Income, Health and Health Insurance

Longitudinal Health Selection in logged Income by Health Insurance Status in Canada

Health Stratification

Health Stratification: Outline

- Theoretical Underpinnings
  - Health Inequalities, health insurance, selection and intergenerational transmission
- Data
- Methodological Questions
  - Fixed effects and OLS
- Results
- Conclusions

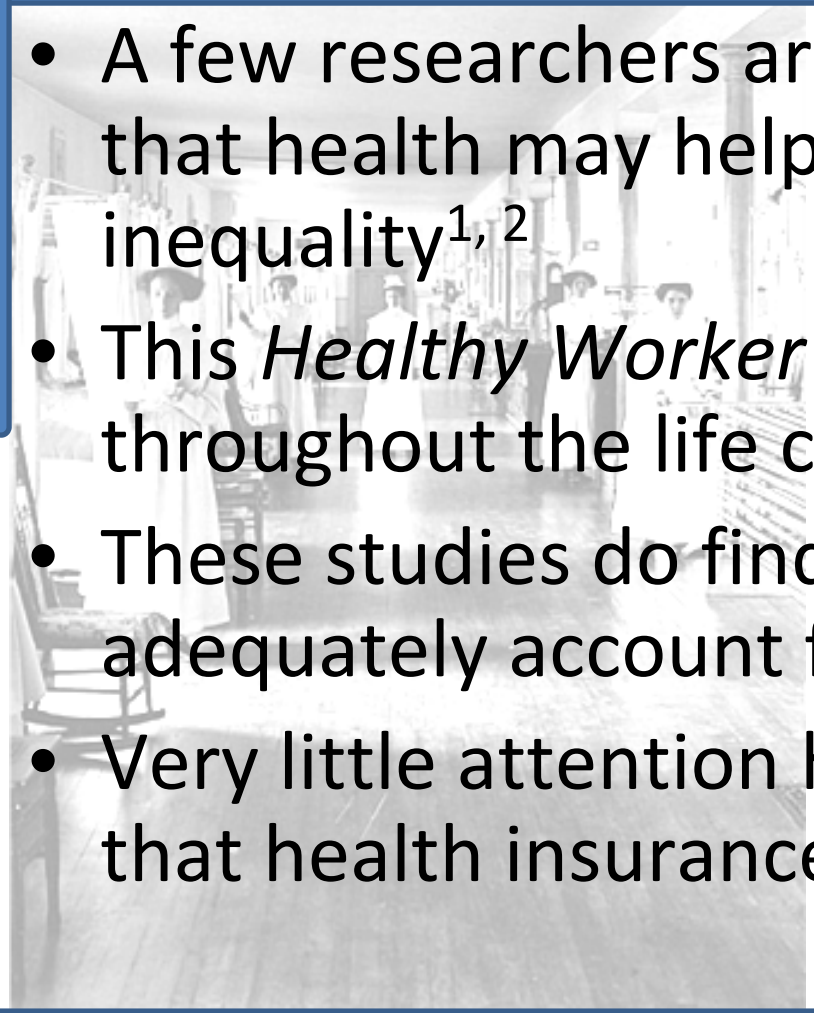
Funding for this project was provided by the Quebec Inter-university Centre for Social Statistics (QICSS)

Assumptions and Health

- Being healthy means more now than it ever has before
- It relates to more of our lives, and more of our lives rotate around our health
- If health is a biological reality as some say, then why bother worrying[1]?
- Is there some kind of gain inherent to health?
- Why is health so precious[2]?

[1](Musgrove, Creese et al., 2000), [2](O'Rand, 1996)

Health Selection



- A few researchers are beginning to realize that health may help create socioeconomic inequality[1, 2]
- This *Healthy Worker* effect may be prominent throughout the life course
- These studies do find a relationship, but none adequately account for selection bias
- Very little attention has been paid to the role that health insurance plays in this relationship

