

International differences in breast cancer survival and 'cure': impact of social deprivation

A comparative study of England and Australia

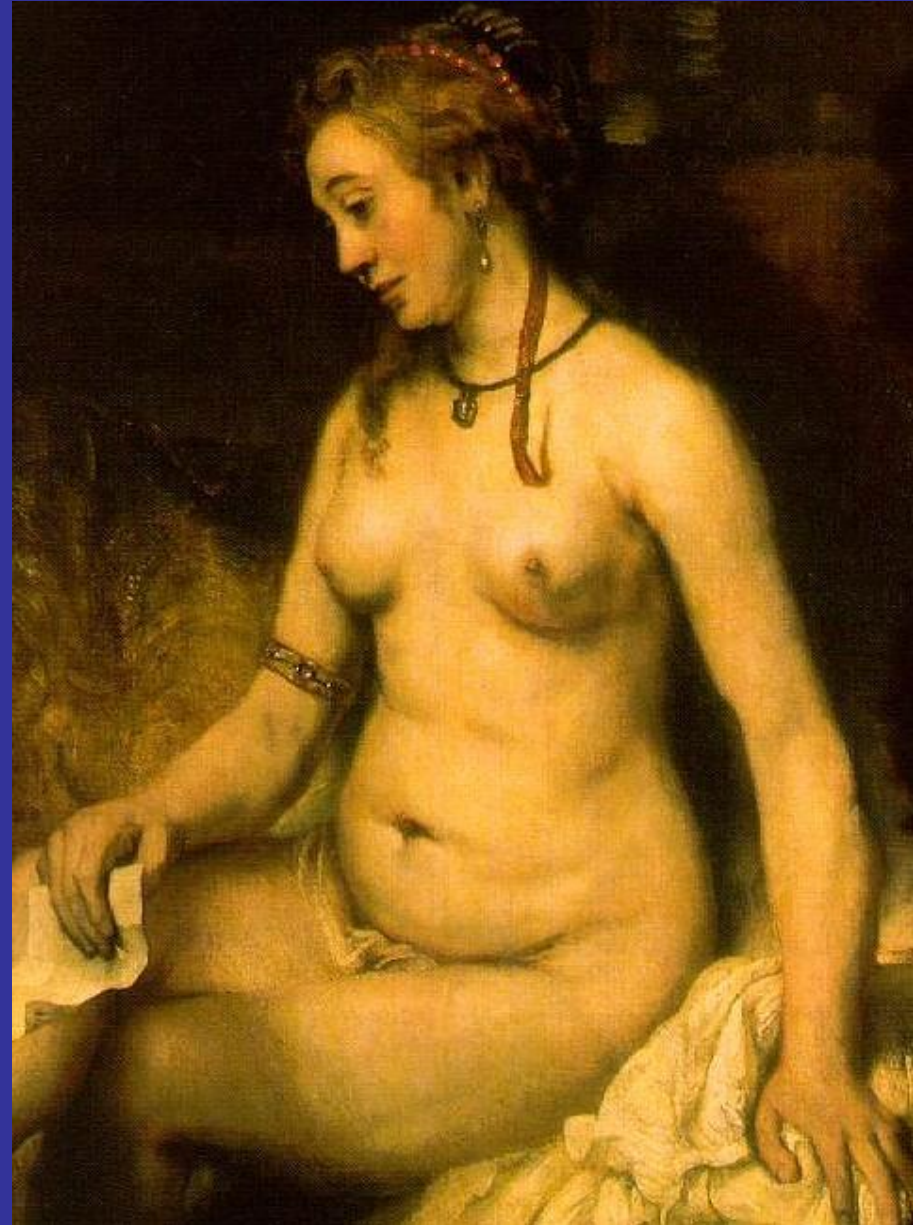
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Breast cancer - overview

- Worldwide, the most common malignancy in women
- 20% of all cancers
- 36,000 cases diagnosed in England and Wales during year 2000
- 10% of the female population of Leeds



Breast cancer overview

↑
INCIDENCE

MORTALITY ↓

- Increasing age at first birth and nulliparity
- Increasing obesity
- Screening

- Improvement in hormonal treatment and surgery
- Screening

SURVIVAL ↑

Measuring cancer survival

- Preferable measure for patient and clinician
- Separate studies are difficult to compare:
 - ▶ Reliant on accurate recording of dates (birth, diagnosis, death)
 - ▶ Different statistical methods
 - ▶ Inclusion (and exclusion) criteria

Comparative studies

- Survival highest in Sweden, Finland, France and Switzerland
- Survival lowest in UK and Eastern Europe
- Variation by age where survival is low



European comparisons & the EUROCARE project

The image features a world map with several regions highlighted in different colors. North America is colored red, South America is purple, Africa is brown, and Australia is dark blue. Europe is divided into several colored sections: a light blue section in the north (Scandinavia), a teal section in the west (UK and France), a green section in the east (Eastern Europe), and a dark green section in the south (Mediterranean). A yellow box on the right contains the text 'European comparisons & the EUROCARE project', with four yellow arrows pointing from the box to the four European regions mentioned in the text.

