.5	2.8
	1961	5.4	12.7	7.8	15.4	7.8	11.0
Newfoundland	1951	14.0	7.5	13.8	2.8	7.5	0.7
	1961	9.2	11.7	11.0	9.8	8.1	5.9
Prince Edward Island	1951	14.1	6.5	11.3	2.1	5.5	0.5
	1961	10.3	13.9	12.6	12.8	8.9	6.7
Nova Scotia	1951	19.0	12.6	19.2	4.8	11.4	1.4
	1961	8.2	13.4	11.1	14.3	9.8	8.2
New Brunswick	1951	17.9	12.8	17.0	5.1	8.9	1.2
	1961	8.0	14.8	11.3	14.9	9.7	8.2
Quebec	1951	19.1	19.4	22.3	8.3	13.1	2.2
	1961	6.6	16.5	9.4	16.3	9.6	11.0
Ontario	1951	14.6	25.2	23.7	12.6	18.9	3.8
	1961	4.1	10.9	6.4	14.9	7.0	11.9
Manitoba	1951	17.5	19.5	23.8	6.7	13.6	1.9
	1961	5.4	14.2	8.0	17.0	7.7	10.4
Saskatchewan	1951	17.2	20.8	19.7	7.2	10.8	1.5
	1961	6.1	12.3	8.6	15.9	7.4	10.2
Alberta	1951	16.7	20.1	23.1	9.2	14.0	2.4
	1961	4.9	11.2	7.5	15.3	6.6	10.3
British Columbia	1951	14.7	22.9	24.9	10.6	18.6	3.2
	1961	4.1	9.4	5.8	15.2	5.0	10.9
Yukon	1951	13.1	19.1	17.2	18.0	15.6	9.0
	1961	4.2	8.9	5.1	12.3	4.5	9.0
Northwest Territories	1951	13.4	16.3	17.0	9.8	16.9	4.9
	1961	5.3	9.4	6.0	11.2	5.1	7.6

TABLE 4-11 WAGE EARNERS, REPORTING EARNINGS, 15 YEARS OF AGE AND OVER, BY SEX, SHOWING MEDIAN EARNINGS, AND NUMBER AND PERCENTAGE DISTRIBUTION BY AMOUNT OF EARNINGS, DURING THE 12 MONTHS PRIOR TO THE CENSUS DATE, CANADA, PROVINCES, AND TERRITORIES, 1951 AND 1961—*Concluded*

Province	Year	Wage Earners Reporting Earnings by Amount of Earnings					
		$3,000–3,999		$4,000–5,999		$6,000*	
		Male	Female	Male	Female	Male	Female
		%	%	%	%	%	%
Canada	1951	12.0	1.2	4.2	0.2	1.5	0.03
	1961	22.1	15.8	29.3	6.3	12.4	1.2
Newfoundland	1951	6.5	0.3	2.3	0.08	0.7	0.007
	1961	19.3	9.1	18.2	2.6	6.7	0.3
Prince Edward Island	1951	4.8	0.1	1.9	0.02	0.6	—
	1961	14.6	5.5	13.0	1.0	4.2	0.2
Nova Scotia	1951	7.8	0.6	2.4	0.1	0.06	0.01
	1961	21.3	10.1	20.9	3.3	7.0	0.6
New Brunswick	1951	6.8	0.3	2.3	0.1	0.7	—
	1961	20.6	9.6	18.3	2.8	5.8	0.3
Quebec	1951	9.1	0.8	3.4	0.1	1.5	—
	1961	23.3	14.1	25.0	4.7	10.2	0.7
Ontario	1951	14.9	1.7	5.2	0.3	1.8	—
	1961	21.8	18.3	33.8	7.4	14.8	1.6
Manitoba	1951	10.9	0.7	4.0	—	1.6	—
	1961	24.4	13.3	28.0	5.2	11.0	0.9
Saskatchewan	1951	8.6	0.5	3.1	0.1	0.7	—
	1961	22.7	14.3	24.4	8.1	9.9	1.0
Alberta	1951	11.9	1.0	4.3	0.1	1.4	—
	1961	22.7	15.5	29.1	7.6	13.6	1.2
British Columbia	1951	15.4	1.7	4.6	0.3	1.4	—
	1961	19.8	17.9	36.6	8.0	15.7	1.6
Yukon	1951	26.1	6.6	9.9	0.7	1.4	—
	1961	13.8	21.4	39.1	13.7	21.8	1.5
Northwest Territories	1951	25.8	4.9	9.2	—	1.3	—
	1961	13.6	15.8	30.6	16.8	27.3	4.0

*Excludes wage earners who did *not report* earnings and wage earners who did not work for wages or salary during the 12 months prior to the census date, June 1, 1961, e.g., members of religious orders who received payment in kind only.

SOURCE: Dominion Bureau of Statistics, *Census of Canada 1961*, Vol. III, Part 3, Ottawa: Queen's Printer, 1963, Table 9.

TABLE 4-12 PERCENTAGE OF WAGE EARNERS EARNING LESS THAN $2,000 PER YEAR, BY SEX, CANADA AND PROVINCES, RURAL AND URBAN, 1961

Province	Male	Female
Canada		
Rural	38.5	66.8
Urban	15.7	47.5
Newfoundland		
Rural	55.6	86.0
Urban	24.2	67.5
Prince Edward Island		
Rural	60.1	77.0
Urban	30.4	71.1
Nova Scotia		
Rural	43.3	72.8
Urban	21.2	59.5
New Brunswick		
Rural	51.4	74.5
Urban	19.8	58.8
Quebec		
Rural	48.1	70.6
Urban	17.3	49.7
Ontario		
Rural	29.2	60.5
Urban	13.4	44.0
Manitoba		
Rural	41.6	60.7
Urban	15.5	52.0
Saskatchewan		
Rural	45.9	61.1
Urban	17.2	47.1
Alberta		
Rural	38.2	61.4
Urban	15.7	48.2
British Columbia		
Rural	21.7	59.5
Urban	15.6	44.3

SOURCE: Based on Dominion Bureau of Statistics, *Census of Canada 1961*, Vol. III, Part 3, Ottawa: Queen's Printer, 1963, Table 14.

wage. Unfortunately the statistics available at present do not enable us to separate out these individuals from those for whom low wages constitute a real burden. On the other hand, a sizeable proportion of this group does consist of married couples with children who find it difficult to provide more than the basic necessities of life out of such resources. Indeed as shown in Tables 4-7 to 4-9, if we were to include the families where the sole wage earner earned less than $3,000 a year it could hardly be said that they have sufficient income to provide the necessities of life including adequate health care.

Although we recognize that some persons in 1961, because of their youth or their limited responsibilities could provide the health services they needed from an income of $2,000, the fact that a sizeable number of Canadians had less than this income suggests that there is still a substantial segment of our population who may need health care and cannot afford to pay for it. How far their needs are currently met through public assistance benefits is discussed in Chapter 18.

Poverty is relative and families with low real incomes have continued to persist despite the fact that most Canadians are better off than a generation ago. Many individuals and families have moved up in the income scale but there remains a sizeable proportion of our population whose level of income keeps them at or below what is now considered a minimum standard of living in Canada.

5

Health Status of the Canadian People

INTRODUCTION

The purpose of health services is to preserve or improve the health of the people or minimize the consequences of ill health. Hence their effectiveness will be judged, in the final analysis, by the extent to which they enable us to prevent, diagnose, or successfully treat illness, and to rehabilitate those who are physically or mentally incapacitated by illness or injury.

An assessment of the health status of the Canadian people thus becomes a necessary prerequisite to a comprehensive examination of our health services which, in common with most other organizational arrangements, have a self-perpetuating tendency. The more unwieldy, complex, and costly these institutions and organizational arrangements become, the greater the necessity for evaluating them against their basic objectives.[1]

Measuring Health in Terms of Illness

Any quantitative evaluation of the health status of a people relies largely on the traditional method of measuring the negative manifestations of health. These may present themselves as physical or mental disease and injury or health impairment, or what is termed "morbidity".

Morbidity is a state of health below a given norm; it may be due to illness, injury, or impairment. The norm may vary, however, depending on its purpose, all the way from perfect health and the ability to undertake the most arduous physical and mental tasks, to just adequate health required to perform certain ordinary activities of everyday life. Thus in assessing what could be a desirable norm, account must be taken of both objective and subjective criteria.

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[1] One of the necessary elements for such an evaluation is the availability of adequate statistical and other factual information. Much remains to be done, however, to produce in the health field a statistical system comparable to those available in other areas of our social fabric.

Objective criteria are those set by organizations or institutions requiring a given standard of health for the performance of certain duties, e.g., the fitness requirements for persons entering the Armed Forces, to qualify for certain particularly arduous tasks, such as pilots, policemen, firemen, and also for certain other types of work, e.g., industrial employment, or government service. These criteria are objective only with respect to the task for which the health of the individual is examined. A person fit for one type of activity may not be fit for another.

Objective criteria may be based also on medical knowledge and experience which enable the physician to determine beyond any reasonable doubt the existence of impaired health.

Subjective criteria imply a judgment of the individual about the effectiveness of his state of health to perform certain functions. These criteria vary further because the same state of morbidity will affect different individuals in different ways. One person may ignore a headache as a passing phase not detrimental to his general well-being while another may want to see a physician and interrupt his normal activity.[1] Even though health defects may vary in their effect on the organism of the individual, the existence or absence of such defects can, of course, often be objectively established.

The physician's evaluation of a patient's health, in turn, may depend on his training and the availability of modern diagnostic services. The physician's interpretation even of objectively determined symptoms may lead to different assessments or diagnoses.

Taking account of both the objective and the subjective criteria we arrive at a concept of health which enables us to establish a state of well-being in which people are able to perform certain tasks and lead a satisfactory life. If this dual objective is not achieved because of either physical or mental disease, illness, injury, or other health impairment, we speak of morbidity. The concept generally used then is one of adequate health in relation to certain objectives and not a concept of "perfect" health or health *per se*.[2]

By adequate health we mean the highest health standards for the Canadian people consistent with the most effective use of the expanding

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[1] The Canadian Sickness Survey undertaken by the Dominion Bureau of Statistics and the Department of National Health and Welfare in 1950-51 showed that persons in Newfoundland reported proportionately fewer minor illnesses than people in British Columbia. There may have been a variety of reasons for this but one possible explanation would be the different attitudes of residents of Newfoundland in what they consider an adequate state of health as compared with the attitudes of persons living in British Columbia.

[2] The problem of arriving at a generally acceptable and quantifiable concept of positive health has been the subject of extensive studies but so far without conclusive results.

resources of this country and employing all the preventive, diagnostic, treatment, and rehabilitative services we are capable of rendering.[1]

Measurement of health is beset with numerous difficulties. The transition from health to ill-health—or morbidity—is often a gradual one and hence the decision where one state ends and the other begins involves some judgment. Frequently we have to rely on the subjective judgment of the patient or the art rather than the science of the physician. The same applies throughout the various stages of illness until the climax of severity, namely death, is reached.

This is one reason why the measurement of mortality has continued to be the most reliable single indicator of health conditions. It can, however, no longer remain the only such indicator. One of the spectacular results of the advances in health care is the effective control of some once fatal diseases, particularly the infectious ones, and the elimination of fatality or its postponement in the case of other diseases. Also, the impact of many long-term diseases, which constitute our main health problems today, lies not only in their fatality—for some like mental disease or arthritis have very low fatality rates—but also in their duration, the extent and degree of disability they cause, and the amount of services they require. These factors are not reflected by mortality data. But as soon as we move away from the clearly identifiable event of death to other characteristics of morbidity, we encounter difficulty in reliably and objectively establishing the facts. Scientific efforts to quantify the non-fatal characteristics of morbidity are relatively new, and little or no effort has so far been made in Canada to establish an integrated system of data collection to supplement the well-established mortality statistics. In the briefs submitted to this Commission frequent references are made to the inadequacy of data concerning Canada's health status and health needs. For the present, only mortality and some hospital statistics are available to indicate historic trends and to make comparisons with other countries. Even these data need to be improved to adapt them to today's health problems.

Because of inadequate data it will be necessary to refer to sources which are often limited in scope or outdated, and some judgment regarding their general validity will be made. We believe, however, that the data presented in this chapter appear to be adequate for a reasonable assessment of the health status of the Canadian people and the main health problems facing our nation today. Still the need of improving and extending data on the health of the Canadian people remains an important task for the future.[2]

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[1] For a statement of principles of achieving the highest possible health standards see Health Charter for Canadians in Chapter 1.

[2] See Chapter 2, Recommendations 184 and 186-189.

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MORTALITY AND THE LIFE SPAN

General Mortality Trends in Canada, 1931 to 1960

General mortality refers to mortality from all causes without regard to mortality from specific diseases. Four different, though related, measures of mortality are presented in Table 5-1.[1]

1. *The Number of Deaths (Col. 1)*: The number of deaths occurring in the country will largely depend on the size of the population. As Canada's population has increased, the number of deaths must also be expected to increase. Therefore, the absolute number of deaths in itself does not permit any conclusions regarding health conditions. Its growth, however, from some 100,000 in 1931 to about 140,000 in 1961 indicates a greater volume of deaths occurring, hence a greater number of fatal illnesses and accidents and a correspondingly greater demand for services to treat such illnesses. This is a reminder that even under improving health conditions the demand for services must be expected to rise as the population increases.
2. *The Crude Death Rate (Col. 2)*: In order to determine whether the impact of mortality today is higher or lower than before, we have to separate it from the population growth and see what would have happened if the size of the population had not changed. This is done by employing a rate, which tells us how many died in each year for every 1,000 of the population. The crude death rate shows that in 1960 only 7.8 people died per 1,000 population, compared to 10.2 deaths per 1,000 population in 1931. Mortality has thus improved (by about 25 per cent according to this measure) although the absolute number of deaths has increased. This measure is thus independent of the size of the population but it does not compensate for changes in the age and sex composition of the population. Nevertheless, the crude death rate from year to year does reflect changes in mortality, and is therefore a useful broad measure of trends and of comparisons with other countries where more refined indicators are not readily available.
3. *The Standardized Death Rate (Col. 3)*: This rate is adjusted so as to eliminate the effect of a changing age and sex composition of the population. We know that the chances of dying increase with age. Therefore, the greater the proportion of older people, the greater the probability of more people dying. The standardized or adjusted rate

[1] Rates are computed as follows in this chapter, unless otherwise stated: general death rates (i.e., deaths from all causes) per 1,000 population; causes of death rates per 100,000 population; infant mortality rate per 1,000 live births; maternal mortality rate per 100,000 live births.

is computed by applying the number of people at each age dying annually to a population with a uniform age composition.[1]

4. *The Age-proportional Death Rate (Col. 4)*: This is a death rate calculated by weighting the number of deaths according to the reciprocal of the age at which they occur. This eliminates the need for referring to any particular age distribution of the population and reflects in a general way the decreasing social impact of death with increasing age at which it occurs.[2] By this measure mortality has declined by 39 per cent from 1931 to 1960.

At our present stage of knowledge, lower mortality is generally regarded as a sign of better health. This is largely justifiable because it means a reduction in the final consequence of ill health, but if we succeed in keeping people alive longer, we face the task of keeping them healthier. Life is not synonymous with health. We are succeeding today in prolonging the life of many patients without always curing their disease. But "where there is life, there is hope" and once we have extended life there is always the possibility—or hope—of a cure or of arresting the disease process. Reduced mortality then is at least a first step towards better health. The mortality rate, however, does not tell the whole story because it does not reflect changes in fields such as mental health and diseases which may be largely disabling without necessarily being fatal.

Age, Sex, and Regional Differences

The reduction of mortality has not been evenly distributed among the various age and sex groups of the population. The crude death rate in 1960 stood at 9.3 per 1,000 population for males and at 6.6 for females. If, by the use of the standardized[3] rate, we adjust for the different age distribution between males and females, we find that the more rapid decline of mortality among females has led to a widening gap between the rates for the two sexes. Although in 1930, the female standardized rate amounted to 92 per cent of the male rate, by 1960 it was reduced to only 71 per cent; some of the causes for the greater premature mortality among males will be referred to in the following pages.

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[1] In this case, Canada's population in 1956, the mid-year between two decennial Censuses and two revisions of the International Classification of Diseases.

[2] If it is accepted that an individual's contribution to society culminates when he approaches the peak of his career and has raised his children, then it can be assumed that his inevitable death will be less disrupting the later in life it occurs. This can be expressed statistically by weighting the number of deaths according to the age at which they occur, decreasing the weight with increasing age. This method oversimplifies the impact of death among some younger age groups but it is valid for the vast majority of deaths in Canada of which in 1960 about 77 per cent occur at ages of 50 and over, and 80 per cent at age 45 and over. See also: Kohn, R., "An Objective Mortality Indicator", *Canadian Journal of Public Health*, Vol. 42, Sept. 1951, pp. 375-379.

[3] To Canada's 1956 population.

TABLE 5-1 MORTALITY IN CANADA, 1931-1960

Year	(1) Number of Deaths*	(2) Crude Death Rate*	(3) Standardized Death Rate*	(4) Age-proportional Death Rate†
1931	108,446	10.2	12.2	20.8
1932	108,161	10.0	12.1	20.3
1933	105,603	9.7	11.6	19.4
1934	105,277	9.5	11.4	18.9
1935	109,724	9.9	11.6	19.2
1936	111,111	9.9	11.5	20.3
1937	118,019	10.4	12.1	20.4
1938	110,647	9.7	11.1	18.3
1939	112,729	9.7	11.1	18.4
1940	114,717	9.8	11.0	18.2
1941	118,797	10.1	11.2	18.6
1942	117,110	9.8	10.7	17.7
1943	122,640	10.1	11.0	18.3
1944	120,393	9.8	10.5	17.4
1945	117,325	9.5	9.3	16.4
1946	118,785	9.4	9.9	16.2
1947	121,503	9.4	9.7	15.7
1948	122,974	9.3	9.5	15.2
1949	124,567	9.3	9.4	14.9
1950	124,220	9.1	9.1	14.5
1951	125,823	9.0	9.0	14.3
1952	126,385	8.7	8.8	13.9
1953	127,791	8.6	8.6	13.7
1954	124,855	8.2	8.2	13.0
1955	128,476	8.2	8.2	13.0
1956	131,961	8.2	8.2	13.4
1957	136,579	8.2	8.3	13.0
1958	135,201	7.9	8.0	12.7
1959	139,913	8.0	8.1	12.8
1960	139,693	7.8	7.9	12.6
1961‡	140,985	7.7	—	—

* Dominion Bureau of Statistics, *Vital Statistics 1960*, Ottawa: Queen's Printer, 1962, pp. 30 and 115.

† Calculations based on the above; for methods, see: Kohn, R., "An Objective Mortality Indicator", *Canadian Journal of Public Health*, Vol. 42, September 1951, pp. 375-379.

‡ Dominion Bureau of Statistics, *Vital Statistics 1961*, Preliminary Annual Report, Ottawa: Queen's Printer, 1962, p. 4.

SOURCE: Kohn, R., *The Health Status of the Canadian People*, a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

TABLE 5-2 POPULATION OF CANADA 1961, IF 1926 DEATH RATE HAD PREVAILED

(thousands)

Year	(1) Population (from Col. 7, previous line)	(2) Birth Rate (per 1,000 population)	(3) Computed No. of Births (1) x (2) / 1,000	(4) Net Migration	(5) Total (1)+(3)+(4)	(6) Computed No. of Deaths (1) x 11.4 / 1,000	(7) Hypothetical Population (5)−(6)
1926	9,717	24.7	240	29	9,986	111	9,875
1927	9,875	24.3	240	55	10,170	113	10,057
1928	10,057	24.1	242	69	10,368	115	10,253
1929	10,253	23.5	241	72	10,566	117	10,449
1930	10,449	23.9	250	47	10,746	119	10,627
1931	10,627	23.2	247	35	10,909	121	10,788
1932	10,788	22.5	243	1	11,032	123	10,909
1933	10,909	21.0	229	1	11,139	124	11,015
1934	11,015	20.7	228	−13	11,230	126	11,104
1935	11,104	20.5	228	−13	11,319	127	11,192
1936	11,192	20.3	227	−10	11,409	128	11,281
1937	11,281	20.1	227	−13	11,495	129	11,366
1938	11,366	20.7	235	−17	11,584	130	11,454
1939	11,454	20.6	236	− 8	11,682	131	11,551
1940	11,551	21.6	249	−21	11,779	132	11,647
1941	11,647	22.4	261	−17	11,891	133	11,758
1942	11,758	23.5	276	−12	12,022	134	11,888
1943	11,888	24.2	288	−24	12,152	136	12,016
1944	12,016	24.0	288	−20	12,284	137	12,147
1945	12,147	24.3	295	−51	12,391	138	12,253
1946	12,253	27.2	333	3	12,589	140	12,449
1947	12,449	28.9	360	15	12,824	142	12,682
1948	12,682	27.3	346	42	13,070	145	12,925
1949	12,925	27.3	353	37	13,315	147	13,168
1950	13,168	27.1	357	17	13,542	150	13,392
1951	13,392	27.2	364	42	13,798	153	13,645
1952	13,645	27.9	381	173	14,199	156	14,043
1953	14,043	28.1	395	96	14,534	160	14,374
1954	14,374	28.5	410	131	14,915	164	14,751
1955	14,751	28.2	416	97	15,264	168	15,096
1956	15,096	28.0	423	64	15,583	172	15,411
1957	15,411	28.3	436	196	16,043	176	15,867
1958	15,867	27.6	438	135	16,440	181	16,259
1959	16,259	27.5	447	64	16,770	185	16,585
1960	16,585	26.9	446	48	17,079	189	16,890
1961	16,890	26.1	441	33	17,364	193	17,171

Actual population, 1961	18,238,000
Hypothetical population, 1961 (Col. 7)	17,171,000
Increase due to mortality decline	1,067,000

SOURCE: Kohn, R., *The Health Status of the Canadian People*, a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

MORTALITY RATE

Year	Male	Female
1930	13.5	12.4
1940	11.8	10.2
1950	10.1	8.1
1960	9.3	6.6

SOURCE: Dominion Bureau of Statistics, *Vital Statistics 1960*, Ottawa: Queen's Printer, 1962, p. 30.

Mortality exerts a considerable impact in the first year of life; is at its minimum during childhood, adolescence, and young adult ages; and, as may be expected, increases notably in the older ages.

Table 5-3 indicates that infant mortality is only about one-third of what it was in 1930. The rates for the remaining younger age groups which

TABLE 5-3 AGE-SEX SPECIFIC MORTALITY RATES, CANADA, 1960, 1950, 1930

Age	1960		1950		1930	
	M	F	M	F	M	F
Under 1	30.8	23.7	46.2	36.5	98.4	79.7
1– 4	1.3	1.1	2.2	1.8	7.9	6.9
5– 9	0.7	0.4	1.0	0.7	2.6	2.0
10–14	0.6	0.3	0.8	0.6	1.7	1.6
15–19	1.3	0.5	1.4	0.8	2.8	2.8
20–24	1.5	0.6	1.7	1.0	3.7	3.6
25–29	1.5	0.7	1.7	1.2	3.7	4.1
30–34	1.6	0.9	1.9	1.4	3.7	4.1
35–39	2.4	1.5	2.6	2.2	4.6	4.9
40–44	3.3	2.1	4.0	3.2	5.8	6.0
45–49	6.0	3.5	6.6	4.7	7.7	7.1
50–54	9.4	5.4	10.0	6.6	10.8	9.3
55–59	15.5	8.1	15.6	10.1	15.7	13.7
60–64	24.3	13.3	25.1	16.1	23.2	20.1
65–69	35.7	21.7	36.4	26.4	37.4	32.8
70–74	55.1	35.6	54.9	42.8	58.0	50.7
75–79	83.6	59.6	84.7	69.9	93.2	82.6
80–84	131.6	106.3	132.2	115.3	141.3	132.8
85 and over	237.8	219.8	222.9	209.1	242.0	233.5

SOURCE: Dominion Bureau of Statistics, *Vital Statistics 1960*, Ottawa: Queen's Printer, 1962, pp. 126-129.

were already comparatively low 30 years ago, have been roughly halved during that period. But very little reduction has taken place at the age groups above the mid-forties.[1]

Regional differences are reflected in the mortality rates for the provinces shown in Table 5-4. Several provinces reversed their positions in 1960 from what they were in 1959. The areas with the lowest and the highest standardized rate were the same in both years, namely Saskatchewan and the Northwest Territories respectively.

TABLE 5-4 MORTALITY RATES, CANADA AND PROVINCES, 1960

Province	Crude Rate	Standardized Rate*
Newfoundland	6.6	7.8
Prince Edward Island	9.3	7.2
Nova Scotia	8.4	7.6
New Brunswick	7.8	7.7
Quebec	6.9	9.0
Ontario	8.5	8.1
Manitoba	8.3	7.4
Saskatchewan	7.5	6.7
Alberta	6.9	7.4
British Columbia	9.2	7.5
Yukon	6.9	7.5
Northwest Territories	14.2	14.7
CANADA	7.8	7.9

* Standardized to Canada 1956 Census population.

