Mortality in Francophone minority in Canada – A 16-year follow-up study

MORTALITY BY SOCIOECONOMIC STATUS AMONG CANADIAN FRANCOPHONES AND ANGLOPHONES LIVING OUTSIDE QUÉBEC

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Introduction

Canada's one million Francophones living outside the province of Québec are considered an official language minority community. These communities are dispersed across the country, are aging, generally poorer, less educated, and more rural. Our work has shown that the health status of French-speaking minorities is generally poorer than that of English-speaking majority in a given province, and that this can be attributed to the circumstances of living in a minority situation (Bouchard et al., 2009).

The objective of this report is to examine mortality by socioeconomic status among Canadian Francophones and Anglophones living outside Québec, and to assess the independent effects of education, occupational skill level and income quintile on mortality by gender and language group.

Data sources and study population

This is a secondary analysis of linked data from the Canadian Census Mortality and Cancer Follow-up Study, 1991-2006 created by Statistics Canada (Wilkins et al., 2008). Approximately 2.7 million people (15% of the 1991 census population) aged 25 or over (excluding institutional residents) were tracked for mortality (1991 to 2006), cancer (1969 to 2006) and annual place of residence (1990 to 2007).

Québec residents (697 850), bilingual English/ French speakers (5 980) and speakers of neither official language (22 360) were removed from the original cohort. The study is based on a sample of 1 896 920 Anglophones (946 875 men; 950 040 women) and 105 710 Francophones (52 045 men; 53 675 women) living outside Québec. During the 16-year observation period, 293 755 Anglophones and 16 710 Francophones died.

Definitions

Francophones and Anglophones were identified based on the variable ***First Official Language Spoken***, an index created by Statistics Canada that considers knowledge of official languages, mother tongue and language spoken at home.

Mortality data includes all causes of death according to the World Health Organization's International Classification of Diseases (ICD-9 and 10).

Three measures of socioeconomic inequality were selected: educational attainment, occupational skill level and income adequacy. Educational attainment was divided into four categories: no high school diploma, high school diploma (or trade school certificate), post-secondary non-university diploma, university degree. Occupational skill level has been classified according to the National Occupational Classification into five broad levels: professional, managerial, skilled, medium-skilled, and unskilled. A separate "no occupation" category was created for people without occupation, including the long-term unemployed, adult students, stay-at-home parents, people unable to work and pensioners). Income adequacy is based on five quintiles, with 1 being the poorest and 5 the richest. Calculated by Statistics Canada, it considers all sources of income before taxes and after transfers and corresponds to the ratio of total income to the low-income cut-off based on family size and geographic area.

Statistical analysis

Descriptive measures were used and are summarized in tables in the form of percentages. Population characteristics were compared between language groups for the total population and the deceased population, and for males and females separately. Chi-square tests were used to compare the proportional distribution of deaths in all categories between Anglophones and Francophones for each variable.

Furthermore, standardized mortality rates (SMR), life expectancy at age 25, and probabilities of survival to age 75 were calculated according to key socio-economic factors, such as education attainment, occupational skill level, and income adequacy for men and women in each linguistic community separately. Finally, to measure the impact of these factors on all-cause and cause-specific mortality for each of the above groups, the Cox proportional hazards regression model was used. The reference categories were chosen to highlight the effect of respondents' low socio-economic status on mortality compared to those in a better socio-economic situation, i.e. those with higher levels of education and income, and a more highly skilled profession. Complete data tables are presented in the appendix.

Results

Table 1. Socioeconomic characteristics of the cohort

	Anglophones Total	Francophones Total	Anglophone Men	Francophone Men	Anglophone Women	Francophone Women
	(N=1 896 920)	(N=105 710)	(N=946 875)	(N=52 045)	(N=950 045)	(N=53 665)
Highest education	14%	11%	16%	11%	12%	12%
Lowest education	33%	42%	33%	44%	33%	40%
Highest income quintile	22%	20%	23%	21%	21%	20%
Lowest income quintile	17%	18%	14%	15%	19%	21%
Professional position	12%	11%	11%	9%	12%	13%
Unskilled position	8%	8%	8%	9%	7%	8%
No occupation	23%	25%	17%	19%	29%	31%

Francophones have lower levels of education and income than the Anglophone cohort. Compared to Anglophones, a higher proportion of Francophones have less than a high school diploma, both for men (44% versus 33%) and women (40% versus 33%).

Gender differences are notable in terms of income and occupational status in both linguistic communities. There were more women in the low-income category (21% of Francophones and 19% of Anglophones versus 15% and 14% of men) and no occupation category (31% of Francophones and 29% of Anglophones versus 19% and 17% of men).

