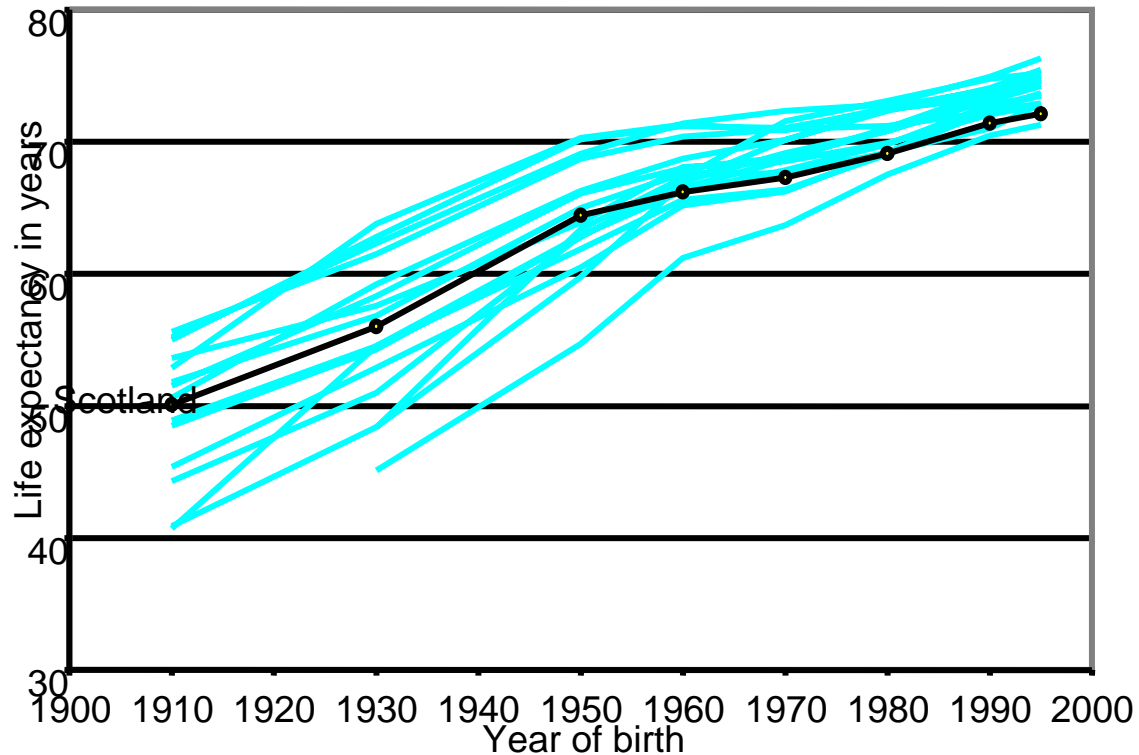
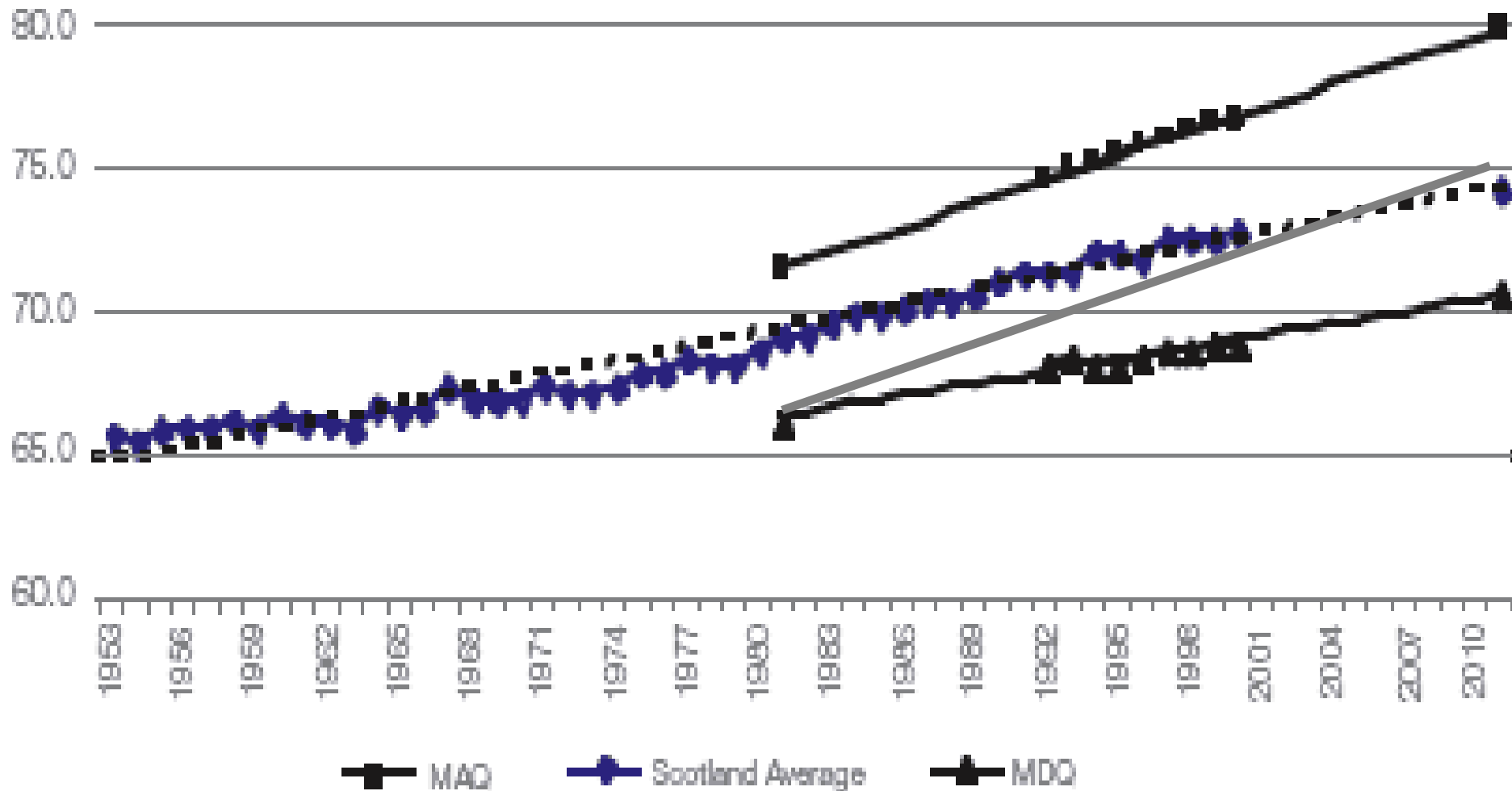


20th century trends in life