

# National analysis of lung cancer data: overview

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# Cancer intelligence “lead areas”

## Thames Cancer Registry:

- Lung cancer  
(Sharma Riaz, Margreet Lüchtenborg)
- Upper gastrointestinal cancer  
(Vicki Coupland, Julie Confortion)
- Build of the national cancer data repository
- National lead for analysis and research  
(Henrik Møller)



# The lung cancer work programme

- Examples of completed work (5)
- Examples of ongoing work (2)

*Workprogramme 2010-2011*

*List of outputs*

*Report to NCIN*

*Workprogramme 2011-2012*

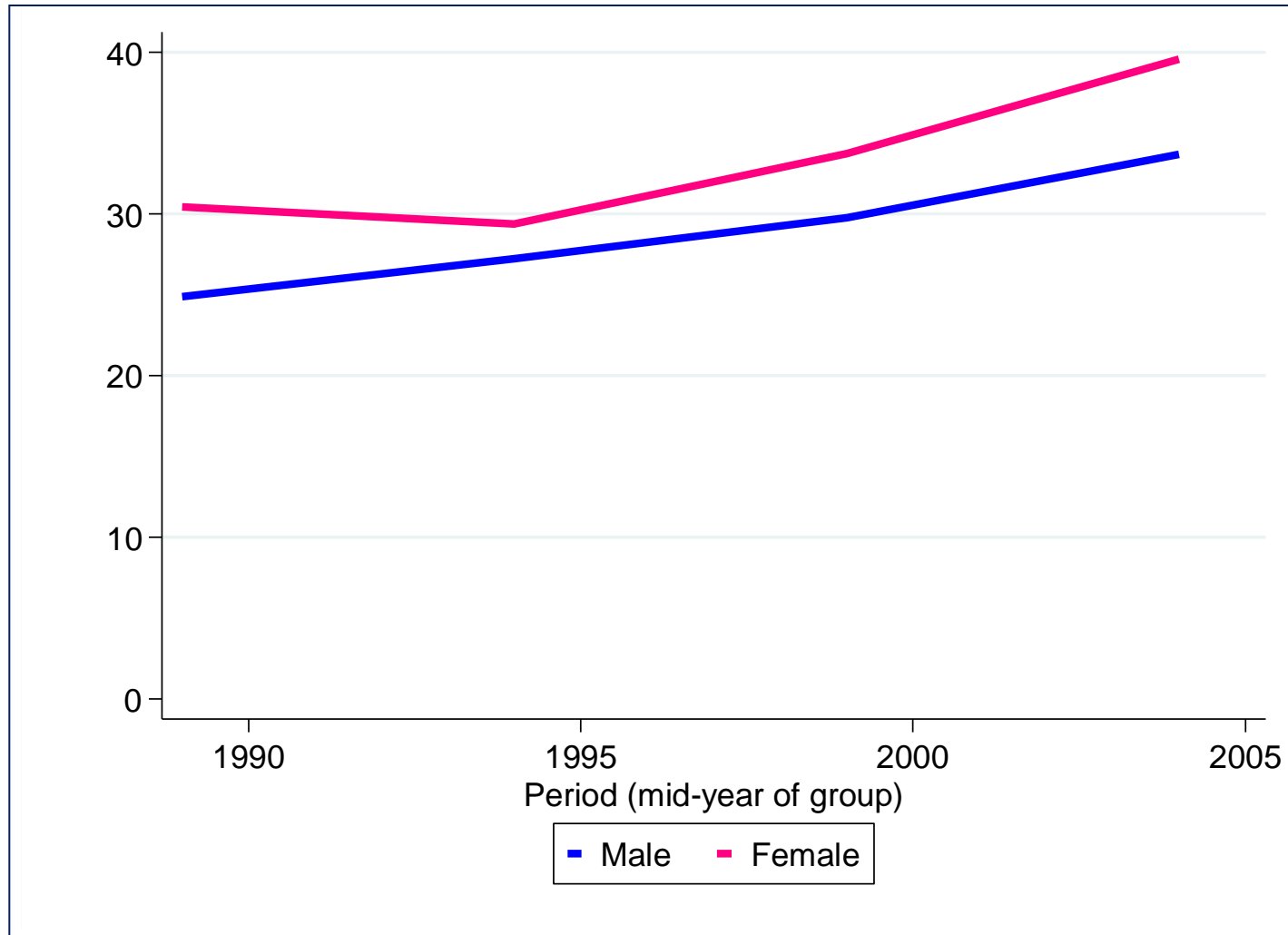


# Examples of completed work

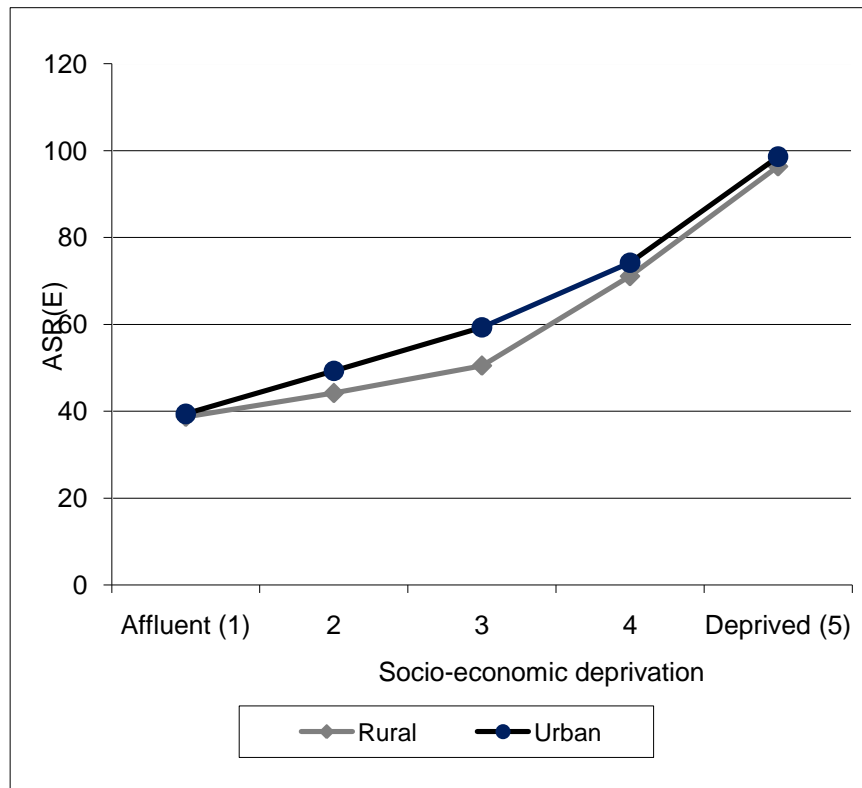
- Trends in mesothelioma survival
- Lung cancer incidence in relation to urbanisation
- Trends in small-cell lung cancer incidence
- Completeness of case ascertainment
- Variation in radical resection and survival



