

Technical Appendices

- A. Demographics**
- B. Lifestyle**
- C. Health Care Organization**
- D. Human Biology**
- E. Environment: Physical**
- F. Environment: Social**
- G. Health Status**

Appendix

Technical Appendices—Tables of Contents

Note that pagination is within each appendix.

Appendix A: Demographics

VITAL STATISTICS	A2
BIRTHS AND BIRTH RATE, 1972/73 AND 1996	A2
DEATHS AND DEATH RATE, 1972/73 AND 1996	A2
AGE SPECIFIC FERTILITY RATES 1971 AND 1993	A2
LIFE EXPECTANCY AT BIRTH FOR PERSONS BORN IN 1970-72 AND 1996	A3
LIFE EXPECTANCY AT BIRTH FOR REGISTERED INDIAN POPULATION	A3
IMMIGRATION BY PLACE OF ORIGIN	A4
TOTAL NUMBERS	A4
AS A PERCENTAGE OF TOTAL IMMIGRANTS	A5
POPULATION BY AGE AND GENDER, 1996	A6
ABORIGINAL POPULATION BY AGE AND GENDER, 1996	A8
REFERENCES	A9

Appendix B: Lifestyle

HEALTHY EATING	B2
PER CAPITA FOOD DISAPPEARANCE, SELECTED FOODSTUFFS, 1971 & 1996	B2
INTERNATIONAL TRENDS	B3
HEALTHY WEIGHTS	B3
BODY MASS INDEX	B3
<i>BMI 1985-1995</i>	B4
<i>BMI Canada 1995</i>	B6
DIFFERENCES AMONG GROUPS	B8
EXERCISE	B9
PERCENTAGE OF ACTIVE & MODERATELY ACTIVE CANADIANS, 1981 & 1995	B9
PARTICIPATION IN EXERCISE ACTIVITIES, OCTOBER 1976	B10
1995 PHYSICAL ACTIVITY MONITOR	B11
<i>Trends in Physical Activity Since 1981</i>	B13
DIFFERENCES AMONG GROUPS	B14
SOCIO-ECONOMIC CHARACTERISTICS OF PARTICIPANTS AND NON-PARTICIPANTS IN SPORT AND PHYSICAL RECREATION OR EXERCISE ACTIVITIES, OCTOBER 1976	B15
ALCOHOL & NON-PRESCRIPTION DRUG USE	B17
TRENDS IN ALCOHOL AND DRUG USE IN ONTARIO ADULTS, 1977 TO 1994, AND IN CANADA, 1996/97	B18
<i>Alcohol</i>	B18

<i>Psychotherapeutics</i>	B18
<i>Illicit Drug Use</i>	B18
Use of Selected Legal and Illegal Drugs in Canada (%) (past 12 months) 1994	B19
IMPAIRED DRIVING IN CANADA	B19
<i>Trends in Drinking among Nighttime Drivers in Canada</i>	B20
<i>Alcohol Use among Fatally Injured Drivers: 21-Year Trend in Seven Provinces</i>	B21
SMOKING	B23
CURRENT CIGARETTE SMOKERS, BY AGE, CANADA, 1970 AND 1996-97	B24
QUITTING SMOKING	B24
PREVALENCE OF CURRENT SMOKING, BY SEX, CANADA, 1970 TO 1996-97	B25
PREVALENCE OF CURRENT SMOKING, BY SEX, CANADA, AGE 15-19, 1970 TO 1996-97	B26
DIFFERENCES AMONG GROUPS	B27
<i>Smoking Rates by Gender and Educational Attainment, 1977 & 1994</i>	B28
	B29
SEATBELTS & ROAD SAFETY	
LEGISLATION	B29
<i>Seat Belt Usage Laws enacted by Canadian Province, by Date</i>	B29
POPULATION 15 YEARS OF AGE AND OVER WHO DROVE OR RODE IN A CAR IN THE PREVIOUS TWO WEEKS BY CONSISTENCY OF SEATBELT USE, BY AGE AND PROVINCIAL SEATBELT LEGISLATION, CANADA, 1978-79	B30
PERCENTAGE OF ALL OCCUPANTS WEARING SEAT BELTS IN LIGHT-DUTY VEHICLES**	B31
ESTIMATES OF SEAT BELT USE FROM ANNUAL SURVEYS 1992-199	
TRAFFIC INJURIES & ROAD SAFETY	B32
<i>Persons killed in motor vehicle accidents compared to Licensed Drivers and Number of Registered Passenger Vehicles, 1971-1996</i>	B32
	B33
REFERENCES	

Appendix C: Health Care Organization

HEALTH CARE FUNDING	C2
TOTAL HEALTH EXPENDITURES BY SECTOR OF FINANCE 1975 AND 1996	C2
REAL TOTAL HEALTH EXPENDITURES BY SECTOR OF FINANCE 1975 AND 1996 IN 1986 DOLLARS	C3
TOTAL HEALTH EXPENDITURES 1975 AND 1996	C4
HEALTH EXPENDITURES 1975 AND 1996 AS A % OF GDP IN CANADA	C4
BROKEN DOWN BY SECTOR, WITH COMPARISON TO U.S.A. TOTAL	C4
TOTAL HEALTH EXPENDITURES BY CATEGORY OF EXPENDITURE 1975/1996	C5
<i>Public Sector Health Expenditures by Category of Expenditure</i>	C7
<i>Private Health Expenditures by Category of Expenditure</i>	C8
	C10
HEALTH CARE WORKERS	
NUMBER OF HEALTH CARE WORKERS 1971 AND 1991 & 1996	C10
<i>Health Diagnosing and Treating Occupations</i>	C10
<i>Nursing Therapy and Related Assisting Occupations</i>	C11
<i>Other Occupations in Medicine and Health</i>	C11
MEDICAL SPECIALTIES RECOGNIZED BY THE ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF CANADA, 1971 AND 1996	C12
<i>Total Number of Recognized Specialties 1971 and 1996</i>	C12
<i>Division of Medicine/Clinical Specialties</i>	C12
<i>Division of Medicine—Laboratory Specialties</i>	C13
<i>Division of Surgery</i>	C13

<i>Certificates of Special Competence and Year Approved</i>	C14
<i>Programs Accredited without Certification and Year Approved</i>	C14
FULL TIME ENROLLMENT IN MEDICAL SCHOOLS, 1971/72 AND 1991	C15
CHANGES IN CARE	C16
PUBLIC HOME CARE EXPENDITURES BY PROVINCE 1975/76 AND 1995/96	C16
<i>Expenditures in \$1 000.00s</i>	C16
<i>Expenditures as a % of total public sector health expenditures</i>	C17
AMOUNT PAID BY CATEGORY OF PRACTITIONER	C18
AMOUNT PAID BY CATEGORY OF SERVICE	C19
HEALTH CARE BEDS 1971 AND 1991/92	C20
<i>Total Hospital Beds per 1000 population</i>	C20
NUMBER OF BEDS AVAILABLE BY TYPE AND NATURE OF INSTITUTION	C21
<i>Number of Beds by Type</i>	C21
<i>Number of Beds by Nature of Institution</i>	C21
AMBULATORY VISITS TO MEDICAL SERVICES	C21
PERCENTAGE OCCUPANCY OF HOSPITAL BEDS	C22
HOSPITAL BEDS BY TYPE	C22
PATIENT DAYS BY LENGTH AND LOCATION OF STAY	C23
<i>Total Patient Days</i>	C23
<i>Patient Days per 100000 population</i>	C23
<i>Total Patient Days by Sex</i>	C23
<i>Total Patient Days by Age Group</i>	C23
AVERAGE STAY IN HOSPITAL BY SEX, REGION, AGE AND REASON	C24
PHARMACEUTICALS	C26
PER CAPITA DRUG EXPENDITURES BY HIGH AND LOW INCOME FAMILIES; 1964-69, 1972-78; 1984-90	C26
NUMBER OF PHARMACEUTICALS AVAILABLE IN CANADA	C27
<i>Comparison of Pharmacopoeia Size for 1971 and 1996</i>	C27
ALTERNATIVE MEDICINE	C28
NATUROPATHIC PRACTITIONERS IN CANADA 1971, 1996 AND 1998	C28
REFERENCES	C29
Appendix D: Human Biology	
GENETIC ENDOWMENT	D2
BIRTH OUTCOMES	D2
STILLBIRTHS BY REGION	D3
INCIDENCE OF CONGENITAL ANOMALIES	D4
DEATHS DUE TO CONGENITAL ANOMALIES	D5
GENETIC STUDIES OF NOTE	D6
<i>The Human Genome Project</i>	D6
<i>The Heritage Family Study</i>	D6
<i>Discoveries of Genetic Markers in Canadian Laboratories (1994/95)</i>	D6
RESEARCH	D7
EXPENDITURES OF THE MEDICAL RESEARCH COUNCIL, 1971 AND 1995	D7
<i>In Current 1000s of \$</i>	D7
INTERNATIONAL REVIEW OF THE MEDICAL RESEARCH COUNCIL, 1996	D8
<i>Summary of Recommendations</i>	D8

EXPLOSION OF INFORMATION IN THE HEALTH SCIENCES	D9
I. Genetics	D9
II. Neuroscience	D9
CONFERENCES ON GENETICS, ETHICAL CONCERNS	D10
REFERENCES	D11

Appendix E: Physical Environment

GOVERNMENT AND NON-GOVERNMENT ENVIRONMENTAL ORGANIZATIONS	E3
DOE BUDGET AS A % OF TOTAL FEDERAL BUDGET, 1971/71 TO 1995/96	E3
THE NATURAL ENVIRONMENT	E4
AIR	E4
Air Pollution	E4
The Five Common Air Pollutants, % of maximum acceptable level	E4
Asthma	E5
Global Warming	E7
Carbon Dioxide Emissions	E8
Ozone Depleting Substances	E9
Health Implications	E10
EARTH	E12
Forest Management	E12
Annual Timber Harvest, 1971-1992	E13
Biodiversity: Population Trends of Forest Birds	E14
WATER	E15
Water Use	E15
Acid Rain	E17
Great Lakes	E19
Fisheries	E21
THE BUILT ENVIRONMENT	E23
URBANIZATION	E23
Urban Land Use, 1971-1996	E23
Shift to Urban Living, Canada, 1961 & 1996	E24
ENERGY	E27
Canadian Consumption of Energy	E27
Total Canadian Consumption of Energy, 1971-1995(exajoules)	E28
Canadian Consumption of Fossil Fuels, 1971-1996	E29
TRANSPORTATION	E30
Preliminary Indicator: How Canadians travel, Passenger-kilometres (billions), 1972-1995	E30
Roads in Canada	E31
Urban Auto vs. Transit Use, 1972-1995	E31
Fuel Efficiency	E32
New Motor Vehicle Sales, 1971 & 1996	E34
CONSUMPTION	E35
CANADIAN CONSUMPTION PRESSURE: 2.35 UNITS	E35
Canadian Consumption as Compared to World Average, 1995	E35
Equipment in Canadian Households, 1982 and 1996	E36
REFERENCES	E37

Appendix F: Social Environment

FAMILIES	F2
PERCENT CHANGES IN FAMILY TYPES, 1970-1995	F3
<i>All Families</i>	F3
<i>Total</i>	F3
FAMILY STRUCTURE: MARITAL STATUS, COMMON-LAW UNIONS AND FAMILIES	F4
WORKING FAMILIES	F6
<i>The Working Family, 1976-1997</i>	F6
WORK	F7
THE CHANGING NATURE OF WORK	F7
<i>Distribution of Employment by Industry in 1961 and 1995</i>	F7
<i>Labour Force Estimates by Composition of Workforce</i>	F8
NON-STANDARD WORK	F8
<i>Nonstandard Employment as a Percentage of Total Employment, 1976 to 1997</i>	F9
HOURS WORKED	F9
UNEMPLOYMENT	F9
<i>Unemployment Rate and Size of Labour Force, 1970 & 1997</i>	F10
EARNINGS	F11
EDUCATION	F12
<i>Educational Attainment of the Labour Force in 1975 and 1995, by Gender</i>	F12
GENDER & WORK	F13
<i>The Wage Gap</i>	F13
EARNINGS	F14
ECONOMIC DISPARITY	F16
ECONOMIC DISPARITY AMONG FAMILIES	F16
<i>Percentage Distribution of After-tax Income of All Units, by Quintiles, 1975, 1984, & 1994</i>	F16
<i>Index of Social Health: Poverty Rates of Elderly and Children, 1970 to 1995</i>	F17
<i>Upper limits of family income and distribution of aggregate family income by deciles, 1970 to 1995, in 1995 constant dollars</i>	F17
EDUCATION	F19
EDUCATIONAL ATTAINMENT OF CANADIANS 15+, 1971 & 1996, CANADA	F19
<i>Women as a proportion of total full-time university enrolment, Canada, 1972-1973 and 1992-1993</i>	F22
LITERACY	F23
THE DISTRIBUTION OF LITERACY ON THE THREE IALS SCALES, CANADIANS 16-19	F23
DIFFERENCES AMONG GROUPS	F23
INDEX OF SOCIAL HEALTH	F24
INDEX OF SOCIAL HEALTH AND GDP (1986 PRICES), CANADA, 1970-1995	F25
REFERENCES	F26

Appendix G: Health Status

MORBIDITY AND MORTALITY	G2
MORTALITY RATES BY CAUSES, 1970 AND 1996	G2
<i>Selected Leading Causes of Death</i>	G3
<i>Trends in Select Mortality Rates among Aboriginal Canadians</i>	G5
SUICIDES BY AGE GROUP AND SEX, 1971 AND 1996	G6
MORBIDITY AND MORTALITY STATISTICS FOR CANCERS BY SITE AND SEX, 1971 AND 1996	G7
<i>Morbidity Rate per 100 000 Males Standardized to 1991 Census Figures</i>	G7
<i>Mortality Rate per 100 000 Males Standardized to 1991 Census Figures</i>	G7
<i>Morbidity Rate per 100 000 Females Standardized to 1991 Census Figures</i>	G8
<i>Mortality Rate per 100 000 Females Standardized to 1991 Census Figures</i>	G8
CANCER RATES FOR CANADA	G9
<i>Lung Cancer Morbidity and Mortality</i>	G9
CASES OF SELECT NOTIFIABLE DISEASES, 1970 AND 1995	G10
<i>Tuberculosis Among Aboriginal Canadians</i>	G11
HOSPITAL SEPARATIONS BY DIAGNOSTIC CATEGORY 1968 AND 1996	G12
<i>Rates per 100 000 Population</i>	G12
SELF-REPORTED HEALTH STATUS	G13
POTENTIAL YEARS OF LIFE LOST BY CAUSE	G14
REFERENCES	G15

Appendix A: Demographics

VITAL STATISTICS	A2
BIRTHS AND BIRTH RATE, 1972/73 AND 1996	A2
DEATHS AND DEATH RATE, 1972/73 AND 1996	A2
AGE SPECIFIC FERTILITY RATES 1971 AND 1993	A2
LIFE EXPECTANCY AT BIRTH FOR PERSONS BORN IN 1970-72 AND 1996	A3
LIFE EXPECTANCY AT BIRTH FOR REGISTERED INDIAN POPULATION	A3
IMMIGRATION BY PLACE OF ORIGIN	A4
TOTAL NUMBERS	A4
AS A PERCENTAGE OF TOTAL IMMIGRANTS	A5
POPULATION BY AGE AND GENDER, 1996	A6
ABORIGINAL POPULATION BY AGE AND GENDER, 1996	A8
REFERENCES	A9

Appendix A: Demographics

Demography, the study of human populations, is the most powerful—and most underutilized—tool we have to understand the past and to foretell the future. Demographics affect every one of us as individuals, far more than most of us have ever imagined. They also play a pivotal role in the economic and social life of our country. Yet because demographic facts seem so obvious many people are inclined to resist them. Life, they say, can't possibly be that simple. By refusing to accept the obvious, they make life more complicated and unpredictable than it has to be.ⁱ

Boom, Bust and Echo 2000—David K. Foot

Vital Statistics

Births and Birth Rate, 1972/73 and 1996ⁱⁱ

Number of Births

	1972/73	1996	% Change
CANADA	345,815	366,189	6

Birth Rate per 1000 population

	1975/76	1996	% Change
CANADA	15.3	12.2	-20

Birth Rate per 1000 population—Registered Indian Populationⁱⁱⁱ

	1980	1994	% Change
CANADA	28.3	22.1	-22

Deaths and Death Rate, 1972/73 and 1996^{iv}

Number of Deaths

	1972/73	1996	% Change
CANADA	162,618	212,881	31

Death Rate per 1000 population

	1972/73	1996	% Change
CANADA	7.0	7.1	1

Death Rate per 1000 population—Registered Indian Population^v

	1975	1994	% Change
CANADA	7.2	5.3	-26

Age Specific Fertility Rates 1971 and 1993^{vi}

Calculated by dividing the number of live births by the total female population (in thousands) in each age group.

Age Group	1971	1993	% Change
15-19 [†]	56	25	-55
20-24	227	73	-68
25-29	214	115	-46
30-34	142	85	-40
35-39	79	30	-62
40-44	28	4	-86
45-49 [‡]	2	-	n/a

[†]Includes live births to mothers aged 14 and under

[‡]Includes live births to mothers aged 50 and over

Life Expectancy at Birth for persons born in 1970-72 and 1996^{vii}

	1970-72	1996	% Change
Both Sexes	72.74	78.0	7
Males	69.40	75.7	9
Females	76.45	81.4	6

Life Expectancy at Birth for Registered Indian Population^{viii}

Year	Male	Female
1975	59.2	65.9
1980	60.9	68.0
1985	63.9	71.0
1990	66.9	74.0
1995	69.1	76.2

Immigration by Place of Origin^{ix}

Total Numbers

Place of Birth	Before 1961	1961-1970	1971-1980	1981-1990	1991-1996
Total	1 054 930	788 580	996 160	1 092 400	1 038 995
United States	45 050	50 200	74 015	46 405	29 025
Central and South America	6 370	17 410	67 470	106 230	76 335
Caribbean and Bermuda	8 390	45 270	96 025	72 405	57 315
Europe	953 360	543 840	356 700	280 695	197 480
United Kingdom	265 580	168 140	132 950	63 445	25 420
Other Northern & Western European	284 205	90 465	59 850	48 095	31 705
Eastern Europe	175 430	40 855	32 280	111 370	87 900
Southern Europe	228 145	244 380	131 620	57 785	52 455
Africa	4 945	25 685	58 150	64 265	76 260
Asia	32 580	96 945	328 375	512 160	592 710
West Central Asia and the Middle East	4 975	15 165	30 980	77 685	82 050
Eastern Asia	20 555	38 865	104 940	172 715	252 340
South-East Asia	2 485	14 040	111 700	162 490	118 265
Southern Asia	4 565	28 875	80 755	99 270	140 055
Oceania and Other	4 250	9 240	15 420	10 240	9 875

Immigration by Place of Origin^x

As a Percentage of Total Immigrants

Place of Birth	Before 1961	1961-1970	1971-1980	1981-1990	1991-1996
Total	100	100	100	100	100
United States	4.3	6.4	7.4	4.2	2.8
Central and South America	0.6	2.2	6.8	9.7	7.3
Caribbean and Bermuda	0.8	5.7	9.6	6.6	5.5
Europe	90.4	69.0	35.8	25.7	19.0
United Kingdom	25.2	21.3	13.3	5.8	2.4
Other Northern & Western European	26.9	11.5	6.0	4.4	3.1
Eastern Europe	16.6	5.2	3.2	10.2	8.5
Southern Europe	21.6	31.0	13.2	5.3	5.0
Africa	0.5	3.3	5.8	5.9	7.3
Asia	3.1	12.3	33.0	46.9	57.0
West Central Asia and the Middle East	0.5	1.9	3.1	7.1	7.9
Eastern Asia	1.9	4.9	10.5	15.8	24.3
South-East Asia	0.2	1.8	11.2	14.9	11.4
Southern Asia	0.4	3.7	8.1	9.1	13.5
Oceania and Other	0.4	1.2	1.5	0.9	1.0

Population by Age and Gender^{xi}

Age	Gender	1971	1996
Total all ages	Total	22026421	29963631
	Male	11065015	14845013
	Female	10961406	15118618
Less than 1 year	Total	360604	377927
	Male	184201	193963
	Female	176403	183964
1 - 4 years	Total	1479703	1582935
	Male	756515	811943
	Female	723188	770992
5 - 9 years	Total	2271907	2015826
	Male	1161558	1031303
	Female	1110349	984523
10 - 14 years	Total	2332017	2019552
	Male	1191514	1031869
	Female	1140503	987683
15 - 19 years	Total	2171877	2002858
	Male	1104015	1026310
	Female	1067862	976548
20 - 24 years	Total	1991401	2036326
	Male	999509	1033470
	Female	991892	1002856
25 - 29 years	Total	1651206	2223536
	Male	844008	1121457
	Female	807198	1102079
30 - 34 years	Total	1348040	2631235
	Male	689533	1334035
	Female	658507	1297200
35 - 39 years	Total	1290231	2666380
	Male	664287	1343878
	Female	625944	1322502
40 - 44 years	Total	1288239	2387502
	Male	658215	1191790
	Female	630024	1195712
45 - 49 years	Total	1254981	2159498
	Male	625179	1084776
	Female	629802	1074722
50 - 54 years	Total	1067353	1672200
	Male	527643	838231
	Female	539710	833969

Population by Age and Gender, continued

55 - 59 years	Total	966793	1332586
	Male	480145	661929
	Female	486648	670657
60 - 64 years	Total	786718	1213101
	Male	386865	596190
	Female	399853	616911
65 - 69 years	Total	627514	1129255
	Male	299844	536197
	Female	327670	593058
70 - 74 years	Total	462740	979902
	Male	208326	432814
	Female	254414	547088
75 - 79 years	Total	329125	704329
	Male	141562	289212
	Female	187563	415117
80 - 84 years	Total	206482	467611
	Male	86671	174877
	Female	119811	292734
85 - 89 years	Total	101339	240606
	Male	41177	78278
	Female	60162	162328
90 years and over	Total	38151	120466
	Male	14248	32491
	Female	23903	87975

Aboriginal Population by Age and Gender, 1996^{xii}

0 - 4 years	Total	58026
	Male	29863
	Female	28163
5 - 9 years	Total	70133
	Male	35883
	Female	34250
10 - 14 years	Total	62365
	Male	31975
	Female	30390
15 - 19 years	Total	56292
	Male	28614
	Female	27678
20 - 24 years	Total	54945
	Male	27569
	Female	27376
25 - 29 years	Total	56843
	Male	28433
	Female	28410
30 - 34 years	Total	55860
	Male	27233
	Female	28627
35 - 39 years	Total	48879
	Male	23205
	Female	25674
40 - 44 years	Total	37503
	Male	17331
	Female	20172
45 - 49 years	Total	28931
	Male	13186
	Female	15745
50 - 54 years	Total	22176
	Male	10060
	Female	12116
55-60 years	Total	16823
	Male	7391
	Female	9432
60-64 years	Total	13438
	Male	5954
	Female	7484
65+ years	Total	28658
	Male	12343
	Female	16315

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- ^v Indian and Northern Affairs Canada. "Basic Departmental Data 1997." : Departmental Statistics Section, 1998.
- ^{vi} Statistics Canada. "Births 1996." *The Daily Wednesday*, July 8, 1998. (1998).
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- ^x Ibid
- ^{xi} Statistics Canada. *Health Indicators* [Electronic Data Base]. Statistics Canada,, 1997 [cited 1998].
- ^{xii} Indian and Northern Affairs Canada. "Basic Departmental Data 1997." : Departmental Statistics Section, 1998.

Appendix B: Lifestyle

HEALTHY EATING	B2
PER CAPITA FOOD DISAPPEARANCE, SELECTED FOODSTUFFS, 1971 & 1996	B2
INTERNATIONAL TRENDS	B3
HEALTHY WEIGHTS	B3
BODY MASS INDEX	B3
<i>BMI 1985-1995</i>	B4
<i>BMI Canada 1995</i>	B6
DIFFERENCES AMONG GROUPS	B8
EXERCISE	B9
PERCENTAGE OF ACTIVE & MODERATELY ACTIVE CANADIANS, 1981 & 1995	B9
PARTICIPATION IN EXERCISE ACTIVITIES, OCTOBER 1976	B10
1995 PHYSICAL ACTIVITY MONITOR	B11
<i>Trends in Physical Activity Since 1981</i>	B13
DIFFERENCES AMONG GROUPS	B14
SOCIO-ECONOMIC CHARACTERISTICS OF PARTICIPANTS AND NON-PARTICIPANTS IN SPORT AND PHYSICAL RECREATION OR EXERCISE ACTIVITIES, OCTOBER 1976	B15
ALCOHOL & NON-PRESCRIPTION DRUG USE	B17
TRENDS IN ALCOHOL AND DRUG USE IN ONTARIO ADULTS, 1977 TO 1994, AND IN CANADA, 1996/97	B18
<i>Alcohol</i>	B18
<i>Psychotherapeutics</i>	B18
<i>Illicit Drug Use</i>	B18
Use of Selected Legal and Illegal Drugs in Canada (%) (past 12 months) 1994	B19
IMPAIRED DRIVING IN CANADA	B19
<i>Trends in Drinking among Nighttime Drivers in Canada</i>	B20
<i>Alcohol Use among Fatally Injured Drivers: 21-Year Trend in Seven Provinces</i>	B21
	B23
SMOKING	
CURRENT CIGARETTE SMOKERS, BY AGE, CANADA, 1970 AND 1996-97	B24
QUITTING SMOKING	B24
PREVALENCE OF CURRENT SMOKING, BY SEX, CANADA, 1970 TO 1996-97	B25
PREVALENCE OF CURRENT SMOKING, BY SEX, CANADA, AGE 15-19, 1970 TO 1996-97	B26
DIFFERENCES AMONG GROUPS	B27
<i>Smoking Rates by Gender and Educational Attainment, 1977 & 1994</i>	B28
	B29
SEATBELTS & ROAD SAFETY	
LEGISLATION	B29
<i>Seat Belt Usage Laws enacted by Canadian Province, by Date</i>	B29
POPULATION 15 YEARS OF AGE AND OVER WHO DROVE OR RODE IN A CAR IN THE PREVIOUS TWO WEEKS BY CONSISTENCY OF SEATBELT USE, BY AGE AND PROVINCIAL SEATBELT LEGISLATION, CANADA, 1978-79	B30
PERCENTAGE OF ALL OCCUPANTS WEARING SEAT BELTS IN LIGHT-DUTY VEHICLES**	B31
ESTIMATES OF SEAT BELT USE FROM ANNUAL SURVEYS 1992-199	
TRAFFIC INJURIES & ROAD SAFETY	B32
<i>Persons killed in motor vehicle accidents compared to Licensed Drivers and Number of Registered Passenger Vehicles, 1971-1996</i>	B32
	B33
REFERENCES	

Appendix B: Lifestyle

“The LIFESTYLE category ... consists of the aggregation of decisions by individuals which affect their health and over which they more or less have control. ... Personal decisions and habits that are bad, from a health point of view, create self-imposed risks. When those risks result in illness or death, the victim’s lifestyle can be said to have contributed to, or caused, his own illness or death.”ⁱ

—A New Perspective on the Health of Canadians

Healthy Eating

Per Capita Food Disappearance, Selected Foodstuffs, 1971 & 1996ⁱⁱ

“Food preferences inferred from purchasing behaviour reveal a substitution of chicken for beef between [1971 and 1996] but little change in consumption of oils and fats. Indeed, there seems to have been a reversal in 1992 of a five-year decline in fat consumption and a return to the levels of 1987. Preferences for dairy products suggest a consistent decline in the purchase of whole milk and, from 1979 through 1988, a clear substitution of whole milk with 2% and, to a lesser extent, skim milk. Unfortunately, Statistics Canada does not track the sales of 1% milk, which may have been increasing in recent years to replace the decline since 1988 in 2% milk sales.”ⁱⁱⁱ

Type of Food (kilograms per person per year)	1971	1996	% Change...
Fresh Fruit	52.43	66.31 (1995)	26
All Fruit (fresh, canned, frozen, dried, juice)	86.04	127.98 (1995)	49
A. Fresh Vegetables	112.30	133.42 (1995)	19
All Vegetables (fresh, canned, frozen, juice)	142.96	172.09 (1995)	20
Soft Drinks (litres)	57.47 (1972)	74.42	29
Alcoholic Beverages (litres)	87.60	74.70	-15
Fluid Milk (litres)	94.59	88.35	-7
Total Cheese	5.6	10.72	91
Red Meat	76.68	58.52	-24
Poultry	19.09	30.77	61
Eggs (dozens)	20.93	15.01	-28
Cereals	64.05	80.43	25
Pulses and Nuts	8.28	8.22	-0.72
Sugar	45.3	39.02	-14
Oils & Fats	20.19	26.51 (1995)	31

International Trends

The average Canadian consumed only slightly more calories, protein, and fat in 1996 than s/he did in 1971. In both years, however, Canadian consumption was much higher than the world average, but the gap between Canadian and world consumption is lessening. In 1971, for example, the average Canadian consumed more than twice (115 percent) as much fat as the average world citizen; in 1996, the gap had narrowed so that the average Canadian consumes about 75 percent more fat than the average world citizen.

Calories, Protein and Fat per person per day, Canada, 1971 & 1996^{iv}

	1971	1996	% Change
Calories	2928	3056	4.37
Protein (grams)	94.3	98.2	4.14
Fat (grams)	115.1	120.2	4.43

Calories, Protein and Fat per person per day, World Average, 1971 & 1996^v

	1971	1996	% Change
Calories	2414	2744	13.67
Protein (grams)	64.6	73.4	13.62
Fat (grams)	53.3	70.1	31.52

Canadian Consumption of Calories, Protein and Fat per person per day, versus World Average, 1971 & 1996

	1971			1996		
	Canada	World	Difference %	Canada	World	Difference %
Calories	2928	2414	21.29	3056	2744	11.37
Protein (grams)	94.3	64.6	45.98	98.2	73.4	33.79
Fat (grams)	115.1	53.3	115.95	120.2	70.1	71.47

Healthy Weights

Body Mass Index

The 1970-1972 Nutrition Canada survey found that half or more of the adult population (over the age of twenty) was overweight. The caloric intake of those who were overweight and those who were not was not significantly different, suggesting that a sedentary lifestyle or genetic predisposition might contribute to this condition.^{vi}

It is not possible to compare today's data with that from the early 1970s; methods for calculating "appropriate" weight have changed. Today, the Body Mass Index (BMI) is used to measure underweight, acceptable weight, and overweight. BMI is calculated by dividing a person's weight in kilograms by their height in metres squared. A BMI of between 20 and 24.9 is considered acceptable while a BMI of less than 20 is considered underweight; a BMI between 25 and 26.9 indicates excess weight that might be a *possible* health risk, and an index above 27 indicates excess weight to the point of

probable health risk.^{vii} (One drawback to the use of BMI is that muscle tissue weight more than fat; heavily muscled individuals may thus be misclassified as overweight as a result of higher muscle density.^{viii})

The 1996-1997 *NPHS* (NPHS) reports that 44 percent of Canadians age 20-64 were an acceptable weight for their height. Almost one-fifth (19 percent) of Canadians were overweight to the point of a *possible* health risk, and 29 percent were overweight to the point of a *probable* health risk. Roughly 8 percent of the population were underweight.^{ix}

We can compare BMI for Canadians going back to 1985. Since then, two major shifts have occurred. First, the proportion of adult Canadians (between the ages of 20 and 64) that is definitely overweight has increased steadily since 1985, for both men and women. “While the increase in the number of overweight Canadians has occurred among both men and women, it has been greatest among men,” notes the CFLRI:

Not only are there more overweight men than women (31% compared to 21%), but the percentage of men who have a healthy weight is also decreasing at a faster rate than it is among women. The proportion of men with a healthy weight has decreased steadily, from 52% in 1985 to 38% in 1995. At the same time, the proportion of men who are overweight has increased by almost 10 percentage points over the past 10 years. In comparison, the proportion of overweight women has rise by about 7 percentage points during the same period.^x

Secondly, there has been a 35 percent *decrease* in the number of underweight women since 1985 (from 20 percent to 13 percent). The 1995 Physical Activity Monitor reports on one puzzling find: “while Canadians have increased their physical activity levels to 37 percent from 21 percent since 1981, they have become fatter.”^{xi} Canadians who are the most active, however, are the least likely to be overweight; about half of active Canadians are at the recommended weight, compared to 38 percent of sedentary Canadians.^{xii}

Body Mass Index (BMI), 1985-1995^{xiii}

BMI	1985	1991	1995	% Change 1985-1995
<20 (Underweight)				
Men	5	8	5	0
Women	20	16	13	-35
20-24.9 (Recommended weight)				
Men	52	45	38	-27
Women	56	52	52	-7
25-26.9 (Overweight possibly leading to				

health problems)				
Men	21	24	25	19
Women	10	13	14	40
>27				
(Overweight probably leading to health problems)				
Men	22	28	31	41
Women	14	19	21	50

Body Mass Index, Canada 1995

	<20	20-25	25-27	>27
Total, Adults (18+)	9%	45%	19%	26%
Women	13	52	13	22
Men	6	39	25	30
18-24	18	53	17	12
Women	26	55	--	--
Men	--	51	20	--
25-44	10	49	18	23
Women	14	56	13	17
Men	--	42	23	30
45-64	6	35	22	37
Women	--	44	14	35
Men	--	27	30	38
65+	--	42	21	30
Women	--	47	--	32
Men	--	37	32	28
Education Level				
Less than secondary	8	39	19	35
Secondary	8	48	18	26
College	10	48	20	22
University	11	46	20	23
Household Income				
<\$20,000	10	48	17	25
\$20,000-29,000	--	49	17	24
\$30,000-39,999	9	42	20	29
\$40,000-59,999	10	45	20	25
\$60,000-79,999	--	49	18	24
\$80,000-99,999	--	38	21	37
≥ \$100,000	--	48	--	26
Employment Status				
Full-time worker	8	46	20	26
Part-time worker	9	52	19	20
Unemployed	--	40	--	30
Homemaker	--	47	--	32
Student	29	47	--	--
Retired	--	39	20	34

(Cont'd)

Community Size				
<1,000	--	42	17	34
1,000-9,999	9	41	23	27
10,000-74,999	7	46	20	26
75,000-299,999	10	49	17	24
≥300,000	11	48	19	22
Family composition				
Living with a partner	7	43	21	29
With children at home	7	45	20	28
Without children at home	7	42	22	29
Widowed, Divorced, Separated	9	44	17	30
With children at home	--	49	--	--
Without children at home	--	43	16	32
Never Married	16	52	15	17
With children at home	--	56	--	--
Without children at home	15	52	15	18
Energy Expenditure				
Active (≥3 KKD)	8	48	21	22
Moderately active (1.5-2.9 KKD)	9	48	19	24
Somewhat active (0.5-1.4 KKD)	10	43	18	29
Sedentary (<0.5 KKD)	--	38	21	28
Activity Pattern				
≥ Every other day	10	48	20	22
≥ Twice a week	--	41	21	31
< Twice a week	10	40	18	32

Differences among Groups

The 1994-95 *National Population Health Survey* (NPHS) suggests that older Canadians are more likely to be concerned about their diet than younger Canadians, and more likely to take action to improve diet. There is also a clear gender difference in concern over diet; two thirds of women (67 percent) aged twelve and over were concerned and taking action about the amount of fat in their diet, compared to only 50 percent of men.