Table 2. Age-standardized mortality rates (ASMR) per 100 000 person-years

	Anglophones Total	Francophones Total	Anglophone Men	Francophone Men	Anglophone Women	Francophone Women
Highest education	857.9	796.8	983.1	1 082.1	659.9	559.8
Lowest education	1 263.0	1 215.7	1 594.7	1 562.0	978.2	906.8
Rate Ratio (RR)	1.47	1.52	1.62	1.44	1.48	1.62
Highest income quintile	898.7	902.8	1 088.4	1 113.7	699.7	692.8
Lowest income quintile	1 426.1	1 350.6	1 915.3	1 971.1	1 128.9	988.7
Rate Ratio (RR)	1.59	1.50	1.76	1.77	1.61	1.43
Professional position	795.2	798.0	905.6	1 040.5	615.6	537.0
Unskilled position	1 123.3	1 105.3	1 355.4	1 407.1	826.5	749.8
No occupation	1 358.8	1 329.9	2 129.6	2 147.8	1 028.7	943.8
Rate Ratio (RR)						
(Professional vs. Unskilled)	1.41	1.39	1.50	1.35	1.34	1.39
(Professional vs. No occupation)	1.70	1.67	2.35	2.06	1.67	1.75

Standardized mortality rates correspond to the number of deaths per 100 000 people that would have occurred in a given geographic area if the age structure of the population in that geographic area were the same as that of a standard population.

The above results show that the mortality rate is higher in the precarious socio-economic categories than in the affluent ones, irrespective of gender. There is large variation in the mortality rate ratio, by education and occupational skill level, ranging from 1.34 to 2.35. Mortality is also higher in men than women. For instance, mortality among Francophone men with no occupation is 2 147.8 deaths per 100 000 people, compared to Francophone women with a professional occupation, which is 537 deaths per 100 000 people.

There is an important disparity between the two linguistic communities: Francophone women have a lower mortality rate than Anglophone women, irrespective of socio-economic factors. Conversely, Francophone men tend to have higher mortality rate than Anglophone men, although the difference is minimal.

Table 3. Life expectancy at age 25

	Anglophones Total	Francophones Total	Anglophone Men	Francophone Men	Anglophone Women	Francophone Women
Highest education	58.1	58.9	56.7	55.8	60.5	62.3
Lowest education	53.4	54.0	50.6	51.3	56.2	57.3
Difference in years	4.7	4.9	6.1	4.5	4.3	5.0
Highest income quintile	57.5	57.4	55.4	55.2	59.8	60.0
Lowest income quintile	51.8	52.3	48.3	47.8	54.6	56.2
Difference in years	5.7	5.1	7.1	7.4	5.2	3.8
Professional position	59.0	59.0	57.5	56.3	61.4	62.4
Unskilled position	54.9	55.0	52.4	52.2	58.2	59.1
No occupation	52.1	52.5	44.8	44.9	55.5	56.8
Difference in years						
(Professional vs. Unskilled)	4.1	4.0	5.1	4.1	3.2	3.3
(Professional vs. No occupation)	6.9	6.5	12.7	11.4	5.9	5.6

Life expectancy at age 25 is the additional number of years a person can expect to live, based on observed mortality rates over the period 1991-2006. A person aged 25 can expect to live this number of additional years, considering the age-specific mortality pattern.

Life expectancy at age 25 is longer for people with higher socio-economic status. Conversely, life expectancy is shorter for people with lower education, income, and occupational skill level. The largest differences in life expectancy were by income quintiles, followed by education and occupation. In particular, Francophone and Anglophone men with no occupation have a life expectancy that is 11.4 and 12.7 years shorter, compared to those with a professional occupation.

Inequalities between Anglophones and Francophones are more pronounced among women. Regardless of socio-economic conditions, Francophone women have a longer life expectancy than Anglophone women. Disparities between men of the two linguistic communities are rather small, except for the professional category. There is also a general trend towards shorter life expectancy among men than women.

Table 4. Probability of survival to age 75

	Anglophones Total	Francophones Total	Anglophone Men	Francophone Men	Anglophone Women	Francophone Women
Highest education	80.1 %	80.3 %	80.3 %	74.4 %	85.1 %	87.0 %
Lowest education	65.7 %	66.8 %	66.0 %	59.6 %	73.7 %	75.0 %
Difference (%)	-14.4 %	-13.5 %	-14.3 %	-14.8 %	-11.4 %	-12.0 %
Highest income quintile	77.5 %	77.0 %	73.2 %	71.8 %	83.3 %	83.5 %
Lowest income quintile	59.5 %	60.6 %	50.4 %	48.2 %	68.1 %	72.1 %
Difference (%)	-18.0 %	-16.4 %	-22.8 %	-23.6 %	-15.2 %	-11.4 %
Professional position	80.6 %	82.0 %	77.1 %	74.9 %	85.6 %	88.2 %
Unskilled position	69.3 %	70.2 %	62.8 %	63.9 %	78.2 %	78.3 %
No occupation	62.0 %	62.2 %	44.5 %	44.1 %	71.2 %	73.7 %
Difference (%)						
(Professional vs. Unskilled)	-11.3 %	-11.8 %	-14.3 %	-11.0 %	-7.4 %	-9.9 %
(Professional vs. No occupation)	-18.6 %	-19.8 %	-32.6 %	-30.8 %	-14.4 %	-14.5 %

Another frequently used indicator is the number of people surviving to a specified age per 100 000 initial births. It is used to calculate survival probabilities from one age to another. Survival to the age of 75 was used in this case.