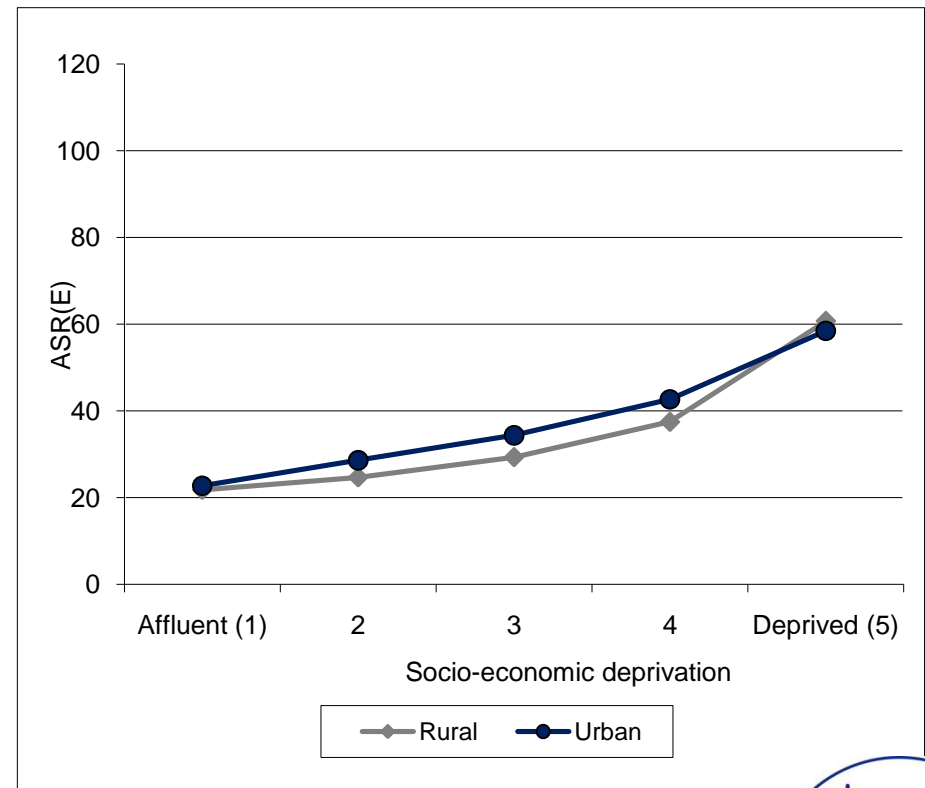
# (1) One-year survival in mesothelioma



## (2) Lung cancer incidence in relation to urbanisation and deprivation



Males

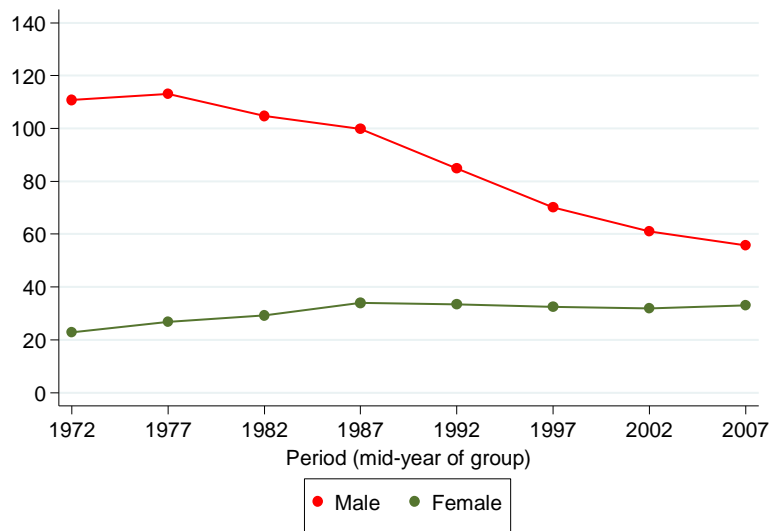


Females

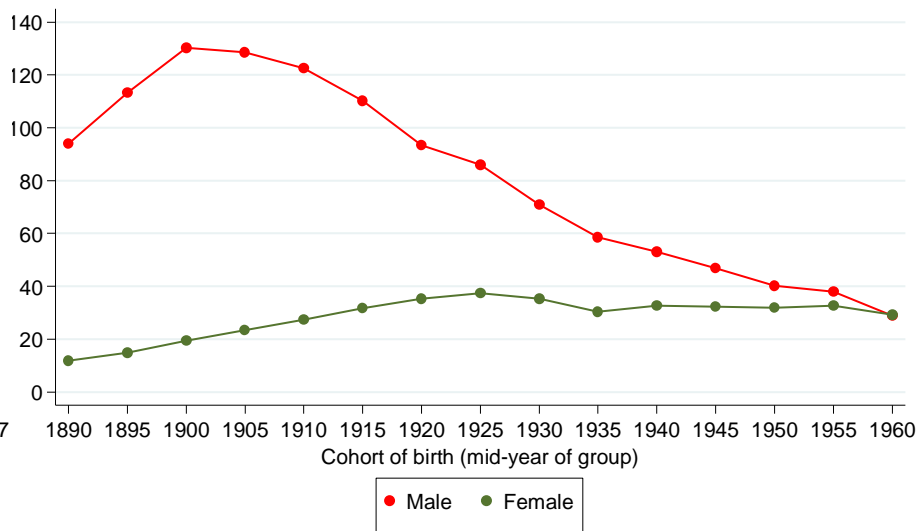


# (3) Trends in incidence of SCLC and all LC

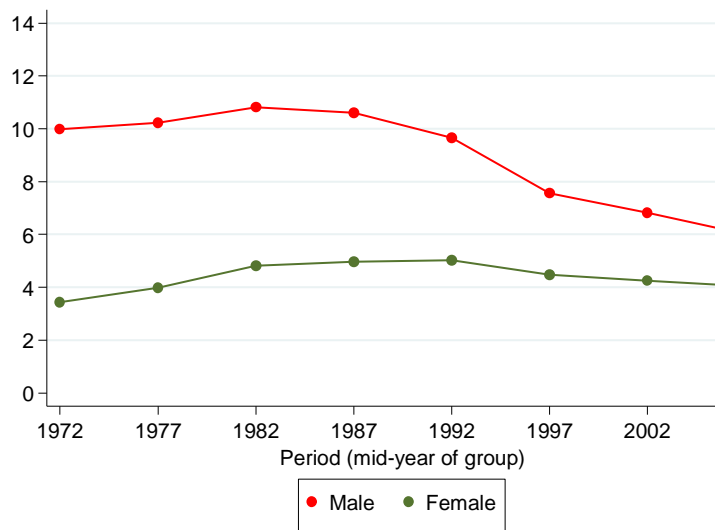
A All lung cancer



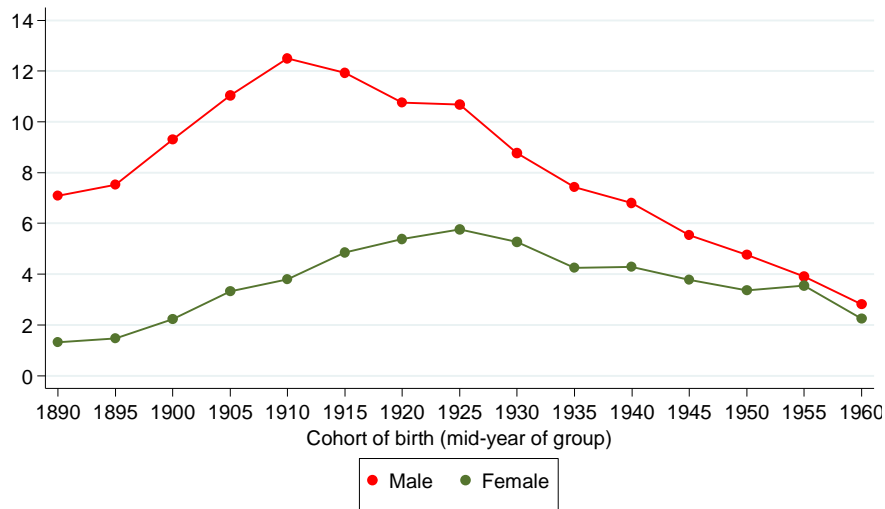
All lung cancer



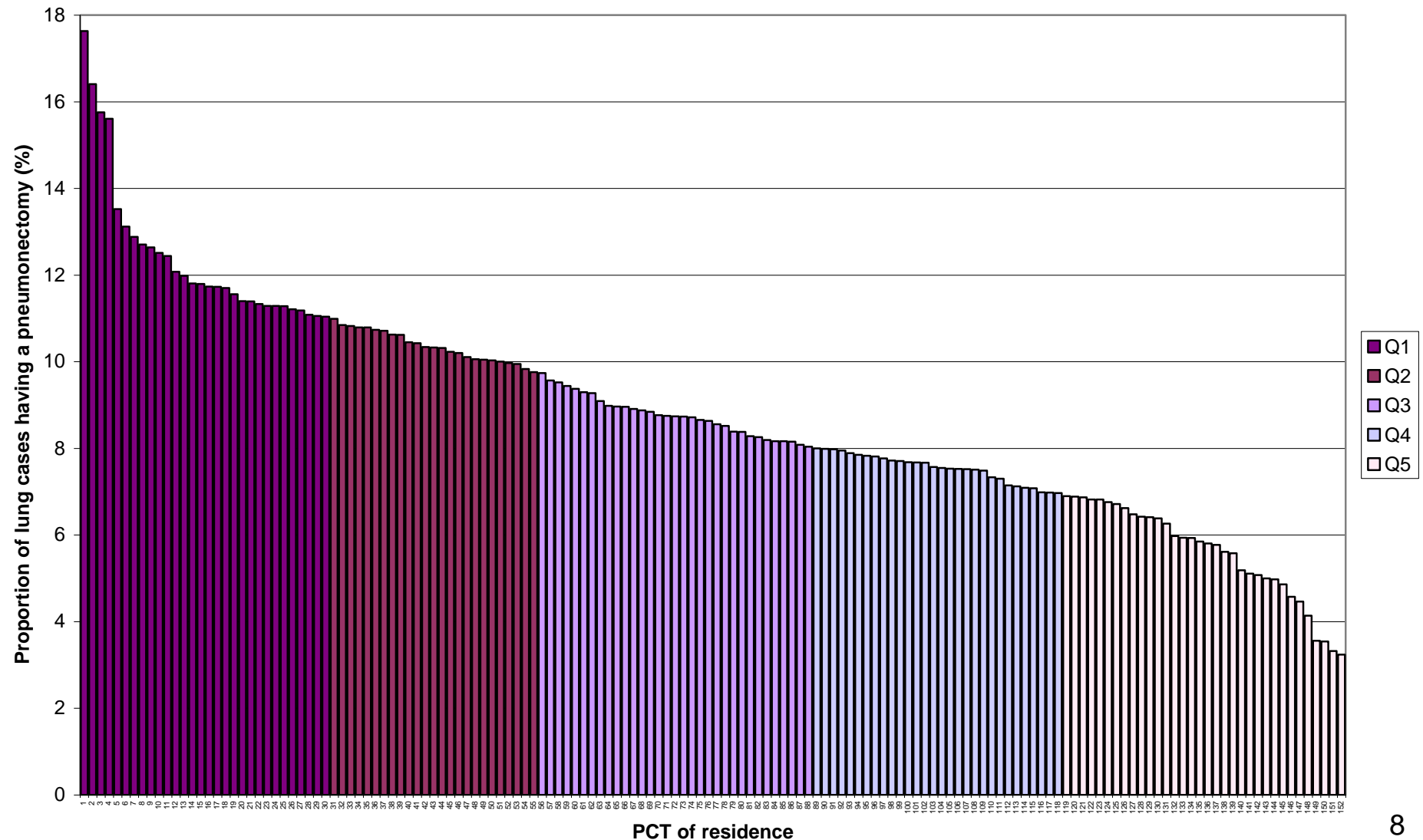
C Small cell lung cancer



D Small cell lung cancer

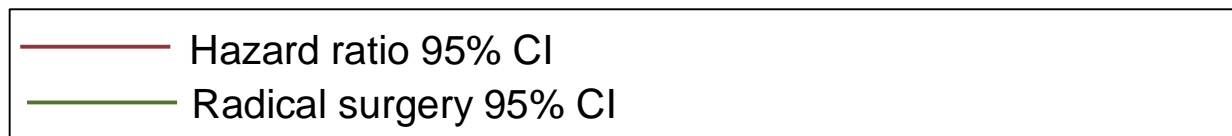
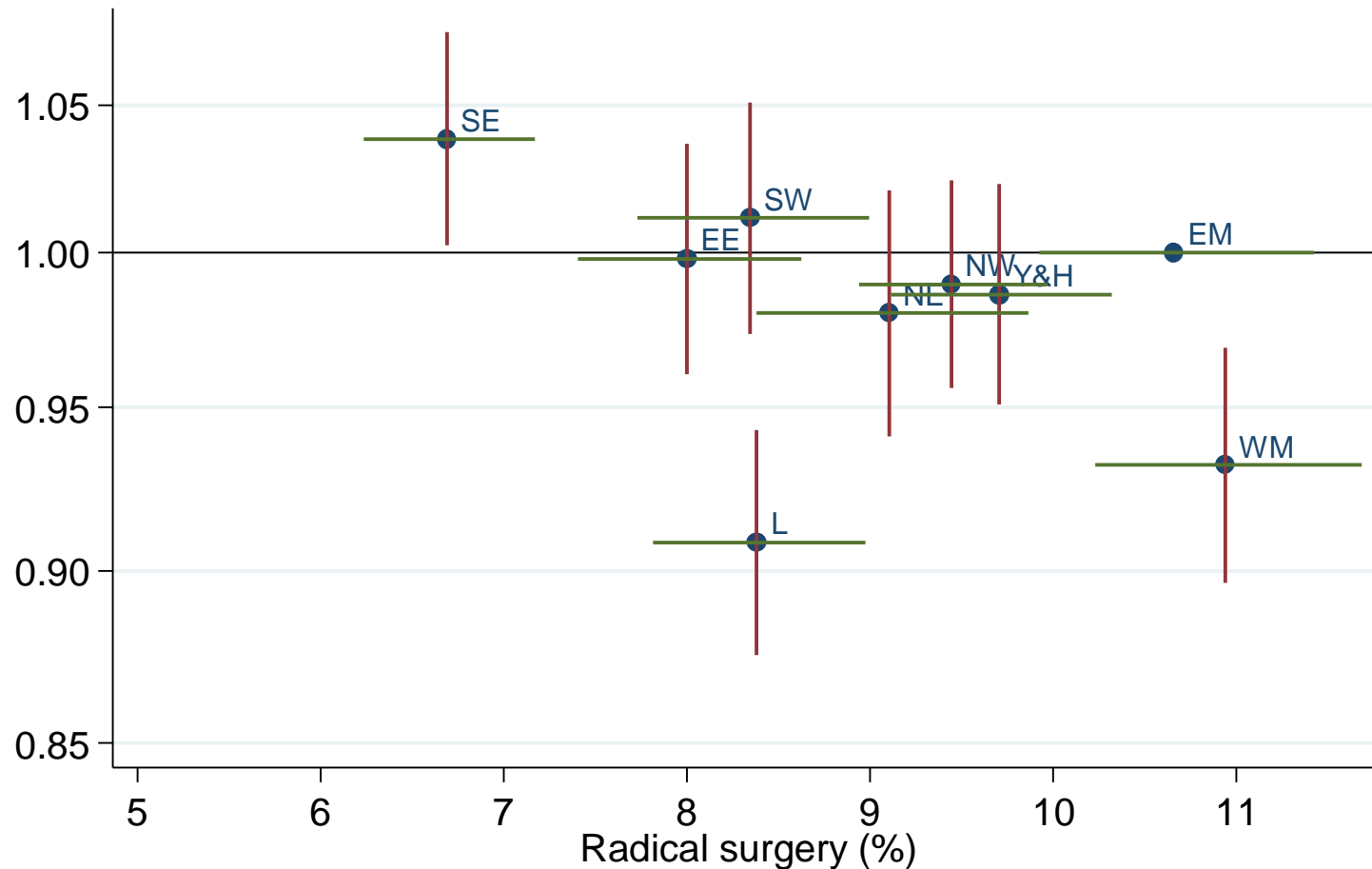


## (4) Radical resection in NSC lung cancer





# Radical resection (%) and survival in regions



## (5) Errors in cancer survival estimation

Incomplete case ascertainment likely to bias survival estimates because good-prognosis cases are missed