Comparative studies

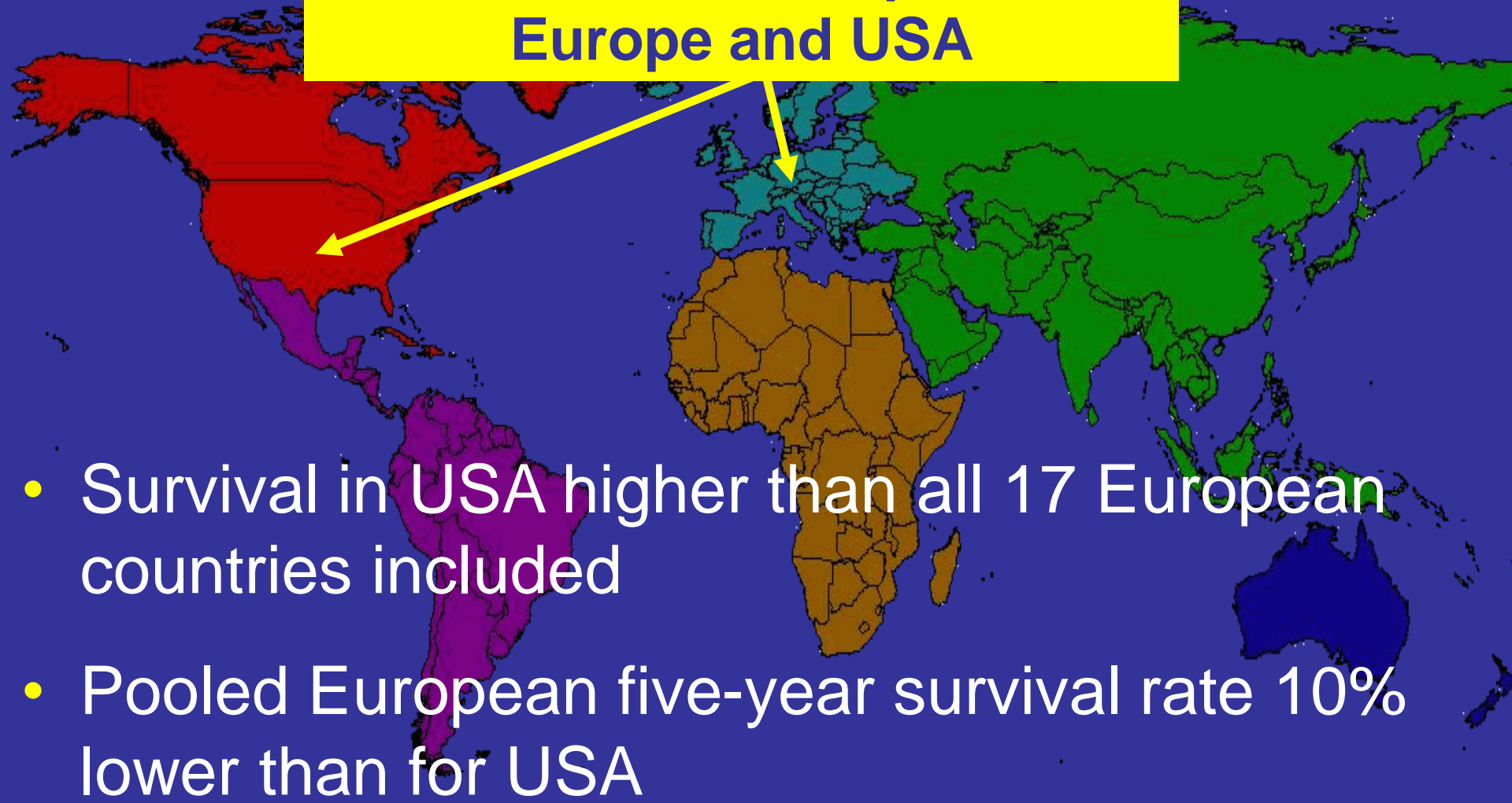
Canada and
USA (SEER)



