Using Cross-Country Longitudinal Data to Better Understand Health Inequalities

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Motivation

- A large literature analyzes the relationship between individual health outcomes and SES
  - and demonstrates that some health inequalities are even more evident among older adults.

Motivation

- More education is associated with better health outcomes
  - Lower mortality
  - Better self-reported health and lower morbidity
- International comparative studies
- If the association is causal: the effect of education on health ⟶ Policy implications

Motivation

- **Health and Education gradient**
  - These associations exist across time and countries, even though their magnitude might differ (Banks et al., 2006; Andreyeva et al., 2007; Mackenbach et al., 2008; Avendano et al., 2009; Michaud et al., 2011).

- **Measurement of health inequality:**
  - Reverse causality
  - Health variables are generally self-reported and are not cardinal variables.

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This paper

- International longitudinal comparative studies:
  - SHARE (Europe), HRS (the U.S.), ELSA (England)
- and **NPHS (Canada)**
- Examine a wide range of health outcomes
  - Subjective measures: self-reported health and functional status
  - Objective measures: major doctor-diagnosed chronic illnesses
- In particular, we focus on the effect of educational level on disease incidence among people aged over 50 across different countries.

Longitudinal Data

- HRS (Health and Retirement Study)
  - The United States
- ELSA (English Longitudinal Study of Ageing)
  - England
- SHARE (Survey of Health, Ageing and Retirement in Europe)
  - 15 European Countries
- NPHS (National Population Health Survey)
  - Canada

The International Landscape in Comparable Data Collection

	SHARE	HRS	ELSA	NPHS
Country	15 European countries	United States	UK	Canada
Waves	2004-2012 On-going	1992-2012 On-going	2002-2012 On-going	1995-2011 (Finished)
Follow-up frequency	Every 2 years			
Age eligibility	+50	+50	+50	+12 (We keep for our analysis +50)

Data

	SHARE	HRS	ELSA	NPHS
Health	Physical/psychological self report, disabilites, behaviors (i.e. smoking)			
Cognitive testing	Yes			No
Biomarkers	No (planned in wave 6)	Yes	Yes	No
Health services	Utilization, insurance, out-of-pocket spending, total medical expenditures			Utilization
Labor Force	Yes			
Income	Large set of income variables			Total Income: limited information
Wealth	Yes (social security earnings/benefit histories, housing, investments,…)			No
Socio-demographic	Education, age, marital status, employment status, family history			

Data

- Education
  - Levels of education and years of full-time education
- Health
  - Poor health – self-reported health is poor or fair
  - Any limitations in five activities of daily living (ADLs)
  - Any limitations in five instrumental activities of daily living (IADLs)
  - Any of the following chronic conditions: cancer, diabetes, heart disease, hypertension, lung disease, arthritis, stroke, psychiatric illness
- Socio-demographic
  - Age, gender, marital status, working status, household size