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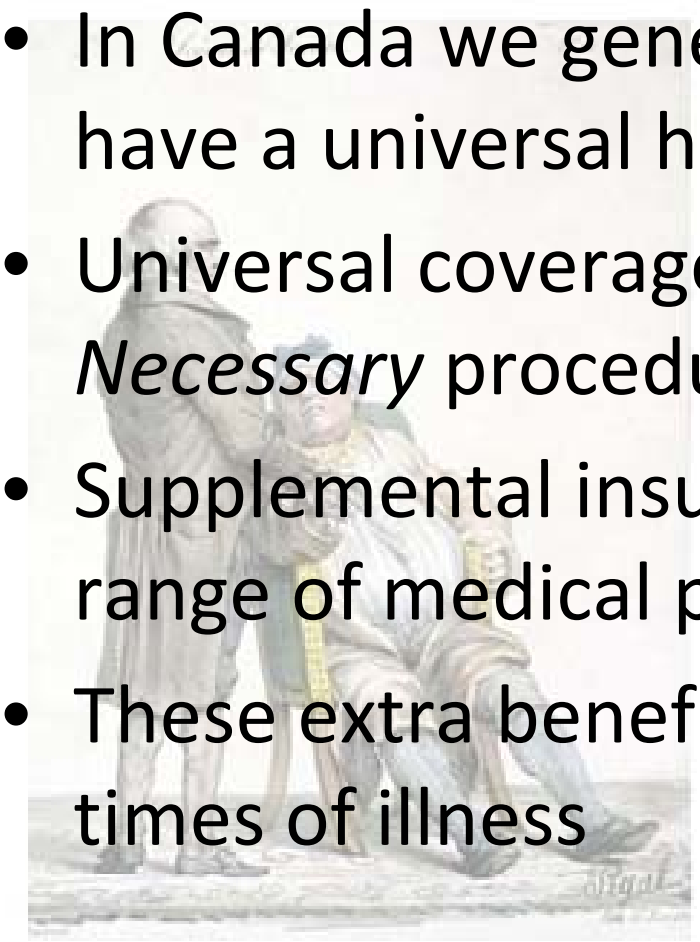
[1](Hurd & Kapteyn 2003), [2](Mulatu & Schooler 2002)

Healthcare Cares?

- In Canada we generally consider ourselves to have a universal healthcare system
- Universal coverage only covers *Medically Necessary* procedures – inequality exists
- Supplemental insurance covers a broader range of medical procedures
- These extra benefits may protect people in times of illness