Educational attainment played a modest role in level of concern over diet. The survey shows that 51 percent of Canadians with less than a high school education reported being concerned about and taking action to improve their diet, compared with about 60 percent of Canadians with more education.

Men are more likely to be overweight than women, and older Canadians are more likely to be overweight than their younger counterparts.

Canadians with lower educational levels are more likely to be overweight than those with more education, although the CFLRI found no consistent pattern between household income and incidence of overweight, although “the percentage of overweight individuals is significantly higher among those with a household income between \$80,000 and \$99,999.”^{xiv} Full and part-time workers are less likely to be overweight than homemakers and retirees. Residents of larger communities tend to have lesser proportions of overweight individuals than do smaller communities; a partial explanation for this phenomenon is that smaller communities tend to be characterized by older populations.^{xv}

Exercise

There seems to be a trend toward increased exercise activity for Canadians overall in the past twenty-five years. Over that time period, our ideas about “appropriate” levels of exercise and intensity have changed, as have our understandings of the amount of physical activity required for health benefits; what were minimum acceptable standards in the 1970s are not necessarily as acceptable today. For example, the 1976 Survey of Physical Recreation and Sport counts as “active” those who have participated in sport or exercise within the past *month*. In 1995, Statistics Canada was measuring activity on weekly and daily levels.

The 1976 survey shows that 58.7 percent of Canadians took part in at least one exercise activity in the month preceding the survey. The Report of the 1978-1979 Canada Health Survey notes that 34 percent of respondents were “sedentary” (16 percent) or “moderately inactive” (18 percent); another third were “moderate” (16 percent) or “moderately active” (18 percent), and 18 percent were “very active.” The remaining 14 percent were “unknown.”^{xvi}

Studies that use comparative data begin in the early 1980s and thus do not mark changes directly from the Lalonde era. According to the Canadian Fitness and Lifestyle Research Institute (CFLRI), Canadians were more active in 1995 than they were in 1981 or 1988: “On average, the percentage of Canadians over 18 who are active has increased by about 1% every year, from 21% in 1981 to 37% by 1995.”^{xvii} The CFLRI notes that the percentage of Canadians who are “moderately active” has also increased, from 17 percent in 1981 to 28 percent in 1995: “As a result, there has been an important decrease in the proportion of Canadians report lower levels of activity, from 62 percent in 1981 to 35% by 1995.”^{xviii}

Activity is measured according to KKD, or kilocalories/kilograms of body weight/day; an energy expenditure of 3 KKD is the equivalent of walking for one hour every day. “Active” Canadians were those classified as expending 3 or more KKD, moderately active Canadians expended 1.5 – 2.9 KKD, sedentary Canadians expended 0.5 – 1.4 KKD, and sedentary Canadians expended fewer than 0.5 KKD.^{xix}

Percentage of Active & Moderately Active Canadians, 1981 & 1995^{xx}

	1981	1995	% Change
% Active	21	37	76
% Moderately Active	17	28	65

The 1996-1997 NPHS reports that one-fifth (21 percent) of Canadians were classified as active during leisure time in the three months preceding the survey. Another fifth (23 percent) were moderately active, and well over half of Canadians were classified as inactive.^{xxi}

Participation in Exercise Activities, October 1976^{xxii}

Rank		Persons participating at least once during last months	Percentage of Canadian population 14 years and over
		'000	
	Total Population	17,452	100.0
	Persons participating in one or more exercise activities	10,237	58.7
1	Walking for exercise	6,984	40.0
2	Calisthenics	3,302	18.9
3	Jogging, running	2,575	14.8
4	Bicycling	2,225	12.7
5	Swimming	1,559	8.9
6	Weight lifting	964	5.5
7	Yoga	493	2.8
8	Skipping rope	461	2.6
9	Alley bowling, 5 and 10 pin	225	1.3
10	Dancing	159	0.9
11	Ice hockey	142	0.8
12	Tennis	129	0.7
13	Golf	103	0.6
14	Volleyball	89	0.5
15	Ice skating	88	0.5
16	Badminton	79	0.5
17	Hunting	63	0.4
18	Football	55	0.3
19	Horseback riding, equestrian, dressage	49	0.3
20	Exercise machines	45	0.3
21	Curling	44	0.3
22	Basketball	44	0.3
23	Squash	43	0.2
24	Judo, karate	41	0.2
25	Soccer	41	0.2
26	Basketball	35	0.2
27	Gymnastics	32	0.2
28	Hiking – Excursion	30	0.2
29	Ping pong, table tennis	22	0.1
30	Canoeing	22	0.1

1995 Physical Activity Monitor^{xxiii}

	Active (> or = 3 KKD^{xxiv})	Moderately Active (1.5-2.9 KKD)	Somewhat Active (0.5 - 1.4 KKD)	Sedentary (<0.5 KKD)
Total, Adults (18+)	37%	28%	23%	12%
Women	34	28	24	14
Men	40	28	23	9
18-24	54	23	16	--
Women	54	20	17	--
Men	54	-- ^{xxv}	--	--
25-44	37	28	25	10
Women	33	29	26	11
Men	40	27	24	8
45-64	32	30	24	13
Women	32	30	25	13
Men	33	30	24	--
65+	24	30	22	24
Women	18	29	22	31
Men	33	--	--	--
Education Level				
Less than secondary	28	28	24	20
Secondary	36	31	20	12
College	37	27	26	11
University	45	26	23	6
Household Income				
<\$20,000	36	28	21	15
\$20,000 -29,999	31	25	32	11
\$30,000 -39,999	33	29	27	--
\$40,000 -59,999	34	26	26	13
\$60,000 -79,999	47	30	16	--
\$80,000 -99,999	44	--	--	--
> \$100,000	44	32	--	--
Employment Status				
Full-time worker	38	29	24	9
Part-time worker	34	32	26	--
Unemployed	37	33	--	--
Homemaker	39	21	19	--
Student	53	--	--	--
Retired	29	28	21	22

(cont'd)

<i>Community Size</i>				
< 1,000	36	24	27	--
1,000 - 9,999	33	23	26	17
10,000 - 74,999	37	31	23	9
75,000 - 299,999	41	31	22	--
> or = 300,000	42	29	19	9
Family Composition				
Living with a partner	35	25	25	11
with children at home	35	29	29	8
without children at home	35	23	23	14
Widowed, divorced, separated	27	22	22	20
With children at home	43	--	--	--
Without children at home	23	23	23	22
Never married	49	18	18	9
With children at home	45	--	--	--
Without children at home	49	18	18	8

Trends in Physical Activity Since 1981^{xxvi}
 1995 Physical Activity Monitor

	Active (> or + 3 KKD ^{xxvii})			
	1995	1988	1981	% Change 1981-1995
Total, Adults (18+)	37%	29%	21%	76
women	34	22	18	89
men	40	36	24	67
18-24	54	38	30	80
women	54	27	26	108
men	54	49	33	64
25-44	37	27	19	95
women	33	21	15	120
men	40	33	24	67
45-64	32	25	17	88
women	32	20	16	100
men	33	30	17	94
65+	24	30	19	26
women	18	22	15	20
men	33	41	24	38
Education Level				
Less than secondary	28	24	16	75
Secondary	36	28	23	57
College	37	31	24	54
University	45	33	27	67
Community Size				
< 1,000	36	26	--	--
1,000 - 9,999	33	26	--	--
10,000 - 74,999	37	27	--	--
75,000 - 299,999	41	32	--	--
> or = 300,000	42	29	--	--
Family Composition				
Living with a partner	35	27	18	94
Widowed, divorced, separated	27	23	19	42
Never married	49	37	30	63

Differences among Groups

In both the early 1970s and the late 1990s, participation in exercise activities varied according to age, income level, gender, educational attainment and job category. Consistently, physical activity levels increase as education and income level rise. In 1976, for example 72 percent of survey respondents with a degree reported that they had participated in an exercise activity in the past month, compared to 43 percent of those with eight or fewer years of school. In 1995, although our criteria for “activity” had changed, the trend of disparity according to education was consistent: 45 percent of Canadians with a university education were active, compared to 28 percent of Canadians with less than a secondary school education. Further, as the CFLRI notes, “the gap in physical activity levels between the least and most educated has widened since 1981 and 1988.”^{xxviii}

The 1976 survey report that adults in the highest quintile of income most often specified “good health” as the reason they exercised; those who made more than \$20,000 in 1972 (the highest quintile) and those with university degrees *or* zero to eight years of education specified “for good health” most often. Those with income under \$20,000 and in other categories of education specified “enjoyment” more than any other reason.^{xxix} Participation rates also varied according to occupation: 69 percent of those in the “managerial, technological, social and cultural” job category participated exercise activities, compared to 50 percent of respondents who worked in primary occupations.^{xxx}

In 1995, higher income was also equated with a higher level of activity. Households with annual incomes of over \$60,000 had the highest reported physical activity levels. “In this income bracket, four in ten are active, compared with three in ten of those earning between \$20,000 and \$60,000.”^{xxxi}

In both 1976 and 1995, younger people were more likely than older people to exercise, and men were more active than women.

**Socio-economic Characteristics of Participants and Non-
participants in Sport and Physical Recreation or Exercise
Activities, October 1976^{xxxii}**

Socio-Economic Characteristics	Total population 14 years and over— Population totale de 14 ans et plus		Persons Unable to Participate -- Personnes incapable de participer	Persons Able to Participate-- Personnes en mesure de participer	Sport and Physical Recreation Activities		Exercise Activities	
	'000				Participants	Non-participants	Participants	Non-participants
	17,452	100	7.3	92.7	50.0	42.7	58.7	34.0
Age - Age:								
14 years - ans	468	100	1.1	98.9	84.2	14.5	89.3	9.6
15- 16 years - ans	937	100	1.7	98.3	82.0	16.3	86.9	11.4
17-19 "	1,369	100	1.9	98.1	73.3	24.8	75.4	22.7
20-24 "	2,166	100	2.1	97.9	66.3	31.6	63.4	30.6
25-34 "	3,652	100	2.4	97.6	61.3	36.3	62.3	35.2
35-44 "	2,575	100	3.7	96.3	51.2	45.2	53.3	41.0
45-54 "	2,438	100	8.9	91.1	37.2	53.9	50.1	41.0
55-64 "	1,917	100	14.3	85.7	24.5	61.1	45.7	40.0
65 years and over - ans et plus . . .	1,930	100	26.5	73.5	9.7	63.8	37.0	36.5
Sex - Sexe:								
Male - Hommes	8,595	100	6.6	93.4	54.4	38.9	59.7	33.7
Female - Femmes	8,857	100	8.0	92.0	45.6	46.4	57.7	34.3
Marital status								
Single - Celibataire	4,802	100	3.5	96.5	68.8	27.6	73.8	22.6
Married - Mariee)	11,139	100	7.3	92.7	45.5	47.2	54.2	38.5
Others - Autres	1,511	100	19.9	80.1	23	57.1	43.2	37.0
Income - Revenu								
Not reported - Non declare	1,915	100	9.8	90.2	37.4	52.8	58.8	34.5
None - Aucun	2,805	100	6.0	94.0	51.0	43.0	63.2	30.8
Less than \$4,000 - Mums de \$4,000	4,630	100	10.7	89.3	47.8	41.5	58.2	31.1
\$ 4,000 - \$ 6,999	1,965	100	9.2	90.8	40.2	50.6	52.8	38.0
7,000- 9,999	1,899	100	4.8	95.2	51.1	44.2	57.0	38.0
10,000 - 14,999	2,399	100	3.8	96.2	56.9	39.2	59.5	36.0
15,000 - 19,999	1,095	100	3.6	96.4	64.6	31.8	60.3	36.1
20,000 and over -- et plus	744	100	3.0	97.0	71.2	23.9	61.6	28.5

(cont'd)

Education -								
0 - 8 years - ans	4344	100	13.6	86.4	23.8	62.5	42.9	43.5
Some high school -	8551	100	5.6	94.4	54.8	39.6	61.7	32.7
Études secondaires								
inachevées								
High school plus	1540	100	5.1	94.9	66.4	28.5	68.8	26.2
some post-								
secondary -- Études								
secondaires plus								
post-secondaires								
inachevées								
Post-secondary	1776	100	5	95.0	60.5	34.6	64.4	30.6
certificate or								
diploma - Certificat								
ou diplômé d'études								
postsecondaires								
University degree -	1242	100	3.2	96.8	72.5	24.2	71.1	25.0
Diplôme								
d'université								
Occupation -								
Managerial,	2664	100	3.6	96.4	68.2	28.2	69.2	27.1
technological, social								
and cultural –								
Gestion, domaine								
technique, social et								
culturel								
Clerical – Travail	2415	100	4.1	95.90	57.9	38.0	62.8	33.0
administratif								
Sales – Commerce	1374	100	5.3	94.7	58.9	35.8	62.9	31.9
Service – Services	1,847	100	5.6	94.4	48.8	45.5	61.9	32.5
Primary	942	100	5.8	94.2	44.6	49.5	50.2	43.9
occupations –								
Secteur primaire								
Other occupations –	3,925	100	4.4	95.6	48.4	47.1	55.0	40.6
Autres								
Never worked	2,093	100	11.6	88.4	44.7	43.7	59.3	29.0
before - N'a jamais								
travaillé encore								
Last worked more	2,191	100	19.8	80.2	24.5	55.7	45.3	34.9
than 5 years ago -								
N'a pas travaillé								
depuis 5 ans								

Alcohol & Non-Prescription Drug Use

In 1973, the Commission of Inquiry Into the Non-Medical Use of Drugs presented its Final Report to the Honourable Marc Lalonde, Minister of National Health and Welfare. Gerald Le Dain, Chairman of the Commission, “defied convention to define all mood-altering substances, alcohol and tobacco included, as drugs.”^{xxxiii}:

[T]he Commission has been concerned with the whole range of psychotropic drugs or substances. Thus, the Commission has been concerned not only with the so-called ‘soft’ drugs, such as cannabis and the other hallucinogens, but with the ‘hard drugs, such as the opiate narcotics, and also with two of the most widely used psychotropic drugs, alcohol and tobacco. Some observers have suggested that the Commission should not have concerned itself with alcohol. [T]his would have been an inexcusable omission that would have created a false impression of the true extent and relative seriousness of non-medical drug use. Moreover, the relationship between the various forms of drug use and the phenomenon of multi-drug use have made it imperative to consider as many classes of psychotropic drugs or substances as possible.^{xxxiv}

Le Dain’s 1972 report on cannabis use in Canada also shocked its audience by recommending the abolishment of the offence of simple possession of the drug. Since then, notes the Addiction Research Foundation, cannabis law has “crept at a turtle’s pace.”^{xxxv} In 1999, we are still debating the decriminalization of marijuana and its legalization for medical purposes. However, we are much more aware of the dangers and harm of substance abuse, and we have made great gains in the field of impaired driving since the 1970s, “when the first spot [roadside] checks sparked a debate about individual rights.”^{xxxvi}

Trends in Alcohol and Drug Use in Ontario Adults, 1977 to 1994,^{xxxvii} and in Canada, 1996/97^{xxxviii}

There is little national trend data for illicit drug use. However, the Addiction Research Foundation (ARF) provides long-term trends for drug and alcohol use for Ontario adults. We can compare Ontario's alcohol and drug use to the nation's current use.

Alcohol

- Fewer drinkers are *frequent* drinkers now than in the past. This trend has been most predominant among men aged 30 to 49: their rate of daily drinking dropped from 20.7 percent in 1977 to 8.4 percent in 1994.

The NPHS reported that 53 percent of Canadians (age 12 and older) reported drinking at least one a month during the previous year.

- Frequent heavy drinking has not changed significantly between 1977 and 1994 in Ontario, varying between 7.4 percent and 9.5 percent. In 1996/97, roughly 9 percent of Canadians reported drinking 14 or more drinks daily. Seven percent of Canadians over age 12 reported drinking daily; 12 percent reported frequent heavy drinking 1 to 3 times per month, and 6 percent reported frequent heavy drinking more than once a week.

Psychotherapeutics

- Of stimulants, tranquillizers, and sleeping pills, only use of tranquillizers dropped steadily in Ontario, from 12.1 percent in 1977 to 3.7 percent in 1994. This decline was especially predominant in women (15.9 percent to 4.1 percent) and women aged 50 and older (21 percent to 7.7 percent).

In 1994, close to 5 million Canadians reported using one or more of prescription painkillers, sleeping pills, tranquillizers, anti-depressants, and diet pills (stimulants). In 1994, 5.3 percent of Canadian women used tranquillizers.^{xxxix}

- Ontarians' use of sleeping pills and stimulants varied between 6.2 percent and 9.1 percent between the two periods, but did not change significantly. For Canada as a whole, about 4.5 percent of the population used sleeping pills in 1994 and 0.9 percent used diet pills.^{xi}

Illicit Drug Use

- Use of cannabis has varied between 8.1 percent and 11.2 percent between 1977 and 1994. A small declining trend has been noted since 1984. Canada's *Alcohol and Other Drugs Survey* found that 7.4 percent of Canadians reported current cannabis use in 1994.^{xli}
- There are no sizeable long-term trends for cocaine use in Ontario. "Lifetime use increased significantly from 3.3 % in 1984 to 6.1% in 1987, and currently stands at

5.7%. However, current use of cocaine ... showed a declining trend in use between 1984 and 1994 (from 2.1 percent to 0.7%).”

In Canada, 0.7 percent of the population reported current use of cocaine in 1994, a decrease from 1.4 percent in 1989.^{xlii}

- Use of crack cocaine has remained at under 1 percent in Ontario since 1987.

Use of Selected Legal and Illegal Drugs in Canada (%) (past 12 months) 1994^{xliii}

	Tranquilizers	Diet Pills, Stimulants	Anti-depressants	Codeine, Demerol, Morphine	Sleeping Pills	Marijuana, hash	LSD, speed, Heroin
Canada	4.3	0.9	3.0	13.1	4.5	7.4	1.1
Atlantic	4.4	1.1*	3.3	13.3	4.3	6.3	0.9*
Quebec	6.8	0.7*	3.7	6.8	5.8	8.6	1.6*
Ontario	3.3	0.7*	1.8	12.6	3.5	5.1	0.5*
Prairies	3.2	1.2*	3.7	17.5	4.5	8.2	1.1*
BC	4.0	0.9*	3.9	21.2	5.3	11.6	1.6*

*High sampling variability

The 1994 *Canadian Alcohol and Drug Survey* indicates that 13.1 percent of Canadians use opiate narcotics, 4.3 percent use tranquilizers, 4.5 percent use sleeping pills and 3.0 percent use antidepressants. As well, 7.4 percent of Canadians used cannabis, 0.7 percent used cocaine, and 1.1 percent of the population used LSD, speed or heroin.^{xliv}

Substance	1994
Alcohol	72.3
Tobacco	27
Cannabis	7.4
Cocaine	0.7
Heroin, LSD, Amphetamines	1.1
Opiate Narcotics	13.1

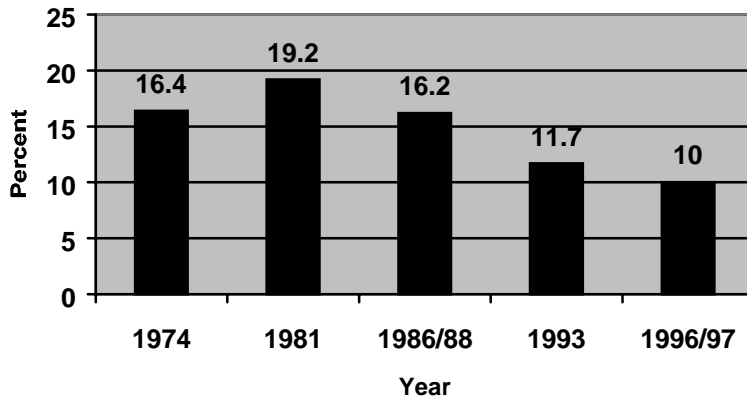
Impaired Driving in Canada

Trend data on driving after drinking exist, but the survey methods and questions are not consistent. It is obvious that we have made gains in the area of impaired driving. “In the late 1970s, [the Addiction Research Foundation] helped pilot-test a program called Reduce Impaired Driving in Etobicoke (RIDE). ‘Etobicoke’ soon became ‘Everywhere’ and today the concept is ‘publicly accepted and supported.’ ... In 1974, 357 Ontario drivers who died in accidents tested positive for alcohol; by 1994 that number had dropped to 200.”^{xlv}

The overall incidence of driving after drinking (at night) rose from 16.4 percent in 1974 to 19.2 percent in 1981. Since then, it has decreased substantially, to 11.7 percent in 1993.^{xlvi} In 1996/97, according to the NPHS, 10 percent of licensed drivers reported driving after drinking.^{xlvii}

Trends in Drinking among Nighttime Drivers in Canada^{xlviii xlix}

Impaired driving is currently measured by blood alcohol content (BAC). The threshold for impaired driving is 80 milligrams of alcohol per 100 millilitres of blood. As the table

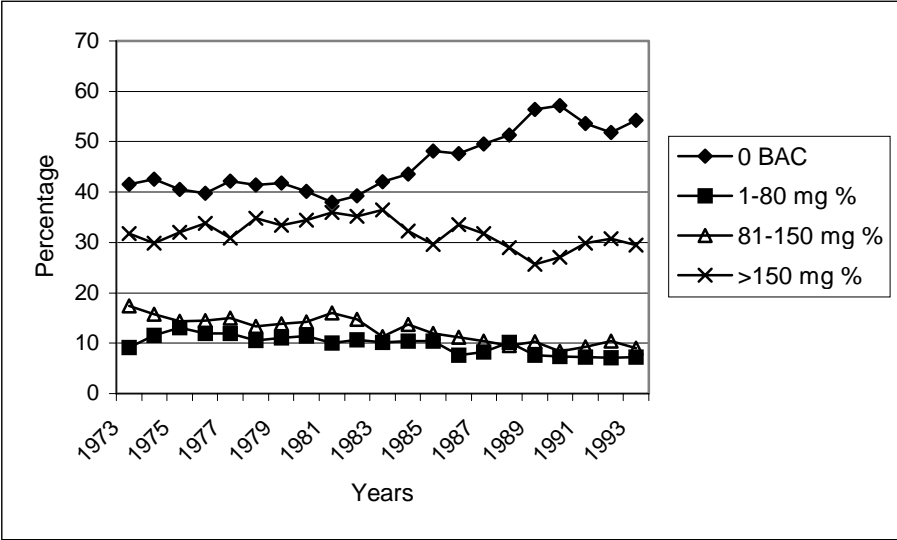


below indicates, the number of drivers fatally injured in car accidents decreased by about one-quarter between 1973 and 1993 (in seven provinces). During the same period, the percentage of fatally injured drivers with *zero* blood alcohol content increased by about 30 percent, while those with 1-80 BAC decreased by about 21 percent, and those with a BAC of between 81 and 150 decreased by almost 50 percent. The percentage of drivers fatally injured with a BAC of over 150 decreased by only about 7 percent. The Traffic Injury Research Foundation suggests that “hard-core drinking drivers,” while only a very small number of drivers on the road, account for a substantial proportion of injury-producing and fatal crashes.¹

**Alcohol Use among Fatally Injured Drivers: 21-Year Trend in
Seven Provinces^{li}**

Year	Number of Drivers	Percent Tested	Drivers Grouped by BAC (mg%)							
			Zero BAC		1-80 mg %		81-150 mg%		>150 mg%	
			No.	% of Tested	No.	% of Tested	No.	% of Tested	No.	% of Tested
1973	1525	86.2	549	41.6	121	9.2	228	17.4	416	31.7
1974	1680	86.3	613	42.6	165	11.5	227	15.8	428	29.9
1975	1503	89.7	546	40.5	177	13.1	194	14.4	431	32
1976	1397	83.9	487	39.8	139	11.9	170	14.5	396	33.8
1977	1300	83.3	457	42.2	129	11.9	162	15	335	30.9
1978	1251	85.5	443	41.4	113	10.6	142	13.3	372	34.8
1979	1426	83.5	497	41.8	131	11	165	13.9	397	33.4
1980	1423	79.8	456	40.1	129	11.4	161	14.2	391	34.4
1981	1549	85.6	504	38	132	10	212	16	478	36
1982	1312	83.7	432	39.3	117	10.7	162	14.8	387	35.2
1983	1345	88.7	502	42.1	120	10.1	135	11.3	436	36.5
1984	1207	89.4	470	43.6	112	10.4	148	13.7	349	32.3
1985	1269	90.3	551	48.1	120	10.4	136	11.9	339	29.6
1986	1277	92.2	561	47.7	89	7.6	132	11.2	395	33.6
1987	1413	89	623	49.6	104	8.3	131	10.4	399	31.7
1988	1333	91.9	629	51.3	125	10.2	116	9.5	355	29
1989	1423	91.4	134	56.4	99	7.6	134	10.3	334	25.7
1990	1239	93.8	665	57.2	66	7.4	96	8.4	314	27
1991	1180	91.7	580	53.6	78	7.2	101	9.3	323	29.9
1992	1123	91.2	530	51.8	73	7.1	107	10.4	314	30.7
1993	1233	90.3	604	54.3	81	7.3	100	9	328	29.5

Alcohol Use among Fatally Injured Drivers: 21-Year Trend in Seven Provinces^{lii}



Smoking

“[In the 1970s,] smoking was still a big part of life at home and on the job for many North Americans. Canada’s own health minister John Munro puffed his way through a[n Addiction Research Foundation] Journal interview on drug policy. Nearby, a pall of smoke made the ARF Library look like a pool hall Today, as studies confirm, it’s the smoker who generally feels like the deviant. Education about health effects, the smoking bans and (at least until 1994) the relatively high taxes have been important factors in the change In Canada, smoking rates are down dramatically... .”^{liii}

Smoking is one of the most important preventable causes of death and illness in Canada and industrialized countries; it is also one of the areas in which Canadians have made the most improvement over the past twenty-five years. The 1996-97 *NPHS* reports that roughly 27 percent of Canadians fifteen years of age and older smoked, down from close to 41 percent in 1970.^{liv}

Because of increases in population, the number of smokers in Canada has remained relatively stable, although the proportion of Canadians who smoke has decreased significantly. In 1970, two-thirds of about 6.4 million smokers consumed between 11 and 25 cigarettes a day; about 10 percent consumed more than 25 cigarettes, and a quarter smoked fewer than 10 cigarettes a day.^{lv} In 1996-97, 29 percent of Canadians were former smokers, and 44 percent had never smoked. Seven million Canadians are smokers today and consume an average of seventeen cigarettes a day.

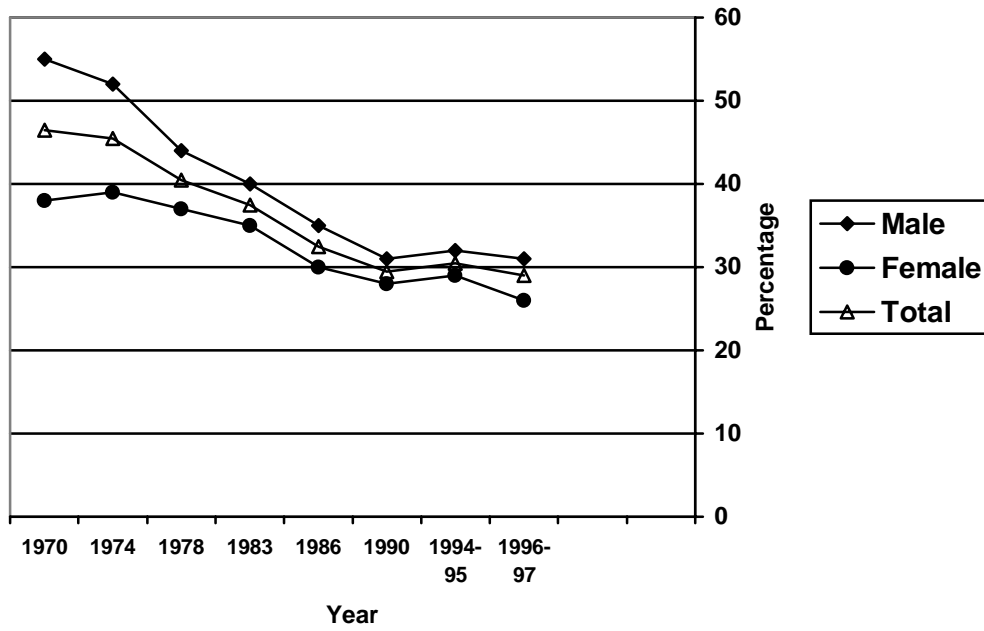
Current Cigarette Smokers, by Age, Canada, 1970^{lvi} and 1996-97^{lvii}

	1970	1996-97	% Change
Total 15+ years	46.5	26.9	-33.8
Men	55	28.7	-41.3
Women	38	24.5	-24.4
Total 20+ Years	42.35	25.9	-38.8
Men	51.1	28.7	-43.8
Women	33.6	23.1	-31.3
15-19 Years, total	30.3	30	-1.0
Men	35.7	29	-18.8
Women	24.9	31.5	26.5
20-24 Years, total	47.65	35	-26.5
Men	53.9	38	-29.5
Women	41.4	31	-25.1
25-44 Years, total	47.75	33.5	-29.8
Men	55.5	36.5	-34.2
Women	40	30.5	-23.8
45-64 Years, total	41.4	26	-37.2
Men	51.3	28.5	-44.4
Women	31.5	23	-27.0
65+ Years, total	20.95	14	-33.2
Men	31.4	16.5	-47.5
Women	10.5	12	14.3

Quitting Smoking

In 1994/95, nearly a quarter of Canadians were former daily smokers. Studies from 1975 and 1994/95 report that the majority of former daily smokers cited concern about future health as the main reason for quitting smoking. In both time periods, the vast majority of smokers (76 percent in 1975 and 89 percent in 1994/95) quit cold turkey.^{lviii}

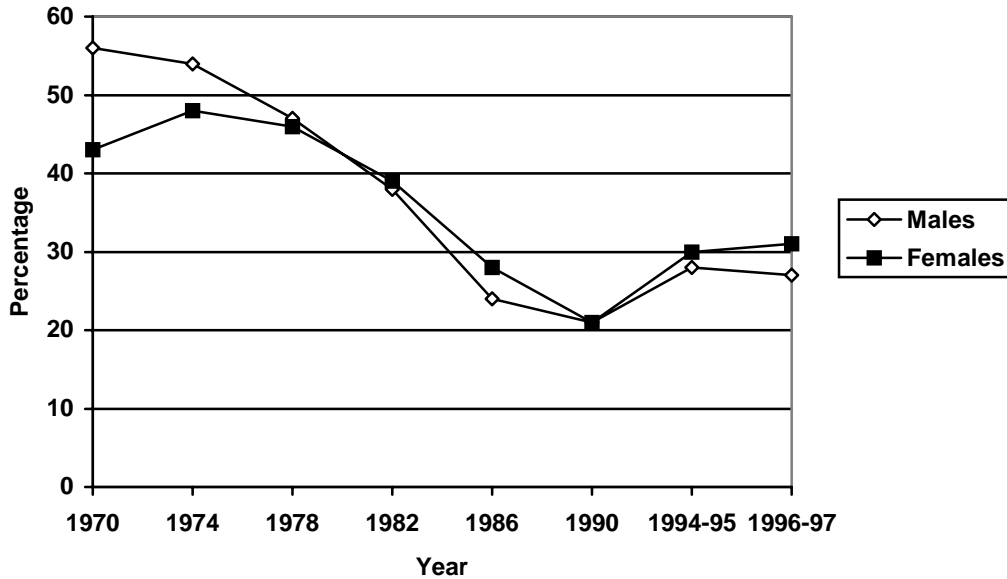
Prevalence of Current Smoking, by sex, Canada, 1970 to 1996-97^{lix}



Prevalence of current smoking,^{lx} by sex, Canada, age 15-19, 1970 to 1996-97^{lxii}

While the current smoking rate is down overall since the early 1970s, it is up among teenagers:

The prevalence of smoking among teens is to some degree a harbinger of future smoking rates. By 1990, the prevalence of current smoking among 15- to 19-year-olds had fallen to 21%--the lowest rate recorded for this age group since 1966. The following year, the rate began to rise and by 1994/95 it was 28%. Teen smoking rates increased among both sexes in the 1990s, but the trend was slightly more pronounced among females. This reversed the situation in the late 1960s when smoking among young men had exceeded the rate for young women.^{lxii}



Differences among Groups

While smoking rates have declined across the board since the 1970s, the declines were not uniform. In both 1977 and 1994, adults with a higher level of educational attainment smoked less than those with fewer years of schooling. From 1977 to 1994, smoking rates among adults with an elementary education or less declined by roughly 30 per cent. For the same period, however, smoking rates among adults with a university degree declined by over 68 per cent.^{lxiii}

The 1996-97 NPHS reports that the most likely population to smoke are men, those aged 18-24 or those who have not completed high school. In both periods, men were more likely to smoke than women, but the gender gap is narrowing: in 1970, 16.5 percentage points separated male from female smokers. By 1996-97, only 5 percentage points separated male from female smokers. Canadians who live in provinces east of Ontario are more likely to be smokers than those in the Western provinces; smoking is heaviest in Quebec and PEI while BC “had a notably lower level of daily smoking, and their average daily cigarette consumption was also comparably lower.”^{lxiv}

According to the First Nations and Inuit Regional Health Surveys, in 1997, 62 percent of First Nations and Inuit smoke cigarettes, a rate that is twice that of non-aboriginal Canadians. Smoking prevalence among Canada’s Aboriginal peoples does not appear to be declining.^{lxv}

Smoking Rates by Gender and Educational Attainment, 1977 &
1994^{lxvi}

Educational Attainment	Smoking Rates		
	1977	1994	% Change
Both Sexes	40	31	-29.03
Elementary or less	44	37	-18.92
Some/complete high school	43	38	-13.16
Some postsecondary	37	31	-19.35
Certificate/diploma	36	30	-20.00
University Degree	27	16	-68.75
Men	46	33	-39.39
Elementary or less	54	47	-14.89
Some/complete high school	50	40	-25.00
Some postsecondary	39	34	-14.71
Certificate/diploma	37	31	-19.35
University Degree	28	18	-55.56
Women	35	29	-20.69
Elementary or less	33	30	-10.00
Some/complete high school	38	36	-5.56
Some postsecondary	34	29	-17.24
Certificate/diploma	35	29	-20.69
University Degree	27	14	-92.86

Seatbelts & Road Safety

Data on seatbelt use began to be collected in the late 1970s as governments recognized the potential for seatbelts to save lives and reduce injuries.