*Bullard 2000; Robinson 2007, 2010*

Death-certificate initiated registration likely to create too low survival times if hospital activity in relation to recurrence or death is mistaken for the initial diagnosis

*Møller 2010*

(1) and (2) leads to artificially low survival estimates



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# EDITORIALS

## UK cancer survival statistics

Are misleading and make survival look worse than it is

### RESEARCH, p 335

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**Competing interests:** Both authors have completed the Unified Competing Interest form at [www.icmje.org/coi\\_disclosure.pdf](http://www.icmje.org/coi_disclosure.pdf) (available on request from either author) and declare no competing

In the linked article, Autier and colleagues report that (population based) breast cancer mortality rates have fallen over the past two decades in many European countries, with a greater decline in the United Kingdom than in any other large country.<sup>1</sup> That the UK is leading Europe in the speed with which national breast cancer mortality rates are falling is in stark contrast to, and at first sight difficult to reconcile with, claims that survival after breast cancer onset is worse in the UK than elsewhere in western Europe.<sup>2</sup>

The unpromising UK cancer survival estimates are, however, misleading. In contrast, population based mortality trends are reasonably reliable (at least in middle age, for example, people aged 35-69 years) because a death certificate is legally required before someone can be buried or cremated. Although the certified cause of death can be

vival calculations based on registry data make UK cancer survival rates seem significantly worse than they really are.

Information in cancer registries on deaths from cancer is virtually complete because every death certificate that mentions cancer is automatically sent to one of the regional registries that, between them, cover the UK. That cancer is then registered, and further information is sought (not always successfully) from medical records. Death certificates have for decades played an important role in the way UK registries identify people with cancer. Without this source of information, many such cancers could have been missed; even with it, many people who die of cancer may have no record other than the death certificate ever traced by the registry (“death certificate only” cases) or may have had only the later phase of their illness traced by the registry.