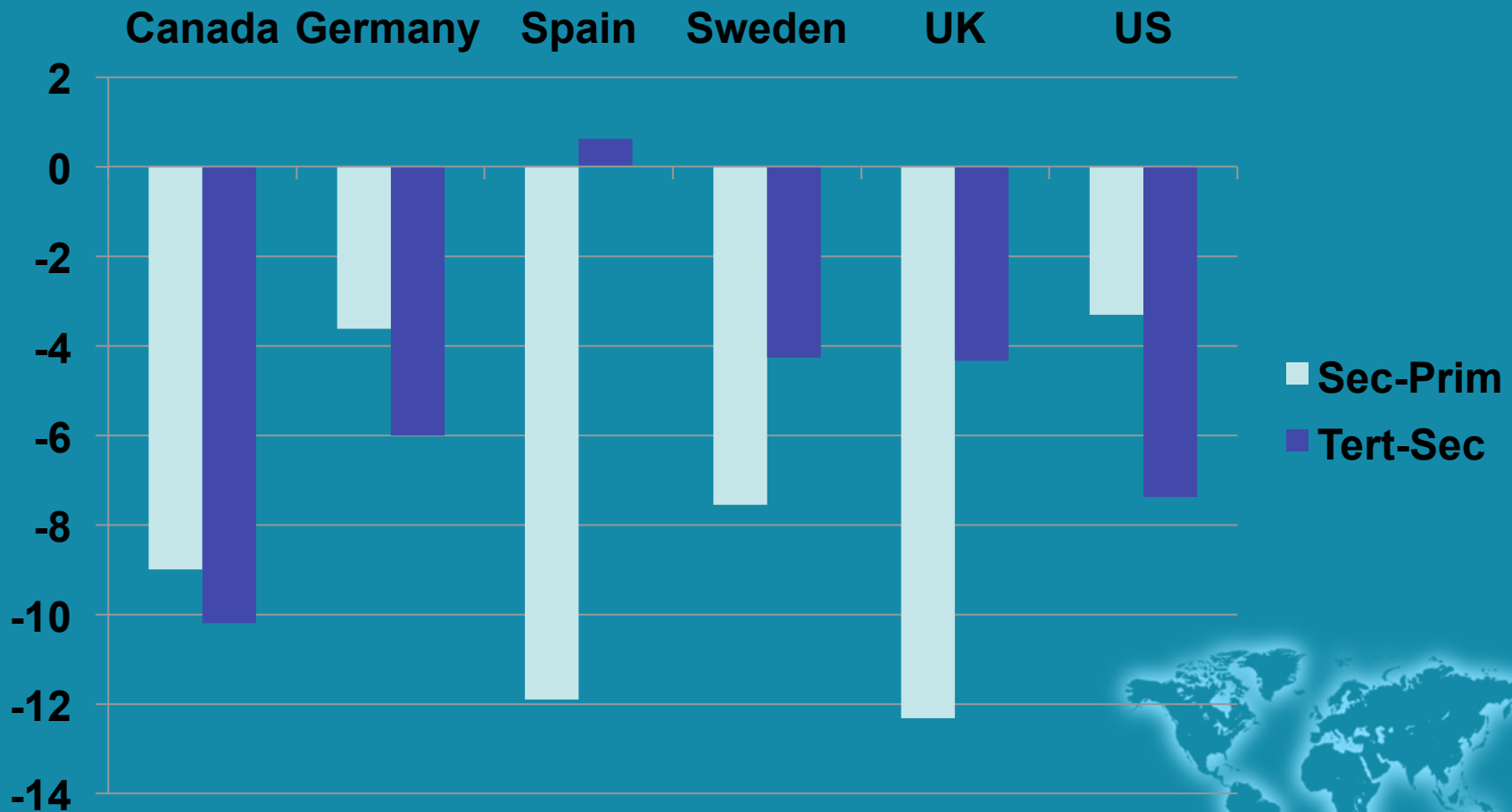Self-reported poor health status