The survival probabilities of Anglophone men are higher than Francophone men in almost all socio-economic categories. However, Francophone women have higher survival probabilities than Anglophone women. In terms of gender differences, women have higher survival probabilities than men in all socio-economic categories.

Table 5. Adjusted hazard ratios for all-cause mortality

	Anglophone men	Francophone men	Anglophone women	Francophone women
Low education vs. High education	1.43	1.22	1.28	1.35
Low income vs. High income	1.42	1.46	1.38	1.27
Unskilled position vs. Management position	1.29	1.42	1.10	1.36
No occupation vs. Management position	1.60	1.75	1.40	1.60

Cox proportional hazards regression model was used to estimate the impact of education, occupation, and income on mortality. The hazard ratios (HR) reference groups were calculated from the following: university degree, high income sufficiency quintile, managerial position. All models were gender specific.

The hazard ratios presented above are all greater than 1. They show that mortality risks are higher in subpopulations of people with no high school diploma (22% to 43%), lowest income quintile (27% to 46%), unskilled occupation (10% to 42%) or no occupation (40% to 75%), compared to the mortality risks of their respective comparison groups. Mortality is greater in the no occupation category, regardless of gender, but more pronounced among Francophones (60% to 75% higher). The mortality risks are generally higher among Francophones than Anglophones.

Impact of inequalities on mortality by cause of death

Inequalities in mortality were further analyzed by examining causes of death. For this, the Global Burden of Disease (GBD) categorization by cause of death (WHO, 2008) was used, and their grouping was based on the World Health Organization's International Statistical Classification of Diseases, Ninth Revision coding for deaths from 1991 to 1999 (WHO, 1977), and according to the Tenth Revision for deaths from 2000 to 2006 (WHO, 1992).

We selected 16 causes of death to analyze mortality over the entire 1991-2006 follow-up period. However, due to the small number of deaths observed from certain causes, the analyses focused on statistically significant results (Table 6 in appendix). The main findings are summarized as follows.

For Francophone men, having low income, an unskilled or no occupation, followed by low education, were independent factors contributing to deaths from lung cancer (HR: 1.48, 1.44, 1.40, and 1.34, respectively). No occupation and/or an unskilled profession, and having a low income also contributed to deaths from stroke and chronic obstructive pulmonary disease (COPD) and other respiratory disease (HR: 1.58 for no occupation and 1.34 for low income categories), as well as from endocrine disorders including diabetes (HR: 2.84, 2.25, and 1.64 for no occupation, unskilled

profession, and low income). No occupation was also a factor in mortality from respiratory infections (HR, 3.92), intentional injuries (HR, 2.50), and unintentional injuries (HR, 2.69). Overall, among **Francophone men**, having **no occupation or an unskilled position, and low income** were the most important factors for many causes of deaths.

For Francophone women, similarly to Francophone men, having no occupation, low income, and low levels of education were the main contributors for deaths from stroke (HR, 1.62, 1.34, and 1.20, respectively) and COPD/other respiratory disease (HR, 2.44, 1.29, and 1.69, respectively). No occupation, and low education also independently contributed to deaths from endocrine disorders including diabetes (HR, 2.41 and 1.75, respectively). Overall, among **Francophone women**, having **no occupation and low level of education**, followed by low income, were the strongest predictors of death from many causes.

Limitations

The cohort sample represents 15% of the total Canadian population, comprising 1 896 920 Anglophones and 105 710 Francophones living outside Québec, i.e. a demographic weight of French-speaking people slightly higher than that of the total population (5.2%). During the 15-year observation period, 293 755 Anglophones and 16 710 Francophones died.

In the 1991 census, the total undercount was estimated at 3.4% which was disproportionately represented by people who were young, mobile, living in low-income households, of Aboriginal ancestry, homeless, and residents of Indian reserves. The population aged 25 and over excludes residents of long-term care facilities, retirement homes and prisons, as well as non-filers for the 1990 and 1991 tax years (Statistic Canada, 1994).

Data on income, education and occupation were collected at the reference date of the 1991 census. These self-reported data may have changed during the follow-up period. It should also be noted that the number of years a 25-year-old is expected to live has been calculated on the assumption that mortality rates observed between 1991 and 2006 remain identical for the rest of life. It is important to note that during the follow-up period, there were a total of 310 465 deaths, a significant proportion of which (47%) involved people aged 65 and over. The potential inclusion of retired people who self-declare as 'no occupation' may be overestimated.

Conclusion

This mortality follow-up study, like others, confirms that mortality is much higher among the most socially disadvantaged, in both language communities. People with no occupation, the poorest and lowest levels of education are the most affected, and in general, men more than women.

