Evaluating the UK Breast Screening Programme

Study design and practicalities

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Background

- UK breast screening programme started in 1987
- Decrease in breast cancer mortality rates since 1990
- Debate over relative contribution of screening and treatment changes
- Requirement to evaluate effectiveness

Difficulties of evaluating population screening programmes

- Lack of control group in most programmes
- Dilution
- Self-selection bias
- Confounding
- Small size of effect

UK evaluation study aims

- Primary

  Estimate effectiveness of the NHS breast screening programme in reducing breast cancer mortality

- Secondary

  Estimate effect of programme on death from all causes and all cancers

  Estimate effect of screening policy changes on effectiveness of the programme

Study design

- Cohort study

  Retrospective and prospective

- Exposure

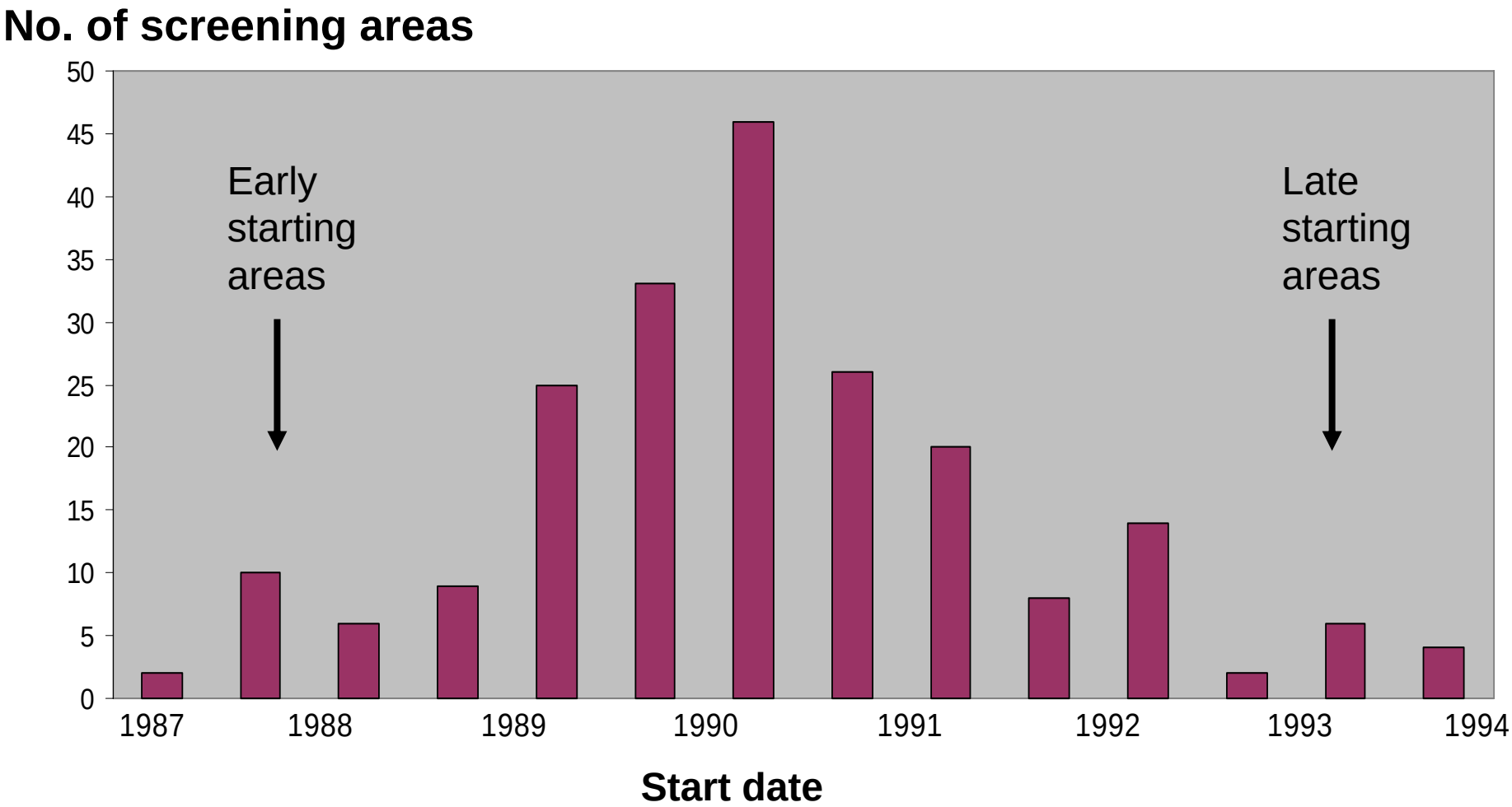
  Screening data from national call/recall system

- Outcome

  Death registrations from UK Office for National Statistics
  Predicted breast cancer mortality

Control group

Staggered start to UK programme allows identification of contemporary comparison group



Dilution, bias, confounding & size of effect

- Dilution
  - Individual-level data
- Self-selection bias
  - Analyse by intention to treat
- Confounding
  - Socio-economic status
  - Treatment data
- Size of effect
  - Powered for 15% mortality difference after 7 years

