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Are Recessions Really Good for Your Health? Evidence from Canada

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ABSTRACT

This study investigates the relationship between business cycle fluctuations and health in the Canadian context, given that a procyclical relationship between mortality rates and unemployment rates has already been well established in the U.S. literature. Using a fixed effects model and provincial data over the period 1977-2009, we estimate the effect of unemployment rates on Canadian age and gender specific mortality rates. Consistent with U.S. results, there is some evidence of a strong procyclical pattern in the mortality rates of middle-aged Canadians. We find that a one percentage point increase in the unemployment rate lowers the predicted mortality rate of individuals in their 30s by nearly 2 percent. In contrast to the U.S. data, we do not find a significant cyclical pattern in the mortality rates of infants and seniors.

Keywords: Unemployment, Business Cycles, Health, Mortality
JEL Code: I10, J20, E32

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INTRODUCTION

There is an expanding literature that documents a procyclical pattern in mortality rates. The evidence is largely based on U.S. data and documents the relationship between state level unemployment rates and mortality rates. Overall, this literature (including Ruhm 2000) has suggested that recessions are "good for your health" and that recessions are particularly beneficial for children's and seniors' health (Miller et al. 2009). The mechanisms underlying the relationship between unemployment and mortality, however, remain unclear.

Gerdtham and Ruhm (2006) have suggested that a country's institutions can influence the relationship. While Canadian and American labour markets are reasonably comparable and subject to many of the same economic shocks, Canadian and American health care institutions differ quite substantially. As such we might not expect Canadian mortality rates to follow the same cyclical pattern as the U.S. mortality rates. This is particularly the case for the Canadian working age population and their families, who benefit from universal health care coverage, in contrast to the working age population in the U.S. where many families have no health insurance at all. (According to DeNavas-Walt et al. 2009, 19 percent of Americans age 25-64 were not covered in 2008.) Canadian seniors, on the other hand, have more comparable health care coverage to their American counterparts given the availability of Medicare in the United States. Important differences remain, however, between the two countries' elderly health care coverage. For example, nursing home facilities that provide long-term custodial care are not covered by Medicare while Canadian personal care facilities and home care assistance are generally paid for by provincial governments as part of the universal health care system.

In this study, we test the relationship between unemployment rates and age-specific mortality rates using Canadian provincial level time-series data covering the 1976-2009 period. Like Ruhm (2000) and Neumayer (2004), we use fixed effects estimation and provide robust standard errors. Similar to Miller et al. (2009) we allow for estimates to vary by age and demonstrate how modelling assumptions can influence our conclusions regarding the cyclicality of mortality.

We find the procyclical relationship between unemployment and mortality is present for some of the working age population. In contrast to the results based on U.S. data, however, the effect is strongest for middle-age individuals and women closer to retirement. There is not, however, a significant procyclical pattern in the mortality rates of Canadian children or seniors. This contrast with the U.S. results suggests that health care institutions may be important for the more vulnerable groups that are only indirectly affected by business cycle fluctuations. For the affected working age population (which is more directly affected by labour market fluctuations), however, health care institutions appear to play a secondary role.

Thus, our contributions to the literature are as follows. First, we provide Canadian estimates for the cyclicality of mortality, which are not currently available. Second, in providing Canadian estimates comparable to the existing U.S. estimates, we indicate how health care institutions may influence the impact that the business cycle can have on individual health. Third, our estimates demonstrate how several modelling assumptions matter for the conclusions drawn regarding cyclicality.

The paper is structured in the following manner. The next section provides some background on the relationship between mortality and business cycle fluctuations. The following section summarizes our data and the Canadian trends in mortality. We then present the evidence on the relationship between mortality and unemployment in Canada. Finally, we offer some discussion of the results and concluding remarks.

CONTEXT

As we might expect, there are several studies suggesting that recessions are harmful to individuals' health and life expectancy, particularly among the working age population. Sullivan and von Wachter (2009) have provided evidence that job loss tends to increase mortality rates. Using administrative records of Pennsylvania workers in the 1970s and 1980s merged to the death records up to 2006, they found that high tenured male workers displaced in the early to mid 1980s saw an increase in their mortality rate by 50-100 percent in the first year after job loss. The effects persist over time, as mortality rates of displaced workers remained 10-15 percent higher after 25 years. Their estimates suggest that if a middle age man was displaced, he loses 1 to 1.5 years in life expectancy. Interestingly, however, there is little effect of job loss on the life expectancy of workers near retirement age.