- Focus on the comparison between deprivation groups
- Deprived in USA had lower survival than the deprived in Canada
- Conflicting findings:
USA > Canada
USA < Canada

Comparative studies

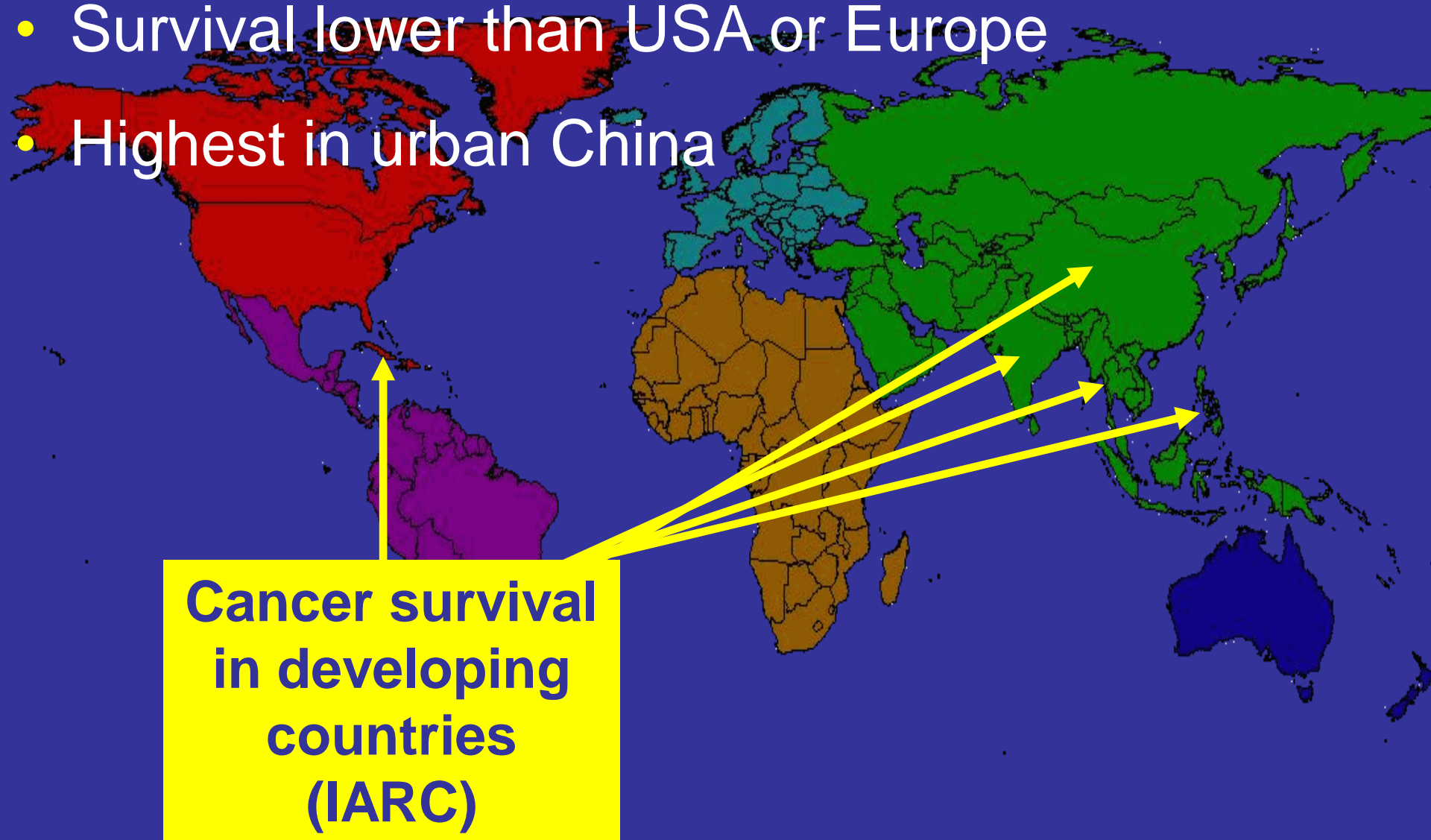
Trans-Atlantic comparisons Europe and USA



- Survival in USA higher than all 17 European countries included
- Pooled European five-year survival rate 10% lower than for USA