In terms of the gender specificities of each language group, Francophone women have a lower mortality rate, a longer life expectancy and a higher probability of survival to age 75 than Anglophone women. In contrast, Francophone men have a slightly higher mortality rate, a similar life expectancy and a higher probability of survival to age 75 than Anglophone men. The risk of mortality is higher overall among the socially disadvantaged, regardless of gender, but is generally higher among Francophones than among Anglophones. It should be noted that, compared to Anglophones, more Francophones belong to the low-education, low-income and non-occupation categories. The socioeconomic indicators that contribute most strongly to many causes of death among Francophones are, firstly, being in the category of no occupation, for both sexes, followed by unskilled occupation and low income for Francophone men, and low education and low income for Francophone women.

Socioeconomic inequalities have a strong gradient effect on mortality. Whether in terms of education, occupation or income, mortality rates are much higher among people at the bottom of the social ladder, and the situation becomes more favorable the higher up the ladder the person is.

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Annex

Table 1. Socioeconomic characteristics of the study population by language group and gender. Canada (excluding Québec), 1991 to 2006.

	Total		Men		Women	
	Anglophones N=1 896 920	Francophones N=105 710	Anglophone N=946 875	Francophone N=52 045	Anglophone N=950 045	Francophone N=53 665
Age group	%	%	%	%	%	%
25-45	55.0	52.9	53.7	52.3	56.3	53.7
>45-65	29.6	31.6	31.5	33.3	27.8	29.9
>65-75	9.9	10.0	10.1	10.1	9.8	10.0
>75-85	4.6	4.5	4.2	3.8	5.1	5.2
>85	0.8	0.9	0.6	0.5	1.0	1.3
Area of residence						
Urban	75.2	66.2	74.1	63.8	76.3	68.5
Rural	24.8	33.8	25.9	36.2	23.7	31.5
Education (diploma)						
University	14.0	11.4	15.7	11.3	12.3	11.5
Post-secondary	16.1	13.4	12.6	10.3	19.6	16.5
Secondary graduation	36.9	33.5	38.4	34.7	35.4	32.3
Less than secondary graduation	33.0	41.7	33.3	43.7	32.7	39.7
Income Quintile						
Quintile 5 (richest)	22.0	20.2	23.2	20.7	20.7	19.7
Quintile 4	21.4	21.5	22.4	22.3	20.5	20.8
Quintile 3	20.7	20.8	21.1	21.8	20.3	19.9
Quintile 2	19.3	19.3	19.0	19.7	19.6	18.9
Quintile 1 (poorest)	16.6	18.2	14.3	15.4	19.0	20.8
Occupation (skill-based)						
Professional	11.5	10.8	11.1	8.6	12.0	12.9
Managerial	8.6	7.0	12.1	9.9	5.1	4.3
Skilled/technical/supervisory	24.5	24.0	29.7	29.5	19.3	18.6
Semi-skilled	24.7	24.4	22.0	23.6	27.2	25.3
Unskilled	7.7	8.4	8.1	9.1	7.3	7.7
No occupation*	23.0	25.4	16.9	19.4	29.1	31.2

Source: Census mortality follow-up study, 1991 to 2006.

* The "No occupation" category includes the long-term unemployed, adult students, stay-at-home parents, people unable to work and retirees.

Table 2: Age-standardized mortality rates (ASMR) per 100 000 person-years at risk, showing rate ratios (RR) by language group, gender and socioeconomic status. Canada, 1991 to 2006.