Charles and DeCicca (2008) have also provided evidence that labour market downturns can harm health, based on U.S. metropolitan statistical area level data from the National Health Interviews Survey. They find that people tend to gain weight during recessions while mental health appears to improve during boom periods. Furthermore, the effects of labour market fluctuations are most pronounced for those individuals most exposed to labour market fluctuations.

In several papers by Christopher Ruhm, evidence is presented supporting the notion that recessions will harm some aspects of individual health. In Ruhm (2000), state-level regressions are used to measure the effects of unemployment rates on mortality by specific causes of mortality. He finds that suicide rates are countercyclical (rising during recessions) as we might expect.

Despite this evidence, however, there is a large body of evidence documenting a general procycilcal trend in mortality rates. Ruhm (2000), when investigating overall mortality rates

over the 1972-1991 period, found that a one percentage point increase in state unemployment rates is associated with a 0.5-0.6 percent reduction in state mortality rates. The largest impact was on 20-44 year olds, who would see a 2 percent reduction in mortality rates for a one point increase in unemployment. Ruhm's (2000) evidence suggests no effect of unemployment on the mortality rates of 45-64 year olds and a small reduction (0.3 percent) in the mortality rates of those age 65 and older. Considering cause-specific mortality rates, Ruhm (2000) observed reductions in deaths due to motor vehicle accidents, homicide, heart disease, and liver disease when unemployment rates rose. Ruhm (2000, 2003) has provided evidence suggesting that physical health also improves during recessions as we improve our exercise and diet. Similarly, Ruhm (2005) finds that smoking and excess weight decline during temporary economic downturns while leisure-time physical activity rises. Black and Ruhm (2002) have found that heavy drinkers tend to reduce alcohol consumption during bad economic times. Overall, the evidence suggests that individuals are less likely to engage is risky or reckless behaviour during recessions and more likely to engage in health improving behaviours.

The procyclical nature of mortality rates appears to prevail in outside the U.S., though the body of evidence is more limited. Neumayer (2004) uses German state level data and finds a procyclical relationship between unemployment and mortality due to cardiovascular disease, pneumonia and influenza, motor vehicle accidents, and suicides, but not necessarily for other specific mortality causes. Their analysis confirms the importance of controlling for state-specific effects, as failure to control for state effects results in estimates suggesting a counter-cyclical relationship. In contrast to most studies, Economou et al. (2008) find a countercyclical relationship between mortality rates and the unemployment rate based on a panel of countries in the European Union. Their unique result, however, relies on the inclusion of several lifestyle and environmental indicators including alcohol consumption and CO_2 emissions, and is not consistent across age groups..

In a recent Canadian study, Brochu et al. (2010) use time use data to investigate the cyclical nature of sleep time. They find that the sleep time of 20-69 year olds decreases when the economy is doing relatively better, such that during a recession Canadians on average sleep 22 minutes more each day. Although they are not able to link the gain in sleep to health outcomes directly, their results contribute to the body of evidence suggesting recessions are good for individual health.

Gerdtham and Ruhm (2006) have provided cross-country (OECD) evidence of procyclical trends. Their (preferred) results suggest a one percentage point decrease in the national unemployment rate is associated with a rise in total mortality by 0.4 percent, with the largest impacts on motor vehicle deaths and liver disease. Their evidence also indicates that the effect of unemployment on mortality may be largest in countries with relatively weak social insurance

protection. The importance of social institutions is also discussed in Hertzmann and Siddiqi (2007) who document a growing gap between Canadian and American life expectancy since the early 1950s and link this to differences in socioeconomic inequality and institutions. To note, their evidence linking inequality to life expectancy is consistent with the Canadian trends in life expectancy by income quintile as documented by Berthelot, Wilkins and Ng (2002). Berthelot et al (2002) found that differences in Canadian life expectancy between the richest and poorest quintiles diminished over the 1971-1996 period. Unfortunately their analysis is not detailed enough to draw any conclusions regarding the business cycle.

More recently, Miller et al. (2009) have estimated the effects of state unemployment rates on mortality at each age. They closely follow Ruhm (2000) and show that the procyclical trend in the mortality rates of 20-44 year olds is really driven by the mortality rates of the youngest individuals in that group. For those middle-aged, there is no significant effect of unemployment rates on mortality. The evidence in Miller et al. (2009) suggests the procyclical pattern in mortality is largely driven by the reduction of mortality rates among seniors during recessions. Their estimates suggest that 85 percent of the reduction in total deaths associated with an increase in unemployment is driven by a reduction in deaths among those age 65 and older. There is, generally, a reduction in deaths for anyone over age 60. Their investigation of specific causes of death provides evidence that when unemployment rises, fewer seniors die of cardiovascular and respiratory disease (representing 41 percent and 24 percent of the reduction in deaths among individuals over age 65, respectively).