Comparative studies

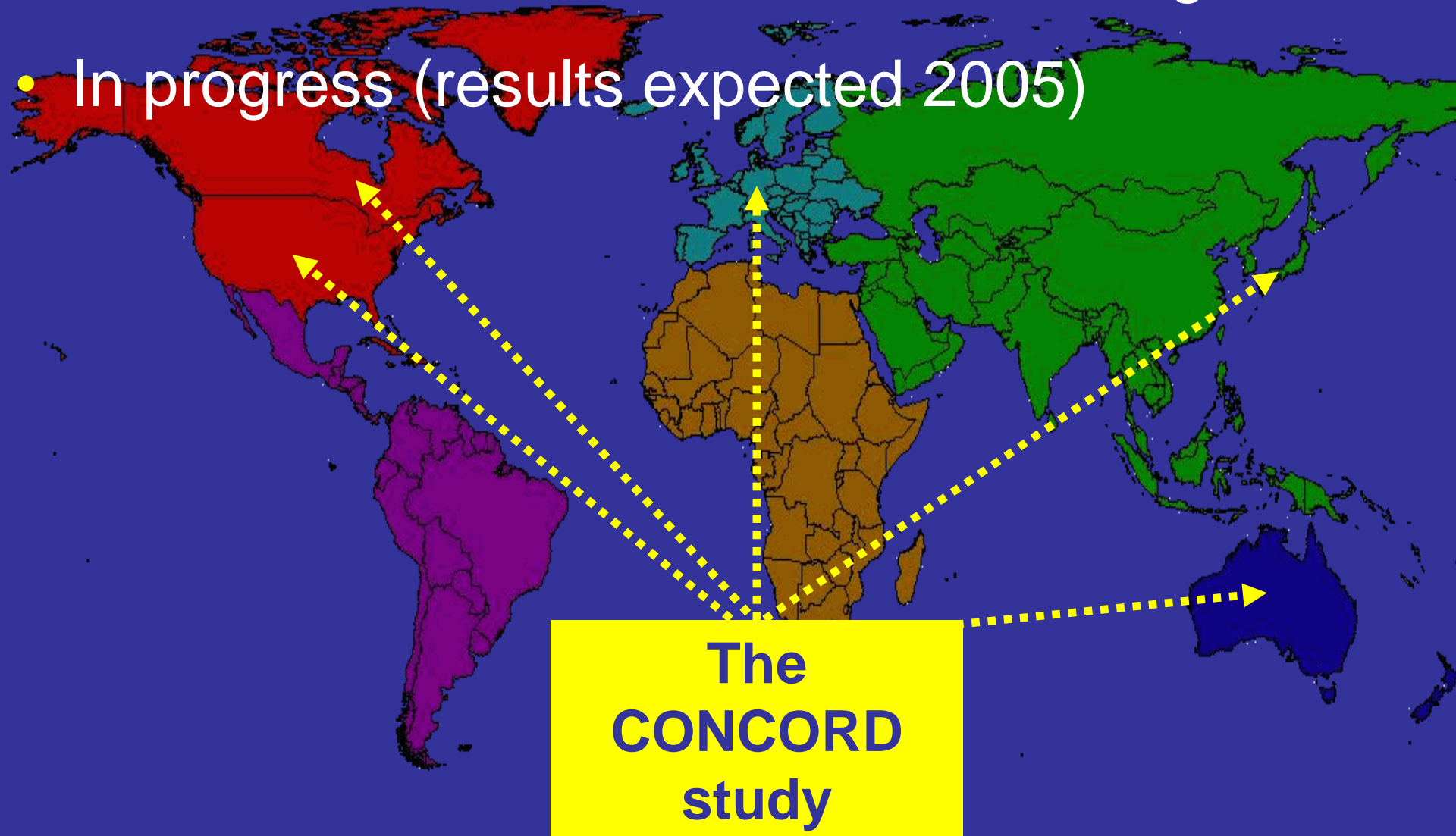
- Survival lower than USA or Europe
- Highest in urban China



**Cancer survival
in developing
countries
(IARC)**

Comparative studies

- International collaboration of cancer registries
- In progress (results expected 2005)