SOURCE: Dominion Bureau of Statistics, *Vital Statistics 1960*, Ottawa: Queen's Printer, 1962, pp. 115 and 130.

Life Span

The length of the life span is regarded as a particularly useful indicator for the evaluation of general health conditions. The length of life is the direct result of the conditions determining the mortality patterns. Hence what has been said about the reduction and differentials of mortality will correspondingly apply to the changing duration of the life span. To determine how long Canadians live, two measures are available: the average age at death, and the life expectancy at birth.

[1] Fluctuations in the age group "85 and over" may be due to small frequencies and perhaps also to the changing age-composition within that group.

The average age at death indicates the length of life of those dying during the current year. These are people who lived their lives under health conditions existing in the past. They did not benefit fully from recent advances in medical care. The life expectancy at birth, on the other hand, tells us what the life pattern for babies born today is likely to be if the current mortality experience were to prevail throughout their life time. Their actual life span will be different from today's life table values; if mortality continues to be reduced, they will be exposed to those changed conditions throughout the coming decades of their lives.

For the middle aged, the actual expectancy will be somewhere between that of the people who are dying and of those born today. Thus, the average age at death of Canadians today is about 60 years; one might expect then that this would have been the life expectancy at birth 60 years ago but actually it was then only about 50 years.[1]

The following tabulation shows the average age at death, that is, the average length of life of the people dying in each year, for selected years. The widening gap between the sexes is as noticeable as it is in the mortality rates.

AVERAGE AGE AT DEATH

Year	Male	Female
1930	42.2	43.5
1940	52.3	53.7
1950	55.6	58.0
1960	59.5	62.7

SOURCE: Dominion Bureau of Statistics, *Vital Statistics 1960*, Ottawa: Queen's Printer, 1962, p. 119, and communication from Dominion Bureau of Statistics.

These figures are not adjusted to the age structure of the population and it is therefore difficult to say how much of the increase is due to improved health and living conditions, and how much is the result of the changing age composition. For example, the ten-year increase in the average age at death in the nineteen thirties is partly due to the unusual increase of the proportion of people over 50 in the population which, in turn, is partly due to the lower birth rate and the net emigration during that decade. On the other hand, the increase in the average age at death during the nineteen fifties occurred despite

[1] Lacking Canadian figures for the period around 1900, this figure is taken from the U.S. life tables which are fairly close to Canadian experience.

a slightly reduced proportion in the over 50 group. The fact remains, however, that Canadians reaching the end of their lives today have on the average lived almost 20 years longer than their forbears who died 30 years ago.

To illustrate the implications of this extension of the life span, we may look at its effect upon the economically productive life. Assuming that it begins, roughly speaking, at age 15, men dying in 1930 would have spent a working life of about 27 years, women of about 29 years. In 1960, the corresponding working life figures were 45 for men and 48 for women, an increase of about two-thirds over the 30-year period. It must be noted, however, that this is the potential, and not the actual working life span. The latter would be shorter due to the amount of disability before death.

Life tables indicate the life expectancy at various ages, based on the probability of dying or surviving at a given age, this probability being computed from the current mortality pattern. With this pattern prevailing from the time of birth, the life expectancy at birth gives the expected total life span. It has been increasing for Canadians as follows:

LIFE EXPECTANCY AT BIRTH

Year	Male*	Female*
1931	60.00	62.10
1941	62.96	66.30
1951	66.33	70.83
1956	67.61	72.92
1961	68.35	74.17

* The total for both sexes is sometimes arrived at by taking the unweighted mean of the two sets of figures. This gives a fairly good over-all picture but is not fully representative. For the many uses of the values for the whole population (i.e., both sexes) it would be helpful if these values were incorporated in the life table.

SOURCE: Dominion Bureau of Statistics, *Vital Statistics 1960*, Ottawa: Queen's Printer, 1962; p. 62, and *Canadian Life Tables 1960-1962*, Ottawa: Queen's Printer, 1963. pp. 6 and 8.

Canada and Other Countries

One method of judging the health status of the Canadian people is to compare selected health indicators for Canada and other countries. For an evaluation of the situation in Canada a comparison with countries of similar social and economic structure and standards is necessary. The United States, England and Wales, and some Scandinavian countries are compared in terms

of certain statistics which are generally considered to be indicative of general health conditions. The data refer to the year 1959:

Country	Infant Mortality Rate per 1,000 Live Births	Mortality Rate From all Infective Diseases per 100,000 Population	Infective Disease Deaths as Per Cent of all Deaths	Maternal Mortality Rate per 100,000 Live Births	Life Expectancy at Birth	Crude General Mortality Rate per 1,000 Population
Canada	28.4	10.8	1.4	54.9	70.3	8.0
U.S.A.	26.4	12.8	1.4	37.4	69.6	9.4
England and Wales	22.2	13.7	1.2	38.7	71.0	11.6
Denmark	22.5	8.2	0.9	43.3	71.2	9.3
Norway	18.7	12.6	1.4	39.7	72.9	8.9
Sweden	16.6	10.9	1.2	23.8	72.6	9.5

SOURCE: See Table 5-5.

Canada's record is not as good as that of the five other countries with which it is compared above, in regard to infant and maternal mortality. The rates for Canada, however, are the net total of widely varying provincial rates as shown in the following tabulation for 1959, the year to which the international comparison refers:

Province	Infant Mortality Rate per 1,000 Live Births	Maternal Mortality Rate per 100,000 Live Births
Newfoundland	39	81
Prince Edward Island	31	Nil
Nova Scotia	31	42
New Brunswick	33	36
Quebec	33	73
Ontario	24	46
Manitoba	27	61
Saskatchewan	26	41
Alberta	24	37
British Columbia	25	43
Yukon	26	Nil
Northwest Territories	129	505
CANADA	28	55

SOURCE: Dominion Bureau of Statistics, *Vital Statistics 1959*, Ottawa: Queen's Printer, 1961, pp. 66, 214 and 215.

Maternal mortality ranged from 36 in New Brunswick to 505 in the Northwest Territories. Infant mortality ranged from a rate of 24 in Ontario and Alberta to 129 in the Northwest Territories.

Infant mortality is at least as much a social problem as it is a medical one. The correlation between high infant mortality and low economic status is illustrated in the following tabulation ranking the provinces[1] according to their infant mortality and per capita personal income, from the best to the worst.

Infant Mortality Rate per 1,000 Population, and Ranking of Provinces, Average 1959-1961			Per Capita Personal Income, Average 1959-1961		
Rank	Province	Rate	Rank	Province	Income $
1	Ontario	23.5	1	Ontario	1,807
2	British Columbia	24.4	2	British Columbia	1,786
3	Alberta	25.7	3	Alberta	1,570
4	Saskatchewan	26.1	4	Manitoba	1,520
5	Manitoba	27.4	5	Saskatchewan	1,338
6	Nova Scotia	29.4	6	Quebec	1,311
7	New Brunswick	29.7	7	Nova Scotia	1,163
8	Quebec	31.6	8	New Brunswick	1,031
9	Prince Edward Island	32.0	9	Prince Edward Island	961
10	Newfoundland	37.5	10	Newfoundland	874

SOURCE: Dominion Bureau of Statistics, *Vital Statistics, 1959, 1960, 1961,* and *National Accounts, Income and Expenditure 1961,* Ottawa: Queen's Printer. The rank correlation is statistically highly significant (Kendall's rank correlation coefficient:

$$\tau = 0.87, \text{ and } \frac{S}{\sigma} = 3.5)$$

Thus, in every province or territory, there is less than one maternal death in every hundred live births. The infant deaths in the "developing" areas of Canada amount to a small percentage only of all infant deaths in Canada and, therefore, have very little effect on the national rate. In 1959, not one of the provinces had reached the level of the European countries chosen for comparison, but the area from Ontario to the West Coast had rates similar to that of the United States.

Summary

The comparison with countries of similar socio-economic structure shows areas requiring improvement in the health status of the Canadian

[1] The situation in the Yukon and the Northwest Territories is discussed at the end of this chapter.

TABLE 5-5 SELECTED HEALTH STATISTICS FOR CANADA AND OTHER COUNTRIES,* ABOUT 1959

Country	Crude Mortality Rate per 1,000 Population	Infant Mortality Rate per 1,000 Live Births	Infant Deaths as Per Cent of all Deaths	Maternal Mortality Rate per 100,000 Live Births	Infectious Disease Mortality Rate per 100,000
AFRICA					
Egypt	16.6	145.0	34.3	—	66.3
AMERICA					
Argentina	8.8	61.8	16.3	—	—
Canada	*8.0*	*28.4*	*9.7*	*54.9*	*10.8*
Chile	12.5	119.7	33.9	—	—
Colombia	12.8	96.9	33.4	—	—
Jamaica	10.0	67.8	26.3	—	—
Trinidad	9.1	62.2	25.4	—	—
U.S.A.	9.4	26.4	6.8	37.4	12.8
Venezuela	9.2	55.3	31.6	130.1	67.4
ASIA					
India	12.1	100.0	20.6	—	—
Japan	7.5	33.7	7.9	146.4	49.1
EUROPE					
Austria	12.5	39.8	5.6	97.3	33.2
Belgium	11.4	30.4	4.6	51.2	23.9
Denmark	9.3	22.5	3.9	43.3	8.2
England and Wales	11.6	22.2	3.1	38.7	13.7
Finland	8.8	23.6	5.1	67.3	36.2
France	11.3	29.5	4.8	55.0	32.6
Hungary	10.4	52.4	7.6	80.0	41.8
Italy	9.3	45.4	9.0	108.9	29.7
Luxembourg	11.1	37.3	5.2	—	16.8
Netherlands	7.6	16.8	4.7	50.0	9.1
Norway	8.9	18.7	3.7	39.7	12.6
Poland	8.6	71.9	20.6	—	—
Portugal	10.8	88.6	19.3	123.4	74.5
Spain	9.0	47.1	11.4	—	40.7
Sweden	9.5	16.6	2.5	23.8	10.9
Switzerland	9.6	22.2	4.1	66.7	23.0
West Germany	10.8	34.3	5.2	108.4	22.4
OCEANIA					
Australia	8.9	21.5	5.5	45.8	10.9
New Zealand	9.0	23.9	7.0	49.3	10.5
U.S.S.R.	7.6	40.6	—	—	—

TABLE 5-5 SELECTED HEALTH STATISTICS FOR CANADA AND OTHER COUNTRIES,* ABOUT 1959—*Concluded*

Country	Infective Disease Deaths as Per Cent Of All Deaths	Mortality Rate Age 1–4 per 1,000 Population	Life Expectancy at Birth	Population per Physician	Population per Hospital Bed
AFRICA					
Egypt	3.5	50.8	—	2,700	480
AMERICA					
Argentina	—	—	—	730	160
Canada	*1.4*	*1.2*	*70.3*	*920*	*90*
Chile	—	—	—	1,700	260
Colombia	10.9	18.3	—	2,500	330
Jamaica	—	—	—	4,300	240‡
Trinidad	5.1	3.2	61.5	2,600	240‡
U.S.A.	1.4	1.1	69.6	790	110
Venezuela	7.3	8.8	—	1,400	290
ASIA					
India	—	—	—	5,200	2,000
Japan	6.6	2.8	67.6	930	120
EUROPE					
Austria	2.7	1.7	64.4	620	110
Belgium	2.1	1.3	64.7	800	130
Denmark	0.9	1.0	71.2	830	110
England and Wales	1.2	0.9	71.0	960	110
Finland	4.1	1.4	—	1,600	110
France	2.9	1.4	68.1	950	110
Hungary	3.9	1.7	67.2	650	150
Italy	3.3	2.2	67.9	620	110
Luxembourg	—	1.2	63.7	910	100
Netherlands	1.2	1.3	72.5	900	130
Norway	1.4	1.0	72.9	900	110
Poland	7.4	—	65.9	1,100	150
Portugal	6.8	9.4	62.4	1,300	190
Spain	—	—	—	1,000	310
Sweden	1.2	0.9	72.6	1,100	90
Switzerland	2.4	1.3	68.6	740	80
West Germany	2.0	1.4	69.2	730	100
OCEANIA					
Australia	1.2	1.2	69.9	860	90
New Zealand	1.5	1.2	70.4	700	90
U.S.S.R.	—	—	67.5	550†	130

* Compilation based on World Health Organization *Annual Epidemiological and Vital Statistics 1959*, Geneva, 1962, passim and United Nations *Demographic Yearbook 1960*, New York, 1961, passim.

† 310 if "feldschers" counted.

‡ West Indies Federation.

NOTE: Some of the differences apparent in the table may be due to variations in report years (life expectancy figures in particular range from 1951 to 1959); differences in the quality of the underlying data, or differences between preliminary figures reported to the United Nations and the final national figures.

SOURCE: Kohn, R., *The Health Status of the Canadian People*, a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

people. Canada's main problem appears to be infant mortality and this can be traced to the situation in certain provinces and regions, that in the Northwest Territories being particularly distressing. Here the infant mortality is at a level found only in some parts of Africa, South America, and certain of the smaller islands in the West Indies. Only because of the comparatively small population in the Northwest Territories is the rate prevalent there but little reflected in the national rate.

While, on the whole, the figures for Canada are not too far out of line with those of other countries with a similar social structure, the wide gulf between these advanced countries and many of the developing ones should be noted.[1] In the former, the deaths among infants represent about five to ten per cent of all deaths, whereas in the latter we find infant deaths amounting to as much as one-quarter to one-half of all deaths. Similarly, Canada's death rate from infectious diseases like that of most other western nations is only a fraction of that found in many countries of Asia, Africa, Central and South America, and even in some countries in Europe; a reminder that in other parts of the world tens of thousands of people are still dying every year from such diseases as cholera, smallpox, plague, malaria, and other epidemic diseases which in Canada are a thing of the past.

At the beginning of this chapter we emphasized that there are no means of measuring health as such by some absolute gauge. The available indicators permit at best a relative judgment. The declining mortality rates and increasing life span can probably be taken as indications of a better standard of health than existed in previous decades; an international comparison suggests that despite inadequacies in some health fields, Canada's experience is not too far from that prevailing in other countries with similar socio-economic levels and is much better than that of many other parts of the world.[2]

MAIN HEALTH PROBLEMS

In the foregoing section an over-all appraisal of health and ill-health was attempted based on the record of mortality. This general picture, it must be remembered, is the aggregate of many components which are not homogeneous and exert their influence in different ways. The declining death rate, for instance, does not mean that mortality from any specific cause has

[1] See Table 5-5.

[2] In connection with Canada's favourable position relative to the large areas of the world, see Chapter 2, Recommendation 145.

declined or that mortality from all causes has declined at the same rate. Rather it is the net result of rates from individual causes some of which are increasing while others decline or remain more or less constant. Therefore, to interpret changes and differences in such general indicators as those presented, one must review the various specific factors which produce them. Evaluation of these factors will permit a clearer identification and assessment of the broad health problems.

Only some of the preventive health measures, such as health education, nutrition, sanitation, or routine examinations, are aimed at preserving health. Other preventive measures, immunizations for example, are directed towards certain diseases. The same is true of the wide range of diagnostic and treatment services which are set in motion to deal with specific types of illness. Therefore, the type and frequency of such illnesses basically determine the demand for health services and indicate the areas where we face health problems.

Health problems may be classified in terms of any of several criteria:

(*a*) the medical causes such as a disease, or a group of diseases with certain common characteristics; this is the classification that will be chiefly used in the following analysis;

(*b*) specific groups of the population, such as age groups, people living in certain areas, or people sharing some common environment.

In this chapter the manifestations of ill-health will be categorized under two broad headings: 1) those affecting the individual (and indirectly also those around him), like discomfort, pain, disability, death; and 2) those giving rise to a need or demand for health services, such as calling a physician, being admitted to a hospital, or using other services. The economic effect of illness in terms of reduced earning power is discussed in Chapter 12.

We turn now to a brief assessment of the major groups of diseases and injuries. In choosing these groups and the order in which they are discussed we follow the International Classification of Diseases[1] developed by the World Health Organization.

In reviewing the health status of the Canadian people, our objective is the general evaluation of the trends for broad groups of diseases, their social and economic impact in terms of illness and their consequences (mortality, duration of illness) and their demand on selected types of health services.

Following is a summary of our observations regarding the various disease groups. More detailed discussions will be found in the subsequent parts

[1] 1955 Revision.

of this chapter. No attempt is made in this summary to rank the various health problems because this would vary according to the criteria by which to measure the importance; we rather follow here, as in the following presentation, the sequence of the International Classification of Diseases.

Summary

With the successful control of the major infective diseases, including tuberculosis, and the reduction in the mortality from others, this group has lost much of its former significance. To maintain this situation, however, continued adequate public health services must be maintained. Venereal diseases and infectious hepatitis remain unsolved and even growing problems, together with the still not fully understood complex of the virus diseases.

Cancer remains an unsolved problem although statistics indicate that early diagnosis and treatment may be successful in the treatment of cancer of certain sites.

Allergies and diabetes also remain unsolved problems though mortality from diabetes is reduced by the application of drugs.

Some of the anaemias likewise can be controlled and the fatal aspects reduced by continuous treatment.

The trend of psychiatric disorders is difficult to evaluate because of the lack of adequate data on their incidence and prevalence. The large volume of hospitalization demanded by these conditions and the continuing increase in the admission rate are disquieting factors.

Diseases of the nervous system show higher mortality and greater frequency of hospitalization than ten years ago although in recent years the trend appears to be levelling off.

Circulatory diseases, like cancer and diseases of the nervous system, most frequent among the older age groups, continue with high (the highest of the groups shown) mortality and hospitalization rates.

The diseases of the respiratory system display little change over the last decade, but the trend is sensitive to the incidence of epidemic varieties such as influenza.

Diseases of the digestive system also have changed little from their level in 1951.

The diseases of the genito-urinary system and conditions related to maternity share the substantial decline in their mortality with little change in their demand for hospitalization.

Skin diseases as well as rheumatism and arthritis and the other diseases in this group have shown little change.

Congenital malformations and certain diseases of early infancy share a record of declining mortality but the number of cases brought to treatment in hospitals has increased sharply.

Accidents, by and large, remain a problem both in terms of mortality and hospitalization despite the many programmes designed to reduce accidents in the home, on the road, and elsewhere.

In brief, then, we have been successful in controlling the most deadly communicable diseases including tuberculosis.[1] The chronic diseases—cancer, heart disease, psychiatric disorders, diseases of the nervous system and diabetes[2]—have shown little or no improvement and in many instances increases, as have accidents, allergies, arthritis, and the often minor but frequent diseases of the respiratory and digestive systems.

The problems of the handicapped assume new significance with more effective rehabilitation procedures available.

Little is known of the trend of dental disease but its present extent is very considerable.

Disease Groups

INFECTIVE AND PARASITIC DISEASES

The Successes—By successfully controlling the infective and parasitic diseases we have reduced the mortality in the lower age groups, thus extending the average life span and exposing more and more people to the chronic and degenerative diseases peculiar to the aged. New concepts of the scope and the extent of yet unrecognized viruses may bring about a change in the assessment of these diseases.

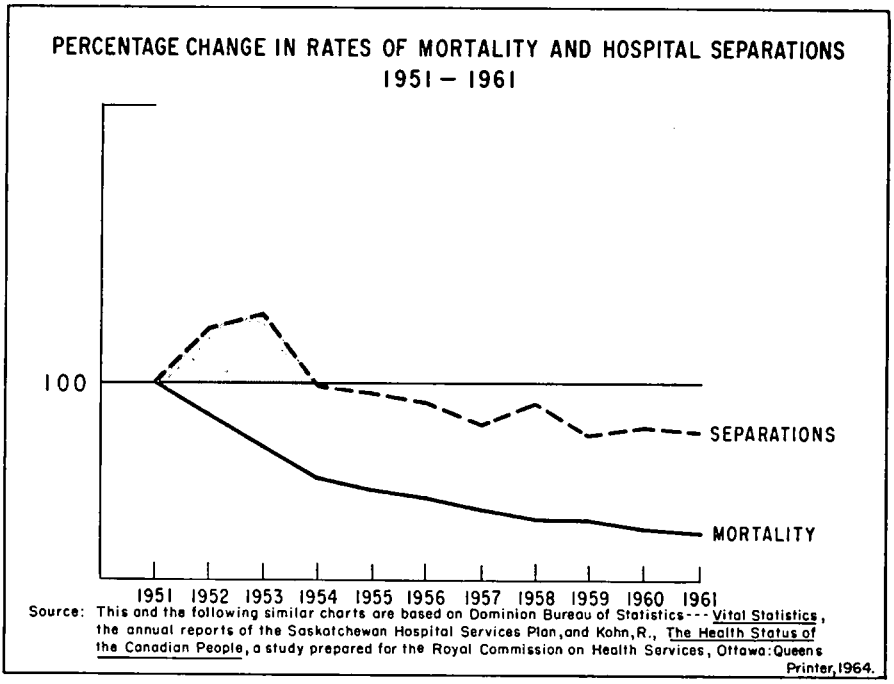
The main diseases included in this group are tuberculosis, and all other communicable diseases with the exception of influenza and the common cold, which the Classification combined with the diseases of the respiratory system. If this group of diseases appears to be given a disproportionate amount of space in this chapter, it is because it is probably the most heterogeneous of the 17 classes of the International Classification, with individual diseases requiring entirely different measures for their control.

The following chart demonstrates the reduction which has taken place over a recent ten-year period in the mortality from infective and parasitic diseases. It also indicates that separations from hospitals, after following an upward trend for the first few years, declined somewhat; this decline did not follow the extent of decline in mortality but showed signs of

[1] Poliomyelitis and influenza are the causes of more recent outbreaks of epidemic proportions accompanied by substantially increased mortality. Poliomyelitis still caused 494 deaths in 1953 (11 in 1961). No accurate figures are available on the deaths caused by the influenza epidemic following World War I but data supplied by the Dominion Bureau of Statistics point to an excess number of deaths of the order of about 25,000 annually during the period from 1918 to 1920. In 1959, the Asian influenza epidemic resulted in an excess of about 600 deaths from influenza during that year.

[2] See p. 176.

levelling-off in recent years. This is one example for our previous statement that a decline in mortality does not nesessarily entail a corresponding decline in the demand for health services.



Source: This and the following similar charts are based on Dominion Bureau of Statistics--- Vital Statistics, the annual reports of the Saskatchewan Hospital Services Plan, and Kohn, R., The Health Status of the Canadian People, a study prepared for the Royal Commission on Health Services, Ottawa: Queens Printer, 1964.

1. *Rare Diseases*

Anthrax, botulism, cholera, leprosy, malaria, plague, psittacosis, and ornithosis, rabies in man, relapsing fever, rickettsial disease (typhus, etc.,), smallpox, tetanus, trichinosis, tularaemia, and yellow fever are referred to as "rare diseases" in the official weekly reports of these diseases. Some of them were once rampant in Canada and still are in large parts of the world. In the year 1924, for instance, there were 2,769 cases of smallpox reported in Canada which resulted in 64 deaths. Nobody has died from this disease in Canada since 1940 and since 1947 only one case has been reported (in 1962) which was brought to Canada from abroad. This example leads to the following observations regarding this group of diseases:

(*a*) they are rare, i.e., not significant numerically, although some are serious enough that even a single case may constitute a

major health problem (note, for example, the precautions taken in the case of a suspected case of smallpox);

(*b*) though rare, there are sufficient cases to indicate that "it can happen here" if the vigilance of the public health authorities is relaxed;

(*c*) they demonstrate the success of systematic control measures.