Miller et al. (2009) also provide evidence that the mortality rates of children age three and younger decline with increases in unemployment rates. This is consistent with evidence from Dehejia and Lleras-Muney (2004), who find that babies conceived in times of high unemployment tend to be healthier. Using the U.S. Vital Statistics Natality records from 1975-1999, they find that the babies have a reduced incidence of low birth weight, fewer congenital malformations, and lower postneonatal mortality if conceived during periods of high unemployment. While many factors appear to play a role, they suggest that mothers tend to increase their use of prenatal care and reduce risky behaviour during recessions. They also provide some evidence based on cross-country data that infant mortality rates fall during recessions.

Overall, the literature suggests that while some individuals face hardships during recessions, those effects on health are dwarfed by the effects of behavioural and other changes that are health improving when looking at the population as a whole. The procyclical relationship in the United States appears to be driven by the mortality rates of seniors and is also significant for infants, although the mechanisms underlying this are not entirely clear. Finally, as cyclicality

may be affected by a country's institutional structure, there is no reason to expect Canadian mortality to show the same patterns as observed in the United States.

DATA AND TRENDS

Similar to the data used in other studies, mortality rates and unemployment rates are observed at a province-year level. We are able to construct a panel data set covering the ten Canadian provinces, over the years 1977-2009. Mortality rates, stated as the number of deaths per 100,000 in the population are based on Statistics Canada's estimates of deaths and population by age (five year age groups), sex and province (CANSIM tables 051-0002 and 051-0001). The annual estimates reflect the July 1-June 30 period, not the calendar year. Unemployment rates are based on the Labour Force Survey monthly estimates (CANSIM Table 282-0001) and represent the percent of the labour force over the age of 15 that is unemployed. To match the mortality rates used here, we construct the average unemployment rate over the July-June period.

Life expectancy has generally increased in Canada over the period studied here (see Figure 1). Men's life expectancy (at birth) increased from 70.3 years in 1976 to 78.8 years in 2008. Women's life expectancy (at birth) increased at a slightly slower rate over the period, from 77.6 to 83.3 years. As we would expect however, this increase in life expectancy at birth does not imply a downward trend in aggregate mortality rates.

As shown in Figure 2, mortality rates reflecting the total number of deaths in each year 1977 and 2009 in each Canadian province do not consistently decline. The variation in mortality rates across provinces, however, shows some consistency over time. There are several dimensions along which the provinces differ that may result in persistent differences in their mortality rates. For example, Alberta has typically had lower mortality rates than other provinces, in part reflecting their younger population and Canadian interprovincial migration patterns. In 2007, 10.4 percent of Alberta's population were seniors age 65 and over, which is the lowest in Canada where 13.4 percent of the total population are seniors age 65 and over.[1] The 'oldest' provinces in 2007 were Saskatchewan and Nova Scotia, with 14.9% and 14.8% of their population being seniors age 65 and over. With respect to migration, Alberta tends to attract younger individuals (under age 45) from other provinces while those over 45 tend to migrate toward the Atlantic Provinces (which includes Newfoundland, Prince Edward Island, Nova Scotia, and New Brunswick).[2]

Industry composition varies across provinces as well. For example, while industries based on resource extraction are a very small part of Ontario's economy (less than one percent of employment in June 2009), these are important industries in Newfoundland and Alberta (representing 7 percent of employment in June 2009).[3] In Ontario and Quebec, the

manufacturing sector is relatively important (employing 12 and 14 percent, respectively, of all workers in June 2009).

There are also persistent differences in the unemployment rates across Canadian provinces. The Atlantic provinces have typically had higher unemployment rates than the rest of Canada (see Table 2). Alberta and Saskatchewan have typically had the lowest rates. As with differences in mortality rates, the provincial differences in unemployment can be explained by many factors including industrial composition.