# Data and methods

- Record linkage study using cancer registrations and HES records, 2001-2007
- HES-only cases who had surgical treatment represent possibly missed good-prognosis cases
- For apparently rapid fatal cases (1Y): identify earliest cancer record in HES
- Compute alternative one-year survival estimate



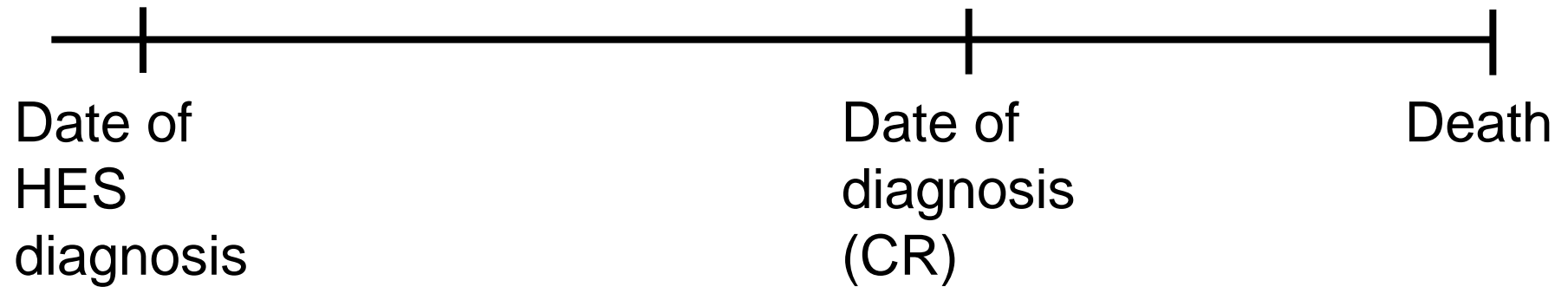
## Completeness of lung cancer case ascertainment in cancer registries in England, 2001-2007

		<u>Lung cancer</u>		
		<u>HESO</u>	<u>REPO</u>	<u>H/R %</u>
Total		802	219483	0.4
Sex	Male	458	128881	0.4
	Female	344	90602	0.4
	NA	0	0	
Registry	EASTERN	106	21396	0.5
	NORTH WEST	111	35384	0.3
	NORTHERN & YORKSHIRE	85	37541	0.2
	OXFORD	54	9081	0.6
	SOUTH WEST	87	27780	0.3
	THAMES	204	42236	0.5
	TRENT	43	23310	0.2
	WEST MIDLANDS	105	22755	0.5
	NA	7	0	

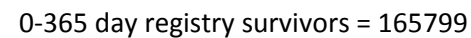
HESO: HES-only records from the repository with a code for "major surgery".

REPO: Valid cancer registrations from the linked repository. These exclude the HESO records.<sup>13</sup>

# Survival time error



0.4%



# Conclusion

- Completeness of lung cancer case ascertainment in English cancer registries is high: around 99.6%
- Survival time error is low: around 0.4% 1Y fatal lung cancer cases are misclassified over the one-year time point
- One-year lung cancer survival estimates may be underestimated by up to 0.8 percentage points (24.5 to 25.3)





# Examples of ongoing work

- Lung cancer survival in five countries
- Lung cancer survival in relation to peer-review measures



