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- A Longitudinal Investigation of the Religious Dimension to Unemployment Dynamics in Northern Ireland
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- Exploring the economic outcomes of young people Not in Education, Employment or Training (NEET) in England and Wales using the Longitudinal Study
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A Longitudinal Investigation of the Religious Dimension to Unemployment Dynamics in Northern Ireland

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Inequalities: A Longitudinal Perspective, BRITISH LIBRARY, 2nd November 2017

Queen's University Belfast

Introduction: Unemployment

- In the UK during April-June 2017, there were 1.48 million unemployed people (no job but available for and seeking a job)*

*ONS: "UK labour market: August 2017 Statistical Bulletin".

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- In the UK during April-June 2017, there were 1.48 million unemployed people (no job but available for and seeking a job)*
- Unemployment matters for individuals because it's generally costly (e.g. financially)
- **Issue:** One concern is whether unemployment begets unemployment (is it "scarring"?)

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Introduction: Unemployment

- In the UK during April-June 2017, there were 1.48 million unemployed people (no job but available for and seeking a job)*
- Unemployment matters for individuals because it's generally costly (e.g. financially)
- **Issue:** One concern is whether unemployment begets unemployment (is it "scarring"?)
- **What I do:** Here I present some answers to this question in the Northern Ireland context

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Introduction: Unemployment Scarring

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  - Change a person's behaviour?
  - Diminish their resources?
  - Is it perceived negatively by employers?

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  - Is it perceived negatively by employers?

- If so, being unemployed might make **future unemployment** more likely

Why might unemployment be scarring?

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Unemployed person is **stigmatised** and not offered the job

Research Question 1/2

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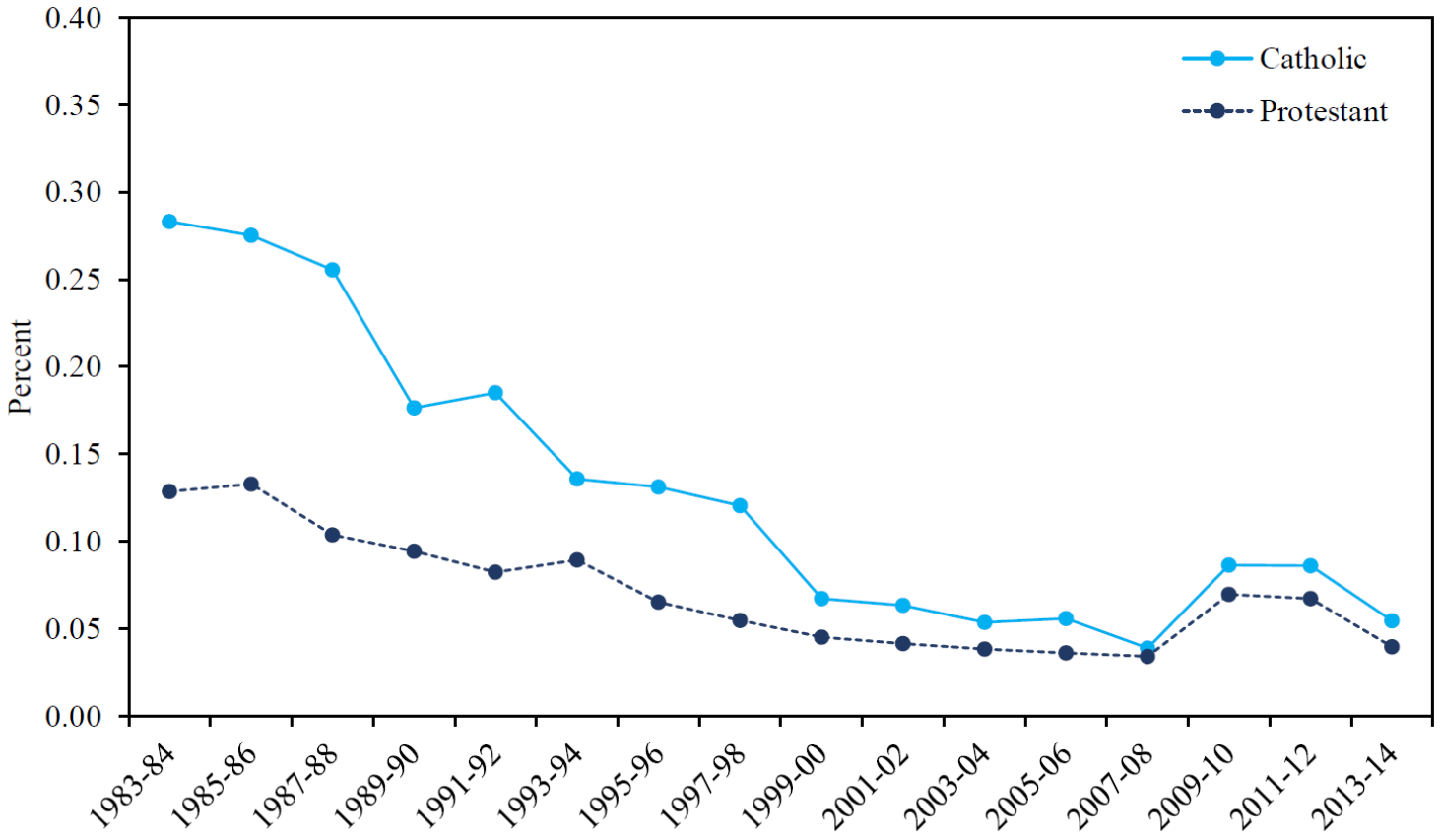
  1. Not previously studied in Northern Ireland
  2. Large-sample longitudinal data (the NILS)
  3. Society with a history of persistent unemployment inequality between a minority group (Catholics) and a majority group (Protestants)

Catholics have a much higher unemployment rate than Protestants before 2001*



*Source: continuous household survey, 1983-2014. Unemployment rates calculated by the author for members of the labour force aged 16-64 years old.

Research Question 1/2

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- Point 3 raises another question …

Research Question 2/2

2) Are scarring effects different for Catholic and Protestant men? i.e. is past unemployment a stronger predictor of future unemployment for a particular religious group?

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2) Are scarring effects different for Catholic and Protestant men? i.e. is past unemployment a stronger predictor of future unemployment for a particular religious group?

Why ask this question?

1. If there is a scarring effect, Catholics would be disproportionately affected, owing to their higher past rate of unemployment
2. This could be compounded by a larger scarring effect
3. Which would represent a legacy effect of past economic inequality

Data: Northern Ireland Longitudinal Study

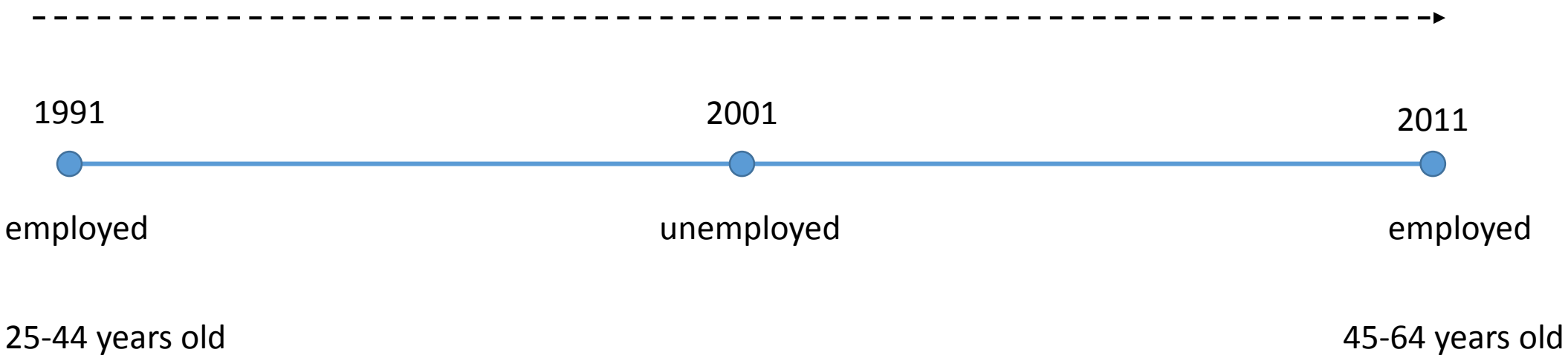
- Large-scale data linkage project which links data from the NI Health Card Registration system to 1981, 1991, 2001 and 2011 census returns and to other administrative data
- 28% random sample of Northern Ireland's population (c. 500,000 individuals, 50% of households)
- Contains socioeconomic, demographic and spatial information
- Strength is sample size and panel structure but limitation is ten-year gap between observations

My Estimation Sample

A balanced panel for the period 1991-2011 (T=3), comprised of 23,669 men who are:

- In labour force (either has a job or is searching for a job) in 1991, 2001 and 2011
- Catholic or Protestant
- 25-44 years old in 1991 (hence not likely to drop out of labour force)
- Born in Northern Ireland
- Do not have missing or inconsistent response information

My Data Structure: T = 3



Regression Strategy: Central Problem

- Typically, past and future unemployment outcomes are strongly, positively correlated

- Is this **persistence** due to:

- **Spurious correlation:** Some people have a stronger underlying propensity for unemployment across time, compared to others

- **True scarring effect**: Unemployment changes a person in such a way that increases their chance of future unemployment

Regression Strategy: Model 1/3

- Model 1: Probit regression of Unemployment Status on Lagged Unemployment Status

$$P(y_{it} = 1 | y_{it-1}) = \Phi(\alpha_0 + \rho y_{it-1})$$

Y =1 if Unemployed
Y =0 if Employed

=1 if Unemployed 10 years ago
=0 if Employed 10 years ago

Regression Strategy: Model 2/3

- Model 1: Probit regression of Unemployment Status on Lagged Unemployment Status
- Model 2: adds time-varying Control Variables

$$P(y_{it} = 1 | y_{it-1}, \boldsymbol{z_{it}}) = \Phi(\alpha_0 + \rho y_{it-1} + \gamma \boldsymbol{z_{it}} + \delta d_t)$$

Y =1 if Unemployed
Y =0 if Employed

=1 if Unemployed 10 years ago
=0 if Employed 10 years ago

Control Variables

Model 2: Control Variables

- Continuous Age
- Highest level of Education
- Health status (presence of an activity-limiting illness)
- Relationship Status
- Number of children in household
- Religion
- Time period

Regression Strategy: Model 2/3

- Model 1: Probit regression of Unemployment Status on Lagged Unemployment Status
- Model 2: adds time-varying Control Variables

$$P(y_{it} = 1 | y_{it-1}, \boldsymbol{z_{it}}) = \Phi(\alpha_0 + \rho y_{it-1} + \gamma \boldsymbol{z_{it}} + \delta d_t)$$

Y =1 if Unemployed
Y =0 if Employed

=1 if Unemployed 10 years ago
=0 if Employed 10 years ago

Control Variables

Regression Strategy: Model 3/3

- Model 1: Probit regression of Unemployment Status on Lagged Unemployment Status
- Model 2: adds time-varying Control Variables
- Model 3: adds controls for Individual-Specific Effects and Initial Conditions (Wooldridge, 2005)

$$P(y_{it} = 1 | y_{it-1}, \boldsymbol{z_{it}}, c_i) = \Phi(\alpha_0 + \rho y_{it-1} + \gamma \boldsymbol{z_{it}} + \delta d_t + \underbrace{\alpha_1 y_{i1} + \alpha_2 \boldsymbol{z_i}}_{c_i})$$

Y =1 if Unemployed
Y =0 if Employed

=1 if Unemployed 10 years ago
=0 if Employed 10 years ago

Control Variables

Individual-Specific Effect

Model 3: Wooldridge (2005) solution

The individual-specific effect is a function of:

1. Unemployment status in the first year (1991)
2. Values of each time-varying control variable in every year, e.g. level of education in 2001, level of education in 2011

Advantages

- Deals with correlation between unobserved individual-specific effects and:
  1. time-varying control variables, and
  2. the initial condition

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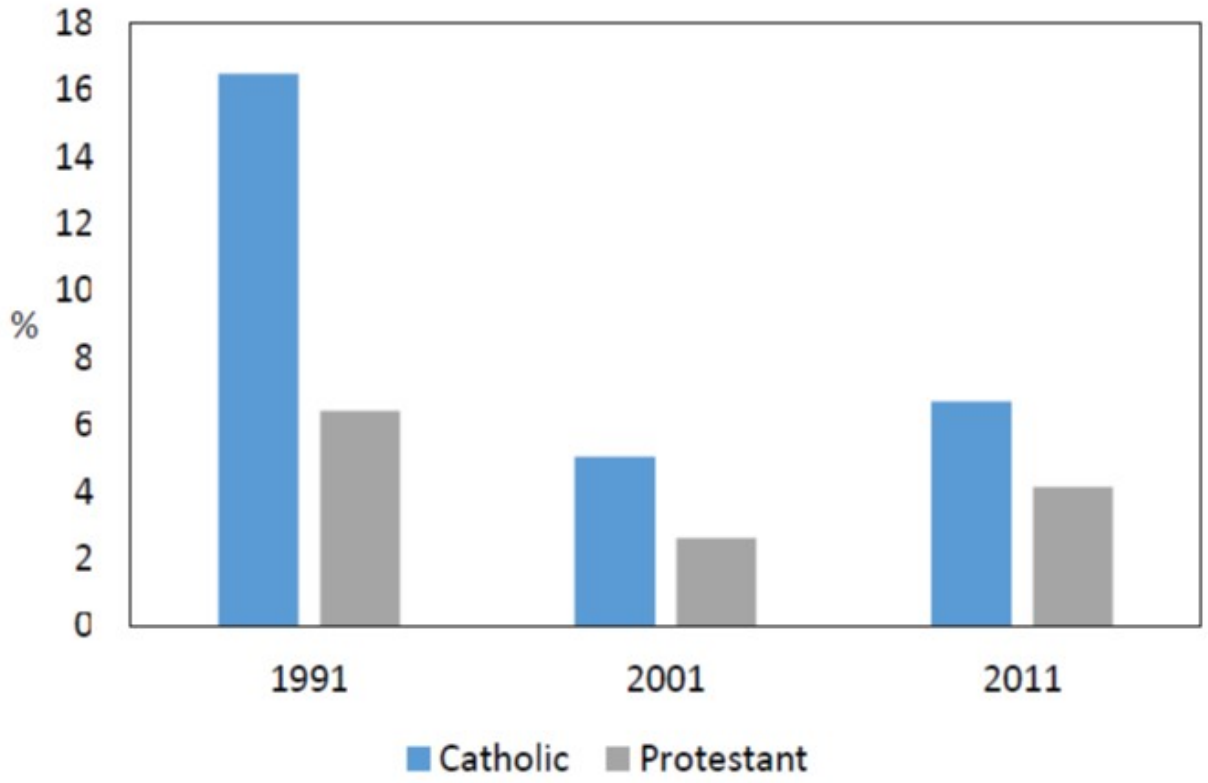
- Deals with correlation between unobserved individual-specific effects and:
  1. time-varying control variables, and
  2. the initial condition