THE EFFECT OF UNEMPLOYMENT ON MORTALITY

Econometric model

Our basic regression equation follows the literature and takes the form

$$M_{apt} = \beta UR_{pt} + \alpha_a + \rho_p + \tau_t + \rho_p t + \varepsilon_{apt} \quad (1)$$

where M_{apt} is the natural logarithm of the mortality rate for age group *a* in province *p* in year *t*. *UR* is the unemployment rate, which proxies for economic conditions. The fixed effect α_a allows for age specific intercepts in the mortality equation, common to all provinces and years. The fixed effect ρ_p controls for time-invariant province characteristics, τ_t accounts for Canada-wide year effects, and province-specific time trends ($\rho_p t$) are also included. Note this model is slightly different from that estimated in Ruhm (2000) and Neumayer (2004) in that we do not assume the same intercept term for all age groups, which is implicitly done when estimating the model using mortality rates that represent deaths in the population as a whole. The estimate of the coefficient β then captures the impact of within-province deviations in the unemployment rate (accounting for nation-wide yearly changes and provincial trends). Robust standard errors (based on the Huber/White estimator) are provided and are clustered at the province level. When estimating the equation, all observations are weighted by the population in each age-province-year group.

We first provide some estimates based on larger age groups and the model that omits age-specific fixed effects, for comparability with earlier U.S. studies, demonstrating the importance of allowing for age-specific intercepts in the model. As the evidence presented by Miller et al. (2009) demonstrates, it may not be reasonable to assume the effect of unemployment on mortality is the same for all age groups. As such, we also estimate the model in (1) for each age group separately. We then provide gender specific estimates for each age group.

Results

We begin by presenting our estimates of the effect of changes in the unemployment rate on mortality rates overall and by broad age group, presented in Table 3. In the first column, we present estimates of the regression equation assuming all age groups have the same intercept term and in the second column we allow for age-specific intercepts in our estimation. Interestingly, when we assume the same intercept term for all age groups, there appears to be no cyclical pattern in mortality rates. Once age-specific intercepts are allowed in the model, however, we find a negative and significant effect of unemployment on mortality. The estimate suggests that a one percentage point increase in the unemployment rate is associated with a 0.53 percent reduction in mortality rates. This represents a reduction of roughly 3.7 deaths per 100,000 in the 2009 population.

Interestingly, when examining the broader age groups, there is little if any effect of unemployment on mortality. The exception lies in the 20-44 year old age group, where a one percentage point increase in the unemployment rate lowers the predicted mortality rate by more than 1 percent. This result for the 20-44 year old group is consistent with, though slightly smaller in magnitude than, the results presented by Ruhm (2000).

We then consider estimates for each five year age group, presented in Table 4. Consider first the estimates for children (under age 15), presented in the top panel of the table. Though estimates in Miller et al. (2009) and Dehejia and Lleras-Muney (2004) suggest significant procyclical patterns in mortality for children, there is no evidence of this in the Canadian data. In a specification of the model that omits the province-specific trend (in the first column of Table 4), there appears to be some significant and positive effect of unemployment on older children's mortality. This effect, however, is no longer significant once a province-specific trend is introduced to the model. The comparable gender-specific estimates in Table 5 do not show a significant cyclical pattern for children either.

The significant procyclical pattern for the working age population appears to be driven by those age 30-39, with results significant for both men and women in their 30s (presented in the second panel of Tables 4 and 5). This is slightly different from the results of Miller et al. (2009) who suggest that the larger effects among the working age population are for those closer to age 20, with no significant cyclicality to mortality for the middle aged. Our results suggest that a one percentage point increase in the unemployment rate will reduce the mortality rates of individuals in their 30s by nearly 2 percent. Furthermore, the effect of unemployment is as strong for men as it is for women in this age group.

Notably, there is a small but significant effect of unemployment on the mortality rates of those age 55-59. The gender specific estimates suggest this effect is only significant for women. The

estimates suggest that a one percentage point increase in the unemployment rate lowers the predicted mortality rate of women age 55-59 by only 0.3 percent. In contrast, there actually appears to be a positive effect of unemployment on the mortality rates of women age 60-64.

Finally, we consider the mortality rates of seniors (over age 65). Miller et al. (2009) found small but significant negative effects of unemployment on the mortality rates of seniors, accounting for most of the additional deaths associated with an increase in the unemployment rates. In the Canadian data, however, we find little effect. There appears to be some effect on the mortality rates of men age 85-89 and women age 75-79, but there is no consistent pattern across estimates for senior men and women. In fact, there appears to be a countercyclical pattern in mortality rates for 80 to 85 year old men.

As a robustness check, we also estimate our model (including a province-specific trend) using a Poisson model rather than OLS. This allows us to use all observations in each province for each age group when estimating the model (as we do not have to drop observations with zero death counts) and is the appropriate model when using count data with often small values. We present the resulting estimates alongside the comparable estimates in Figure 3. While there are some differences in the estimated coefficients that were not significantly different from zero in either model, our main conclusions regarding the effect of unemployment on mortality rates by age do not change qualitatively or substantially.