by education across countries (2006)
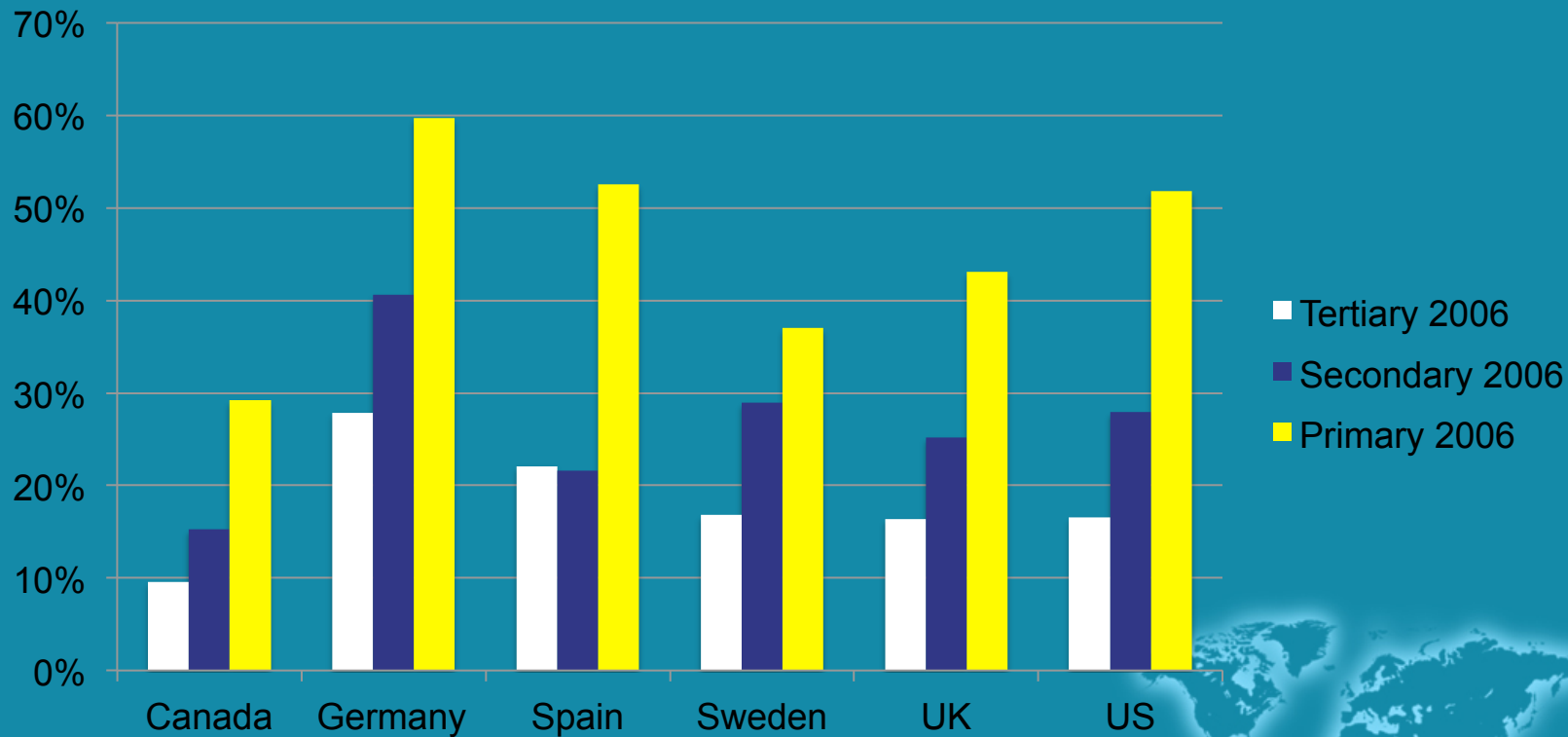