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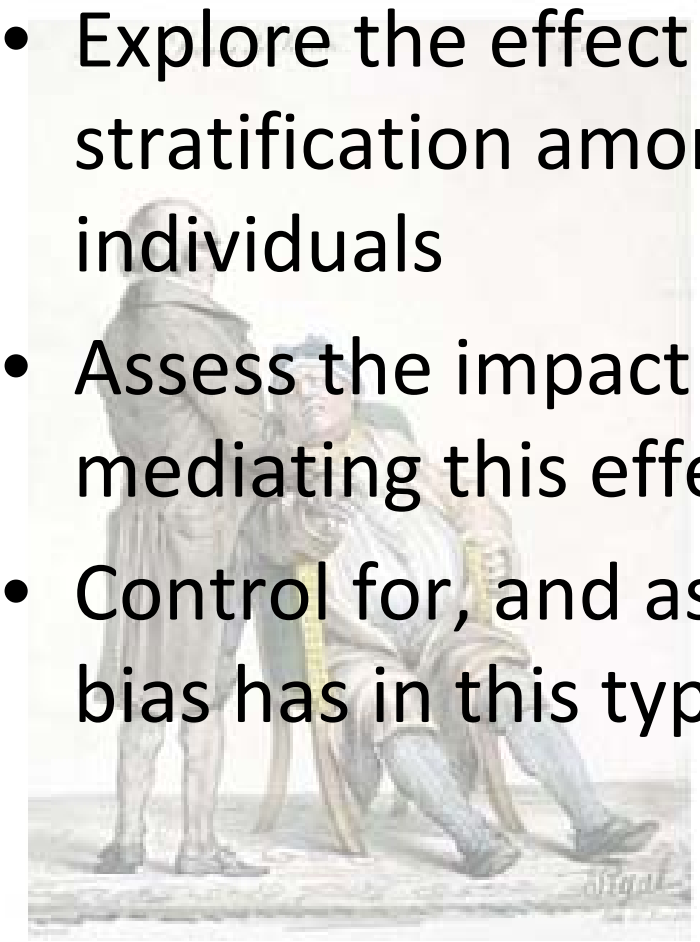
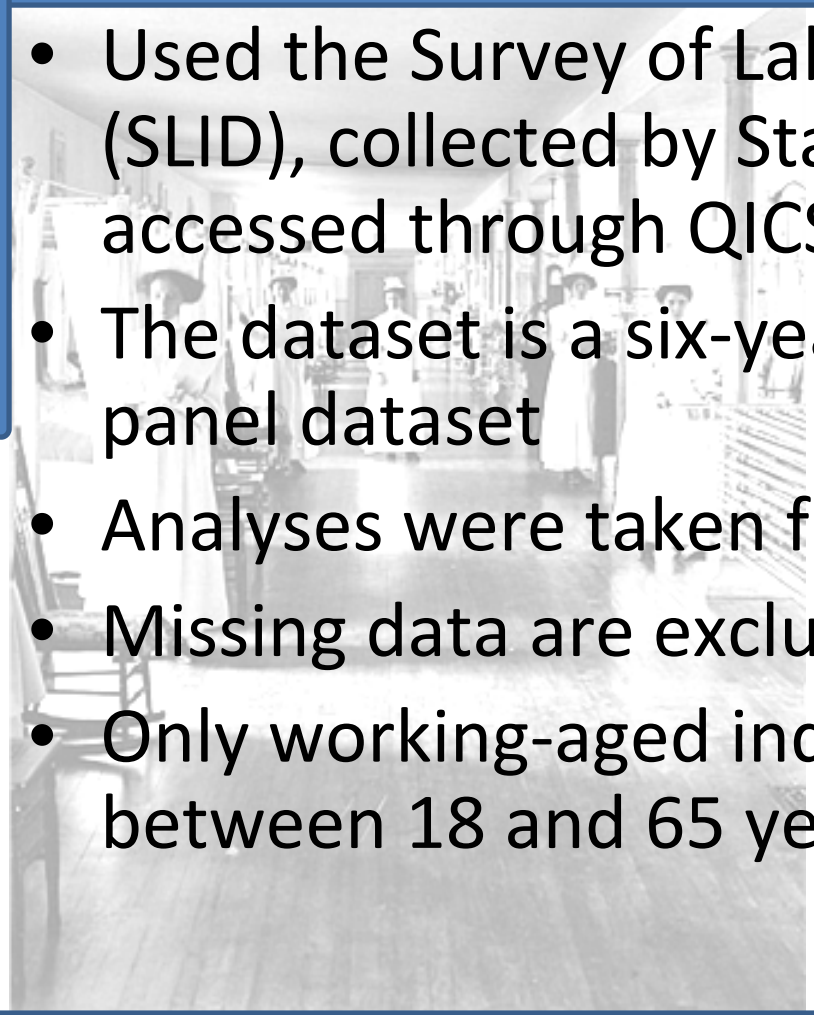
Problem

- Explore the effect that health has in creating stratification amongst working-aged individuals
- Assess the impact of health insurance in mediating this effect
- Control for, and assess the part that selection bias has in this type of stratification



Data



- Used the Survey of Labour and Income Dynamics (SLID), collected by Statistics Canada and accessed through QICSS
- The dataset is a six-year refreshing household panel dataset
- Analyses were taken from the 1999 – 2002 years
- Missing data are excluded listwise
- Only working-aged individuals, here defined as between 18 and 65 years of age, were included

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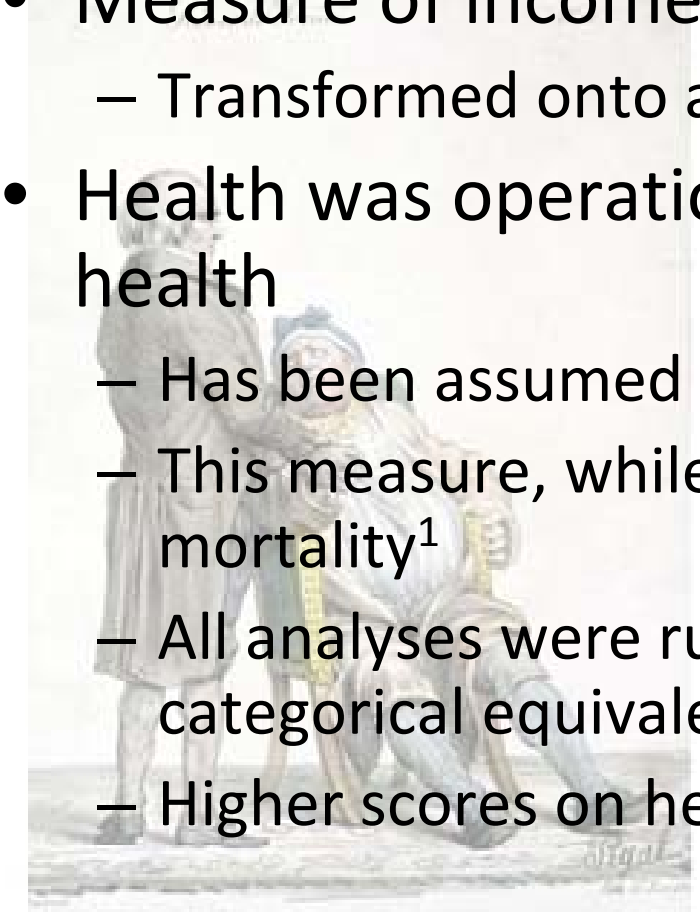
Measures: Income and Health