Legislation

Legislation is a significant factor in whether or not people wear seatbelts. No province had mandatory seatbelt legislation in 1971; Ontario was the first province to enact such legislation, in 1976, followed by Quebec. In the early 1970s, the compulsory use of seatbelts was “largely unexplored” as a legislative means of preventing injury and death.^{lxvii} In 1978/1979, only four provinces had laws requiring people travelling in cars to wear seatbelts. In the provinces with legislation, the 60 per cent of drivers and passengers reported wearing their seatbelts all or most of the time, as opposed to 16 per cent in provinces without legislation.^{lxviii} In 1998, every Canadian province and territory had laws requiring seatbelt use, with a compliance rate of 88.7 percent for all occupants of light-duty vehicles^{lxix} and over 90 per cent for their drivers.^{lxx}

Seat Belt Usage Laws enacted by Canadian Province, by Date^{lxxi}

Province	Date Enacted
1. Ontario	January 1976
2. Quebec	July 1976
3. Saskatchewan	July 1977
4. British Columbia	October 1977
5. Newfoundland	July 1982
6. New Brunswick	November 1983
7. Manitoba	April 1984
8. Nova Scotia	January 1985
9. Alberta	July 1987
10. Prince Edward Island	January 1988
11. NWT	April 1989
12. Yukon	July 1991

Population 15 Years of Age and Over who Drove or Rode in a Car
in the Previous Two Weeks by Consistency of Seatbelt Use, by
Age and Provincial Seatbelt Legislation, Canada, 1978-79^{lxxii}

Seatbelt Legislation	Consistency of Seatbelt Use			
	Always or most of the time	Inconsistently	Rarely or never	Unknown
Age 15 and Over:				
Total	49.2	3.1	29.7	18
Seatbelt Use Mandatory	60.2	3.3	21.2	15.3
Seatbelt Use not Mandatory	15.9	2.7	65.3	16.1
Age 15-19				
Total	38.9	3	37.9	20.2
Seatbelt Use Mandatory	49.2	3.2	31.5	16.1
Seatbelt Use not Mandatory	13	3	68.2	15.8
Age 20-24				
Total	42.4	5.4	39.2	13
Seatbelt Use Mandatory	52.2	6.1	31.2	10.6
Seatbelt Use not Mandatory	13.3	3.8	70.1	12.7
Age 25-44				
Total	52.7	3.7	29.1	14.6
Seatbelt Use Mandatory	63.3	3.9	20.1	12.8
Seatbelt Use not Mandatory	18.1	3.1	65.8	13.1
Age 45-64				
Total	52.8	2	24	21.2
Seatbelt Use Mandatory	63.9	2.1	15.6	18.4
Seatbelt Use not Mandatory	16.9	2	61.7	19.4
Age 65 and Over:				
Total	50.3	0.6	22.8	26.2
Seatbelt Use Mandatory	63.4	--	14.2	21.9
Seatbelt Use not Mandatory	13	--	60.7	25.2

Percentage of all Occupants Wearing Seat Belts in Light-Duty
Vehicles**

Estimates of seat belt use from annual surveys 1992-1998* lxxiii

Province / Territory	1992 June (%)	1993 June (%)	1994 June (%)	1996 June (%)	1997 July (%)	1998 June (%)
Newfoundland	90.4	94.5	93.6	91.9	92.4	86.4
Prince Edward Island	76.9	77.8	84.5	87.5	82.6	82.7
Nova Scotia	82.1	83.5	83.2	88.2	87.1	88.5
New Brunswick	77.9	82.1	84.9	86.6	86.5	87.9
Quebec	86.0	88.8	89.8	90.3	91.7	92.3
Ontario	76.6	79.4	86.3	89.9	89.2	89.1
Manitoba	76.5	80.2	82.6	82.4	84.8	84.4
Saskatchewan	88.7	89.4	87.7	89.6	91.7	89.7
Alberta	80.3	81.0	83.1	85.1	83.7	82.4
British Columbia	87.1	86.4	88.3	88.7	89.4	89.7
Yukon	60.1	72.8	68.2	81.2	83.4	82.1
Northwest Territories	68.7	51.5	67.4	54.9	64.3	52.6
Canada	81.4	83.4	86.8	88.7	88.9	88.7

*Note: Some jurisdictions have laws exempting certain individuals from wearing seat belts

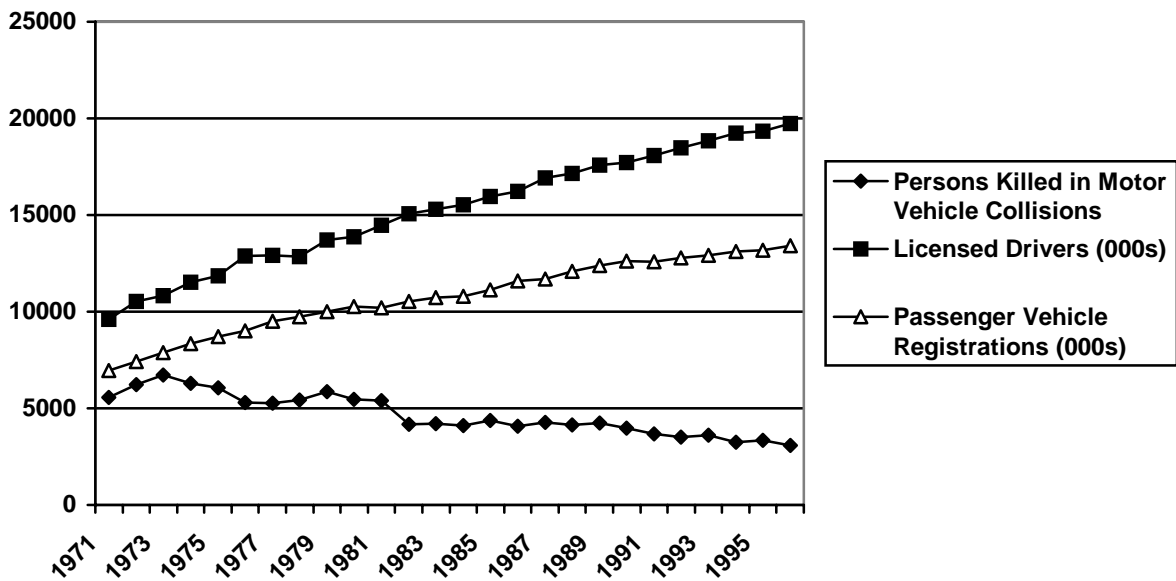
** Light-duty vehicles include passenger cars, passenger vans and light trucks.

Traffic Injuries & Road Safety

In 1971, 5,573 people were killed in a total of 491,781 accidents. By 1996, the number of traffic fatalities had decreased substantially, despite large increases in number of vehicles, licensed drivers, and collisions: 3082 deaths in 158,973 collisions, a decrease of almost 45 percent. The number of injuries increased by about 20 percent. During the same period, the number of motor vehicles registered more than doubled, as did the number of licensed drivers.^{lxxiv}

These improvements in fatality rates and injury rates relative to the number of vehicles and licensed drivers may be variously attributed to increased use of seatbelts, less impaired driving, better automotive and safety technology, and improved medical procedures for dealing with accident trauma victims.

Persons killed in motor vehicle accidents compared to Licensed Drivers and Number of Registered Passenger Vehicles, 1971-1996^{lxxv}



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Appendix C: Health Care Organization

HEALTH CARE FUNDING	C2
TOTAL HEALTH EXPENDITURES BY SECTOR OF FINANCE 1975 AND 1996	C2
REAL TOTAL HEALTH EXPENDITURES BY SECTOR OF FINANCE 1975 AND 1996 IN 1986 DOLLARS	C3
TOTAL HEALTH EXPENDITURES 1975 AND 1996	C4
HEALTH EXPENDITURES 1975 AND 1996 AS A % OF GDP IN CANADA	C4
BROKEN DOWN BY SECTOR, WITH COMPARISON TO U.S.A. TOTAL	C4
TOTAL HEALTH EXPENDITURES BY CATEGORY OF EXPENDITURE 1975/1996	C5
<i>Public Sector Health Expenditures by Category of Expenditure</i>	C7
<i>Private Health Expenditures by Category of Expenditure</i>	C8
HEALTH CARE WORKERS	C10
NUMBER OF HEALTH CARE WORKERS 1971 AND 1991 & 1996	C10
<i>Health Diagnosing and Treating Occupations</i>	C10
<i>Nursing Therapy and Related Assisting Occupations</i>	C11
<i>Other Occupations in Medicine and Health</i>	C11
MEDICAL SPECIALTIES RECOGNIZED BY THE ROYAL COLLEGE OF PHYSICIANS AND SURGEONS OF CANADA, 1971 AND 1996	C12
<i>Total Number of Recognized Specialties 1971 and 1996</i>	C12
<i>Division of Medicine/Clinical Specialties</i>	C12
<i>Division of Medicine—Laboratory Specialties</i>	C13
<i>Division of Surgery</i>	C13
<i>Certificates of Special Competence and Year Approved</i>	C14
<i>Programs Accredited without Certification and Year Approved</i>	C14
FULL TIME ENROLLMENT IN MEDICAL SCHOOLS, 1971/72 AND 1991	C15
CHANGES IN CARE	C16
PUBLIC HOME CARE EXPENDITURES BY PROVINCE 1975/76 AND 1995/96	C16
<i>Expenditures in \$1 000.00s</i>	C16
<i>Expenditures as a % of total public sector health expenditures</i>	C17
AMOUNT PAID BY CATEGORY OF PRACTITIONER	C18
AMOUNT PAID BY CATEGORY OF SERVICE	C19
HEALTH CARE BEDS 1971 AND 1991/92	C20
<i>Total Hospital Beds per 1000 population</i>	C20
NUMBER OF BEDS AVAILABLE BY TYPE AND NATURE OF INSTITUTION	C21
<i>Number of Beds by Type</i>	C21
<i>Number of Beds by Nature of Institution</i>	C21
AMBULATORY VISITS TO MEDICAL SERVICES	C21
PERCENTAGE OCCUPANCY OF HOSPITAL BEDS	C22
HOSPITAL BEDS BY TYPE	C22
PATIENT DAYS BY LENGTH AND LOCATION OF STAY	C23
<i>Total Patient Days</i>	C23
<i>Patient Days per 100000 population</i>	C23
<i>Total Patient Days by Sex</i>	C23
<i>Total Patient Days by Age Group</i>	C23
AVERAGE STAY IN HOSPITAL BY SEX, REGION, AGE AND REASON	C24
PHARMACEUTICALS	C26
PER CAPITA DRUG EXPENDITURES BY HIGH AND LOW INCOME FAMILIES; 1964-69, 1972-78; 1984-90	C26
NUMBER OF PHARMACEUTICALS AVAILABLE IN CANADA	C27
<i>Comparison of Pharmacopoeia Size for 1971 and 1996</i>	C27
ALTERNATIVE MEDICINE	C28
NATUROPATHIC PRACTITIONERS IN CANADA 1971, 1996 AND 1998	C28
REFERENCES	C29

Appendix C: Health Care Organization

The fourth category in the concept is HEALTH CARE ORGANIZATION which consists of the quantity, quality, arrangement, nature and relationships of people and resources in the provision of health care. It includes medical practice, nursing, hospitals, nursing homes, medical drugs, public and community health care services, ambulances, dental treatment and other health services such as optometry, chiropractics and podiatry. This fourth element is what is generally defined as the health care system.ⁱ

A New Perspective on the Health of Canadians

Health Care Funding

Total Health Expenditures by Sector of Finance 1975 and 1996ⁱⁱ

Total in \$1 000 000.00s

Year	Federal Direct	Provincial	Municipal	Worker's Comp.	Total Public Sector	Private Sector	Total
1975	398.3	8,710.4	132.0	121.1	9,361.7	2,899.2	12,260.9
1996	2,668.8	48,468.3	784.8	628.9	52,550.8	22,673.9	75,224.7
% ±	570	456	495	419	461	682	514

\$ per Capita

Year	Federal Direct	Provincial	Municipal	Worker's Comp.	Total Public Sector	Private Sector	Total
1975	17.16	375.30	5.69	5.22	403.36	124.92	528.28
1996	89.07	1,617.57	26.19	20.99	1,753.82	756.71	2,510.53
% ±	419	331	360	302	335	506	375

Percentage Distribution

Year	Federal Direct	Provincial	Municipal	Worker's Comp.	Total Public Sector	Private Sector	Total
1975	3.2	71.0	1.1	1.0	76.4	23.6	100.00
1996	3.5	64.4	1.0	0.8	69.9	30.1	100.00
% ±	9	-9	-9	-20	-9	28	0

Of these per capita expenditures 72.2% of the funds spent are spent by the public sector while 27.8% are spent by the private sector. The public sector expenses can be

further broken down into federal direct payments of 3.7%, provincial payments of 66.6%, municipal payments of 1.1% and worker's compensation payments of 0.9%.ⁱⁱⁱ

Real Total Health Expenditures by Sector of Finance 1975 and 1996 in 1986 Dollars^{iv}

Total in \$1 000 000.00s

Year	Federal Direct	Provincial	Municipal	Worker's Comp.	Total Public Sector	Private Sector	Total
1975	946.0	20,689.8	313.5	287.6	22,236.8	6,907.7	29,144.6
1996	2,043.2	37,106.6	600.8	481.5	40,232.1	15,521.8	55,753.9
% ±	116	79	92	67	81	125	91

\$ per Capita

Year	Federal Direct	Provincial	Municipal	Worker's Comp.	Total Public Sector	Private Sector	Total
1975	40.76	891.45	13.51	12.39	958.1	297.63	1,255.73
1996	68.19	1,238.39	20.05	16.07	1,342.7	518.02	1,860.72
% ±	67	39	48	30	40	74	48

Percentage Distribution

Year	Federal Direct	Provincial	Municipal	Worker's Comp.	Total Public Sector	Private Sector	Total
1975	3.2	71.0	1.1	1.0	76.3	23.7	100.00
1996	3.7	66.6	1.1	0.9	72.2	27.8	100.00
% ±	16	-6	0	-10	-5	17	0

Total Health Expenditures 1975 and 1996^v**In Current Dollars**

Year	Total		Per Capita	
	\$100 000.00s	% Change*	\$1.00s	% Change*
1975	12,260.9	15.0	528.28	13.5
1996	75,224.7	1.2	2,510.53	0.1
% Change	514	-92	375	-99

*Estimate based upon % change in 1976

In Constant 1986 Dollars

Year	Total		Per Capita	
	\$100 000.00s	% Change	\$1.00s	% Change
1975*	29,144.6	2.6	1,255.73	1.2
1996	55,753.9	0.6	1,860.72	-0.6
% Change	91	-77	48	-150

*Estimate based upon % change in 1976

Health Expenditures 1975 and 1996 as a % of GDP in Canada^{vi}**Broken Down by Sector, with Comparison to U.S.A. Total**

Year	Public	Private	Total	U.S.A.
1975	5.5	1.7	7.1	8.2
1996	6.6	2.9	9.5	14.2
% Change	20	71	34	73

In 1996 the total expenditures on health care in Canada were just over 7.5 Billion dollars, or approximately \$2500.00 per capita. This marked an increase over the previous year of less than 1%, well below the current rate of inflation.^{vii}

Total Health Expenditures by Category of Expenditure 1975/1996^{viii}**Total in \$1 000 000.00**

Category	1975	1996	% Change
Hospitals	5,396.8	25,714.6	376
Other Institutions	1,121.9	7,503.9	569
Physicians	1,838.1	10,867.5	491
Other Professionals	899.4	6,619.7	636
Drugs	1,247.1	10,845.2	770
Capital	536.9	1,850.0	245
Public Health	468.5	3,798.6	711
Other	752.2	8,025.1	967
Total	12,260.9	75,224.7	514

\$ per Capita

Category	1975	1996 ^{ix}	% Change
Hospitals	232.53	862.93	271
Other Institutions	48.34	251.23	420
Physicians	79.20	358.52	353
Other Professionals	38.75	294.54	660
Drugs	53.73	340.58	534
Capital	23.13	74.11	220
Public Health	20.19	126.77*	528
Other	32.41	267.83*	726
Total	528.28	2,512.72*	376

*Data for Public Health and Other is merged at 330.81 in [Canadian Institute of Health Information, 1999 #133], estimates presented are those from [Health Canada, 1997 #21]. As a result these estimates may not sum to the total presented.

Percentage Distribution

Category	1975	1996	% Change
Hospitals	44.0	34.2	-22
Other Institutions	9.1	10.0	10
Physicians	15.0	14.4	-4
Other Professionals	7.3	8.8	21
Drugs	10.2	14.4	41
Capital	4.4	2.5	-43
Public Health	3.8	5.0	32
Other	6.1	10.7	75
Total	100.0	100.0	0

Total Health Expenditures by Category of Expenditure 1975/1996^x
Total in 1986 \$1 000 000.00

Category	1975	1996	% Change
Hospitals	12,821.3	19,431.2	52
Other Institutions	2,667.2	5,550.6	108
Physicians	4,366.2	8,311.6	90
Other Professionals	2,142.0	4,608.1	115
Drugs	2,969.1	7,733.6	160
Capital	1,276.4	1,375.0	8
Public Health	1,112.9	2,908.1	161
Other	1,789.4	5,835.6	226
Total	29,144.6	55,753.9	91

1986 \$ per Capita

Category	1975	1996	% Change
Hospitals	552.43	648.49	17
Other Institutions	114.92	185.25	61
Physicians	188.12	277.39	47
Other Professionals	92.29	153.79	67
Drugs	127.93	258.10	102
Capital	55.00	45.89	-17
Public Health	47.95	97.06	102
Other	77.10	194.75	153
Total	1,255.73	1,860.72	48

Percentage Distribution based upon 1986 \$

Category	1975	1996	% Change
Hospitals	44.0	34.9	-21
Other Institutions	9.2	10.0	9
Physicians	15.0	14.9	-1
Other Professionals	7.3	8.3	14
Drugs	10.2	13.9	36
Capital	4.4	2.5	-43
Public Health	3.8	5.2	37
Other	6.1	10.5	72
Total	100.0	100.0	0

Public Sector Health Expenditures by Category of Expenditure^{xi}**Total in \$1 000 000.00**

Category	1975	1996	% Change
Hospitals	5,080.2	22,560.7	344
Other Institutions	793.9	5,106.7	543
Physicians	1,811.3	10,763.5	494
Other Professionals	134.8	944.2	600
Drugs	324.2	3,818.0	1078
Capital	377.2	1,339.9	255
Public Health	468.5	3,798.6	711
Other	371.5	4,219.2	1036
Total	9,361.7	52,550.8	461

\$ per Capita

Category	1975	1996	% Change
Hospitals	218.89	752.93	244
Other Institutions	34.21	170.43	398
Physicians	78.04	359.22	360
Other Professionals	5.81	31.51	442
Drugs	13.97	127.42	812
Capital	16.25	44.72	175
Public Health	20.19	126.77	528
Other	16.01	140.81	780
Total	403.36	1,753.82	335

Percentage Distribution

Category	1975	1996	% Change
Hospitals	54.3	42.9	-21
Other Institutions	8.5	9.7	14
Physicians	19.3	20.5	6
Other Professionals	1.4	1.8	29
Drugs	3.5	7.3	109
Capital	4.0	2.5	-38
Public Health	5.0	7.2	44
Other	4.0	8.0	100
Total	100.0	100.0	0

Private Health Expenditures by Category of Expenditure^{xii}**Total in \$1 000 000.00**

Category	1975	1996	% Change
Hospitals	316.6	3,154.0	896
Other Institutions	327.9	2,397.1	631
Physicians	26.8	104.0	288
Other Professionals	764.7	5,675.6	642
Drugs	922.9	7,027.2	661
Capital	159.6	510.1	220
Public Health	0.0	0.0	0.0
Other	380.6	3,805.9	900
Total	2,899.2	22,673.9	682

\$ per Capita

Category	1975	1996	% Change
Hospitals	13.64	105.26	672
Other Institutions	14.13	80.00	466
Physicians	1.15	3.47	202
Other Professionals	32.95	189.42	475
Drugs	39.77	234.52	490
Capital	6.88	17.02	147
Public Health	0.00	0.00	0.00
Other	16.40	127.02	675
Total	124.92	756.71	506

Percentage Distribution

Category	1975	1996	% Change
Hospitals	10.9	13.9	28
Other Institutions	11.3	10.6	-6
Physicians	0.9	0.5	-44
Other Professionals	26.4	25.0	-5
Drugs	31.8	31.0	-3
Capital	5.5	2.2	-60
Public Health	0.0	0.0	0.0
Other	13.1	16.8	28
Total	100.0	100.0	0

Public Sector and Private Sector Shares of Health Expenditures by Category of Expenditure 1975 and 1996^{xiii}

Category	1975	1996
Hospitals	94.1 : 5.9	87.7 : 12.3
Other Institutions	70.8 : 29.2	68.1 : 31.9
Physicians	98.5 : 1.5	99.0 : 1.0
Other Professionals	15.0 : 85.0	14.3 : 85.7
Drugs	26.0 : 74.0	35.2 : 64.8
Capital	70.3 : 29.7	72.4 : 27.6
Public Health	100.0 : 0.0	100.0 : 0.0
Other	49.4 : 50.6	52.6 : 47.4
Total	76.4 : 23.6	69.9 : 30.1

Health Care Workers

Number of Health Care Workers 1971 and 1991 & 1996

Health Diagnosing and Treating Occupations

Profession ^{xiv}	1971 ^{xv}	1996 ^{xvi}	% Change 1971-1991
Health Diagnosing and Treating Occupations	39,110	89,525	129
Physicians & Surgeons	28,580	59,340	108
Dentists	6,425	12,355	92
Veterinarians	1,715	3,560	108
Osteopaths & Chiropractors	1,075	3,630	238
Other	1,310	1,335	2

The number of physicians in Canada nearly doubled between the 1970s and the 1990s. This increase is somewhat mitigated by the fact that the population of Canada increased by almost 50% during the same period, making the actual per capita access to physicians a less dramatic increase. Additionally, there is ongoing concern about the location of physicians relative to the population they are to serve. In 1993, 99% of people within major urban centers lived within 5km of the nearest physicians, while outside urban areas only 56% of the population was so situated.^{xvii} This disparity becomes even more pronounced when one examines the distribution of the population by latitude. In the range of 65-69° North, the patient to physician ratio was 3 974:1 and 64% of this population was living more than 100km from the nearest physician.^{xviii} In contrast, below 45° North the ratio was only 476:1 and 91% were within 5km of the nearest physician.^{xix}

Nursing Therapy and Related Assisting Occupations

Profession^{xx}	1971^{xxi}	1996^{xxii}	% Change
Nursing, Therapy & Related Assisting Occupations	233,140	439,765	89
Supervisors	14,550	14,135	-3
Nurses, Graduate	94,795	232,660	145
Nurses-in-training	9,835	3,405	-65
Nursing Assistants	27,285	39,895	46
Nursing Aids & Orderlies	70,940	125,475	77
Physiotherapists, Occupational & Other Therapists	6,245	27,385	339
Other	9,480	53,110	460

Other Occupations in Medicine and Health

Profession^{xxiii}	1971^{xxiv}	1996^{xxv}	% Change
Other Occupations	54,305	106,930	97
Pharmacists	9,410	20,625	119
Dietitians & Nutritionists	1,790	6,760	278
Optometrists	1,525	3,395	123
Dispensing Opticians	1,395	4,755	241
Radiological Technologists	6,445	15,345	138
Medical Laboratory Technologists & Technicians	33,745	56,050	66

Medical Specialties Recognized by the Royal College of Physicians and Surgeons of Canada, 1971 and 1996^{xxvi}

Total Number of Recognized Specialties 1971 and 1996

	1971	1996	% Change
Specialties	31	32	3
Certificates of Special Competence	0	14	N/a
Accreditations without Certification	0	11	N/a
Total	31	57	84

Division of Medicine/Clinical Specialties

1971	1996
Anesthesia	Anesthesia
Cardiology	*
Clinical Immunology ²	
Dermatology	Community Medicine
Diagnostic Radiology	Dermatology
	Diagnostic Radiology
Gastroenterology	Emergency Medicine
Hematology	*
Internal Medicine	*
	Internal Medicine
Neurology	Medical Genetics
	Neurology
	Nuclear Medicine
	Occupational Medicine
Pediatrics	Pediatrics
Physical Medicine and Rehabilitation	Physical Medicine and Rehabilitation
Psychiatry	Psychiatry
Public Health	Becomes Community Medicine 1979
	Radiation Oncology
Respirology	*
Rheumatology	*
Therapeutic Radiology	Becomes Radiation Oncology 1976

*These specialties have become Certificates of Special Competence (subspecialties).

Division of Medicine—Laboratory Specialties

1971	1996
Anatomical Pathology	Anatomical Pathology
General Pathology	General Pathology
Hematological Pathology	Hematological Pathology
Medical Biochemistry	Medical Biochemistry
Medical Microbiology	Medical Microbiology
Neuropathology	Neuropathology

Division of Surgery

1971	1996
Cardiovascular and Thoracic Surgery	Cardiac Surgery
General Surgery	Cardiothoracic Surgery
Neurosurgery	Cardiovascular and Thoracic Surgery
Obstetrics and Gynecology	General Surgery
Ophthalmology	Neurosurgery
Orthopedic Surgery	Obstetrics and Gynecology
Otolaryngology	Ophthalmology
Plastic Surgery	Orthopedic Surgery
Urology	Otolaryngology
	Plastic Surgery
	Thoracic Surgery
	Urology

Certificates of Special Competence and Year Approved

Certificate	Year Approved by College
Cardiology	1979
Clinical Immunology and Allergy	1979
Endocrinology and Metabolism	1983
Gastroenterology	1979
Geriatric Medicine	1977
Hematology	1979
Infectious Diseases	1980
Medical Oncology	1982
Nephrology	1977
Pediatric General Surgery	1975
Respirology	1979
Rheumatology	1979
Thoracic Surgery	1976
Vascular Surgery	1980

Programs Accredited without Certification and Year Approved

Accreditation	Year Approved by College
Clinical Pharmacology	1986
Colorectal Surgery	1990
Critical Care Medicine	1986
General Surgical Oncology	1989
Gynecologic Oncology	1987
Gynecologic Reproductive Endocrinology and Infertility	1989
Maternal-Fetal Medicine	1986
Neonatal-Perinatal Medicine	1986
Neuroradiology	1990
Pediatric Radiology	1994
Clinical Investigator Program	1995

In 1972 the College discontinued the fellowship exams in various specialties.^{xxvii} In 1970 the College declared a moratorium on further specializations.^{xxviii} The College has never accepted the designation of sub-specialization as is common in other countries, such as the USA. This role is currently fulfilled by the Certificates of Special Competence.^{xxix}

Full Time Enrollment in Medical Schools, 1971/72 and 1991

	1971/72 ^{xxx}	1991 ^{xxxi}	% Change
Total Full Time	5,592	8,215	47
Males	4,430	4,860	10
Females	1,162	3,350	188

While the number of Canadian medical students has increased in proportion to the increase in the number of physicians in general, it should be noted that the majority of growth has been in increased numbers of female students, up from just over 20% of medical students to just over 40% in the 20 years from 1971 to 1991.^{xxxii} It is interesting to note that while the number of medical students has been growing, the number of graduates has remained relatively constant, at least in recent years with 497 graduates from Canadian medical schools in 1987, and 491 graduates in 1991.^{xxxiii}

Changes in Care*Public Home Care Expenditures by Province 1975/76 and 1995/96^{xxxiv}***Expenditures in \$1 000.00s**

Region	1975/76	1995/96	% Change
CANADA	62,257.4	1,815,283.4	2816
Nfld.	292.0	42,320.3	14393
P.E.I.	415.2	3,593.3	765
N.S.	568.5	53,755.1	9356
N.B.	753.4	66,910.1	8781
Que.	15,413.5	256,402.5	1563
Ont.	23,209.0	883,740.0	3708
Man.	6,440.1	91,596.3	1322
Sask.	2,621.0	61,945.6	2263
Alta.	1,911.6	131,967.5	6804
B.C.	10,495.1	217,959.8	1977
N.W.T.	108.3	3,827.6	3434
Yukon	29.6	1,265.2	4174

Public Home Care Expenditures by Province 1975/76 and 1995/96^{xxxv}**Expenditures as a % of total public sector health expenditures**

Region	1975/76	1995/96	% Change
CANADA	0.65	3.45	431
Nfld.	0.14	4.17	2879
P.E.I.	0.92	1.85	101
N.S.	0.18	3.53	1861
N.B.	0.33	5.35	1521
Que.	0.55	2.10	282
Ont.	0.67	4.48	569
Man.	1.45	4.29	196
Sask.	0.75	3.55	373
Alta.	0.23	2.64	1048
B.C.	0.99	2.95	198
N.W.T.	0.40	1.19	198
Yukon	0.22	1.38	527

As the money spent on hospitals has decreased the money spent on home care has increased. Interestingly, the greatest increases in home care expenditures are found in provinces which also have among the highest numbers of hospital beds per 1000 population; such as Saskatchewan, Manitoba, New Brunswick and Nova Scotia, despite their recent closures.^{xxxvi}

Amount Paid by Category of Practitioner^{xxxvii}

	1982-83	1991-92	% Change
Total	4073501788	7234977329	78
General Practice	1412204674	3465635721	145
Internal medicine	273026567	976046198	257
Neurology	27754654	79909207	188
Psychiatry	131418709	374761744	185
Pediatrics	97493935	249613692	156
Dermatology	38202645	111941212	193
Physical Medicine	7452443	32048531	330
Anaesthesia	112131944	322246560	187
General surgery	184809996	383280755	107
Thoracic and cardiovascular surgery	16840857	41271408	145
Urology	50156048	124290993	148
Orthopaedic surgery	79614271	195033867	145
Plastic surgery	27496441	72310164	163
Neurosurgery	15327880	37123093	142
Ophthalmology	98713569	275233709	179
Otolaryngology	60602341	150154977	148
Obstetrics and gynaecology	140737867	344075501	144
Diagnostic radiology	218066485	0	-100
Laboratory specialties	240089500	0	-100
Unclassified	841360962	0	-100

Amount Paid by Category of Service^{xxxviii}

	1982-83	1991-92	% Change
Total	4073501788	7234977329	78
Consultations	330371778	809294309	145
Major assessments	303910592	766385837	152
Other assessments	903873365	2370515888	162
Hospital care days	150032873	284711469	90
Special calls	120700272	256429150	112
Psychotherapy, counselling	195984472	558754604	185
Major surgery	259356588	604443180	133
Minor surgery	46574780	92819538	99
Obstetrical services	51177424	130657942	155
Surgical assistance	31321502	69284027	121
Anaesthesia	130311920	310352649	138
Diagnostic, therapeutic services	212377166	668205977	215
Miscellaneous services	2215536	31018115	1300
Special services	15826494	31843024	101
Radiology services	214547741	46482094	-78
Laboratory services	339671823	203779529	-40
Not specified	765247462	0	-100

*Health Care Beds 1971 and 1991/92***Total Hospital Beds per 1000 population**

Region	1971^{xxxix}	1991/92^{xi}	% Change
CANADA	9.9	15.0	52
Nfld.	7.8	12.8	64
P.E.I.	10.0	22.3	123
N.S.	9.9	16.2	64
N.B.	9.6	17.8	85
Que.	10.1	13.7	36
Ont.	9.1	14.9	64
Man.	10.3	17.5	70
Sask.	11.1	19.6	77
Alta.	12.0	16.2	35
B.C.	9.3	14.3	54
N.W.T.	12.3*	10.6	76
Yukon	-	11.1	

*combined total for N.W.T. and Yukon

While the number of hospital beds has increased from 1971 to 1996 it should be noted that this macro-level growth, masks a current pattern of shrinkage. From 1987 to 1994/95 the number of public hospitals in Canada decreased from 1 224 to 978, a loss of 20% with an attendant reduction in available beds from 178 137 to 156 547, a loss of 12%.^{xli} The majority of these cuts happened in general hospitals, with long-term care units (17% loss), extended care facilities (26% loss) and nursing stations and outpost hospitals (100% loss) though the latter statistic reflects a change in designation of these facilities as they no longer provided inpatient care in 1994/95.^{xlii} In terms of location the majority of beds were lost in the Maritimes, and the prairie provinces.^{xliii}

*Number of Beds Available by Type and Nature of Institution^{xliv}***Number of Beds by Type**

	1979-80	1993-94	% Change
Total	376518	395003	5
Short-term	112974	104722	-7
Rehabilitation	4197	5182	23
Extended care	75374	75730	0
Other long-term	52653	92301	75
Minimal Care	46234	42275	-9
Self-sufficient	43941	33902	-23

Number of Beds by Nature of Institution

	1979-80	1993-94	% Change
Total institutions	52653	92301	75
Hospitals	7184	9376	31
Residential care facilities	45469	82925	82

*Ambulatory Visits to Medical Services^{xlv}***Total Visits**

	1976	1993-94	% Change
Outpatient visits to general and special clinics	11368618	17792277	57
Visits to outpatient day/night care programs	694701	2904217	318
Other outpatient visits to emergency units	9529967	15985866	68
Visits to surgical day care programs	691800	1824197	164

Visits per 100000 Population

	1976	1993-94	% Change
Outpatient visits to general and special clinics	494	613	24
Visits to outpatient day/night care programs	30	100	233
Other outpatient visits to emergency units	414	550	33
Visits to surgical day care programs	30	63	110

*Percentage Occupancy of Hospital Beds^{xlvi}***Beds of all Types**

	1979-80	1993-94	% Change
Hospitals	81	75	-7
Residential care facilities	93	94	1

*Includes only the facilities that were in operation for the entire fiscal year and reported beds and patient days in the Annual Hospital Survey or the Survey of Residential Care Facilities. The rate is calculated by multiplying patient days by 100 and dividing by approved beds times the number of days in the year. The rate is calculated by multiplying patient days by 100 and dividing by approved beds times the number of days in the year.

Hospital Beds by Type

	1979-80	1993-94	% Change
Total beds	81	75	-7
Short-term	77	69	-10
Rehabilitation	81	79	-2
Extended care	93	89	-4
Other long-term	90	87	-3
Minimal care	0	0	N/A
Self-sufficient	0	0	N/A

Residential Care Facility Beds by Type

	1979-80	1993-94	% Change
Total beds	93	94	1
Short-term	0	0	N/A
Rehabilitation	0	0	N/A
Extended care	97	96	-1
Other long-term	96	98	2
Minimal care	93	91	-2
Self-sufficient	88	85	-3

*Patient Days by Length and Location of Stay^{xlvii}***Total Patient Days***

	1979-80	1993-94	% Change
Total patient days	120798600	124117166	3
Short term patient days	31648999	26191961	-17
Long term patient days	89144635	97925205	10

*A patient-day is the period of service to an inpatient between the census-taking hours on two successive days. The day of admission is counted as a patient-day but the day of separation is not. All residential care facilities are classified as long term facilities.