	Total				Men					Women				
	Anglophones		Francophones		Anglophone			Francophone			Anglophone			Francophone	
	ASMR	(IC 95%)	ASMR	(IC 95%)	ASMR	(IC 95%)	RR	ASMR	(IC 95%)	RR	ASMR	(IC 95%)	RR	ASMR	(IC 95%)	RR
Total	**1097.5**	**(1097.5 - 1097.5)**	**1095.4**	**(1095.3 - 1095.4)**	**1375.6**	**(1375.6-1375.6)**	**1.00**	**1458.9**	**(1458.8-1459)**	**1.00**	**857.9**	**(857.9-857.9)**	**1.00**	**812.5**	**(812.4-812.5)**	**1.00**
Education (diploma)																
University *	858.0	(857.9 - 858.0)	796.9	(796.8 - 797.1)	983.2	(983.1-983.2)	1.00	1082.4	(1082.1-1082.7)	1.00	660.0	(659.9-660.1)	1.00	560.0	(559.8-560.2)	1.00
Post-secondary	850.1	(850.0 - 850.1)	841.8	(841.7 - 842.0)	1123.1	(1123.0-1123.2)	1.14	1212.7	(1212.3-1213.1)	1.12	716.4	(716.4-716.5)	1.09	709.6	(709.4-709.8)	1.27
Secondary graduation	1057.6	(1057.6 - 1057.7)	1015.7	(1015.6 - 1015.8)	1316.6	(1316.5-1316.6)	1.34	1356.3	(1356.1-1356.5)	1.25	814.3	(814.3-814.3)	1.23	721.5	(721.4-721.7)	1.29
Less than secondary graduation	1263.0	(1263.0 - 1263.0)	1215.8	(1215.7 - 1215.9)	1594.7	(1594.7-1594.7)	1.62	1562.0	(1561.8-1562.1)	1.44	978.2	(978.2-978.2)	1.48	906.9	(906.8-907.0)	1.62
Income Quintile																
Quintile 5 (richest)*	898.7	(898.7 - 898.7)	902.9	(902.8 - 903.1)	1088.5	(1088.4-1088.5)	1.00	1113.9	(1113.7-1114.2)	1.00	699.8	(699.7-699.8)	1.00	693.0	(692.8-693.1)	1.00
Quintile 4	990.2	(990.2 - 990.3)	953.7	(953.6 - 953.9)	1228.3	(1228.3-1228.4)	1.13	1247.2	(1246.9-1247.4)	1.12	753.9	(753.9-753.9)	1.08	692.0	(691.9-692.2)	1.00
Quintile 3	1071.8	(1071.8 - 1071.9)	1050.8	(1050.6 - 1050.9)	1344.5	(1344.5-1344.6)	1.24	1351.6	(1351.4-1351.8)	1.21	810.0	(810.0-810.1)	1.16	764.5	(764.4-764.7)	1.10
Quintile 2	1190.3	(1190.3 - 1190.4)	1196.2	(1196.1 - 1196.3)	1524.1	(1524.0-1524.1)	1.40	1600.3	(1600.1-1600.5)	1.44	898.6	(898.6-898.6)	1.28	842.9	(842.8-843.1)	1.22
Quintile 1 (poorest)	1426.2	(1426.1 - 1426.2)	1350.8	(1350.6 - 1350.9)	1915.3	(1915.3-1915.4)	1.76	1971.4	(1971.1-1971.6)	1.77	1128.9	(1128.9-128.9)	1.61	988.8	(988.7-989.0)	1.43
Occupation (skilled-based)																
Professional*	795.2	(795.2 - 795.3)	798.3	(798.0 - 798.7)	905.7	(905.6-905.8)	1.00	1041.0	(1040.5-1041.4)	1.00	615.7	(615.6-615.8)	1.00	537.4	(537.0-537.7)	1.00
Managerial	952.1	(952.0 - 952.1)	866.6	(866.2 - 867.0)	1040.4	(1040.3-1040.5)	1.15	960.6	(960.1-961.1)	0.92	683.8	(683.6-683.9)	1.11	596.5	(595.9-597.2)	1.11
Skilled/technical/ supervisory	994.9	(994.9 - 995.0)	912.7	(912.6 - 912.9)	1140.6	(1140.6-1140.7)	1.26	1119.1	(1118.8-1119.3)	1.08	717.0	(716.9-717.1)	1.16	640.3	(640.1-640.5)	1.19
Semi-skilled	952.8	(952.8 - 952.9)	955.3	(955.1 - 955.6)	1246.2	(1246.1-1246.3)	1.38	1276.5	(1276.1-1277.0)	1.23	702.6	(702.5-702.6)	1.14	687.2	(686.9-687.4)	1.28
Unskilled	1123.4	(1123.3 - 1123.4)	1105.7	(1095.3 - 1095.4)	1355.5	(1355.4-1355.6)	1.50	1407.8	(1407.1-1408.4)	1.35	826.6	(826.5-826.7)	1.34	750.3	(749.8-750.7)	1.40
No occupation	1358.9	(1358.8 - 1358.9)	1330.0	(1329.9 - 1330.1)	2129.7	(2129.6-2129.8)	2.35	2148.2	(2147.8-2148.5)	2.06	1028.7	(1028.7-1028.7)	1.67	943.9	(943.8-944.0)	1.76

Source: Census mortality follow-up study, 1991 to 2006.

* Reference category. The reference population (person-years at risk) was derived from the age distribution of the total cohort for all variables.

Table 3. Life expectancy at age 25 by language group, gender and socioeconomic status. Canada except Québec, 1991 to 2006.