- Bias could also arise from
  - overlapping spells of unemployment – probably minimal due to the 10-year gap between time periods,
  - unobservables that predict unemployment and change during the 10-year interval for a given individual

- Thus, results are interpreted as *suggestive* of a scarring effect

Descriptives

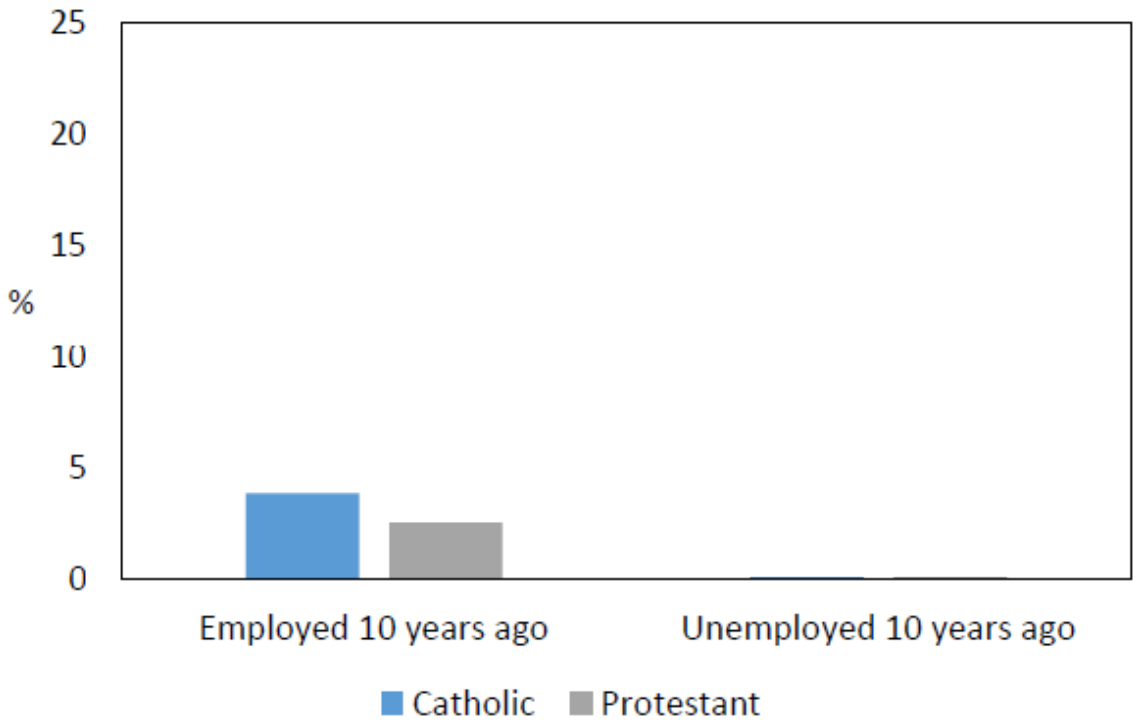
Figure: Unemployment Rate



Source: NILS

Descriptives

Figure: Probability of Unemployment in Current Period (t), by Economic Status in Previous Period (t-1)



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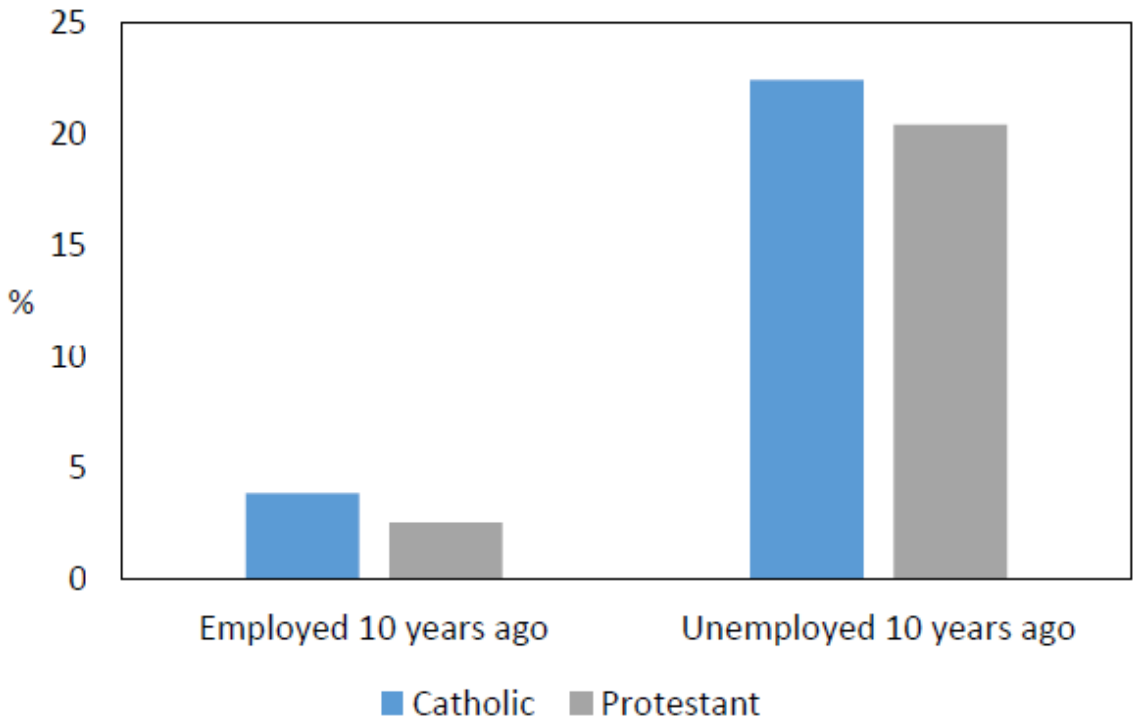
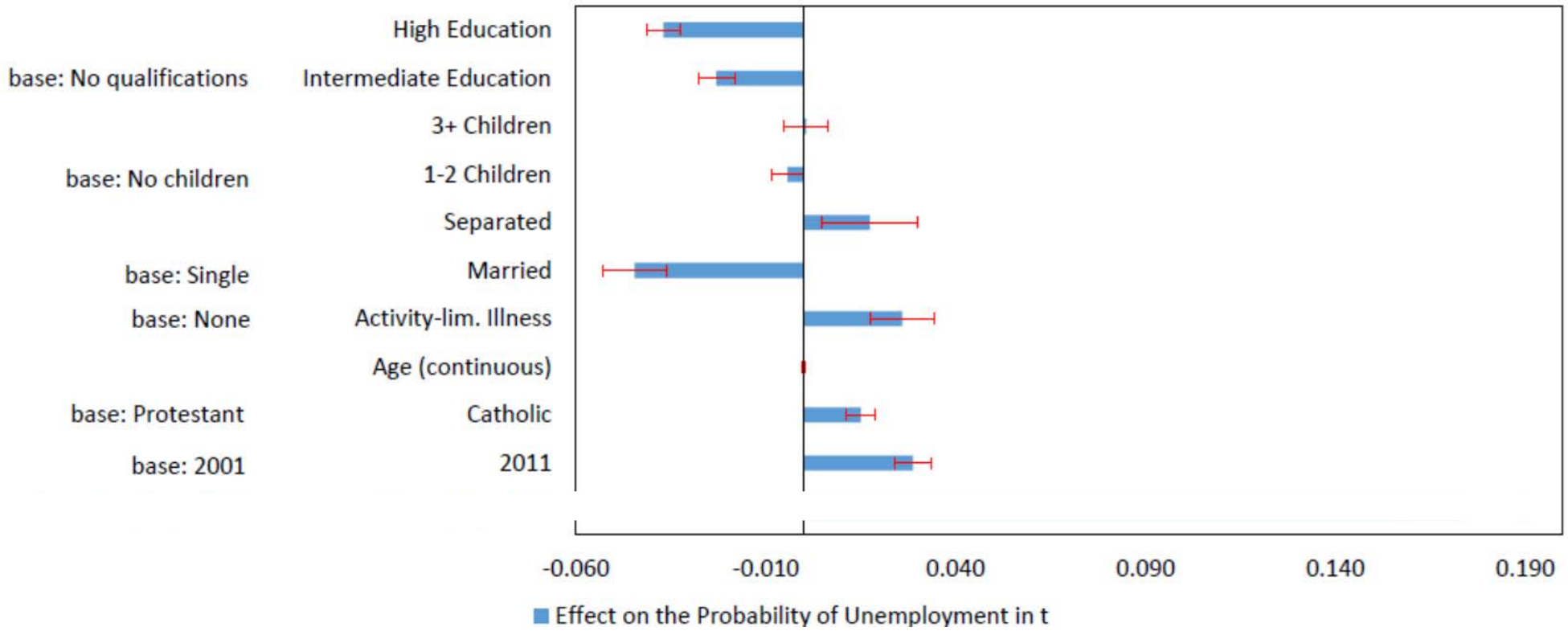


Source: NILS

Pooled Linear Probability Model of Unemployment (N = 47,338)



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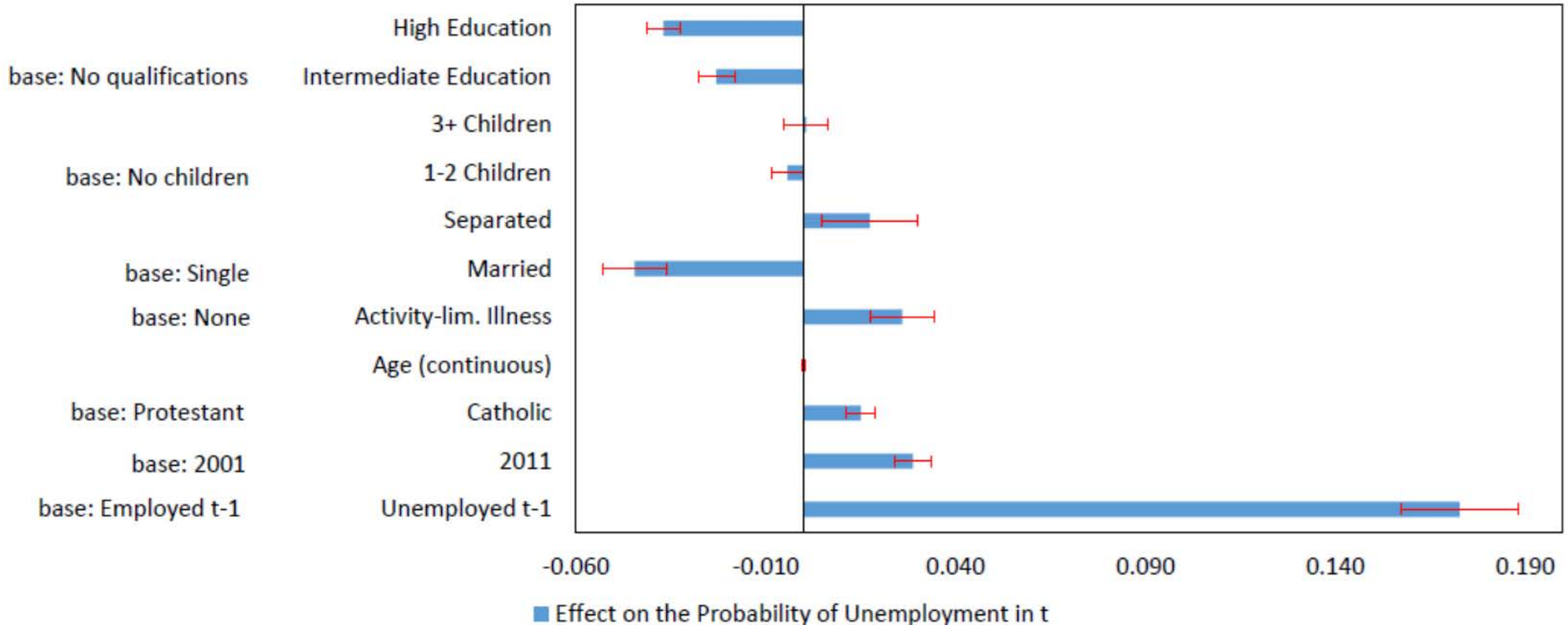
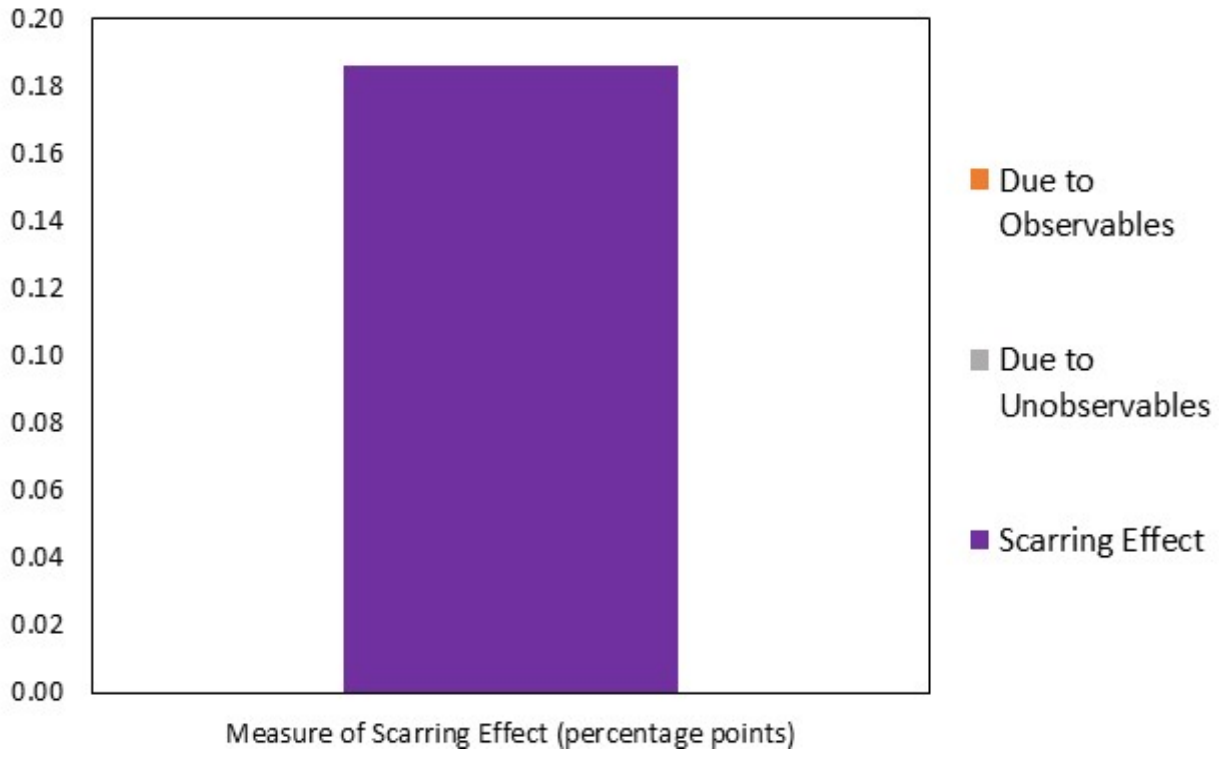


Research Question 1

- Are men more likely to be unemployed in the current year –
- if they were unemployed, rather than employed, 10 years ago?