Patient Days per 100000 population

	1979-80	1993-94	% Change
Total patient days	5067	4273	-16
Short term patient days	1328	902	-32
Long term patient days	3740	3371	-10

Patient-days by age and sex have been estimated by applying the distribution of days' stay by age and sex to the total number of patient-days reported by hospitals for each province and Canada. Days' stay are defined as the number of accumulated patient-days since admission (even if admission was in the previous reporting year) of patients that were discharged (or died in hospital) during the reporting year. Patient-days are days stay of inpatients accumulated during the reporting year only.

Total Patient Days by Sex

	1979-80	1993-94	% Change
Total	49310312	44270885	-10
Male	21431309	18845122	-12
Female	27879003	25425763	-9

Total Patient Days by Age Group

	1979-80	1993-94	% Change
Total	49310312	44270885	-10
Less than 15 years	3262979	1853087	-43
15 - 24 years	3842089	1873083	-51
25 - 44 years	7809671	6415717	-51
45 - 64 years	10851549	8040500	-10
65 years and over	23544024	26088498	-43

*Average Stay in Hospital by Sex, Region, Age and Reason^{xlviii}***Average Stay in Hospital by Sex**

	1970-71	1995-96	% Change
Total	12	11	-8
Male	12	11	-8
Female	11	11	0

Average Stay in Hospital by Region

	1970-71	1995-96	% Change
Canada	12	11	-8
Newfoundland	10	8	-20
Prince Edward Island	10	8	-20
Nova Scotia	11	8	-27
New Brunswick	11	8	-27
Quebec	13	13	0
Ontario	12	10	-17
Manitoba	11	10	-9
Saskatchewan	10	8	-20
Alberta	10	6	-40
British Columbia	10	13	30
Yukon	n/a	4	n/a
Northwest Territories	n/a	5	n/a

Average Stay in Hospital by Age

	1970-71	1995-96	% Change
Total	12	11	-8
Less than 15 years	7	5	-29
15 - 24 years	7	4	-43
25 - 44 years	8	6	-25
45 - 64 years	14	10	-29
65 years and over	26	19	-27

It should be noted that the averages taken over these age quintiles mask some finer-grained differences. While the average stay for persons aged 45-64 years is 10 days, it is only 8 days for those aged 45-54 and 11 for those from 55-64. Likewise the average of 19 days for those 65 years and over breaks down into an average stay of 14 days until the age of 74 when it climbs to an average stay of 23 days.

Gender also has an influence with most younger men (<45 years old) staying in the hospital longer than women of the same age, while older women (>55 years) tend to stay longer in hospital than men of their age cohort.

Average Stay in Hospital by Reason

	1970-71	1993-94	% Change
Total	12	11	-8
Infectious and parasitic diseases	9	9	0
Neoplasms	18	12	-33
Endocrine, nutritional and metabolic diseases and immunity disorders	18	12	-33
Diseases of blood and blood-forming organs	11	8	-27
Mental disorders	17	33	94
Diseases of the nervous system and sense organs	18	24	33
Diseases of the circulatory system	23	15	-35
Diseases of the respiratory system	7	7	0
Diseases of the digestive system	10	6	-40
Diseases of the genitourinary system	8	5	-38
Complications of pregnancy, childbirth and the puerperium	6	3	-50
Diseases of the skin and subcutaneous tissue	11	9	-18
Diseases of the musculoskeletal system and connective tissue	16	10	-38
Congenital anomalies	13	8	-38
Certain conditions originating in the perinatal period	0	11	N/A
Symptoms, signs and ill-defined conditions	7	8	14
Injury and poisoning	11	10	-9
Supplementary classifications of factors influencing health status and contact with health services	20	28	40

Pharmaceuticals

Per Capita Drug Expenditures by High and Low Income Families; 1964-69, 1972-78; 1984-90^{xlix}

	1964-69	1972-78	1984-90
Low Income Group salaries 1986\$	\$12 700	\$13 200	\$14 400
Mean total drug expenditure/family	\$39.00	\$37.70	\$95.70
As % of total family expenses	1.4	0.81	0.78
Per capita drug expenditures	\$24.60	\$23.20	\$61.20
% of families reporting health insurance	15.4	11.7	16.5
High Income Group salaries 1986\$	\$35 300	\$54 400	\$49 400
Mean total drug expenditure/family	\$70.20	\$73.30	\$149.30
As % of total family expenses	0.52	0.24	0.23
Per capita drug expenditures	\$17.70	\$19.10	\$43.80
% of families reporting health insurance	39.7	46.2	57.1

*Number of Pharmaceuticals available in Canada***Comparison of Pharmacopoeia Size for 1971 and 1996**

	1971¹	1996ⁱⁱ	% Change
White Pages	755	1677	122
Monographs of Pharmaceuticals			
Pink Pages	68	16	-76
Prescriber's Guide and Therapeutic Index			
Green Pages	32	69	116
Nonproprietary Names Index			
Yellow Pages	36	32	-11
Manufacturer's Index			
Lilac Pages*	-	80	N/A
Clinical Info			
Blue Pages	-	160	N/A
Patient Information			
Product Recognition Section	-	40	N/A

*Included in Pink Pages in 1971 Compendium

Alternative Medicine

Naturopathic Practitioners in Canada 1971, 1996 and 1998^{lii}

1971	1996	1998	% Change 1971-1996
100	445	536	345

The above numbers are estimates, based upon graduations and registrations at the Canadian College of Naturopathic Medicine and estimates of the number of graduates from the 4 American colleges practicing in Canada.

The *National Population Health Survey of 1994-95* reported that 5% of Canadians age 12 and older reported using some form of alternative health care, while the *National Population Health Survey of 1996-97* reported that that number had risen to 7%.

49% of those indicating some alternative health care use in 1996 reported visiting a massage therapist while 22% visited a homeopath or naturopath such as those practitioners tabulated above.

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Appendix D: Human Biology

GENETIC ENDOWMENT	D2
BIRTH OUTCOMES	D2
STILLBIRTHS BY REGION	D3
INCIDENCE OF CONGENITAL ANOMALIES	D4
DEATHS DUE TO CONGENITAL ANOMALIES	D5
GENETIC STUDIES OF NOTE	D6
<i>The Human Genome Project</i>	D6
<i>The Heritage Family Study</i>	D6
<i>Discoveries of Genetic Markers in Canadian Laboratories (1994/95)</i>	D6
RESEARCH	D7
EXPENDITURES OF THE MEDICAL RESEARCH COUNCIL, 1971 AND 1995	D7
<i>In Current 1000s of \$</i>	D7
INTERNATIONAL REVIEW OF THE MEDICAL RESEARCH COUNCIL, 1996	D8
<i>Summary of Recommendations</i>	D8
EXPLOSION OF INFORMATION IN THE HEALTH SCIENCES	D9
I. <i>Genetics</i>	D9
II. <i>Neuroscience</i>	D9
CONFERENCES ON GENETICS, ETHICAL CONCERNS	D10
REFERENCES	D11

Appendix D: Human Biology

The HUMAN BIOLOGY element includes all those aspects of health, both physical and mental, which are developed within the human body as a consequence of the basic biology of man and the organic make-up of the individual.ⁱ

A New Perspective on the Health of Canadians

Genetic Endowment

Birth Outcomesⁱⁱ

Year	Stillbirths	Deaths under 1 week	Live Births	Infant Mortality Rate [*]	Perinatal Mortality Rate ^{**}	Neonatal Mortality Rate ^{**}
1974	2618	3069	345645	15	16	9
1975	2440	2893	358285	14	15	8
1976	1892	2758	359307	13	13	8
1977	2279	2590	362208	12	13	7
1978	2122	2436	358410	12	13	7
1979	2101	2244	365475	11	12	6
1980	1952	2092	369709	10	11	6
1981	1972	2037	370336	10	11	6
1982	1923	1882	373082	9	10	5
1983	1828	1740	373689	9	10	5
1984	1678	1629	377031	8	9	4
1985	1629	1641	375027	8	9	4
1986	1573	1577	372431	8	8	4
1987	1584	1403	369441	7	8	4
1988	1435	1440	375743	7	8	4
1989	1593	1509	391925	7	8	4
1990	1559	1530	404669	7	8	4
1991	1396	1361	402528	6	7	3
1992	1512	1342	398642	6	7	3
1993	1419	1332	388394	6	7	3
1994	1371	1347	385112	6	7	4
1995	.	.	.	6.1	6.9	3.4
1996	.	.	.	5.6	6.7	3.3

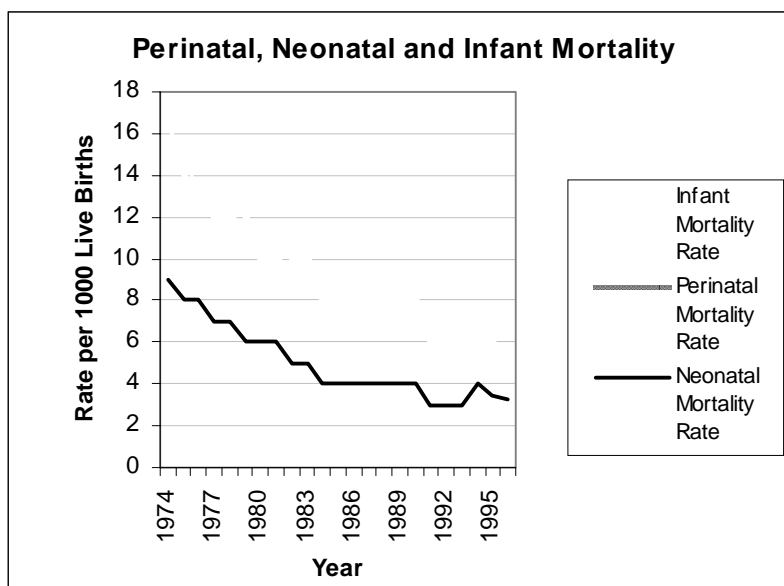
^{*} Number of deaths of children less than 1 year of age per 1000 live births

^{**} Calculated by summing stillbirths of 28 weeks and over gestation and deaths under one week and dividing by the sum of total still- births of 28 weeks and over gestation plus total live- births (in thousands)

^{***} Calculated as the number of deaths of children less than one week of age per 1,000 livebirths

*Stillbirths by Region*ⁱⁱⁱ

Region	1974	1994
Canada	2617	1371
Newfoundland	0	22
Prince Edward Island	20	9
Nova Scotia	122	43
New Brunswick	125	37
Quebec	628	256
Ontario	1014	558
Manitoba	128	62
Saskatchewan	132	63
Alberta	173	156
British Columbia	252	151
Yukon	7	1
Northwest Territories	16	13



Incidence of Congenital Anomalies^{iv}

Year	Congenital anomalies (ICD-9 740-759)
1974	358
1975	311
1976	241
1977	303
1978	276
1979	252
1980	243
1981	214
1982	227
1983	189
1984	183
1985	174
1986	158
1987	165
1988	150
1989	181
1990	169
1991	126
1992	133
1993	130
1994	134

Deaths due to Congenital Anomalies^v

Year	Infant Mortality Rate [*]	Perinatal Mortality Rate ^{**}	Neonatal Mortality Rate ^{**}
1974	3	3	2
1975	3	2	2
1976	3	2	2
1977	3	3	2
1978	3	3	2
1979	3	2	2
1980	3	2	2
1981	3	2	2
1982	3	2	2
1983	3	2	2
1984	2	2	1
1985	3	2	2
1986	2	2	1
1987	2	2	1
1988	2	2	1
1989	2	2	1
1990	2	2	1
1991	2	1	1
1992	2	1	1
1993	2	1	1
1994	2	1	1

*Number of deaths of children less than 1 year of age per 1000 live births

** Calculated by summing stillbirths of 28 weeks and over gestation and deaths under one week and dividing by the sum of total still- births of 28 weeks and over gestation plus total live- births (in thousands)

*** Calculated as the number of deaths of children less than one week of age per 1,000 livebirths

Genetic Studies of Note

The Human Genome Project^{vi}

- Started in 1991, 15 year project to map all 70 000 human genes
- April 1998 marked the half-way point
- Initial composition of the Human Genome Organization (HUGO) the international advisory body overseeing the project, consisted of 210 scientists from around the world, including 11 Canadians

The Heritage Family Study^{vii}

- Study based in five laboratories in the USA and Canada to assess the contribution of genetic factors to human fitness. Begun in February 1993.
- DNA sequencing correlated with various medical indicators, over the course of a 20 week longitudinal study involving measurement of response to controlled exercise regimen, and diet in 130 families.
- No significant data releases as yet.

Discoveries of Genetic Markers in Canadian Laboratories (1994/95)^{viii}

- Genetic marker for Alzheimer's disease discovered at McGill University
- 2 new genes implicated in Juvenile Diabetes discovered at University of Calgary.
- 2 genes associated with Spinal Muscular Atrophy discovered at University of Ottawa
- Genetic link to Schizophrenia established at University of Toronto
- Nobel Prize in Chemistry (1993) awarded to Dr. Michael Smith of the University of British Columbia for development of *site-directed mutagenesis*, basic research discovery that revolutionizes genetic research.

Research*Expenditures of the Medical Research Council, 1971 and 1995***In Current 1000s of \$**

	1971^{ix}	1995^x
Grants and Scholarships	33 962	257 634
Operations		6 090
Administration	498 [†]	2 034
Total	34 460	267 758

[†]Includes operating costs

Expenditures of the Medical Research Council, 1971 and 1995**In Constant 1986 1000s of \$ (calculations are author's own and only an approximation)**

	1971^{xi}	1995^{xii}
Grants and Scholarships	81 509	190 649
Operations		4 506
Administration	1 195 [†]	1 505
Total	82 704	196 660

[†]Includes operating costs

[‡]Sources are for the initial data, before conversion

International Review of the Medical Research Council, 1996^{xiii}

Summary of Recommendations:

1. Change the name of the council to the *Health Sciences Research Council of Canada*
2. Pursue current strategic plan, but reformulate it to take into account the unique characteristics of each funding source.
3. Begin formulation of next 5-year strategic plan, emphasis on reduction in base funding by federal sources, sustainability of collateral sources, joint planning with NSERC and SSHRC , new directions for health sciences research, roles of MRC and Health Canada in “policy relevant” research.
4. Lobby for increased training and career development with Minister of Health, Minister of Human Resources, and Development Canada to help stem the loss of talented researchers to foreign markets.
5. Increased evaluation of expenditures from core budget, strike balance between established and new researchers as funding priorities, develop outcomes database for funded research.
6. Devise large-scale organizational strategies for research.
7. Increased joint ventures through association with Canadian Medical Discoveries Fund, maintain Networks of Centres of Excellence Program.
8. Expand organization in administration resources available for strategic planning, while identifying possible shared resources with other granting agencies.
9. Keep key decision makers briefed on the state of the art in Canadian research.
10. Continue to lobby for the importance of the council.

*Explosion of Information in the Health Sciences***I. Genetics****Number of Periodicals in the Field of Genetics**

1971^{xiv}	1996^{xv}	% Change
61	257	+321%

II. Neuroscience**Society Membership, Annual Conference Location, Attendance and Content for the Society for Neuroscience, 1971 and 1996^{xvi}****Membership in the Society for Neuroscience**

1971	1996	% Change
1 700	26 721	+1 472%

Details of the Annual Convention

	1971	1996	% Change
Dates	October 27-30	November 16-21	
Location	Washington, DC	Washington, DC	
Attendance	1 396	25 062	+1 695%
Papers Presented	269	12 571	+4 573%

Periodicals in the Neurosciences including Neurology and Neuropsychology

1971^{xvii}	1996^{xviii}	% Change
45	473	+951%

Conferences on Genetics, Ethical Concerns

Dates:	May 18, 1973	1996
Locations:	York, University Downsview, ON	Montreal
Topics:	<ul style="list-style-type: none"> • Ethics of Cloning^{xix} • Nature of Personhood^{xx} • Legal Implications of In Vitro Fertilization, Cloning, Genetic Testing^{xxi} • Discussion of Advances in detection and prevention of Genetic Disease^{xxii} • Discussion of Genetic Diversity^{xxiii} 	<ul style="list-style-type: none"> • DNA sampling and banking^{xxiv} • Issues concerning storage and disposal of materials^{xxv} • Ethical concerns about the Human Genome project^{xxvi} • Question of Informed consent^{xxvii} • Potential for misuse and commercialization of genetic information and samples^{xxviii}

In May, 1973, a conference held at York University discusses the technological advances in the field of human genetics^{xxix} and possible ethical concerns arising from them. Concerns include the nature of personhood under Canadian law,^{xxx} cloning, and in-vitro fertilization,^{xxxi} as well as other techniques for the detection and eventual prevention of genetic disease.^{xxxii}

In the 1970s, the public is also expressing interest in ethical issues raised by advances in medical and biological technology. A Gallup poll taken in 1971 indicates that the population is split on the issue of abortion on demand (44 percent in favour, 44 percent opposed)^{xxxiii}; during this era, however, they are moving toward a position of favoring informed choice. By 1973, 61 percent of Canadians respond that the decision to have an abortion should be made solely by a woman and her physician.^{xxxiv} A survey indicates that 70 percent of Canadians have heard of voluntary male sterilization and that 61 percent are in favour of it as a means of contraception.^{xxxv} Further, 61 percent of Canadians believe that detailed and accurate information about birth control should be provided for teenagers.^{xxxvi} A national magazine story highlights the work of a young and up-and-coming scientist, Dr. David Suzuki, and his work on the genetic engineering of fruit flies. The article raises public interest in the question of when and how such techniques might be employed on humans.^{xxxvii}

Today, public interest in bio-ethical issues remains strong. In 1996, a Gallup poll shows that the majority of Canadians are opposed to the selling of human eggs (66 percent opposed) and sperm (65 percent opposed) as well as paid surrogate motherhood (52 percent opposed).^{xxxviii} A 1997 Gallup poll shows that while 83 percent of Canadians are aware of recent cloning performed on sheep and 79 percent believed it likely that human cloning will be possible within 50 years, 82 percent of Canadians disapprove of this.^{xxxix} In May, 1973, a conference held at York University discusses the technological advances in the field of human genetics^{xl} and possible ethical concerns arising from them. Concerns include the nature of personhood under Canadian law,^{xli} cloning, and in-vitro fertilization,^{xlii} as well as other techniques for the detection and eventual prevention of genetic disease.^{xliii} In 1972, Alberta's Sexual Sterilization act, established in 1928 to restrict the reproduction of "feeble-minded persons" for eugenic reasons, is struck down on the grounds of moral repugnancy.^{xliv}

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Appendix E: Physical Environment

GOVERNMENT AND NON-GOVERNMENT ENVIRONMENTAL ORGANIZATIONS	E3
DOE BUDGET AS A % OF TOTAL FEDERAL BUDGET, 1971/71 TO 1995/96	E3
THE NATURAL ENVIRONMENT	E4
AIR	E4
<i>Air Pollution</i>	E4
<i>The Five Common Air Pollutants, % of maximum acceptable level</i>	E4
<i>Asthma</i>	E5
<i>Global Warming</i>	E7
<i>Carbon Dioxide Emissions</i>	E8
<i>Ozone Depleting Substances</i>	E9
<i>Health Implications</i>	E10
EARTH	E12
<i>Forest Management</i>	E12
<i>Annual Timber Harvest, 1971-1992</i>	E13
<i>Biodiversity: Population Trends of Forest Birds</i>	E14
WATER	E15
<i>Water Use</i>	E15
<i>Acid Rain</i>	E17
<i>Great Lakes</i>	E19
<i>Fisheries</i>	E21
THE BUILT ENVIRONMENT	E23
URBANIZATION	E23
<i>Urban Land Use, 1971-1996</i>	E23
<i>Shift to Urban Living, Canada, 1961 & 1996</i>	E24
ENERGY	E27
<i>Canadian Consumption of Energy</i>	E27
<i>Total Canadian Consumption of Energy, 1971-1995(exajoules)</i>	E28
<i>Canadian Consumption of Fossil Fuels, 1971-1996</i>	E29
TRANSPORTATION	E30
<i>Preliminary Indicator: How Canadians travel, Passenger-kilometres (billions), 1972-1995</i>	E30
<i>Roads in Canada</i>	E31
<i>Urban Auto vs. Transit Use, 1972-1995</i>	E31
<i>Fuel Efficiency</i>	E32
<i>New Motor Vehicle Sales, 1971 & 1996</i>	E34
CONSUMPTION	E35
CANADIAN CONSUMPTION PRESSURE: 2.35 UNITS	E35
<i>Canadian Consumption as Compared to World Average, 1995</i>	E35
<i>Equipment in Canadian Households, 1982 and 1996</i>	E36
REFERENCES	E37

Appendix E: Physical Environment

The ENVIRONMENT category includes all those matters related to health which are external to the human body and over which the individual has little or no control. Individuals cannot, by themselves, ensure that food, drugs, cosmetics, devices, water supply, etc. are safe and uncontaminated; that the health hazards of air, water and noise pollution are controlled; that effective garbage and sewage disposal is carried out; and that the social environment, including rapid changes in it, do not have harmful effects on health.

—A New Perspective on the Health of Canadians

Humans have always used the environment as a convenient site for the disposal of wastes. Human activity has led to the production and release of a wide variety of chemical, radioactive, biological and physical contaminants. Fortunately, since reaching a peak in the 1970s, environmental levels of many hazardous contaminants have declined dramatically in Canada. For example, airborne lead concentrations have fallen to trace levels as a result of a ban on leaded gasoline. The levels of many other common air pollutants have also dropped significantly. As well, since the 1970s, as a result of various control strategies, levels of polychlorinated biphenyls (PCBs), dioxins and organochlorine pesticides found in water, food, soil and human tissue have fallen in most of Canada, with the possible exception of the Arctic.

Today, the health of our natural environment compares favourably with that of other countries. Canadians enjoy one of the safest food supplies on earth, the overall quality of our air and drinking water is very high, and our built environment is generally cleaner and healthier today than it was 100 years ago. Despite this, however, we still face a variety of potential threats to our health from the environment.

—Health Canada, *Health and Environment: Partners for Life*

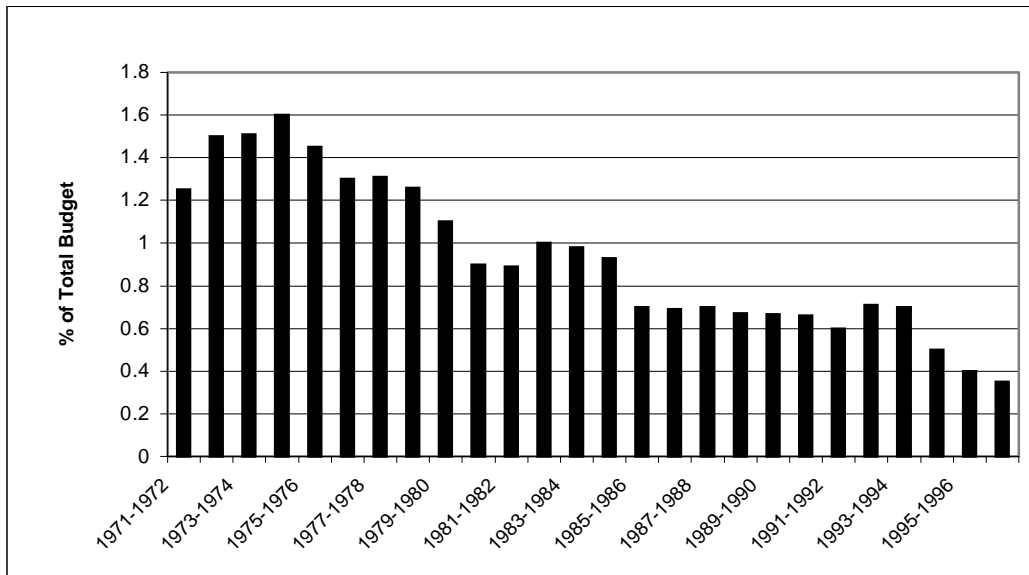
Government and Non-Government Environmental Organizations

In 1970, Prime Minister Pierre Trudeau created the federal Department of the Environment, which began operations in 1971. The DOE was an amalgam of several pre-existing agencies including the Department of Fisheries and Forestry; the Water Sector from the Department of Energy, Mines and Resources; the Canada Land Inventory from Regional Economic Expansion, and the Canadian Wildlife Service from Indian Affairs and Northern Development.ⁱ By 1996, the DOE had gone through seventeen ministers. Restructuring and budget cutbacks have led to doubts about the ministry’s ability to monitor or enforce environmental legislation.

Pollution Probe, Greenpeace, and SPEC (Canadian Scientific Pollution and Environmental Control Society) were all formed in the late 1960s and early 1970s; all have grown to become major national and international organizations. The number of environmental NGOs has grown substantially since the 1970s, from 450 in 1973 to over 2,000 in 1994.ⁱⁱ

DOE Budget as a % of Total Federal Budget, 1971/71 to 1995/96ⁱⁱⁱ

In 1971/72, the percentage of the federal budget devoted to the DOE was approximately 1.25%. In 1996/97, that percentage had dropped to approximately 0.38 percent, a decline of 229 percent.



The Natural Environment

The physical environment can be thought of in terms of two broad areas: the “natural” environment and the “built” environment. The natural environment focuses on the condition of our air, earth, water, and other natural resources.

Air

Air pollution has a strong measurable impact on our health. Health Canada notes that there is a strong relationship between hospital admissions in Canada for respiratory symptoms and high levels of air pollution the previous day. “Health effects associated with different air pollutants include asthma attacks, breathing difficulties, respiratory inflammation and illnesses, heart problems, decreased lung capacity and premature death.”^{iv} Contaminants to air include natural sources, such as smoke, dust, and bacteria, and non-natural sources, such as motor vehicle emissions, industry, environmental tobacco smoke, and the burning of wood and fossil fuels.

Air Pollution

Overall, air quality has improved substantially in Canada’s urban areas and the levels of most air contaminants have diminished since the late 1970s. As the chart below indicates, concentrations of carbon monoxide, nitrogen oxides, and sulphur dioxide declined significantly. In addition, airborne concentrations of lead have fallen to trace levels since the 1970s as a result of a ban on leaded gasoline.^v However, since the 1970s, average ground-level ozone levels have climbed by 29 percent, despite a 50 percent reduction in severe pollution episodes (i.e. where air levels exceeded air quality objectives).^{vi}

The Five Common Air Pollutants, % of maximum acceptable level^{vii}

	CO Carbon Monoxide	NO₂ Nitrogen Dioxide	O₃ Ground- level Ozone	SO₂ Sulphur Dioxide	TSP Airborne Particles	Average
1979	13%	12%	19%	3%	55%	20.4%
1980	12%	12%	19%	3%	56%	20.4%
1981	12%	11%	18%	2%	49%	18.4%
1982	10%	11%	20%	2%	43%	17.2%
1983	9%	10%	20%	2%	40%	16.2%
1984	8%	11%	20%	2%	39%	16%
1985	8%	10%	20%	2%	36%	15.2%
1986	7%	10%	20%	2%	36%	15%
1987	7%	11%	20%	1%	39%	15.6%
1988	7%	10%	23%	2%	36%	15.6%
1989	7%	11%	23%	2%	37%	16%
1990	6%	10%	21%	2%	32%	14.2%
1991	6%	9%	24%	1%	32%	14.4%
1992	6%	9%	21%	1%	29%	13.2%
1993	6%	9%	25%	2%	34%	15.2%
% Change	-54	-25	32	-33	-38	-25.5

Asthma

Asthma is one of the most common health problems related to air pollution. In the past two decades, the prevalence of childhood asthma has increased almost three and half times.^{viii}

Selected Indicators of asthma among children in Canada, excluding territories^{ix}

	1978/79	1983/84	1994/95	% Change 1978/79 to 1994/95
Population aged 0-14	5,531,000	5,326,000	6,000,000	8
Number with asthma	141,000	167,000	672,000	377
% with asthma	2.5	3.1	11.2	348
Hospital separations for asthma	17223	27357	29073	69
Per 100,000 population aged 0-14	311	514	488	57
Per 100,000 population aged 0-14 with asthma	12,215	16,381	4,326	-65
Asthma deaths	16	13	9	-44
Per 100,000 population aged 0-14	0.29	0.24	0.15	-48
Per 100,000 population aged 0-14 with asthma	11.3	7.8	1.3	-88

Asthma (cont'd)**Prevalence of asthma among children, by selected characteristics, Canada excluding territories, 1994-95^x**

“Children in middle-income households had a significantly low prevalence of asthma compared with both lower- and middle-income households. However, among children with asthma, those in lower-income households were the most likely to have had a recent attack.”

	Number	Diagnosed with asthma	Children with asthma who had attack in the past year
	'000	%	%
Total	6000	11	51
Sex			
Male	3096	13	50
Female	2904	9	51
Age			
0 -4	1960	7	57
5 - 9	1931	13	50
10-14	2108	13	48
Region			
Urban	4894	11	45
Rural	1099	11	52
Not stated	7	--	--
Household Income			
Lowest/Lower-middle	1063	13	54
Middle	1960	10	51
Upper-middle	1994	11	50
Highest	911	13	46
Not stated	72	--	--

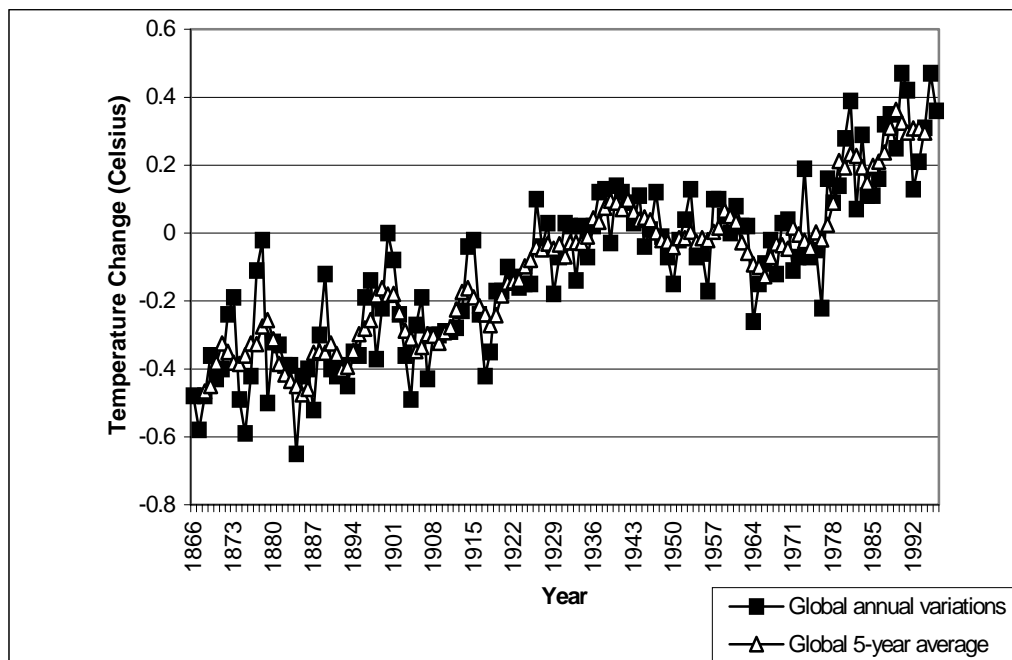
Global Warming

Recent evidence suggests that the world's climate is getting warmer: the eleven warmest years on record in Canada have all occurred since 1976. Air pollution and emissions can contribute to global warming; “greenhouse gases” such as carbon dioxide and methane are thought to contribute to global warming by trapping solar radiation in the form of heat.^{xi}

If global warming continues at its current rates, the resulting health and environmental impact could be profound, ranging from coastal flooding to increases in severe weather events and their aftermath, and the emergence of hitherto “tropical” diseases.^{xii} In 1995, Canadians experienced the hottest June and July in the past century and Montreal and Ottawa experienced the coldest and snowiest November and December on record.^{xiii}

Average global temperature has increased by approximately 0.5°C over the past century, and Canada's average annual temperature has increased about 0.4°C since nationally representative temperature records began in 1948.