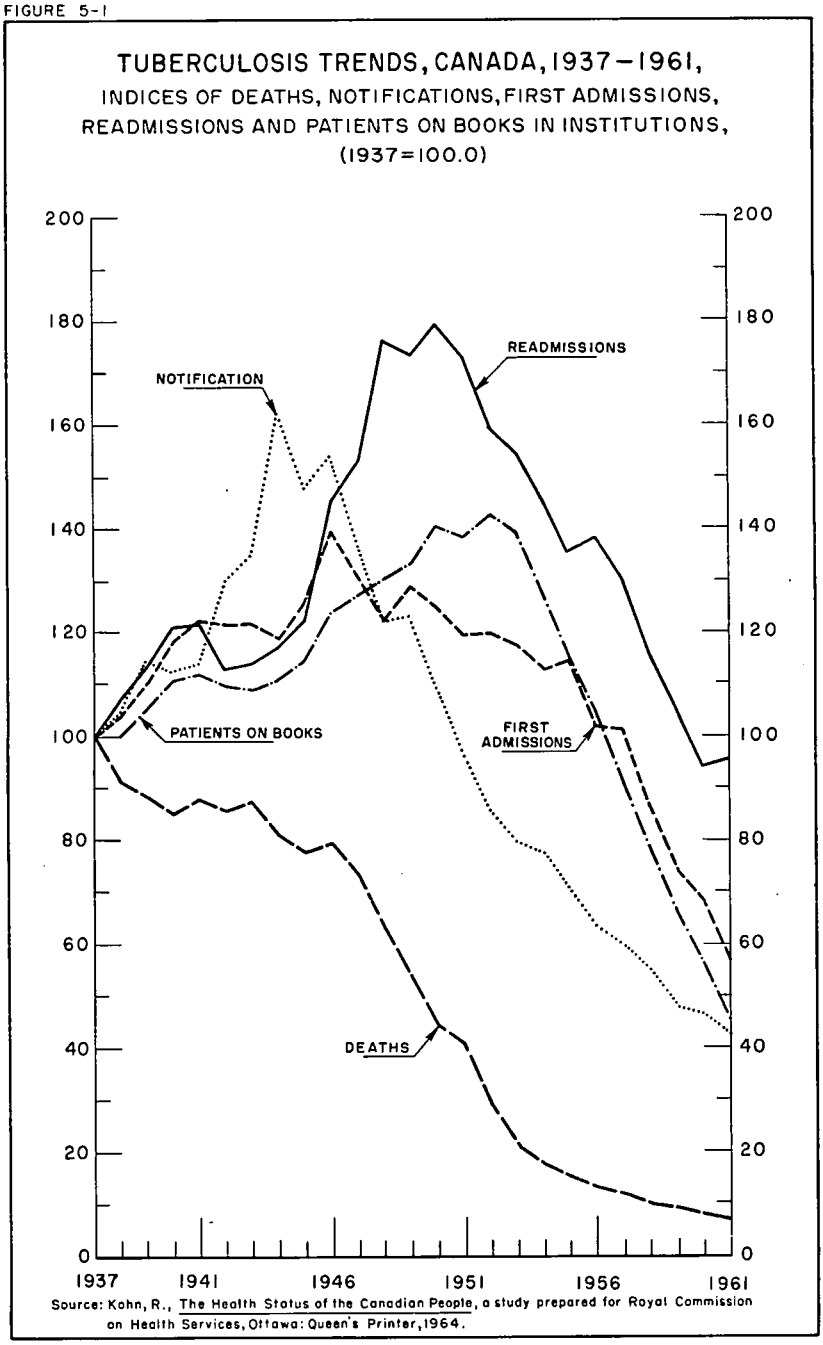
This group of diseases, insignificant as it now is in terms of the number of cases and deaths, and the volume of care they require, nevertheless constitutes a significant health problem because of the preventive measures needed and because of the treatment facilities required if unusual outbreaks do occur. Even diseases which have been non-existent in Canada for many decades present a potential health problem here as long as they exist anywhere in the world. In this age of easy and speedy travel, with more and more Canadians going abroad and people from other countries coming to Canada, quarantine and other public health measures become increasingly important even for conditions which are effectively controlled here.

2. *Tuberculosis*[1]

Considerable progress has been made towards the control of tuberculosis which has lost much of its former dreaded role as one of the major health problems in the community. This may be ascribed to a variety of factors including improved case-finding and compulsory treatment, paid for largely out of public funds, more effective treatment methods, and improved living standards. Figure 5-1 compares the index of the decline of mortality with that of the notification of newly discovered cases, and the movement of patients in institutions. The spectacular decline in the death rate from 24.8 per 100,000 population in 1951 to 4.2 in 1961 is not entirely matched by the decline in the indicators of the incidence (the number of new cases). The index of readmissions to hospitals took a sharp upward turn when the indices of death, infections, and first admissions declined. The readmission index in 1961 stood at a point considerably below its 1951 level with a possible upward trend since then. This is one dark spot in the otherwise bright picture of tuberculosis indicating that there are difficulties in ensuring the follow-through in modern drug treatment, and that the reservoir of tuberculosis in the community

[1] See also Wherrett, G. J., *Tuberculosis in Canada*, a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

FIGURE 5-1


TUBERCULOSIS TRENDS, CANADA, 1937–1961,
INDICES OF DEATHS, NOTIFICATIONS, FIRST ADMISSIONS,
READMISSIONS AND PATIENTS ON BOOKS IN INSTITUTIONS,
(1937=100.0)
200
180
160
140
120
100
80
60
40
20
0
NOTIFICATION
READMISSIONS
PATIENTS ON BOOKS
FIRST ADMISSIONS
DEATHS
1937
1941
1946
1951
1956
1961
Source: Kohn, R., The Health Status of the Canadian People, a study prepared for Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

has changed but little over the last ten years. Where records have been kept of the number of active or inactive cases, they show little or no decline in the total number of cases under observation.[1] All these cases still require follow-up procedures.

3. *Poliomyelitis*

Poliomyelitis, like most infective diseases, differs from tuberculosis in that the latter on the whole varies gradually and fairly steadily in its level of incidence and its endemic level (i.e., the amount of the disease usually present in the community). Diseases like poliomyelitis are characterised by periods of occasional epidemic flare-ups or seasonal variations. The assumption is that in the case of poliomyelitis the smaller number of cases and deaths reported in recent years are due to the effectiveness of the vaccination programme which is expected to prevent major outbreaks in the future. But, the increases in the number of persons contracting this disease in 1959 and 1960 emphasize the need for caution before the disease can be considered to be effectively controlled.

TABLE 5-6 POLIOMYELITIS

Cases and Deaths, 1951–1961

Year	Cases	Deaths
1951	1,248	162
1952	1,595	311
1953	3,912	494
1954	1,456	157
1955	584	36
1956	404	51
1957	185	26
1958	249	26
1959	1,887	182
1960	909	83
1961	189	11

SOURCE: Dominion Bureau of Statistics, *Annual Report of Notifiable Diseases 1961*, p. 19, and *Causes of Death, Canada, 1950-1960*, p. 6, Ottawa: Queen's Printer, 1962.

[1] For example, in British Columbia the total known cases (active and inactive) of tuberculosis stood at 15,807 in 1953, and at 16,291 in 1962, with the maximum of 17,995 cases reached in 1958. (Data are preliminary.)

4. *Diphtheria*

The effects of immunization against diphtheria have been evident for many years, but unnecessary cases and deaths still occur which could be avoided by the universal application of immunization.

TABLE 5-7 DIPHTHERIA

Cases and Deaths, 1942–1961

Year	Cases	Deaths
1942	2,955	256
1943	2,804	287
1944	3,223	309
1945	2,786	271
1946	2,535	227
1947	1,550	140
1948	898	86
1949	806	84
1950	421	52
1951	253	37
1952	190	26
1953	132	15
1954	208	18
1955	139	15
1956	135	8
1957	142	20
1958	66	7
1959	37	—
1960	53	7
1961	93	5

SOURCE: Dominion Bureau of Statistics, *Summary of Notifiable Diseases, 1924-1952; Causes of Death, Canada, 1950-60; Vital Statistics 1961, Preliminary Annual Report,* and *Canada Year Book,* 1955 to 1961, Ottawa: Queen's Printer, 1954 and 1962.

5. *Whooping Cough (Pertussis)*

Though the reliability of diagnosis as well as the efficacy of the vaccine may be lower in the case of whooping cough than they are for diphtheria, a similar situation prevails: immunization has reduced the problem but it still continues to cause a number of deaths every year.

TABLE 5-8 PERTUSSIS

Cases and Deaths, 1952–1961

Year	Cases	Deaths
1952	8,520	148
1953	9,387	134
1954	11,600	96
1955	13,683	137
1956	8,513	118
1957	7,459	63
1958	6,932	40
1959	7,259	46
1960	5,992	71
1961	5,478	36

SOURCE: Dominion Bureau of Statistics, *Annual Report of Notifiable Diseases, 1961; Causes of Death, Canada 1950-60; Vital Statistics 1961, Preliminary Annual Report,* Ottawa: Queen's Printer, 1964.

Remaining Problems, Old and New—While many of the former scourges among the infective and parasitic diseases have been curbed, there seems to be some truth in William Farr's claim that when one weed in the garden is controlled, others will take its place. The successes of "sulfa drugs" and antibiotics are sometimes followed by resistance to these drugs. New forms of staphylococci and viruses develop or are being discovered, and the impact of the viruses is still not fully known.

Some of the older diseases still rise occasionally above the endemic level. In assessing the data, one has to remember that the statistics for Canada as a whole are apt to obscure the seriousness of some local occurrences: for instance, 20 cases of a disease during the year may be few in relation to the population and size of the country but if the 20 cases occur in one locality, they may represent a very serious outbreak.

Noteworthy among the diseases in this problem group, besides those already mentioned, are the venereal diseases which are a continuing problem and infectious hepatitis which is a growing and perplexing public health threat.

1. *Venereal Diseases*

The venereal diseases are a group where the means of prevention as well as cure are known and available, and yet these diseases continue to be a problem not because of the lack of medical knowledge or adequate health services but because of social conditions whose remedy seems to lie entirely in the field of education. The rising incidence during the last few years has been a cause of great concern to those dealing with the health and social issues involved.

Mortality from syphilis is due to its late effects, and therefore the deaths of today are the result of the new cases of previous years. Because of this time lag it is difficult to establish the relationship of deaths and new cases in the same year. The slowly declining number of deaths, however, may be ascribed to more effective treatment methods which help to keep the mortality down even in the face of an increasing incidence.

TABLE 5-9 VENEREAL DISEASES

Cases, Deaths, and Rates per 100,000 Population, 1952-1961

Year	Primary Syphilis		Gonorrhoea		Deaths from Syphilis and Sequelae	
	Cases	Rates	Cases	Rates	Number	Rates
1952	347	2.4	14,411	99.7	297	2.1
1953	202	1.4	15,496	104.4	283	1.9
1954	157	1.0	15,472	101.2	179	1.2
1955	131	0.8	14,295	91.1	187	1.2
1956	116	0.7	14,545	90.4	209	1.3
1957	146	0.9	14,312	86.2	190	1.1
1958	123	0.7	15,037	88.0	177	1.0
1959	226	1.3	14,821	84.8	167	1.0
1960	266	1.5	15,659	87.6	172	1.0
1961	133	1.8	16,451	90.2	160	0.9

Based on Dominion Bureau of Statistics, *Annual Report of Notifiable Diseases, 1961; Causes of Death, Canada, 1950-60; Vital Statistics 1961, Preliminary Annual Report,* Ottawa: Queen's Printer, 1962.

SOURCE: Kohn, R., *The Health Status of the Canadian People,* a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

2. *Infectious Hepatitis*

The following table, showing the number of cases reported each year, illustrates the growing seriousness of the problem.

TABLE 5-10 INFECTIOUS HEPATITIS

Cases Reported, and Rates per 100,000 Population, 1952-1961

Year	Cases	Rates
1952	2,392	16.5
1953	3,268	22.0
1954	4,567	29.9
1955	3,885	24.7
1956	2,937	18.3
1957	3,006	18.1
1958	4,515	26.4
1959	4,728	27.0
1960	6,314	35.3
1961	12,237	67.1

Based on Dominion Bureau of Statistics, *Infectious Hepatitis, 1961,* Ottawa: Queen's Printer, March 1962.

SOURCE: Kohn, R., *The Health Status of the Canadian People,* a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

3. *Chickenpox, Measles, Mumps, German Measles (Rubella)*

Physicians are no longer required to notify health authorities about the incidence of these diseases because they no longer constitute a public health problem, and also because the reporting had been so incomplete that the resulting statistics were useless. The four diseases, often referred to as the minor childhood diseases, are thus considered to be part of the growing-up process. There is no adequate method of prevention, and quarantine is not enforced. Among children the cases are usually light and recovery is quick but in later life, in some cases particularly during pregnancy, these diseases may cause severe illness or complications.

Yet, there are still deaths from measles, due mostly to complicating pneumonia, and there are also some deaths even from the usually harmless chickenpox, mumps, and German measles.

Although these diseases may be considered a less severe type of health impairment rather than an important public health problem, they account for a sizeable proportion of illness among children and of their health care.

According to the Canadian Sickness Survey, 1950-51,[1] these four diseases were responsible for some 11 million days of disability corresponding

[1] Department of National Health and Welfare and Dominion Bureau of Statistics, *Illness and Health Care in Canada,* Canadian Sickness Survey, 1950-51, Ottawa: Queen's Printer, 1960.

TABLE 5-11 MEASLES, CHICKENPOX, MUMPS, GERMAN MEASLES

Deaths, 1952-1961

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Measles	256	140	120	179	177	108	93	84	53	96
without mention of pneumonia	87	62	40	56	72	46	34	41	19	—
with pneumonia	168	78	79	118	102	60	59	43	34	—
late effects	1	—	1	5	3	2	—	—	—	—
Chickenpox	25	22	15	13	19	29	35	17	29	26
Mumps	11	8	10	7	10	9	4	4	5	5
German Measles	2	—	1	3	5	3	2	—	—	—

SOURCE: Dominion Bureau of Statistics, *Causes of Death, 1950-1960*, p. 7, and *Vital Statistics 1961, Preliminary Annual Report*, p. 6, Ottawa: Queen's Printer, 1962, and communication from Dominion Bureau of Statistics.

to some 16 million days of disability in the larger population in 1961. This is about seven per cent of all disability reported in the Survey and 63 per cent of the disability due to the entire group of infectious and parasitic diseases. It amounts to about one-quarter of disability from all causes among children under 15, and to about one-tenth of all school absenteeism from Grade I to Grade XIII.[1]

The successful gradual control of such diseases as smallpox, diphtheria, tuberculosis, poliomyelitis, and whooping cough has reduced this group of diseases from its position as the outstanding health problem to one taking second place to the chronic diseases and accidents. This development has brought about an extension of public health methods which originated as a defence against the epidemics of old. This defence, however, still has to be maintained. The venereal diseases thought to be controlled after the intensive campaigns during and after the last war, show signs of some resurgence though their fatality has been reduced. Infectious hepatitis is an increasing problem as is the wide and largely uncharted field of viruses in general. Thus, the infective diseases are far from being eliminated as a serious health problem.

What we have achieved, however, is control of the most fatal of these diseases. Their fatal effect has been reduced to the extent that they no longer exact the toll in human lives that they did when epidemics laid waste the cities and towns of Europe, and more recently when tuberculosis, and the other communicable diseases were among the leading causes of death. The success achieved should not be allowed to obscure the fact that the control measures

[1] The National Committee for School Health Research, *Absenteeism in Canadian Schools*, Report No. 3, Toronto, 1948.

must be continued, and intensified in some instances, if we are to continue to combat these diseases effectively in the future.

Infective and Parasitic Diseases in Canada and Selected Other Countries—The death rate per 100,000 population from these diseases in 1959 shows that Canada compares favourably with certain other countries selected for this comparison:[1]

Canada	10.8
United States	12.8
England and Wales	13.7
France	32.6
Sweden	10.9
Mexico	171.1
Ceylon	73.8

Tuberculosis is among the diseases causing the higher rates in countries with a comparable standard of living and health services.[2] Compared with some of the developing countries, Canada's low rate is due to her effective control of environmental hazards favouring the spread of communicable diseases, and to some extent to the climate which is not conducive to the vectors of some of the diseases which are causing the high rates in Mexico and Ceylon.

Infective and Parasitic Diseases and Their Share of the Total of All Illness and Health Care—Mortality from these diseases—whether measured in absolute numbers or in terms of the age at death—has been reduced to a point where they account for less than two per cent of the mortality from all causes. They now rank eleventh in terms of the number of deaths and ninth in regard to life years lost, a far cry from the second place (after the diseases of the circulatory system) they occupied in 1924.

Nevertheless, this group ranks third as a cause of disability and hospitalization, the latter due largely to the need for hospitalization by tuberculosis patients. While it ranks only ninth in terms of the demand for physicians' services (accounting for 5.4 per cent of the total), this group of diseases requires for its continuing control a substantial part of the preventive and other public health services such as quarantine, case finding and follow-up.

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[1] Here and in similar comparisons in subsequent sections the United States, England and Wales, France, and Sweden were selected as countries with similar socio-economic conditions. Mexico and Ceylon are added as examples of developing countries, for which data are available, the former as a country in the Americas, the latter as an Asian country.

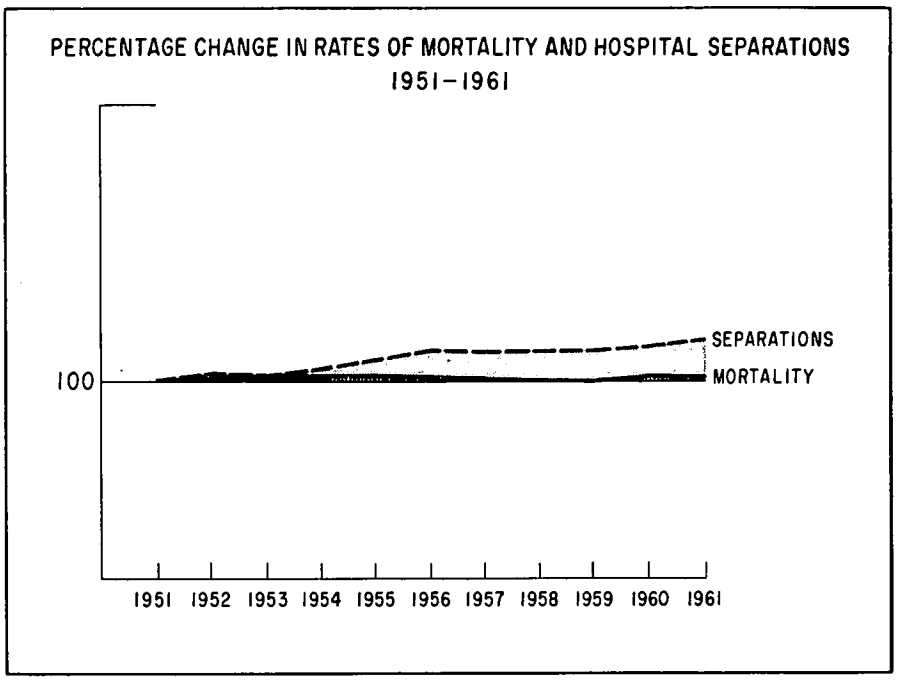
[2] The death rate from tuberculosis was as follows in 1959: Canada 5.5, United States 6.5, England and Wales 8.5, France 23.2, Sweden 7.2. Based on World Health Organization, *op. cit.*, pp. 288-290.

This group accounted for the following percentages of total illness and demand for selected health services:[1]

	Per Cent
All deaths	1.2
Premature mortality	1.8
Disabling illness	9.5
Non-disabling illness	3.0
Hospital separations	1.5
Hospital days	6.1
Physicians' services	5.4
Prescriptions	0.5
Home nursing	1.8

NEOPLASMS

This group of diseases includes the malignant neoplasms, i.e., cancer, and the benign neoplasms (including non-malignant tumours, cysts, etc.) and those neoplasms which are unspecified as to their nature.



[1] See Table 5-15.

The above chart shows that illness from these diseases as reflected in the number of hospital cases (separations) has been increasing slightly but steadily, and that the mortality rate has remained at almost exactly the same level throughout. The malignant neoplasms, as the name implies, are the deadly ones in this class. Less than two per cent of the deaths are ascribed to what would appear to be complications of normally benign neoplasms.

The death rate from benign neoplasms has remained low and fairly constant with a small decline during the most recent years. On the other hand, they account for about one-half of the hospital cases in this class. Their rate of hospitalization has remained fairly constant. The increase in the rate of hospitalization for all neoplasms is thus due to the malignant ones.

BENIGN NEOPLASMS

Year	Death Rate per 100,000 Population*	Hospital Separations per 100,000 Population†
1951	2.2	420
1952	2.6	457
1953	2.7	438
1954	2.4	449
1955	2.3	457
1956	2.2	473
1957	2.1	458
1958	1.7	453
1959	1.9	440
1960	1.7	430
1961	1.7	450

* Dominion Bureau of Statistics, *annual reports of Vital Statistics.*

† Saskatchewan Hospital Services Plan, *annual reports.*

Cancer—(Malignant Neoplasms)—There are few diseases of which we know so little, whether it be their prevention or their cure, as we do of cancer.

The mortality rates shown for all forms of cancer hide different and even diverging trends as shown by malignancies of specific sites and among specific groups of people.[1]

During the period from 1951 to 1961 the mortality rate from all malignant neoplasms changed but little. In 1951, it stood at 127.3 per 100,000 population and after some minor fluctuations rose to 129.7 in 1961, a percentage increase of 1.9. The rate of hospital separations, on the other hand, rose from 418 to 560 during the same period, a percentage change of 34.0.

A comparison with selected other countries shows the Canadian mortality to be lower than that of England and Wales, France, Sweden, and the United States, but very substantially higher than that of Mexico and Ceylon. These are crude rates, however, which have not been adjusted for the different age composition of the populations of these countries.

While the total mortality rate displays very little change over the years, the effects of the disease are becoming quite different between the two sexes. After adjustment for the age composition, we find that a significant increase has been taking place in male mortality and a significant decrease in female mortality.[2] The percentage distribution by site of cancer mortality in each sex will further illustrate the sex difference (data relate to 1961):

Male	Per Cent	Female	Per Cent
All Cancer	100.0	All Cancer	100.0
Digestive Organs and Peritoneum	40.2	Breast and Genito-urinary Organs	41.0
Respiratory System	19.7	Digestive Organs and Peritoneum	37.1
Breast and Genito-urinary Organs	18.2	Miscellaneous and Unspecified Sites	8.6
Lymphatic and Haematopoietic Tissues	14.5	Lymphatic and Haematopoietic Tissues	7.9
Miscellaneous and Unspecified Sites	8.7	Respiratory System	4.1
Buccal Cavity and Pharynx	3.1	Buccal Cavity and Pharynx	1.3

SOURCE: Based on Dominion Bureau of Statistics, *Vital Statistics 1961*, Ottawa: Queen's Printer, 1963.

[1] While we know how many persons die from cancer year by year, regrettably we have no statistics showing how many people suffer from cancer in this country, how many new cases occur or are found, and the trend over a number of years. Cancer shares this deplorable lack of adequate statistics with all our other major health problems, a fact which is difficult to reconcile with the advanced techniques at our disposal for data collection and processing. See Chapter 2, Recommendations 184 and 186-189.

[2] Phillips, A. J., *Cancer Mortality Trends in Canada—1941 to 1958*, The British Journal of Cancer, 1961, Vol. XV., reprint, p. 8.

Phillips studied the mortality trends for selected sites for the period between 1941 and 1958, based on age-adjusted rates, and found the following statistically significant changes:[1]

SIGNIFICANT INCREASES, 1941-1957

Male	Female
Respiratory System (26.3%) Male Genital Organs (14.1%) Urinary Organs (8.8%) Leukaemia (6.8%)	Leukaemia (4.7%)

SIGNIFICANT DECREASES, 1941-1957

Male	Female
Stomach (24.9%) Buccal Cavity and Pharynx (4.3%)	Intestines (17.0%) Uterus (13.2%) Stomach (11.4%)

While both sexes have shown a decrease of cancer of the stomach, the increase of the over-all cancer death rate for males is influenced largely by the substantial increase in the rate for the respiratory system,[2] and the decrease for females by the falling off in the mortality from cancer of the intestines and the uterus. The latter is ascribed to large-scale cytological screenings with the resulting early detection and diagnosis.

Health agencies as well as the public at large have been much concerned at the continuing rise in the frequency of lung cancer, especially among males. Incriminated as factors in this increase are cigarette smoking, air pollution and exposure to industrial carcinogenic substances.[3]

All the statistics mentioned relate to the mortality from cancer, the only manifestation of the disease for which we have Canada-wide statistics over a considerable period of time. No comparable data exist on the actual occurrence, i.e., incidence and prevalence of the disease, but data are available from some provincial programmes, such as an incidence study in Mani-

[1] *Ibid.*, p. 3.

[2] The mortality rate from cancer of the lung (including bronchus and trachea) has risen as follows since 1951:

	1951	1961
Male	15.5	26.2
Female	3.4	4.0

SOURCE: Communication from Dominion Bureau of Statistics.

[3] Department of National Health and Welfare, *Smoking and Health,* prepared for the Canadian Conference on Smoking and Health, Ottawa: The Association, 1963, p. 9; see also: U.S. Department of Health, Education, and Welfare, Public Health Service, *Smoking and Health,* Washington, D.C., U.S. Government Printing Office, 1964.

toba[1] from which selected statistics as shown in Table 5-12 illustrate the relationship between incidence and mortality:

TABLE 5-12 CANCER DEATHS AND NEW CASES, MANITOBA 1961-62, BY SITE AND SEX

(rates per 100,000 population)

Site	Male		Female	
	Deaths	New Cases	Deaths	New Cases
Buccal Cavity and Pharynx	2.3	19.8	1.3	4.6
Digestive Organs and Peritoneum	63.2	83.6	43.7	65.1
Oesophagus and Stomach	26.9	31.6	12.8	15.0
Intestines, Rectum, Peritoneum	20.9	35.4	17.7	36.2
Liver, Pancreas, Biliary Passages	15.4	16.6	13.2	13.9
Respiratory System	38.6	41.8	5.1	7.7
Breast and Genito-Urinary	25.4	64.2	41.3	137.9
Breast	0.4	0.4	18.5	63.3
Female Genital	—	—	19.7	67.1
Male Genital	17.3	42.7	—	—
Urinary Organs	7.7	21.1	3.1	7.5
Other and Unspecified Organs	14.5	70.8	11.7	61.4
Skin	1.7	50.8	1.1	40.8
Eye	0.4	1.9	0.2	0.2
Brain and Nervous System	5.8	6.6	4.0	6.9
Thyroid and Endocrine Glands	0.6	1.7	1.3	2.6
Bones and Connective Tissue	1.9	2.6	—	1.6
Other and Unspecified Sites	4.1	7.2	5.1	9.3
Lymphatic and Haematopoietic System	18.8	23.3	9.9	13.9
Hodgkin's Disease	1.9	3.2	0.4	1.6
Other Lymphomas	5.3	4.7	2.4	2.4
Multiple Myeloma	4.1	4.3	2.7	2.6
Leukaemia and Aleukaemia	7.5	10.2	4.0	6.4
Polycythaemia Vera	—	0.9	0.4	0.9
ALL SITES	162.8	303.7	113.0	290.6

SOURCE: Based on The Manitoba Cancer Treatment and Research Foundation, Report April 1, 1961 to March 31, 1962, pp. 66-67 and 99-100.

