

Using the ONS Longitudinal Study in epidemiological studies

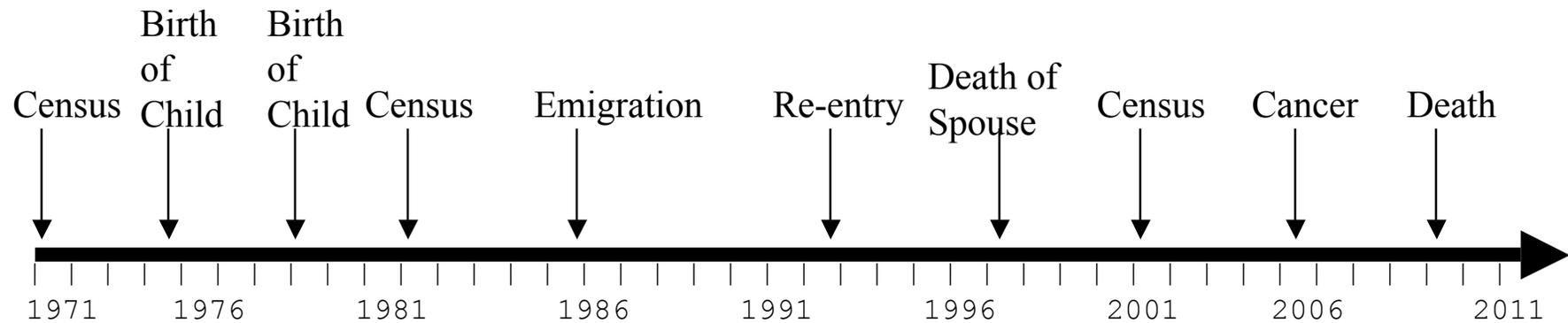
What is the Longitudinal Study?

- a dynamic record linkage study with linked census records of 1% of the E&W population
- started in 1971, so shortly will comprise of records spanning up to 30 years for >600,000 individuals
- complemented by event data

Event data

- Live births and stillbirths to LS mothers
- Infant deaths to LS mothers
- Deaths of LS members and their spouses
- Embarkations
- all available to end of 2000
- Cancer registrations (to end 1997)

Person included from 1971 Census



Census data includes:

- age, sex, marital status
- family, household or communal establishment type
- housing, including tenure, rooms and amenities
- country of birth, and in 1971 parent's country of birth
- ethnicity (1991 & 2001)
- educational qualifications (only higher level qualifications 1971 & 1981; all levels 2001)
- economic activity
- occupation and social class
- migration and travel to work
- long-standing illness (1991 & 2001) and self-rated health (2001)
- religion (2001)
- caregiving (2001)
- marriage and fertility history (1971)

Death registration data

(up to date to end 2000)

For deaths of LS members; spouses of LS members; stillbirths, neonatal & postneonatal deaths to infants of female LS members (some for male); deaths of children < 16 to be added.

- **Cause of death, main & associated (up to 8)**
- **Certification type (1993_)**
- **Place of death, including type of communal establishment & length of stay (1993_)**
- **Occupation/employment/social class of LS member & husband/father**

Cancer registration data

(up to date to end 1997)

- Age at registration
- Place of birth & usual residence
- Registry Centre
- Occupation / employment / social class of LS member & husband / father
- Basis of diagnosis
- Behaviour of neoplasm

From 1993:

- Age at diagnosis
- Marital status at registration
- Ethnic origin at registration
- Registered at screening indicator
- Tumour cell grading
- Treatment type

CeLSIUS



CeLSIUS (Centre for Longitudinal Study Information and User Support)

**Provides help to academic users of the LS
Funded by ESRC and based at LSHTM**

www.celsius.lshtm.ac.uk

CeLSIUS and the ONS LS

- User support programme needed because, for confidentiality reasons, the data can only be accessed within a secure area at ONS
- Complexity of data set also means advice and training needed
- Only aggregated data can be supplied to researchers

Data restrictions

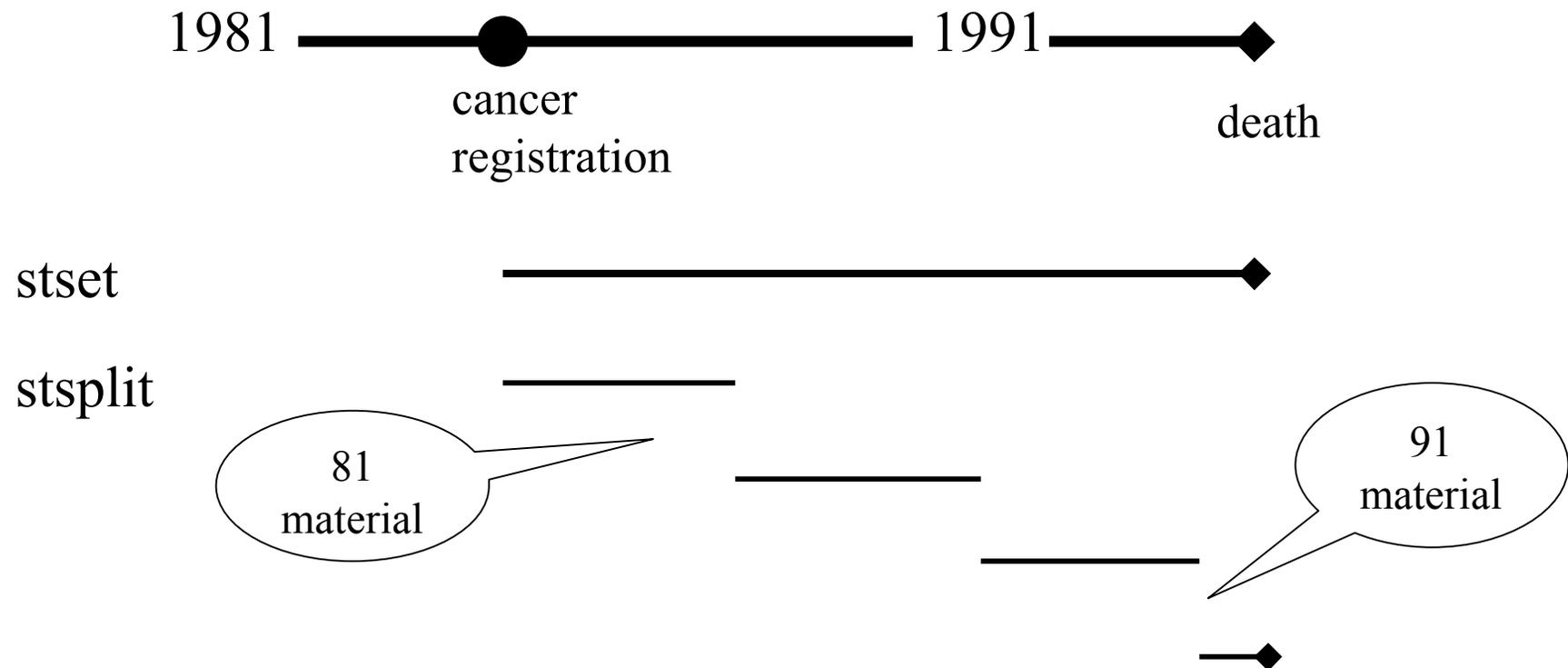
- prevent identification of individuals
- no individual-level data released
- limits on complexity of data:
 - categories, top coding
- care with geographical data
- data aggregated as frequency records