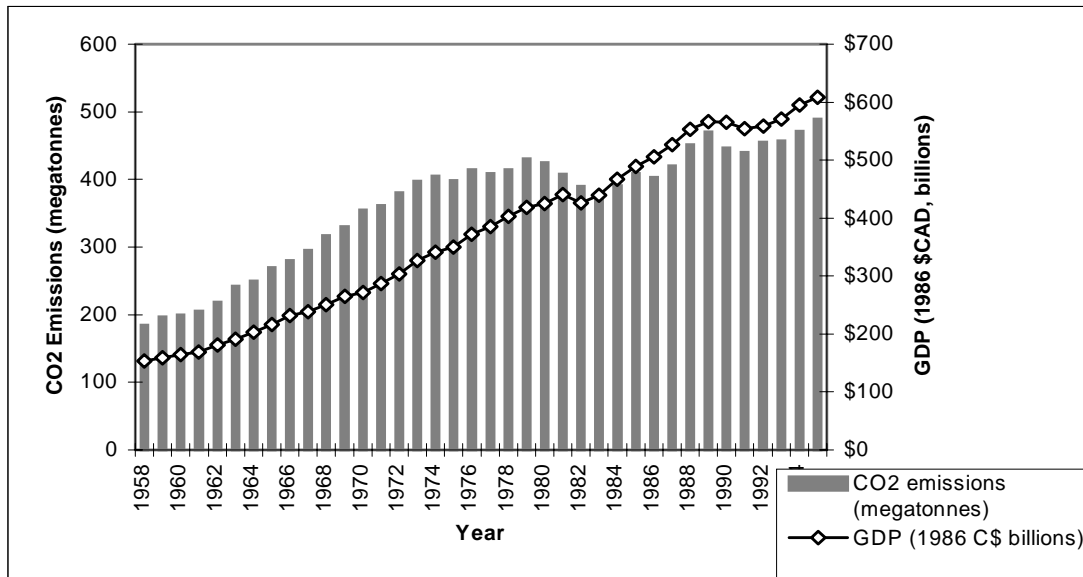
Canadian and Global Average Temperatures and GDP, 1866-1996^{xiv}



Carbon Dioxide Emissions

Carbon dioxide (CO₂) emissions contribute to global warming; concentrations of CO₂ have increased by 28 percent over the past two centuries and are expected to double over the next 40 years.^{xv} Motor vehicle emissions are a major contributor to levels of CO₂. While our cars are much more fuel-efficient today than they were in the 1970s, total CO₂ emissions are increasing because of a rise in the number of automobiles on the road.^{xvi}

Carbon Dioxide Emissions and GDP, Canada, 1958-1994^{xvii}



Ozone Depleting Substances

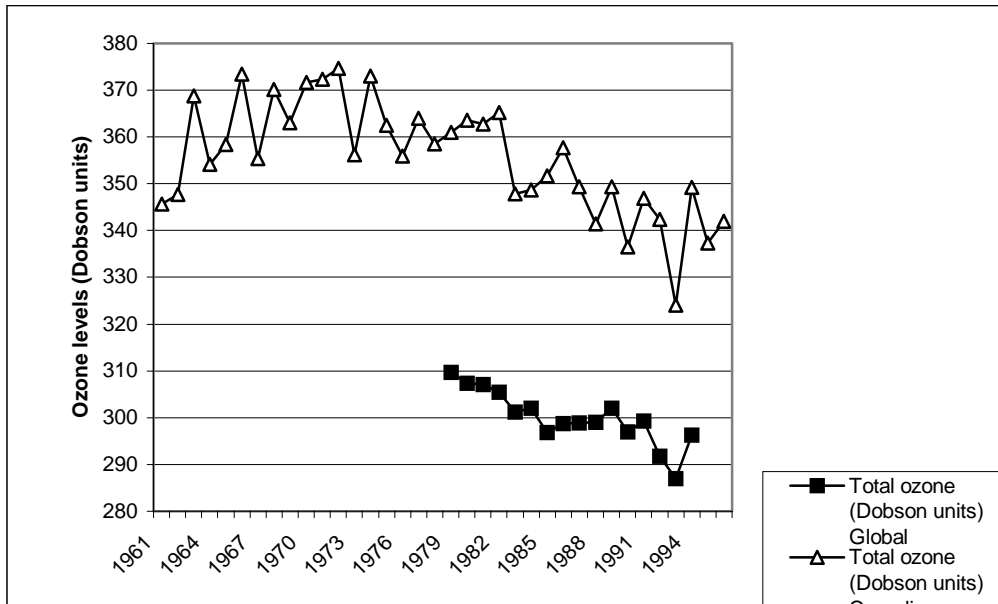
In the 1970s, Canadians had not heard of a UV index. The ozone layer was a faint idea, and certainly not a troubling one. However, it received some attention in 1974, when

“[t]wo atmospheric scientists at the University of California, Drs. Rowland and Molina, published a paper in *Nature* advancing their theory that [chlorofluorocarbons (CFCs),] over a period of fifty or more years would gradually drift up to the stratosphere and, once there, be broken down by the ultraviolet light to their constituent parts. The chlorine molecules thus released from CFCs would then begin a chain reaction with the ozone molecules, breaking them down to normal oxygen and chlorine monoxide, neither of which is capable to absorbing ultraviolet light. [CFCs,] developed forty years earlier [by DuPont,] as a safe alternative to [their] more toxic predecessors, Rowland and Molina argued, [were] endangering life on earth.”^{xviii}

Since 1979, there has been a steady decrease in the amount of ozone in the upper atmosphere.^{xix} It was not until 1985, when technology advanced enough to detect the hole in the ozone layer above the Antarctic, that Canadians began to understand the threat of the disappearing ozone layer.

In addition to CFCs, ozone depleting substances include methyl chloroform, halons, carbon tetrachloride, HCFCs, and the pesticide methyl bromide.^{xx} One large contributor to global warming and the destruction of the ozone layer is the automobile. While the 1973 oil embargo spurred the development of technology leading to cleaner cars and lower emission rates per vehicle,^{xxi} the number of cars on Canadian roads has doubled, contributing to the increase in carbon dioxide emissions.

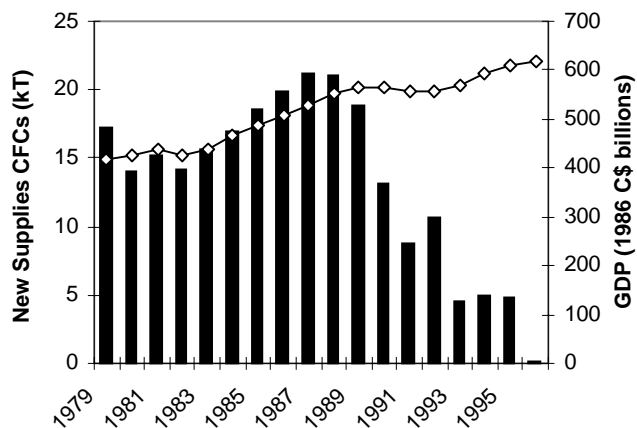
Global and Canadian Stratospheric Ozone Levels, 1961 to 1996^{xxii}



Health Implications

Overexposure to ultraviolet radiation is one of the principal causes of skin cancer. Health Canada reports that the incidence of malignant melanoma has more than doubled since the mid-1980s: more than 55,000 Canadians developed skin cancer in 1995. However, since skin cancer can take years to develop, this increase is probably due to suntanning rather than the thinning of the ozone layer.^{xxiii}

Prolonged exposure to UV rays can cause sunburn, “premature aging and wrinkling of the skin, depression of the immune system, allergic reactions and eye problems, such as inflammations, cornea damage and cataracts.”^{xxiv}

Canadian Supplies of CFCs and GDP, 1979-1996^{xxv}

New supplies of CFCs and non-essential methyl chloroform have been phased out as of 1996. New supplies of halons were phased out in January 1994, and carbon tetrachloride in January 1995. Consumption of HCFCs has been frozen as of January 1, 1996, and will be reduced by 35 percent by 2004, 65 percent by 2010 and 90 percent by 2015.

Production and importation will cease by 2020. Environment Canada also reports that “[in] 1995, the global CFC production was 77% less than the peak of 1 200 kilotonnes in 1988. Canada made up less than 1% of the global production. As of January 1, 1996, all industrialized countries stopped producing new supplies of CFCs.”^{xxvi}

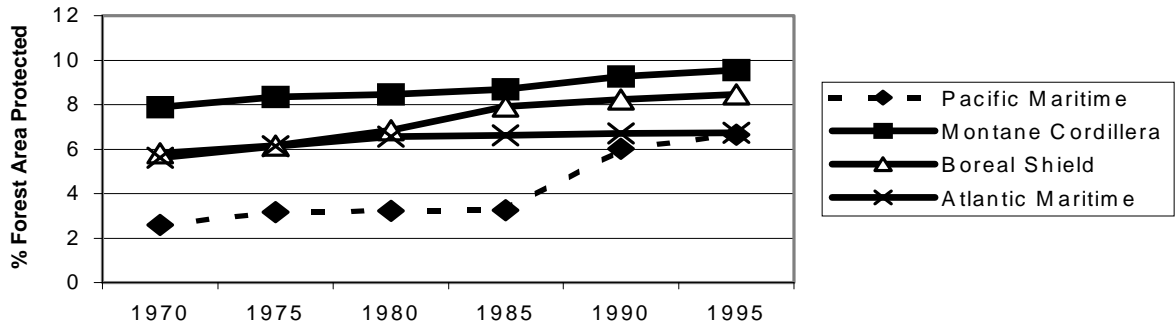
Earth

Forests cover nearly half of the Canadian landscape; our forests represent 10 percent of the world’s forests. “About two-thirds of Canada’s terrestrial species are found in our forests or are dependent on forest habitat. Forests produce oxygen and remove carbon dioxide - a gas that contributes to global warming—from the atmosphere. Forests also purify water, moderate climate, stabilize soil, and regulate water flow.”^{xxvii}

Forest Management

“The amount of protected land in Canada increased by 267 per cent between 1960 and 1993. Protected areas vary in size and type, from a few hectares to vast areas in the north. Despite these gains in protected lands, Statistics Canada estimates that Canada lost 4 per cent of its wild area between the mid-1970s and 1990. This area is equivalent to the area of all our national parks combined.”^{xxviii}

Proportion of Forest Area Protected^{xxix}



The World Wildlife Fund’s *Living Planet Index* suggests that the world lost about 10 per cent of its forest area between 1970 and 1995. Forest area, however, is not the same as forest diversity, the *Index* warns, and “the relatively slow decline of the index masks a loss of ecological quality, particularly in temperate forests.”^{xxx}

Annual Timber Harvest, 1971-1992^{xxxii}

The amount of timber harvested each year increased by about 42 percent between 1971 and 1992. Environment Canada reports that “both area and volume of wood harvested peaked in the late 1980s at levels double those of the 1950s. Since 1990, the economic recession has reduced harvesting to roughly mid-1980 levels.”^{xxxii}



Biodiversity: Population Trends of Forest Birds

Our forests are home to two-thirds of Canada’s wildlife, the survival of which depends on preserving a rich mixture of “forest types, age structure, functions, and patterns across the landscape.”^{xxxiii} One indicator of changing forest biodiversity is the varying population of forest birds, which can fluctuate according to climate change, land use, and the spread of non-native species. As the table below indicates, “more forest birds species are showing declining populations in the post-1980 period as compared to the pre-1980 period. These trends may be signalling changes to certain habitat types.”^{xxxiv}

Ecozone	Number of species		
	Increasing population	Decreasing population	Number of species
Pacific Maritime			
1966-79	11	5	16
1980-94	17	16	33
Montane Cordillera			
1966-79	29	12	41
1980-94	31	20	51
Boreal Shield			
1966-79	36	21	57
1980-94	29	33	62
Atlantic Maritime			
1966-79	34	22	56
1980-94	26	32	58

Water

Canada contains about 15 percent of the world’s supply of fresh water. However, most of that water flows north, far away from the southern population that needs it.

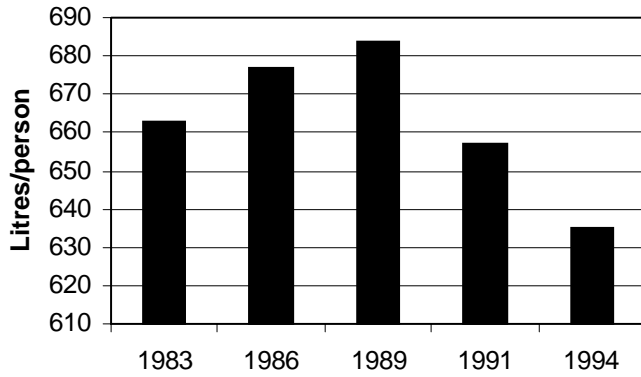
Generally, Canadian drinking water is of high quality, and a minor source of most pollutants compared to other media such as food or air. Most Canadians receive treated municipal tap water: “With a few exceptions, the most potentially serious contamination problems involve tap water from untreated sources, such as private wells.”^{xxxv}

Water Use

“Urban Canadians on average use almost twice as much water per capita as urban residents in most other industrialized countries except the United States.”^{xxxvi} However, we are becoming more efficient in our use of water: more Canadians are using less water per person. Municipal regulations and devices such as low-flow aerators on faucets and low-flow showerheads and toilets have helped to improve measures to conserve water.

Excessive water use is problematic for economic and environmental reasons, reports Environment Canada: it can lead to water shortages, influence water levels and stream flows (which, in turn can affect the habitat of wildlife and aquaculture), put strain on energy resources required to pump water, increase the amount of wastewater generated, and strain existing reservoirs and distribution systems.^{xxxvii}

Daily Municipal Water Use, 1983-1994^{xxxviii}



From 1983 to 1994, total municipal water use declined after reaching a peak in 1989. “In 1991, we withdrew a grand total of 45 billion cubic metres of water, 88% more than in 1972, or roughly 45 L per person per day, of which 34 L went towards residential uses.”^{xxxix}

Acid Rain

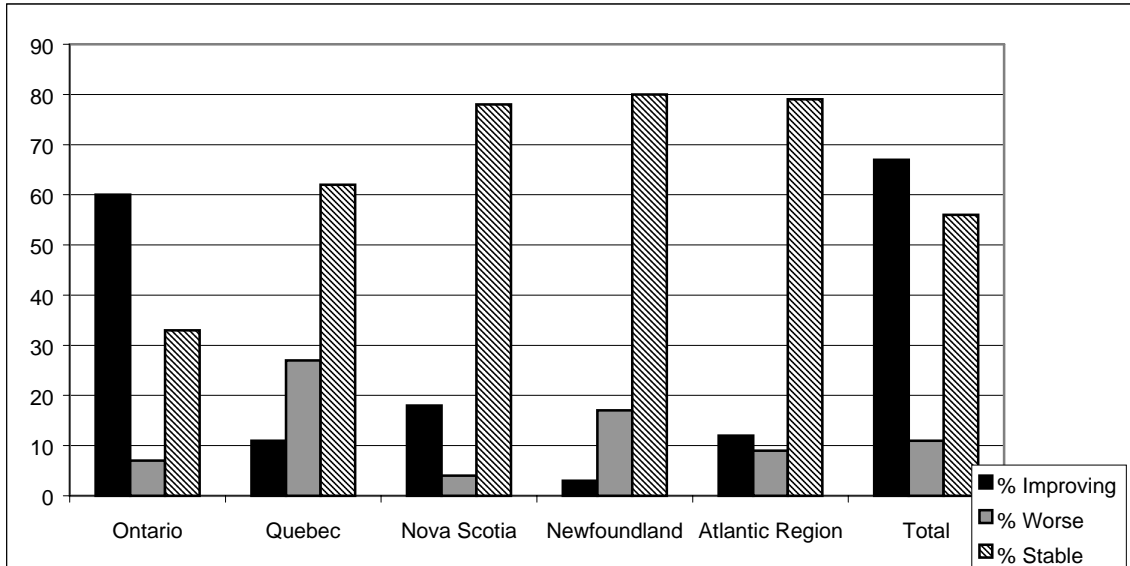
“*Acid rain*, the popular term for precipitation acidified by atmospheric pollutants, became a Canadian environmental issue in the 1970s after scientists noted losses of fish populations in some highly acidified lakes of northern Ontario. Acid rain is caused by pollutants such as sulphur dioxide (SO₂) and nitrogen oxides (NO_x), which in the atmosphere are converted chemically to sulphuric acid and nitric acid. Diluted forms of these acids fall to earth as rain, hail, drizzle, freezing rain or snow (wet deposition), or are deposited as acid gas or dust (dry deposition). Normal rain is slightly acidic, but acid rain can be as much as 100 times more acidic.”^{xi}

The vast majority of pollutants causing acid rain result from human activities such as the burning of fossil fuels or the smelting or refining of sulphur-bearing ores.^{xii}

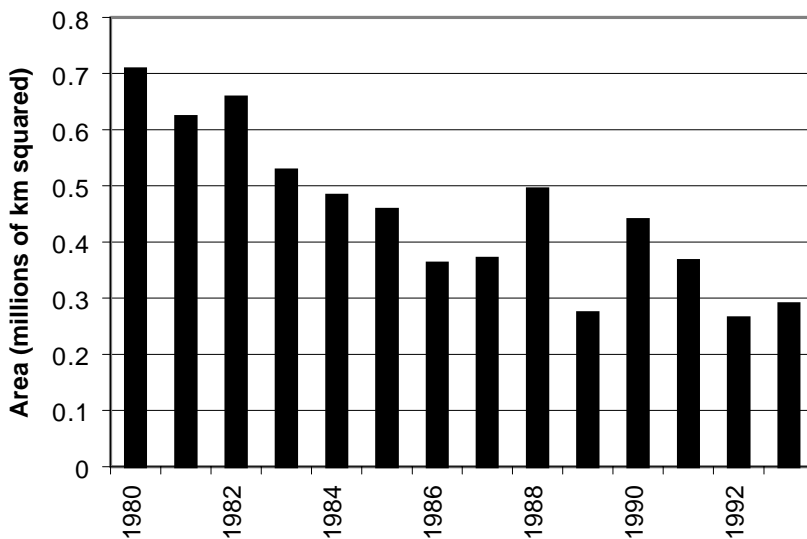
Acid rain may contribute to declines in tree populations and the acidification of lakes, which in turn can affect aquaculture. It can also lead to the erosion of building materials, causing buildings and monuments to decay. Because acid rain contains particulate matter, including sulphate and acidic aerosols, it may also affect our respiratory health. As Environment Canada reports, “[recent] research indicates a relationship between decreased lung function, increased cardio-respiratory mortality and long-term exposure to ambient acidic aerosols.”^{xiii}

Trends in lake acidity by region (1981-1994)^{xliii}

“A total of 202 lakes were monitored for acid rain effects in Ontario, Quebec and the Atlantic Region between 1981 and 1994. Of these, 33% showed some improvement in acidity. Acidity levels were stable in 56% of the lakes and 11% were becoming worse.”^{xliv}



Total Area in Eastern Canada Receiving >20 kg/ha/yr of Wet Sulphates^{xlv}



Great Lakes

On April 15, 1972, Canada and the United States signed the Great Lakes Water Quality Agreement (GLWQA), designed to restore and enhance water quality in the Great Lakes system and to provide a framework for binational cooperation.

The GLWQA came about as a result of increasing concern over pollution and water quality in the Great Lakes. Contamination of the water by sewage and garbage in the nineteenth century led to cholera and typhoid outbreaks; by the mid-twentieth century, phosphates; toxic chemicals such as PCBs, DDT, DDE and mercury threatened the health of the lakes. They were also affected by the introduction of new species, overfishing, and nutrient enrichment. “By the late 1960s, degradation had become so extreme that newspaper headlines such as ‘Lake Erie is Dead’ were common.”^{xlvi} Birth defects and reproductive problems were observed in Great Lakes species such as cormorants, herring gulls, bald eagles, and ospreys, all species that relied on Great Lakes fish. The link between animal and human health was not difficult to make: “In 1971, as a result of finding PCB residues in fish, Michigan issued the first public fish advisory for the Great Lakes limiting the consumption of lake trout and salmon from Lake Michigan.”^{xlvi}

The early 1970s marked the beginning of a “‘modern era’”^{xlvi} of Great Lakes research and clean-up programs. Twenty-five years later, although we still face many challenges, we can mark a number of successes in the reduction of pollution in the Lakes.

Great Lakes Successes

“Pollution abatement initiatives undertaken in Canada and the United States within the Great Lakes basin have achieved many important successes. In contrast to 1972, for example:

- occurrences and magnitudes of chemical spills to the lakes have been reduced significantly;
- physical pollution in the form of "objectionable" and "nuisance" materials forming scums, sludges and odours, have almost been eliminated;
- significant reductions in industrial pollution have been achieved;
- phosphorus inputs have been controlled to the point that algal growth has been slowed and water clarity in Lakes Erie and Ontario improved; and
- several contaminants such as PCBs, DDT, and mercury have declined in fish and wildlife by as much as 90%.^{xlvi}

Lake Erie

Lake Erie, thought to be “dead” in the early 1970s due to eutrophication, has improved considerably. Phosphorus (from municipal wastewater containing household laundry detergents, industrial wastes, and agricultural runoff) was identified as the major contributor to eutrophication. Phosphorus control and cleanup plans have led to an almost 80 percent reduction in Lake Erie loadings of municipal phosphorus. Algal growth has been slowed and water clarity has improved.

Annual Phosphate Loadings in Lake Erie, 1968 & 1993^l

	1968	1993	% Change
Phosphate loadings, tonnes	28,000	5,600 (approximate)	-80

Double-Crested Cormorants

The double-crested cormorant, a large fish-eating bird found throughout the Great Lakes, has experienced great fluctuation in population over the past decades. “Devastated by the effects of toxic chemicals, the number of nesting pairs decreased by 86% between the 1950s and the 1970s. Today, however, the cormorant is more numerous on the Great Lakes than at any time in its recorded history.”^{li} Between 1971 and 1993, cormorant populations increased by three hundred times.

The decline and rise in cormorant populations can be attributed to persistent toxic substances, particularly pesticides and their by-products, such as DDE, and PCBs in the Great Lakes. These chemicals caused birth defects, such as crossed bills, and the thinning of eggshells.

Because of legislated controls of the production of DDT and other toxic chemicals, levels of these substances have dropped in the Great Lakes, allowing the cormorant populations to once more breed successfully. “The most regularly monitored sites showed DDE and PCB levels in cormorant eggs decreasing by more than 80% between 1971 and 1989. Similar reductions have been recorded in several other species of Great Lakes fish and wildlife including Herring Gulls, Common and Caspian Terns, Ospreys and Lake Trout.”^{lii}

Great Lakes Challenges^{liii}

- “Levels of persistent toxic chemicals still remain unacceptably high in some areas.”
- “The long-range atmospheric transport of contaminants leaves the Great Lakes vulnerable to the deposition of substances from the air.”
- “Exotic species continue to be unintentionally introduced into the Great Lakes with severe impacts on indigenous species.”
- “Expanding populations and changes in land use due to urbanization and other development processes continue to impact sensitive tributary and nearshore habitats. These areas are often critical for the maintenance of Great Lakes water quality and the protection of many fish and wildlife species. There are often conflicting demands placed on these waters and choosing environmentally sensitive development options remains a substantial challenge.”

Fisheries

Canadian fisheries have been the focus of much attention from environmentalists, the media, and those whose livelihoods depend on fishing. In recent years, depleted Atlantic cod and Pacific salmon and herring stocks have raised questions about sustainable management of natural food sources.

Cod Fisheries

On the average, Canadian fishermen enjoyed a good year in 1971. In some cases, the volume of the catch was lower than in the previous year but generally higher prices prevailed for many products... . On the Atlantic Coast, total landings have been declining since the peak in 1968. The value to Atlantic Coast fishermen, however, has been increasing steadily and reached an all time high of \$133.4 million in 1971.

--Environment Canada, Annual Report, 1971-72

Of the 90 million tonnes of fish eaten by human beings each year, cod from the Grand Banks supplied some 800 000 t, or a little less than 1% in the 1970s... . The loss of the Atlantic cod fishery means a loss of 6.5 billion servings of fish, or more than 237 servings for every Canadian every year.

-- The State of Canada's Environment, 1996

Total Cod Catch in Canada and in Newfoundland & Labrador, 1971 & 1992

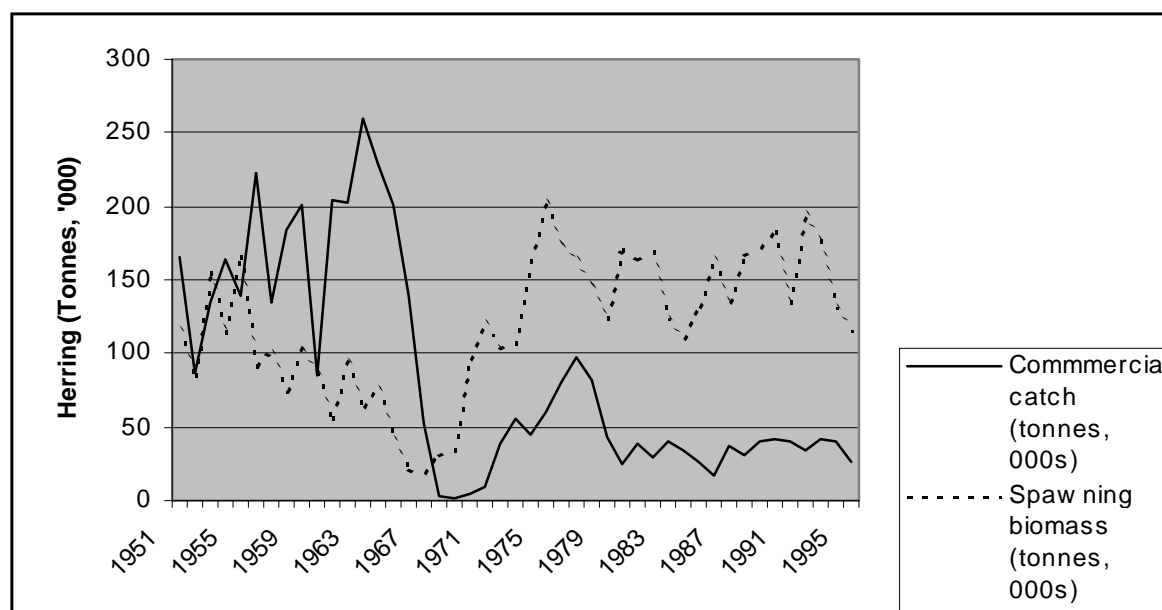
	1971	1992	% Change
Total Cod Catch (000 tons)	920	239	-74
Total Cod Catch in Newfoundland and Labrador (000 tons)	667	99	-85

Pacific Herring Stocks

“The Pacific herring fish stocks of Canada’s west coast are a marine resource that is highly valued internationally, provides employment for thousands of Canadians and a way of life for numerous coastal communities, and contributes millions of dollars to Canada’s economy. Pacific herring is, itself, a regional indicator of marine resource sustainability carrying national significance.”^{liv}

Until the late 1960s, Pacific herring were caught in unsustainable amounts, leading to the collapse of the fishery. In 1967, the federal government placed a four-year ban on commercial fishing. The fishery started up again in 1972, in more sustainable numbers. Since 1983, “catches have not been permitted to exceed 20% of each stock’s spawning biomass, as forecasted annually. The fishery is closed if stock abundance falls below the cutoff or fishing threshold. The general goal is to produce a low volume of a high-quality product, judged to be both economically profitable and ecologically sustainable.”^{lv}

Commercial catch of all Pacific herring stocks (1951-1995), in relation to spawning biomass^{lvi}



Global Comparisons

The World Wildlife Fund’s *Living Planet Index* suggests that the world lost about 50 per cent of its freshwater ecosystems between 1970 and 1995. Between 1990 and 1995, the average rate of decline was almost 6 per cent per year.^{lvii} The marine ecosystems index fell by about 30 per cent during the same period.^{lviii} These indices can be thought of as measuring the population of a typical marine or freshwater species.

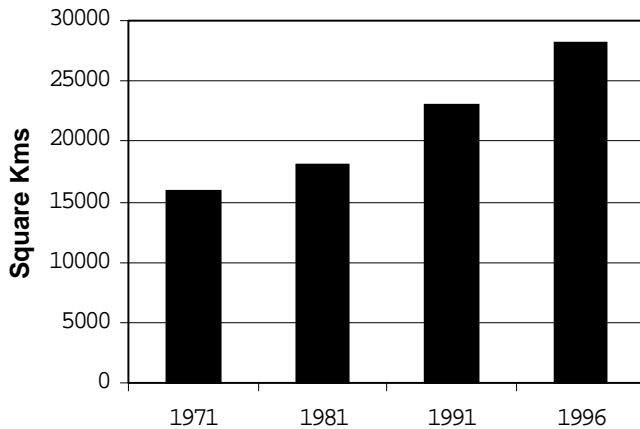
The Built Environment

The “built” environment focuses on the ways in which we use and consume resources in, for example, our homes, schools, places of business, and travel. As Health Canada defines it, “the *built environment* is part of the overall ecosystem of our Earth. It encompasses all of the buildings, spaces and products that are created, or at least significantly modified, by people. It includes our homes, schools, and workplaces, parks, business areas and roads. It extends overhead in the form of electric transmission lines, underground in the form of waste disposal sites and subway trains and across the country in the form of highways.”^{lix}

Urbanization

In just over a century, Canada’s population went from mainly rural to mainly urban. Canada has 91 cities with 50,000 inhabitants or more; nearly 60 per cent of the population lives in cities of 500,000 or more.^{lx} Most new housing in Canada is in suburban communities; studies have shown that suburban residents drive twice as far, walk and cycle one-third as often, consume twice as much energy and produce twice as much pollution as downtown residents.^{lxi}

Urban Land Use, 1971-1996^{lxii}

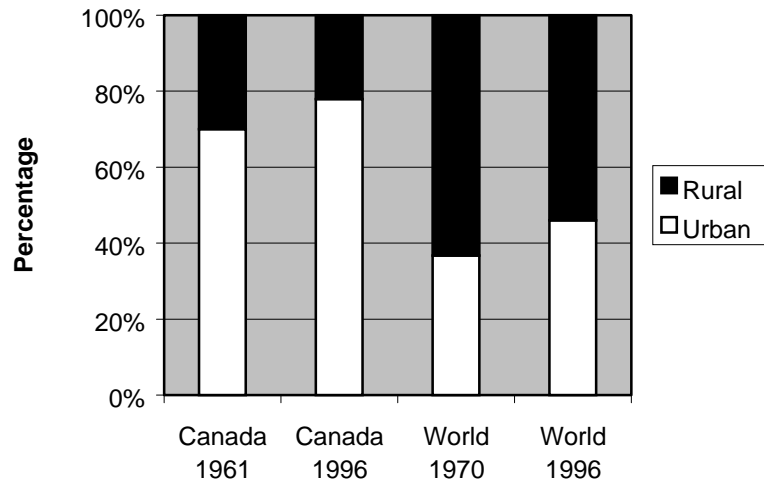


Shift to Urban Living, Canada, 1961 & 1996^{lxiii}

	1961	1996	% Change
Share of Canadian Population that is Urban	70	77.9	10

World Urban Population, 1970 & 1996 (projected)^{lxiv}

	1970	1996	% Change
World Urban Population	1.357	2.636	94.25
Share of World Population that is Urban	36.7	46	25.34



**Dwellings and Persons per Dwelling Relative to Population, Canada,
1971 & 1991^{lxv}**

This table indicates that between 1971 and 1991, the total number of dwellings in Canada increased by 66 per cent, although the population increased by only 27 per cent. During the same period, the average number of persons per dwelling decreased by about 25 per cent. The increase in number of dwellings is partly due to increased numbers of lone-parent families and single-person households. The consumption of energy is more closely related to the number of households than to the number of people.^{lxvi}

	1971	1991	% Change
Population Total (000's)	21568	27297	27
Total No. Dwellings (000's)	6044	10018	66
Persons per Dwelling	3.6	2.7	-25

From 1981 to 1996, the number of private households in Canada grew by about a third, and the number of single-person households grew by about 15 per cent.

**Private households by age group of household maintainer^{lxvii} and by population,
Canada, 1981 & 1996^{lxviii}**

	1981	1996	% Change
Private households	8281530	10820050	31
under 30	20.1%	11.7%	-42
30-49	40.1%	46.5%	16
50-64	22.9%	21.8%	-5
65+	16.8%	20.1%	20
Family households	6231950	7658475	23
under 30	17.8%	9.9%	-44
30-49	46.1%	52.0%	13
50-64	24.1%	53.1%	120
65+	12.1%	15.0%	24
One-person households	1681195	1934755	15
under 30	23.9%	41.3%	73
30-49	22.5%	32.9%	46
50-64	20.0%	14.3%	-29
65+	33.7%	11.5%	-66
Persons aged 65+ in institutional dwellings	194230	256520	32

Urbanization: Housing Types and Urban Density

“The low-density pattern of development that usually surrounds single-family dwellings [in the suburbs] results in large distances between homes and schools, shopping centres, community facilities, and workplaces. Transportation alternatives to the private automobile, such as walking, bicycling, and public transport, become unappealing, inefficient options.”^{lxix}

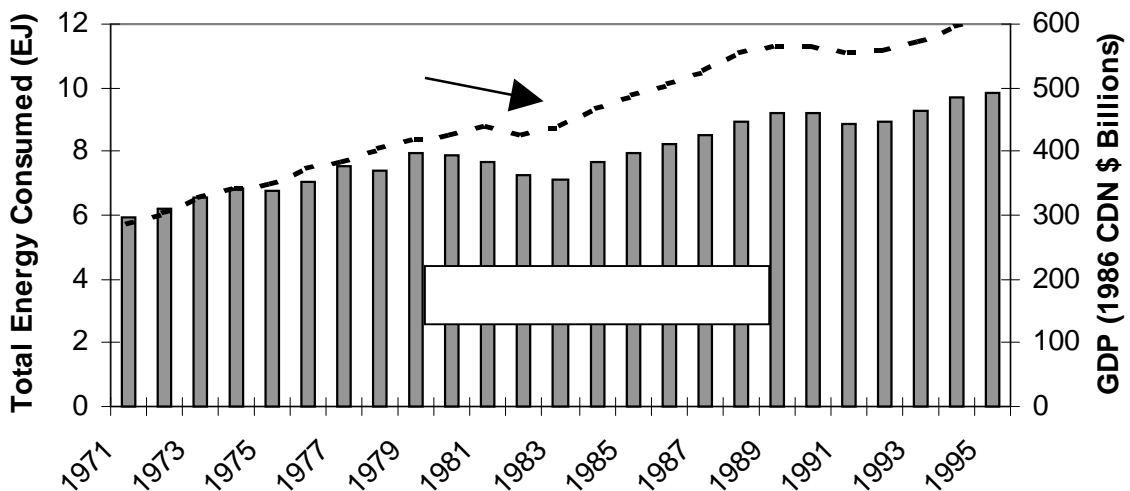
All urban areas >10,000	1971	1994	% Change
Single Detached	31.4	52.8	68
Semidetached	6.1	8.5	39
Row	7.9	12.2	54
Apartments and Other	54.6	26.5	-51
Total	100	100	

Energy

From 1971 to 1996, Canadian consumption of energy increased by 29 percent. Most notable were our increases in consumption of nuclear energy and natural gas. While we use energy much more efficiently, we use more of it.