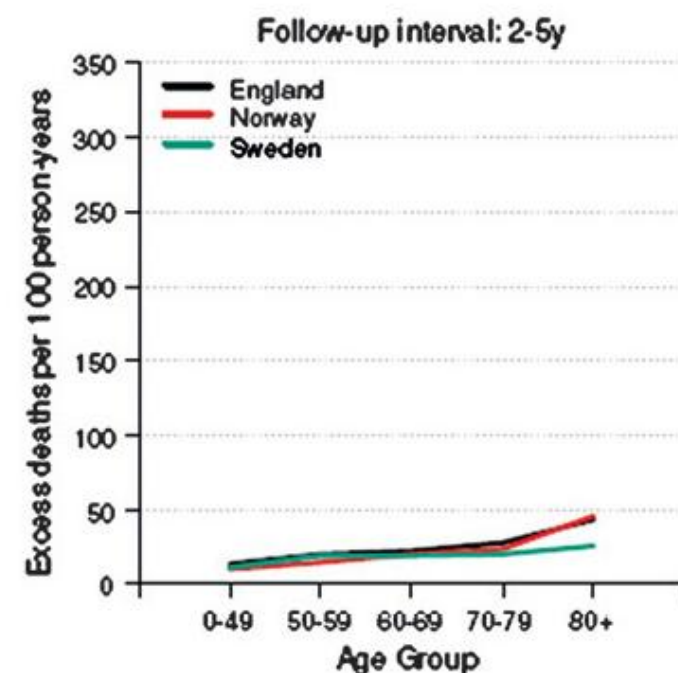
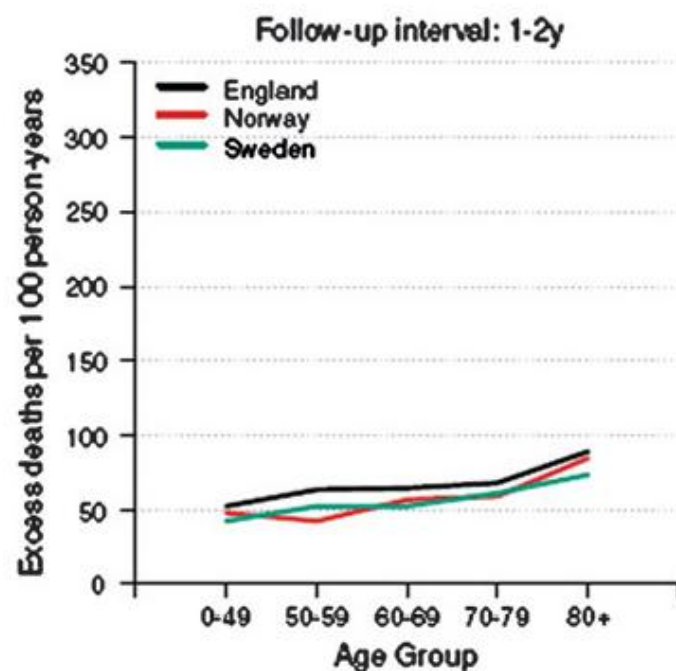
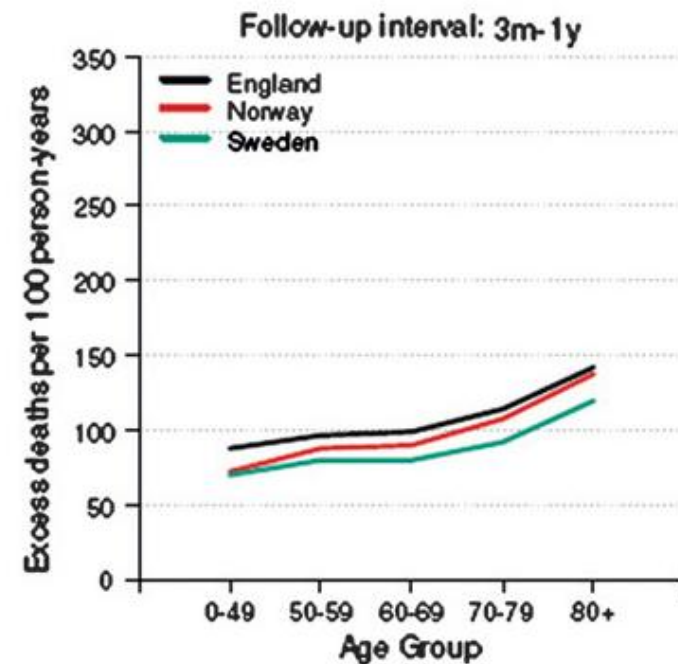
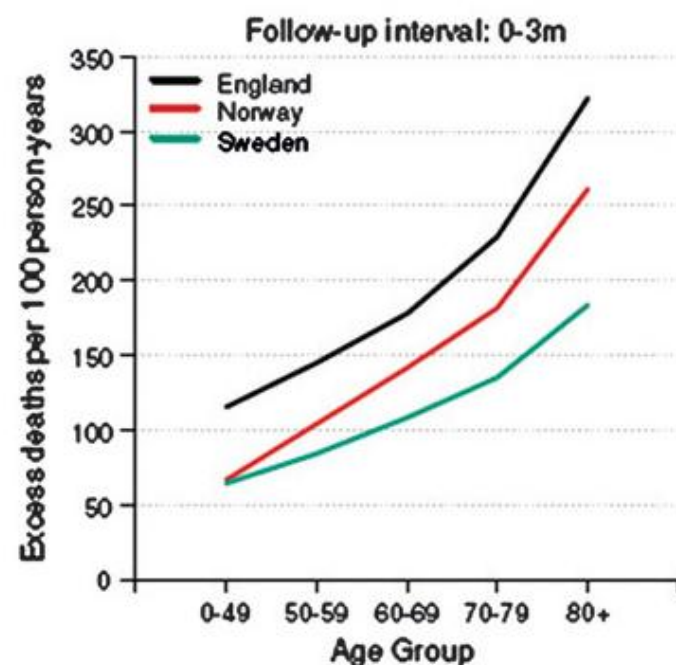
## Lung cancer

# National comparisons of lung cancer survival in England, Norway and Sweden 2001–2004: differences occur early in follow-up

Lars Holmberg,<sup>1</sup> Fredrik Sandin,<sup>2</sup> Freddie Bray,<sup>4</sup> Mike Richards,<sup>5</sup> James Spicer,<sup>1</sup> Mats Lambe,<sup>3</sup> Åsa Klint,<sup>6</sup> Mick Peake,<sup>7</sup> Trond-Eirik Strand,<sup>4</sup> Karen Linklater,<sup>1</sup> David Robinson,<sup>1</sup> Henrik Møller<sup>1</sup>