The table indicates that about twice as many new cases of cancer are found in a year as deaths from the disease. The ratio varies among the different sites but the discrepancy is greatest for cancer of the skin. Further studies will be required, and we stress the necessity of undertaking such investigations to determine to what extent the differences are due either to varying survival

[1] The Manitoba Cancer Treatment and Research Foundation, Report April 1, 1961 to March 31, 1962.

rates or to differences in diagnostic practices, time lag, or other factors. The cancer registries existing or being developed in the provinces should lend themselves to this kind of study recognizing the fact that both incidence (as well as prevalence) and mortality represent different stages or degrees of cancer morbidity. The registries and regular follow-up studies of the existing records should also yield more general and continuous data than now exist on the survival of cancer cases and the epidemiology of the disease.[1]

All cancer accounts for 16.8 per cent of all deaths, slightly less (13.7 per cent) of the life years lost due to premature mortality, only 0.9 per cent of all disability days, 3.6 per cent of hospital days, 5.1 per cent of physicians' services, 0.3 per cent of all prescriptions, but 7.0 per cent of home nursing services.

Following are the percentages of total illness and the demand for selected health services accounted for by all forms of cancer and the whole group of neoplasms:[2]

	All Cancer	All Neoplasms
	Per Cent	Per Cent
All deaths	16.8	17.0
Premature mortality	13.7	13.7
Disabling illness	0.9	2.0
Non-disabling illness	n.a.	1.4
Hospital separations	2.5	4.5
Hospital days	3.6	4.6
Physicians' services	5.1	5.8
Prescriptions	0.3	0.3
Home nursing	7.0	7.3

[1] Such studies would permit the evaluation of therapeutic procedures as well as changing patterns of the disease. A project of this kind was carried out by T. A. Watson in Saskatchewan in his report: *Results of Treatment of Cancer in Saskatchewan 1945-52 (inclusive)*, published in 1958. The Annual Report of The Manitoba Cancer Treatment and Research Foundation April 1, 1961 to March 31, 1962, states on p. 25 in regard to survival studies that "overall five year results will now be required annually as part of the criteria for approval of a Cancer Registry, by the Committee on Cancer of the American College of Surgeons". The difference shown in the existing sources are difficult to assess because of the limited number of cases covered. Cancer is one of the diseases where the knowledge of differentials between various groups of the population and people in various parts of the world has been exploited considerably in efforts to detect leads regarding the causation of the disease. Such projects of international epidemiology require uniformity of methods if the results are to be comparable. Recognizing this fact, the Second World Health Assembly requested action resulting in the creation of a sub-committee (of the Expert Committee on Health Statistics) on the Registration of Cases of Cancer as well as their Statistical Presentation. The report on its first session is contained in World Health Organization *Technical Report*, Series No. 5, Geneva: The Organization, March 1950.

[2] See Table 5-15.

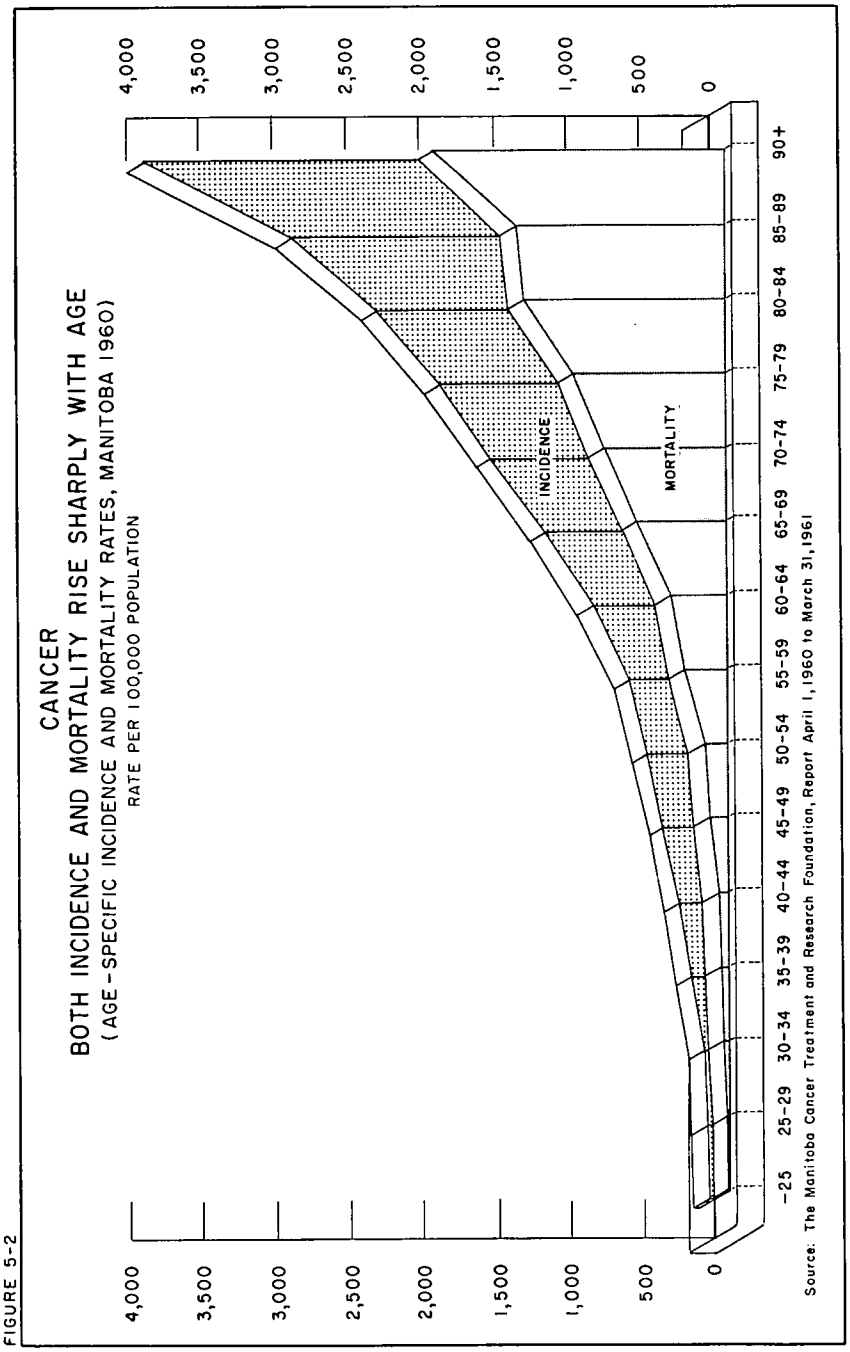
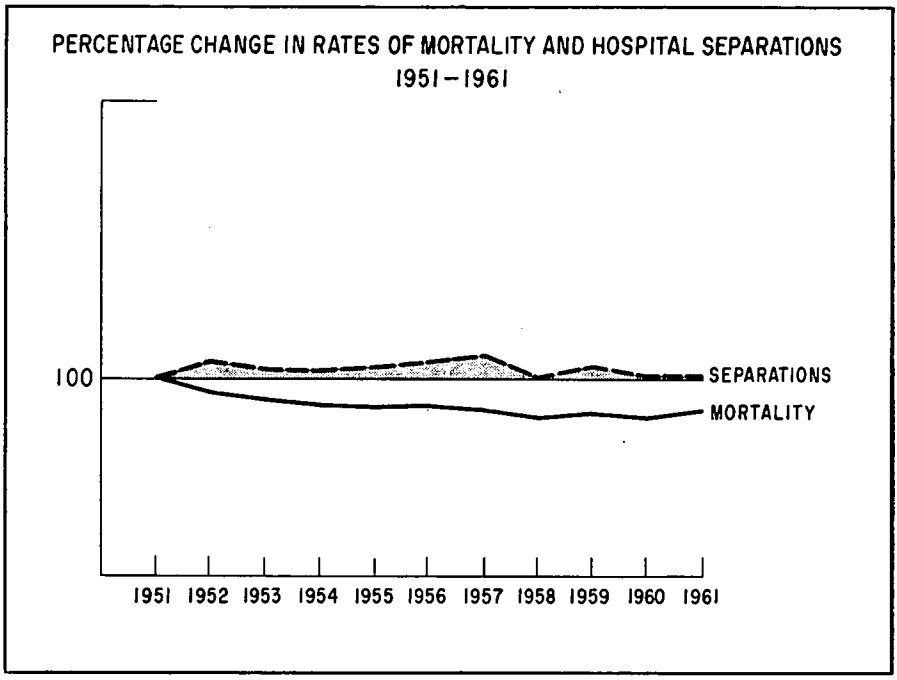

CANCER
BOTH INCIDENCE AND MORTALITY RISE SHARPLY WITH AGE
(AGE-SPECIFIC INCIDENCE AND MORTALITY RATES, MANITOBA 1960)
RATE PER 100,000 POPULATION
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
INCIDENCE
MORTALITY
-25 25-29 30-34 35-39 40-44 45-49 50-54 55-59 60-64 65-69 70-74 75-79 80-84 85-89 90+
Source: The Manitoba Cancer Treatment and Research Foundation, Report April 1, 1960 to March 31, 1961

FIGURE 5-2

ALLERGIC, ENDOCRINE SYSTEM, METABOLIC AND NUTRITIONAL DISEASES

This group of diseases includes the allergic disorders (such as hay fever, and asthma), diabetes, as well as various glandular disorders and nutritional deficiency diseases. This is a heterogeneous group which, as a whole, is characterized by the fairly even trend of mortality and hospitalization over the last decade as indicated in the following chart.



The trend shown above reflects the lack of substantial progress in dealing with the major diseases included here, although the first half of the period saw a decline in mortality of about 16 per cent (from a rate of 20.5 per 100,000 population in 1951 to 17.2 in 1957, the rate reached 19.8 again in 1961). The rate of hospitalization remained around the level of about 600 separations per 100,000 population.

A comparison with selected other countries shows mortality in Canada at about the same level as that of France and Sweden, lower than that of the United States, but substantially higher than that of England and Wales.

The share of these diseases in mortality and disabling illness is inconspicuous: they account for 2.2 per cent of all deaths, somewhat less (1.8 per

cent) of the life years lost due to premature mortality because of deaths occurring generally at advanced ages; 1.3 per cent of all disability days; but 5 per cent of non-disabling illness.

Of similar proportions is their share of hospitalization (2.2 per cent of the cases, and 1.8 per cent of the days) and of physicians' services (2.0 per cent). But this group accounts for 7.0 per cent of all prescriptions and 11.1 per cent of home nursing services.[1]

The demand for home nursing and prescriptions, as well as the share of non-disabling illness days is out of proportion to the frequency of these diseases, a fact which is explained by their nature. The allergies, such as hay fever or asthma are characterized in common with diabetes, by their chronicity usually without being fatal, and they also share to a varying extent the need for medication, occasional in some cases, regular in others. Hay fever and asthma account for about one-third of the illness days ascribed to this class in the Canadian Sickness Survey.[2]

Diabetes—Diabetes is the disease which accounts for most of the mortality due to this group. While the death rate for the whole group has declined, mainly due to a considerable reduction in the deaths from asthma,

DIABETES*

Deaths, 1951-1961

Year	Number of Deaths	Rate per 100,000 Population
1951	1,584	11.3
1952	1,577	10.9
1953	1,621	10.9
1954	1,607	10.5
1955	1,716	10.9
1956	1,820	11.3
1957	1,866	11.2
1958	1,869	10.9
1959	1,988	11.4
1960	2,081	11.6
1961	2,164	11.9

* Based on Dominion Bureau of Statistics *Causes of Death, Canada 1950-60,* Ottawa: Queen's Printer, 1962, p. 11 and Dominion Bureau of Statistics, *Vital Statistics 1961, Preliminary Annual Report,* Ottawa: Queen's Printer, 1962, p. 8.

[1] See Table 5-15.

[2] Department of National Health and Welfare and Dominion Bureau of Statistics, *Illness and Health Care in Canada, Canadian Sickness Survey, 1950-51,* Ottawa: Queen's Printer, 1960, p. 140.

the rate for diabetes has changed very little during the last decade and the absolute number of deaths has actually increased. It must be remembered that insulin therapy greatly extended the survival period of diabetics so that more of them marry and transmit the disease to their children.

As there are no corresponding data available on either incidence or prevalence trends of the disease, one can only assume that the continually high and even rising mortality rate is due not to a greater risk of dying for diabetes patients, but to a greater number of cases due to the higher incidence among an ageing population.

Observations based on the Canadian Sickness Survey, 1950-51,[1] indicate about 770 cases per 100,000 population, or a total of about 150,000 diagnosed cases now existing in Canada.[2]

The death rate in 1960 was higher for females (13.4) than for males (10.0) which corresponds to a similar difference in the prevalence rate found in the United States National Health Survey (1,000 and 800 respectively per 100,000 population). The same Survey in the United States reported two-thirds of all diabetics to be 55 years of age or older. Prevalence figures referred to cover only known cases. One estimate indicates that there may be an equal number of unrecognized cases in the community.[3] Such estimates are based on the results of multiphase screening programmes which help in the detection of unrecognized cases.

Diabetics account for a large proportion of home nursing services. They are not numerous (about 5 per cent of all medical and surgical cases attended by the Victorian Order of Nurses) but require intensive care. They obtain 14 per cent of all nursing visits made to medical and surgical cases, ranking highest among all disease groups in the average number of visits per case (54 as compared with an average of 19 for all causes). Female cases outnumber male by a ratio of over 2:1, with 90 per cent of all cases being in the age group 45 years and over.[4]

Cases of diabetes, many requiring continuous medication, account for about two per cent of all prescriptions.[5]

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[1] These data were not published because the survey sample did not yield a sufficient number of cases for a reliable estimate.

[2] This very rough estimate compares with the somewhat higher prevalence rate of 900 per 100,000 population in the United States (Health Statistics from the United States National Health Survey: *Diabetes reported in interviews, United States July 1957-June 1959,* United States Department of Health, Education, and Welfare, Washington, D.C., United States Government Printing Office, 1960, p. 7). But then the U.S. mortality rate (15.9 in 1959) is also higher than the Canadian (11.4 in 1959) indicating that a real difference exists in the frequency of the disease in the two countries.

[3] Department of National Health and Welfare, 1951, *Epidemiological Data on Chronic Illness in Canada.*

[4] Dominion Bureau of Statistics, *Home Nursing Services (Victorian Order of Nurses for Canada), 1960.*

[5] *Canadian Disease and Therapeutic Index,* A Study of Physician Practice, February-May 1960, Lea Associates, Inc., Flourtown, Pa.

Asthma—Asthma has been the second largest cause of death in this group but one which contributed to the general decline in the mortality, except for the small upswing apparent in 1961.

ASTHMA*

Deaths, 1951-1961

Year	Number of Deaths	Rate per 100,000 Population
1951	741	5.3
1952	662	4.6
1953	644	4.3
1954	629	4.1
1955	639	4.1
1956	598	3.7
1957	599	3.6
1958	502	2.9
1959	494	2.8
1960	402	2.2
1961	468	2.6

* Based on Dominion Bureau of Statistics *Causes of Death, Canada 1950-60,* Ottawa: Queen's Printer, 1962, p. 11 and communication from the Dominion Bureau of Statistics.

Here again the lack of data on the incidence and prevalence of the disease precludes the full evaluation of the mortality figures and we have no evidence to tell us whether the decline in mortality until 1960 was due to a reduction in the frequency of the disease or, which is more likely, to a reduction of its fatal aspects.[1]

Estimates of the frequency of asthma and hay fever in the United States range all the way from about 1,000 to 6,900[2] per 100,000 population. This may reflect regional differences in the occurrence of the disease, making it doubtful whether the United States National Health Survey prevalence figure (2,340 per 100,000 population) is applicable to Canada. This Survey points

[1] This is another area of illness that requires more systematic study with respect to incidence and its consequences.

[2] Cf. The Committee for the Special Research Project in the Health Insurance Plan of Greater New York: *Health and Medical Care in New York City,* Commonwealth Fund, Cambridge, Mass.: Harvard University Press, 1957; and State of California, Department of Public Health, *Health in California,* California Health Survey, California State Printing Office (no date).

out the preponderance of asthma and hay fever among young males (under 15 years) as compared with females in the same age group.[1]

Diabetes, asthma, hay fever and other diseases in this group are chronic but not necessarily disabling except during acute attacks. Hence, they account for a relatively high proportion of all non-disabling illness.

Following are the percentages accounted for by this entire group of diseases out of total illness and the demand for selected health services:[2]

	Per Cent
All deaths	2.2
Premature mortality	1.8
Disabling illness	1.3
Non-disabling illness	5.0
Hospital separations	2.2
Hospital days	1.8
Physicians' services	2.0
Prescriptions	7.0
Home nursing	11.1

DISEASES OF THE BLOOD AND BLOOD-FORMING ORGANS

This group of diseases, comprised largely of the various types of anaemia, ranks low in its contribution to mortality and non-fatal illness and in its use of health services. Because of the low frequencies it is difficult to establish what the trend has been but the following chart indicates a decline in the death rate which is not matched by what we know of hospital separations. The anaemias thus appear as another group of diseases where modern treatment has succeeded in curbing the mortality if not the frequency of the disease.

Little is known about the prevalence of anaemia in the general population—a screening test in Baltimore yielded a count of 16 cases per 1,000 persons screened,[3] but it would be difficult to say how indicative this figure may be of the situation in Canada.

The death rate has declined from 4.3 per 100,000 population in 1951 to an estimated 2.8 in 1961. The rate of hospital separations varied during the same period upward and downward, starting from a rate of 77 per 100,000 population, and during the most recent three years hovering around the 100 mark.

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[1] United States Department of Health, Education, and Welfare, Public Health Service, *Health Statistics from the United States National Health Survey—Chronic Respiratory Conditions reported in interviews, United States July 1957-June 1958,* Washington, D.C., United States Government Printing Office, 1959.

[2] See Table 5-15.

[3] Commission on Chronic Illness, *Chronic Illness in a Large City—The Baltimore Study,* Cambridge, Mass.: Harvard University Press, 1957, p. 485.

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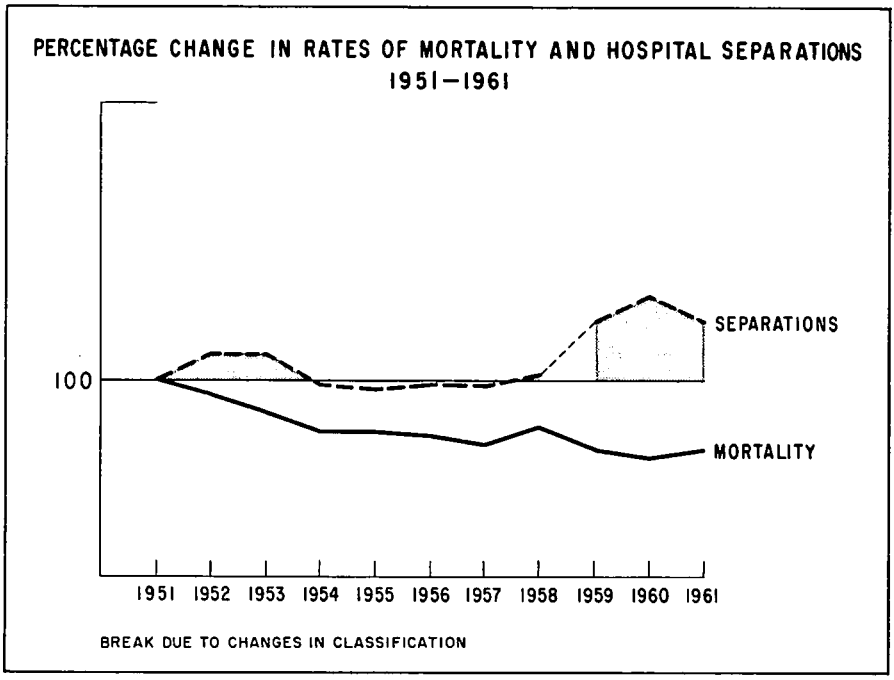


A comparison with selected other countries shows the Canadian mortality from these diseases to be roughly in line with the United States, France and Sweden.

The group accounts for less than one per cent of all deaths and life years lost due to premature mortality, less than one per cent of hospital and physicians' services, but a relatively higher share (2.8 per cent) of all prescriptions and of home nursing (6.8 per cent), the latter being due largely to the application of the required injections. The percentages this group accounts for out of the total are as follows:[1]

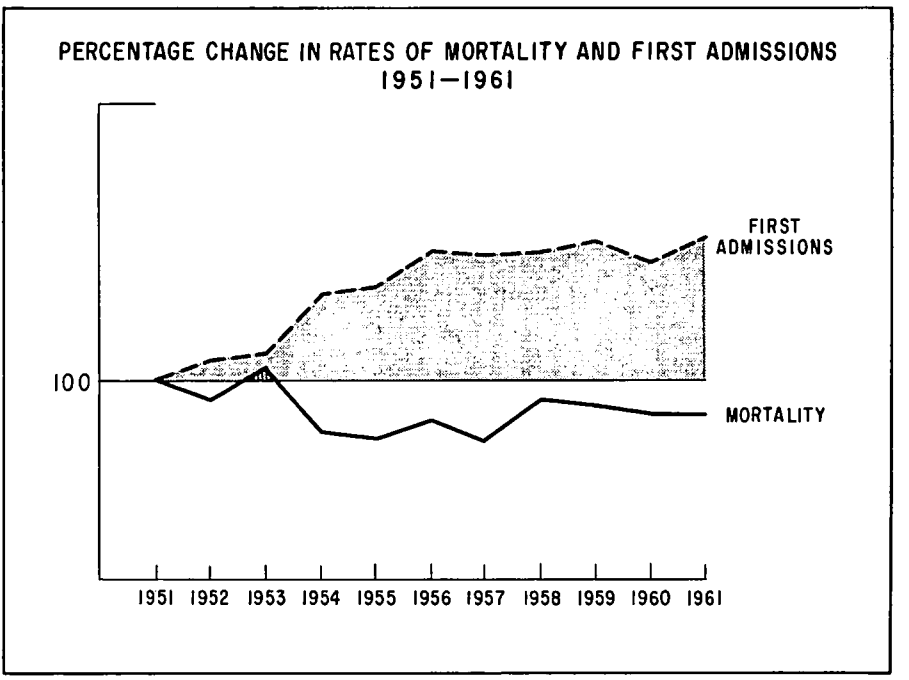
	Per Cent
All deaths	0.4
Premature mortality	0.3
Disabling illness	n.a.
Non-disabling illness	n.a.
Hospital separations	0.4
Hospital days	0.3
Physicians' services	0.9
Prescriptions	2.8
Home nursing	6.8

[1] See Table 5-15.

MENTAL, PSYCHONEUROTIC AND PERSONALITY DISORDERS[1]

Most health problems have attracted our attention because of their fatal aspects. Mental disease has never been prominent in this respect accounting, as it does, for only a very small proportion of all deaths: in all, 0.3 per cent of all deaths occurring in Canada are ascribed to disorders in this group.

The impact of mental disease lies not in the mortality but in its staggering effect of disability as well as the demand for health services, particularly hospital services. The diseases in this group account for 38.9 per cent of all hospital days. The 3.7 per cent of all prescriptions obtained outside the hospital, being ascribed to this group of diseases may be an understatement to the extent that psychiatric disorders are reported under other diagnoses.[2]



[1] See also McKerracher, D. G., *Trends in Psychiatric Care,* and Richman, A., *Psychiatric Care in Canada: Extent and Results,* studies prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

[2] In 1961, $4,428,000 were spent on "medical, surgical supplies and drugs" in mental institutions, amounting to 3.4 per cent of their total operating expenditure, Dominion Bureau of Statistics, *Mental Health Statistics, Financial Supplement, 1961,* Ottawa: Queen's Printer, 1963, p. 10.

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With changing patterns of care for the psychiatric patient, both within the institution and in the community, it is becoming more and more difficult to draw conclusions from institutional statistics concerning the actual frequency of these diseases. These data, nevertheless, give some indication of the magnitude of the problem.

Of all hospital beds (192,162) about one-third (67,895) were in mental hospitals in 1960.[1] In addition, there are about 1,500 beds in psychiatric units in general hospitals.