- Measure of income from all types of employment
  - Transformed onto a logarithmic scale
- Health was operationalized using self-rated health
  - Has been assumed to be continuous
  - This measure, while not "objective", predicts mortality[1]
  - All analyses were run using dummy constructs and categorical equivalents of health, to no avail
  - Higher scores on health indicate poorer health



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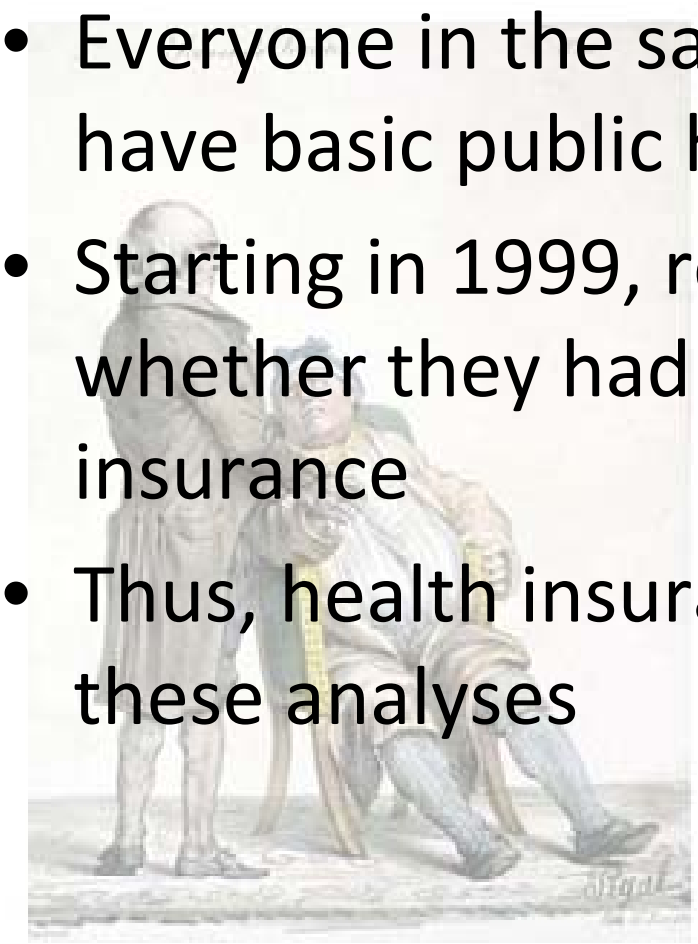
[1](Mossey & Shapiro, 1982)