Model 1: Raw Effect (measures persistence)

Raw Effect (1)
= 18.6 pp

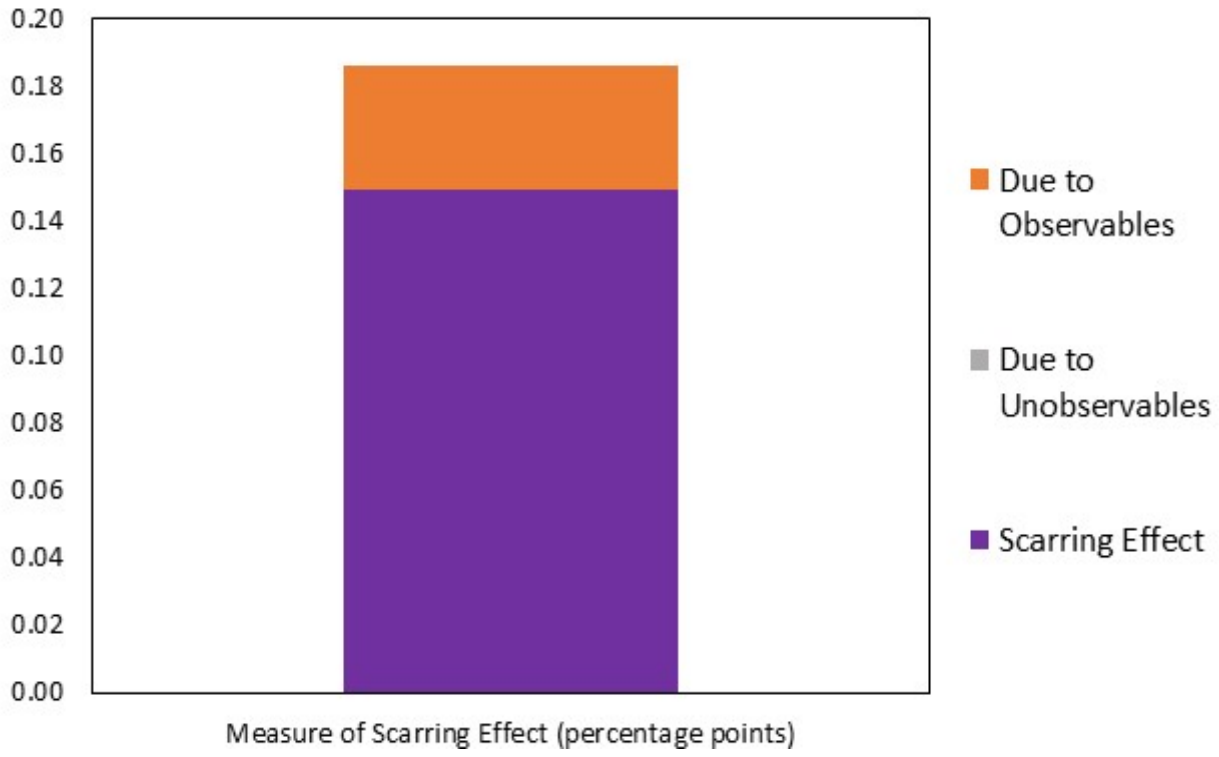


Note that effects are average marginal effects, and are statistically different from zero at the 0.1% level.

Model 2: Conditional on observables

Raw Effect (1)
= 18.6 pp

Conditional Effect (2)
= 14.9 pp



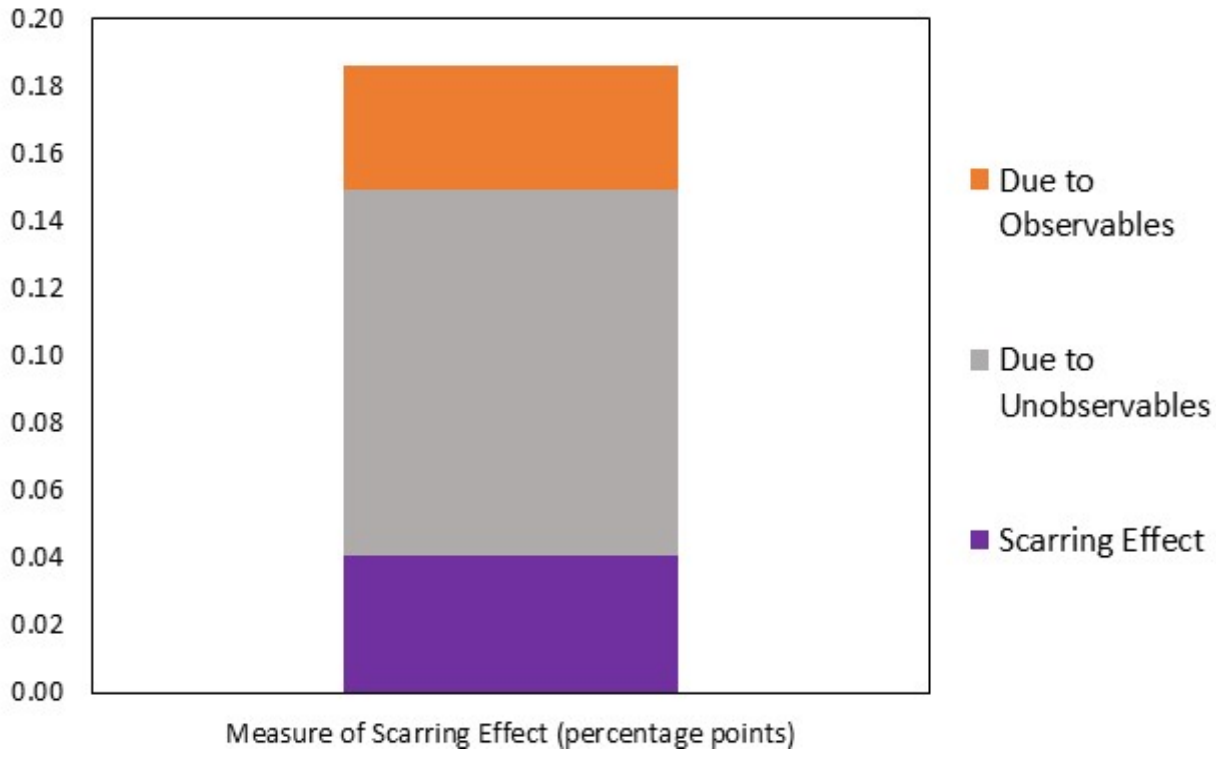
Note that effects are average marginal effects, and are statistically different from zero at the 0.1% level.

Model 3: Conditional on observables, time-invariant unobservables, and initial condition

Raw Effect (1)
= 18.6 pp

Conditional Effect (2)
= 14.9 pp

Conditional Effect (3) = 4.1 pp
(Est. Scarring Effect)



Note that effects are average marginal effects, and are statistically different from zero at the 0.1% level.

Research Question 2

- Unemployment displays a scarring effect –
- are Catholic and Protestant men equally scarred?

Research Question 2: Do Catholics and Protestant men face similar scars?

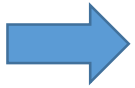
Table: Religion-Specific Effects of Past Unemployment on Current Unemployment

Dependent variable: Unemployed at time *t*		
	Catholics	Protestants
Unemployed *t-1*	0.043***	0.040***
	(0.012)	(0.011)
	[0.020, 0.065]	[0.018, 0.061]
N observations	18,282	28,410
N individuals	9,141	14,205

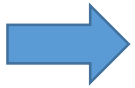
Note: Average marginal effects reported; (cluster-robust se); [95% confidence interval].
Controls are for age, health status, highest level of education, marital status, number of children in household, and time period.

Discussion

- Result 1: A scarring effect (= 4.1 pp) remained even after correcting for many compositional differences between previously unemployed and employed men

-  proportionally more Catholics affected, due to higher past Catholic unemployment rate

- Result 2: Catholic and Protestant men appear to be equally scarred

-  Implies the effects of past unemployment inequality fade away over time

Discussion

- Not accounted for labour force drop-out or migration, which could reflect inability to find employment (men may give up searching for work or leave the country)

- Scarring effect is overestimated if unobservables which influence unemployment and which vary over time for a given individual have changed

- Future work:
  - Add in controls for local area-level economic conditions
  - Test if unemployed men are more likely to drop-out of labour force ten years later

Conclusion

- Evidence supports the unemployment scarring hypothesis, consistent with the literature
- Evidence does not support the hypothesis of an interactive effect with religion
- Catholics and Protestants in Northern Ireland are renowned for their differences – but they face a similar penalty to being out of work

Acknowledgements

NILS-RSU:

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Appendix

Research Question 1: Is Unemployment Scarring?

Table: Effect of Past Unemployment on Current Unemployment, ($N = 47,338$)

	Dependent variable: Unemployed at time t		
	(1)	(2)	(3)
Unemployed *t-1*	0.186***	0.149***	0.041***
	(0.008)	(0.007)	(0.008)
	[0.170, 0.202]	[0.135, 0.162]	[0.026, 0.056]
Raw Probabilities			
$P(U_t = 1 \mid E_{t-1})$	0.031		
$P(U_t = 1 \mid U_{t-1})$	0.217		
Control variables	x	✓	✓
Wooldridge solution	x	x	✓
Estimation type	Pooled Probit	Pooled Probit	RE Probit

Note: Average marginal effects reported; (cluster-robust se); [95% confidence interval].
Controls are for age, health status, religion, highest level of education, marital status, number of children in household, and time period.

A1: Estimation Results (Main Spec.), Full Sample (N=47,338)

VARIABLE	COEFFICIENT	SE	T	P	LCI	UCI
LUnemployed	0.462	0.061	7.600	0.000	0.343	0.581
Unemployed_1991	0.644	0.062	10.460	0.000	0.523	0.765
Census2011	0.266	0.857	0.310	0.756	-1.414	1.946
Catholic_two	0.098	0.187	0.530	0.598	-0.267	0.464
age	0.004	0.086	0.040	0.967	-0.166	0.173
health	0.193	0.066	2.940	0.003	0.064	0.321
Married	-0.370	0.136	-2.720	0.006	-0.637	-0.104
Separated	0.055	0.141	0.390	0.699	-0.222	0.331
OneTwo	-0.042	0.049	-0.870	0.384	-0.138	0.053
ThreePlus	0.062	0.071	0.870	0.384	-0.077	0.201
Intermediate	0.022	0.062	0.360	0.720	-0.099	0.144
Higher	-0.195	0.135	-1.440	0.149	-0.459	0.070
Catholic_two_2001	0.178	0.131	1.360	0.174	-0.079	0.435
Catholic_two_2011	-0.089	0.145	-0.610	0.540	-0.373	0.195
age_2001	0.013	0.058	0.230	0.817	-0.100	0.127
age_2011	-0.018	0.068	-0.270	0.789	-0.152	0.115
health_2001	0.139	0.059	2.380	0.018	0.024	0.254
health_2011	0.023	0.056	0.400	0.687	-0.087	0.133
Married_2001	0.092	0.102	0.890	0.372	-0.109	0.292
Married_2011	-0.191	0.103	-1.850	0.064	-0.393	0.011
Separated_2001	0.185	0.107	1.730	0.084	-0.025	0.395
Separated_2011	-0.063	0.110	-0.570	0.567	-0.278	0.152
OneTwo_2001	-0.035	0.042	-0.840	0.400	-0.116	0.046
OneTwo_2011	-0.065	0.045	-1.440	0.151	-0.153	0.024
ThreePlus_2001	0.014	0.054	0.260	0.794	-0.092	0.121
ThreePlus_2011	-0.148	0.075	-1.970	0.049	-0.296	0.000
Intermediate_2001	-0.232	0.046	-5.050	0.000	-0.323	-0.142
Intermediate_2011	-0.105	0.052	-2.030	0.042	-0.206	-0.004
Higher_2001	-0.329	0.102	-3.230	0.001	-0.528	-0.129
Higher_2011	-0.080	0.103	-0.780	0.436	-0.281	0.121
constant	-1.608	0.690	-2.330	0.020	-2.961	-0.255