DISCUSSION AND CONCLUDING REMARKS

Overall, the evidence we present here suggests that the procyclical pattern in mortality rates is not consistent across countries. There is some procyclical pattern to the mortality rates of middle-aged Canadians. The affected age groups are different from the U.S., with individuals in their 30s most affected rather than individuals in their 20s. The results, however, do not contradict the suggestion by Ruhm (2000) and others that individuals tend to take on behaviours that are harmful to their health when economic conditions are good.

The clear difference between the U.S. and Canadian data, however, is with our estimates for infants and seniors. In Canada, there does not appear to be a cyclical pattern in the mortality rates for these age groups. On its own, this result would be expected as infants and seniors are not likely directly affected by fluctuations in the labour market. Why, then, would we see an effect in the U.S. and not Canada?

Consider first the mortality rates of infants. An important difference between Canada and the U.S. lies in their health care systems and the portion of families with health insurance. All Canadians (citizens and permanent residents) enjoy universal coverage of medically necessary health care services. In the U.S., however, a large portion of individuals have no health insurance coverage whatsoever. According to DeNavas-Walt et al. (2009), 43.6 million (or 15.4

percent of) Americans were not covered by any health insurance (public or private) in 2008. Those uninsured are likely to be young (as 28.6 and 26.5 percent of 18-24 and 26-35 year olds, respectively, were uninsured in 2008). The uninsured are also likely to have relatively low household incomes (as 24 percent of those with incomes below US$25,000 are uninsured and do not qualify for Medicaid (see DeNavas-Walt et al. 2009)). Also, during economic downturns, the number of uninsured and Medicaid spending tend to increase (Dorn et al. 2008).

In this context, then, consider the results of Dehejia and Lleras-Muney (2004) who found that less educated white mothers were more likely to have babies during recessions. These expectant mothers, more like to be uninsured, are able to spend more time attending to their health, thereby improving the health of their babies. It is also possible that when unemployed, these less educated mothers in the U.S. become qualified for Medicaid. This type of response to recessions may not be relevant in Canada as insurance coverage and pre-natal health care are not as great an issue. Of course, further research is required before a decisive statement can be made regarding the importance of health care insurance.

For seniors, the institutional differences between Canada and the United States are much smaller. In the U.S., Medicare covers the vast majority of seniors as only 1.6 percent are uninsured (DeNavas-Walt et al. 2009). There are some differences with respect to coverage for prescription drugs, home care assistance and long term care facilities, but it is not clear the extent to which these differences will matter over the business cycle. Similar to Miller et al. (2009), it is not clear to us why U.S. seniors' mortality rates decrease during an economic downturn. The Canadian data, however, makes it clear that this is not a universal phenomenon.

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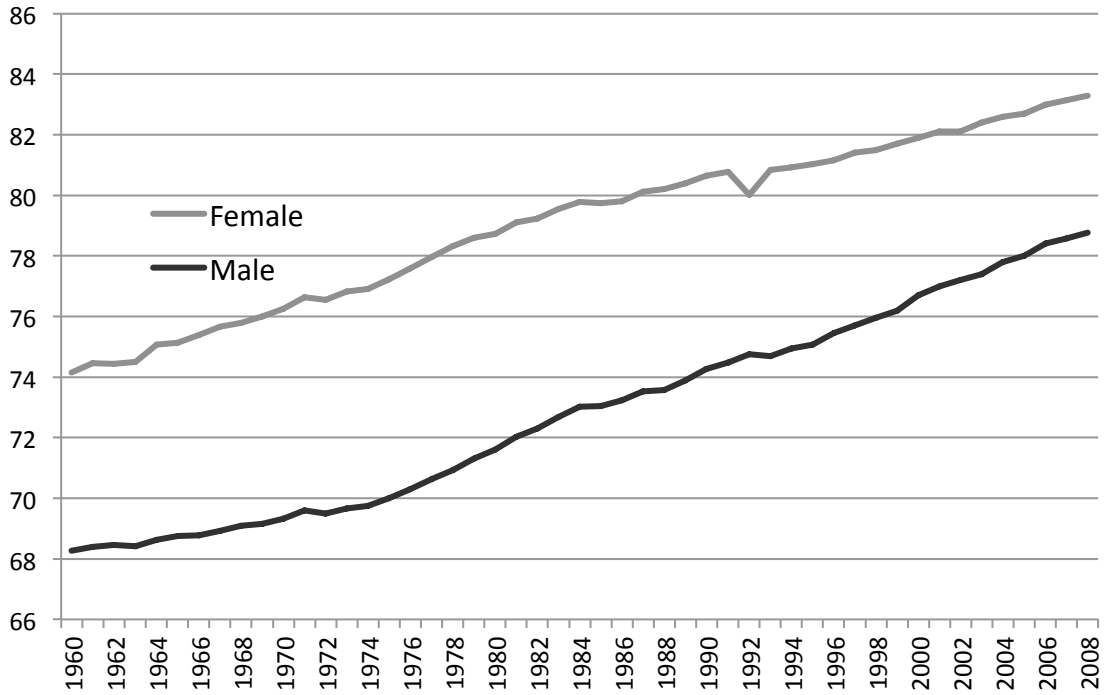