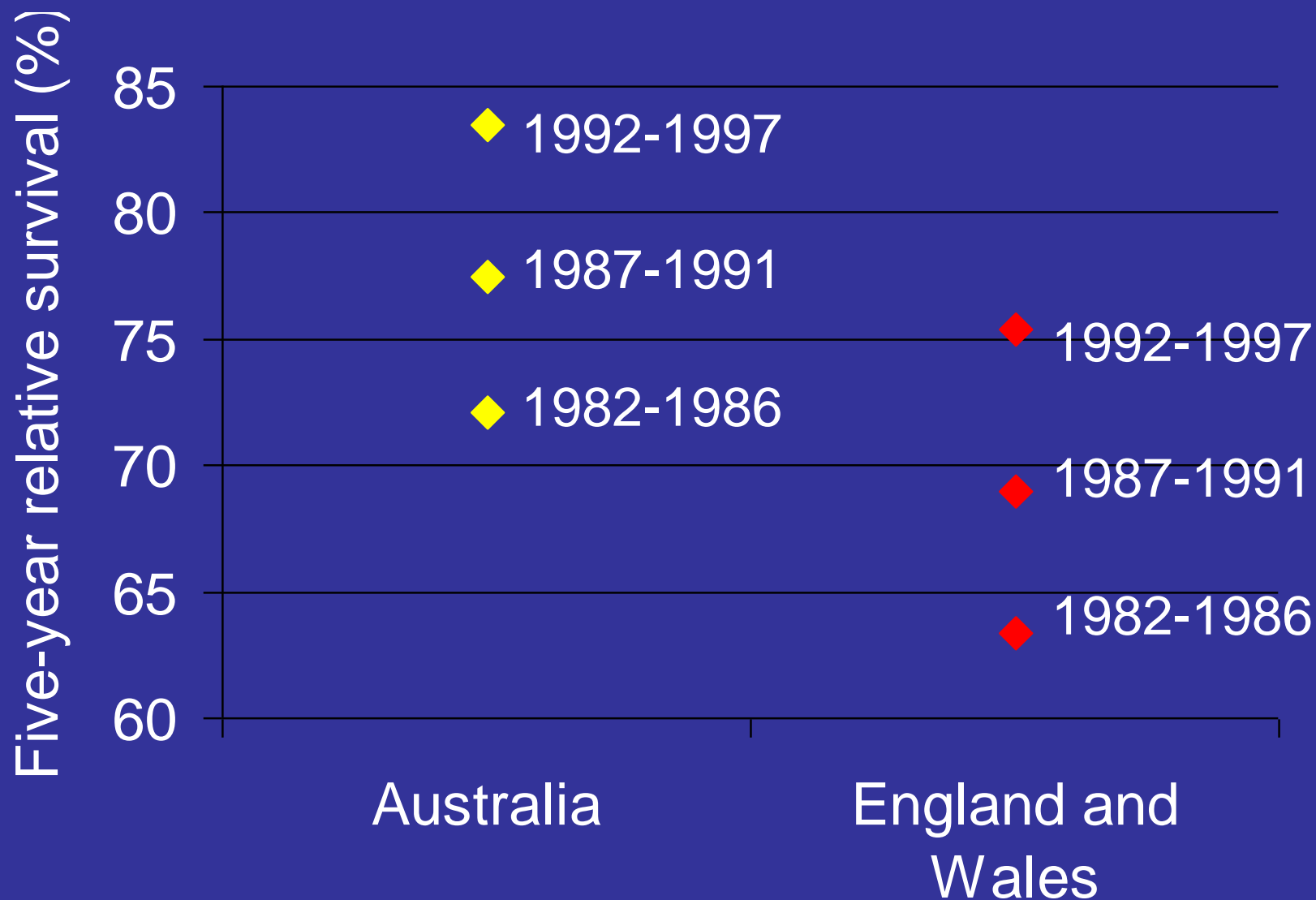
Implications from literature review

- Comparable data
- Comparable statistical methods
- National and sub-national analyses
- Adequate adjustment for age at diagnosis
- Multi-variate analyses
- Inclusion of diagnostic delay and treatment
- Adjustment for deprivation