$\sigma_c^2 = 0.531$
$\rho_* = 0.220$
LR Test ($H_0 : \rho_* = 0$): 30.50 (p-value = 0.000)

A2: Main Estimation Results, Catholic sub-sample (N=18,282)

VARIABLE	COEFFICIENT	SE	t	p	LCI	UCI
1.LUnemployed	0.419	0.086	4.890	0.000	0.251	0.587
1.Unemployed_1991	0.671	0.085	7.890	0.000	0.504	0.838
1.Census2011	-0.160	1.326	-0.120	0.904	-2.759	2.440
age	0.046	0.134	0.340	0.732	-0.216	0.308
1.health	0.346	0.103	3.360	0.001	0.144	0.548
1.Married	-0.523	0.224	-2.340	0.019	-0.961	-0.085
1.Separated	-0.027	0.238	-0.110	0.909	-0.494	0.440
1.OneTwo	-0.014	0.069	-0.210	0.836	-0.150	0.122
1.ThreePlus	0.140	0.096	1.460	0.145	-0.049	0.329
1.Intermediate	0.114	0.093	1.220	0.222	-0.069	0.297
1.Higher	-0.132	0.225	-0.590	0.556	-0.573	0.308
age_2001	-0.009	0.093	-0.100	0.919	-0.193	0.174
age_2011	-0.038	0.099	-0.380	0.706	-0.232	0.157
1.health_2001	0.149	0.089	1.680	0.092	-0.024	0.323
1.health_2011	-0.151	0.093	-1.620	0.105	-0.334	0.032
1.Married_2001	0.248	0.182	1.360	0.174	-0.109	0.605
1.Married_2011	-0.202	0.162	-1.250	0.211	-0.519	0.115
1.Separated_2001	0.299	0.191	1.570	0.116	-0.074	0.673
1.Separated_2011	-0.065	0.176	-0.370	0.712	-0.409	0.280
1.OneTwo_2001	-0.004	0.069	-0.050	0.960	-0.139	0.132
1.OneTwo_2011	-0.051	0.065	-0.780	0.435	-0.179	0.077
1.ThreePlus_2001	0.036	0.081	0.440	0.661	-0.124	0.195
1.ThreePlus_2011	-0.206	0.102	-2.020	0.044	-0.406	-0.006
1.Intermediate_2001	-0.328	0.071	-4.600	0.000	-0.468	-0.188
1.Intermediate_2011	-0.208	0.077	-2.700	0.007	-0.359	-0.057
1.Higher_2001	-0.347	0.177	-1.960	0.050	-0.693	-0.001
1.Higher_2011	-0.277	0.170	-1.630	0.103	-0.611	0.056
constant	-1.219	1.015	-1.200	0.230	-3.207	0.770
var(constant)	0.331	0.097			0.187	0.588

A2: Main Estimation Results, Protestant sub-sample (N=28,410)

VARIABLE	COEFFICIENT	SE	t	p	LCI	UCI
1.LUnemployed	0.496	0.095	5.240	0.000	0.311	0.682
1.Unemployed_1991	0.628	0.096	6.570	0.000	0.441	0.816
1.Census2011	0.223	1.190	0.190	0.852	-2.110	2.555
age	0.009	0.120	0.080	0.939	-0.226	0.244
1.health	0.092	0.098	0.940	0.348	-0.100	0.285
1.Married	-0.331	0.212	-1.560	0.118	-0.745	0.084
1.Separated	0.044	0.220	0.200	0.842	-0.387	0.474
1.OneTwo	-0.066	0.068	-0.970	0.332	-0.198	0.067
1.ThreePlus	-0.028	0.115	-0.250	0.806	-0.254	0.197
1.Intermediate	-0.040	0.086	-0.460	0.646	-0.209	0.129
1.Higher	-0.226	0.188	-1.200	0.230	-0.596	0.143
age_2001	0.016	0.077	0.210	0.831	-0.135	0.168
age_2011	-0.028	0.094	-0.290	0.769	-0.212	0.157
1.health_2001	0.139	0.077	1.790	0.073	-0.013	0.291
1.health_2011	0.136	0.084	1.620	0.105	-0.028	0.300
1.Married_2001	0.047	0.147	0.320	0.750	-0.241	0.334
1.Married_2011	-0.175	0.153	-1.150	0.252	-0.474	0.124
1.Separated_2001	0.155	0.156	0.990	0.322	-0.152	0.461
1.Separated_2011	-0.028	0.160	-0.170	0.862	-0.341	0.286
1.OneTwo_2001	-0.064	0.055	-1.170	0.243	-0.172	0.044
1.OneTwo_2011	-0.075	0.065	-1.160	0.247	-0.202	0.052
1.ThreePlus_2001	-0.028	0.079	-0.350	0.724	-0.183	0.127
1.ThreePlus_2011	-0.059	0.126	-0.470	0.641	-0.305	0.188
1.Intermediate_2001	-0.163	0.063	-2.590	0.010	-0.286	-0.040
1.Intermediate_2011	-0.024	0.071	-0.340	0.737	-0.163	0.116
1.Higher_2001	-0.336	0.134	-2.520	0.012	-0.598	-0.074
1.Higher_2011	0.076	0.141	0.540	0.588	-0.200	0.353
constant	-1.499	0.961	-1.560	0.119	-3.382	0.385
var(constant)	0.256	0.090			0.129	0.509

Overview

- This paper presents longitudinal research based on a Census product the Scottish Longitudinal Study (SLS)
- It involves linked health data
- The research makes use of the extended Scottish health questions asked in the 2011 Census

Basic structure of the SLS

- The SLS is a large-scale, **ANONYMISED** linkage study designed to capture 5.5% of the Scottish population
- It actually contains information on a 5.3% sample
- Based on 20 semi-random birthdays
- It is built using data available from…
  - Census data (1991-2011)
  - Vital Events data (births, deaths, marriages)
- With appropriate permissions can be linked to health data, here the Scottish Morbidity Records (SMR):
  - SMR02 maternity dataset
  - SMR04 admissions - Mental Health Impatient & Day Case dataset

Background to the project

- the research draws on and extends work on reproductive histories and outcomes
- part of a larger research project looking at premature mortality at mid-life
- it is known that either not having children or the number of children (parity) can be linked to specific health outcomes at mid and later life for women (Grundy 2009; Grundy & Kravdal 2007; Grundy & Tomassini 2005)
- focus here is on mental health in mid-life, previous studies have looked at mental health linked to teen births but not number of children

Problems with UK civil registration data

Civil registration data is problematic only records all previous births **within** marriage:

- question asked of married women when registering a birth is the number of previous children (alive & stillborn) by current & previous husbands
- only records all previous births within marriage, and therefore it misses a large percentage of births thus rendering the information inaccurate for generalising to all women
- 90% within marriage in 1977 (GROS 2008:64; 2010:10)
  - today less people will answering this question at birth registration and may be a select non-representative group

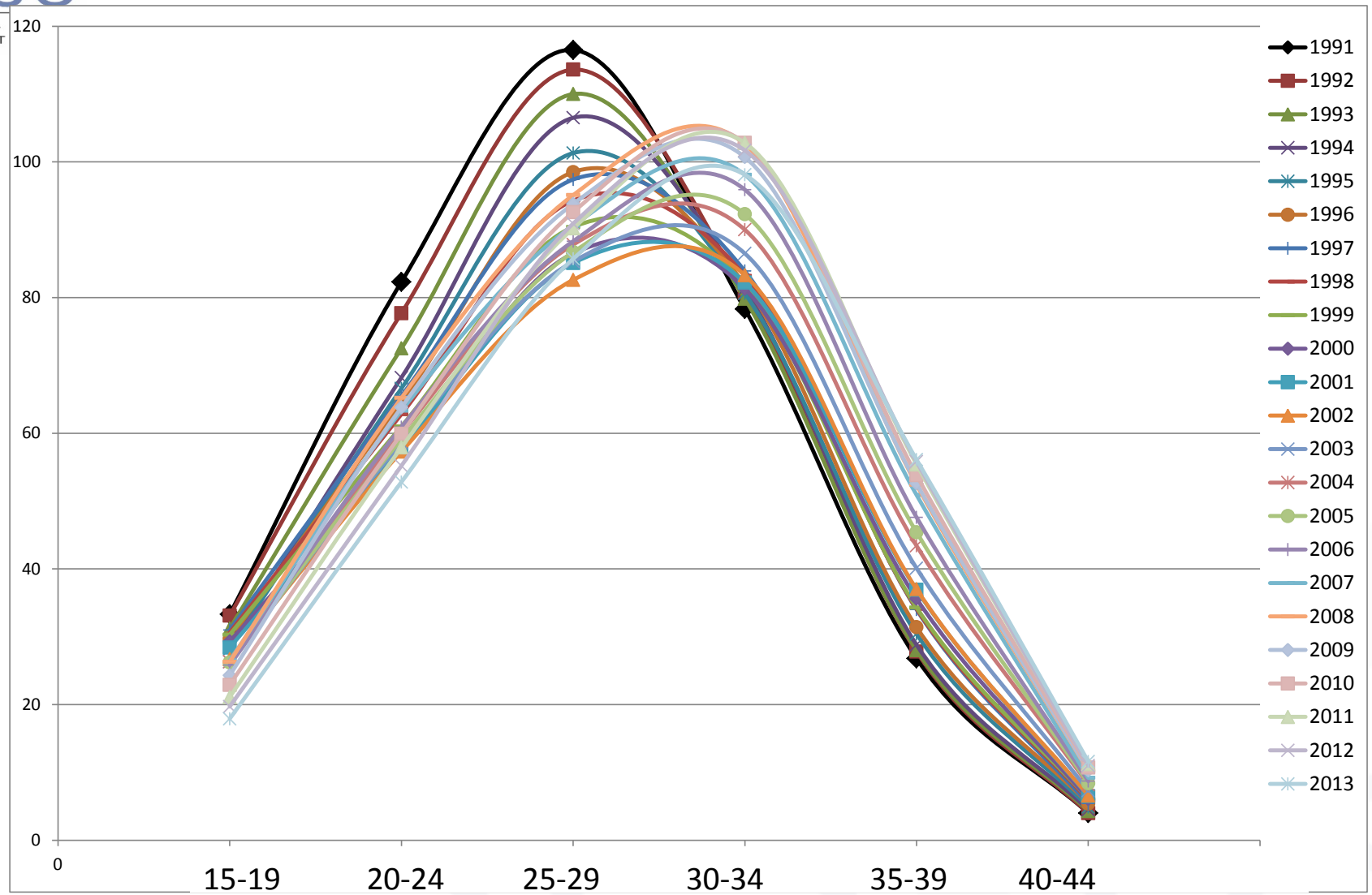
Parity from SMR02 maternity data

- This projects uses NHS health data from the Scottish Morbidity Record (SMR) maternity dataset (SMR02) to estimate parity for all women
- SMR02 is available from 1975, meaning for unbiased complete fertility history the sample must be born after 1959 (1975-16)
- There is a derived parity variable within the SMR02, however, the definition differs for other researchers
  - parity is derived as the number of previous pregnancies which hides multiple births & stillbirths

SLS cohort

- SMR02 is available from 1975, meaning for complete fertility history the sample must be born after 1959 (1975 less 16) & be able to follow after childbearing ages
- the SLS cohort for the analysis are born 1959-1966 aged ~45-52 in 2011
- using 1991 Census information to estimate living conditions at around the time of peak fertility
  - aged ~25-32 in 1991

Scottish ASFR



Source: NRS

www.nrscotland.gov.uk/files//statistics/time-series/birth-aug2014/bt-10-fertility-rates-by-council-area-1991-2013.xls

exploratory data analysis

Unbiased Cohort Born 1959-1966		Mean	SD	Min	Max
Total N for models	12,663				
Date of birth (Year)		62.47	2.26	59	66
Parity measure from ISD (cleaned)					
parity of 2 *(reference for modelling)*	35.54				
None	29.24				
parity of 1	13.70				
parity of 3	15.44				
parity of 4	4.24				
parity of 5 & over	1.83				
Living arrangements in 1991 (using Marital Status)					
Married	58.60				
Living as Single (including single parent)	32.50				
Cohabiting	8.89				
class 3 cats Based on 1991					
social class I & II	25.53				
class IIIN & IIIM+forces	42.43				
social class IV & V	20.97				
missing (any reason)	11.07				
HH tenure Based on 1991					
Owner occupier	57.41				
Social rented LA HA New Town etc (Council)	36.08				
Private renting	4.41				
Other -with job or Lives rent free etc	2.1				
Highest Level of highest qualification Based on 1991					
Low or None (includes ~3% missing)	80.12				
Other Higher Qualifications (non-degree)	11.35				
First Degree and Higher Degree	8.54				
2011 Nature of Health Condition: mental health condition					
No	93.30				
Yes	6.70				

Source: SLS

exploratory data analysis

	Married(all)	Living Single (includes single parent)	Cohabiting(all)	Total
Married (first marriage)	7,137	572	79	7,788
	91.64	*7.34*	*1.01*	*100*
Single		3,018	809	3,827
		78.86	*21.14*	*100*
Other (Remarried, Divorced, Widowed)	284	526	238	1,048
	27.10	*50.19*	*22.71*	*100*
Total	**7,421**	**4,116**	**1126**	**12,663**
	58.60	***32.50***	***8.89***	***100***

Source:
SLS

Measures of mental health

- 2011 Census question

  Nature of Health Condition:

  "Do you have any of the following conditions which have lasted, or are expected to last, at least 12 months?"