Figure 1: Life Expectancy at Birth in Canada, by Gender, 1960-2008.
Source: World Bank World Development Indicators. Accessed at http://data.worldbank.org/indicator October 2010.

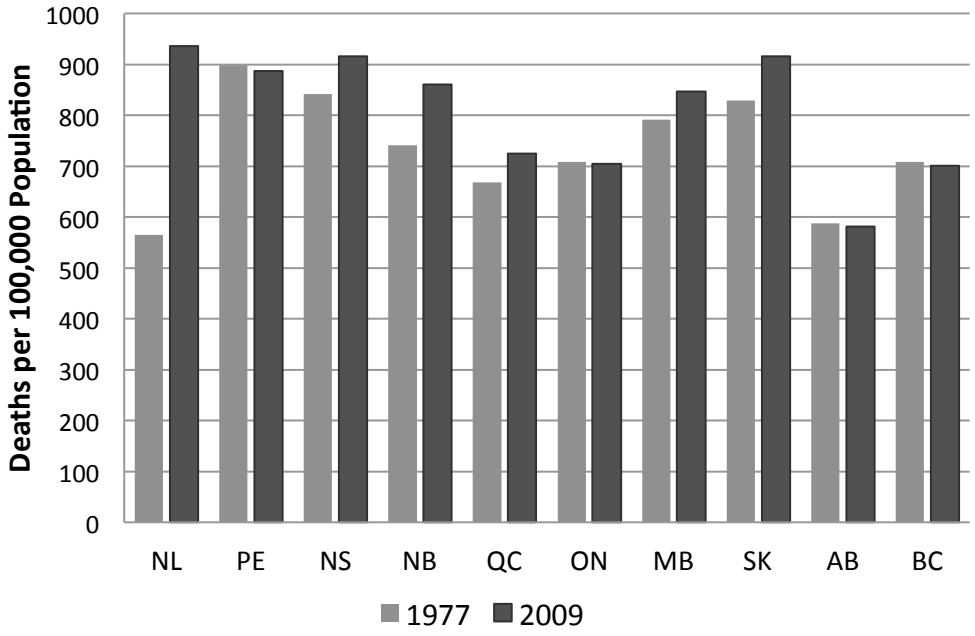

Figure 2: Mortality rates by province, 1977 and 2009.

Source: Authors' tabulations based on Statistics Canada's Cansim Tables 051-0002 and 051-0001.