Canada is the world's sixth largest consumer of primary energy; Canadian consumption of energy in 1993 accounted for 2.6 percent of global consumption, while our population accounts for 0.56 percent of the world's total. Our high energy consumption "can be attributed to a number of factors: vast distances, a cold climate, an energy-intensive industrial base, relatively low energy prices, and a high standard of living. Canada's proximity to abundant energy resources has contributed to keeping energy prices lower than in many other industrialized countries."^{lx}

Canadian Consumption of Energy



**Total Canadian Consumption of Energy, 1971-
1995^{lxxi} (exajoules)**

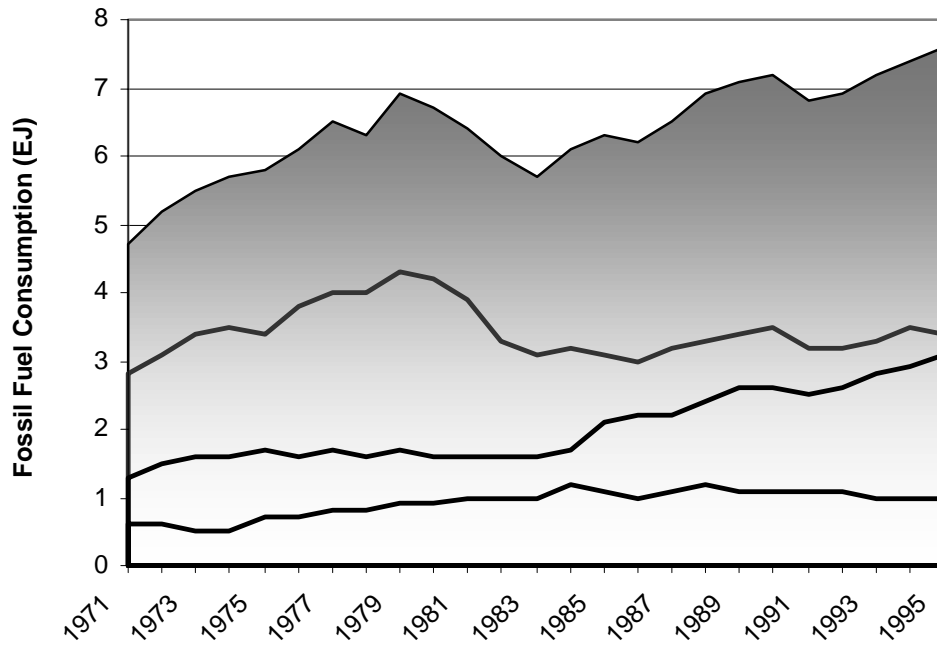
Year	Coal	Crude Oil	Electricity	Hydro	Natural gas	Nuclear	Wood	Total Energy	GDP
1971	0.61	2.81	-0.01	0.58	1.31	0.05	0.50	5.90	\$287
1972	0.63	3.09	-0.03	0.65	1.48	0.08	0.43	6.23	\$303
1973	0.53	3.39	-0.05	0.69	1.63	0.16	0.44	6.56	\$327
1974	0.54	3.53	-0.05	0.76	1.62	0.16	0.44	6.85	\$341
1975	0.68	3.42	-0.03	0.73	1.67	0.14	0.35	6.76	\$350
1976	0.72	3.79	-0.03	0.77	1.59	0.19	0.36	7.06	\$372
1977	0.80	4.01	-0.06	0.79	1.68	0.29	0.36	7.56	\$385
1978	0.77	3.97	-0.07	0.84	1.59	0.34	0.39	7.39	\$403
1979	0.93	4.32	-0.11	0.88	1.66	0.39	0.40	7.94	\$418
1980	0.91	4.23	-0.10	0.90	1.57	0.42	0.43	7.88	\$425
1981	0.95	3.87	-0.12	0.95	1.62	0.44	0.41	7.64	\$440
1982	1.03	3.33	-0.11	0.92	1.64	0.42	0.41	7.26	\$426
1983	1.02	3.15	-0.13	0.95	1.56	0.53	0.44	7.12	\$439
1984	1.21	3.19	-0.14	1.02	1.71	0.57	0.44	7.66	\$467
1985	1.12	3.06	-0.15	1.08	2.13	0.66	0.47	7.95	\$489
1986	1.02	3.02	-0.12	1.11	2.20	0.78	0.49	8.23	\$506
1987	1.07	3.21	-0.16	1.13	2.20	0.84	0.50	8.50	\$527
1988	1.24	3.29	-0.10	1.10	2.41	0.90	0.50	8.93	\$553
1989	1.14	3.41	-0.03	1.04	2.58	0.87	0.49	9.18	\$566
1990	1.13	3.47	0.00	1.06	2.60	0.80	0.48	9.18	\$565
1991	1.07	3.24	-0.07	1.10	2.53	0.93	0.49	8.87	\$555
1992	1.08	3.15	-0.09	1.13	2.62	0.88	0.49	8.92	\$558
1993	1.03	3.34	-0.10	1.15	2.81	1.03	0.49	9.30	\$571
1994	1.03	3.49	-0.16	1.18	2.93	1.18	0.54	9.71	\$595
1995	1.03	3.39	-0.13	1.20	3.14	1.07	0.59	9.86	\$609
Change 1971-1996	8%	-12%	6%	26%	94%	144%	45%	29%	38%

Notes:

(a) The indicators measure energy consumption as new primary energy that becomes available in a given year. Energy used in converting this primary energy into energy used by consumers is included in the indicator.

(b) EJ (exajoules) = 1018 joules. One exajoule is roughly equivalent to 28 billion litres of motor gasoline.

Canadian Consumption of Fossil Fuels, 1971-1996^{lxxii}



Transportation

In 1995, 81 out of every 100 passenger-kilometres travelled were by automobile.^{lxxiii} Our reliance on the car has major implications for the environment. While our economy and geography make the automobile a necessity, it puts stress on the environment in the form of emissions, pollution caused by oil spills and leaks, natural resource and fossil fuel consumption, land use (for roads and parking), noise pollution, and injury and death as a result of accidents.

Between 1970 and 1995, automobile use more than doubled, while travel by airplane increased nearly three-fold.

Preliminary Indicator: How Canadians travel, Passenger-kilometres (billions), 1972-1995^{lxxiv}

Year	Automobile**	Bus***	Plane	Train	GDP (1986 C\$ billions)
1970	177.19	9.04	18.6	3.1	\$271.37
1972	191.63	9.45	21.7	2.8	\$303.45
1974	205.55	10.18	29.2	2.5	\$341.24
1976	216.18	11.77	32.8	2.4	\$371.69
1978	228.05	12.66	38.3	2.5	\$402.74
1980	250.13	13.9	47	2.7	\$424.54
1982	236.88	14.35	44.2	2.1	\$425.97
1984	267.77	13.57	46.4	2.3	\$467.17
1986	295.86	14.56	53.1	2.2	\$505.67
1988	322.75	14.29	62.3	2.3	\$552.96
1990	334.35	14.37	66.8	1.4	\$565.16
1991	334.38	14.93	57.9	1.43	\$554.74
1992	348.82	14.82	62.5	1.44	\$558.17
1993	361.57	14.94	60.7	1.41	\$570.54
1994	379.49	15.05	65.6	1.44	\$594.99
1995	383.45	15.76	72.1	1.47	\$608.84
% Change 1970-1995	116	74	288	-53	124

A "passenger-kilometre" is a standard unit for measuring travel that takes into account both the number of people travelling and the distance travelled. For example, 200 passenger-kilometres of travel is equivalent to 10 people each travelling 20 kilometres, or to 1 person travelling 200 kilometres.

** "Automobile" refers to cars and other private-use passenger vehicles, such as vans and small trucks.

*** "Bus" includes intercity and urban bus plus other forms of urban transit (light rail, subway, etc.)

Roads in Canada

In 1991, there were about 879 000 km of highways in Canada. In urban areas, up to 42 percent of the land in downtown cores and 18 percent of the land in greater metropolitan areas may be occupied by motor vehicle infrastructure, including roads, rights-of-way, bridges, garages, retail outlets, and parking lots. In Toronto, 2 percent of the city's area is devoted specifically to parking.^{lxxv}

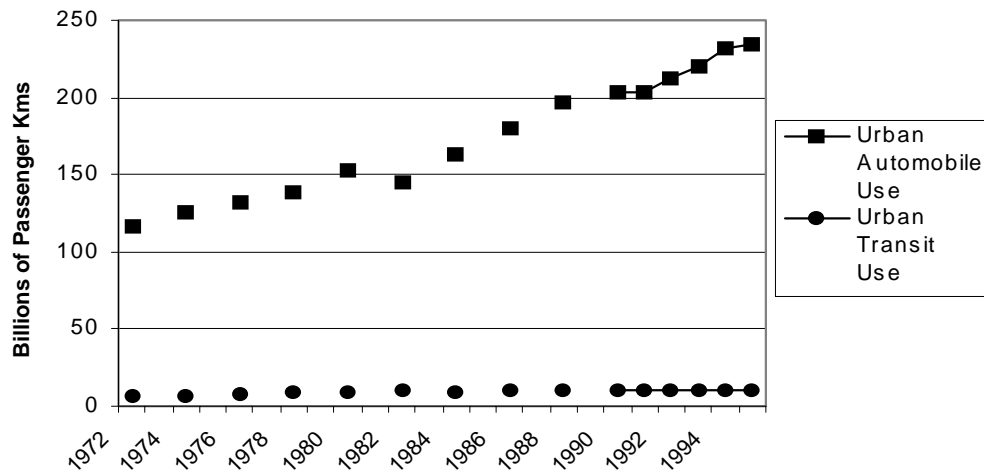
Number of kilometers of roads in Canada, 1970^{lxxvi} & 1991^{lxxvii}

	1970	1991	% Change
No. kilometres	460,422	879,000	91

Urban Auto vs. Transit Use, 1972-1995^{lxxviii}

As Canadians become ever more dependent upon cars for transportation, the use of public transit has declined; currently, transit represents less than 5 percent of motorized travel in urban areas^{lxxix}:

“The decline of urban transit is closely mirrored by the rise in automobile ownership [and the growth of suburban communities, or “urban sprawl”]. ... By 1990, there were nearly half as many automobiles as people in Canada, and the average Canadian with access to transit service took only about 100 rides on transit. The inverse relationship between auto ownership and transit ridership was briefly interrupted in the 1970s and early 1980s, owing largely to the effects of the two ‘oil crisis’ episodes and the startup of some major new rapid transit systems. However, since about 1986, transit ridership per capita has declined moderately but continuously.”^{lxxx}



How Canadians Travel to Work, 1973 & 1996^{lxxxii}

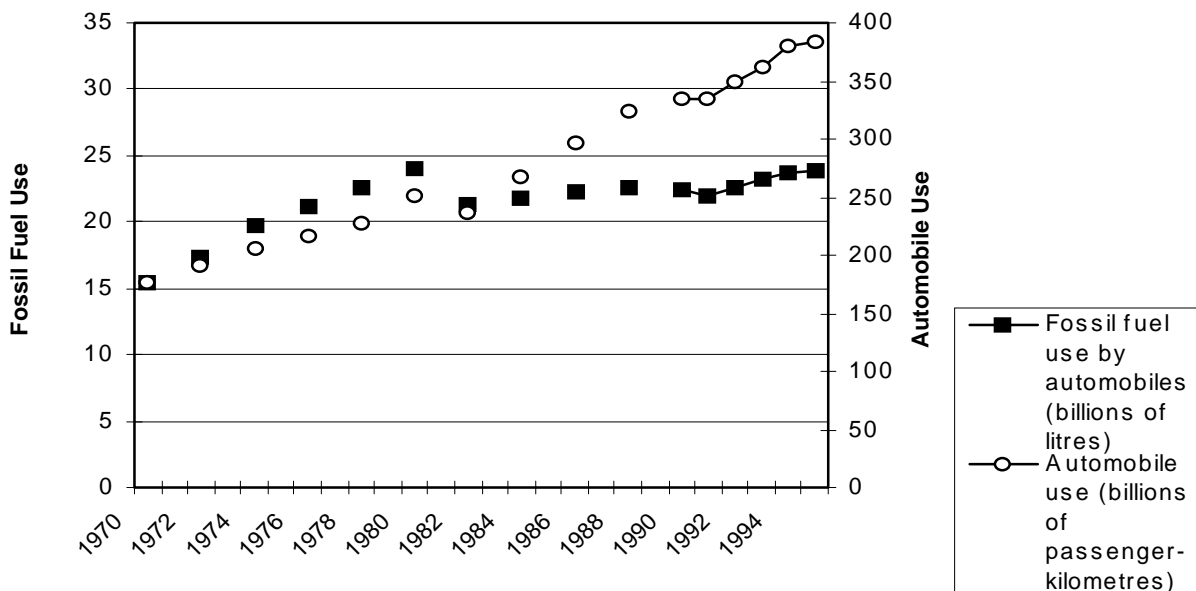
	November 1973	1996	Change
Car/Taxi	73.1%	80.7%	10
Public Transport	16.4%	10.1%	-38
Bicycle (or motorcycle, 1973)	0.4%	1.1%	175
Walk	8.6%	7.0%	-23
Other	1.9%	1.0%	-47

Fuel Efficiency

“Average fuel efficiency per passenger-kilometre travelled has improved. Thus, overall fuel consumption by automobiles would be decreasing if it were not for the increase in automobile travel.”^{lxxxiii}

The oil crisis of 1973 was one precipitating factor in increased fuel efficiency for automobiles. In the years prior to the crisis, most automobiles were actually becoming less efficient. Statistics Canada notes that from 1965 to 1973, “average fuel consumption over 100 km went from 16.5 to 17.8 litres.” After the oil shocks, motorists reacted by demanding smaller and more fuel-efficient cars: “Although the real pump price increased by 60 percent between 1973 and 1985, the fact that cars consumed only three quarters as much gasoline to travel the same distance limited travel cost increases to less than 20 percent during the period. Even after gasoline prices plunged in 1986, fuel efficiency continued to improve until the end of the Gulf war in 1991, and has since stabilized.”^{lxxxiii}

Fossil fuel use by automobiles and Automobile Use, 1970-1996^{lxxxiv}



Fuel efficiency of new automobiles and fuel cost^{lxxxv}

Year	Fuel efficiency* (litres per 100 kilometres)	Fuel cost** (1986 \$/litre)
1965	15.1	\$0.36
1970	15.5	\$0.35
1973	16.5	\$0.33
1974	15.9	\$0.35
1975	15.3	\$0.36
1976	13.2	\$0.37
1977	12.6	\$0.38
1978	11.5	\$0.36
1979	11.5	\$0.36
1980	10.2	\$0.39
1981	9.3	\$0.47
1982	8.4	\$0.52
1983	8.4	\$0.52
1984	8.5	\$0.53
1985	8.4	\$0.54
1986	8.2	\$0.45
1987	8.1	\$0.46
1988	8.1	\$0.44
1989	8.1	\$0.45
1990	8.2	\$0.49
1991	8	\$0.46
1992	8.1	\$0.43
1993	8.1	\$0.41
1994	8.2	\$0.40
1995	8	\$0.43
1996	7.9	\$0.39

* This is the average efficiency of the fleet of new automobiles (not including vans and small trucks) that are sold each model year.

** Based on an average of provincial retail prices of regular gasoline corrected for inflation.

Vehicle Registrations by Type of Vehicle and Licensed Drivers, 1971^{lxxxvi} & 1996^{lxxxvii}

Year	Passenger Automobiles (000s)	Commercial Vehicles (000s)	Motorcycles (000s)	Licensed Drivers (000s)
1971	6,967	1,856	199	9,595
1996	13,406	3,829	314	19,744
% Change	92	106	58	106

New Motor Vehicle Sales, 1971 & 1996^{lxxxviii}

	1971	1996	% Change
Number of Vehicles Sold	68,569	1,204,557	1657

World Automobile Production, 1971 & 1996^{lxxxix}

	1971	1996	% Change
Production (millions)	26	37	42
Total Fleet (millions)	207	489	136

Consumption

The way we consume resources through daily living patterns puts pressure on the environment, which must produce resources for human activity and absorb the wastes generated by that activity.

The World Wildlife Fund's *Living Planet Index* uses global consumption patterns to calculate Consumption Pressure—a measure of the burden placed on the natural environment by humanity. “Globally, Consumption Pressure is growing rapidly—at about 5 per cent a year—and is likely to exceed sustainable levels, at least for fish consumption, meat consumption, and CO₂ emissions, if indeed they have not been exceeded already. Consumption Pressure is very unevenly distributed: on average, a consumer in the industrialized world exerts two-and-a half times as much pressure on the natural environment as his or her counterpart in the developing world.”^{xc}

Canadian Consumption Pressure: 2.35 Units^{xci}

Another way of calculating the pressure we put on our environment is the “Ecological Footprint.” This term was developed as a measure of human consumption in terms of land units needed to support human activity. In 1995, the average Canadian had an ecological footprint of about 4.8 hectares, or three city blocks. “That includes 1.3 hectares for food, 1.0 for housing, 1.1 for transport, and 1.1 for consumer goods. Looked at another way, land use involves 2.9 hectares for energy, 1.1 for farmland, 0.6 for forest, 0.2 under pavement and buildings.”^{xcii} If everyone on Earth lived like Canadians, we’d need more than three Earths to sustain global levels of consumption. As we can see from the table below, and discussions of water use, energy, and transportation above, Canadian consumption continues to grow. While we use energy more efficiently, we use more of it.

Canadian Consumption as Compared to World Average, 1995^{xciii}

	Population (millions)	Grain Total (kg grain- equivalent)	Fish Marine (kg)	Wood (square metres)	Freshwater Withdrawal s (square metres)	CO ₂ Emissions (t)	Cement (kg)
Canada	29.46	560	31.7	1.81	644	14.95	234
World Average		316	15.9	0.58	1604	4.05	242

Equipment in Canadian Households, 1982 and 1996^{xciv}

Equipment	% of households owning equipment, 1982	% of households owning equipment, 1996	Change 1982-1996
Air conditioner	16	29.3	83
Microwave Oven	10.3	85.3	728
Gas Barbecue	19.9	53.2	167
Refrigerator	99.7	99.6	0
Freezer	54.4	57.1	5
Dishwasher	33.7	47.7	42
Washing Machine	77.4	79.6	3
Clothes Dryer	66.3	76.5	15
Automobile	80.2	77.5	-3
One	52	53.5	3
Two or more	28.3	20.4	-28
Van or truck	20.2	32.2	59
Telephone	97.9	98.7	1
Radio	98.8	98.6	0
Colour Television			
One	72.5	47.1	-35
Two or more	12.3	51.5	319
Cable Television	58.9	74	26
VCR	6.4	83.5	1205
Compact disc player	-	53.4	--

References

- ⁱ McDonald, Doug. *The Politics of Pollution: Why Canadians are Failing Their Environment*. Toronto: McClelland & Stewart Inc., 1991.
- ⁱⁱ Ibid.
- ⁱⁱⁱ Notes: Peak year was 1974-75, at 1.6 percent. Budget changes are due in part to reorganization of department: in 1980-81, Fisheries left and ParksCan joined; in 1985-86, Forestry left; in 1992-93, the DOE got a boost from the now-defunct Green Plan; in 1994-95, the departure of ParksCan coincided with a major drop in budget, as did a Program Review in 1995-96. Environment Canada. *EC Budget Declining in Importance Federally: DOE Budget as a % of the Total Federal Budget. Based on the annual Main Estimates, Part II, for the Government of Canada*. Hull, QC: Environment Canada, 1997.
- ^{iv} Health Canada. *Health and Environment: Partners for Life*. Ottawa: Minister of Public Works and Government Services, 1997.
- ^v Ibid. p. 163.
- ^{vi} Ibid. p. 56.
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Appendix F: Social Environment

FAMILIES	F2
PERCENT CHANGES IN FAMILY TYPES, 1970-1995	F3
<i>All Families</i>	F3
<i>Total</i>	F3
FAMILY STRUCTURE: MARITAL STATUS, COMMON-LAW UNIONS AND FAMILIES	F4
WORKING FAMILIES	F6
<i>The Working Family, 1976-1997</i>	F6
WORK	F7
THE CHANGING NATURE OF WORK	F7
<i>Distribution of Employment by Industry in 1961 and 1995</i>	F7
<i>Labour Force Estimates by Composition of Workforce</i>	F8
NON-STANDARD WORK	F8
<i>Nonstandard Employment as a Percentage of Total Employment, 1976 to 1997</i>	F9
HOURS WORKED	F9
UNEMPLOYMENT	F9
<i>Unemployment Rate and Size of Labour Force, 1970 & 1997</i>	F10
EARNINGS	F11
EDUCATION	F12
<i>Educational Attainment of the Labour Force in 1975 and 1995, by Gender</i>	F12
GENDER & WORK	F13
<i>The Wage Gap</i>	F13
EARNINGS	F14
ECONOMIC DISPARITY	F16
ECONOMIC DISPARITY AMONG FAMILIES	F16
<i>Percentage Distribution of After-tax Income of All Units, by Quintiles, 1975, 1984, & 1994</i>	F16
<i>Index of Social Health: Poverty Rates of Elderly and Children, 1970 to 1995</i>	F17
<i>Upper limits of family income and distribution of aggregate family income by deciles, 1970 to 1995, in 1995 constant dollars</i>	F17
EDUCATION	F19
EDUCATIONAL ATTAINMENT OF CANADIANS 15+, 1971 & 1996, CANADA	F19
<i>Women as a proportion of total full-time university enrolment, Canada, 1972-1973 and 1992-1993</i>	F22
LITERACY	F23
THE DISTRIBUTION OF LITERACY ON THE THREE IALS SCALES, CANADIANS 16-19	F23
DIFFERENCES AMONG GROUPS	F23
INDEX OF SOCIAL HEALTH	F24
INDEX OF SOCIAL HEALTH AND GDP (1986 PRICES), CANADA, 1970-1995	F25
REFERENCES	F26

Appendix F: Social Environment

*The ENVIRONMENT category includes all those matters related to health which are external to the human body and over which the individual has little or no control. Individuals cannot, by themselves, ensure that food, drugs, cosmetics, devices, water supply, etc. are safe and uncontaminated; that the health hazards of air, water and noise pollution are controlled; that effective garbage and sewage disposal is carried out; and that the social environment, including rapid changes in it, do not have harmful effects on health.*ⁱ

—A New Perspective on the Health of Canadians

Families

Over the past 25 years, “changes in social attitudes, family laws and social security provisions led to significant changes in the structural composition of families. Between the 1971 and 1996 Censuses, the total population increased by 34 percent while the number of census families increased by 55 percent. The fast growth of female lone-parent families contributed considerably to this difference in growth rates. And the aging of the population led to an increase in the proportion of elderly families.”ⁱⁱ

Between 1970 and 1996, family structure changed substantially. The number of female lone-parent families more than doubled, and rose from 7 percent of all families in 1970 to 12 percent in 1995.ⁱⁱⁱ The number of lone-parent and common-law families is growing at a much more rapid pace than that of married couple families: “[b]etween 1991 and 1996, the number of lone-parent families increased 19%, compared to 28% for common-law families and 1.7% for married couple families.”^{iv}

Other Statistics Canada findings:

- “Between 1991 and 1996, the number of children living in families increased 6.3%. There was almost no increase in children living in families of married couples, in contrast to strong growth among children who lived with common-law couples (+52%) and lone parents (+19%). Almost one in every five children in Canada lived with a lone parent in 1996.”^v
- “Overall, the total number of families in Canada increased 6.6% to 7.8 million between 1991 and 1996. This was a more moderate pace than the growth rate of 9.2% in the previous five-year period. This slower growth was the result of people waiting longer to either marry or enter a common-law union. In addition, there was a higher proportion of separated, divorced or widowed individuals who were not living as part of a couple at the time of the Census.”^{vi}

Percent Changes in Family Types, 1970-1995^{vii}

While the total population of Canada increased by about a third, the number of Census families increased by half, mostly due to an increased number of female lone-parent families (which have grown 155 percent since 1970). Other trends of note: the number of dual-earner families has increased substantially. Husband-wife families in which the wife earns income have grown 132 percent since 1970, while those in which only the husband earned income have *decreased* by almost 13 percent.

Family Type	% Growth, 1970-1995
Total population	34
All families	55.1
Husband-wife families	46.2
Wife with employment income	132.4
Wife without employment income	-12.7
Male lone-parent families	93.3
Female lone-parent families	155.5
Under age 45	243.1
45 and over	84.3

Family Structure	1971		1996		% Change in proportion, 1971 to 1996
	Total	% of total	Total	% of total	
<i>All Families</i>	5,054,630		7,837,865		55
Husband-wife families^{viii}	4,585,215	91	6,700,360	85	46
Both spouses worked	1,924,720	38	4,011,680	51	108
Husband only worked	2,195,940	43	1,162,290	15	-47
Husband did not work	464,560	9	1,526,385	19	229
Male Lone Parent	99,445	2	192,275	2	93
Female Lone Parent	369,970	7	945,235	12	155

Family Structure: Marital Status, Common-law Unions and Families

Family Size & Proportion of Population Living in Families^{ix}

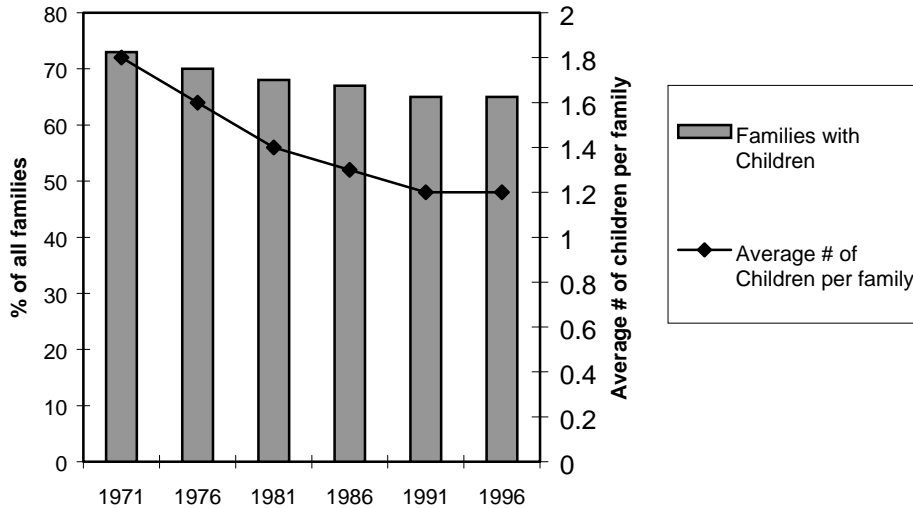
	1971	1996	% Change
Family Size (persons)	3.7	3.1	-16
Proportion of Population in Families %	89	84	-1

Family Types as a % of all Families with Children^x

	1971 (% of all families)	1981 (% of all families)	1996 (% of all families)	% Change
Married couples	86.8		74	
Common-law^{xi}			11.7	
Female lone-parent	10.4		12.1	
Male lone-parent	2.8		2.5	-10.7

Statistics on common-law couples were collected beginning in 1981, when they accounted for 5.6 percent of all families. In 1996, they accounted for 11.7 percent of all families, an increase of 109 percent.^{xii}

Families with children and average number of children per family, 1971 to 1996^{xiii}



Marriage and Divorce

In 1996, people are waiting longer before marrying than they did in 1971. Then, only 56 percent of people aged 20-24 were single; according to the 1996 Census, 89 percent of 20-24-year-olds had never been married.^{xiv} Couples in 1996 more frequently prefer to live in common-law unions: in 1996, 16 percent of people who had never married lived in a common-law union, up from 14 percent in 1991.^{xv} (Data on common-law partnerships was not collected in 1971.)

Marital Status of People 15 years and over^{xvi}

	1971	1996	% Change
Single	28.3	32.2	14
Now Married	61.9	51.2	-17
Separated	2.4	3	25
Divorced	1.2	7.2	500
Widowed	6.2	6.4	3

Number of Marriages and Marriages Per 1000 Population^{xvii}

	1974	1994	% Change
Number of Marriages	198,824	159,959	-20%
Per 1000 Population	8.7	5.5	-37%

Number of Divorces and Divorces Per 100,000 Population^{xviii}

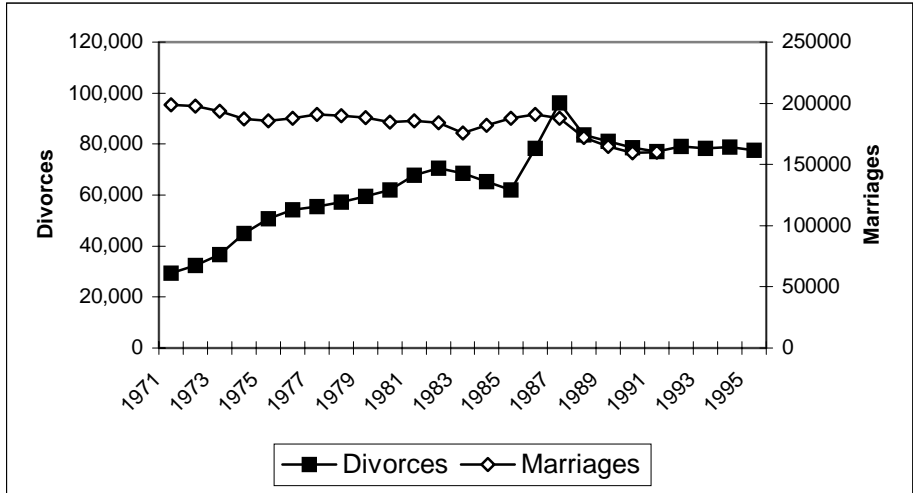
	1971	1995	% Change
Number of Divorces	29 684	77 636	162%
Per 1000 Population	13.5	26.2	95%

“Federal Divorce Act of 1968 - Either partner must be a resident of the respective province for one year for the provincial court to hear the case. Grounds of divorce include: fault grounds; adultery, mental or physical cruelty, homosexual conduct, imprisonment of the respondent for a prolonged length of time, gross addiction to alcohol or narcotics for at least three years, and breakdown grounds; separation for three years, or desertion for five years. A divorce is granted in 2 parts and the second (the decree) is necessary before remarriage.”

Divorce Act of 1985 - Divorce was granted on only one condition: breakdown of marriage, established by proof of adultery, mental or physical cruelty, or a separation of one year.^{xix}

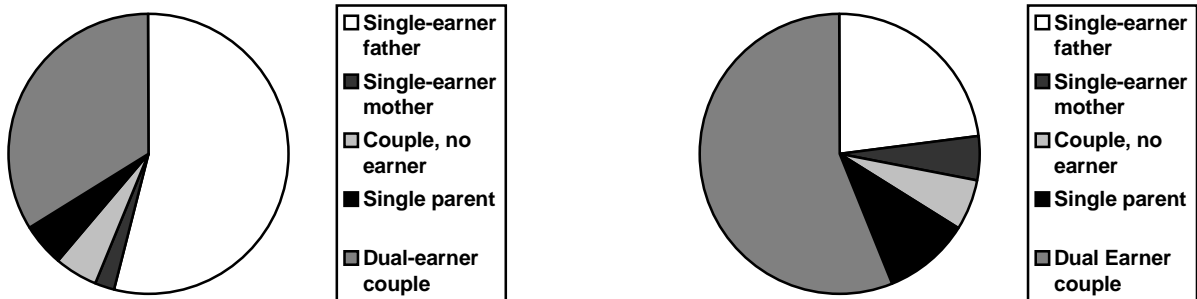
Working Families

The number of married-couple families in which only one spouse (usually the husband)



works has decreased substantially since 1976: from 54 percent to 23 percent of all families. During the same period, the proportion of single-earner mothers more than doubled, and dual-income families went from about a third of all families (34 percent) to more than half (56 percent). The number of employed and unemployed single-parent families doubled as well, from 5 percent to 10 percent of the total.^{xx}

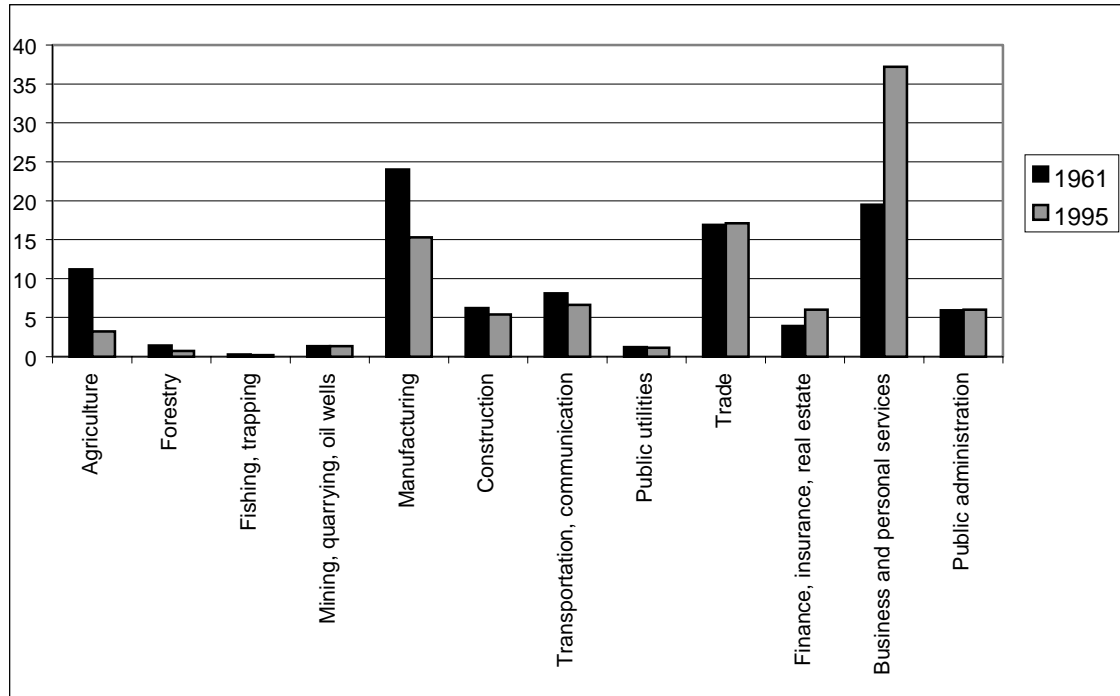
The Working Family, 1976-1997^{xxi}



Work

The Changing Nature of Work

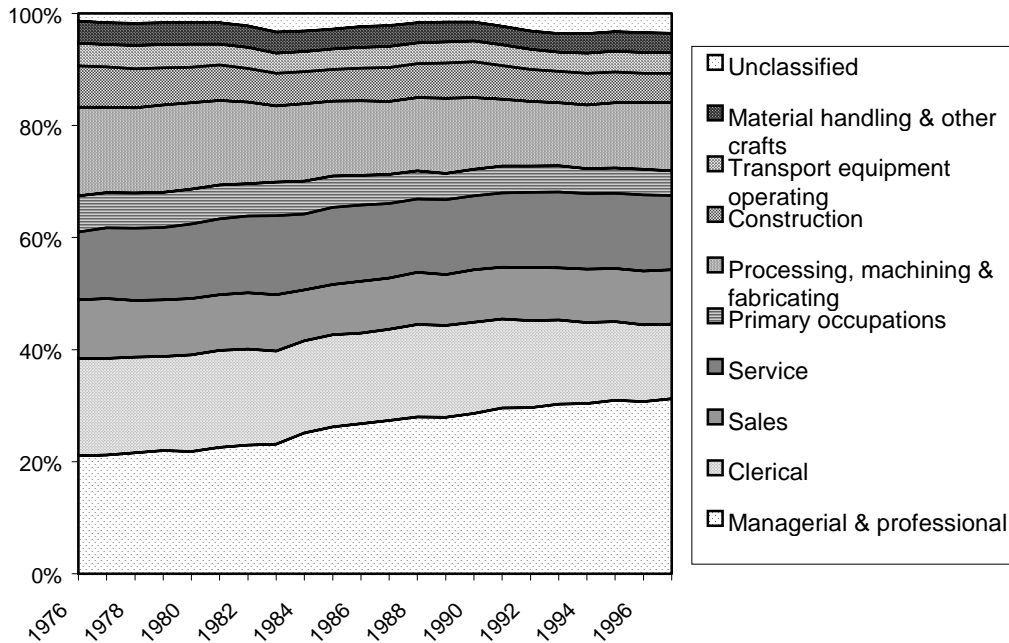
Distribution of Employment by Industry in 1961 and 1995^{xxii}



Since 1961, declines in agricultural and manufacturing employment have been offset by gains in business and personal services. Betcherman and Lowe report that more than 70 percent of all jobs are now in the service sector of the economy. Increasingly, there are signs of growing polarization—into “good jobs” versus “bad jobs”—within this sector:

This is captured in the distinction between “upper-tier” or “dynamic” services—high value-added industries such as financial and business services where innovation and knowledge are critical—and “lower-tier” or “traditional” services, including retail trade and consumer services, where many jobs have low skill requirement and wages. Because these two sectors will continue to be the main sources of employment and growth, the balance between them will influence the overall quality of employment in the future. Until now, lower-tier, not upper-tier, services have been creating the greater number of jobs.^{xxiii}

Labour Force Estimates by Composition of Workforce^{xxiv}

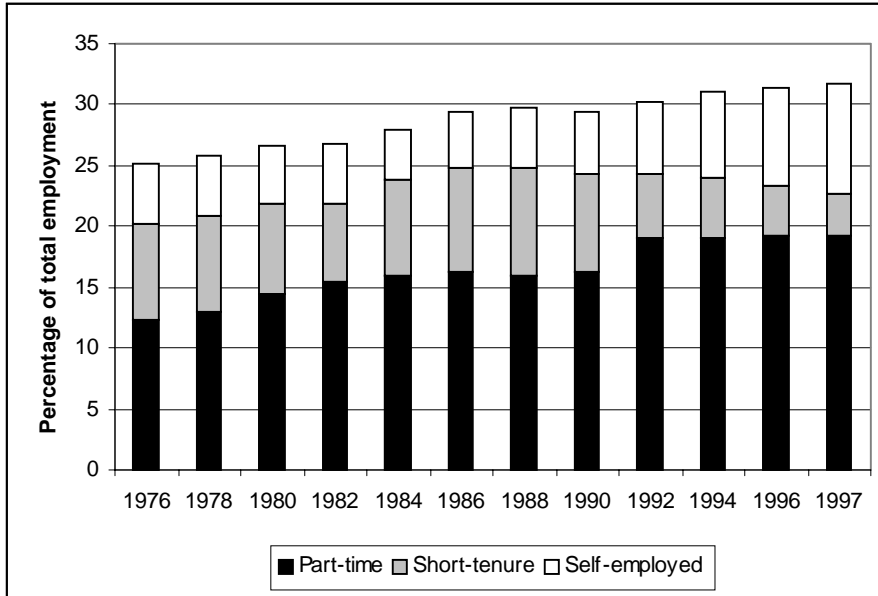


Non-Standard Work

“The term non-standard work was coined in the 1980s to describe the shift away from full-time, continuous work.”^{xxv} Non-standard work includes part-time employment, short-term or multiple jobs, and self-employment. In 1976, non-standard work accounted for 25.2 percent of total employment. By 1995, it accounted for 30.5 percent of total employment:

However, while the increase in the overall share of non-standard work has been only gradual, the trend becomes much more dramatic when we note that it accounts for roughly half of the new job creation in the past two decades. This is troubling because, generally speaking, non-standard work falls into the “bad jobs” category: low pay, few benefits, little or no job security, and few intrinsic rewards. But some workers face a dilemma, having to trade these off in order to get the flexibility offered by non-standard employment.^{xxvi}

Nonstandard Employment as a Percentage of Total Employment, 1976 to 1997^{xxvii}



Hours Worked

Since 1976, the instance of the typical 40-hour work week has declined, while both shorter and longer work weeks have increased. Thus, while unemployment has been rising, so has the incidence of long work hours.