  "A mental health condition"

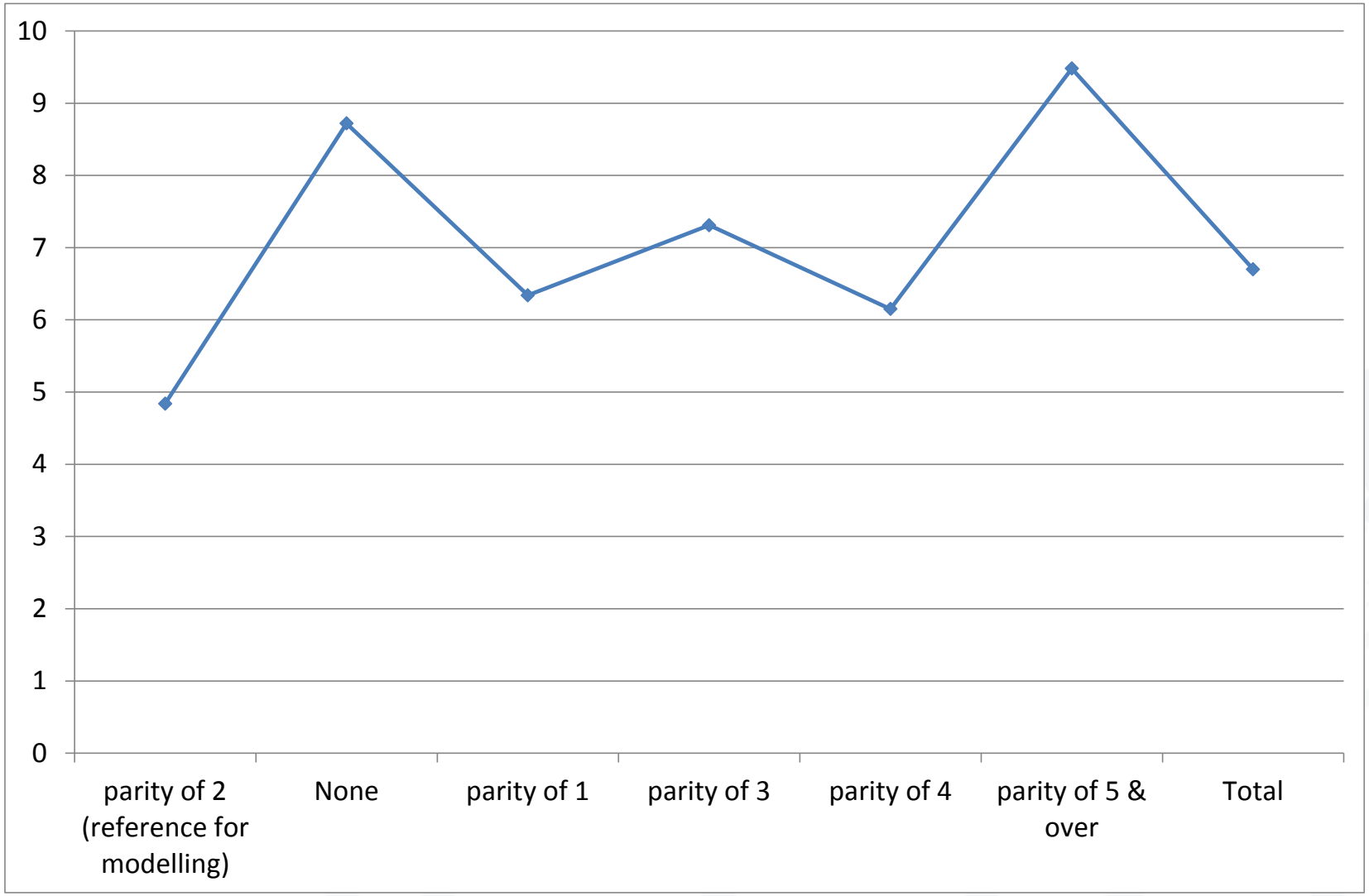
- SMR04 admissions - Mental Health Impatient & Day Case dataset

Reported Mental Health condition in 2011

2011 Nature of Health Condition: "Do you have any of the following conditions which have lasted, or are expected to last, at least 12 months?" "A mental health condition"			
Parity measure from ISD (cleaned)	No	Yes	Total
parity of 2 (reference for modelling)	4283	218	4501
	95.16	*4.84*	*100*
None	3380	323	3703
	91.28	*8.72*	*100*
parity of 1	1625	110	1735
	93.66	*6.34*	*100*
parity of 3	1812	143	1955
	92.69	*7.31*	*100*
parity of 4	504	33	537
	93.85	*6.15*	*100*
parity of 5 & over	210	22	232
	90.52	*9.48*	*100*
Total	**11814**	**849**	**12663**
	93.3	***6.7***	***100***

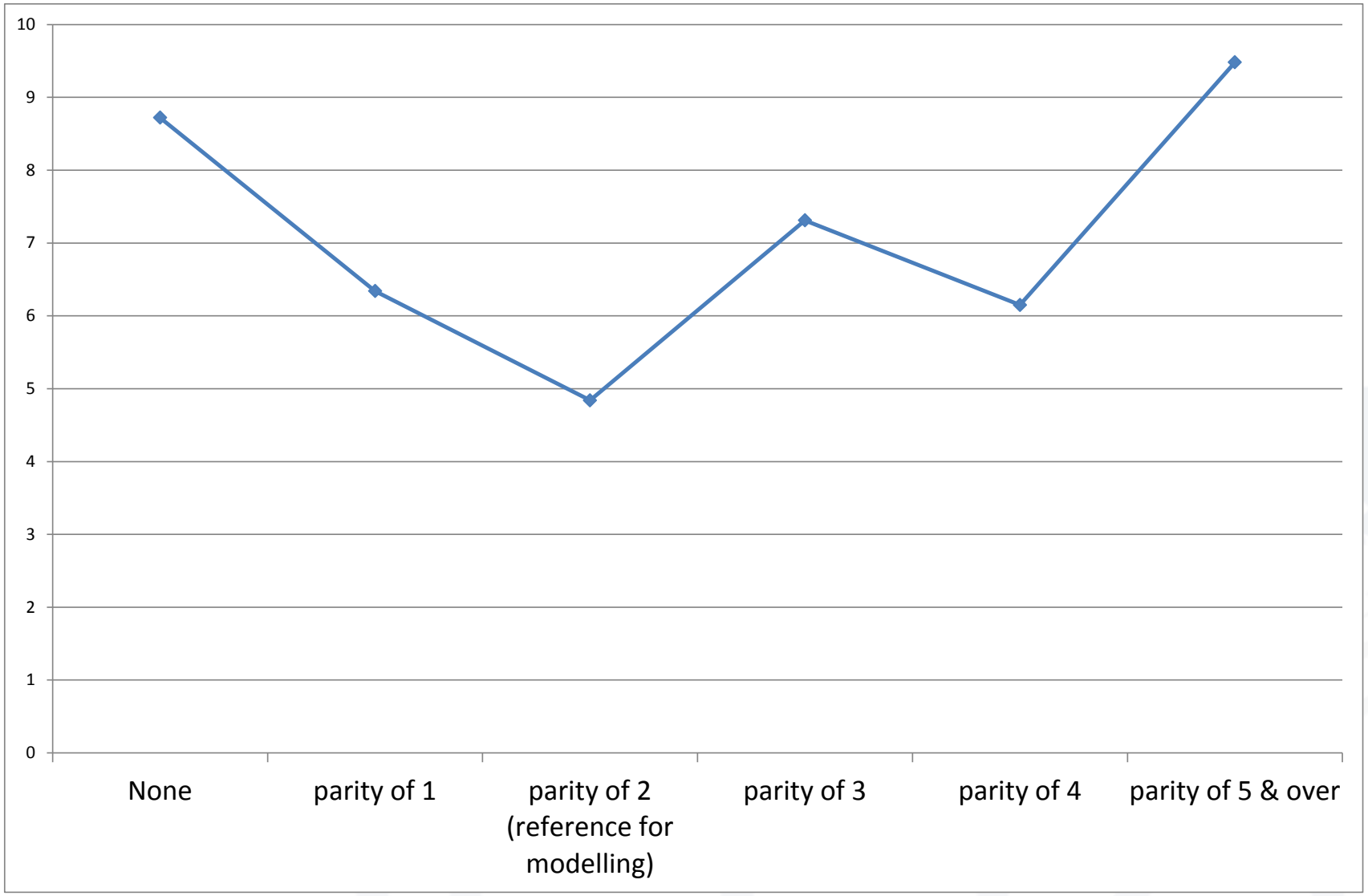
Source: SLS

Reported Mental Health condition in 2011



Source: SLS

Reported Mental Health condition in 2011



Source: SLS

Exploratory data analysis using SMR04 admissions

(Mental Health Impatient & Day Case dataset)

Reported mental health condition	Ind if ever had SMR04 admission		
	No	**Yes**	Total
No	11,615	199	11,814
	98.32	*1.68*	*100*
Yes	644	205	849
	75.85	*24.15*	*100*
Total	**12,259**	**404**	**12,663**
	96.81	***3.19***	***100***

Source: SLS

Preliminary results

- 2011 Nature of Health Condition: mental health condition

  Do you have any of the following conditions which have lasted, or are expected to last, at least 12 months? mental health condition

SLS-DSU
Scottish Longitudinal Study Development & Support Unit

Preliminary results modelling all women N=12,663

THE UNIVERSITY of EDINBURGH

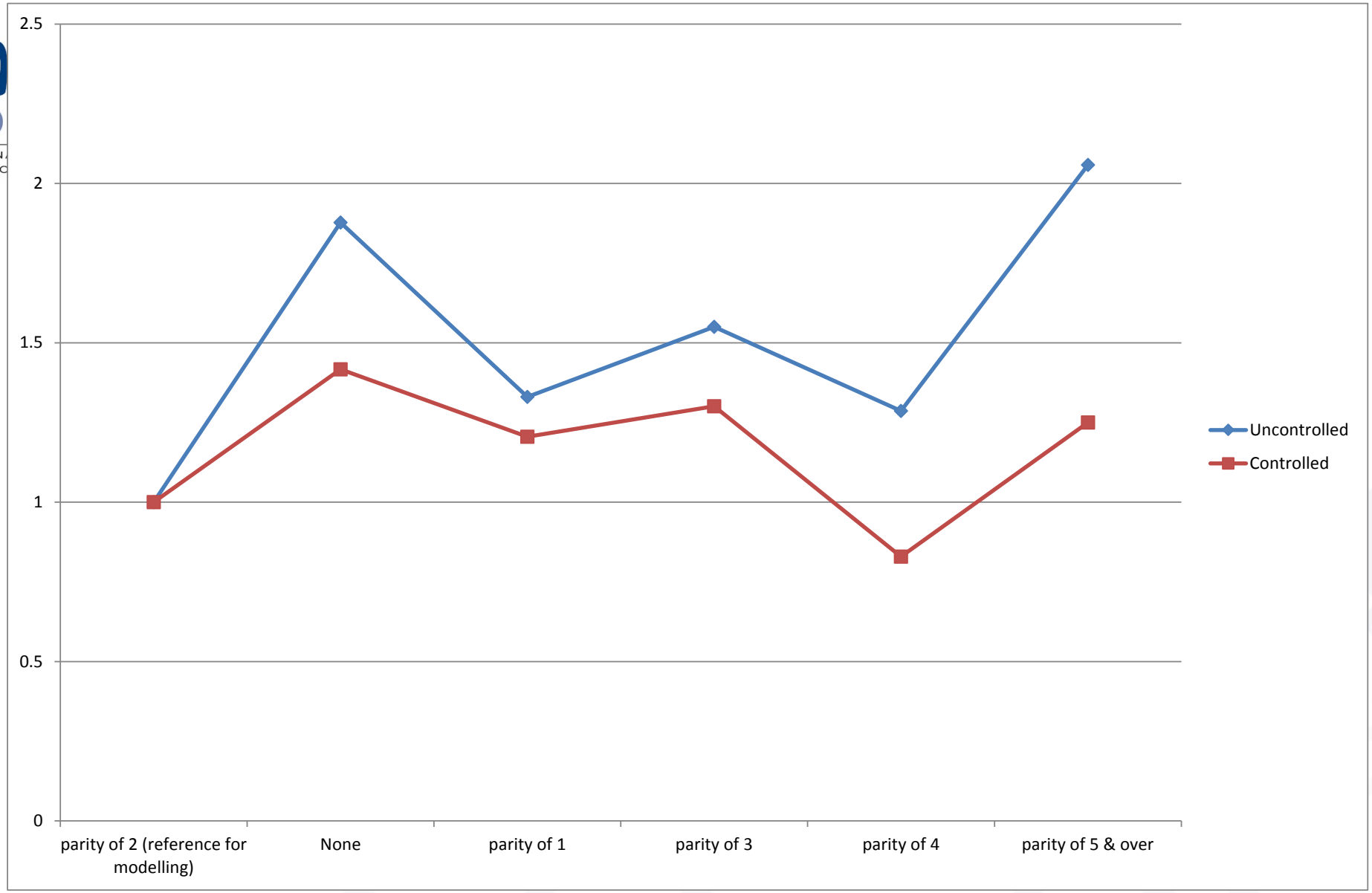
LSCS longitudinal studies centre Scotland — LINKING LIVES THROUGH TIME

National Records of Scotland

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

Updated preliminary results

- Imputation flags for outcome variable: mental health condition
- Religion from 2011 – not compulsory
  - Brought up in
  - Practicing now
- Area
  - Cities
  - **Glasgow**


2.5
2
1.5
1
0.5
0
parity of 2 (reference for modelling)
None
parity of 1
parity of 3
parity of 4
parity of 5 & over
Uncontrolled
Controlled

Source:
SLS


2.5
2
1.5
1
0.5
0
No children
parity of 1
parity of 2 (reference for modelling)
parity of 3
parity of 4
parity of 5 & over
Uncontrolled
Controlled

Source:
SLS

Reported mental health condition in 2011 (N=12,663)

