



Analysing the England and Wales, Scottish and Northern Ireland Longitudinal Studies

Health and Mortality as a case study

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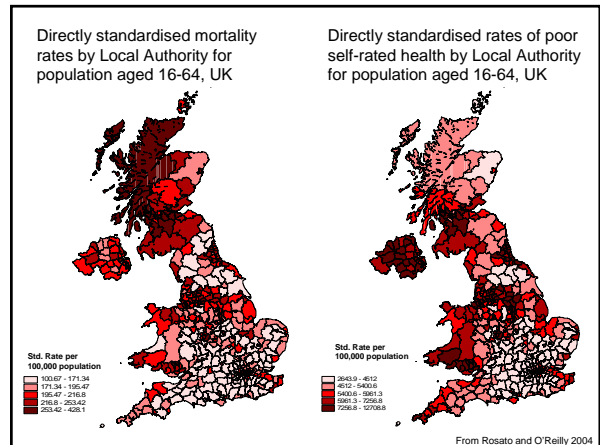
Developmental Aim

To demonstrate how parallel and if possible combined analyses of the 3 datasets can give UK-wide results:

- Consider issues that could affect cross-country analysis: address and document
- Negotiate procedures facilitating UK-wide analysis and a user guide for others

Background

- Use of ONS LS to analyse mortality and (since 1991) morbidity
- Self-rated health predictive of mortality
- Variations in response to self-rated health questions (and so associations between health and mortality)
 - Gender
 - Socio-economic status
 - Geographic (reflecting culture / context)



Research Aims

1. Analyse socio-economic and socio-demographic variation in reporting poor health in 2001 in England and Wales, Scotland and Northern Ireland.
2. Analyse associations between reporting of health status in 2001 and subsequent mortality (taking account of socio-economic and socio-demographic factors).

Datasets

- ONS Longitudinal Study – England and Wales (ONS LS)
- Scottish Longitudinal Study (SLS)
- Northern Ireland Longitudinal Study (NILS)

- Record linkage studies
- Samples drawn from census data, based on a number of birthdays in the year
- After initial census starting point, subsequent census points linked in
- Samples maintained by addition of new births and immigrants
- Vital events data linked in (birth to sample mother, death of spouse, death & other)

Datasets

	Census data from	% of population in sample	Sample size in 2001
ONS LS	1971 - 2001	1	Approx 500,000
SLS	1991, 2001	5.3	Approx 274,000
NILS	2001	28	Approx 500,000

Confidentiality

Access to anonymised individual level data only in relevant Statistical Office safe setting.

Outputs from safe setting governed by disclosure guidelines.

Variations in data access between the studies reflect

- Differences in sampling fractions
- Legal differences.

Analysis strategy

1. Parallel analysis using individual level data in relevant safe setting

2. Combined analysis using aggregated counts of individual level data (counts had to meet Statistical Office disclosure thresholds).

Note: Combined analysis of individual level data is not currently possible

Sample population

Population aged 35 and over
Present at 2001 Census
Parallel and combined analysis

Analyses by gender, age group, region

Sample size:

- LS 301,649
- SLS 143,224
- NILS 226,833

Outcome variables

Self-rated health

"Over the last twelve months would you say your health has on the whole been:
Good, Fairly good or Not good

Limiting long term illness

"Do you have any long term illness, health problem or disability which limits your daily activities or the work you can do? (include problems which are due to old age)"
Yes, No

Mortality

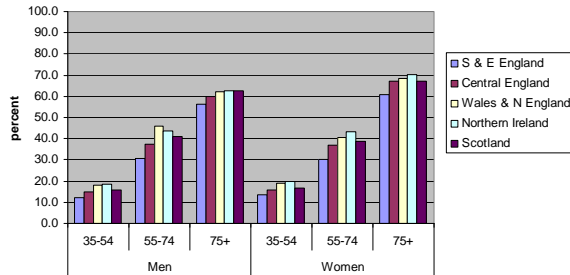
2001 Census to mid 2006

Explanatory variables - # of categories

Variable	Parallel analysis	Combined analysis
Age	Single year of age	5 age groups
Gender	2	2
Marital status	4	2
Education	3 / 4	Deprivation index 6 categories
NS-SEC	4	
Housing tenure	3	
Car access	2	
Country / region	3 (ONS LS only)	5

1. Variation in health reporting

Prevalence of limiting long term illness by age, gender and country, ONS LS, NILS & SLS 2001.



Results from parallel analysis.

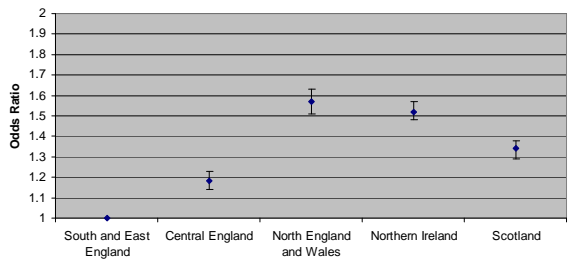
Odds ratios from logistic regression showing age and gender differences in reporting a limiting long term illness by region / country for those aged 35+, ONS LS, SLS, NILS, 2001.