	Total				Men				Women			
	Anglophones		Francophones		Anglophone		Francophones		Anglophone		Francophone	
	Years	(CI 95%)	Years	(CI 95%)	Years	(CI 95%)	Years	(CI 95%)	Years	(CI 95%)	Years	(CI 95%)
Total	**55.3**	**(55.2-55.3)**	**55.4**	**(55.2-55.5)**	**52.9**	**(52.8-52.9)**	**52.3**	**(52.1-52.5)**	**57.9**	**(57.9-58.0)**	**58.6**	**(58.4-58.8)**
Education (diploma)												
University	58.1	(58.0-58.2)	58.9	(58.3-59.5)	56.7	(56.5-56.8)	55.8	(55.0-56.6)	60.5	(60.2-60.7)	62.3	(61.5-63.2)
Post-secondary	58.0	(57.9-58.2)	58.2	(57.7-58.8)	55.1	(55.0-55.3)	54.5	(53.5-55.4)	59.6	(59.5-59.8)	59.9	(59.2-60.6)
Secondary graduation	55.7	(55.6-55.7)	56.1	(55.7-56.4)	53.2	(53.1-53.3)	52.9	(52.5-53.4)	58.4	(58.3-58.5)	59.7	(59.2-60.1)
Less than secondary graduation	53.4	(53.3-53.4)	54.0	(53.8-54.3)	50.6	(50.5-50.7)	51.3	(50.9-51.7)	56.2	(56.1-56.3)	57.3	(57.0-57.7)
Income Quintile												
Quintile 5 (richest)	57.5	(57.4-57.5)	57.4	(57.0-57.9)	55.4	(55.3-55.5)	55.2	(54.6-55.8)	59.8	(59.7-60.0)	60.0	(59.3-60.6)
Quintile 4	56.5	(56.4-56.6)	56.9	(56.5-57.3)	54.1	(54.0-54.2)	54.1	(53.5-54.6)	59.2	(59.0-59.3)	60.2	(59.6-60.8)
Quintile 3	55.6	(55.5-55.7)	55.9	(55.5-56.3)	53.0	(52.9-53.2)	53.2	(52.7-53.7)	58.5	(58.3-58.6)	59.3	(58.7-59.9)
Quintile 2	54.3	(54.3-54.4)	54.4	(54.0-54.7)	51.5	(51.4-51.7)	51.1	(50.6-51.7)	57.3	(57.2-57.4)	58.2	(57.7-58.7)
Quintile 1 (poorest)	51.8	(51.7-51.9)	52.3	(51.9-52.8)	48.3	(48.1-48.4)	47.8	(47.2-48.5)	54.6	(54.5-54.7)	56.2	(55.7-56.7)
Occupation (skilled-based)												
Professional	59.0	(58.7-59.2)	59.0	(58.0-59.9)	57.5	(57.2-57.8)	56.3	(55.1-57.4)	61.4	(60.9-61.8)	62.4	(60.9-64.0)
Managerial	57.0	(56.7-57.2)	59.2	(57.5-60.8)	55.9	(55.7-56.2)	58.7	(56.6-60.8)	60.3	(59.8-60.9)	62.1	(58.9-65.3)
Skilled/technical/supervisory	56.4	(56.3-56.5)	57.5	(57.0-58.1)	54.7	(54.6-54.9)	55.4	(54.6-56.1)	59.7	(59.5-60.0)	61.1	(60.2-62.0)
Semi-skilled	56.8	(56.7-57.0)	56.7	(56.1-57.3)	53.6	(53.4-53.8)	53.5	(52.8-54.3)	60.1	(59.8-60.3)	60.3	(59.2-61.3)
Unskilled	54.9	(54.7-55.1)	55.0	(54.0-55.9)	52.4	(52.0-52.8)	52.2	(51.0-53.4)	58.2	(57.8-58.6)	59.1	(57.6-60.6)
No occupation	52.1	(52.0-52.2)	52.5	(52.0-53.0)	44.8	(44.4-45.1)	44.9	(43.4-46.3)	55.5	(55.3-55.6)	56.8	(56.3-57.2)

Source: Census mortality follow-up study, 1991 to 2006.

Table 4. Percentage of survivors to age 75 by language group, gender and socio-economic status. Canada, excluding Québec, 1991-2006.