In 1960 over 25 million days were spent in mental hospitals and psychiatric units, with an average daily number of patients of 69,000.[2] In other words, one in every 260 people is a patient in a psychiatric hospital or unit. It is estimated that, if present admission rates continue, more than one out of every ten infants will spend some part of his life in a psychiatric institution.[3] In addition, there are those suffering from psychiatric or emotional disorders but not necessarily confined to hospital whose number is unknown but estimated to be possibly in the neighbourhood of one in ten of the population.[4]

Based on studies in Britain and the United States it has been estimated that the prevalence of emotional and mental disorders among school children is of the order of 5 to 10 per cent,[5] and mental retardation may affect at least 3 per cent of the population, one-fifth of this number under the age of 20.[6] Among a large group of employees, a highly selected population group, it has been found that psychiatric disorders account for about 6 per cent of all sickness absenteeism.[7] All these are estimates of different aspects of psychiatric disorder among the population, which may serve to indicate the magnitude of the problem though they do not lend themselves to a clear and precise over-all picture.

Trends in the frequency and the characteristics of psychiatric disorders are very difficult to interpret in terms of their impact on the health services. On the one hand, there is a tendency to draw more and more types of what previously would have been considered as social maladjustment into the sphere of psychiatric care: alcoholism is one example. Drug addicts are being moved from jails to hospitals or clinics, and other kinds of social

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[1] Department of National Health and Welfare, *Hospital Care in Canada,* (unpublished report).

[2] *Ibid.*

[3] *The Canadian Mental Health Association,* brief submitted to the Royal Commission on Health Services, Toronto 1962, Appendix 3.

[4] This estimate, often heard in Canada and the United States, is considered to be a "very conservative one" in: Tyhurst, J. S., *et al., More for the Mind,* Toronto: The Canadian Mental Health Association, 1963, p. 9.

[5] The Canadian Mental Health Association, *op. cit.,* Appendix 3.

[6] *Ibid.,* this estimate results in a total of over 100,000 retarded children and adolescents in Canada.

[7] Generally speaking, absences of over 3 days duration. Dominion Bureau of Statistics, *Illness in the Civil Service,* Statistical Report, 1960, Ottawa: Queen's Printer, 1962, p. 30.

offenders may follow. Psychiatric treatment, on the other hand, has been changing from the purely passive custodial care to intensive treatment with the resulting demand for substituting care in psychiatric units of general hospitals for that in mental institutions for a sizeable portion of the mentally ill.[1]

This entire group of diseases accounted for the following percentages of total illness and the demand for selected health services:[2]

	Per Cent
All deaths	0.3
Premature mortality	0.5
Disabling illness	9.9
Non-disabling illness	n.a.
Hospital separations	2.5
Hospital days	38.9
Physicians' services	1.7
Prescriptions (outside hospital)	3.7
Home nursing	0.7

DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS

This group contains some diseases which are important as causes of death. Among them are conditions often referred to as a "stroke", cerebral haemorrhage, embolism, and thrombosis; crippling and disabling diseases such as multiple sclerosis, various forms of paralysis, epilepsy, and others; and the eye and ear diseases.

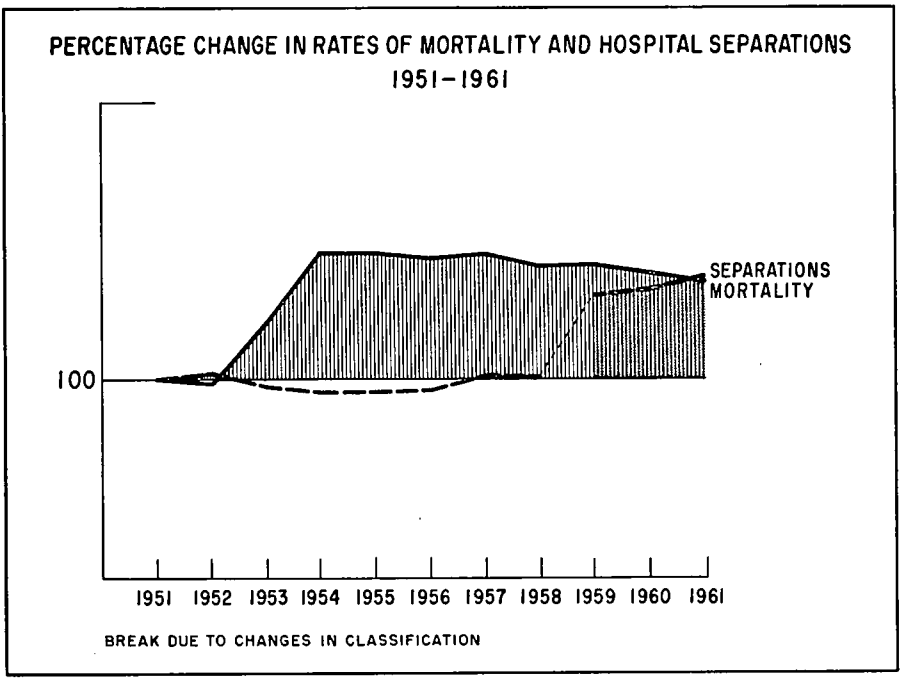
Accordingly, the group ranks fairly high as a cause of death and illness and in terms of its demand on hospital and other health services. The first-mentioned diseases in the group, the vascular lesions, are often combined with diseases of the heart into the cardiovascular group of diseases as typical forms of the degenerative diseases among the older population groups.

The trend in mortality and hospitalization during the period 1951 to 1961 is indicated in the following chart which shows the index for both in 1961 well above that in 1951, although mortality has somewhat declined after the sharp rise earlier in the decade.

The Canadian death rate from these diseases (89.7 in 1959) is lower than that of the United States (108.5), England and Wales (165.6), France (136.4), and Sweden (137.9).

The diseases in this group caused 17,102 deaths in 1961, of which 15,428 were due to vascular lesions affecting the central nervous system. This amounts to 12 per cent of all deaths. The percentage of life years lost due to premature mortality is somewhat lower, however, because most of the

[1] See Chapter 8.
[2] See Table 5-15.



deaths occur at an advanced age. About six per cent of the total duration of illness (6.3 per cent of disabling, and 5.6 per cent of non-disabling) is due to these diseases which also account for 5 per cent of all hospital days, 5.3 per cent of all prescriptions, 3.9 per cent of all physicians' services, but 11 per cent of home nursing services. This reflects the age of the patients, the generally high degree of disability, and the need for whatever rehabilitation can be achieved.

The following list will allow a comparison of the percentages of total illness and the demand for services accounted for by this entire group of diseases:[1]

	Per Cent
All deaths	12.1
Premature mortality	7.4
Disabling illness	6.3
Non-disabling illness	5.6
Hospital separations	3.7
Hospital days	5.0
Physicians' services	3.9
Prescriptions	5.3
Home nursing	11.0

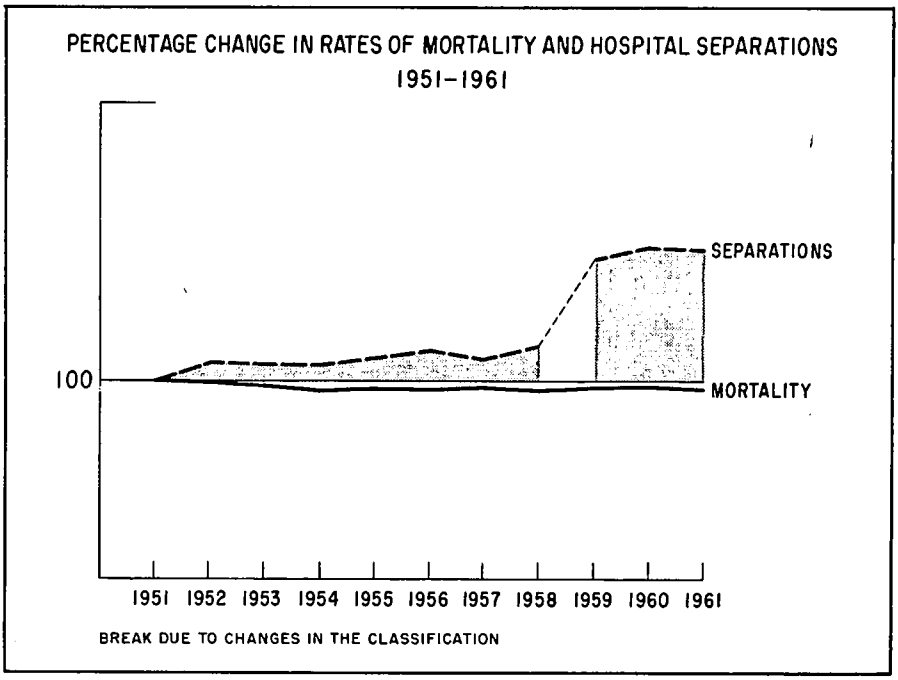
[1] See Table 5-15.

While the vascular lesions account for most of the mortality from the diseases in this group and for about one-fourth of the duration of hospitalization, they share the frequency of hospitalization (separations) about equally with the eye diseases and the ear diseases.[1] The latter, however, account for more than half of the prescriptions in this group.

DISEASES OF THE CIRCULATORY SYSTEM

These are the various types of heart disease, hypertension, arteriosclerosis and other diseases of veins and arteries.

The following chart shows a fairly stable trend of mortality over the last decade with a slight reduction (3.8 per cent) between 1951 and 1961. The line showing the trend of hospital separation, broken due to changes in the classifications, indicates an increased frequency of hospitalization for these diseases.



[1] The respective rates per 100,000 population are:

	Hospital Discharges	*Hospital Days*
Vascular lesions	174	7,290
Diseases of eye	198	1,706
Diseases of ear	151	1,182

The comparison with selected other countries shows Canada's mortality rate (273.1) lower than that of the United States (370.7), England and Wales (385.8), and Sweden (307.9), but somewhat higher than that of France (214.8). Differences in the age composition of the respective populations have to be taken into account in interpreting these figures.

The diseases of the circulatory system account for about 40 per cent of all deaths, by far the highest percentage of all disease groups. These are followed by the malignant neoplasms which account for about 17 per cent of all deaths. Although death from the circulatory diseases usually occurs at an advanced age, the sheer number of deaths also makes it the leading cause group in regard to life years lost due to premature death. Their reported share in disabling and non-disabling illness is about one-tenth of the total from all causes (9.1 and 10.6 respectively).

In terms of hospitalization, this group ranks second, after the mental diseases with 7.9 per cent with the latter taking up almost 40 per cent of all hospital days. Its demand on physicians and services is 5.2 per cent of total demand and for prescriptions 16.2 per cent, for home nursing services 11.9 per cent. It ranks second highest in the requirement for these two types of care.

Within this group of diseases, the arteriosclerotic and degenerative heart disease account for almost 80 per cent of the deaths.

Following are the percentages accounted for by this group of total illness and the demand for selected services:[1]

	Per Cent
All deaths	38.8
Premature mortality	22.0
Disabling illness	9.1
Non-disabling illness	10.6
Hospital separations	6.3
Hospital days	7.9
Physicians' services	5.2
Prescriptions	16.2
Home nursing	11.9

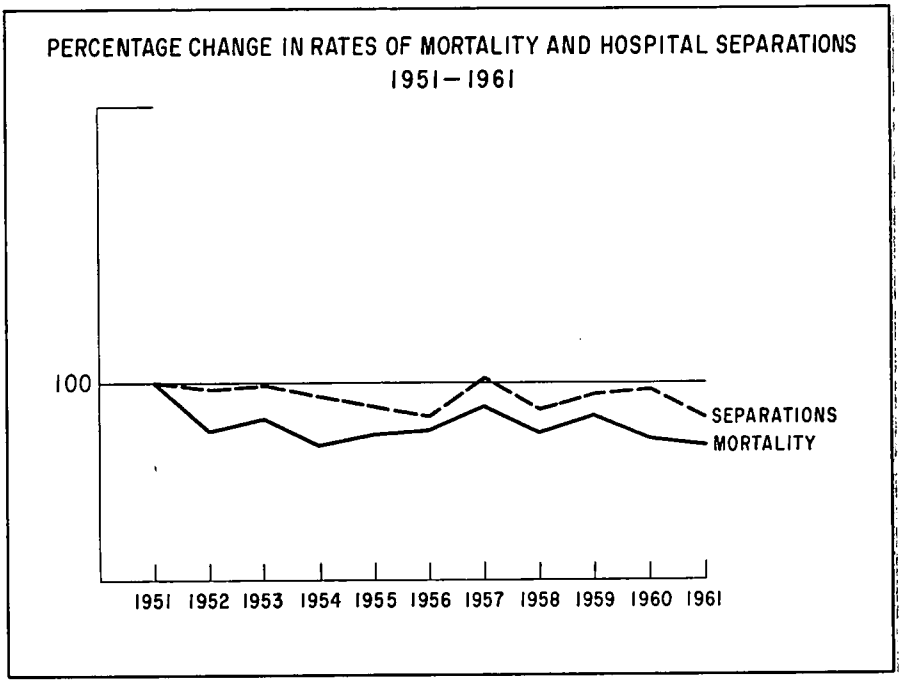
DISEASES OF THE RESPIRATORY SYSTEM

Among the diseases in this group are the common cold, influenza, pneumonia, tonsillitis and other diseases related to the respiratory tract.

The trend in the mortality from these diseases and their hospitalization from 1951 to 1961 is shown in the following chart.

In both series the rates have remained below the 1951 figures (except for hospital separations in 1957). There is, however, no continuous trend because the most frequent of these diseases (common cold, influenza, and pneumonia) are subject to epidemic outbreaks. In fact, 1951, the initial

[1] See Table 5-15.



year of this period, was a year of a widespread Asian influenza epidemic which brought the incidence of related respiratory disorders and their complications to a high level.

Because of the susceptibility of the incidence of respiratory diseases to epidemic outbreaks and environmental or climatic conditions, comparisons with other countries would be meaningful only over a long period of time taking into account a number of extraneous factors involved.

There is evidence, however, that new drugs and treatment methods have succeeded in substantially reducing mortality from respiratory diseases as shown by the following figures for the period prior to 1951.

DEATH RATES FROM INFLUENZA, BRONCHITIS AND PNEUMONIA COMBINED, 1926-1950

Average 1926-30	Average 1931-35	Average 1936-40	Average 1941-45	Average 1946-50
134.0	100.6	97.4	69.0	55.2

SOURCE: Dominion Bureau of Statistics, *Canadian Vital Statistics Trends, 1921-1954*, Reference Paper No. 70, Ottawa: Queen's Printer, 1956, p. 33.

The respiratory group accounts for about five per cent of all deaths with a somewhat higher proportion (7.2 per cent) of all life years lost in a year due to premature mortality.

The impact of the respiratory diseases, however, lies in their demand on physicians' services (15.1 per cent), prescriptions (16.7 per cent), and in their share of disabling (28.0 per cent) and non-disabling illness (23.4 per cent), rendering them the highest ranking group in these respects. They also account for 13.9 per cent of hospital separations, but only 4.9 per cent of all hospital days and 1.5 per cent of home nursing services.

Following are the percentages accounted for by all diseases of the respiratory system out of total illness and total demand for selected services:[1]

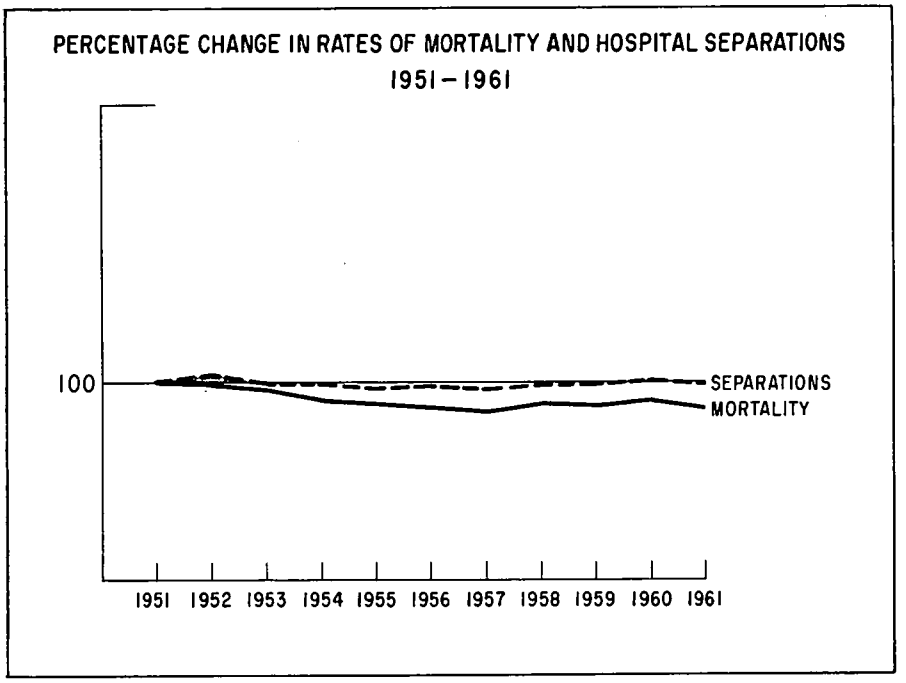
	Per Cent
All deaths	5.7
Premature mortality	7.2
Disabling illness	28.0
Non-disabling illness	23.4
Hospital separations	13.9
Hospital days	4.9
Physicians' services	15.1
Prescriptions	16.7
Home nursing	1.5

Among the diseases of the respiratory system, the common cold, influenza and other acute infections of the upper respiratory tract are responsible for about one-fifth of all illness days, disabling and non-disabling; and for about one-tenth of all physicians' services. Hypertrophy of tonsils (tonsillitis) and adenoids account for 6.3 per cent of all general hospital separations, but, because of the generally short stay, for only 1.3 per cent of all general hospital days. There are 1,116 cases per 100,000 population, the rate being highest (5,356) for the four-year olds. Correspondingly, there are 2,359 days per 100,000 population but 9,449 among the four-year olds.

DISEASES OF THE DIGESTIVE SYSTEM

This group includes, among others, the various diseases (except cancer) of the stomach, ulcers, appendicitis, hernia, as well as diseases of the liver, gallbladder, and pancreas—a rather heterogeneous group. The following chart indicates a slow decline in the mortality from these diseases between 1951 and 1961, but little change in the frequency of hospitalization.

[1] See Table 5-15.



A comparison with the mortality rates of other selected countries indicates rates of the same order, except for the higher rate in France.

The diseases of the digestive system rank on the whole about midway among the groups covered in this chapter, except for occupying the third rank for physicians' services (9.6 per cent), and fourth each for hospital services (5.7 per cent) and prescriptions (8.2 per cent). They account for 3.7 per cent of all deaths, 4.3 per cent of life-years lost, 6.8 per cent of disabling and 8.6 per cent of non-disabling illness.

Of the deaths due to this group of diseases about one-fifth (1,083 in 1961) are caused by cirrhosis of liver. The corresponding number of deaths in 1951 was 607. Somewhat lower is the number of deaths from intestinal obstruction and hernia (929) and gastro-enteritis and colitis (864). The number of deaths from appendicitis has declined from 262 in 1951 to 187 in 1961.

Appendicitis accounts for 1.9 per cent of all general hospital separations and 1.4 per cent of general hospital days. The rate of hospital separations per 100,000 population is 331, with 2,608 hospital days.

The hospital utilization rate for hernia is similar, 1.8 per cent of all general hospital separations and 1.5 per cent of hospital days. There are 315 separations per 100,000 population, with 2,883 hospital days.

Although the International Classification includes dental disorders among the diseases of the digestive system, the bulk of such disorders as caries (forming a large part of the dentist's work load) and other conditions usually treated at the dentist's office will be discussed separately later in this chapter.

With this exception, the diseases of the digestive system account for the following percentages of total illness and the demand for selected services:[1]

	Per Cent
All deaths	3.7
Premature mortality	4.3
Disabling illness	6.8
Non-disabling illness	8.6
Hospital separations	10.8
Hospital days	5.7
Physicians' services	9.6
Prescriptions	8.2
Home nursing	3.8

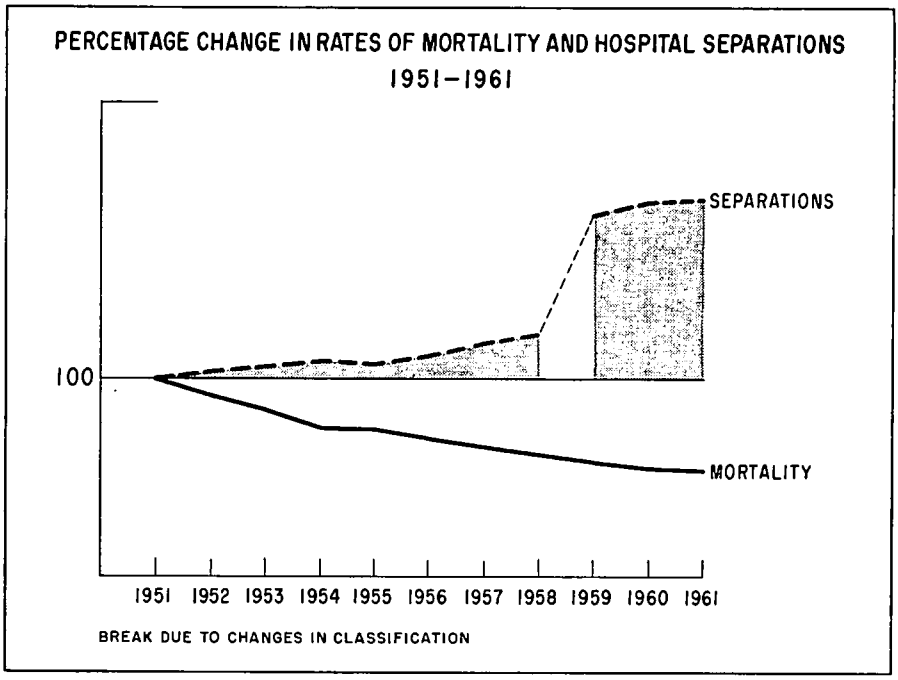
DISEASES OF THE GENITO-URINARY SYSTEM

This group includes nephritis, diseases of kidney and bladder, and the various diseases (except cancer) of the genital organs. Increased hospitalization is accompanied by a steadily declining mortality rate. This group of diseases shows little variation in the death rate between Canada and other selected countries.

As a group, these diseases rank about midway in terms of their share of illness and the demand for health services, accounting for the following percentages of:[2]

	Per Cent
All deaths	2.1
Premature mortality	1.5
Disabling illness	3.5
Non-disabling illness	5.0
Hospital separations	6.9
Hospital days	3.5
Physicians' services	8.7
Prescriptions	4.4
Home nursing	1.8

[1] See Table 5-15.
[2] See Table 5-15.



About one-half of the relatively high demand for physicians' services is due to the diseases of the female genital organs.[1] Nephritis, however, accounts for about one-half of the deaths in this group. The number of these deaths has decreased from 3,043 in 1951 to 1,553 in 1961, with a correspondingly larger decline in the rate.

MATERNITY AND COMPLICATIONS[2]

This group is peculiar in that most of the conditions included are not the result of an abnormal state of health, but they do require health services; only the exceptional complications are manifestations of ill-health. The only other exception is the last class—"supplementary"—which also includes a substantial part of services not related to illness; for example, periodic health examinations or well-baby care.

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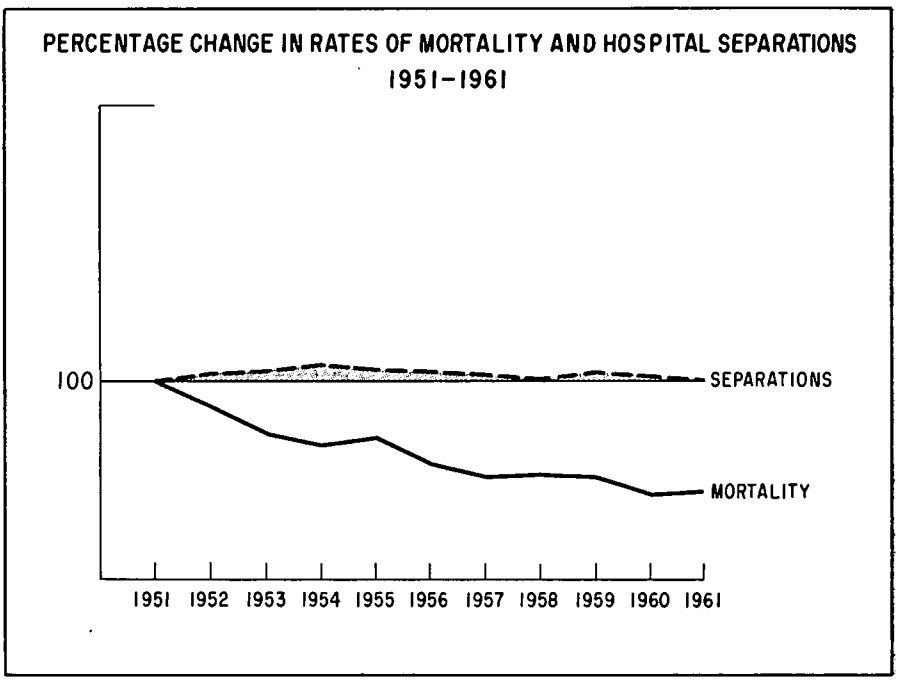
[1] leRiche, H., *A Sample Study on the Participants of a Canadian Prepayment Medical Care Plan in Regard to Costs, Disease Episodes and Services*: Physicians' Services Incorporated, Toronto, 1957.