ALL WOMEN	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se
	model 1 12,663		model 2 12,663		model 3 12,663		model 4 12,663		model 5 12,663		model 6 12,663		model 7 12,663		model 8 12,663	
Parity measure from ISD (cleaned)																
parity of 2 (Ref Cat)																
None	1.877***	[0.170]	1.509***	[0.144]	1.503***	[0.144]	1.495***	[0.143]	1.506***	[0.144]	1.511***	[0.145]	1.505***	[0.144]	1.417***	[0.143]
parity of 1	1.330*	[0.160]	1.18	[0.144]	1.17	[0.143]	1.15	[0.141]	1.17	[0.144]	1.20	[0.147]	1.19	[0.147]	1.21	[0.155]
parity of 3	1.550***	[0.172]	1.524***	[0.170]	1.521***	[0.170]	1.511***	[0.169]	1.395**	[0.157]	1.310*	[0.149]	1.305*	[0.148]	1.301*	[0.155]
parity of 4	1.29	[0.248]	1.25	[0.242]	1.24	[0.240]	1.22	[0.236]	1.04	[0.202]	0.91	[0.179]	0.90	[0.176]	0.83	[0.173]
parity of 5 & over	2.058**	[0.483]	1.887**	[0.445]	1.870**	[0.442]	1.763*	[0.418]	1.50	[0.357]	1.28	[0.309]	1.27	[0.306]	1.25	[0.319]
Year of Birth			0.97	[0.0156]	0.97	[0.0156]	0.97	[0.0156]	0.97	[0.0157]	0.98	[0.0160]	0.98	[0.0160]	0.98	[0.0168]
SMR04 admission															15.44***	[1.725]
Living arrangements in 1991																
Married (Ref Cat)																
Single (including single parent)			1.868***	[0.150]	1.814***	[0.146]	1.813***	[0.146]	1.473***	[0.122]	1.430***	[0.119]	1.411***	[0.118]	1.361***	[0.120]
Cohabiting			1.18	[0.161]	1.19	[0.162]	1.20	[0.164]	1.10	[0.151]	1.09	[0.150]	1.07	[0.148]	1.02	[0.149]
Glasgow					1.406***	[0.101]	1.392***	[0.101]	1.366***	[0.1000]	1.340***	[0.0985]	1.310***	[0.101]	1.333***	[0.108]
Highest Level of highest qualification (if missing in 1991 take from 2001)																
Low or None (Ref Cat)																
Other Higher Qualifications (non-degree)							0.531***	[0.0755]	0.690*	[0.100]	0.76	[0.123]	0.77	[0.124]	0.82	[0.137]
First Degree and Higher Degree							0.458***	[0.0770]	0.639**	[0.111]	0.688*	[0.129]	0.70	[0.132]	0.74	[0.143]
HH tenure Based on 1991																
Owner occupier (Ref Cat)																
Social rented LA HA New Town etc (Council)									2.138***	[0.175]	1.843***	[0.160]	1.720***	[0.169]	1.548***	[0.159]
Private renting									1.41	[0.264]	1.33	[0.250]	1.30	[0.243]	1.16	[0.232]
Other -with job or Lives rent free etc									1.26	[0.366]	1.19	[0.346]	1.16	[0.340]	1.13	[0.345]
Social Class 3 cats Based on 1991																
social class I & II (Ref Cat)																
class IIIN & IIIM+forces											0.96	[0.115]	0.96	[0.115]	0.95	[0.119]
social class IV & V											1.21	[0.160]	1.19	[0.158]	1.18	[0.164]
missing (any reason)											1.952***	[0.270]	1.935***	[0.269]	1.743***	[0.255]
Deprivation quintile																
1 Least Deprived (Ref Cat)																
2													1.575**	[0.240]	1.616**	[0.255]
3													1.440*	[0.223]	1.518**	[0.243]
4													1.398*	[0.220]	1.481*	[0.242]
5 Most Deprived													1.538**	[0.252]	1.630**	[0.279]

Exponentiated coefficients; Standard errors in brackets

* p<0.05, ** p<0.01, *** p<0.001

Source: SLS

Reported mental health condition in 2011 (N=12,663)

ALL WOMEN	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se
	model 1 12,663		model 2 12,663		model 3 12,663		model 4 12,663		model 5 12,663		model 6 12,663		model 7 12,663		model 8 12,663	
Parity measure from ISD (cleaned)																
parity of 2 (Ref Cat)																
No children	1.877***	[0.170]	1.509***	[0.144]	1.503***	[0.144]	1.495***	[0.143]	1.506***	[0.144]	1.511***	[0.145]	1.505***	[0.144]	1.417***	[0.143]
[illegible]	1.330*	[0.160]	1.18	[0.144]	1.17	[0.143]	1.15	[0.141]	1.17	[0.144]	1.20	[0.147]	1.19	[0.147]	1.21	[0.155]
3 children	1.550***	[0.172]	1.524***	[0.170]	1.521***	[0.170]	1.511***	[0.169]	1.395**	[0.157]	1.310*	[0.149]	1.305*	[0.148]	1.301*	[0.155]
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parity of 5 & over	2.058**	[0.483]	1.887**	[0.445]	1.870**	[0.442]	1.763*	[0.418]	1.50	[0.357]	1.28	[0.309]	1.27	[0.306]	1.25	[0.319]
Year of Birth			0.97	[0.0156]	0.97	[0.0156]	0.97	[0.0156]	0.97	[0.0157]	0.98	[0.0160]	0.98	[0.0160]	0.98	[0.0168]
SMR04 admission															15.44***	[1.725]
Living arrangements in 1991																
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Single (including single parent)			1.868***	[0.150]	1.814***	[0.146]	1.813***	[0.146]	1.473***	[0.122]	1.430***	[0.119]	1.411***	[0.118]	1.361***	[0.120]
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Exponentiated coefficients; Standard errors in brackets

* p<0.05, ** p<0.01, *** p<0.001

Source: SLS

Reported mental health condition in 2011 (N=12,663)

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1 Least Deprived (Ref Cat)																
2													1.575**	[0.240]	1.616**	[0.255]
3													1.440*	[0.223]	1.518**	[0.243]
4													1.398*	[0.22		
5 Most Deprived													1.538**	[0.25	1.630***	

Social rented

Missing social class info

Area deprivation

Exponentiated coefficients; Standard errors in brackets

* p<0.05, ** p<0.01, *** p<0.001

Source: SLS

Reported mental health condition in 2011 (N=12,663)

ALL WOMEN	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se	Odds Ratio	se
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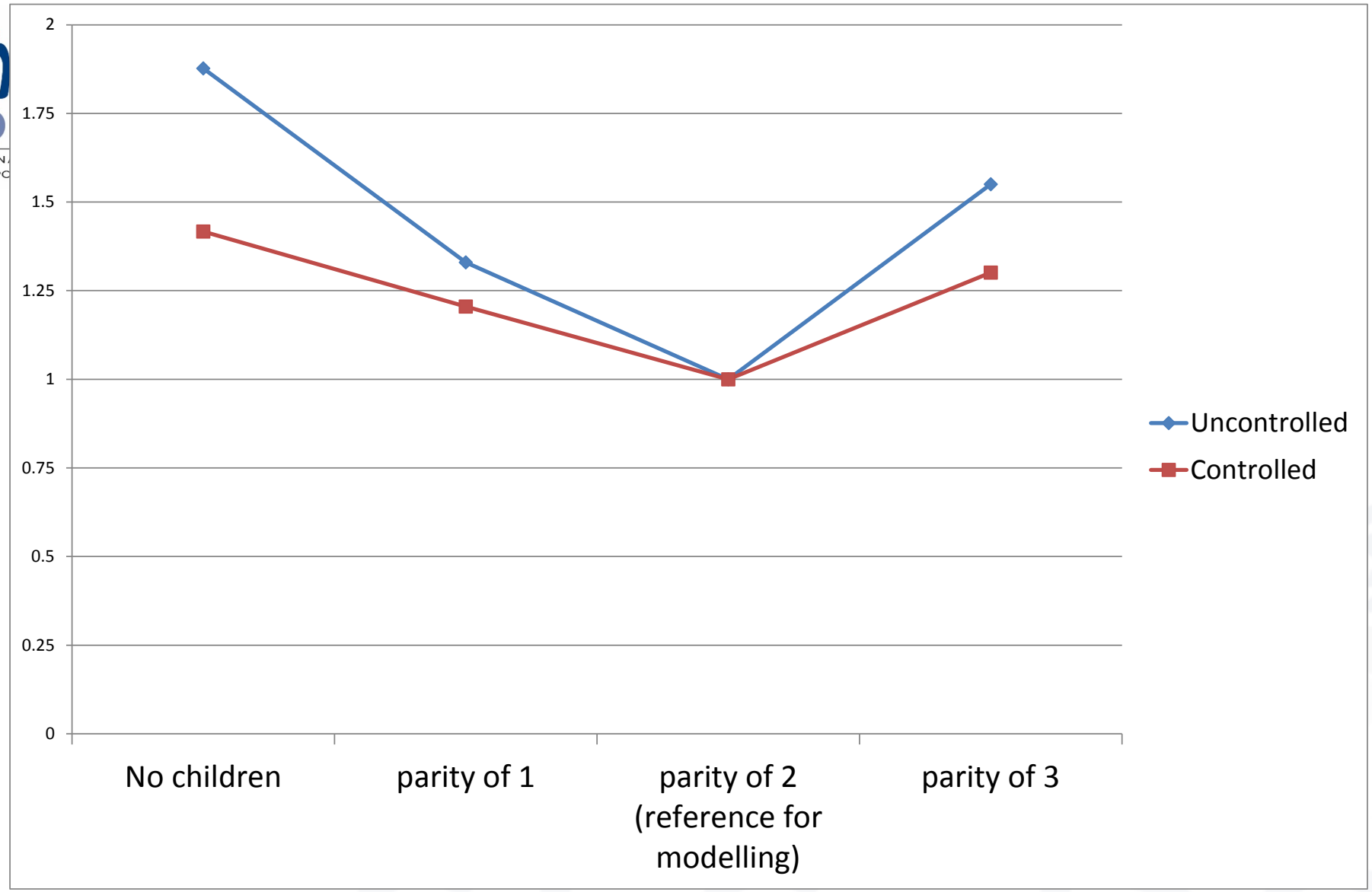
parity of 2 (Ref Cat)																
None	1.877***	[0.170]	1.509***	[0.144]	1.503***	[0.144]	1.495***	[0.143]	1.506***	[0.144]	1.511***	[0.145]	1.505***	[0.144]	1.417***	[0.143]
parity of 1	1.330*	[0.160]	1.18	[0.144]	1.17	[0.143]	1.15	[0.141]	1.17	[0.144]	1.20	[0.147]	1.19	[0.147]	1.21	[0.155]
parity of 3	1.550***	[0.172]	1.524***	[0.170]	1.521***	[0.170]	1.511***	[0.169]	1.395**	[0.157]	1.310*	[0.149]	1.305*	[0.148]	1.301*	[0.155]
parity of 4	1.29	[0.248]	1.25	[0.242]	1.24	[0.240]	1.22	[0.236]	1.04	[0.202]	0.91	[0.179]	0.90	[0.176]	0.83	[0.173]
parity of 5 & over	2.058**	[0.483]	1.887**	[0.445]	1.870**	[0.442]	1.763*	[0.418]	1.50	[0.357]	1.28	[0.309]	1.27	[0.306]	1.25	[0.319]
[illegible]			0.97	[0.0156]	0.97	[0.0156]	0.97	[0.0156]	0.97	[0.0157]	0.98	[0.0160]	0.98	[0.0160]	0.98	[0.0168]
SMR04 admission															15.44***	[1.725]
[illegible]																
Married (Ref Cat)																
Single (including single parent)			1.868***	[0.150]	1.814***	[0.146]	1.813***	[0.146]	1.473***	[0.122]	1.430***	[0.119]	1.411***	[0.118]	1.361***	[0.120]
Cohabiting			1.18	[0.161]	1.19	[0.162]	1.20	[0.164]	1.10	[0.151]	1.09	[0.150]	1.07	[0.148]	1.02	[0.149]
Glasgow					1.406***	[0.101]	1.392***	[0.101]	1.366***	[0.1000]	1.340***	[0.0985]	1.310***	[0.101]	1.333***	[0.108]
Highest Level of highest qualification (if missing in 1991 take from 2001)																
Low or None (Ref Cat)																
Other Higher Qualifications (non-degree)							0.531***	[0.0755]	0.690*	[0.100]	0.76	[0.123]	0.77	[0.124]	0.82	[0.137]
First Degree and Higher Degree							0.458***	[0.0770]	0.639**	[0.111]	0.688*	[0.129]	0.70	[0.132]	0.74	[0.143]
HH tenure Based on 1991																
Owner occupier (Ref Cat)																
Social rented LA HA New Town etc (Council)									2.138***	[0.175]	1.843***	[0.160]	1.720***	[0.169]	1.548***	[0.159]
Private renting									1.41	[0.264]	1.33	[0.250]	1.30	[0.243]	1.16	[0.232]
Other -with job or Lives rent free etc									1.26	[0.366]	1.19	[0.346]	1.16	[0.340]	1.13	[0.345]
Social Class 3 cats Based on 1991																
social class I & II (Ref Cat)																
class IIIN & IIIM+forces											0.96	[0.115]	0.96	[0.115]	0.95	[0.119]
social class IV & V											1.21	[0.160]	1.19	[0.158]	1.18	[0.164]
missing (any reason)											1.952***	[0.270]	1.935***	[0.269]	1.743***	[0.255]
Deprivation quintile																
1 Least Deprived (Ref Cat)																
2													1.575**	[0.240]	1.616**	[0.255]
3													1.440*	[0.223]	1.518**	[0.243]
4													1.398*	[0.220]	1.481*	[0.242]
5 Most Deprived													1.538**	[0.252]	1.630**	[0.279]

Exponentiated coefficients; Standard errors in brackets

* p<0.05, ** p<0.01, *** p<0.001

Source: SLS


2
1.75
1.5
1.25
1
0.75
0.5
0.25
0
No children
parity of 1
parity of 2 (reference for modelling)
parity of 3
Uncontrolled
Controlled

Source:
SLS

Parity measure from ISD (cleaned)	Married(all)	Living Single (includes single parent)	Cohabiting(all)	Total
parity of 2 (reference for modelling)	72.76	20.15	7.09	100%
None	37.08	52.12	10.80	100%
parity of 1	51.93	37.46	10.61	100%
parity of 3	70.33	22.20	7.47	100%
parity of 4	68.34	23.09	8.57	100%
parity of 5 & over	56.03	30.60	13.36	100%
Total	**58.6**	**32.5**	**8.89**	**100%**

Source:
SLS

Parity measure from ISD (cleaned)	Married(all)	Living Single (includes single parent)	Cohabiting(all)	Total
None	37.08	52.12	10.80	100%
parity of 1	51.93	37.46	10.61	100%
parity of 2 (reference for modelling)	72.76	20.15	7.09	100%
parity of 3	70.33	22.20	7.47	100%
parity of 4	68.34	23.09	8.57	100%
parity of 5 & over	56.03	30.60	13.36	100%
Total	**58.6**	**32.5**	**8.89**	**100%**

Source:
SLS

Future research

Continue modelling:

- Limiting long-term illness at 2011 Census
- Early death at mid-life deaths until 2014
- Sensitivity testing for a:
  - wider cohort
  - only parous women
- Cancer registrations & preventable deaths – too small numbers?
- Use time varying covariants – ie update martial status based on vital events data, but have to consider if will bias as we do not know if a cohabiting union dissolves

Acknowledgements:

- “The help provided by staff of the Longitudinal Studies Centre – Scotland (LSCS) is acknowledged. The LSCS is supported by the ESRC/JISC, the Scottish Funding Council, the Chief Scientist’s Office and the Scottish Government. The authors alone are responsible for the interpretation of the data. Census output is Crown copyright and is reproduced with the permission of the Controller of HMSO and the Queen’s Printer for Scotland.”