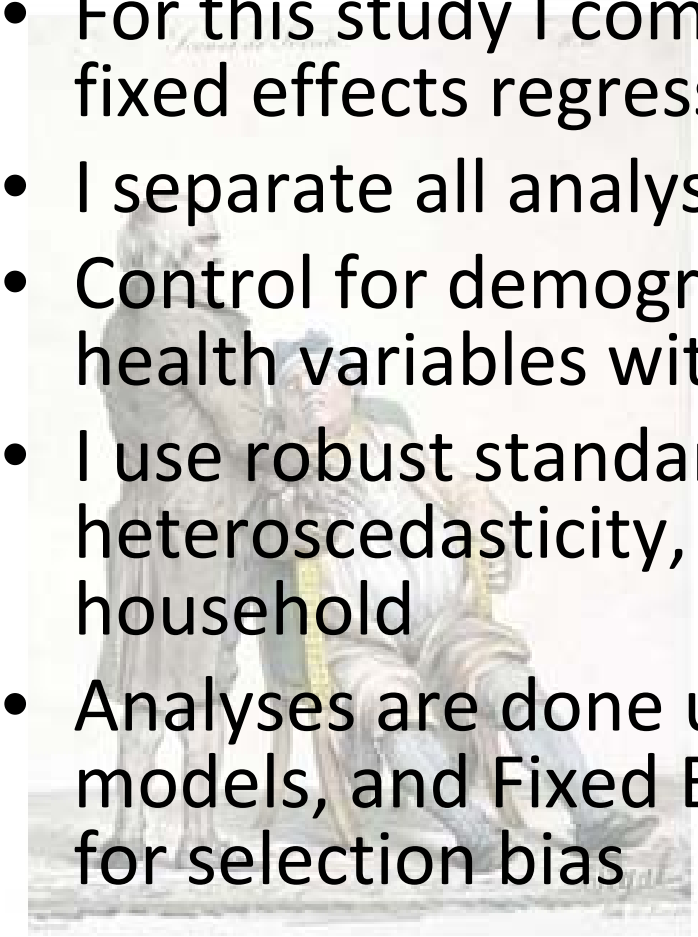
Health Insurance

- Everyone in the sample has been assumed to have basic public health coverage
- Starting in 1999, respondents were asked whether they had supplemental health insurance
- Thus, health insurance is dichotomous in these analyses



Methods

- For this study I compare OLS regression with fixed effects regression
- I separate all analyses by age group
- Control for demographic variables, nesting the health variables within this relationship
- I use robust standard errors to control for heteroscedasticity, and I cluster around household
- Analyses are done using lagged health OLS models, and Fixed Effects regression to control for selection bias



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Descriptive Statistics

Descriptive Statistics							
	18 – 29	30 – 49	50 – 65		18 – 29	30 – 49	50 – 65
Health	1.875	2.117	2.286	Mar Stat			
PHI	0.356	0.725	0.711	Married	0.256	0.766	0.786
Income	9.081	10.111	9.757	Single	0.708	0.118	0.056
Age	23.261	40.056	55.276	Widow.	0.000	0.004	0.038
HS	0.462	0.286	0.522	Divor.	0.005	0.060	0.090
>HS	0.439	0.597	0.256	Separ.	0.031	0.052	0.030
Sex	0.523	0.503	0.493				
HHSize	3.157	3.350	2.513				
Employ	0.600	0.878	0.800				

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Results!

OLS Regressing Income on Nested Health and Health Insurance by Age Group

		Health[1]	Coverage[1]	Interact.[1]	N	ΔR^2
18 – 29	Health	-0.165*	-0.159*	-0.194*	Ind =2720	***
	PHI		0.599***	0.401		***
	PHI*SRH			0.102	HH =2399	
30 – 49	Health	-0.014	-0.013	-0.089***	Ind =5910	***
	PHI		0.623***	0.375***		***
	PHI*SRH			0.117**	HH =4464	
50 – 65	Health	-0.057*	-0.056***	-0.192***	Ind =2609	***
	PHI		0.937***	0.460**		***
	PHI*SRH			0.209***	HH =2146	***

Health Stratification

[1]Controls: age, gender, education, employment status, marital status, occupation, and household size