	S & East England		Central England		Wales & N England		Northern Ireland		Scotland	
	OR	P	OR	P	OR	P	OR	P	OR	P
Gender (reference: men)										
Men	1.00		1.00		1.00		1.00		1.00	
Women	1.05	***	1.06	**	0.96	*	1.07	***	1	
Age group (reference: 35-54)										
35-54	1.00		1.00		1.00		1.00		1.00	
55-74	2.97	***	3.24	***	3.37	***	3.21	***	3.37	***
75+	9.74	***	9.87	***	8.70	***	8.68	***	10.83	***

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

Models controlled for age group and gender only. Parallel analysis

Adjusted odds ratio of LLTI by country / region compared with the South and East of England for men aged 35-74, ONS LS, SLS, NILS 2001



Model controlled for age group, marital status, deprivation index. Combined analysis

Odds ratios from logistic regression showing the association of socio-economic factors and LLTI by region / country for men aged 35-54, ONS LS, NILS, SLS 2001.

	S & East England		Central England		Wales & N England		Northern Ireland		Scotland	
	OR	P	OR	P	OR	P	OR	P	OR	P
Housing tenure (reference: owner occupier)										
Owner	1.00		1.00		1.00		1.00		1.00	
Priv. rent	1.28	***	1.58	***	1.82	***	1.80	***	2.02	***
Social rent	2.59	***	2.24	***	2.59	***	2.40	***	2.77	***
NSSEC (reference: manager or professional)										
Manager	1.00		1.00		1.00		1.00		1.00	
Intermed.	1.28	***	1.34	***	1.33	***	1.17	***	1.31	***
Lower	1.29	***	1.51	***	1.48	***	1.45	***	1.35	***
Nev. work / unemp	3.29	***	3.18	***	2.16	***	2.08	***	1.77	***

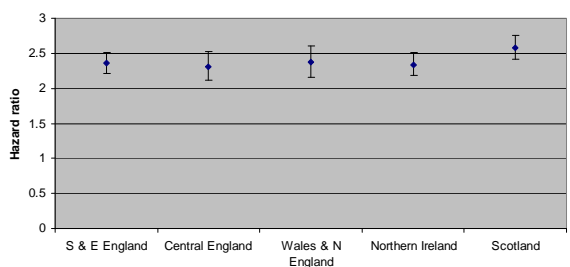
* p<0.05 ** p<0.01 *** p<0.001

Models controlled for age, marital status, tenure, car access, education, NS-SEC.

Results from parallel analysis.

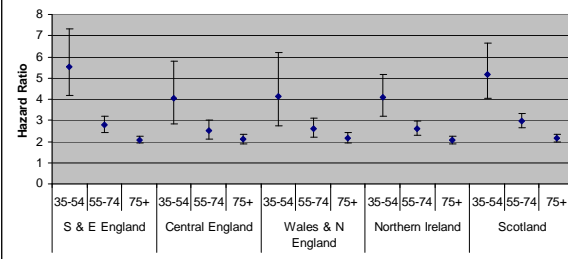
2. Association of morbidity and mortality – parallel analysis

Adjusted hazard ratios of mortality for women aged 35+ with an LLTI compared with no LLTI by country, NILS, ONS LS and SLS 2001-2005




Models controlled for age, marital status, housing tenure, car access, education, NS-SEC. Results from parallel analysis

Adjusted hazard ratios of mortality for women aged 35+ with an LLTI compared with no LLTI by age and country, ONS LS, SLS and NILS 2001-05




Models controlled for age, marital status, housing tenure, car access, education, NS-SEC. Results from parallel analysis.



Country differences in health-mortality association ?

In combined analysis, we found evidence of interaction – stronger association between poor self-rated health and mortality in Scotland than in South and East England (but not LLTI) for women.

No significant interaction for other areas compared with South and East England.




Summary of results

Regional / country differences in

- Reporting poor health
- Gender and age effects on reporting poor health
- Associations between different SES indicators and reporting poor health

In all areas, reporting a limiting long term illness and reporting poor self-rated health are associated with mortality.


Some country / regional differences in this, with some significance.



Limitations

Dataset comparability

- Variable differences: tenure, education
- Differences in placing of questions on Census forms between Scotland and other countries.




Discussion of developmental aim: parallel analysis

Pros

- Rich datasets with more variables and more variable categories than combined datasets
- Less time and resources necessary for data preparation

Cons

- No easy way to make statistical comparisons between country datasets




Discussion of developmental aim: combined analysis

Pros

- Can make statistical country comparisons, and calculate interaction effects

Cons

- Complex iteration process to produce datasets at three sites that meet disclosure control guidelines of each statistical office
- Negotiating with three statistical Offices with different policies
- Fewer variables and less variable detail possible due to disclosure control guidelines



Conclusions

It is possible to carry out analysis of the three datasets together – 2 ways to date.

Takes considerable time and organisation, especially for combined aggregated analyses.

In future it would be beneficial to create combined sub-sets of individual level data from the three studies – would combine the benefits of both current methods.



Project outputs

User guide: aide for others wanting to carry out combined analysis of the ONS LS, SLS, NILS.

Core variables data thesaurus

Journal article on main substantive results.

Article in Population Trends / Health Statistics Quarterly on procedures and methods.



Acknowledgements

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For more information

ONS Longitudinal Study
www.celsius.lshtm.ac.uk

Northern Ireland Longitudinal Study
<http://www.nisra.gov.uk/nils/default.asp.htm>

Scottish Longitudinal Study
www.lscs.ac.uk