Thanks for listening!

Any questions or comments to:

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Economic outcomes of young people
Not in Education, Employment or Training (NEET)
in England and Wales Longitudinal Study

CLOSER 1-2nd Nov 2017 London

Wei Xun
Department of Epidemiology and Public Health, UCL

Supervisors:
Dr Nicola Shelton
Dr Rebecca Lacey, Dr Stephen Jivraj, Dr Christopher Marshall

In the media "YOUTHS WITH NO FUTURE"

totalpolitics

NEETs: A lost generation

by Alex Cunningham | 3 Dec 2012

Alex Cunningham MP paints a bleak future facing too many of this country's unemployed young people

A Lost Generation

NEWS EDUCATION & FAMILY

22 November 2012 Last updated at 17:26

Young jobless Neets still top one million

By Judith Burns
Education reporter, BBC News

BMJ Helping doctors make better decisions

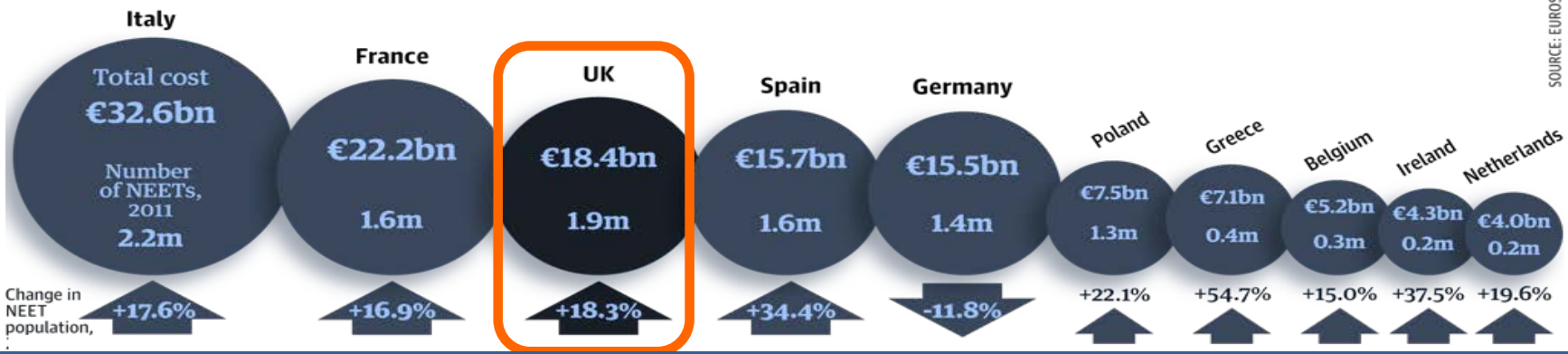
NEWS

Scale of youth unemployment is a public health emergency, Marmot says

BMJ 2011; 343 doi: http://dx.doi.org/10.1136/bmj.d7608 (Published 23 November 2011)
Cite this as: *BMJ* 2011;343:d7608

Young people not in employment, education or training

The total cost and number of Neets in 2011 plus the change in Neet population from 2008



Not In Education, Employment or Training

- NEET
  - Unemployed
  - Economically Inactive

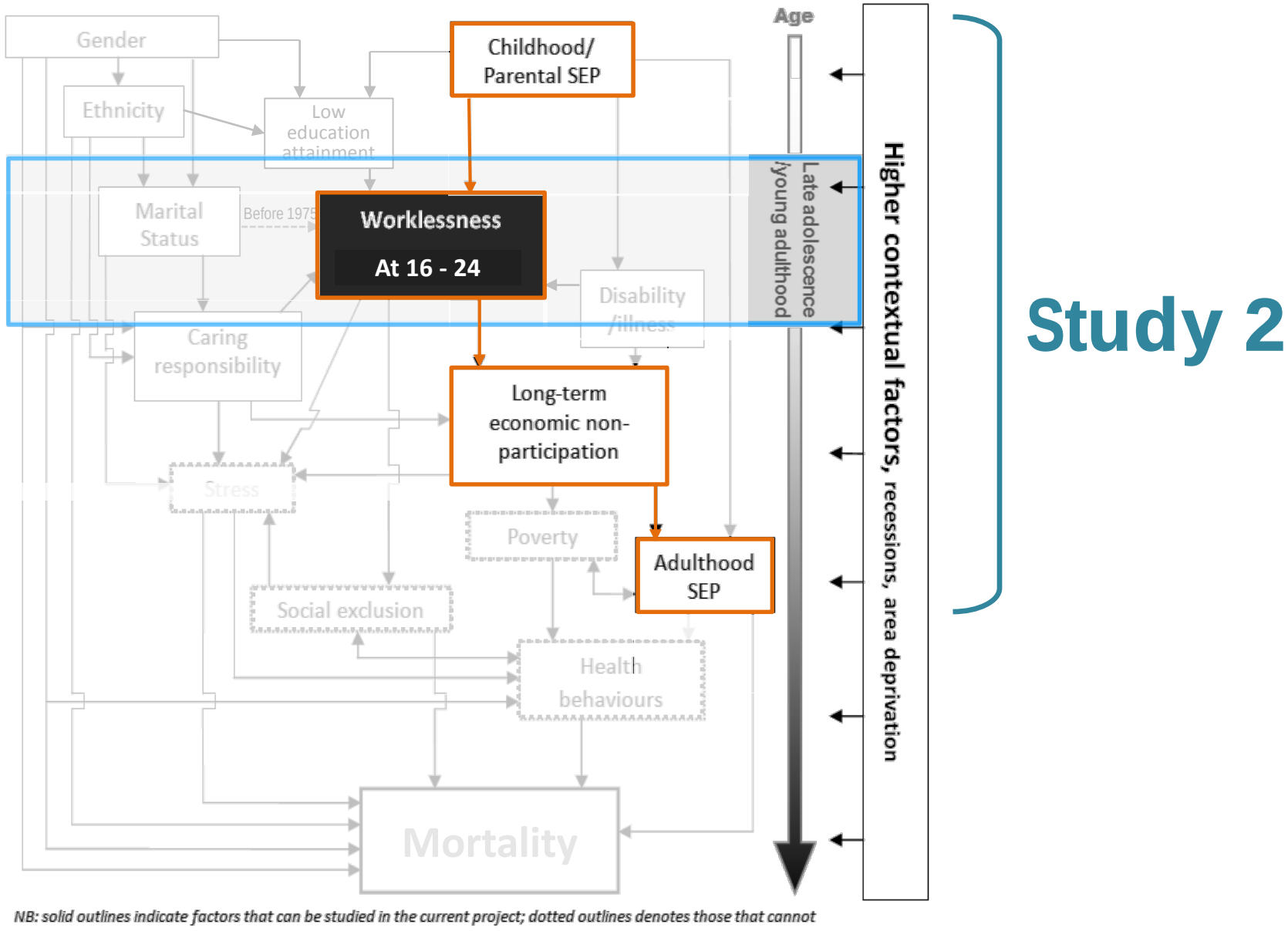
"Youth Worklessness" ~16-24yrs

Economic disadvantage

- Further episodes of worklessness[2,3]
- "Wage scar"[4-6]

2: Coles et al, 2002, Research Report 347, Dept Education Skills. 3: Bartley& Plewis , 2002, *Int J Epidemiol*, 32(2). 4: Arulampalam, 2000, *Institute for the Study of Labor* (IZA). 5: Gregg &Tominey , 2005, *Labour Economics*, 12. 6: Macmillan, 2012, *Annex A, ACEVO report*

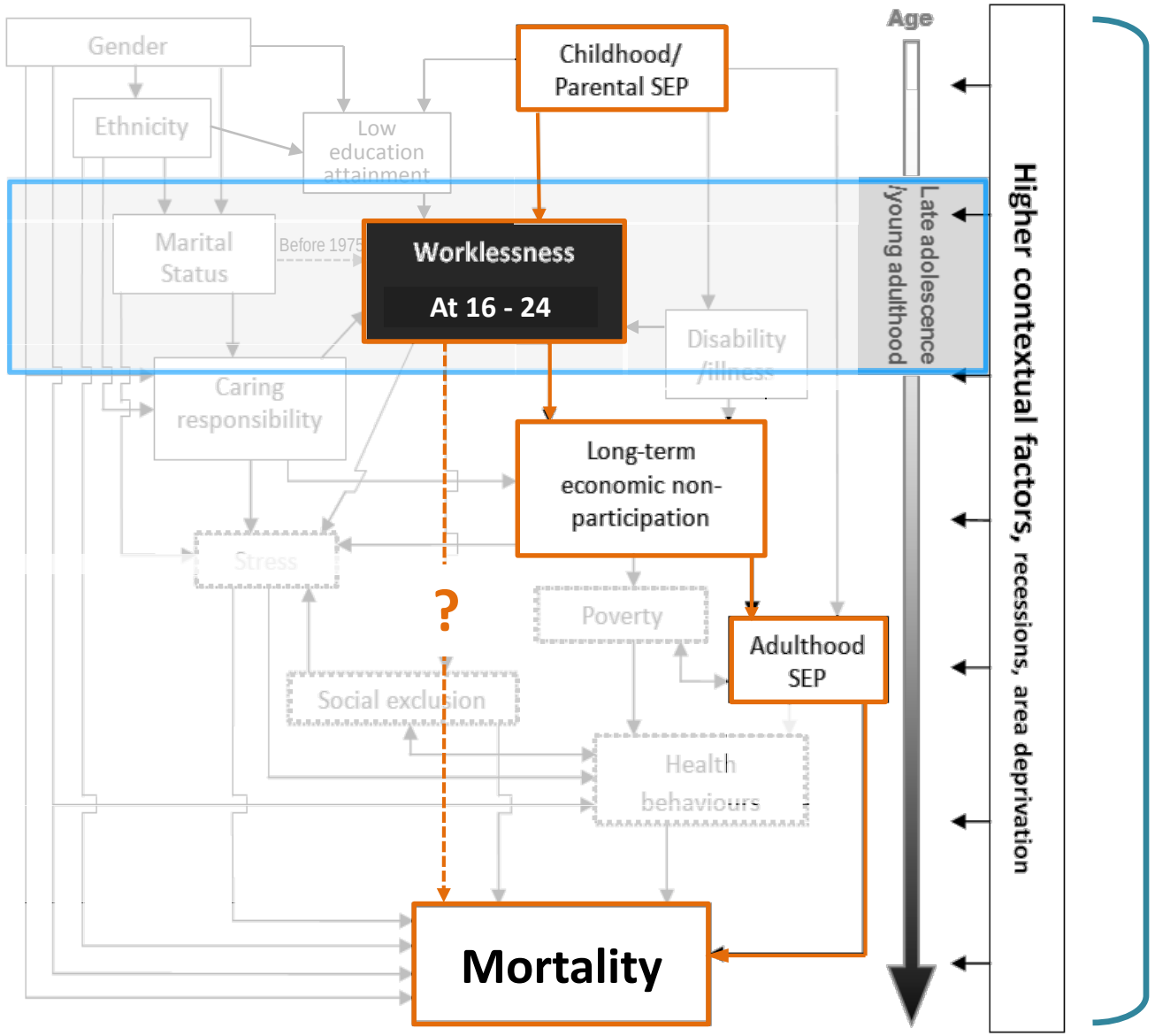
Life-course Operational Framework



Study 2

NB: solid outlines indicate factors that can be studied in the current project; dotted outlines denotes those that cannot

Life-course Operational Framework

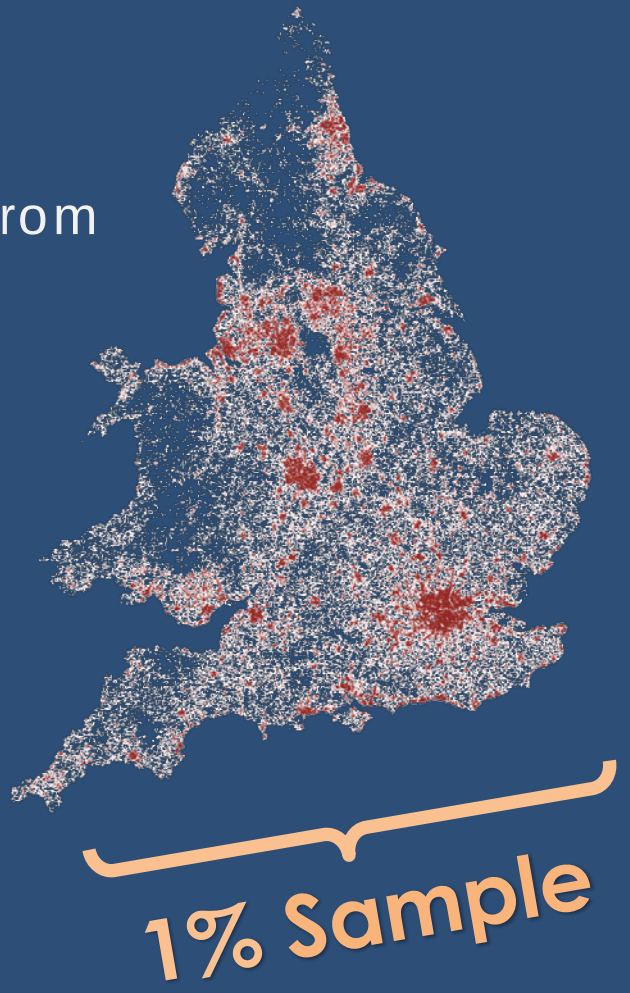


Study 3

NB: solid outlines indicate factors that can be studied in the current project; dotted outlines denotes those that cannot