[2] This heading is used throughout this Report instead of the more descriptive and correct but lengthy terminology of the International Classification of Diseases which reads: "Deliveries and complications of pregnancy, childbirth and the puerperium".



The decline in maternal mortality has been substantial and continuous. This is one of the indicators frequently used as reflecting general health conditions in a country. It is affected not only by the state of personal health services, but also by hygiene and sanitation, as well as living standards and general health habits. The extent of hospitalization, on the other hand, is the result of the birth rate[1] and the proportion of deliveries occurring in hospital.[2]

The Canadian maternal mortality rate, though low (46.0 per 100,000 live births in 1961 and 54.9 in 1959) is somewhat higher than the rates for 1959 in the United States (37.4), England and Wales (38.7) and Sweden (23.8) indicating that there is room for still further improvement. It is lower than the rate in France (55.0).

This group of conditions ranks low in terms of mortality, only a little higher in the extent of disability, but fairly high in its demand for services, accounting for the following percentages of:[3]

[1] The birth rate stood at 27.2 in 1951, reached a peak of 28.5 in 1954, and then declined gradually to 26.1 in 1961.

[2] The percentage of births occurring in hospital rose steadily from 79.1 per cent in 1951, to 96.9 per cent in 1961.

[3] See Table 5-15.

	Per Cent
All deaths	0.2
Premature mortality	0.3
Disabling illness	2.5
Non-disabling illness	0.5
Hospital separations	18.3
Hospital days	5.7
Physicians' services	11.3
Prescriptions	3.5
Home nursing	9.2

Of the hospital days required by this group, about 70 per cent are due to deliveries without any complication.[1] In 1926 the maternal mortality rate[2] was 560 per 100,000 live births and declined to 46 by 1961. An indication of the possibility of further improving the Canadian rate is obtained by examining the differences in the rate for those provinces which have not been sharing equally in the remarkable improvement that has taken place over the last quarter of a century.[3]

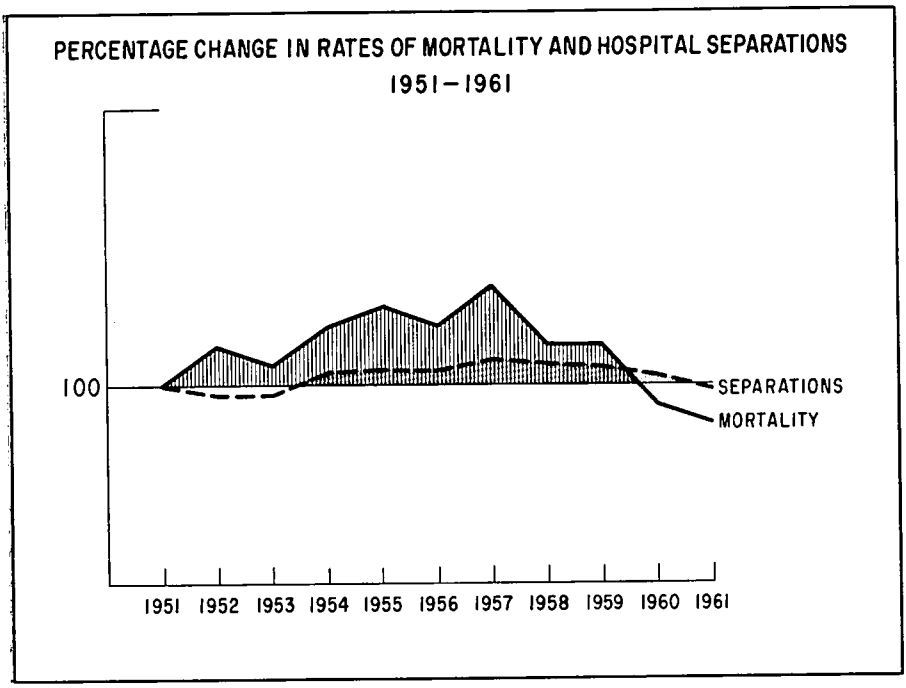
	Maternal Mortality Rate per 100,000 Live Births
Newfoundland	88
Prince Edward Island	18
Nova Scotia	21
New Brunswick	55
Quebec	64
Ontario	38
Manitoba	48
Saskatchewan	34
Alberta	21
British Columbia	37
Yukon	—[4]
Northwest Territories	—[4]
Canada	46

DISEASES OF THE SKIN AND CELLULAR TISSUE

This group includes boils, carbuncles, impetigo and other skin conditions such as dermatitis but excludes cancer.

Apparent changes, particularly in the mortality rate, may not be significant because of the comparatively small numbers involved (165 in 1960). The same applies to the trend of hospital separations which, how-

[1] This does not include new-born care which is shown under the "supplementary" group.
[2] Per 1,000 live births.
[3] The mean between the 1960 and 1961 rate is shown to reduce the effect of chance variations due to small numbers, based on Dominion Bureau of Statistics, *Vital Statistics 1961*, Ottawa: Queen's Printer, 1963, p. 213.
[4] Rates for the Yukon and Northwest Territories omitted. Because of the small populations in these Territories maternal deaths are very infrequent so that, for instance, one such death in the Yukon means a jump in the rate of about 180. Comparisons of rates based on such small frequencies would not be meaningful.



ever, vary to a lesser extent, remaining at about the same level throughout the period.[1]

As a group, these diseases rank generally low in their share of illness and their demand for health care, with the exception of physicians' services. They account for the following percentages of:[2]

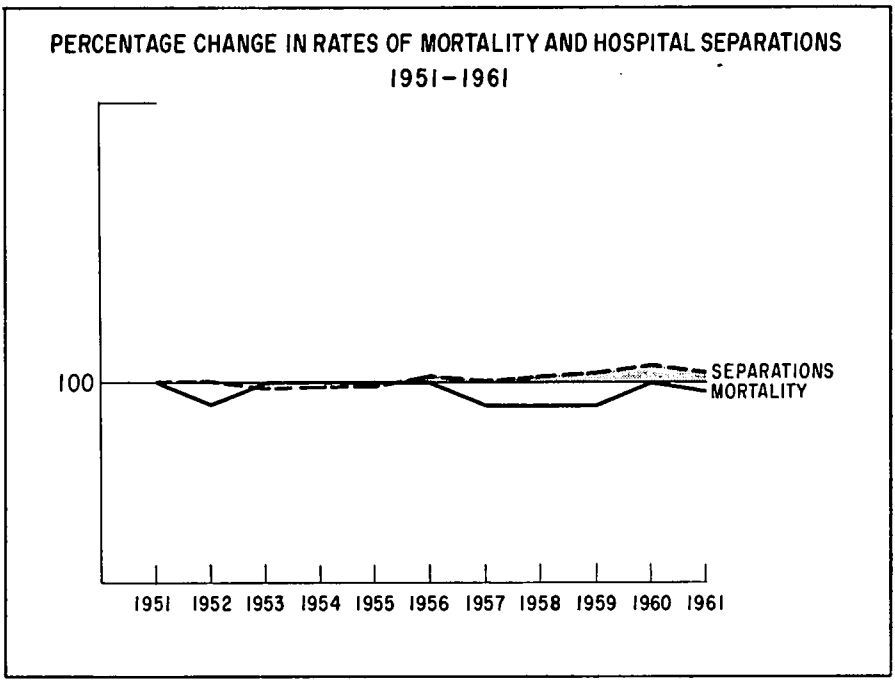
	Per Cent
All deaths	0.1
Premature mortality	0.1
Disabling illness	1.6
Non-disabling illness	5.5
Hospital separations	2.0
Hospital days	0.9
Physicians' services	8.3
Prescriptions	4.2
Home nursing	1.6

The demand for physicians' services is due largely to the diseases described as infections of skin and subcutaneous tissue, which also account for about half of the prescriptions required by this group.

[1] Comparable data for other countries are not available.
[2] See Table 5-15.

DISEASES OF THE BONES AND ORGANS OF MOVEMENT

This is the group of diseases which includes the various forms of arthritis and rheumatism.[1]



The impact of this group of diseases lies mainly in their share of non-disabling illness, to a lesser extent of disabling illness, and also in their demand for physicians' services, prescriptions and home nursing services. They account for the following percentages of:[2]

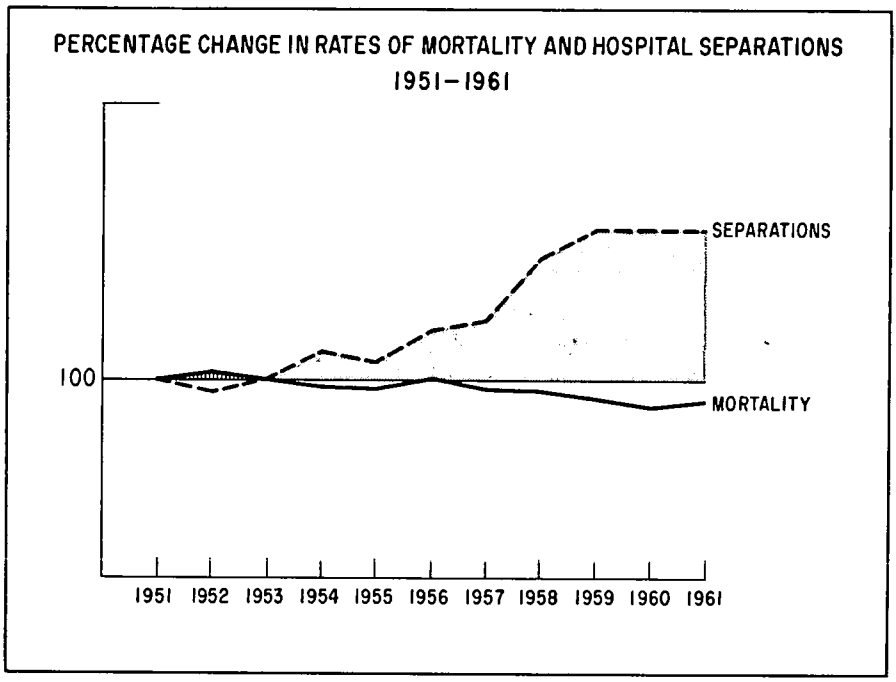
	Per Cent
All deaths	0.3
Premature mortality	0.3
Disabling illness	5.7
Non-disabling illness	10.0
Hospital separations	2.7
Hospital days	2.9
Physicians' services	7.2
Prescriptions	4.6
Home nursing	5.5

[1] Comparable data for other countries are not available.
[2] See Table 5-15.

About 80 per cent of the non-disabling and 90 per cent of the disabling illness in this group is due to arthritis and rheumatism, and similar proportions apply to the demand for physicians' services, prescriptions and home nursing services.

CONGENITAL MALFORMATIONS

The title of this group of conditions is self-explanatory, the distinction between various types of malformations resting primarily on the site of the deformity.



Mortality has been declining slowly but steadily although the incidence of hospitalization has gone up, indicating some success in reducing the mortality if not the frequency of these conditions. Whether the increased hospitalization rate reflects only a greater proportion of these conditions being brought to treatment, or whether it is also an indication of an increasing incidence can only be established definitely when more complete statistics and the results of studies become available regarding the suspected effects of exposure to radiation, drugs and other environmental factors.

Canada's mortality rate is similar to that of the United States, England and Wales, France, and Sweden.

Because of the deaths occurring generally at an early age, the impact of these conditions lies particularly in their share in life years lost due to premature mortality. Further successes in keeping children with malformations alive and wider application of rehabilitation services and prosthetic devices may well increase the demand for a larger share of health services. At present, congenital malformations account for the following percentages of:[1]

	Per Cent
All deaths	2.0
Premature mortality	6.5
Duration of illness	n.a.
Hospital separations	0.8
Hospital days	0.7
Physicians' services	0.3
Prescriptions	nil
Home nursing	0.2

CERTAIN DISEASES OF EARLY INFANCY

This group comprises only some of the causes responsible for Canada's relatively high infant mortality rate. Besides the congenital malformation, they are largely confined to those, responsible for the deaths during the neo-natal period, i.e., the first four weeks after birth. The most frequent of these conditions are asphyxia, birth injuries and immaturity.

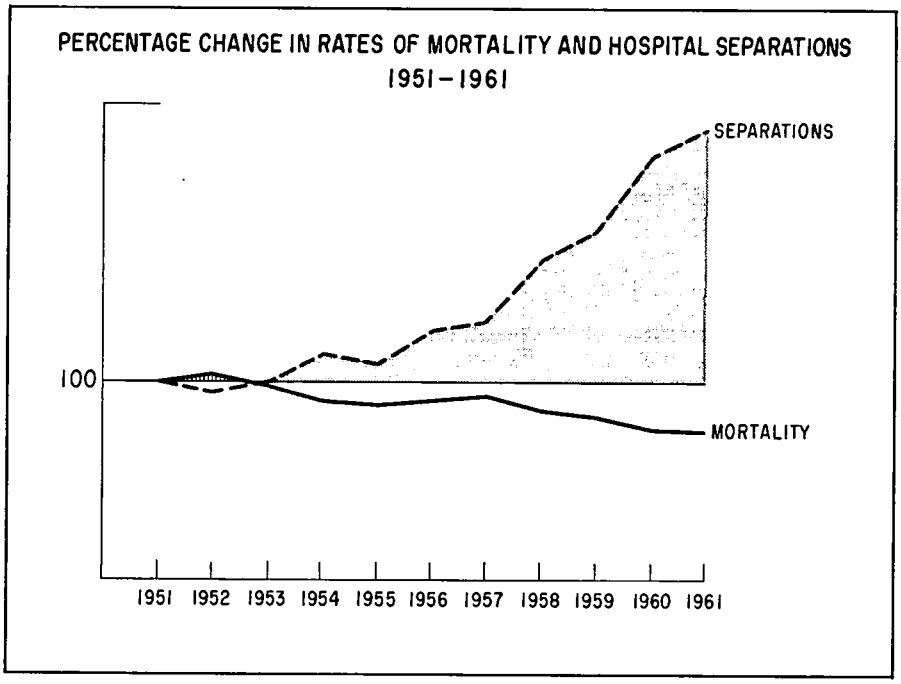
Mortality has been slowly declining while the incidence of hospitalization has risen sharply, indicating growing success in treatment, a trend similar to that found for congenital malformations with which this group is not unrelated.

The mortality rate from these diseases (1,555 in 1959)—per 100,000 live births—is at about the same level as that in the United States (1,600); somewhat higher than in England and Wales (1,244), France (1,307), and Sweden (1,070).

These diseases are among the major causes of death also in Canada. Because almost the entire expected life span is lost in each case, this group of diseases ranks second in terms of premature mortality. It accounted for the following percentages of:[2]

	Per Cent
All deaths	5.1
Premature mortality	17.4
Duration of illness	n.a.
Hospital separations	0.4
Hospital days	0.3
Physicians' services	1.3
Prescriptions	0.2
Home nursing	0.1

[1] See Table 5-15.
[2] See Table 5-15.

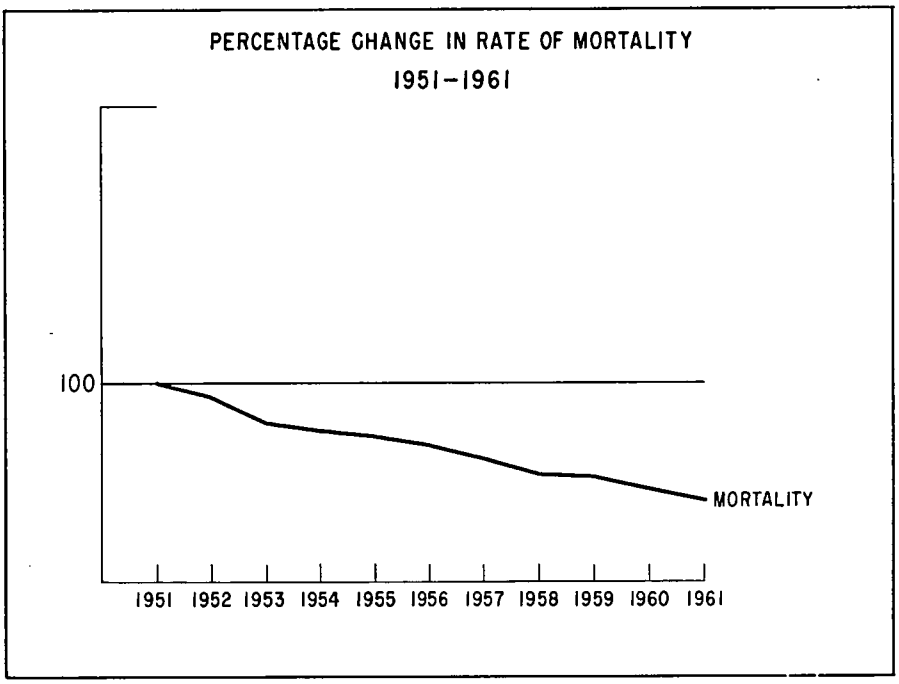


While most of the diseases in this group have shown some decline in the respective mortality rates, some still remain stubbornly high, especially where immaturity is a complicating factor. Immaturity as such accounts for almost one-third of the deaths in this group. Post-natal asphyxia and atelectasis, especially when combined with immaturity, is another major component, followed by birth injuries. Pneumonia deaths among the newborn remain on a high level as do the haemolytic diseases of the newborn. A notable reduction has taken place in the newborn deaths arising from certain diseases of the mother during pregnancy, particularly toxaemia of pregnancy.

The health of the newborn is to a large extent a function of the care given to mother and baby, their nutrition, and standards of hygiene prevailing in their environment. That there is room for improvement in these respects is clearly indicated by the differences among the mortality rates from diseases of the newborn in the various provinces which in 1959 ranged from 1,333 per 100,000 live births in Manitoba to 4,950 in the Northwest Territories—or from rates approaching those of European countries with good health conditions to those found in countries with the worst.

SYMPTOMS, SENILITY AND ILL-DEFINED CONDITIONS

This group of conditions is largely residual including anything that does not belong into one of the other groups or where the diagnosis is not sufficiently specific to permit of its classification under any of the foregoing headings. In the latter case, the inclusion in this group is due to inadequate information in the basic records. Thus, the comparison of data over a period of time or between different countries will reflect to a considerable degree changes in the quality of "bookkeeping" rather than actual health conditions.



International comparisons are affected by differences in recording practices that impair the quality of the resulting statistics. Canada's mortality rate ascribed to this group is the lowest among the selected countries (in 1959):

Canada	8.8
United States	10.8
England and Wales	17.2
France	167.6
Sweden	24.9
Mexico	138.9
Ceylon	201.2

The group's apparent share in illness and demand for health services must be interpreted with care bearing in mind the above qualifications:[1]

	Per Cent
All deaths	0.9
Premature mortality	0.6
Disabling illness	8.1
Non-disabling illness	17.0
Hospital separations	1.9
Hospital days	0.9
Physicians' services	6.6
Prescriptions	5.4
Home nursing	4.3

The percentage is lowest in regard to deaths and hospital days, the two series which are based on well established record systems. The data on illness days, both disabling and non-disabling, are based on lay information. The often minor causes of non-disabling illness may be due to vague symptoms such as headaches or pains, not diagnosed by a physician, and therefore not recognizeable as a specific disease entity under any other heading.

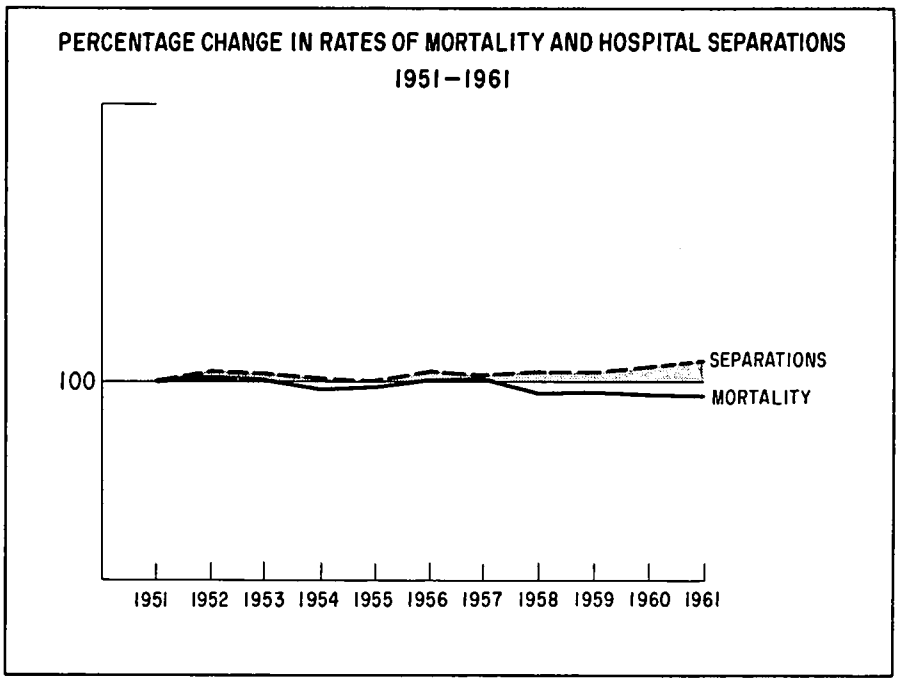
ACCIDENTS, POISONINGS, AND VIOLENCE

This group deals with injuries inflicted on the body by the extraneous circumstances mentioned. In this respect the injuries differ from the health problems discussed in the foregoing sections. Unlike the diseases reviewed there, the injuries do not stem from malfunctions in the body or mind but from situations or occurrences which as such would bear no relation to a person's health. Hence, the causes of accidents, which form the bulk of this group, and violence have been considered in the past as lying outside the area of medical concern which has been limited to the treatment of the resulting injuries. This has changed, however, since injuries as a result of accidents have developed into one of our major health problems. It is becoming increasingly recognized and accepted that there is such a thing as the epidemiology of accidents; that medical science can contribute to their control by studying the physical and mental conditions leading to accidents and violence. Nevertheless, the causation of accidents is not primarily a

[1] See Table 5-15.

medical problem. We sympathize with the difficulties of the medical profession in delineating their responsibility in this field.[1]

A dual classification is available for the study of accidents. They can be categorized either by their external cause (e.g., motor vehicle accidents) or by the nature of injury (e.g., fracture of skull). The latter is important from the point of view of treatment, but as we are more concerned with the social aspects of accidents, the external causes will be reviewed here briefly under the following headings: railway accidents, motor vehicle accidents, other road vehicle accidents, water transport accidents, aircraft accidents, poisonings, falls and other miscellaneous accidents.



[1] See editorial in the *Canadian Medical Association Journal*, July 15, 1959, Vol. 81, p. 112: " . . . a great number of demands are made upon our profession nowadays to show leadership and take the initiative in reforming society. We are required, for example, to deal with the growing army of alcoholics in our midst and to dissuade the young from the abuse of tobacco. We are expected to stop executives from killing themselves with overwork and overeating, to transform homosexuals into heterosexuals and to change sexual offenders, by surgery and psychiatry, into law-abiding citizens. The editor of a learned contemporary has recently requested us to assist in the abolition of boxing, and some think that we should take the lead in stamping out that other form of slaughter, the automobile accident. Now all these problems certainly have a medical angle, but we can scarcely be expected to deal with them alone. We have the good of the people at heart, but what if they do not want to be done good to! If people want to get fat and lazy, or drink themselves to death or hit each other, what are the limits of our responsibility to them?"

Both mortality and hospitalization show but little change, the former increasing and the latter decreasing slightly. The comparison with selected other countries shows the Canadian mortality rate as being of the same order of size as that in other countries and very close to the rate in the United States (54.1 and 52.2 respectively in 1959).

Accidents rank high as causes of mortality—they are the main cause of deaths among the younger age groups—and as causes of non-fatal illness. They also take up a substantial part of our health services, accounting for the following percentages of:[1]

	Per Cent
All deaths	7.9
Premature mortality	14.3
Disabling illness	5.7
Non-disabling illness	4.4
Hospital separations	7.5
Hospital days	4.7
Physicians' services	6.7
Prescriptions	4.5
Home nursing	3.4

The high toll in terms of life years lost due to premature mortality is due to the high rate of fatal accidents among children and young adults. Accidents have taken the place of the infectious diseases by killing and injuring people in their prime of life. Of the 11,229 deaths due to accidents in 1961, 3,882 (or 34.6 per cent) were due to motor vehicle accidents, the remainder to accidental falls, drownings, fires, and other causes.

SUPPLEMENTARY CLASS

This group has been added to the classification of diseases and injuries in order to account for health care given without relation to a certain specific illness or any actually existing condition. Shown under this heading are, for instance, the days of newborn care in the hospital, well-baby care by physicians as well as X-ray or laboratory examinations without evidence of illness, prophylactic injections, vaccinations, and similar procedures.