**Figure 2** Excess deaths/100 person-years by country, age and follow-up interval during the period 2001–2004.



# Extension to five countries, 2006-2008

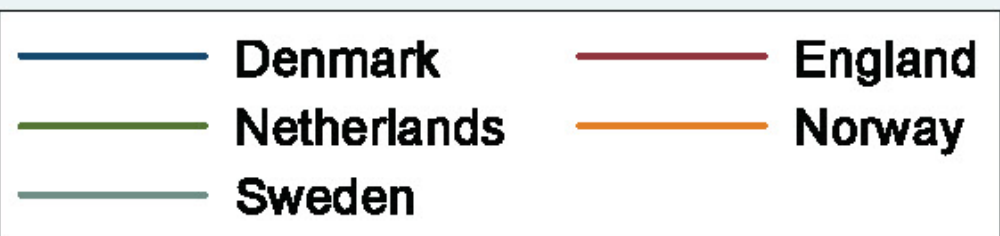
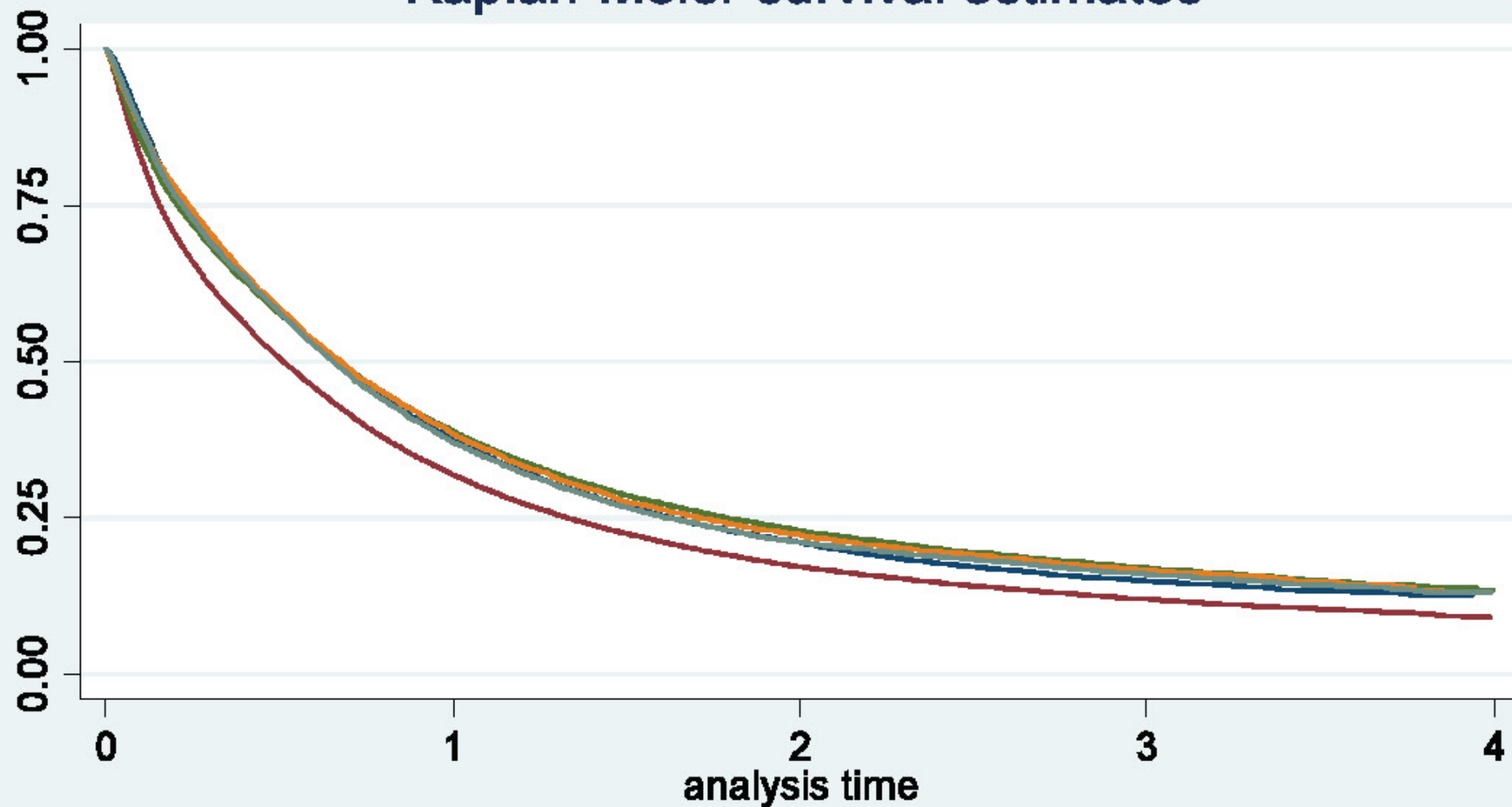
England, Norway, Sweden, Netherlands and Denmark

Can survival differences be attributed to ...

- Stage distribution?
- Treatment patterns?



## Kaplan-Meier survival estimates



## (2) Lung cancer peer review

Each provider unit obtained an overall compliance score

4 groups of scores

32 individual scores (eg specialist surgeon in MDT)

Are peer review scores associated with survival?



# Acknowledgment

This paper is a contribution from the National Cancer Intelligence Network ([www.ncin.org.uk](http://www.ncin.org.uk)) and is based on the information collected and quality assured by the regional cancer registries in England ([www.ukacr.org](http://www.ukacr.org)).