Fixed Effects

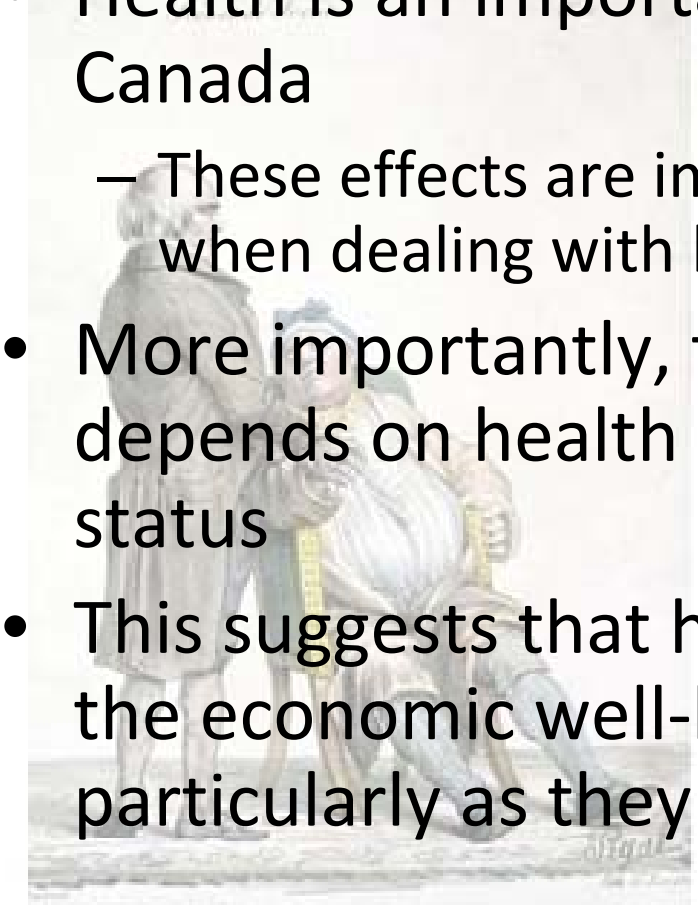
Fixed Effects Models of Income on Health by Age Group						
		Health[1]	Coverage[1]	Interact.[1]	N	ΔR^2
18 – 29	Health	0.033	0.031	0.001	Ind =2720	***
	PHI		0.495***	0.336***	Obs=9130	***
	PHI*SRH			0086	HH =2399	
30 – 49	Health	-0.138***	-0.130***	-0.235**	Ind =5910	***
	PHI		0.741***	0.426*	Obs=9130	***
	PHI*SRH			0.146	HH =2399	
50 – 65	Health	-0.263***	-0.233***	-0.581***	2609	***
	PHI		0.887***	-0.305	Obs=9130	***
	PHI*SRH			0.498***	HH =2399	***

Health Stratification

[1]*Controls: age, gender, education, employment status, marital status, occupation, and household size*