This group of services accounts for the following percentages of:[2]

	Per Cent
Hospital separations	13.7
Hospital days	5.2
Physicians' services	4.7[3]
Prescriptions	12.5
Home nursing	18.0

Most of these services can be considered as preventive.

To ascertain the full extent of personal preventive care now provided a number of other services should also be included. Immunization procedures,

[1] See Table 5-15.

[2] See Table 5-15.

[3] Based on leRiche, *op. cit.*, p. 80. Physicians' services include refractions accounting for 41 per cent of the cost of services in this group (*ibid.*, p. 54.)

for instance, are performed by the public health services as well as private physicians; so are well-baby and pre- or post-natal care. leRiche estimates that under the Physicians' Services Incorporated[1] "between 13.26 and 16.51 per cent of its disbursements" are allocated to "physiological and preventive" services in which he includes also obstetrical services and services for symptoms and ill-defined illness.

THE HANDICAPPED

In order to study the impact of the various health problems on the community, and on the health services in particular, we have found it useful to review what is happening during a given year.

This approach, however, obscures the impact of either good or ill health on the individual. In order to see how he is affected by illness, we want to know also what happens to the same individual, or the same group of individuals, over a period of years, possibly an entire lifetime. Here is an example: we may find that a certain disease in a given year accounts for 365 days of disability. This may represent 365 people, each of whom was disabled for only one day, or it may be the experience of one individual incapacitated for 365 days. Anyone found to be incapacitated during the whole year is most likely also to have been incapacitated before the beginning of that year; and his incapacity is likely to continue after the end of the particular year chosen for the review. In some cases this condition will continue for the patient's lifetime.

All these cases—ranging from those with a disability of one day to those with permanent disabilities—are reflected in the statistics depicting the annual demand for health services.

Yet, if instead of looking at the current situation only at a particular period of time we follow the individual or groups of people over a period of time, perhaps their lifetime, we observe different problems. The difference between a day-long and life-long illness—to mention the two extremes—is not merely a matter of degree. Long-term illness and disability often require not necessarily more but different services from those provided in cases of short-term illness. Long-term illness, and particularly disability, have a much greater social impact on the individual, his family, and the community than the sum total of a correspondingly larger number of short-term illnesses or temporary disabilities.

In the previous sections we have reviewed illness based largely on the diseases and injuries as its causes. When we think of impairments and handicaps, however, we look at the consequences rather than the causes of illness. Thus, identical handicaps may be the result of widely different diseases

[1] *Ibid.*, p. 32.

or injuries. The absence of a limb, for instance, may have been caused by injury, by congenital malformation, or by an amputation in the course of the treatment of a disease. At this stage, then, treatment and rehabilitation services will be similar for similar handicaps, regardless of the original cause of the handicap. In many, though not all, of these cases the possibilities of treatment for the underlying disease or injury will have been exhausted, and what remains to be done is mainly in the nature of compensating devices, medical restoration, and social rehabilitation including training and special schooling.

In order to assess the need for these services and to evaluate the present supply, one has to introduce a new dimension into the health statistics by taking a count of persons with various impairments in which the emphasis is on the type and degree of the residual handicap rather than its causes. We refer to this as a different dimension because such a count cuts across the previously used classification of health problems in terms of the causative disease or injury. Nor is the term impairment or handicap necessarily synonymous with illness. Disabilities not causing pain or discomfort, or compensated impairments are often not considered or counted as illness. Examples are impairments of sight or hearing—if compensated by glasses or hearing aids—or the loss of a limb—if compensated by prosthetic devices.

An attempt to estimate present and future needs for rehabilitation services, appliances, special schooling and employment facilities, and institutional services is circumscribed by the availability of limited data for Canada. They suffice, however, to suggest the order of magnitude of the problem and to point to some of the major requirements. The important criteria in evaluating health and social needs in respect to impairments are: (1) the nature or type of impairment, (2) its degree, and (3) its duration.

The Canadian Sickness Survey 1950-51 produced some data on the prevalence of permanent physical disabilities in Canada. The rates and their application to Canada's 1961 population are shown in Table 5-13. We have in Canada somewhere around one and one-quarter million people with permanent physical handicaps. Of these, about 56 per cent are of minor or moderate nature, 44 per cent are classified as severe or total.[1] Those severely

[1] The severity groups of the chronic disabilities, deformities and amputations enumerated in the original survey are defined as follows: Minor—not interfering to any practical extent in the day-to-day functioning on the job or at home; Moderate—appearing to have only a localized effect on conduct in daily employment or at home but not seriously affecting a person's general way of life; Severe—interfering considerably with work or normal home responsibilities (persons in this group were not totally bedridden but generally had to take life easily, take much extra rest, or be confined to bed during acute phases of disability); Total—largely necessitating confinement to bed, a wheelchair or a sitting position (in addition, assistance was usually required in carrying out the simple functions of everyday living). Department of National Health and Welfare and Dominion Bureau of Statistics, *Illness and Health Care in Canada,* Canadian Sickness Survey, 1950-51, Ottawa: Queen's Printer, 1960, p. 25.

or totally handicapped as a result of chronic disability, deformity, or amputation number over half a million. From the nature of the original survey it appears that this is a conservative estimate because of the reluctance to report certain disabilities to an interviewer and also because long-term patients in institutions may not have been included in the household information.[1]

TABLE 5-13 PERMANENT PHYSICAL DISABILITIES, ESTIMATED NUMBER AND RATE PER 1,000 POPULATION BY AGE GROUP, BY SEVERITY, CANADA, 1961*

Age Group	All Severity Groups		Minor and Moderate Disabilities		Severe and Total Disabilities	
	Number	Rate	Number	Rate	Number	Rate
All ages	1,295,000	71	730,000	40	565,000	31
Under 15	111,000	18	....	....	....	....
15–24	....	....	42,000	16	....	....
25–44	297,000	61	190,000	39	107,000	22
45–64	415,000	131	238,000	75	177,000	56
65 and over	355,000	255	142,000	102	213,000	153

* Based on Department of National Health and Welfare and the Dominion Bureau of Statistics, *Illness and Health Care in Canada*, Canadian Sickness Survey, 1950-51, Ottawa: Queen's Printer, 1960, and Dominion Bureau of Statistics, *Census 1961*, Ottawa: Queen's Printer, 1963.

SOURCE: Kohn, R., *The Health Status of the Canadian People*, a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

NOTE: . . . . means survey sample insufficient for estimates.

The primary causes of all these disabilities, whether minor or severe, were shown as being distributed as follows:[2]

	Per Cent	Estimated Number of Cases in 1961
ALL CAUSES	100.0	1,290,000
Heart disease	13.1	169,000
Impairments due to accidents	12.6	162,000
Arthritis and rheumatism	11.9	154,000
Deafness	7.6	98,000
Blindness and near blindness	6.9	89,000
Chronic diseases of nervous system	5.9	76,000
Other causes	42.0	542,000

[1] The rate of impairments found in the United States National Health Survey is about twice as high (141.4) as the Canadian rate (71) but the concept used there is somewhat broader and the rate also includes mental disorders. United States Department of Health, Education, and Welfare, *Health Statistics—Impairments by type, sex, and age, United States, July 1957-June 1958*, Washington, D.C., United States Government Printing Office, 1959, p. 8.

[2] Based on Department of National Health and Welfare, Dominion Bureau of Statistics, *op. cit.*, p. 114.

Of the 565,000 severe or total disabilities, the survey tells us only that 19.1 per cent (or slightly over 100,000 in 1961) were due to heart disease, and 11.8 per cent (or some 60,000 in 1961) to arthritis and rheumatism.

Since the data quoted above are limited to physical disabilities, it is necessary to turn to other sources to determine the extent of long-term disability due to psychiatric disorders. No survey has as yet been undertaken to obtain this information for the population of Canada as a whole. Among psychiatric patients in institutions on a given day,[1] some 33,000 had been in the institution for more than 3 years,[2] and another 10,000 for over one year on the Census day. On the same day, there were nearly 20,000[3] mentally deficient patients in institutions. This total of some 50,000 to 60,000 does not include the considerable number of the chronic mentally disabled outside the institutions.[4]

Statistics available from other sources contribute little to our knowledge of the total numbers of persons with certain disabilities, but they shed some light on the relative frequencies of various types of handicaps. Comparability is impaired though by the selectiveness of the programmes from which the data come and by the use of different concepts and to some degree also classifications.

Regarding the totally and permanently handicapped, some information is available from the medical statistics of applicants for Allowances for Disabled Persons in Canada.[5] These statistics relate to those persons entering the programme, and not necessarily all those receiving the allowances at a given point of time. They represent, therefore, not a cross-section of the group of people in receipt of allowances. Their characteristics will vary from those of the new applicants because of varying survival rates, changing conditions, and perhaps also changing diagnostic classification and administrative practices. We are dealing here with a highly selected group of people; they are generally in the age group 18 to 64, thus omitting children and the vulnerable group of the aged; they are people who have passed the means test in order to qualify for the allowance; they exclude most of those staying in hospitals, homes for the aged and other custodial institutions.[6]

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[1] December 31, 1960, is the latest date for which figures are available.

[2] Based on Dominion Bureau of Statistics, *Mental Health Statistics, Supplement: Patients in Institutions*, Ottawa: Queen's Printer, 1960, p. 43.

[3] 19,590, *ibid.*

[4] See p. 182.

[5] Department of National Health and Welfare, *Allowances for the Permanently and Totally Disabled—Medical Statistics—April 1, 1957 to March 31, 1960*, Ottawa: The Department, 1961.

[6] Those who are pay residents in full or in part are entitled to receive the allowances.

Table 5-14 shows the percentage distribution of the causes of disability among those granted the allowances during the three fiscal years ending March 31, 1958 to 1960.

TABLE 5-14 PERCENTAGE DISTRIBUTION BY CAUSE OF DISABILITY OF PERSONS GRANTED ALLOWANCES FOR DISABLED PERSONS IN CANADA

Fiscal Years Ending March 31, 1958-1960*

Cause Group	1958	1959	1960
I. Infective and Parasitic Diseases	6.0	5.0	3.5
II. Neoplasms	3.3	4.0	5.0
III. Allergic, Endocrine System, Metabolic and Nutritional Diseases	6.7	5.3	3.1
IV. Diseases of the Blood and Blood-forming Organs	0.4	0.4	0.3
V. Mental, Psychoneurotic and Personality Disorders	23.5	27.5	33.2
VI. Diseases of the Nervous System and Sense Organs†	17.4	20.0	20.9
VII. Diseases of the Circulatory System	21.0	20.0	17.3
VIII. Diseases of the Respiratory System	2.5	2.4	2.7
IX. Diseases of the Digestive System	1.5	1.1	0.8
X. Diseases of the Genito-Urinary System	0.9	0.8	0.7
XII. Diseases of the Skin and Cellular Tissue	0.3	0.4	0.2
XIII. Diseases of the Bones and Organs of Movement	10.7	9.3	8.3
XIV. Congenital Malformations	1.2	1.1	1.4
XVI. Symptoms, Senility, and Ill-defined Conditions	2.6	0.8	0.4
XVII. Accidents, Poisoning, and Violence	2.0	1.9	2.2
ALL CAUSES	100.0	100.0	100.0

* Based on Department of National Health and Welfare, Research and Statistics Division, *Allowances for the Permanently and Totally Disabled,* Medical Statistics, April 1, 1957 to March 31, 1960, pp. 22-27.

† Generally excludes the blind who are covered by the Allowances for Blind Persons.

These figures do not reflect the actual prevalence of the various causes but only their relative ranking within this particular population group. Nor do small changes over a period of two or three years necessarily indicate definite trends. For certain causes, however, the trend has been one of consistent change either upwards or downwards.

Accounting for an increasing proportion are: Neoplasms; Mental, Psychoneurotic and Personality Disorders; Diseases of the Nervous System and Sense Organs.[1] Mental and related disorders were the leading cause group in all three years, followed in the last year by the increasing proportion of diseases of the nervous system and sense organs, and a decreasing proportion of diseases of the circulatory system.

[1] This group does not include blindness, except for a few isolated cases.

During the same three years the following numbers of blind persons were granted allowances for blind persons:[1]

Year	Persons
1957-58	834
1958-59	1,037
1959-60	774

If added to the aforementioned figures for all other disabilities for which allowances were granted, the blind would account for about 10 per cent in the year 1959-60.

The great importance of psychiatric disorders and the diseases of the nervous and sense organs (including blindness) is borne out also by statistics of registered disabilities of adults in British Columbia.[2] The same source indicates the following as the main causes of disabilities among the registered live cases under the age of 21:

Cause	Per Cent of Total
Mental retardation	18
Strabismus	9
Congenital heart disease	6
Cerebral palsy	5
Impaired hearing and deafness	5
Non-organic speech defects	4
Clubfoot	4

A study of the types of congenital malformations found among newborn children in British Columbia[3] disclosed among the most frequent are cleft palate and harelip, malformations of the circulatory system, clubfoot, spina bifida and meningocele. All these handicaps require, to a varying degree, medical and institutional care, often including a wide range of rehabilitation services. They also represent the demand for compensating devices such as prosthetic appliances of an ever increasing variety and complexity.[4]

Inadequate eyesight conditions which can be compensated by the use of spectacles are usually not counted a disease or handicapping condition, yet they are no doubt health defects whose rectification falls under the

[1] Department of National Health and Welfare, *Report on the Administration of Allowances for Blind Persons in Canada, Fiscal Year Ended March 31, 1962,* Ottawa: Queen's Printer, 1962, p. 5.

[2] This fact stands out though the two series of statistics are not comparable, see Department of Health Services and Hospital Insurance, British Columbia, *Registry for Handicapped Children and Adults, Annual Report 1962.*

[3] Doughty, J. H., *Case Finding of Congenital Malformations,* in the above quoted report, pp. 37-50.

[4] See Chapter 2, Recommendations 113-115.

provision of health services.[1] We have prepared some approximate estimates of the extent of the problems faced in this field based on the frequency of these disorders.

In 1961 the number of blind persons registered with the Canadian National Institute for the Blind was 24,117.[2] The Canadian Sickness Survey indicates that all permanent impairments of the eye—minor as well as total—amount to about four times this figure.[3]

Regarding refractive errors only, the Canadian Association of Optometrists estimates[4] that among the general population 41 per cent do not require vision care, 30 per cent are receiving adequate care, 14 per cent have uncorrected problems, 10 per cent are wearing obsolete or improper corrections, and 5 per cent are uncorrectable. Thus, about 54 per cent of the population require vision aid. This over-all percentage varies from about 20 per cent among school age children to about 90 per cent at age 70.[5] These figures approach fairly closely the results of a survey in England according to which there are about 44 per cent of the general population there wearing glasses.[6]

According to the same source, about 88 per cent of the 13.2 per cent of the population having eye examinations, require glasses. This would put the number of people needing new glasses or replacements at about 12 per cent of the population annually. The Canadian Sickness Survey[7] reported only 4 examinations for glasses in every 100 of the population. The Canadian Association of Optometrists estimate that people on the average have their eyes examined every three to four years.[8]

DENTAL HEALTH PROBLEMS

The disorders referred to under this heading are those usually treated by dentists. This sets them apart from other diseases in a way roughly analogous to the separation between the dentist and the medical practitioner. But it is not only the type of service and the training of the practitioner which accounts for the separation (not unlike the traditional separation of mental disease and services from other health problems and services). There also seems to be an attitude towards dental care as something more elective than general health care partly due perhaps to a lack of awareness of its nature,

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[1] See Chapter 2, Recommendations 83-94.

[2] Canadian National Institute for the Blind, Annual Report 1961.

[3] See page 205 above.

[4] *Canadian Association of Optometrists*, brief submitted to the Royal Commission on Health Services, May 1962, Toronto, pp. 25-27.

[5] *Ibid.*, Exhibit No. 19.

[6] Gray, P. G., "Who Wears Spectacles " in *The Lancet*, Sept. 22, 1951, p. 537.

[7] Department of National Health and Welfare and Dominion Bureau of Statistics, *Illness and Health Care in Canada*, Canadian Sickness Survey, 1950-51, Ottawa: Queen's Printer, 1960, p. 192.

[8] Canadian Association of Optometrists, *op. cit.*, p. 26.

the limited access to care facilities, and their cost. While everyone knows what a bad toothache means, it can often be stopped by the extraction of the tooth or teeth. Once the source of the pain has been removed, the immediate need for treatment subsides, any resulting complications are slow in developing, and the inconvenience of the loss of a tooth or even several teeth is often suffered because of the lack of access to or desire for further treatment.

Statistical information on the prevalence of dental disorders among the general population is limited but available evidence is convincing that dental disease is one of the most frequent health defects found in the community.[1] Most surveys are limited to children in certain areas. Estimates based on such surveys indicate the extent of the problem:

> "By the age of 13, according to the National Dental Health Survey, 98 per cent of Canadian children have one or more teeth decayed and 40 per cent of them have lost one or more permanent teeth. Only 13 per cent of the children between seven and 13 years of age have no untreated dental defects; each child has an average backlog of three teeth needing restoration.
>
> "Sixteen per cent of all children and almost 80 per cent of all adults have gingival infections. Between 50 and 70 per cent of the people have malocclusion".[2]

Of Canadian children between the age of 7 and 13, only 13.2 per cent have no dental defects, and 21.5 per cent no caries defects.[3] The existing backlog of untreated caries is, on the average, 3.4 teeth per child up to age 14 and 2.9 teeth per adult.[4] The following are figures resulting from dental surveys in British Columbia[5] showing the mean number of carious permanent teeth per child.

Age	Mean Number of Carious Permanent Teeth per Child
5	0.1
7	1.5
9	2.0
11	2.8
13	4.3
15	4.8
Ages 7–15 combined	2.9

[1] "The unnecessary tragedy of dental diseases is one of Canada's gravest health problems", *The Canadian Dental Association*, brief submitted to the Royal Commission on Health Services, Ottawa, 1962, p. 9.

[2] *Canadian Dental Association, ibid.*, p. 11.

[3] *Ibid.*, p. II-5.

[4] *Ibid.*, p. III-3.

[5] Department of Health Services and Hospital Insurance, British Columbia Health Branch, Division of Vital Statistics, Special Report No. 52, *British Columbia Dental Health Surveys, 1958-1960, Part III*, pp. 18, 19.

Despite this great need for dental services, the effective demand is very low.[1] The Canadian Sickness Survey shows that in 1950-51 only about one in seven Canadians visited a dentist during a year. The Canadian Dental Association estimates that about one-third of all Canadians receive some dental care in a year.[2]

There were considerable differences among income groups in the frequency of dental visits.

Income Group	Visits	
	Per 1,000 Population	Per 1,000 Persons Reporting Dental Visits
Low Income	163	1,729
Medium Income	302	2,076
High Income (lower)	416	2,195
High Income (upper)	542	2,520
ALL GROUPS	323	2,192

This discrepancy was particularly marked in the case of children under 15. Four times as many children in the high (upper) income group as in the low income group received dental care.[3]

THE RELATIVE MAGNITUDE OF THE PROBLEMS

Table 5-15 is presented as a model rather than a source of complete information. The basic data were obtained from sources varying greatly in their scope as well as the period covered, leaving some gaps to be filled by rough approximations. Nevertheless, the figures permit us to view disease groups in a broad perspective. The table shows for each of the major diagnostic classes selected, its percentage of mortality and duration of illness from all causes, as well as of the total volume of the selected health services for which data could be obtained.

[1] See Chapter 2, Recommendations 39-57.
[2] *Canadian Dental Association, op. cit.*, p. IV-2.
[3] Department of National Health and Welfare and Dominion Bureau of Statistics, *Illness and Health Care in Canada*, Canadian Sickness Survey, 1950-51, Ottawa: Queen's Printer, 1960, p. 187.

TABLE 5-15 THE MAJOR DIAGNOSTIC CLASSES AND THEIR PERCENTAGE SHARE OF TOTAL ILLNESS AND HEALTH SERVICES, CANADA, ABOUT 1961

Diagnostic Class	Illness				Health Services				
	Deaths	Premature Mortality	Disabling Illness	Non-Disabling Illness	Hospital Separations	Hospital Days	Physicians' Services	Prescriptions	Home Nursing
I. All Infective and Parasitic Diseases	1.2	1.8	9.5	3.0	1.5	6.1	5.4	0.5	1.8
Tuberculosis	0.5	0.6	1.3	n.a.	0.4	5.1	0.3	n.a.	1.0
II. All Neoplasms	17.0	13.7	2.0	1.4	4.5	4.6	5.8	0.3	7.3
Malignant Neoplasms	16.8	13.7	0.9	n.a.	2.5	3.6	5.1	0.3	7.0
III. Allergic, Endocrine System, Metabolic, and Nutritional Diseases	2.2	1.8	1.3	5.0	2.2	1.8	2.0	7.0	11.1
IV. Diseases of the Blood and Blood-forming Organs	0.4	0.3	n.a.	n.a.	0.4	0.3	0.9	2.8	6.8
V. Mental, Psychoneurotic and Personality Disorders	0.3	0.5	9.9	n.a.	2.5	38.9	1.7	3.7	0.7
VI. Diseases of the Nervous System and Sense Organs	12.1	7.4	6.3	5.6	3.7	5.0	3.9	5.3	11.0
VII. Diseases of the Circulatory System	38.8	22.0	9.1	10.6	6.3	7.9	5.2	16.2	11.9
VIII. Diseases of the Respiratory System	5.7	7.2	28.0	23.4	13.9	4.9	15.1	16.7	1.5
IX. Diseases of the Digestive System	3.7	4.3	6.8	8.6	10.8	5.7	9.6	8.2	3.8
X. Diseases of the Genito-Urinary System	2.1	1.5	3.5	5.0	6.9	3.5	8.7	4.4	1.8

XI. Maternity and Complications	0.2	0.3	2.5	0.5	18.3	5.7	11.3	3.5	9.2
XII. Diseases of the Skin and Cellular Tissue	0.1	0.1	1.6	5.5	2.0	0.9	8.3	4.2	1.6
XIII. Diseases of the Bones and Organs of Movement	0.3	0.3	5.7	10.0	2.7	2.9	7.2	4.6	5.5
XIV. Congenital Malformations	2.0	6.5	n.a.	n.a.	0.8	0.7	0.3	—	0.2
XV. Certain Diseases of Early Infancy	5.1	17.4	n.a.	n.a.	0.4	0.3	1.3	0.2	0.1
XVI. Symptoms, Senility, and Ill-defined Conditions	0.9	0.6	8.1	17.0	1.9	0.9	6.6	5.4	4.3
XVII. Accidents, Poisoning and Violence	7.9	14.3	5.7	4.4	7.5	4.7	6.7	4.5	3.4
XVIII. Supplementary Class	—	—	—	—	13.7	5.2	—	12.5	18.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: Kohn, R., *The Health Status of the Canadian People*, a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

Figure 5-3 shows the same data rearranged to indicate under each heading (mortality, illness, health services) the main causes of each. Thus we find again the circulatory diseases prominent in regard to mortality, but also among the main causes of illness and the selected types of health services shown. The respiratory diseases are the main cause of disabling and non-disabling illness, and they require the largest share of any disease group of physicians' services and prescriptions. The largest proportion of hospital care goes to mental illness whose share in illness is again grossly understated.

The next step is an attempt to show for each diagnostic group its share in the total cost of personal health services. This was done by dividing the total estimated cost for each type of service according to the percentages shown in the foregoing table. Table 5-16 has the further limitation in addition to those applying to Table 5-15, in that it omits the cost of public health services applicable to certain infectious diseases and other conditions. Further it does not include a number of health services such as those of the optometrist, and it assumes that the cost in all cases is proportional to the volume of the services provided. We know, however, that the per diem cost in mental, tuberculosis, and other chronic hospitals is less than that for acute treatment beds, and also that the number of procedures performed by physicians and certain types of prescriptions is not proportional to their cost. Eventually it should be possible to refine this table.