Research questions

- Cross-sectional (snapshot) at census point 1971, 1981 or 1991
- Change: investigating same people at two census points
- Duration: mortality, fertility, cancer incidence and survival
 - need event data

Computing

- used to be primarily SPSS with some SAS support
- introduction of Stata some years ago when survival analysis of LS data became popular
- Celsius team now work almost exclusively in Stata



- effectively get a person-years analysis



can collapse further to produce hazard rates by follow-up and categories of interest

and produce a lifetable or can model

cases	deaths	pyrs	period	yearfup	agegp	mstatus	housefa
1	0	1	1981-1985	0	45-49	Widowed	Living al
1	0	1	1981-1985	0	45-49	Widowed	Lone parent+others
1	0	1	1981-1985	0	45-49	Widowed	Lone parent+others
1	1	.19438	1981-1985	0	45-49	Married	Couple+others
1	1	.64339	1981-1985	0	45-49	Married	Couple+others
1	1	.78028	1981-1985	0	45-49	Married	Couple+others
1	1	.02190	1981-1985	0	45-49	Married	Couple no others
1	0	1	1981-1985	0	50-54	Single	Living alone
1	0	1	1981-1985	0	50-54	Single	No family but others
1	1	.01906	1981-1985	0	50-54	Single	Communal estab.
1	0	1	1981-1985	0	50-54	Married	Couple no others
1	0	1	1981-1985	0	50-54	Married	Couple no others

CeLSIUS



cases	deaths	pyrs	period	yearfup	agegp	expected mortality
1	0	1	1981-1985	0	45-49	0.00034
1	0	1	1981-1985	0	45-49	0.00034
1	0	1	1981-1985	0	45-49	0.00034
1	1	.19438	1981-1985	0	45-49	0.00034
1	1	.64339	1981-1985	0	45-49	0.00034
1	1	.78028	1981-1985	0	45-49	0.00034
1	1	.02190	1981-1985	0	45-49	0.00034
1	0	1	1981-1985	0	50-54	0.00072
1	1	.01906	1981-1985	0	50-54	0.00072
1	0	1	1981-1985	0	50-54	0.00072
1	0	1	1981-1985	0	50-54	0.00072

can proceed
to relative
survival
model

need to
aggregate
further

this value will need
adjustment

final aggregation

cases	deaths	pyrs	period	yearfup	agegp	expected mortality
3	0	3	1981-1985	0	45-49	0.00102
4	4	1.6425	1981-1985	0	45-49	0.00136
2	0	2	1981-1985	0	50-54	0.00068
1	1	.01906	1981-1985	0	50-54	0.00072
2	0	2	1981-1985	0	50-54	0.00144

This data is OK to release and can form the basis of a Poisson model of crude survival or, by using a user defined link function in a glm model, relative survival can be modelled (year of follow up always included in model)

Details: Dickman P, Sloggett A, Hills M, Hakulinen T. Regression models for relative survival. Statistics in Medicine

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Table 1: Crude and relative survival at 1, 5 and 10 years: comparison with Cancer Survival Trends (CST)* data for breast cancer.

Survival Time	Crude survival (%)			Relative survival (%)		
	This study 1981-1997 (95% CIs)	CST 1981-85	CST 1986-90	This study 1981-1997 (95% CIs)	CST 1981-85	CST 1986-90
1 year	86.4 (85.5-87.2)	85	87	88.4 (87.5-89.2)	88	90
5 year	58.4 (57.0-59.8)	54	59	66.1 (64.5-67.6)	63	68
10 year	42.4 (40.2-44.6)	37	-	55.9 (52.9-58.7)	51	-

* (Coleman et al. 1999)

Using the LS

- **Decide if the LS is a suitable source for the research project planned:
consult website; review publications (online list);
consult CeLSIUS staff**
- **If yes, prepare project outline, consult CeLSIUS staff and submit proposal, including confidentiality undertaking**
- **Specify data extract needed using online resources (data dictionary) and help from assigned CeLSIUS support officer**
- **Specify analyses needed/aggregate tabulations**
- **Notify CeLSIUS of publications and presentations**