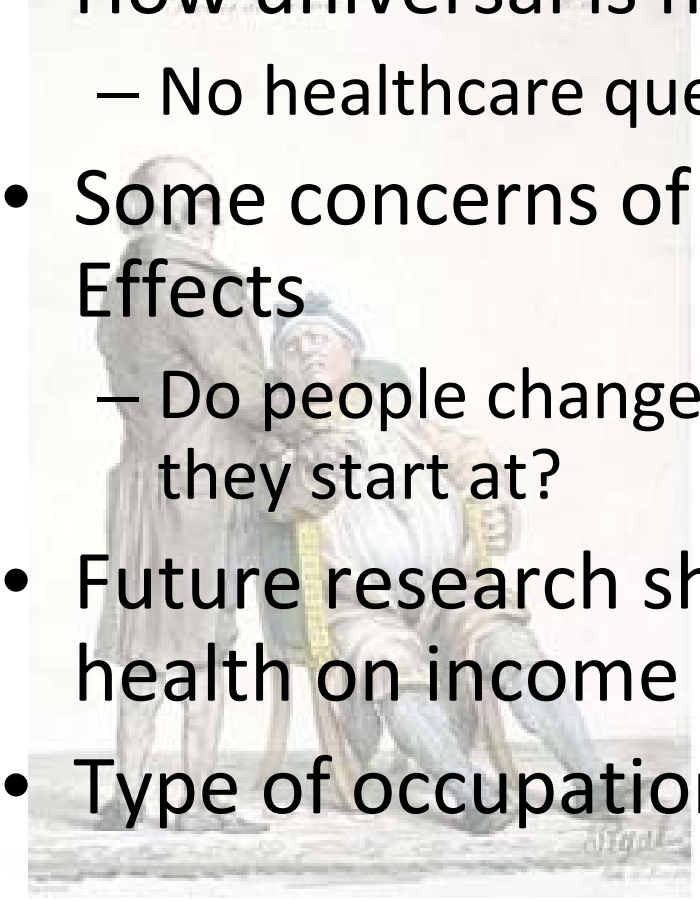
Conclusions

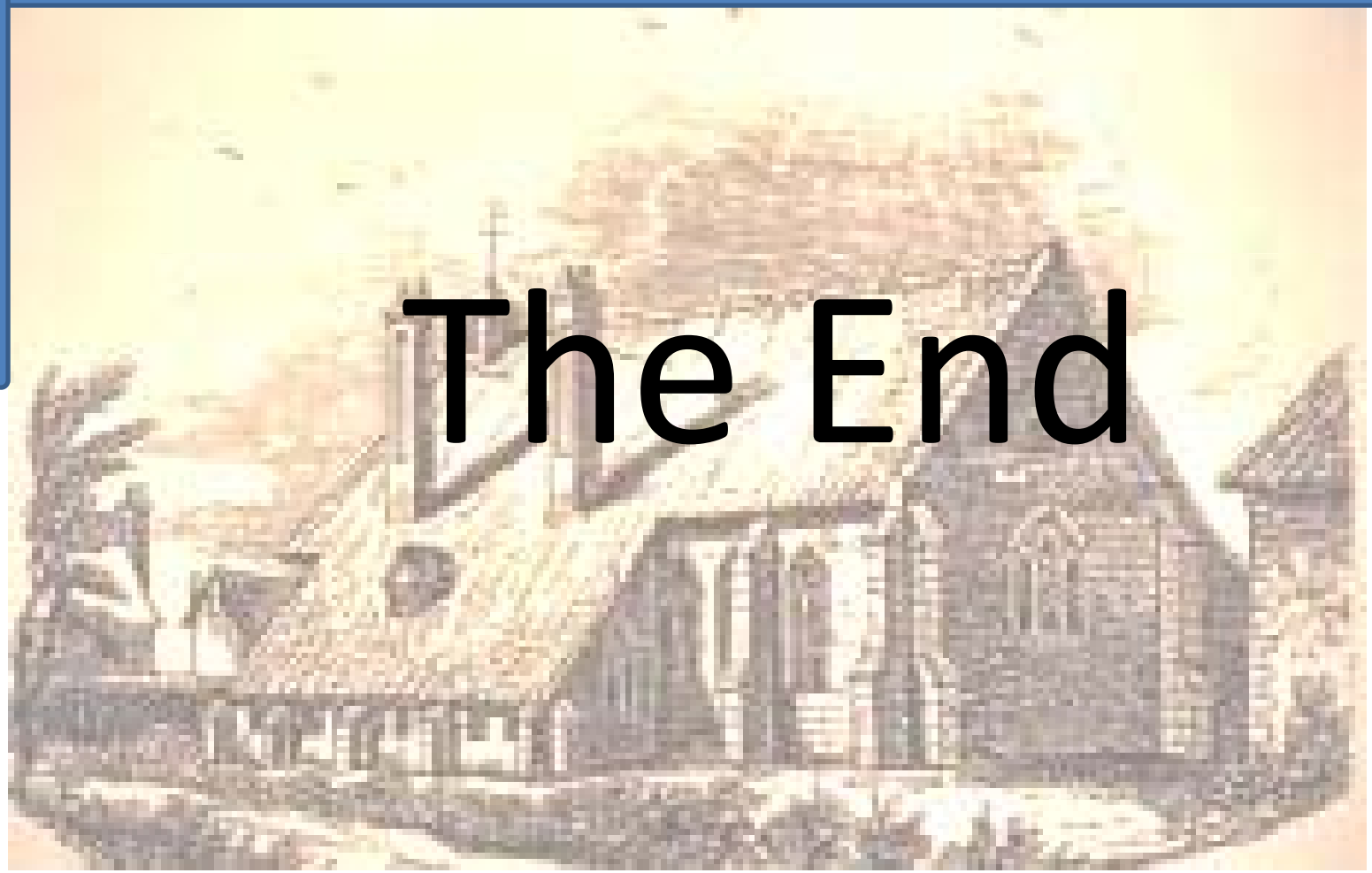
- Health is an important predictor of income in Canada
  - These effects are important both as a selector, and when dealing with health shocks over the life course
- More importantly, for Canadians, income depends on health depending on insurance status
- This suggests that health coverage is integral to the economic well-being of Canadians, particularly as they age



Limitations and Future Research

- How universal is healthcare in Canada?
  - No healthcare question, only supplemental
- Some concerns of selection bias in Fixed Effects
  - Do people change their health depending on what they start at?
- Future research should consider the effects of health on income in differing health regimes
- Type of occupation should also be considered





The End

Table 4

Longitudinal One-way Analysis: R^2			
	18 – 29	30 – 49	50 – 65
Health	0.571	0.602	0.637
PHI	0.601	0.701	0.723
Income	0.538	0.629	0.605
Educ.	0.778	0.970	0.988
Mar Stat	0.644	0.819	0.924
Employ	0.573	0.488	0.499
HHSize	0.745	0.906	0.881

- Considering if there is enough change in the measures
- How much does past have to do with future?