Unemployment

In 1970, the unemployment rate was 6 percent. Since then, it has fluctuated, rising until it reached a peak of 11.8 percent (1.4 million people) in 1983, and declining since then. In 1997, the unemployment rate was 9.2 percent.^{xxviii} In *The Future of Work in Canada*, authors Gordon Betcherman and Graham S. Lowe point out that “before 1975, the average annual unemployment rate never got above 7.5 percent; since then it has not dropped below that level.”^{xxix}

Betcherman and Lowe point out that the *nature* of unemployment has changed as well since the 1970s. Unemployment has moved from a “cyclical” problem to a “structural” one; from a blue-collar phenomenon driven by seasonal cycles and slow business to one driven by “technological displacement, economic restructuring, or downsizing,” leading to more long-term joblessness and affecting white-collar workers at professional and managerial levels.^{xxx}

Unemployment Rate and Size of Labour Force, 1970 & 1997^{xxxii}

	1970	1997	% Change
Unemployment Rate (%)	6	9.2	53
Labour Force (millions)	8.3	15.4	86

*Earnings*Average earnings of women and men in constant (1996) dollars and female-to-male earnings ratios, by work activity, 1967 to 1996^{xxxii}

Year	Full-year full-time workers (a)			Other workers			All earners		
	Women	Men	Earnings ratio		Men	Earnings ratio	Women	Men	Earnings ratio
1967	18,427	31,548	58.4	6,619	13,091	50.6	12,068	26,177	46.1
1969	20,188	34,412	58.7	7,863	17,104	46.0	12,778	27,960	45.7
1971	22,255	37,304	59.7	7,427	14,730	50.4	14,067	30,013	46.9
1972	23,104	38,621	59.8	7,627	14,758	51.7	14,348	31,116	46.1
1973	23,320	39,347	59.3	7,795	14,929	52.2	14,658	31,684	46.3
1974	24,368	40,911	59.6	8,519	15,965	53.4	15,370	32,415	47.4
1975	25,256	41,957	60.2	8,435	16,664	50.6	15,956	33,184	48.1
1976	26,565	44,921	59.1	9,272	17,679	52.4	16,509	35,358	46.7
1977	25,881	41,708	62.1	9,427	15,513	60.8	17,030	33,547	50.8
1978	26,733	42,436	63.0	8,992	15,327	58.7	16,971	33,405	50.8
1979	26,133	41,174	63.5	9,349	16,133	57.9	17,149	33,258	51.6
1980	26,969	41,909	64.4	9,209	14,998	61.4	17,207	33,299	51.7
1981	26,214	41,129	63.7	9,592	15,399	62.3	17,431	32,500	53.6
1982	26,029	40,671	64.0	8,947	14,196	63.0	17,051	30,969	55.1
1983	26,931	41,555	64.8	8,422	13,521	62.3	17,207	31,160	55.2
1984	26,562	40,498	65.6	9,411	13,432	70.1	17,596	30,581	57.5
1985	26,421	40,602	65.1	9,094	12,980	70.1	17,637	31,311	56.3
1986	26,852	40,807	65.8	9,927	13,408	74.0	18,248	31,746	57.5
1987	27,320	41,303	66.1	10,139	13,298	76.2	18,523	32,037	57.8
1988	24,426	41,912	65.4	10,009	13,497	74.2	18,884	32,842	57.5
1989	27,484	41,655	66.0	10,474	14,211	73.7	19,445	32,913	59.1
1990	28,310	41,811	67.7	10,123	14,313	70.7	19,459	32,517	59.8
1991	28,893	41,494	69.6	9,567	13,622	70.2	19,458	31,619	61.5
1992	30,122	41,900	71.9	9,849	12,976	75.9	20,133	31,516	63.9
1993	29,653	41,058	72.2	9,614	12,890	74.6	19,865	30,872	64.3
1994	29,491	42,247	69.8	10,090	12,917	78.1	20,086	32,255	62.3
1995	30,154	41,230	73.1	10,143	13,178	77.0	20,528	31,527	65.1
1996	30,717	41,848	73.4	10,388	13,280	78.2	20,902	32,248	64.8

(a) "Full-year" is defined as 50 to 52 weeks for data prior to 1981 and 49 to 52 weeks for more recent data.

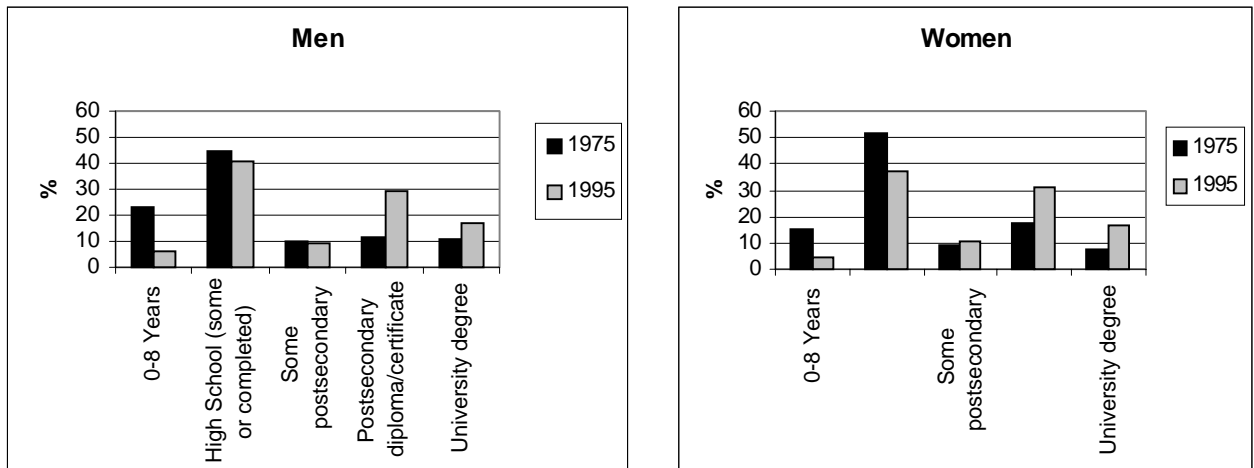
The Changing Labour Force

Betcherman and Lowe point out that the labour force “is now much more diverse, better educated, and older than it was a generation ago.”^{xxxiii} There have been significant increases in female and youth participation in the labour market, which has been slow to respond to the this shifting composition in terms of providing options for child care and balancing family/work obligations.

Education

The labour force is also better educated, as the chart below indicates, and consistent with the overall trend toward higher levels of education for all Canadians since the 1970s.

Educational Attainment of the Labour Force in 1975 and 1995, by Gender^{xxxiv}



Canada’s labour force is also aging, and this raises issues around retirement and pensions. The dependency ratio, which expresses the number of persons aged 65 and older per 100 persons of working age, rose throughout the past 25 years and will jump significantly “after 2011, when baby boomers begin retiring.”^{xxxv}

Dependency Ratio for Persons 65 and Older^{xxxvi}

	1971	1996	% Change
Dependency Ratio	14.4	18.1	25.7

Gender & Work

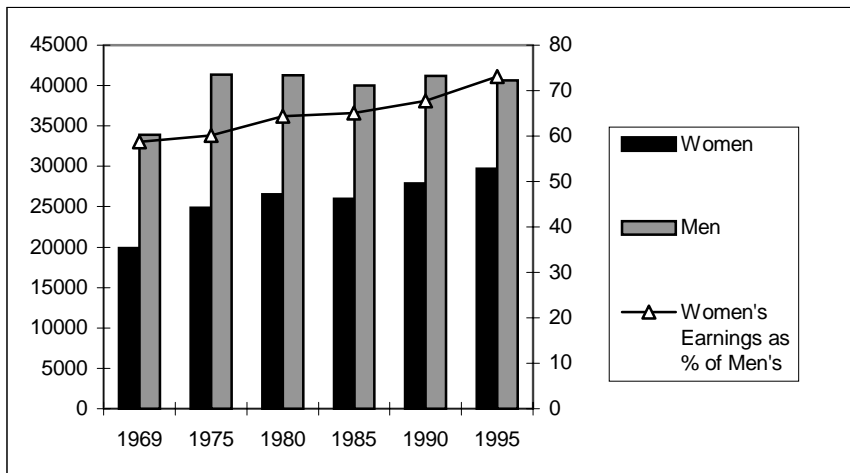
“In 1970, 38 percent of all adult women in Canada worked outside the home for pay. By 1996, this figure had jumped to 58 percent.”^{xxxvii} The dual-earner family is now the norm in Canada. While there have been significant gains in women’s employment opportunities, gender-related inequities persist in the workplace. At home, working women still tend to shoulder the majority of household chores.

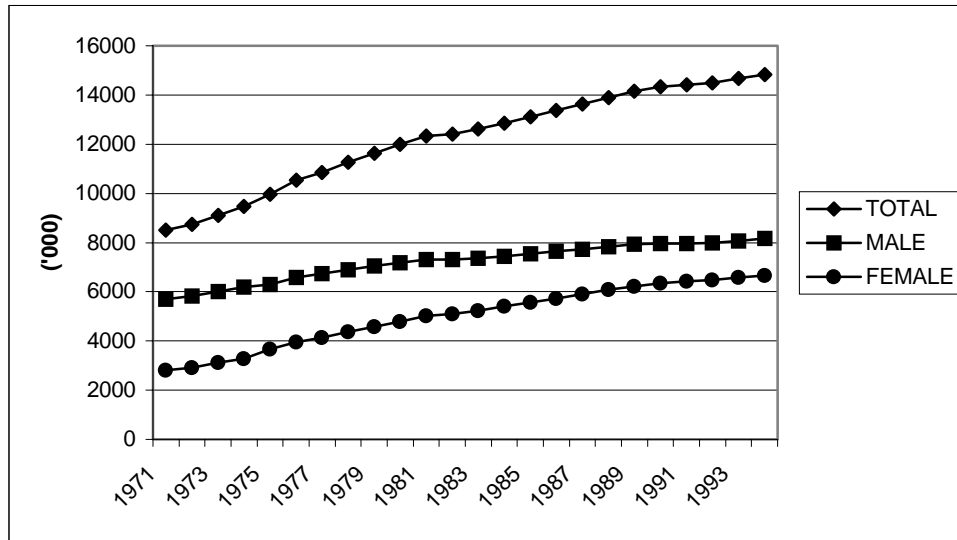
Women tend to work in what Krahn and Lowe term “female job ghettos,” offering, in contrast to “male job *shelters*,” little economic security, opportunity for advancement, or stimulation.^{xxxviii} In 1996, women’s jobs tend to be concentrated in clerical and medical/health-related fields (80 percent of all employees), and teaching, social sciences, and service occupations (between 57 and 65 percent female).^{xxxix} One 1971 study cited by Krahn and Lowe suggests that 86 percent of women then worked in traditionally female occupations; by 1991 that number had declined to 79 percent.^{xl} Women have made “significant inroads” in law, medicine, and management and administration, but still encounter the “*glass ceiling*—subtle barriers to advancement that continue to exist despite formal policies designed to eliminate such barriers.”^{xli}

The Wage Gap

In 1969, Canadian women earned an average of 58.7 percent of men’s earnings, and in 1975, they earned an average of 60.2 percent of the average man’s salary. By 1996, the wage gap had shrunk, but women still only earned 73.1 cents for every dollar a man earned.^{xlii}

Average Earnings in Constant (1995) Dollars for Full-Time/full Year Workers, by Gender, Canada, 1969 -1995^{xliii}



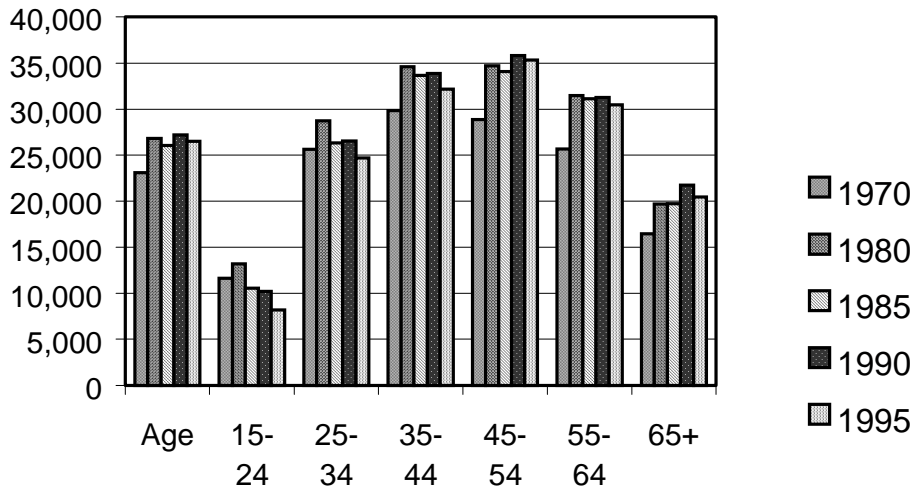
Total Labour Force, 1971-1994^{xliv}**Earnings**

Since the 1970s, the distribution of earnings has become more unequal; more Canadians are either in the high-earner or low-earner categories, and fewer are in the middle. The two principal factors underlying this trend, as Betcherman and Lowe report, are the redistribution of work hours and the “sharp decline in wages paid to young workers relative to older workers.”^{xlv}

Earnings have also stagnated in the past 25 years. The “robust real wage increases of the 1950s and 1960s slowed dramatically in the 1970s and essentially had disappeared by the 1980s. The average Canadian worker today earns little more than his or her counterpart did two decades ago. Younger workers have been hardest hit by this trend, experiencing a sharp drop in real wages in the 1980s.”^{xlvi} The levelling off of wages coincided with the marked productivity slowdown in the 1970s.

Average earnings in constant (1995) dollars, by age, Canada^{xlvii}

	1970	1980	1985	1990	1995
Age	23,075	26,784	26,062	27,170	26,474
15-24	11,643	13,191	10,565	10,212	8,199
25-34	25,641	28,724	26,326	26,519	24,689
35-44	29,836	34,601	33,620	33,855	32,155
45-54	28,845	34,683	34,061	35,816	35,317
55-64	25,669	31,441	31,092	31,249	30,448
65+	16,474	19,707	19,729	21,742	20,446



Economic Disparity

Economic Disparity among Families

Between 1970 and 1995, the rich indeed got richer and the poor got poorer. According to Statistics Canada, “[b]etween 1970 and 1995, real average family income increased 32.0 percent. However, this increase was not spread evenly across all families. The share of total income going to families lower on the income scale declined slightly during the 25-year period, while it increased fractionally for those at the upper levels.”^{xlvi}

However, increases in economic disparity remained relatively moderate: “The top 30% saw an increase of 1.9 percentage points in their share of all income (from 53.6% in 1970 to 55.5% in 1995), while the bottom 70% experienced a drop of 1.9 points (from 46.4% to 44.5%).”^{xlix} Government transfer payments and income taxes offset a growing income earning gap; without these payments and taxes, economic disparity would be greater.¹

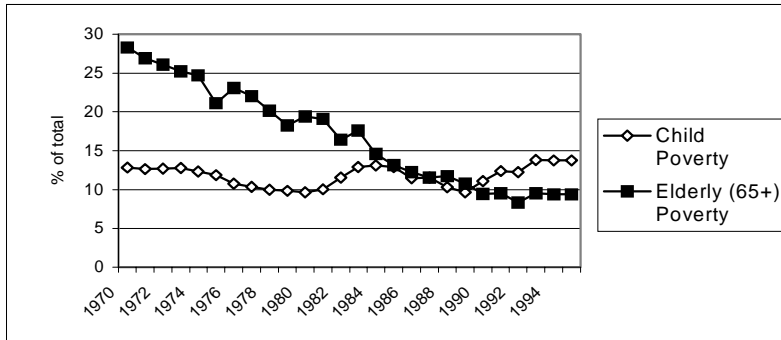
According to the same report, “the real difference in income disparity between 1995 and 1970 has to do with the changing nature of families and the profile of those who live in poverty. In the 70s, those aged 65 dominated the bottom decile and over (26 percent); extreme poverty was a problem for the old. In 1995, the elderly had been replaced by female single parents, who accounted for 24 percent of the decile in 1970 and “a staggering 40 per cent in 1995.”^{li}

The top 10 percent of earners for both periods were husband-wife families. In 1970, 50 percent of these families had two incomes; by 1995, that proportion had risen to 81 percent. This trend toward dual-income families is evident across all deciles, but most noticeable near the top.^{lii}

Percentage Distribution of After-tax Income of All Units, by Quintiles, 1975, 1984, & 1994^{liii}

QUINTILE	1975 (%)	1984 (%)	1997 (%)
Bottom	4.6	5.2	5.7
Second	11.5	11.4	11.4
Middle	18.2	17.7	17.5
Fourth	25.1	24.8	24.7
Top	40.6	40.8	40.7

Index of Social Health: Poverty Rates of Elderly and Children, 1970 to 1995^{liv}



Upper limits of family income and distribution of aggregate family income by deciles, 1970 to 1995, in 1995 constant dollars^{lv}

From 1970 to 1995, “the share of total income going to families in the top 3 deciles (or 30% of all families taken as a group) increased In contrast, the share of the families in the bottom 7 deciles (the remaining 70% of all families taken as a group) declined.”^{lvi}

At the same time, family size decreased from an average of 3.7 to 3.1 people per family, so that overall, families were generally better off financially. Notes Statistics Canada:

“Compared with the overall increase of 32.0% in average family income, average income per family member increased 60.9% over the period.”^{lvii}

	1970	1980	1985	1990	1995
Decile					
First	11,968	16,343	15,786	17,549	15,158
Second	19,318	24,287	23,368	25,860	23,184
Third	25,884	32,747	31,271	34,413	31,097
Fourth	31,427	40,294	39,055	42,295	38,988
Fifth	36,622	47,404	46,433	50,111	46,951
Sixth	42,194	54,742	54,248	58,176	55,355
Seventh	48,392	63,203	62,764	37,568	64,997
Eighth	56,816	74,196	73,974	79,903	77,051
Ninth	71,318	92,745	92,725	100,751	98,253

Percent share of aggregate income by decile, 1970 to 1995^{lviii}

Year	1970	1980	1985	1990	1995
Decile					
First	1.46	1.48	1.49	2	1.45
Second	3.78	3.8	3.75	3.78	3.55
Third	5.48	5.38	5.18	5.27	4.96
Fourth	6.97	6.9	6.7	6.69	6.42
Fifth	8.2	8.25	8.13	8.05	7.86
Sixth	9.53	9.61	9.55	9.44	9.37
Seventh	10.96	11.09	11.09	10.95	10.91

Eighth	12.6	12.86	12.94	12.8	13.11
Ninth	25.77	25.13	25.53	15.53	15.85
Tenth				25.85	26.53

Education

From 1971 to 1996, more Canadians became better educated. Education is an important component of socioeconomic status and is often linked to better health status and health behaviours, such as tendency to exercise and likelihood of being a non-smoker. In the 1996-97 NPHS, 30 percent of university graduates rated their health as “excellent,” compared to only 19 percent of respondents with less than a high school education.^{lix}

In 1971, 32 percent of Canadians age 15 and over had less than a Grade 9 education. In 1996, that number had dropped to 12 percent. At the same time, there was an increase in the number of Canadians with some post-secondary education, from 17 percent in 1971 to 34 percent in 1996. Close to 17 percent of Canadians had completed Grades 9-13 in 1971; by 1996, about 35 percent had done so. In 1971, about 5 percent of Canadians had a university degree, compared with about 13 percent in 1996.^{lx} 1996 was the first year in which there were more university graduates than people reporting less than a Grade 9 education.

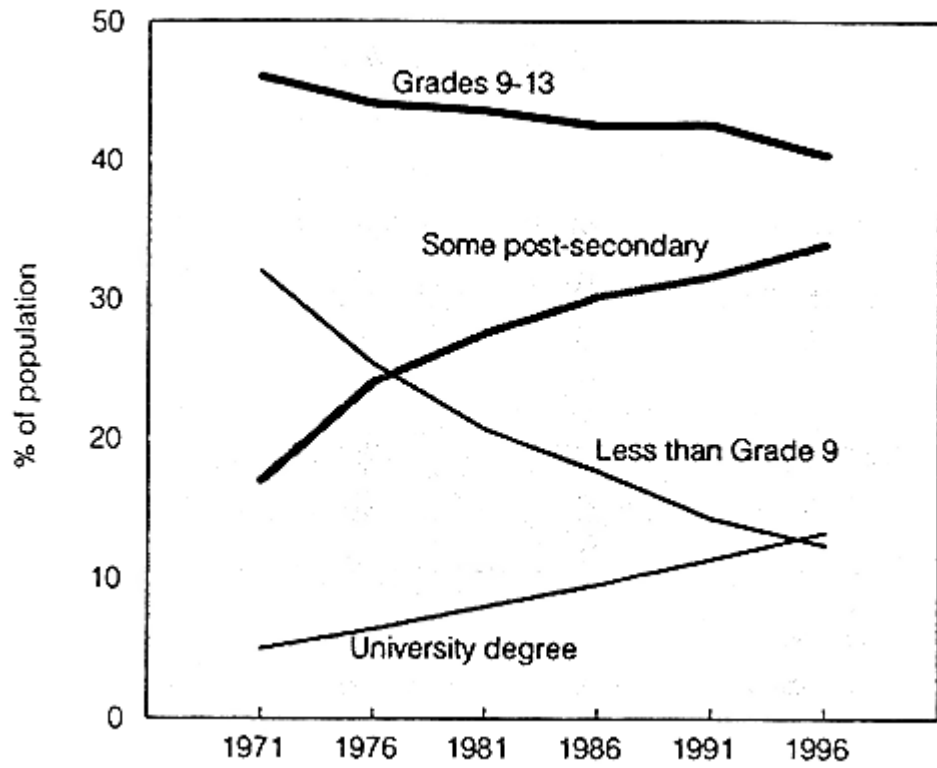
Educational Attainment of Canadians 15+, 1971 & 1996, Canada

	1971	1996	% Change
0-8 Years	32	12	-63
Some post-secondary	17	34	100
Grades 9-13	47	41	-11
University degree	5	13	160

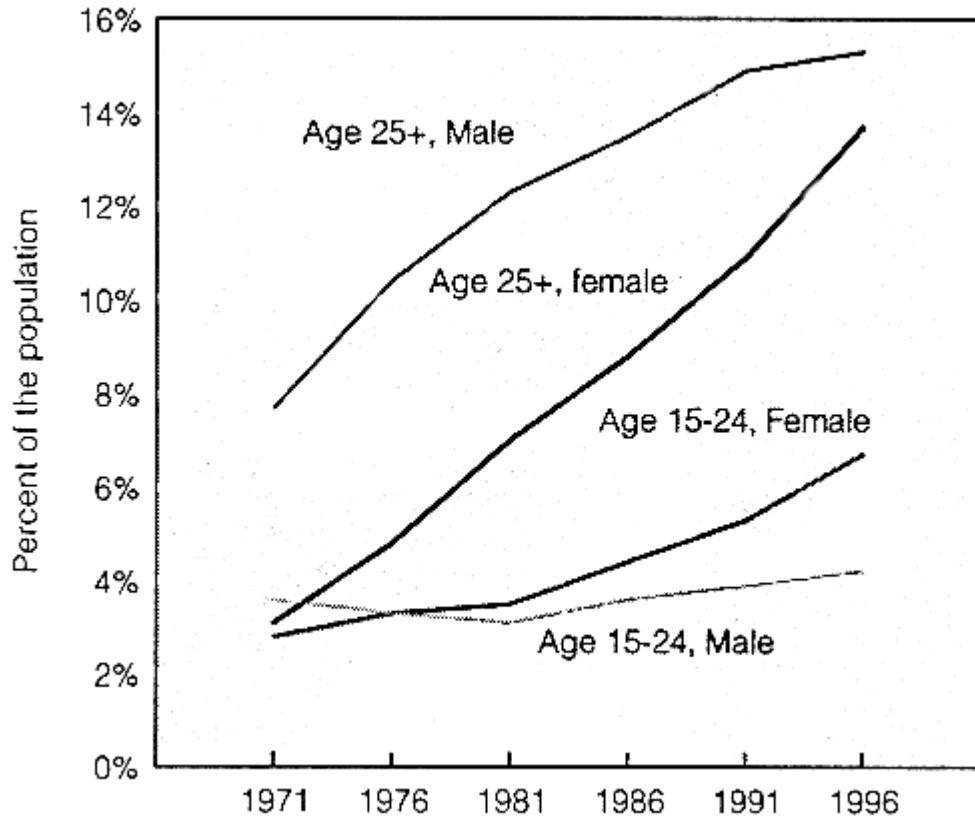
Educational Attainment of the Labour Force by Gender, Canada, 1975 and 1996^{lxi}

	1975		1995		% Change	
	Men	Women	Men	Women	Men	Women
0-8 Years	23.4	15	6.2	3.9	-74	-74
High School (some or completed)	44.7	51.4	37.9	36.2	-15	-30
Some post-secondary	9.8	9.2	9	10.3	-8	12
Post-secondary diploma/certificate	11.8	17.1	29.5	32.2	150	88
University degree	10.4	7.4	17.4	17.2	67	132

Highest Level of Schooling, Age 15+, Canada, 1971-1996

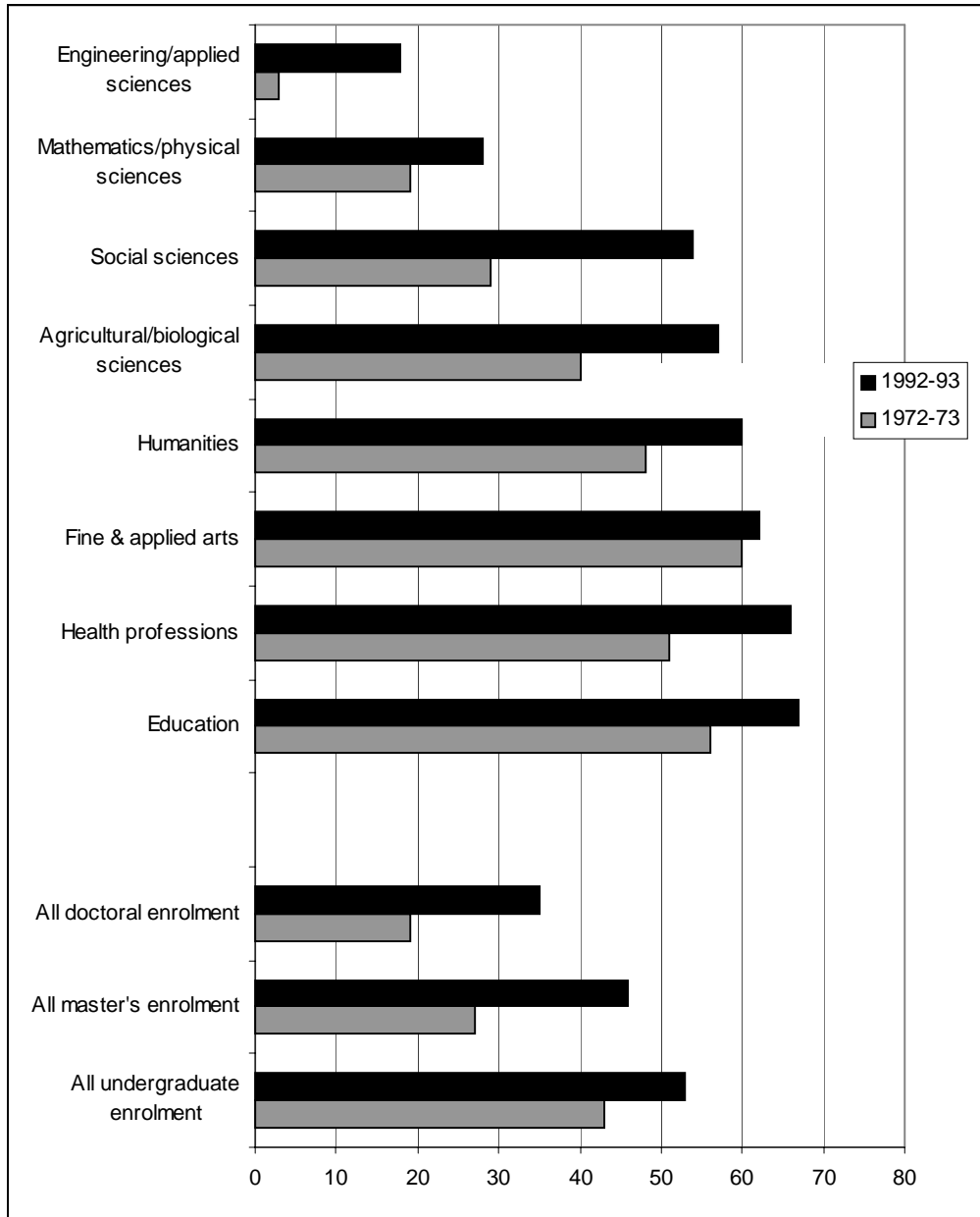


Attainment of a University Degree, Canada, 1971 to 1996



One important change between 1971 and 1996 was the number of women attaining a university degree; the number of women aged 25 and over with a degree more than quadrupled between the two periods (compared to twice as many men). Women aged 15-24 made similar gains compared to men.

Women as a proportion of total full-time university enrolment,
 Canada, 1972-1973 and 1992-1993^{lxii}



Literacy

There is little trend data to describe changes in literacy and numeracy over time. The International Adult Literacy Survey reports that literacy levels have remained unchanged for the past five years. The IALS reports that 22 percent of Canadians 16 years and over fall into the lowest level of literacy, and another 24-26 percent fall into the second-lowest level.^{lxiii} The former have serious difficulties understanding and dealing with printed matter, while the latter can deal with only simple material that is clearly laid out. Literacy levels tend to follow those of educational attainment, but not exclusively.