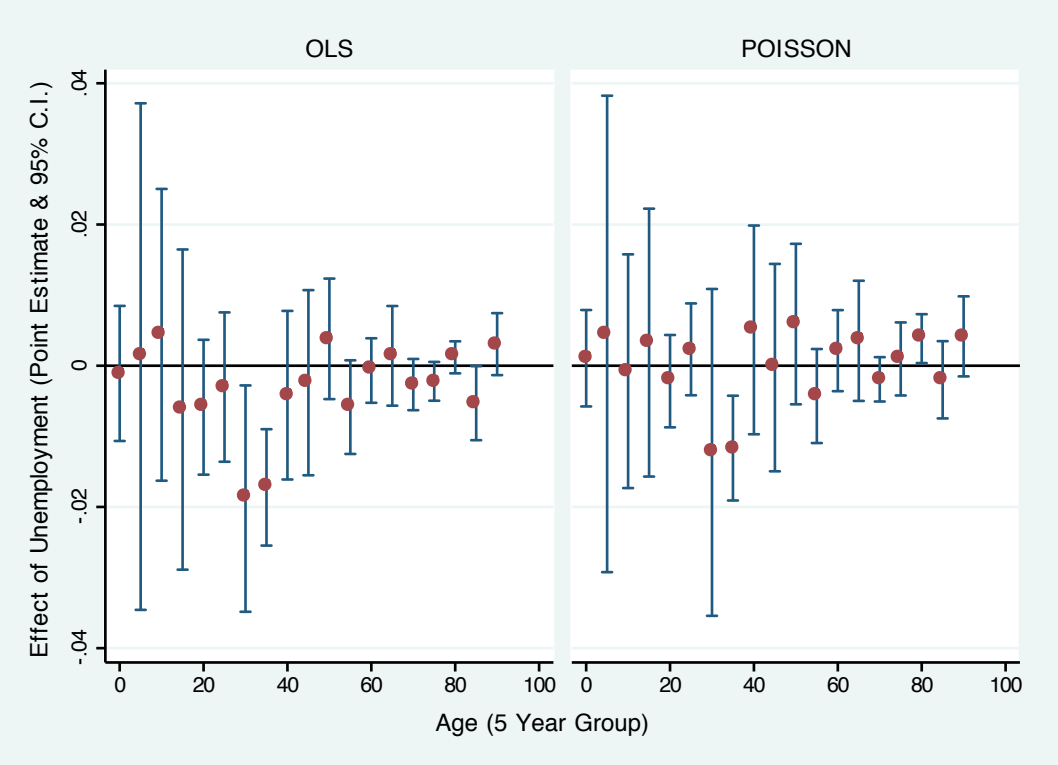

Figure 3. Coefficients on Unemployment in OLS and Poisson Models of Mortality for Each 5 Year Age Group.

Notes: Authors' Tabulations. OLS coefficients correspond to those presented in the second column of Table 2. The blue line represents the 95 percent confidence interval for the corresponding estimated coefficient.

Table 1. Average Mortality Rate in Canada, 1977-2009

	Death Rate Per 100,000 Population	
Age	Mean	Std. Dev.
All ages	749.8	98.1
0 to 14	32.4	13.3
15 to 24	79.3	24.0
25 to 34	86.7	17.3
35 to 44	152.8	28.0
45 to 54	378.9	90.1
55 to 64	973.9	204.7
65 to 74	2374.1	366.6
75 to 84	5689.7	665.5
over 85	14058.9	937.0

Note: Authors' tabulations based on Statistics Canada Cansim Tables 051-0002 and 051-0001. Presented here is the mean across provinces and years, within each age group, weighted by population.

Table 2. Average Unemployment Rate in Canada, by Province, 1977-2009

	Mean	Std. Dev.
Canada	9.8	3.8
NL	16.8	2.2
PE	12.9	2.2
NS	10.8	1.9
NB	11.7	1.9
QC	10.4	1.9
ON	7.5	1.6
MB	6.6	1.7
SK	6.1	1.4
AB	6.5	2.4
BC	8.9	2.6

Note: Authors' tabulations based on Statistics Canada Cansim Table 282-0001. There are 33 observations per province.

Table 3. Effect of unemployment on mortality by age group

	NO AGE DUMMIES	WITH AGE DUMMIES	# Obs.
ALL AGES	0.0147	-0.0053	6251
	(0. 0116)	(.0027)*	
0 to 14	-0. 0034	-0. 0013	971
	(0. 0031)	(0. 0036)	
20 to 44	-0. 0074	-0. 0104	1650
	(0. 0041)	(0.0036)**	
45 to 64	-0. 0014	-0. 0016	1320
	(0. 0031)	(0. 0032)	
over 65	-0. 0010	-0. 0005	1980
	(0. 0023)	(0. 0012)	

Note: * 10%, ** 5%, *** 1% denote level of significance. Robust standard errors (clustered at the province level) are provided in parentheses. Province specific trends and province and year fixed effects are included in the specification of the estimating equation.

Table 4 The effect of unemployment, by five-year age group

Age	No Trend[a]	With Trend[a]	# Obs.
0 to 4	0.0093	-0.0011	322
	(0.0088)	(0.0042)	
5 to 9	0.0267	0.0013	319
	(0.0227)	(0.0158)	
10 to 14	0.0199	0.0044	330
	(0.0071)**	(0.0091)	
15 to 19	0.0026	-0.0062	330
	(0.0037)	(0.0100)	
20 to 24	-0.0055	-0.0059	330
	(0.0056)	(0.0042)	
25 to 29	0.0006	-0.0030	330
	(0.0063)	(0.0047)	
30 to 34	-0.0065	-0.0188	330
	(0.0121)	(0.0071)**	
35 to 39	-0.0152	-0.0172	330
	(0.0046)***	(0.0036)***	
40 to 44	-0.0049	-0.0042	330
	(0.0045)	(0.0052)	
45 to 49	-0.0031	-0.0024	330
	(0.0062)	(0.0058)	
50 to 54	0.0051	0.0038	330
	(0.0068)	(0.0038)	
55 to 59	-0.0051	-0.0059	330
	(0.0047)	(0.0030)*	
60 to 64	0.0020	-0.0007	330
	(0.0060)	(0.0020)	
65 to 69	0.0013	0.0014	330
	(0.0054)	(0.0031)	
70 to 74	-0.0022	-0.0027	330
	(0.0046)	(0.0016)	
75 to 79	-0.0022	-0.0022	330
	(0.0040)	(0.0012)	
80 to 85	0.0001	0.0012	330
	(0.0031)	(0.0010)	
85 to 89	-0.0030	-0.0053	330
	(0.0022)	(0.0023)**	
over 90	0.0036	0.0031	330
	(0.0014)**	(0.0020)	