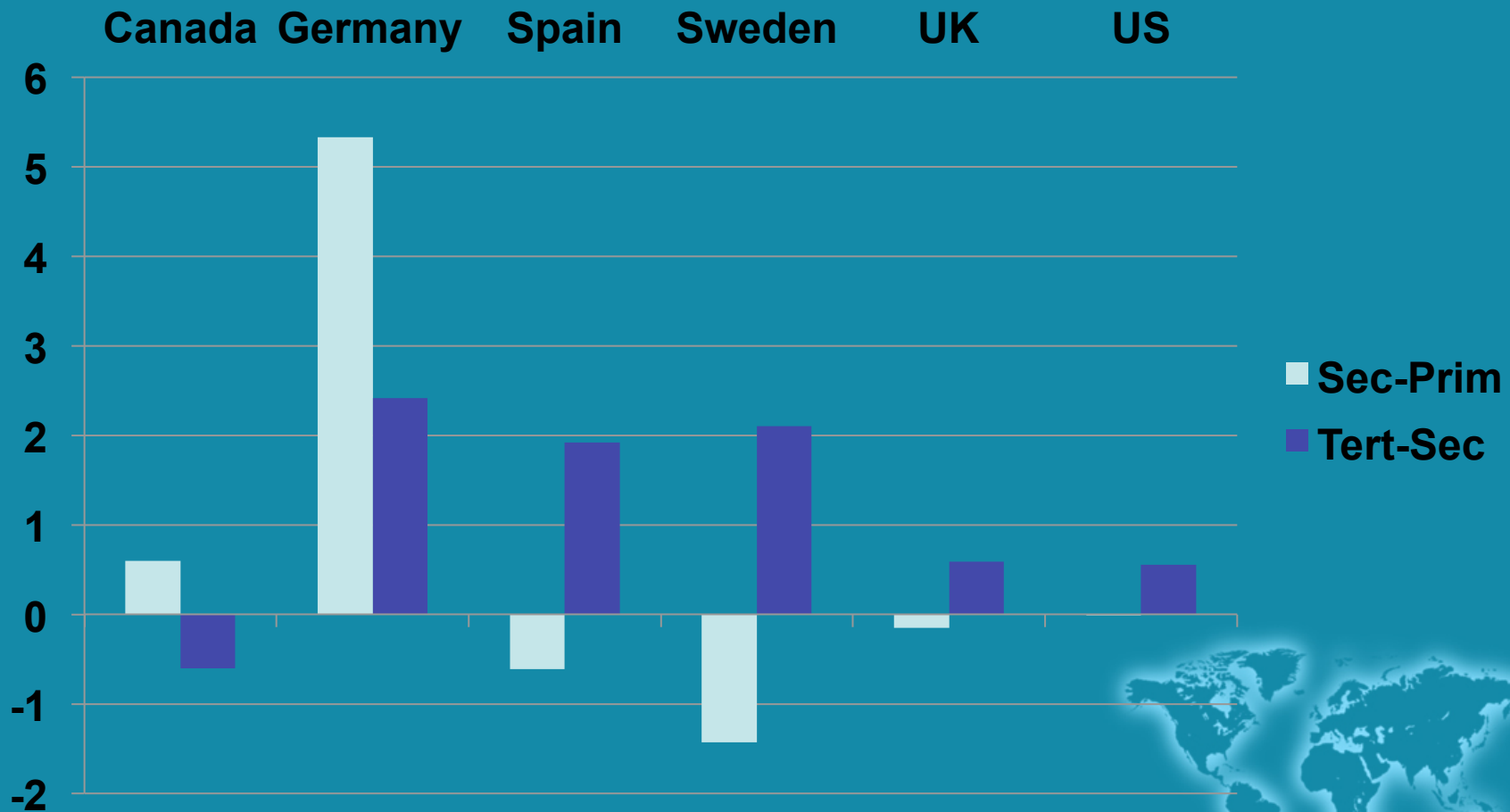
Health inequality measures