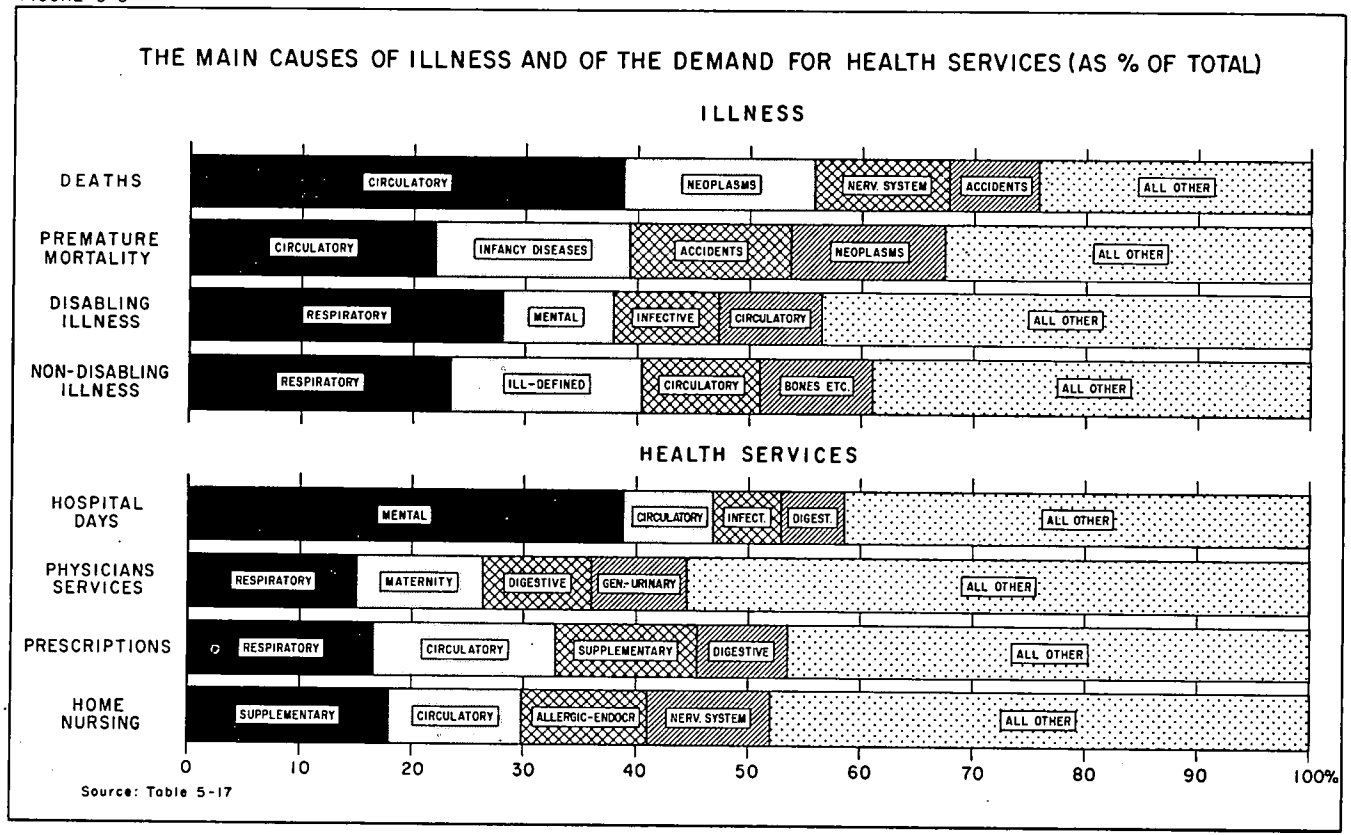
Table 5-16 shows for each of the diagnostic groups the roughly estimated cost of hospital services, physicians' services and prescriptions,[1] as well as the total for these three items. These totals are ranked from the highest to the lowest in Table 5-17. It shows mental illness as accounting for most of the cost,[2] followed by the respiratory diseases, dental services and circulatory diseases; maternity ranks fourth and it should be noted that newborn care in the hospital is shown in the supplementary class.

The high expenditure for dental services—even though these services are inadequate at the present utilization rate—is noteworthy. These services relate to conditions with no mortality, illness, hospital or nursing care to speak of.

The share of the cost of health services does not, of course, reflect the over-all medical and social importance of a disease or group of diseases. In determining the over-all importance or impact of a disease one must also take into account other effects of illness such as mortality and impaired health. Also a picture for the nation as a whole obscures the problems created for individuals by comparatively rare diseases or impairments such

[1] Number of prescriptions, outside hospital.
[2] Somewhat overstated as indicated above.

FIGURE 5-3



Source: Table 5-17

TABLE 5-16 ESTIMATED EXPENDITURES ON SELECTED ITEMS OF PERSONAL HEALTH CARE, BY MAIN DIAGNOSTIC CLASSES, CANADA, 1961*

Diagnostic Class	Hospital Services	Physicians' Services	Prescriptions	Total
	$ 000,000			
I. All Infective and Parasitic Diseases	56.3	20.7	.6	77.6
Tuberculosis	47.1	1.1	—	48.2
II. All Neoplasms	42.5	22.2	.3	65.0
Malignant Neoplasms	33.3	19.5	.3	53.1
III. Allergic, Endocrine System, Metabolic, and Nutritional Diseases	16.6	7.7	7.8	32.1
IV. Diseases of the Blood and Blood-forming Organs	2.8	3.5	3.1	9.4
V. Mental, Psychoneurotic, and Personality Disorders	359.4	6.5	4.1	370.0
VI. Diseases of the Nervous System and Sense Organs	46.2	14.9	5.9	67.0
VII. Diseases of the Circulatory System	73.0	19.9	18.0	110.9
VIII. Diseases of the Respiratory System	45.3	57.9	18.5	121.7
IX. Diseases of the Digestive System	52.7	36.8	9.1	98.6
X. Diseases of the Genito-Urinary System	32.3	33.3	4.9	70.5
XI. Maternity and Complications	52.6	43.3	3.9	99.8
XII. Diseases of the Skin and Cellular Tissue	8.3	31.8	4.7	44.8
XIII. Diseases of the Bones and Organs of Movement	26.8	27.6	5.1	59.5
XIV. Congenital Malformations	6.5	1.1	—	7.6
XV. Certain Diseases of Early Infancy	2.8	5.0	.2	8.0
XVI. Symptoms, Senility, and Ill-defined Conditions	8.3	25.3	6.0	39.6
XVII. Accidents, Poisoning, and Violence	43.4	25.7	5.0	74.1
XVIII. Supplementary Class	48.0	—	13.9	61.9
Sub-total	923.8	383.2	111.1	1,418.1
Dental Services	—	—	—	118.8
Sub-total	—	—	—	1,536.9
All Other Personal Health Services	—	—	—	115.0
TOTAL	—	—	—	1,651.9

* Source for Sub-totals, Dental Services, All Other Personal Health Services, and Total: Department of National Health and Welfare, *Expenditures on Personal Health Care in Canada 1953-1961*, Health Care Series, Memorandum No. 16, Ottawa, 1963.

SOURCE: Kohn, R., *The Health Status of the Canadian People*, a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

as, for instance, the heavy burden imposed by cases of cystic fibrosis, certain crippling impairments, or similar conditions. The group of congenital malformations is an example of conditions accounting for a small, though growing, proportion of health services. Nevertheless, Canada faces the requirements of an unprecedented expansion in the field of prosthetic devices, a long-standing need of children and adults with impairments which has been brought into focus by the deformities resulting from the use of thalidomide.

TABLE 5-17 THE RANKING OF BROAD DIAGNOSTIC GROUPS IN TERMS OF THE ESTIMATED COST OF SELECTED PERSONAL HEALTH SERVICES*

(About 1961)

Rank No.	Class No.	Diagnostic Group	Estimated Expenditure $ millions	Per Cent of Total Expenditure
1	V	Mental, Psychoneurotic, and Personality Disorders	370.0	24.1
2	VIII	Diseases of the Respiratory System	121.7	7.9
3	—	Dental Services	118.8	7.7
4	VII	Diseases of the Circulatory System	110.9	7.2
5	XI	Maternity and Complications (excl. newborn care)	99.8	6.5
6	IX	Diseases of the Digestive System	98.6	6.4
7	I	All Infective and Parasitic Diseases	77.6	5.0
8	XVII	Accidents, Poisoning, and Violence	74.1	4.8
9	X	Diseases of the Genito-Urinary System	70.5	4.6
10	VI	Diseases of the Nervous System and Sense Organs	67.0	4.3
11	II	All Neoplasms	65.0	4.2
12	XVIII	Supplementary Class	61.9	4.0
13	XIII	Diseases of the Bones and Organs of Movement	59.5	3.9
14	—	Malignant Neoplasms	53.1†	3.5†
15	—	Tuberculosis	48.2‡	3.1‡
16	XII	Diseases of the Skin and Cellular Tissue	44.8	2.9
17	XVI	Symptoms, Senility, and Ill-defined Conditions	39.6	2.8
18	III	Allergic, Endocrine System, Metabolic, and Nutritional Diseases	32.1	2.1
19	IV	Diseases of the Blood and Blood-forming Organs	9.4	0.6
20	XV	Certain Diseases of Early Infancy	8.0	0.5
21	XIV	Congenital Malformations	7.6	0.5
		TOTAL	1,536.9	100.0

* Includes: hospital services, physicians' services, prescriptions.
† Also included in item 11—All Neoplasms.
‡ Also included in item 7—All Infective and Parasitic Diseases.

SOURCE: Kohn, R., *The Health Status of the Canadian People*, a study prepared for the Royal Commission on Health Services, Ottawa: Queen's Printer, 1964.

IMPACT OF ILLNESS AT VARIOUS AGES

We turn now to a brief examination of the extent of ill-health by age groups on the basis of the number or rate of deaths, the life years lost due to premature mortality, disabling and non-disabling illness. We distinguish:

The "under 15" are the children with the hazards peculiar to childhood and receiving paediatric services from physicians and hospitals. The group "15-24" comprises the teenagers and young adolescents. The group "25-44" includes the child-bearing ages for the females. (Some of whom are also included in the previous group.)

The group "45-64" plus the two previous groups completes the working ages and in itself represents an age group significant for the onset of chronic disease.

The "65 and over" is generally the age of retirement.

Deaths

In 1960, the deaths were distributed as follows:[1]

Age	Deaths	
	Number	Per Cent
Under 15	17,102	12.2
15–24	2,498	1.8
25–44	8,224	5.9
45–64	29,867	21.4
65 +	81,987	58.7
ALL AGES	139,678	100.0

The absolute numbers of deaths and their distribution indicate the actual volume of death and related illness with a corresponding need for health services. If, on the other hand, we are to compare the relative impact of ill-health at various ages, we will have to relate deaths to number of people in each age group which is done by using the age specific rate.[2]

Age	Death Rate per 1,000 Population (1960) in Age Group
	Per Cent
Under 15	2.8
15–24	1.0
25–44	1.7
45–64	9.7
65 +	60.4
ALL AGES	7.8

[1] Based on Dominion Bureau of Statistics, *Vital Statistics 1960,* Ottawa: Queen's Printer, 1962, pp. 166-167.

[2] *Ibid.*

Premature Mortality

The life years lost due to deaths before completing the expected life span are distributed as follows.[1]

Age	Life Years Lost	
	Number in Thousands	Per Cent
Under 15	1,163.5	40.6
15–24	130.4	4.5
25–44	310.3	10.8
45–64	617.2	21.4
65 +	652.8	22.7
		100.0
ALL AGES	2,874.2	

Disabling and Non-disabling Illness

The following tabulation is based on the Canadian Sickness Survey, 1950-51.

Age	Days of	
	Disabling Illness	Non-disabling Illness
	Per Cent	Per Cent
Under 15	26.0	19.1
15–24	10.2	8.9
25–44	22.2	32.2
45–64	23.0	25.0
65 +	18.6	14.8
ALL AGES	100.0	100.0

These figures indicate how much of the total illness load in Canada is accounted for by the various age groups, whereby it must be borne in mind that the middle age groups include the maternity periods. The high percentage due to illness among children is noteworthy.

[1] Data supplied by the Vital Statistics Section, Dominion Bureau of Statistics.

The following tabulation compares the burden of illness among people within these age groups, by showing the average number of illness days per person, again including maternity periods.[1]

Age	Average Number of Days of Illness per Person per Year	
	Disabling	Non-disabling
Under 15	10	26
15–24	8	24
25–44	9	45
45–64	16	56
65 +	29	76
ALL AGES	12	40

People 65 and over are prevented from following their usual activities for over four weeks on the average and are suffering from some non-disabling ailment for about 11 weeks a year.

The following chart, Figure 5-4, summarizes these findings. It indicates the expected high share of the old age group in the number of deaths, but it also shows the large proportion of mortality, loss of life, and illness accounted for by those in the childhood ages.

In the middle age groups, 15-44, "illness" includes the periods around childbirth. Allowing for this and particularly also with respect to the two measures of mortality it is obvious that the age group "45-64" sets the stage for many of the health problems of the subsequent age groups. This emphasizes the importance of the "45-64" group for the care of chronic diseases especially in terms of preventive measures, which remains as one of our foremost health problems.

HEALTH PROBLEMS IN THE NORTH

Data for Canada as a whole are aggregates of varying components. The purpose of aggregates and averages is to abstract from individual and local differences, thus obscuring variations which exist. In order to evaluate the national figures more effectively, however, regional differences should

[1] Based on Department of National Health and Welfare, and Dominion Bureau of Statistics, *Illness and Health Care in Canada*, Ottawa: Queen's Printer, 1960, p. 115.

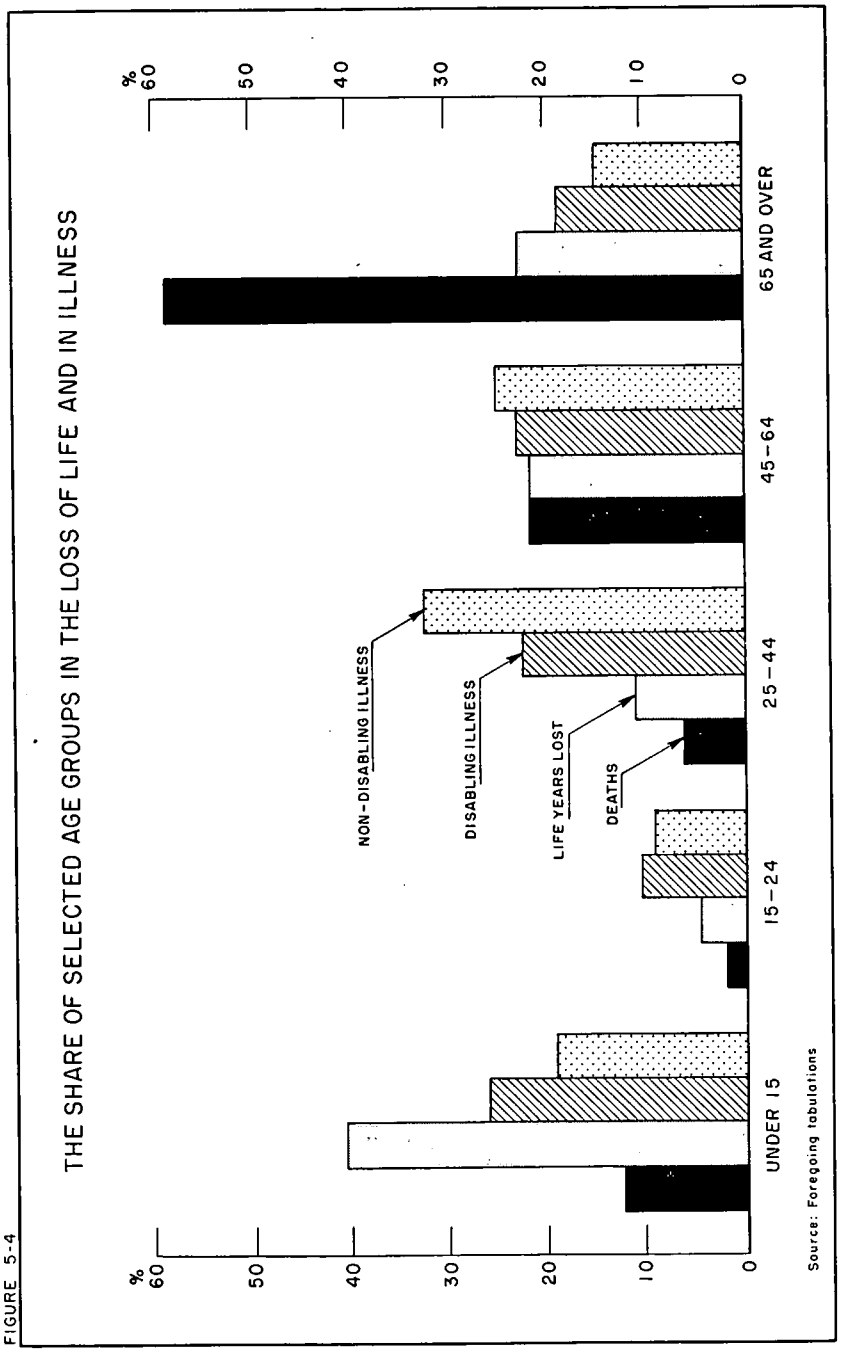

THE SHARE OF SELECTED AGE GROUPS IN THE LOSS OF LIFE AND IN ILLNESS
%
60
50
40
30
20
10
0
NON-DISABLING ILLNESS
DISABLING ILLNESS
LIFE YEARS LOST
DEATHS
UNDER 15
15-24
25-44
45-64
65 AND OVER
Source: Foregoing tabulations

FIGURE 5-4

be taken into account where appropriate. For instance, if Canada's infant mortality rate is comparatively high, we may observe that the high national figure is the result of the higher than average experiences in certain regions and it is there that the problem will be found.

Epidemic outbreaks of communicable diseases, for example, are often limited to certain areas. Certain types of cancer or tooth defects can perhaps be linked to certain local conditions. The age-composition of an area will determine the extent of diseases peculiar to certain age groups such as chronic disease among an older population. The most pronounced and most serious regional differences are those resulting from conditions associated with standards of living, sanitation, and health services in general.

Certain regional differences have already been pointed out when discussing such problems as infant mortality. When speaking of regional differences within Canada, we usually refer to provinces or groups of provinces and territories because that is the way the services are organized and statistics compiled. Health problems, however, do not stop at provincial borders and what is said, for instance, for the Northwest Territories will, to a large extent, apply also to the northern parts of the provinces with sparsely populated areas, and people living in less well organized communities than those farther to the south.

The most outstanding regional health problem in Canada is that of her northern regions. There is a wide gap between health standards of this area and those of the rest of the country, and there are peculiar problems besetting the provision of health services. The number of people involved is comparatively small: 24,000 in the Northwest Territories in 1962 and 15,000 in the Yukon.

Their health problems can be briefly summarized in the words of the Commissioner of the Northwest Territories:

> "The Eskimo birth rate of 59 per thousand population continued to be one of the highest in the world. The Indian rate was 46 and the white status rate 38. The all Canada rate is 26.9. At the same time, the Eskimo death rate continued to be high at 21 per thousand population—nearly three times the national rate. The Indian rate was 9 per thousand. Fifty-five per cent of the Eskimo deaths were those of infants under the age of one year and 62 per cent of the deaths were those of children under 15 years. The Eskimo infant mortality rate was 193 per thousand live births compared with the Indian rate of 77 and the white status rate of 21. The national rate in 1960 was 27.
>
> "Tuberculosis case-finding surveys were carried out throughout the Territories. The percentage of the population turning out for surveys in some locations, particularly the white status population, was somewhat discouraging but everything possible is being done to bring about an increase. There were 9 deaths from tuberculosis in 1961, three more than in 1960. Of the nine, six were Eskimo and three were Indians.

"Venereal disease continued to be a matter of concern. The gonorrhoea rate was six times the national rate and continued to rise. Although the incidence of syphilis was many times the national rate in 1959 and 1960 there was only one reported case in 1961.

"The chief cause of death continued to be pneumonia. There is a very strong connection between this disease and the factors of low resistance to infection, climate and a low standard of living—particularly poor housing standards".[1]

The following tabulation illustrates some of the differences in the health status of the people in the Yukon and the Northwest Territories as compared with Canada as a whole in 1961:[2]

	Yukon	N.W.T.	Canada
Birth rate	38.1	48.6	26.1
Percentage of births in hospital	92.8	57.1	96.9
Crude fertility rate	186.7	290.0	152.9
Illegitimate births as per-cent of all live births	16.8	12.6	4.5
Standardized death rate	8.5	14.6	7.6
Percentage of deaths occurring in hospital	43.6	26.0	63.0
Average age at death:			
Males	44.8	26.0	59.7
Females	32.4	21.5	63.1[3]
Infant mortality rate	41	111	27
Death rate from infectious diseases	6.8	87.0	8.7
Death rate from respiratory tuberculosis	6.8	39.1	3.7

In a large part of the Northwest Territories "970,000 square miles of tundra" the population density is about one person per 125 square miles. "Getting medical and public health service to them is a challenge to modern logistics and to medical and nursing ingenuity, and the greatest test in Canada of the pioneering spirit, of professional devotion and personal courage."[4] But while the problem of providing health services is common to all segments of the population, the Indians and Eskimos have health problems beyond those experienced by the people coming there from the south, often for limited periods only.

[1] Annual Report of the Commissioner of the Northwest Territories 1961-62, Northwest Territories, Sessional Paper No. 3, 1962 (Second Session), pp. 8 and 9.

[2] Dominion Bureau of Statistics, *Vital Statistics 1961*, Ottawa: Queen's Printer, 1963, *passim*.

[3] Note the lower age at death of women than of men in the Yukon and the Northwest Territories.

[4] Northern Health Service, *Health Services for Small Population Groups in Outlying Areas of Northern Canada*, brief submitted to the Royal Commission on Health Services, April 1963, p. 1.

There are, however, problems common to both natives and immigrants: they are the mental health problems resulting from an adjustment to new conditions, vastly different from the accustomed ones. The native, particularly the Eskimo, has to adjust to the changes brought into his life by the newcomers from the south. Those coming to the north have to adjust to a forbidding land and a way of life which to many would be bearable only for a short period of time.[1]

The high infant mortality among Eskimos and Indians, the high prevalence of tuberculosis, their susceptibility to other infectious diseases and pneumonia as a major cause of death can all be traced directly to their living conditions.

"Inhuman"—is the way a public health nurse described, in the course of a conversation, the living conditions of the Eskimos in her community. An apt description indeed. To realize this one has to shed the romantic ideas of Eskimo life, derived from children's books and movies, and walk through a settlement of Eskimo tents on a cold September night with the wind and rain lashing against the flimsy tents, babies crying and whimpering, and children and adults alike coughing inside. Outside is the stench of human and dog excretion and of rotten food scraps. The tent houses not only the family but all their belongings and implements.[2]

This is the environment in which families spent not a week-end (as campers or scouts would in much more substantial tents), but a lifetime, and this is where babies are born and reared and the sick cared for.

Substantial beginnings have been made against the odds of northern logistics in the provision of health services, housing and some means of sanitation.[3] Nevertheless, hundreds of families still live under conditions that would not be tolerated elsewhere even in a more moderate climate.

The high infant mortality has been traced to the lack of adequate housing, and it is obvious that the same conditions govern the spread of tuberculosis and other infectious diseases. Medical care can be brought to bear only to alleviate the consequences of the environment. This is a very obvious example of the interrelationship between health and social conditions which calls for a much closer co-ordination between health and other social services.[4]

There are about 12,000 Eskimos in Canada, or perhaps about 2,000 or 3,000 families. Some of them are adequately housed but the majority are not. We firmly believe that remedial action in such related fields which affect

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[1] See also Willis, John S., and Martin, Morgan, *Mental Health in Canada's North,* 1962.
[2] Based on an on-the-spot study of health conditions in a northern area.
[3] See also Chapter 8.
[4] Indian and Northern Health Services, Department of National Health and Welfare and Northern Administration Branch, Department of Northern Affairs and National Resources, *Eskimo Mortality and Housing, 1960.*

significantly health standards can be found. While it is beyond our terms of reference to make recommendations in these related fields, we suggest that considerations of humanity and economics make it imperative for governments to take comprehensive and practical actions in these related fields because without them the serious health problems facing Canadians everywhere but particularly in the North cannot be adequately and effectively resolved.

CONCLUDING SUMMARY

Were we to evaluate the health status of the Canadian people as such and to draw conclusions from the often inconclusive evidence presented in this chapter, we could offer the widely accepted view that the improvements in the mortality and increasing life expectancy during the last decade or decades are signs of improved health. But this is true only if we are justified in equating life with health. One might ask whether our longer life today, beset as it is with chronic illness and exposed to such insidious risks as radiation and carcinogenic matter, is really healthier than the shorter life span of former generations which may have ended more abruptly as the result of some acute infectious disease. We can leave this question, however, to the medical experts and the philosophers as we are not so much concerned with health *per se* as with the services for its improvement. Thus it is our main concern to evaluate the effectiveness of these services as well as to determine the various health problems and the extent to which they affect the demand for services.

In doing so we have found that a comparison of Canadian health indicators with those of other countries establishes Canada's record as being generally well in line with that of other countries with similar standards of living though there remains the need for improvement in the area of infant and maternal mortality. International comparisons also led us to observe Canada's favourable position compared to many parts of the world still exposed to many diseases now controlled here.

We have reviewed the trends and impact of certain diseases and disease groups, attempting to show them in their proper perspective measured by their respective demand for health services. In this regard we have found mental disorder as the most pressing problem, with other chronic diseases figuring prominently. But even the often minor diseases of the respiratory system, by their sheer volume, demand a considerable amount of services. The continuing problems presented by some diseases in the infectious group emphasize the need for continued vigilance and maintenance of effective control measures. Accidents also continue to demand our attention.

Of the particularly vulnerable population groups we have identified those at the two extremes of the life span, the children and especially the aged. We have dealt with the problems of the handicapped and important segments of our northern population.

The extent of dental disorders and vision defects is such that it calls for remedial action to ward off its worst effects.