

A national cohort study of community belonging and its influence on premature mortality

Journal of Epidemiology & Community Health

Sensitivity Analysis 1: Categorizing missing household income observations^a as a separate category

Supplementary Table S1: Unadjusted and multivariable-adjusted relative risk estimates^b for premature mortality within 5 years of follow-up per level of community belonging (N=477,100).

Source: Canadian Community Health Survey (2000-2012), Canadian Vital Statistics Database (2000-2017)

	Model 3: Sociodemographic & health adjustments^c
18 to 35 years (n=151,000)	
Very strong	1.16 (0.72, 1.87)
Somewhat strong	Ref.
Somewhat weak	1.76 (1.27, 2.44)
Very weak	1.55 (1.00, 2.41)
36 to 55 years (n=191,000)	
Very strong	0.91 (0.75, 1.12)
Somewhat strong	Ref.
Somewhat weak	0.82 (0.69, 0.98)
Very weak	1.34 (0.96, 1.87)
56 to 70 years (n=135,100)	
Very strong	1.10 (1.00, 1.21)
Somewhat strong	Ref.
Somewhat weak	0.99 (0.90, 1.10)
Very weak	1.15 (1.02, 1.29)

^a Household income values were missing for 8.7% of the sample..

^b Estimates are weighted to produce population estimates; pooled sampling weights provided by Statistics Canada were normalized.

^c Model 3 adjustments include age, sex, survey cycle, urban/rural designation, household income quintile (missing observations as separate category vs. imputed), racialization, immigrant status, smoking behaviour, alcohol consumption, physical activity, and body mass index. Models for the older two age groups (36-55 years and 56-70 years) additionally adjusted for diagnosis of chronic obstructive pulmonary disease/emphysema, cancer, diabetes, or heart disease.

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Sensitivity Analysis 2: Lag model

Supplementary Table S2: Unadjusted and multivariable adjusted relative risk estimates^a for premature mortality within 5 years of follow-up per level of community belonging (N=475,500; excluding participants with an event within the first year following baseline interview).

Source: Canadian Community Health Survey (2000-2012), Canadian Vital Statistics Database (2000-2017)

	Model 3: <i>Sociodemographic & health adjustments^b</i>
18 to 35 years (n=150,900)	
<i>Very strong</i>	1.20 (0.71, 2.01)
<i>Somewhat strong</i>	Ref.
<i>Somewhat weak</i>	1.72 (1.20, 2.47)
<i>Very weak</i>	1.44 (0.87, 2.4)
36 to 55 years (n=190,600)	
<i>Very strong</i>	0.84 (0.69, 1.03)
<i>Somewhat strong</i>	Ref.
<i>Somewhat weak</i>	0.77 (0.64, 0.94)
<i>Very weak</i>	1.39 (0.96, 2.01)
56 to 70 years (n=134,000)	
<i>Very strong</i>	1.08 (0.97, 1.20)
<i>Somewhat strong</i>	Ref.
<i>Somewhat weak</i>	0.93 (0.84, 1.03)
<i>Very weak</i>	1.16 (1.02, 1.32)

^a Estimates are weighted to produce population estimates; pooled sampling weights provided by Statistics Canada were normalized.

^b Model 3 adjustments include age, sex, survey cycle, urban/rural designation, household income quintile, racialization, immigrant status, smoking behaviour, alcohol consumption, physical activity, and body mass index. Models for the older two age groups (36-55 years and 56-70 years) additionally adjust for diagnosis of chronic obstructive pulmonary disease/emphysema, cancer, diabetes, or heart disease.

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Sensitivity Analysis 3: Additional adjustments for baseline health

Supplementary Table S3: Unadjusted and multivariable adjusted relative risk estimates^a for premature mortality within 5 years of follow-up per level of community belonging (N=477,100).