Fixed Effects Transformation

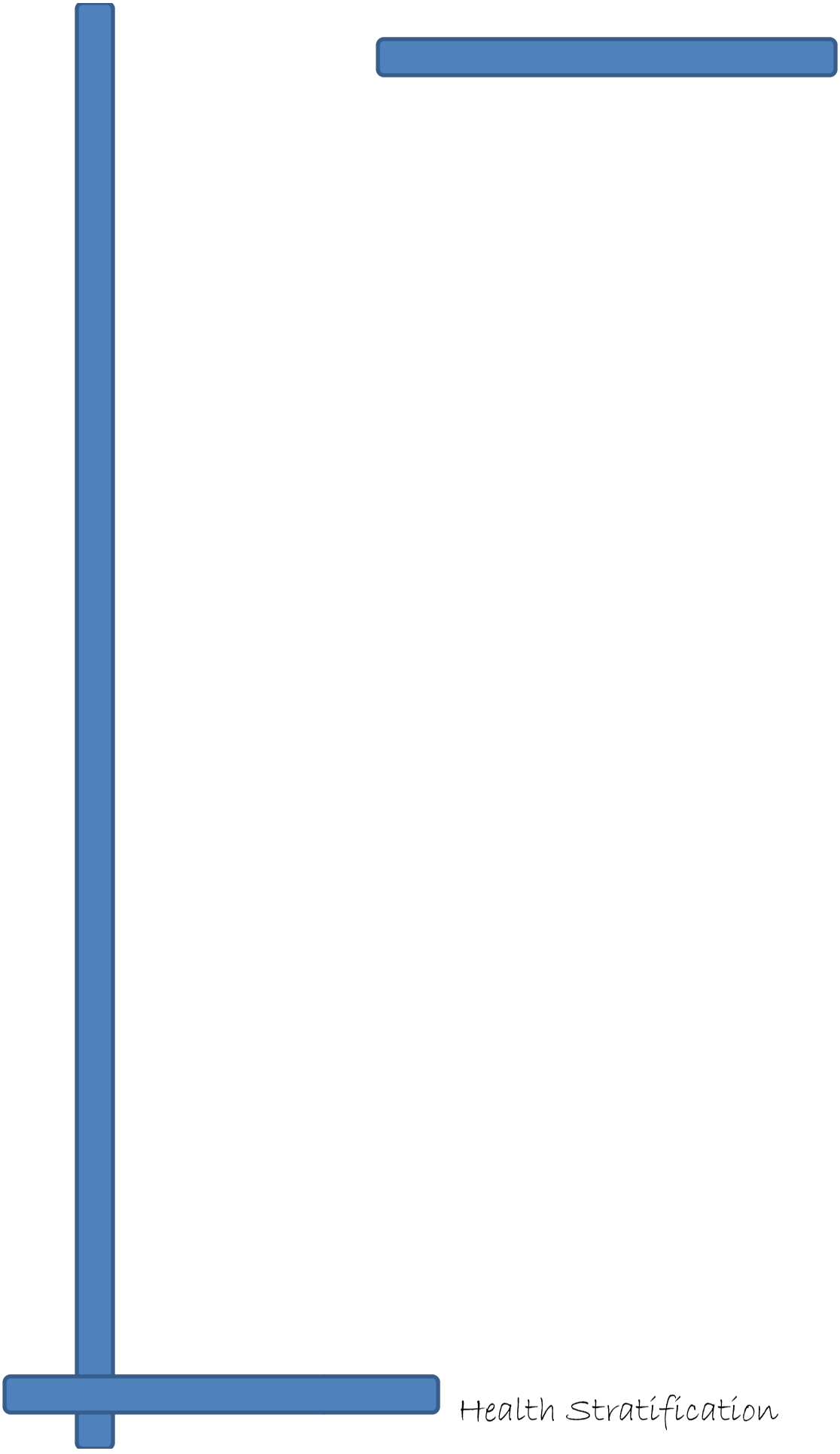
$$y = \alpha + \beta x + \varepsilon$$

$$\bar{y} = \alpha + \beta \bar{x} + \bar{\varepsilon} + \bar{\nu}$$

$$(y_i - \bar{y}) = (\alpha - \alpha) + \beta (x_i - \bar{x}) + (\varepsilon_i - \bar{\varepsilon}) + (\nu_i + \bar{\nu})$$

$$\dot{y} = \beta \dot{x} + \dot{\varepsilon}$$

- Here ν is the time invariant fixed individual effects in the error term
- ε is the changing part of the error term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