	Total				Men				Women			
	Anglophones		Francophones		Anglophone		Francophone		Anglophone		Francophone	
	%	(CI 95%)	%	(CI 95%)	%	(CI 95%)	%	(CI 95%)	%	(CI 95%)	%	(CI 95%)
Total	**71.1**	**(70.8-71.3)**	**70.5**	**(70.2-70.8)**	**65.1**	**(64.8-65.4)**	**63.2**	**(62.9-63.5)**	**77.9**	**(77.6-78.2)**	**78.8**	**(78.6-79.1)**
Education (diploma)												
University	80.1	(79.8-80.3)	80.3	(80.0-80.5)	80.3	(77.3-77.8)	74.4	(74.1-74.6)	85.1	(84.9-85.3)	87.1	(86.8-87.3)
Post-secondary	78.1	(77.8-78.3)	77.6	(77.3-77.8)	78.3	(71.6-72.2)	69.8	(69.5-70.1)	82.4	(82.1-82.6)	81.7	(81.5-81.9)
Secondary graduation	72.1	(71.9-72.4)	72.8	(72.6-73.1)	72.4	(66.4-66.9)	65.3	(65.0-65.6)	79.3	(79.0-79.5)	82.3	(82.1-82.6)
Less than secondary graduation	65.7	(65.4-66.0)	66.8	(66.5-67.1)	66.0	(58.6-59.2)	59.6	(59.3-60.0)	73.7	(73.5-74.0)	75.3	(75.0-75.6)
Income Quintile												
Quintile 5 (richest)	77.5	(77.2-77.7)	77.0	(76.7-77.2)	73.2	(72.9-73.5)	71.8	(71.5-72.1)	83.3	(83.0-83.5)	83.5	(83.2-83.7)
Quintile 4	74.3	(74.0-74.6)	74.5	(74.2-74.7)	69.1	(68.8-69.4)	68.4	(68.1-68.6)	81.1	(80.9-81.4)	81.9	(81.7-82.2)
Quintile 3	71.8	(71.5-72.0)	72.6	(72.3-72.9	65.7	(65.4-66.0)	65.8	(65.5-66.1)	79.1	(78.9-79.4)	80.9	(80.7-81.2)
Quintile 2	67.9	(67.6-68.2)	67.5	(67.2-67.8)	60.6	(60.3-60.9)	59.5	(59.2-59.8)	76.1	(75.8-76.3)	76.5	(76.2-76.8)
Quintile 1 (poorest)	59.5	(59.2-59.8)	60.6	(67.2-67.8)	50.4	(50.0-50.7)	48.2	(47.8-48.5)	68.1	(67.9-68.4)	72.1	(71.9-72.4)
Occupation (skilled-based)												
Professional	80.6	(80.3-80.8)	82.0	(81.7-82.2)	77.1	(76.9-77.4)	74.9	(74.7-75.2)	85.6	(85.3-85.8)	88.2	(88.0-88.4)
Managerial	75.6	(75.3-75.9)	76.0	(75.8-76.3)	74.0	(73.7-74.2)	73.3	(73.0-73.5)	81.3	(81.1-81. 6)	83.6	(83.4-83.9)
Skilled/technical/supervisory	73.9	(73.6-74.2)	73.3	(73.0-73.6)	69.8	(69.6-70.1)	69.3	(69.0-69.6)	82.1	(81.9-82.4)	81.1	(80.9-81.3)
Semi-skilled	73.8	(73.5-74.0)	74.0	(73.7-74.3)	66.2	(65.9-66.5)	66.8	(66.5-67.1)	81.0	(80.8-81.3)	81.6	(81.4-81.9)
Unskilled	69.3	(69.0-69.6)	70.2	(69.9-70.4)	62.8	(62.5-63.1)	63.9	(63.6-64.2)	78.2	(77.9-78.4)	78.3	(78.0-78.5)
No occupation	61.7	(61.4-62.0)	62.2	(61.9-62.5)	44.5	(44.2-44.8)	44.1	(43.8-44.4)	71.2	(70.9-71.5)	73.7	(73.4-74.0)

Source: Census mortality follow-up study, 1991 to 2006.

Table 5. Adjusted hazard ratios (HR) for all-cause mortality by language group, gender and socioeconomic status. Canada, excluding Québec, 1991-2006.

	Francophone women			Anglophone women			Francophone men			Anglophone men		
	HR	(CI 95%)		HR	(CI 95%)		HR	(CI 95%)		HR	(CI 95%)	
Education (diploma)												
University degree*	1.00	-	-	1.00	-	-	1.00	-	-	1.00	-	-
Post-secondary diploma	1.20	1.06	1.38	1.07	1.03	1.10	1.06	0.93	1.21	1.10	1.07	1.13
Secondary graduation	1.18	1.04	1.33	1.15	1.12	1.19	1.15	1.03	1.28	1.27	1.24	1.29
Less than secondary graduation	1.35	1.20	1.52	1.28	1.24	1.31	1.22	1.10	1.35	1.43	1.40	1.46
Income Quintile												
Quintile 5 (richest)*	1.00	-	-	1.00	-	-	1.00	-	-	1.00	-	-
Quintile 4	0.98	0.89	1.09	1.04	1.02	1.06	1.05	0.97	1.13	1.04	1.02	1.06
Quintile 3	1.06	0.96	1.16	1.09	1.07	1.12	1.10	1.02	1.18	1.09	1.07	1.11
Quintile 2	1.13	1.03	1.24	1.18	1.16	1.21	1.24	1.15	1.33	1.18	1.16	1.19
Quintile 1 (poorest)	1.27	1.16	1.38	1.38	1.36	1.41	1.46	1.38	1.58	1.42	1.39	1.44
Occupation (skilled-based)												
Managerial*	1.00	-	-	1.00	-	-	1.00	-	-	1.00	-	-
Professional	0.99	0.76	1.28	0.91	0.86	0.96	1.05	0.89	1.23	1.00	0.97	1.03
Skilled/technical/supervisory	1.21	0.96	1.53	1.00	0.96	1.05	1.16	1.04	1.30	1.09	1.06	1.11
Semi-skilled	1.26	1.00	1.58	0.99	0.95	1.04	1.26	1.12	1.41	1.19	1.16	1.22
Unskilled	1.35	1.06	1.73	1.09	1.04	1.15	1.42	1.24	1.62	1.29	1.25	1.33
No occupation	1.60	1.28	1.99	1.40	1.34	1.46	1.75	1.57	1.97	1.60	1.56	1.63

Source: Census mortality follow-up study, 1991 to 2006.