Data source: The ONS Longitudinal Study (LS)

- Sampled from **Census**
- Individual and household level **microdata** from England and Wales
- **Random selection** based on date of birth
- **>500'000** at each cross-sectional "sweep"
- Decennial **follow-up since 1971➔40 years**
- Linkage to **mortality** and **cancer registries**
- **Large sample,** subgroup analyses possible



http://www.theguardian.com/news/datablog/interactive/2013/aug/01/every-person-in-england-wales-dot-map#7/52.929/-2.571

Baseline Samples for STUDY 2

	Cohort at 1971 (16-24yrs)		
Initial sample n (%)	68847		
Excluded Visitors n (%)	3613 (5.2)		
No Economic activity (%)	0 (0.0)		
	Characteristics		
	All	Men	Women
Final Sample n (%)	65234	32704 (50.1)	32530 (49.9)
Mean age (±sd)	20.2 (2.6)	20.1 (2.6)	20.2 (2.6)
UK Country of Birth %	92.8	92.8	92.8

Multinomial Logistic regression

- **Economic activity states** every 10 years as nominal, 3 category outcome,
- Residual effect of **baseline** (**1971**) on **outcome** economic activity
- Results presented as predicted discrete **average marginal probabilities**

→ Probabilities (**Pr**) for particular outcome category (**Y=0/1/2**) for a **given value** of **X**

Eg:

1991			
Ill/Retired/ Other Inactive	Pr(Y=3)	Pr(Y=3)	Pr(Y=3)
Unemployed	Pr(Y=2)	Pr(Y=2)	Pr(Y=2)
Employed /student	Pr(Y=1)	Pr(Y=1)	Pr(Y=1)
1971	Employed /student	Unemployed	Ill/Retired/ Other Inactive

Model Adjusted for:

Economic activity at last FU, age group, education, married (Y/N), self-reported sickness from last $FU_{91+'01+'11}$, child in HH, illness in HH members, spouse working, parental social class at baseline, Carstairs deprivation quintiles

Interim Summary Findings

- Descriptives → divergent economic trajectories between genders
  - Men in work, more commonly lost/ill at older ages
  - More diversity in women, prevalent interruptions of work by care
  - Both have considerable % that stay in work/study throughout

- Workless states at baseline **(aged 16-24)** seems to perpetuate up to mid/late-life **(aged 46-54)**
  - ORs significant even after adjusting for closest economic and health statuses (+others)
  - Men: not working with illness at **46-54** years
  - Women: Unemployed/ill/Retired/Other at **56-64** years

Thank you

Many thanks to: Nicola Shelton, Christopher Marshall, Rebecca Lacey, Stephen Jivraj, Rachel Stuchbury, Jo Tomlinson and the CeLSIUS and LSDT teams for their invaluable support

Disclaimer: The permission of the Office for National Statistics to use the Longitudinal Study is gratefully acknowledged, as is the help provided by staff of the Centre for Longitudinal Study Information & User Support (CeLSIUS). CeLSIUS is supported by the ESRC Census of Population Programme (Award Ref: ES/K000365/1). The authors alone are responsible for the interpretation of the data.

Extra slides

Strengths and Limitations

- Large, nationally representative sample
- Long follow-up period(s) for health outcomes
- Includes women and the economically inactive
- Uses the life-course framework
- Selection and attrition

- Historical cohorts
  - Period effect too strong in women to investigate macroeconomic conditions
- Economic activity and social class difficult to measure in Women
- Economic status every 10-years

The association between health and degree subject area - research using the ONS Longitudinal Study

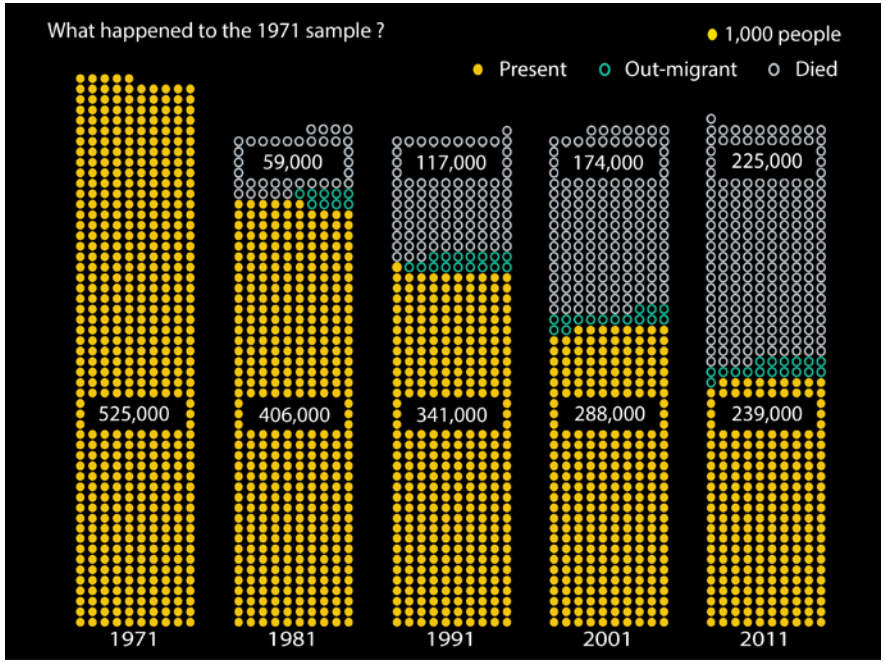
Dr Nicola Shelton† and Dr Oliver Duke-Williams‡
with assistance from the CeLSIUS team

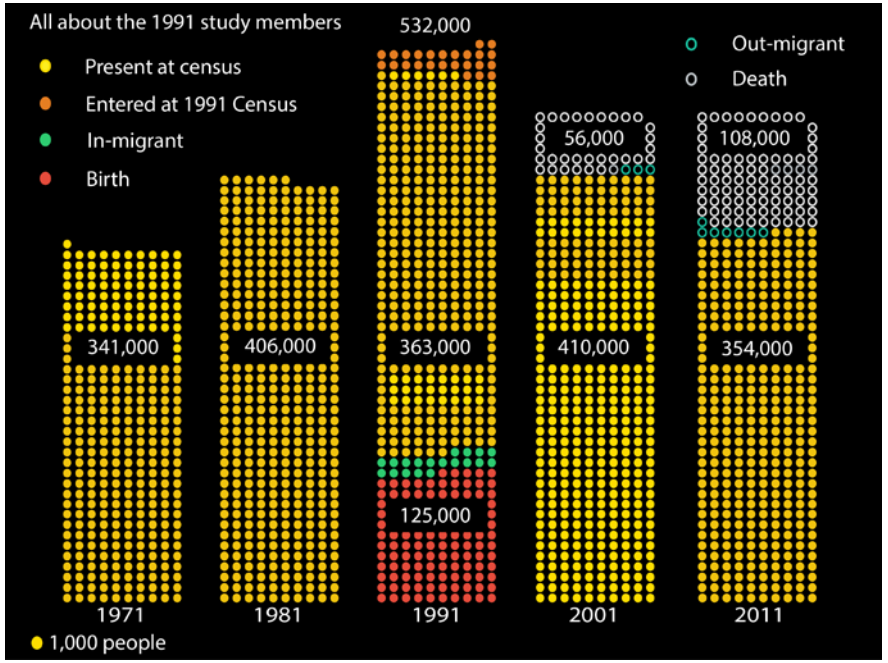
†Department of Epidemiology and Public Health, UCL;
‡UCL Centre for Digital Humanities

ONS Longitudinal Study

- Complete set of **individual level census records**, **linked between 5 successive censuses** starting at 1971, together **with data for various life events**.
- **Large population-based sample:** The LS comprises people born on one of four selected dates of birth and so makes up about **1% of the total population in England and Wales** – new LS members enter the study through birth and immigration and existing members leave through death and emigration (but their data is retained).
- The ONS LS now **includes records for over 1,100,000 individuals**.

Sample characteristics





Data Source ONS Longitudinal Study.

HE in the LS

- HE Participation in UK increased from 3.4% in 1950, to 8.4% in 1970, to 19.3% in 1990 (Bolton, 2012).
- Adults with post age 18 qualifications were asked the titles, subjects, awarding institutions and year
- Grouped by ONS into 186 subjects in 1971 and 111 subjects in 1991.
- Subject areas were grouped by 2014 REF main panel subject area (http://www.ref.ac.uk/panels/unitsofassessment/)

Cohorts

- The 1971 respondents includes adults who gained their degrees over lifetime (back to the late 1800s).
- The 1991 graduates include anyone with a degree who was enumerated in 1971, new graduates since 1971, and any immigrants since 1971 who had a degree prior to the 1991 Census.
- We have restricted 1971 sample to those born before 1955 and survived to 1971 census
- We have restricted 1991 sample to those born before 1975 and survived to 2011 Census

Humanities degrees and health outcomes

- Graduates in humanities have lower salaries and lower employment rates in the UK than graduates in medicine and science (ONS, 2013).
- We examined self-reported health at 2011 (for graduates by 1991) and mortality by 2014 (for graduates by 1971) in England and Wales by main subject area

Graduate subject areas in the LS

Graduates	Graduates (by 1971)	Non-grads	All		Graduates (by 1991)	Non-grads	Total
Degree in							
A (Life Sciences)	16	-	0.46		14.8	-	1.14
B (Physical Sciences)	36	-	1.03		29.3	-	2.25
C (Social Sciences)	26.3	-	0.75		34.8	-	2.67
D (Humanities)	21.7	-	0.62		21.1	-	1.62
Died by 2014	45	60.1	59.7				
Fair/Very bad health in 2011					15.3	31.9	30.6
Sex (female)	22.7	53	52.2		37.8	54.4	53.1
Mean Age (years in 1971/1991)	41.4	45.6	45.5		39.4	38.7	38.7
Total	*11,529*	*391,412*	*402,941*		*21,534*	*258,603*	*280,137*
Underlying counts	Graduates (by 1971)	Non-grads	All		Graduates (by 1991)	Non-grads	Total
Degree in							
A (Life Sciences)	1849	-	1853		3193	-	3194
B (Physical Sciences)	4153	-	4150		6305	-	6303
C (Social Sciences)	3031	-	3022		7483	-	7480
D (Humanities)	2496	-	2498		4552	-	4538
Died by 2014	5188	235239	240540				
Fair to Very poor health in 2011					3295	82494	85722
Sex (female)	2617	207448	210321		8140	140680	148753
Mean Age (years in 1971/1991)	41.4	45.6	45.5		39.4	38.7	38.7
Total	*11,529*	*391,412*	*402,941*		*21,534*	*258,603*	*280,137*

Data Source ONS Longitudinal Study. Analysis authors own

Logistic regression of deaths to 2014 by degree attained by 1971 Subject grouped 2014 REF Panel classes (A-C) compared to Humanities (D)

Cohort born before 1955 and survived until 1971 Census Completion				
MEN (n=8,908)	Odds Ratio	p	95%CI	
Age	0.54	<0.001	0.51	0.57
Age Squared	1	<0.001	1.00	1.00
A (Life Sciences)	1.05	0.564	0.89	1.24
B (Physical Sciences)	0.79	0.001	0.69	0.90
C (Social Sciences)	1.03	0.672	0.89	1.19
Constant				

Data Source ONS Longitudinal Study. Analysis authors own

Logistic regression of deaths to 2014 by degree attained by 1971 Subject grouped 2014 REF Panel classes (A-C) compared to Humanities (D)

Cohort born before 1955 and survived until 1971 Census Completion WOMEN (n=2,621)				
	Odds Ratio	p value	95%CI	
Age	0.54	<0.001	0.49	0.60
Age Squared	1.00	<0.001	1.00	1.01
A (Life Sciences)	0.83	0.126	0.66	1.05
B (Physical Sciences)	0.68	0.019	0.50	0.94
C (Social Sciences)	0.75	0.011	0.60	0.94
Constant				

Logistic regression of fair/poor/very poor health in 2011 by degree attained by 1991 Subject grouped 2014 REF Panel classes (A-C) compared to Humanities (D)

Cohort born before 1975 and survived until 2011 Census Completion				
MEN (n=13,391)	Odds Ratio	p value	95%CI	
Age	1.00	0.991	0.96	1.04
Age Squared	1.00	0.001	1.00	1.00
A (Life Sciences)	0.75	0.003	0.62	0.91
B (Physical Sciences)	0.78	0.001	0.67	0.90
C (Social Sciences)	0.90	0.189	0.77	1.05
Constant				

Data Source ONS Longitudinal Study. Analysis authors own

Logistic regression of fair/poor/very poor health in 2011 by degree attained by 1991 Subject grouped 2014 REF Panel classes (A-C) compared to Humanities (D)

Cohort born before 1975 and survived until 2011 Census Completion				
WOMEN (n=8,143)	Odds Ratio	p value	95%CI	
Age	1.02	0.394	0.97	1.08
Age Squared	1.00	0.113	1.00	1.00
A (Life Sciences)	0.94	0.529	0.77	1.14
B (Physical Sciences)	1.16	0.187	0.93	1.45
C (Social Sciences)	1.09	0.267	0.93	1.28
Constant				

Data Source ONS Longitudinal Study. Analysis authors own

The permission of the Office for National Statistics to use the Longitudinal Study is gratefully acknowledged, CeLSIUS is supported by the ESRC Census of Population Programme (Award Ref: ES/K000365/1). The authors alone are responsible for the interpretation of the data.