Source: Canadian Community Health Survey (2000-2012), Canadian Vital Statistics Database (2000-2017)

	Model 3: Sociodemographic & health adjustments^b		
	<i>Plus adjustment for:</i> Anxiety or mood disorder diagnosis	<i>Plus adjustment for:</i> Self-rated mental health	<i>Plus adjustment for:</i> Self-rated general health
18 to 35 years (n=151,000)			
<i>Very strong</i>	1.16 (0.73, 1.86)	1.23 (0.77, 1.97)	1.20 (0.74, 1.93)
<i>Somewhat strong</i>	Ref.	Ref.	Ref.
<i>Somewhat weak</i>	1.71 (1.23, 2.37)	1.65 (1.19, 2.30)	1.68 (1.21, 2.34)
<i>Very weak</i>	1.42 (0.91, 2.20)	1.38 (0.88, 2.15)	1.35 (0.85, 2.12)
36 to 55 years (n=191,000)			
<i>Very strong</i>	0.92 (0.75, 1.13)	0.93 (0.76, 1.15)	0.92 (0.75, 1.14)
<i>Somewhat strong</i>	Ref.	Ref.	Ref.
<i>Somewhat weak</i>	0.81 (0.68, 0.97)	0.80 (0.67, 0.96)	0.79 (0.66, 0.94)
<i>Very weak</i>	1.31 (0.93, 1.86)	1.30 (0.92, 1.84)	1.18 (0.83, 1.69)
56 to 70 years (n=135,100)			
<i>Very strong</i>	1.10 (1.00, 1.21)	1.10 (1.00, 1.21)	1.11 (1.01, 1.22)
<i>Somewhat strong</i>	Ref.	Ref.	Ref.
<i>Somewhat weak</i>	0.99 (0.89, 1.09)	0.99 (0.89, 1.09)	0.95 (0.86, 1.05)
<i>Very weak</i>	1.12 (1.00, 1.27)	1.11 (0.98, 1.25)	1.00 (0.89, 1.13)

^a Estimates are weighted to produce population estimates; pooled sampling weights provided by Statistics Canada were normalized.

^b Model 3 adjustments include age, sex, survey cycle, urban/rural designation, household income quintile, racialization, immigrant status, smoking behaviour, alcohol consumption, physical activity, and body mass index. Models for the older two age groups (36-55 years and 56-70 years) additionally adjust for diagnosis of chronic obstructive pulmonary disease/emphysema, cancer, diabetes, or heart disease.

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Sensitivity Analysis 4: E-value compared to fully adjusted model from Table 2

	Fully Adjusted model results from Table 2*	E-value [32]
18 to 35 years (n=151,000)		
<i>Very strong</i>	1.17 (0.73, 1.88)	1.62
<i>Somewhat strong</i>	Ref.	
<i>Somewhat weak</i>	1.76 (1.27, 2.43)	2.92
<i>Very weak</i>	1.53 (0.99, 2.38)	2.43
36 to 55 years (n=191,000)		
<i>Very strong</i>	0.92 (0.75, 1.13)	1.30
<i>Somewhat strong</i>	Ref.	
<i>Somewhat weak</i>	0.82 (0.69, 0.98)	1.74
<i>Very weak</i>	1.34 (0.96, 1.87)	2.01
56 to 70 years (n=135,100)		
<i>Very strong</i>	1.10 (1.01, 1.21)	1.43
<i>Somewhat strong</i>	Ref.	
<i>Somewhat weak</i>	0.99 (0.90, 1.10)	1.11
<i>Very weak</i>	1.14 (1.01, 1.28)	1.54

Model 3 adjustments include all model 2 covariates plus smoking behaviour, alcohol consumption, physical activity, and body mass index. Models for the older two age groups (36-55 years and 56-70 years) additionally adjust for diagnosis of chronic obstructive pulmonary disease/emphysema, cancer, diabetes, or heart disease.

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Databases and Software for Analysis

This study used the Canadian Community Health Survey (CCHS) respondents that participated between 2000-2012 and consented to administrative health database linkage linked to the Canadian Vital Statistics Death Database (CVSD) by Statistics Canada. The datasets used in this study belong to Statistics Canada and cannot be shared publicly because of personal health information at the individual level. These data can only be accessed in secure computing environments upon approval of a project proposal and subsequent release of data for research by Statistics Canada. CCHS data is available through the Research Data Centres program administered by Statistics Canada (see this link for eligibility and access process: www.statcan.gc.ca/en/microdata/data-centres). Data access needs to be approved by Statistics Canada, and output is vetted by Statistics Canada before being released. We did not receive special access to data and followed a process that was open to others. Access can be granted to others by following the request to access outlined by Statistics Canada using the link provided. Statistical analyses were conducted using SAS Version 9.4 using PROC FREQ and PROC MEANS for descriptive statistics, PROC GLM for Poisson regression, PROC MI for imputation, and the R package for computing E-value for the sensitivity analysis [31].