- not applicable

Significant estimates (p≤0.05)

Table 6. Adjusted hazard ratios* by language group, gender, socio-economic status, and cause of death. Canada, excluding Québec, 1991-2006.

	Ischemic heart disease / cerebrovascular disease (stroke)	COPD/other respiratory diseases	Lung cancer	Colorectal cancer	Prostate cancer	Mouth and oropharynx, esophagus, and stomach cancers	Liver/pancreas cancers	Liver/pancreas cancers	Endocrine disorders (including diabetes)	Cirrhosis of the liver	Hiv/Aids and hepatitis B and C	Respiratory infections	Unintentional injuries	Intentional injuries	Breast cancer	Cervix uteri cancer
Francophone men																
Lowest education	**1.17**	**1.39**	**1.34**	1.00	1.23	1.22	1.12	1.10	1.13	**0.58**	**0.52**	0.96	1.26	1.14	n/a	n/a
Lowest income quintile	**1.34**	**1.46**	**1.48**	1.01	0.74	0.96	1.10	1.15	**1.64**	**1.76**	**2.06**	1.08	1.37	1.29	n/a	n/a
Unskilled	1.02	1.04	**1.44**	0.83	1.00	**1.57**	0.91	1.08	**2.25**	1.61	1.03	2.04	1.26	1.53	n/a	n/a
No occupation	**1.58**	**2.63**	**1.40**	0.88	1.26	1.50	0.83	1.11	**2.84**	1.76	1.44	**3.92**	**2.69**	**2.50**	n/a	n/a
Anglophone men																
Lowest education	**1.26**	**1.45**	**1.49**	**1.19**	**1.14**	**1.27**	1.10	1.09	**1.29**	**1.33**	**0.67**	**1.27**	**1.25**	**1.40**	n/a	n/a
Lowest income quintile	**1.29**	**1.39**	**1.29**	1.08	0.96	**1.25**	1.11	1.09	**1.47**	**1.79**	**2.32**	**1.33**	**1.55**	**1.55**	n/a	n/a
Unskilled	**1.19**	**1.42**	**1.30**	1.05	0.98	**1.19**	1.17	1.07	**1.35**	**1.44**	1.27	**1.34**	**1.36**	**1.28**	n/a	n/a
No occupation	**1.59**	**2.34**	**1.35**	1.09	1.30	**1.16**	1.00	**1.21**	**1.97**	**1.55**	**2.44**	**2.22**	**2.00**	**1.93**	n/a	n/a
Francophone women																
Lowest education	**1.20**	**1.69**	**1.65**	1.19	n/a	1.12	-	0.98	**1.75**	-	-	1.08	1.19	-	0.94	-
Lowest income quintile	**1.34**	**1.29**	1.05	0.96	n/a	1.08	-	0.94	1.13	-	-	**1.45**	1.24	-	0.92	-
Unskilled	1.18	1.15	1.37	0.81	n/a	0.78	-	1.09	1.16	-	-	1.15	1.04	-	1.51	-
No occupation	**1.62**	**2.44**	1.37	1.08	n/a	1.03	-	1.24	**2.41**	-	-	1.78	1.57	-	1.33	-
Anglophone women																
Lowest education	**1.24**	**1.30**	**1.43**	1.12	n/a	**1.26**	1.11	1.07	**1.58**	**1.43**	-	**1.15**	1.01	1.02	**0.90**	**1.52**
Lowest income quintile	**1.27**	**1.36**	**1.22**	1.01	n/a	**1.21**	1.00	1.04	**1.50**	**1.83**	-	**1.25**	**1.58**	**1.79**	0.99	**1.71**
Unskilled	**1.18**	**1.22**	**1.21**	1.04	n/a	**1.11**	1.09	0.99	1.24	1.12	-	0.91	1.21	**1.35**	**0.88**	1.29
No occupation	**1.91**	**2.42**	**1.17**	**1.21**	n/a	1.30	1.03	**1.18**	**2.36**	**1.96**	-	**2.10**	**1.90**	**1.85**	0.98	1.26

Source: Census mortality follow-up study. 1991 to 2006.

*Age-adjusted model controls for age (continuous); fully-adjusted model controls for age (continuous), education level, professional skill level and income adequacy quintile. Hazard ratios are calculated according to the following reference groups (HR=1.00): University degree; richest income quintile; professional position.

- Not available due to low sample size.

Significant estimates (p≤0.05)

** Other cancers include melanoma and other skin cancers, bladder cancer, lymphoma and multiple myeloma, leukemia, other malignant neoplasms.