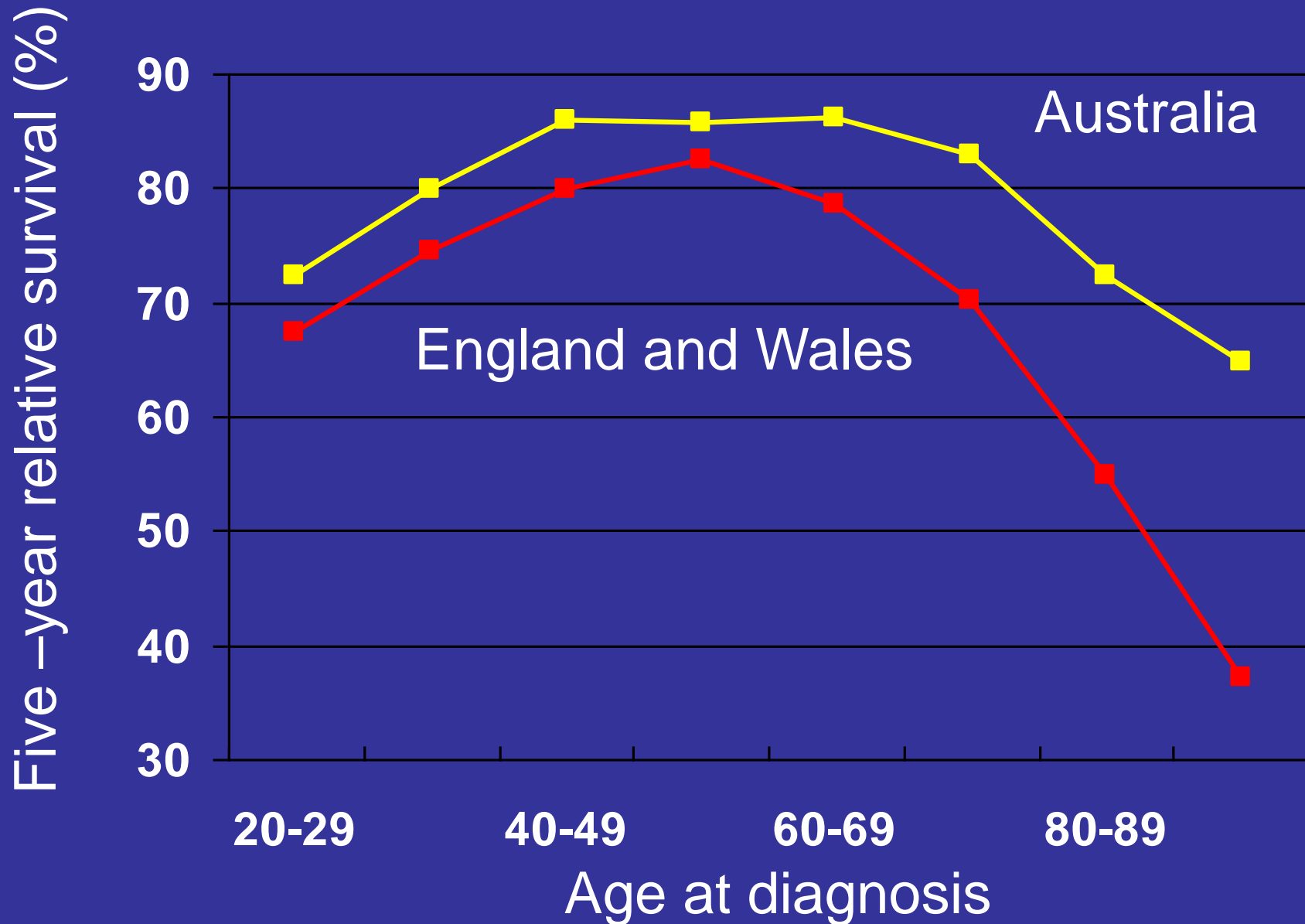
Comparison of breast cancer survival in Australia and England

- Extend comparative studies to Australasia
- Important similarities
 - ▶ Nationalised health care
 - ▶ Caucasian population
 - ▶ National cancer registration
- Important differences
 - ▶ Survival rates
 - ▶ Deprivation gap in survival