Note: * 10%, ** 5%, *** 1% denote level of significance. Robust standard errors (clustered at the province level) are provided in parentheses. (a) Trend refers to the inclusion of the province-specific trend in the estimating equation. Province and year fixed effects are included in the specification of the estimating equation.

Table 5. Effect of unemployment, by gender and age group

	MEN ONLY		WOMEN ONLY	
Age	No Trend[a]	With Trend[a]	No Trend[a]	With Trend[a]
0 to 4	0.0024	-0.0049	0.0186	0.0022
	(0.0066)	(0.0098)	(.0146)	(0.0064)
5 to 9	0.0432	0.0167	0.0034	-0.0238
	(0.0221)*	(0.0159)	(0.0298)	(0.0202)
10 to 14	0.0266	0.0077	0.0039	-0.0082
	(0.0076)***	(0.0089)	(0.0178)	(0.0186)
15 to 19	0.0045	-0.0035	-0.0024	-0.0126
	(0.0040)	(0.0117)	(0.0148)	(0.0126)
20 to 24	-0.0071	-0.0048	0.0054	-0.0008
	(0.0040)	(0.0043)	(0.0142)	(0.0126)
25 to 29	0.0034	0.0009	-0.0034	-0.0080
	(0.0051)	(0.0047)	(0.0108)	(0.0089)
30 to 34	-0.0062	-0.0191	-0.0070	-0.0187
	(0.0124)	(.0067)**	(0.0132)	(.0086)*
35 to 39	-0.0159	-0.0160	-0.0131	-0.0183
	(0.0059)**	(.0027)***	(.0058)*	(.0067)**
40 to 44	-0.0041	-0.0058	-0.0054	0.0005
	(0.0076)	(0.0056)	(0.0042)	(0.0054)
45 to 49	-0.0003	0.0019	-0.0082	-0.0095
	(0.0112)	(0.0079)	(.0077)	(.0063)
50 to 54	0.0035	0.0026	0.0067	0.0046
	(0.0109)	(0.0045)	(0.0045)	(0.0042)
55 to 59	-0.0051	-0.0079	-0.0053	-0.0033
	(0.0072)	(0.0050)	(0.0045)	(0.0015)*
60 to 64	-0.0008	-0.0042	0.0078	0.0052
	(0.0071)	(0.0028)	(0.0054)	(0.0023)*
65 to 69	0.0018	0.0014	0.0030	0.0028
	(0.0057)	(0.0044)	(0.0059)	(0.0022)
70 to 74	-0.0007	-0.0003	-0.0025	-0.0034
	(0.0053)	(0.0019)	(0.0047)	(0.0025)
75 to 79	-0.0008	0.0016	-0.0040	-0.0052
	(0.0046)	(0.0018)	(0.0055)	(.0021)**
80 to 85	0.0007	0.0025	-0.0030	-0.0011
	(0.0049)	(0.0009)**	(0.0046)	(0.0016)
85 to 89	-0.0051	-0.0074	-0.0030	-0.0031
	(0.0027)*	(.0026)**	(0.0031)	(0.0028)
over 90	0.0016	0.0020	0.0032	0.0037
	(0.0026)	(0.0028)	(0.0016)*	(0.0021)

Note: * 10%, ** 5%, *** 1% denote level of significance. Robust standard errors (clustered at the province level) are provided in parentheses. (a) Trend refers to the inclusion of the province-specific trend in the estimating equation. Province and year fixed effects are included in the specification of the estimating equation. There are between 304 and 330 observations for each regression.

Endnotes

[1] See CANSIM table 109-5226.
[2] See Cansim Table 051-0012. This trend is most pronounced in more recent years.
[3] Based on CANSIM table 282-0088 Labour Force Survey Estimates.