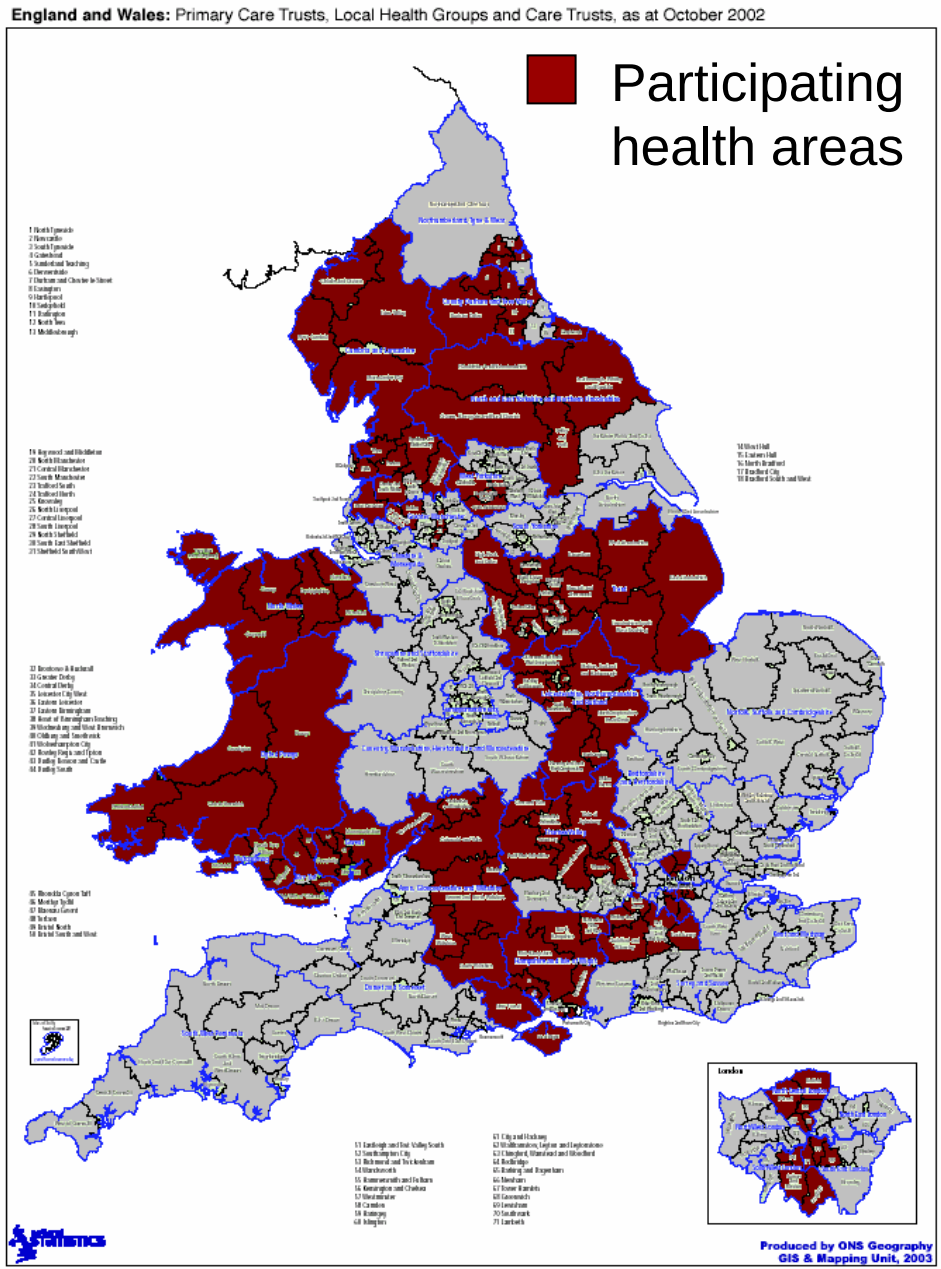
Study area

- Choice of area:
  Feasibility of data collection
  Screening start date

- 38% of screening population of England & Wales (33% of UK)

- Representative of UK

- Cohort size: 4M



Health area re-organisation and data protection

- 2002: major re-organisation of health areas in England and Wales

- Climate of increased data protection

18 months to obtain permission to collect data

Obtaining individual mortality data

- Standard methods are impractical
  - Cost
  - Time
- Exploration of alternative data sources and linkage methods

Progress

- Collection of cohort
  - 2.7M women of eligible screening age up to 1995
- Collection of exposure data for these women
  - 7.3M screening episodes up to end 2004
- Method for collection of mortality data developed and piloted

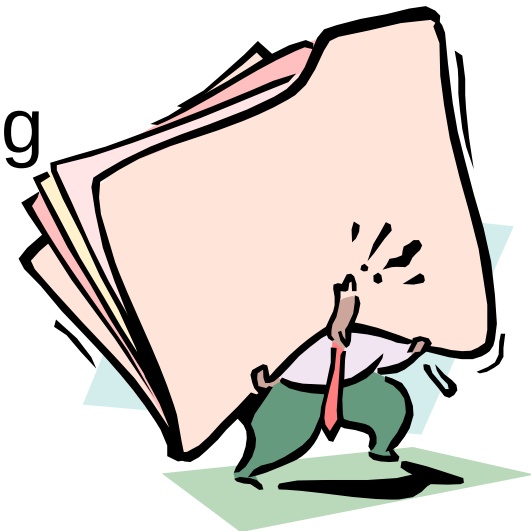
Next stages

- Collection of mortality data
- Data validation
- Preliminary analyses

    Effect of screening programme 1995-2001

Concluding remarks

- Evaluation of population screening is technically and practically challenging



- Major hurdles can be overcome