The distribution of literacy on the three IALS scales, Canadians 16-19^{lxiv}

	IALS Levels (%)			
	1	2	3	4/5
Prose	18	26	35	22
Document	19	25	32	24
Quantitative	18	26	34	22

Differences among Groups

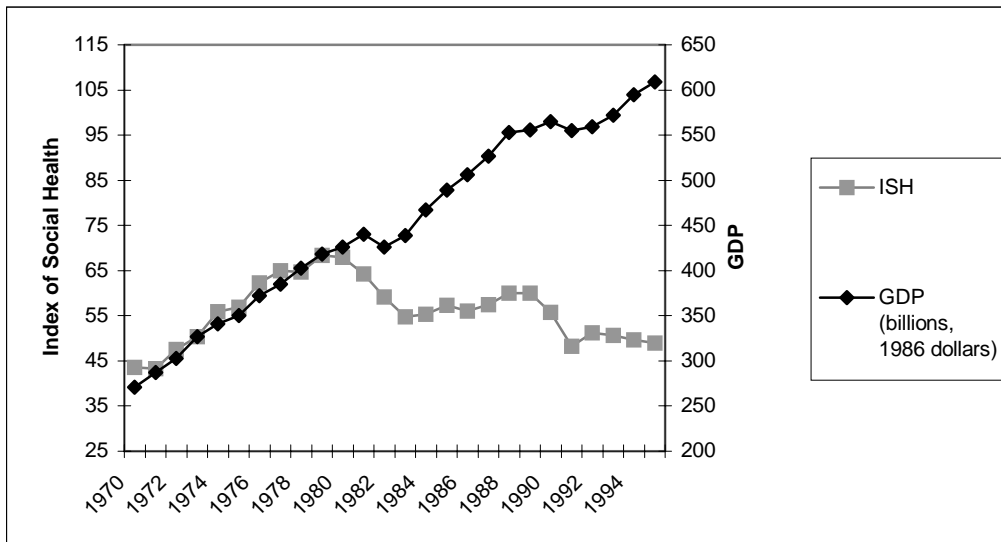
The majority of Canadians over age 65 tended to fall into literacy Level 1.^{lxv} Statistics Canada reports that “the health of many seniors may be at risk simply because they are not able to read crucial information accompanying prescription drugs”; in 1994, “8 in 10 seniors had literacy skills at the two lowest levels, making them especially at risk in medical situations that may demand high literacy ability.”^{lxvi}

Index of Social Health

The Index of Social Health is a measure of the wellbeing of Canadians that identifies fifteen social indicators relating to health, mortality, inequality, and access to services, and stratified according to life stage. For Canada, these indicators are:

Children	Youth	Adults	Elderly	All Ages
<ul style="list-style-type: none"> • Infant Mortality • Child Abuse • Children in Poverty 	<ul style="list-style-type: none"> • Teen suicide • Drug Abuse • High school drop-outs 	<ul style="list-style-type: none"> • Unemployment • Average weekly earnings 	<ul style="list-style-type: none"> • Poverty among those 65+ years • Out-of-pocket health expenditures 	<ul style="list-style-type: none"> • Homicides • Alcohol-related traffic fatalities • Social Assistance Beneficiaries • Access to affordable housing • Gap between rich and poor

“ISH indicators are monitored in terms of relative improvement or decline in performance from 1970 to 1995. Each indicator's best year of performance over the period is scored 10 while the worst year of performance is rated zero. All remaining observations are rated proportionately between zero and 10. The scores for the indicators are then averaged and expressed as a percentage to derive the aggregate Index of Social Health.”^{lxvii}

Index of Social Health and GDP (1986 Prices), Canada, 1970-1995¹

Gross Domestic Product (GDP) is often taken as a measurement of a country's social as well as economic prosperity. But the use of GDP to measure social well-being has been criticized for its limitations: it does not take into account non-market activities that contribute to economic growth *and* well being (such as child-rearing or volunteer work), and it does not reflect economic activity that actually imposes costs on the economy (such as oil spills).^{lxviii}

The Index of Social Health was thus developed as an alternative measure of social well-being. From 1970 to 1995, the ISH tells a markedly different story than that of the GDP. While measures improved in the early 1970s, the ISH veered from the GDP at the beginning of the 1980s, and declined again in the early 1990s; both of these pronounced declines are probably linked to the recessions of the two periods. "In Canada, the index rose from 43 and peaked at 68 in 1979. Since then, the Index has declined to about 49. In other words, Canada has lost the ground it gained in the seventies falling to its approximate starting point."^{lxix} (In comparison, the ISH in the United States peaked at 77 in 1973, then declined continuously until 1982, after which it flattened out at around 40).^{lxx}

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Appendix G: Health Status

MORBIDITY AND MORTALITY	G2
MORTALITY RATES BY CAUSES, 1970 AND 1996	G2
<i>Selected Leading Causes of Death</i>	G3
<i>Trends in Select Mortality Rates among Aboriginal Canadians</i>	G5
SUICIDES BY AGE GROUP AND SEX, 1971 AND 1996	G6
MORBIDITY AND MORTALITY STATISTICS FOR CANCERS BY SITE AND SEX, 1971 AND 1996	G7
<i>Morbidity Rate per 100 000 Males Standardized to 1991 Census Figures</i>	G7
<i>Mortality Rate per 100 000 Males Standardized to 1991 Census Figures</i>	G7
<i>Morbidity Rate per 100 000 Females Standardized to 1991 Census Figures</i>	G8
<i>Mortality Rate per 100 000 Females Standardized to 1991 Census Figures</i>	G8
CANCER RATES FOR CANADA	G9
<i>Lung Cancer Morbidity and Mortality</i>	G9
CASES OF SELECT NOTIFIABLE DISEASES, 1970 AND 1995	G10
<i>Tuberculosis Among Aboriginal Canadians</i>	G11
HOSPITAL SEPARATIONS BY DIAGNOSTIC CATEGORY 1968 AND 1996	G12
<i>Rates per 100 000 Population</i>	G12
SELF-REPORTED HEALTH STATUS	G13
POTENTIAL YEARS OF LIFE LOST BY CAUSE	G14
REFERENCE	G15

Appendix G: Health Status

Morbidity and Mortality

Mortality Rates by Causes, 1970 and 1996ⁱ

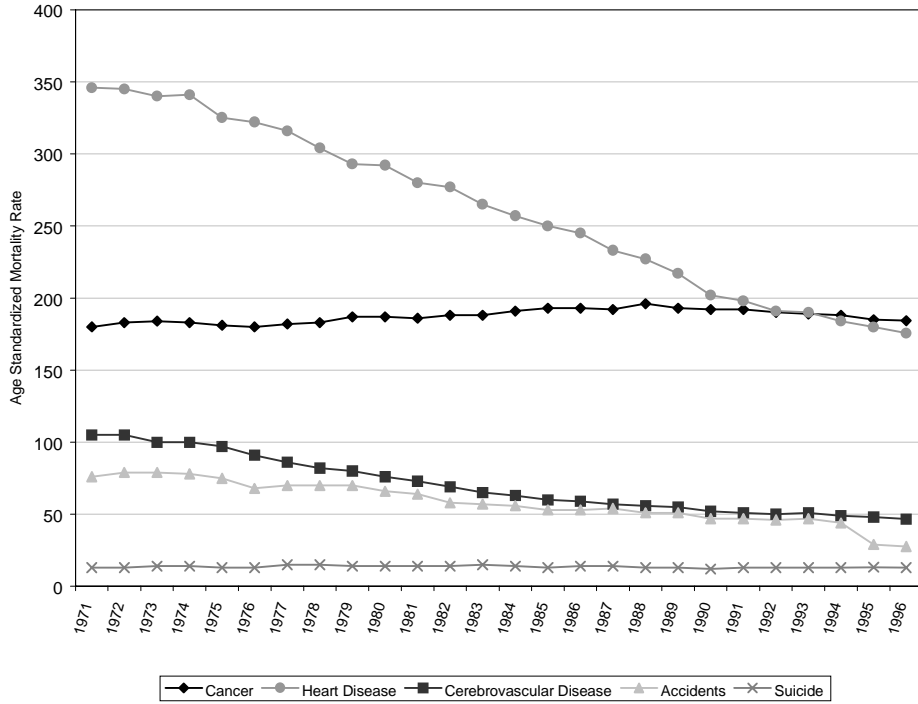
Rates per 100 000 population, age-standardized by 1991 census figures

	1970	1996	% Change
All Causes	956.8	653	-32
Males	1215.8	836	-31
Females	750.4	517	-31
Malignant Neoplasms	182.9	185	1
Males	227.6	231	1
Females	151.6	153	1
Heart Diseases	359.1	133	-63
Males	471.2	184	-61
Females	267.4	95	-64
Cerebrovascular Diseases	106.7	93	-13
Males	115.4	104	-10
Females	100.0	84	-16
Atherosclerosis	21.3	46	116
Males	23.9	53	122
Females	19.6	41	109
Respiratory Diseases	66.0	58	-12
Males	96.8	82	-15
Females	44.3	4	-91
Accidents	74.6	43	-42
Males	106.0	63	-41
Females	43.8	25	-43

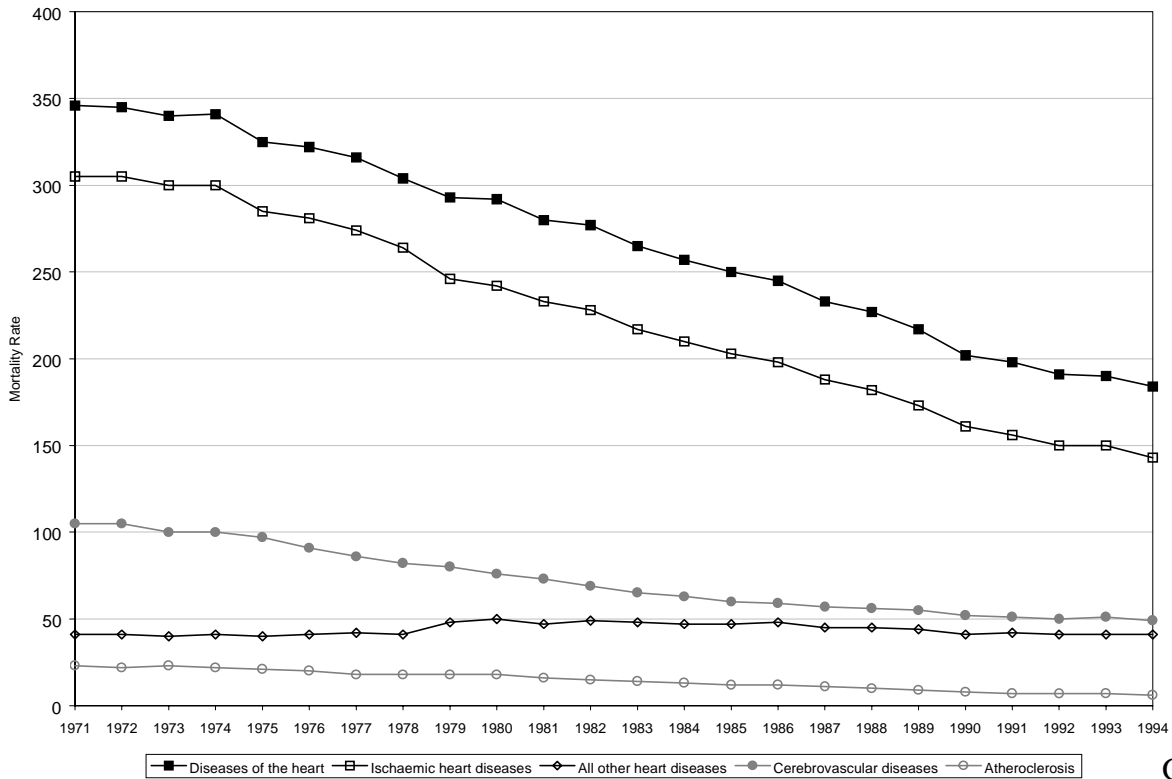
In the 1970s, the most common cause of death for both men and women is heart disease, with cancer and cerebrovascular disease in second and third places respectively.ⁱⁱ

In the past 25 years, mortality rates for nearly all causes of disease have declined, particularly the rates associated with perinatal disorders and atherosclerosis. Deaths due to malignant neoplasms remain fairly constant, and even increase slightly.ⁱⁱⁱ

Selected Leading Causes of Death



Heart Disease and Stroke



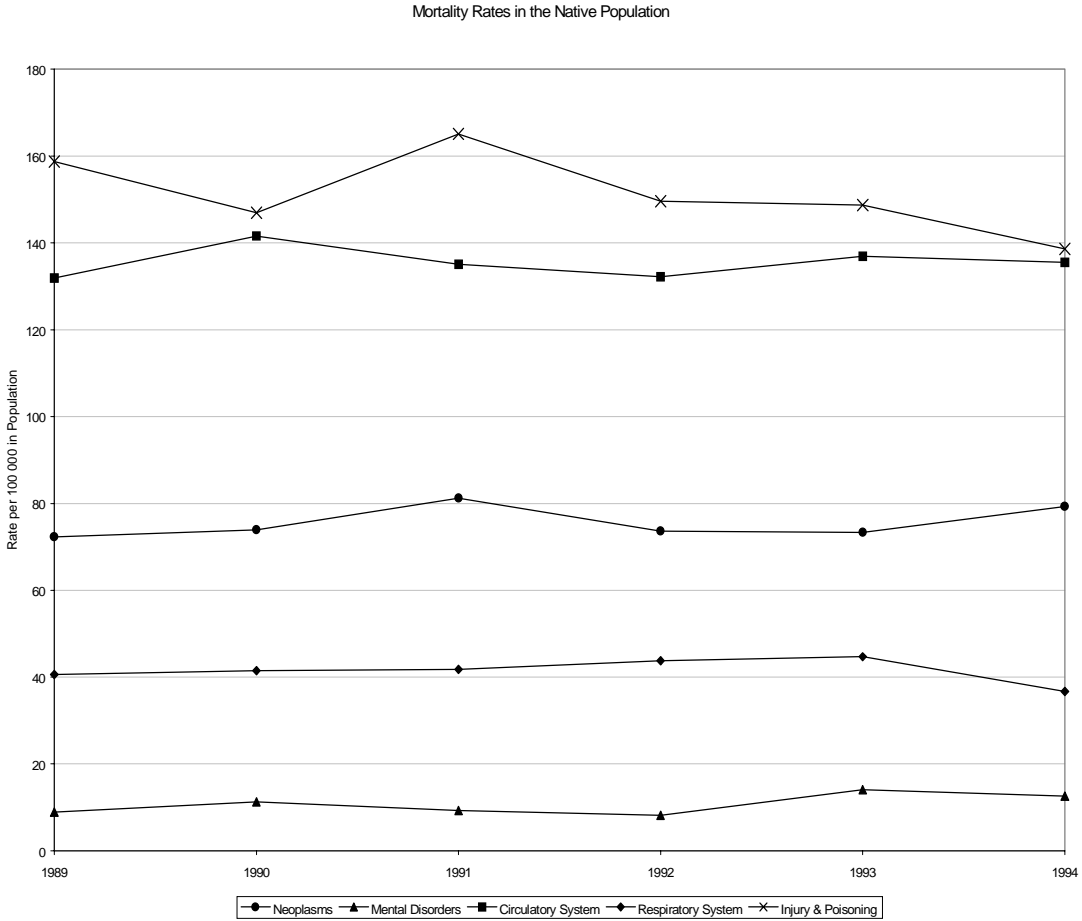
Mortality Rates among Aboriginal Canadians^{iv}

Disease Classification	1984	1985	1986	1987	1988
Infectious and Parasitic	12.7	8.7	16	9.1	6.2
Neoplasms	57.3	53.5	57.5	65.9	64.3
Endocrine, Metabolic & Immunity Disorders	7.4	16.2	12.4	17.9	11.9
Blood & Blood-forming Organs	1.3	0.8	2.4	1.2	2.5
Mental Disorders	4.4	5.4	6	6.7	7.6
Nervous System & Sense Organs	6.4	6.6	5.6	10.6	9.9
Circulatory System	138.2	153.7	120.7	125.5	127.4
Respiratory System	45.9	45.6	38.8	45.3	43.6
Digestive System	21.8	24	23.2	23.4	2.4
Genito-Urinary System	9.1	7.5	6.4	8.5	8.5
Complications of Pregnancy, Childbirth, etc.	0	0.8	0	0.3	0.8
Skin & Subcutaneous Tissues	1	0	0	0	0.8
Musculoskeletal System	3	2.1	0.8	1.8	2.3
Congenital Anomalies	10.4	9.1	12.4	10.3	7.1
Conditions from the Perinatal Period	11.1	14.5	12.4	8.5	7.9
Symptoms, Signs & Ill-defined Conditions	19.8	25.3	32.8	27	31.4
Injury & Poisoning	189.5	200.1	162.2	183.5	167
Other	22.5	19.5	42	9.7	9.6

Disease Classification	1989	1990	1991	1992	1993	1994
Infectious and Parasitic	4.6	6	8.8	10.4	10.2	10.4
Neoplasms	72.3	73.9	81.2	73.6	73.3	79.3
Endocrine, Metabolic & Immunity Disorders	16.5	1.3	18.7	17.2	18.8	18.1
Blood & Blood-forming Organs	1.4	1.3	3	2.4	1.1	1.5
Mental Disorders	8.9	11.3	9.3	8.2	14.1	12.6
Nervous System & Sense Organs	6.8	7	7.3	8.7	10.7	7.3
Circulatory System	131.9	141.6	135.1	132.2	136.9	135.5
Respiratory System	40.6	41.5	41.8	43.8	44.7	36.7
Digestive System	24.9	28.9	27.2	30.6	25	25
Genito-Urinary System	9.5	12.3	10.8	8.9	13.2	11.7
Complications of Pregnancy, Childbirth, etc.	0.5	0.3	0.5	0	0.2	0.4
Skin & Subcutaneous Tissues	0	1.3	0.5	0.7	0.2	0.2
Musculoskeletal System	1.9	2	3	3.5	1.6	2.9
Congenital Anomalies	7.6	8.6	9.8	7.5	8.4	9.5
Conditions from the Perinatal Period	10.8	6.3	8.8	10.1	6.1	6.9
Symptoms, Signs & Ill-defined Conditions	24.9	26.9	33.3	30.4	24.1	32.7
Injury & Poisoning	158.7	146.9	165.1	149.6	148.7	138.6
Other	10.6	7.5	14.1	11.8	14.5	0

All rates are calculated per 100 000 persons in the native population.

Trends in Select Mortality Rates among Aboriginal Canadians^v



As can be seen, while nearly all mortality rates in recent years among Native Canadians remain much higher than in the general population more significantly they do not show the decline seen in the general population.

Suicides by Age Group and Sex, 1971 and 1996^{vi}**Rates per 100 000 Population**

	1971	1996	% Change
All Ages	11.86	13.2	11
Males	17.29	20.8	20
Females	6.43	5.6	-13
1-14	0.30	0.7	133
Males	0.45	1.1	144
Females	0.14	0.3	114
15-19	7.95	11.5	45
Males	12.66	18.5	46
Females	3.08	4.2	36
20-24	19.59	17.2	-12
Males	33.21	29.0	-13
Females	5.80	5.0	-14
25-44	16.99	17.2	1
Males	24.24	27.8	15
Females	9.52	7.8	-18
45-64	22.79	16.2	-29
Males	32.12	24.2	-25
Females	13.70	8.2	-40
65 and over	15.08	13.4	-11
Males	24.68	25.6	4
Females	7.27	4.5	-38

In the early 1970s, suicide is a problem primarily afflicting male youths or men post mid-life. It is most common among males between the ages of twenty to twenty-four and forty-five to sixty-four.^{vii} By the 1990s, suicides are in decline in nearly all age groups. The most notable exception, however, is the dramatic increase in suicide for children aged one to fourteen and teens aged fifteen to nineteen.^{viii} UNICEF notes with alarm the high incidence of suicides among Canadian teens compared with those in other industrialized countries; to date, however, experts are unable to pinpoint a likely cause.^{ix}

Morbidity and Mortality Statistics for Cancers by Site and Sex, 1971 and 1996^xMorbidity Rate per 100 000 Males Standardized to 1991 Census
Figures

Site	1971	1996 [†]	% Change
All Cancers	331.8	480.3	45
Prostate	55.5	132.7	139
Lung	61.7	86.6	40
Colorectal	48.2	61.3	27
Bladder	23.8	23.7	0
Non-Hodgkin's Lymphoma	8.9	19.2	116
Stomach	21.9	13.0	-41
Melanoma[‡]	3.4	11.2	229

[†]Estimated Rates[‡]Excluding non-melanoma skin-cancers (ICD-9 173)Mortality Rate per 100 000 Males Standardized to 1991 Census
Figures

Site	1971	1996 [†]	% Change
All Cancers	223.2	238.1	7
Prostate	57.2	76.3	33
Lung	26.1	31.4	20
Colorectal	28.7	23.6	-18
Bladder	21.9	8.6	-61
Non-Hodgkin's Lymphoma	5.6	8.4	50
Stomach	9.5	7.0	-26
Melanoma[‡]	1.2	2.7	125

[†]Estimated Rates[‡]Excluding non-melanoma skin-cancers (ICD-9 173)

Cancer statistics from the 1970s show that men are most likely to contract lung cancer, but most likely to die from prostate cancer. Over the past 25 years there has been an increase in morbidity in nearly all forms of cancer for men; the most dramatic is the increased incidences of melanoma and prostate cancer. Cancer of the prostate remains the highest level of cancer mortality for men.

Morbidity Rate per 100 000 Females Standardized to 1991 Census Figures

Site	1971	1996 [†]	% Change
All Cancers	273.5	341.3	25
Lung	10.2	43.5	326
Breast	80.6	106.8	33
Colorectal	41.8	39.8	-5
Ovary	13.5	12.7	-6
Non-Hodgkin's Lymphoma	6.2	13.2	113
Body of Uterus	18.5	17.4	-6
Stomach	11.1	5.4	-51
Cervix	19.5	8.0	-59
Melanoma[‡]	4.0	8.8	120

[†]Estimated Rates

[‡]Excluding non-melanoma skin-cancers (ICD-9 173)

Mortality Rate per 100 000 Females Standardized to 1991 Census Figures

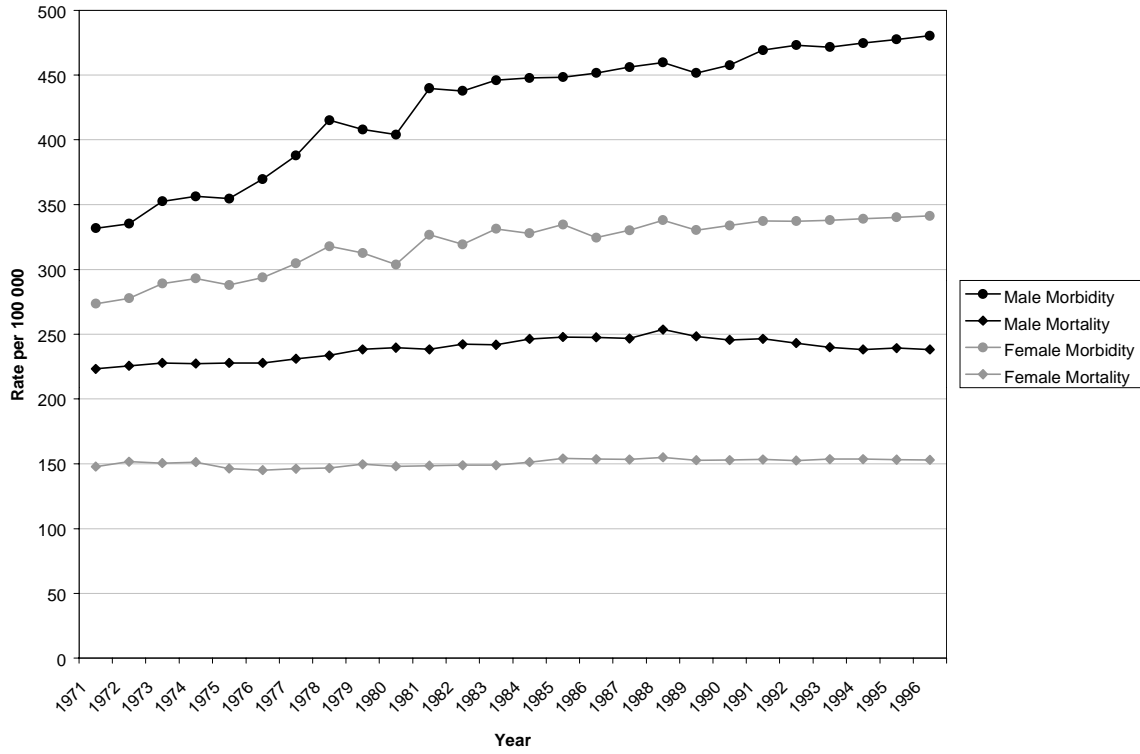
Site	1971	1996 [†]	% Change
All Cancers	147.8	153.0	4
Lung	8.6	33.8	293
Breast	30.5	29.0	-5
Colorectal	24.3	14.9	-39
Ovary	9.2	7.8	-15
Non-Hodgkin's Lymphoma	3.9	5.9	51
Body of Uterus	5.1	3.2	-37
Stomach	10.8	4.1	-62
Cervix	6.8	2.4	-65
Melanoma[‡]	1.0	1.4	40

[†]Estimated Rates

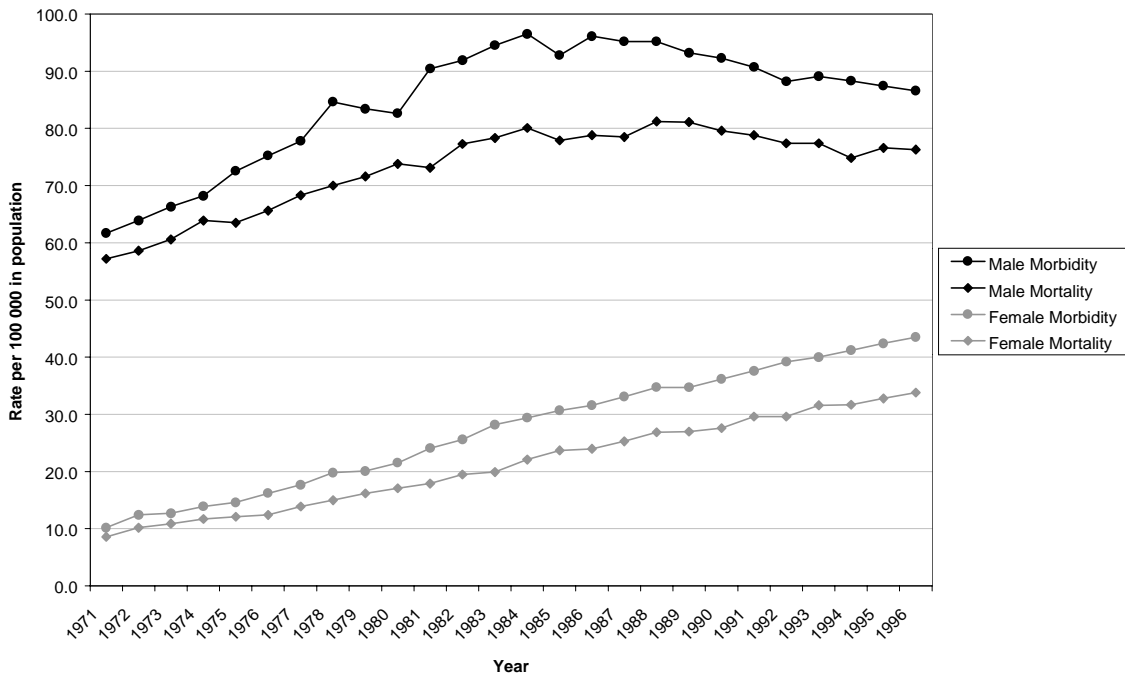
[‡]Excluding non-melanoma skin-cancers (ICD-9 173)

Women in the 1970s were most likely to contract breast cancer and also most likely to die from it. The highest mortality rate for cancer among women is associated with breast cancer, with colorectal cancer in second place. In the 1990s breast cancer remains the most common form of the disease for women; the most striking increases in morbidity, however, are seen in lung cancer and melanoma. There is a tremendous decline in cancer mortality for women for cancers of all sites, with the notable exceptions of lung cancer and melanoma, both of which showed a marked increase.^{xi}

Cancer Rates for Canada



Lung Cancer Morbidity and Mortality

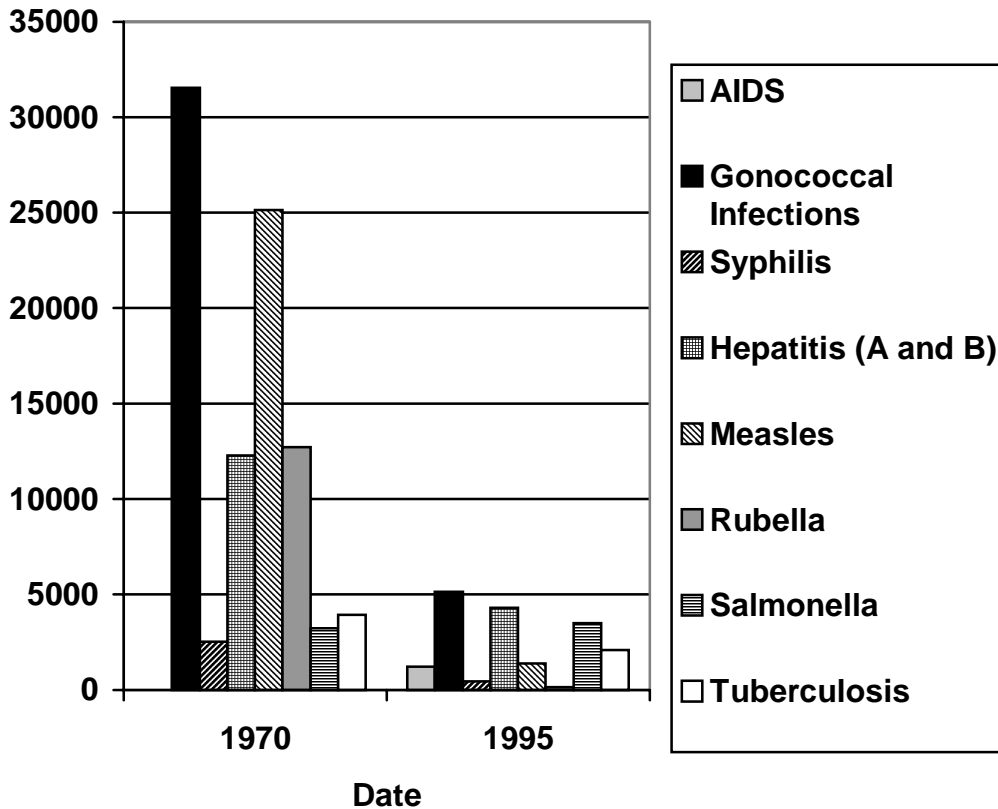


Cases of Select Notifiable Diseases, 1970 and 1995

Disease	1970 ^{xii}	1995 ^{xiii}	% Change
AIDS	-	1 212	n/a
Gonococcal Infections	31,544	5,136	-84
Syphilis	2,501	421	-83
Hepatitis (A and B)H	12,295	4,281	-65
Measles	25,137	1,381	-95
Rubella	12,710	123	-99
Salmonella	3,226	3,490	8
Tuberculosis	3,920	0 [†]	n/a

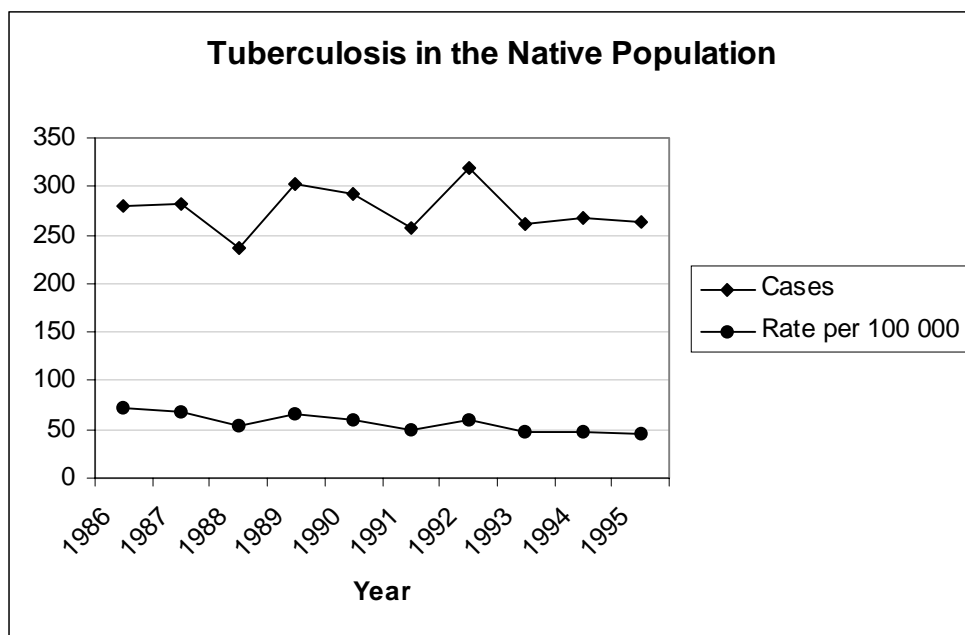
[†]2 075 cases reported in 1994

Reported Cases of Notifiable Diseases



Tuberculosis Among Aboriginal Canadians^{xiv}

Year	Cases	Rate per 100 000
1986	281	72
1987	283	68
1988	236	53
1989	303	65
1990	292	60
1991	258	50
1992	320	60
1993	261	47
1994	267	47
1995	264	45



Hospital Separations by Diagnostic Category 1968 and 1996

Rates per 100 000 Population

All Ages

Disease	1968^{xv}	1996^{xvi}	% Change
All Diagnoses	15,725	11,171	-29
Complication of Pregnancy & Childbirth	2,360	1,609	-32
Disease of the Circulatory System	1,333	1,588	19
Digestive System	2,148	1,268	-41
Respiratory System	2,441	1,060	-57
Genito-Urinary System	1,401	709	-49
Musculo-Skeletal System	598	506	-15
Nervous System[†]	825		-100
Skin & Subcutaneous Tissues	271		-100
Blood & Blood-forming Organs	93		-100
Endocrine, Metabolic and Nutritional System[‡]	476		-100
Infectious & Parasitic Diseases	195		-100
Neoplasms	909	772	-15
Congenital Anomalies	164		-100
Conditions Arising in the Perinatal Period	47		-100
Injury and Poisonings	1,425	915	-36
Mental Disorders	516	603	17
Other[§]	523		-100

[†]Including the Sense Organs[‡]Including Allergies in the 1968 sample[§]Including Symptoms, Senility, and other Ill Defined Conditions

Self-Reported Health Status^{xvii}

	1991	1991	1995	1995
	Good Health	Health Problems	Good Health	Health Problems
Total	18229875	13167722	21467737	2480867
Male	9014135	6055033	10719783	1060551
Female	9215740	7112688	10747953	1420316

As a percentage:

	1991	1991	1995	1995
	Good Health	Health Problems	Good Health	Health Problems
Total	58%	42%	89%	11%
Male	60%	40%	91%	9%
Female	56%	44%	88%	12%

	1991	1991	1995	1995
	Good Health	Health Problems	Good Health	Health Problems
Total	18229875	13167722	21467737	2480867
15 - 24 years	1681187	867350	4910631	201318
25 - 44 years	10034751	5943071	9066058	553769
45 - 64 years	4407938	3866140	5106105	859757
65 years and over	2105999	2491161	2384943	866024

As a percentage:

	1991	1991	1995	1995
	Good Health	Health Problems	Good Health	Health Problems
Total	58%	42%	89%	11%
15 - 24 years	66%	34%	96%	4%
25 - 44 years	63%	37%	94%	6%
45 - 64 years	53%	47%	86%	14%
65 years and over	46%	54%	73%	27%

In the above self-report Good Health is defined as answering that one feels of above average health compared to other people one's age, while health problems is defined as identifying oneself as suffering from any particular health limitation compared to others one's age.

Potential Years of Life Lost by Cause^{xviii}

Potential years of life lost are calculated by taking the median age in each age group, subtracting from 70, and multiplying by the number of deaths in that age group disaggregated by sex and cause of death. The result of the calculation shows the number of life years lost in each cause, somewhat similar to the number of deaths by age and cause. The figures so derived maybe expressed as a crude or standardized rate by cause using the populations in indicator 105.

	1971	1996	% Change
Total all causes	1242507	1043952	-16
Neoplasms	250766	310468	24
Accidental deaths	393026	195229	-50
Suicides	69438	110210	59
Respiratory diseases	55029	31167	-43
Diseases of the heart	226185	138813	-39
Cerebrovascular diseases	45439	25604	-44
All other causes	173492	216947	25

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- ^{iv} Indian and Northern Affairs Canada. “Basic Departmental Data 1997.” : Departmental Statistics Section, 1998.
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