– make pair wise comparisons of health between two subgroups

– use of data from all subgroups to assess inequality

Percentage point difference, % with any chronic condition 2006

Change in percentage point education gap, % with diabetes, 2004-2006

Cross-sectional comparisons

**Limitations of cross-sectional comparisons**

- Can't measure how changes in policies, economic conditions or other determinants of health affect health gradients
  - Can't ask causal questions

Limitations of comparisons using REPEATED cross-sectional data
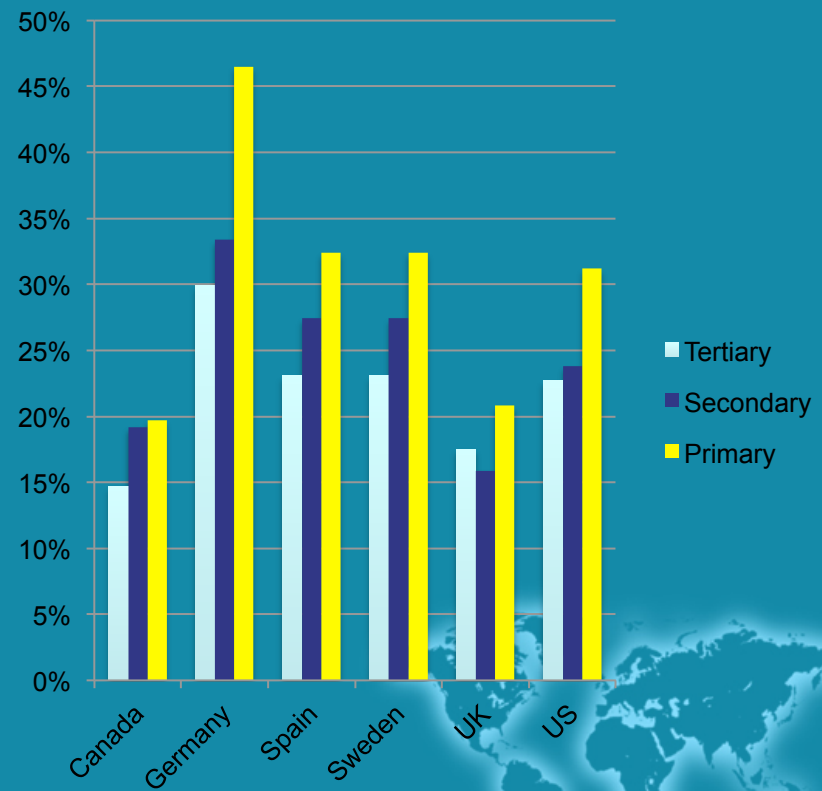
- Can't measure how changes in economic conditions or other determinants of health <u>at the individual level</u> affect health differentially by SES
  - Can't ask causal questions
- Can't see incident health conditions
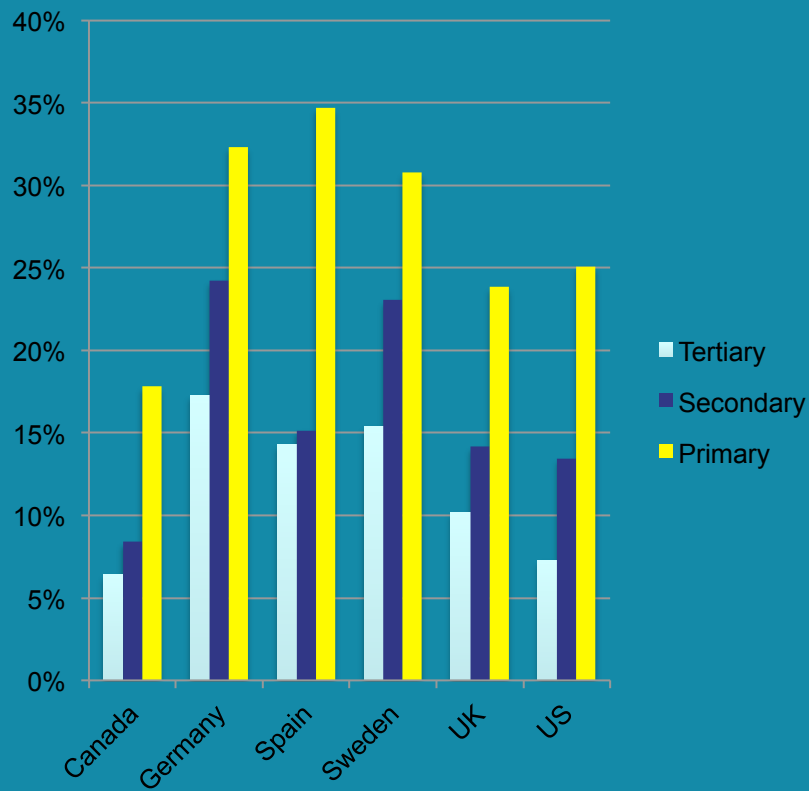
Marginal effects of education on Disease Incidence

Canada	iany_chronic	ihealth	idiabe	iany_adl	Germany	iany_chronic	ihealth	idiabe	iany_adl
Secondary	0,026	0,025	0,01	**0.031***	Secondary	0.048	**0.077***	0.014	0.001
	(0.03)	(0.02)	(0.01)	(0.01)		(0.05)	(0.03)	(0.01)	(0.02)
Primary	0,064	**0.104***	0,012	**0.052***	Primary	0.123	**0.136***	0.022	**0.046***
	(0.04)	(0.02)	(0.01)	(0.01)		(0.07)	(0.04)	(0.02)	(0.02)
UK	iany_chronic	ihealth	idiabe	iany_adl	Sweden	iany_chronic	ihealth	idiabe	iany_adl
Secondary	-0.025	**0.049***	0.006	0.021	Secondary	0.037	**0.086***	**0.027***	0.027
	(0.03)	(0.02)	(0.01)	(0.01)		(0.05)	(0.03)	(0.01)	(0.02)
Primary	0.024	**0.141***	**0.013***	**0.082***	Primary	**0.099***	**0.156***	**0.025***	**0.050***
	(0.03)	(0.02)	(0.01)	(0.01)		(0.04)	(0.03)	(0.01)	(0.02)
United States	iany_chronic	ihealth	idiabe	iany_adl	Spain	iany_chronic	ihealth	idiabe	iany_adl
Secondary	0.011	**0.064***	0.007	**0.026***	Secondary	0.021	0.031	0.034	0.076
	(0.02)	(0.01)	(0.00)	(0.01)		(0.12)	(0.09)	(0.04)	(0.07)
Primary	**0.056***	**0.149***	**0.013***	**0.083***	Primary	**0.177***	**0.216***	0.039	**0.167***
	(0.02)	(0.01)	(0.00)	(0.01)		(0.09)	(0.06)	(0.03)	(0.06)