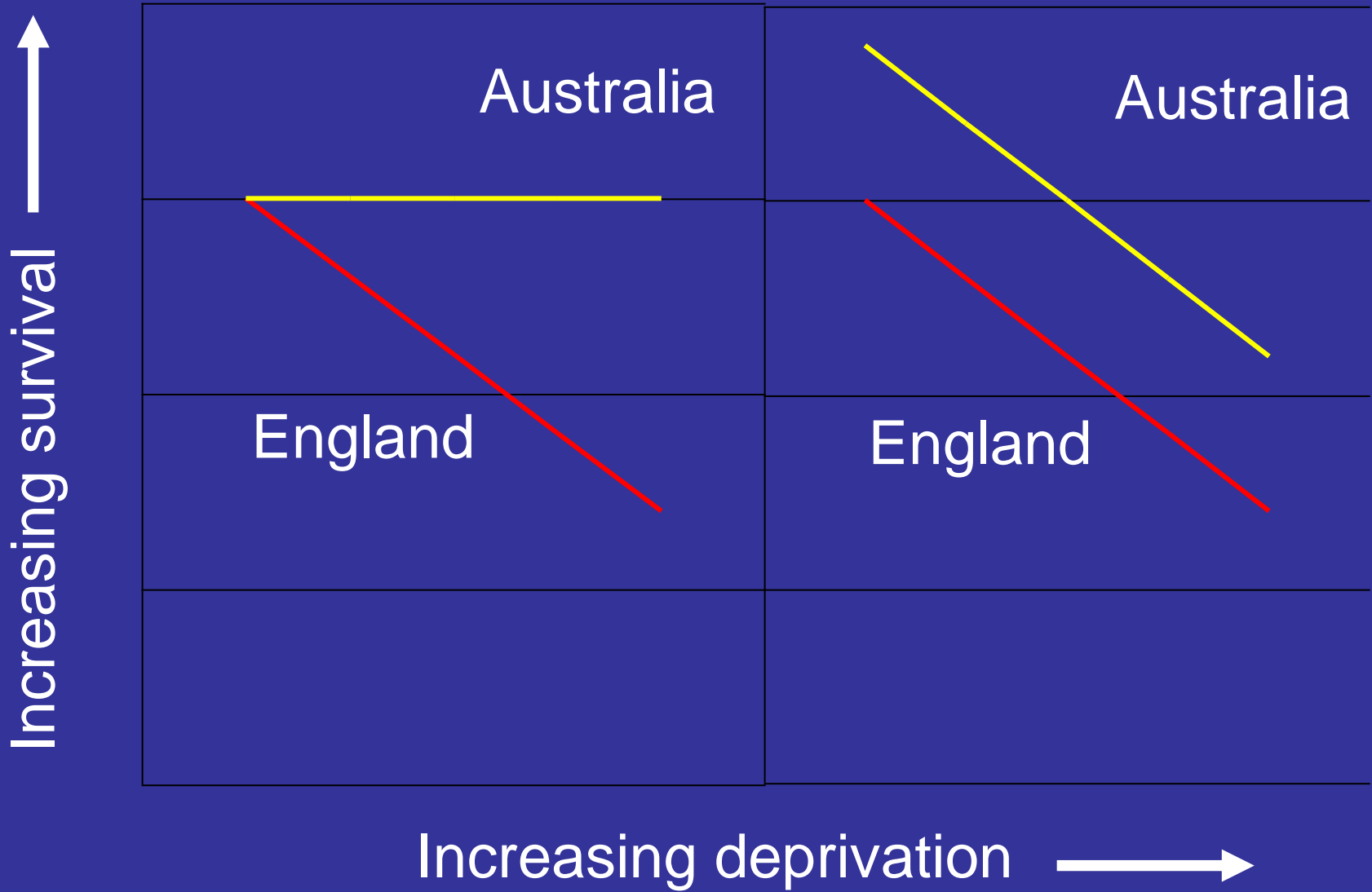
Survival contrasts



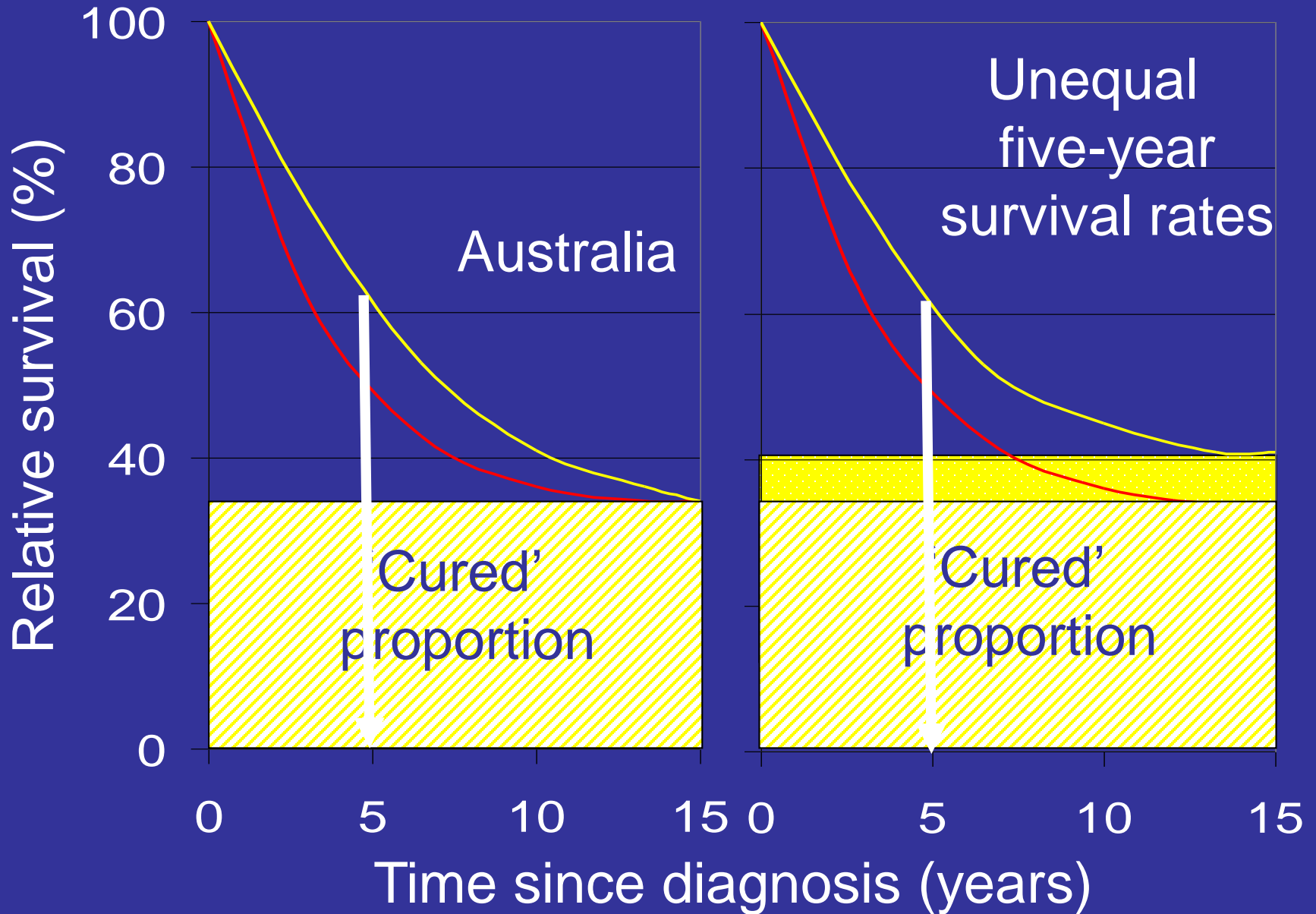
Survival contrasts



Survival contrasts



Survival contrasts



Aims

- Describe epidemiology of breast cancer
- Quantify the Australian advantage
- Compare the proportion 'cured'
- Investigate reasons for differences
 - ▶ Between Australia and England
 - ▶ Within Australia and England
- Investigate the role of within-country variability in international differences

Planned analysis

- National data ('big picture') and registry data (detailed analyses)
- Incidence, relative survival and 'cure'
- Several covariates:
 - ▶ deprivation category
 - ▶ age at diagnosis
 - ▶ stage of disease at diagnosis
 - ▶ screening history
 - ▶ time period of diagnosis

West Midlands Cancer Intelligence Unit

New South Wales Central Cancer Registry

- Population 5.3 million (West Midlands)
6.4 million (New South Wales)
- Register c.3000 breast cancer cases per year
- Consistent geographic boundaries 1980-2004
- Screening history available for all women through national screening programme

Data: Breast cancers 1980-2004

Variables required	National Data	Registry Data
Patient and tumour identifiers	X	X
Dates of birth, diagnosis and death or censoring	X	X
Data quality indicators	X	X
Region/ State at diagnosis	X	
Area-based deprivation category		X
Tumour characteristics		X
Screening history		X

Measuring deprivation

- No individual measure in cancer registry data
- Area-based scores (census data)
- Several indices available
 - ▶ Carstairs, Townsend, IMD (England)
 - ▶ Townsend, SEIFA (Australia)
- Several possible geographies
 - ▶ English EDs ('91), OAs, Super-OAs ('01), wards
 - ▶ Australian Collection districts (CDs)

Methods

- Relative survival analysis
 - ▶ Adjusts for background mortality
 - ▶ Permits valid comparisons between different groups of cancer patients
 - ▶ Country- and deprivation-specific life tables
- Age standardisation of survival
- Cure analysis
 - ▶ Testing of currently available models
 - ▶ Development of a more robust cure model

Research conducted in collaboration with the
West Midlands Cancer Intelligence Unit
and the
New South Wales Central Cancer Registry

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