Note: Tertiary education is base.   Weighted data and standard errors in parantheses

Marginal effects of education on incidence of self-reported poor health status (+control variables)

	Without controls (1)	With controls (2)	With controls (2) +Wealth (3)
Canada			
Secondary	0.025	0.010	
	(0.02)	(0.02)	
Primary	0.104***	0.043*	
	(0.02)	(0.02)	
UK			
Secondary	0.049*	0.031	0.025
	(0.02)	(0.02)	(0.02)
Primary	0.141***	0.084***	0.068***
	(0.02)	(0.02)	(0.02)
United States			
Secondary	0.064***	0.043***	0.038***
	(0.01)	(0.01)	(0.01)
Primary	0.149***	0.098***	0.083***
	(0.01)	(0.01)	(0.01)
Germany			
Secondary	0.077*	0.060*	0.053
	(0.03)	(0.03)	(0.03)
Primary	0.136**	0.076	0.063
	(0.04)	(0.04)	(0.05)
Sweden			
Secondary	0.086**	0.056	0.056
	(0.03)	(0.03)	(0.03)
Primary	0.156***	0.093***	0.087**
	(0.03)	(0.03)	(0.03)
Spain			
Secondary	0.031	0.071	0.066
	(0.09)	(0.08)	(0.08)
Primary	0.216***	0.169**	0.150*
	(0.06)	(0.06)	(0.06)

- Column (1) marginal effects of education on incidence of self-reported poor health status

- Column (2) the same as (1) with controls: age groups, gender, marital status, employment status and income

- Column (3) the same as (2) with 1 more control: net wealth

International Aging Comparable Data

- HRS, SHARE and ELSA
- No equivalent data for Canada

OTHER COUNTRIES

- MHAS (Mexican Health and Aging Study) 2001,2003, 2012 (3 waves)
- KLoSA (Korean Longitudinal Study of Ageing) 2006-2014 (5 waves)
- J-STAR (Japanese Study on Aging and Retirement) 2007-2013 (4 waves)
- CHARLS (Chinese Health and Retirement Longitudinal Study) 2 pilots, 2011
- TILDA (Irish Longitudinal study on Ageing) 2010-2014 (3 waves)
- LASI (Longitudinal Ageing Study in India) 1 pilot, 2011
- ELSI (Brazilian Longitudinal Study of Aging) (in process)

OTHER CLOSED DATA

- The WHO Study on Global AGEing and Adult Health (SAGE)
- Costa Rican Longevity and Healthy Aging Study (CRELES)
- Canadian Community Health Survey (CCHS) - CLSA (Canadian Longitudinal Study on Aging)
- Indonesian Family Life Survey (IFLS)

Canadian Aging Data Health (1)

- CLSA (Canadian Longitudinal Study on Aging)
  - Data collection launched in 2012, expecting to follow 50,000 Canadians between 45 and 85 for at least 20 years.
  - "The study will collect information on the changing biological, medical, psychological, social, lifestyle and economic aspects of people's lives."
  - Income variables: limited information.
  - NO WEALTH
  - NO MEDICAL EXPENDITURES…

Canadian Data – Longitudinal Health (2)

- Longitudinal and International Study of Adults (LISA) – longitudinal, conducted in 2012 and 2014.

- Survey of Labour and Income Dynamics (SLID) – longitudinal, annual, rotating panels of 6 years each, 1993-2011, health questions limited to self-reported health and activity limitations.

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Canadian Data – cross sectional Health (3)

- SOME EXAMPLES:

  - Canadian Community Health Survey (CCHS)

  - General Social Survey (GSS)

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