expectancy in Scotland and 16 other Western European countries

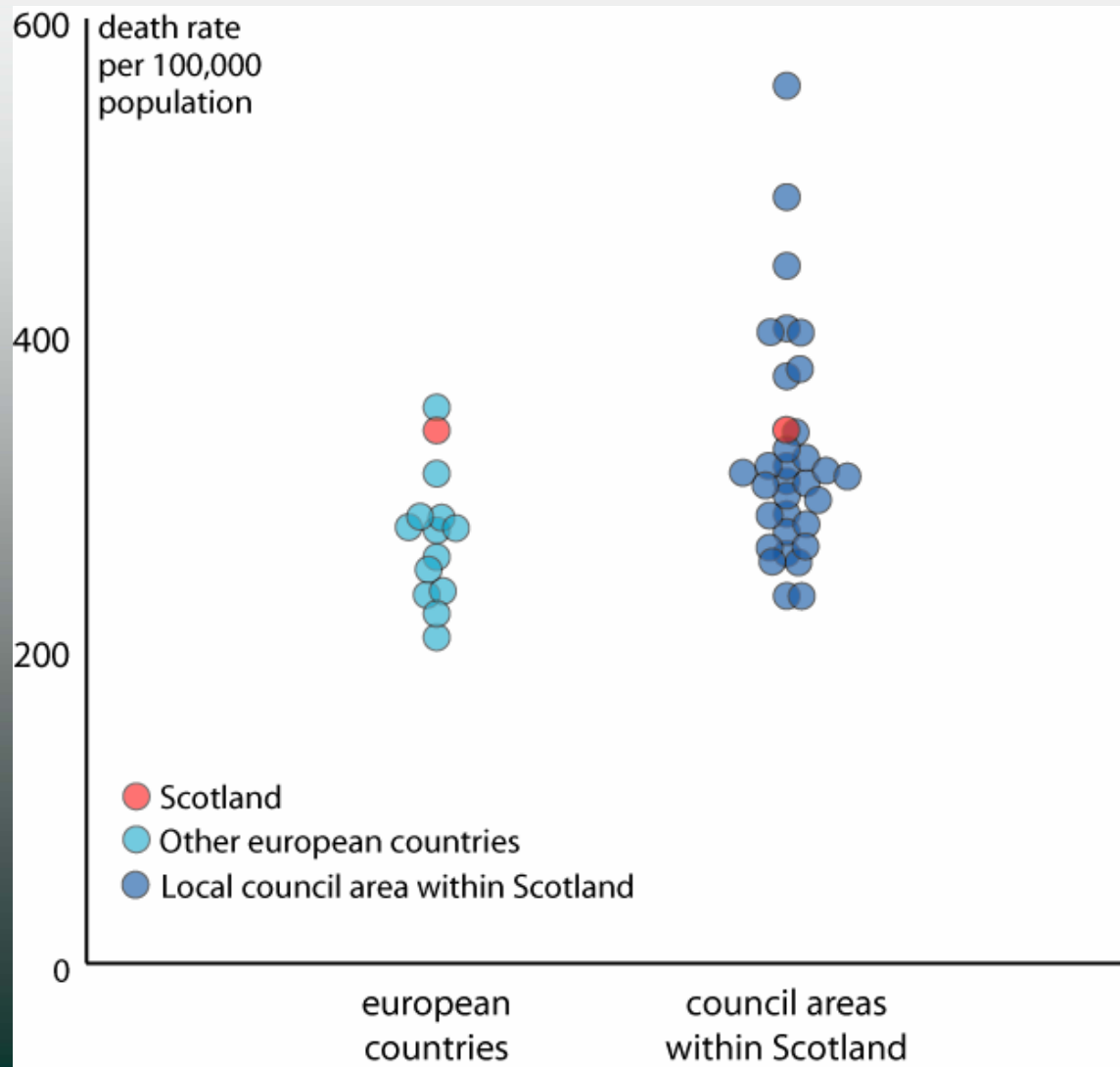
Males



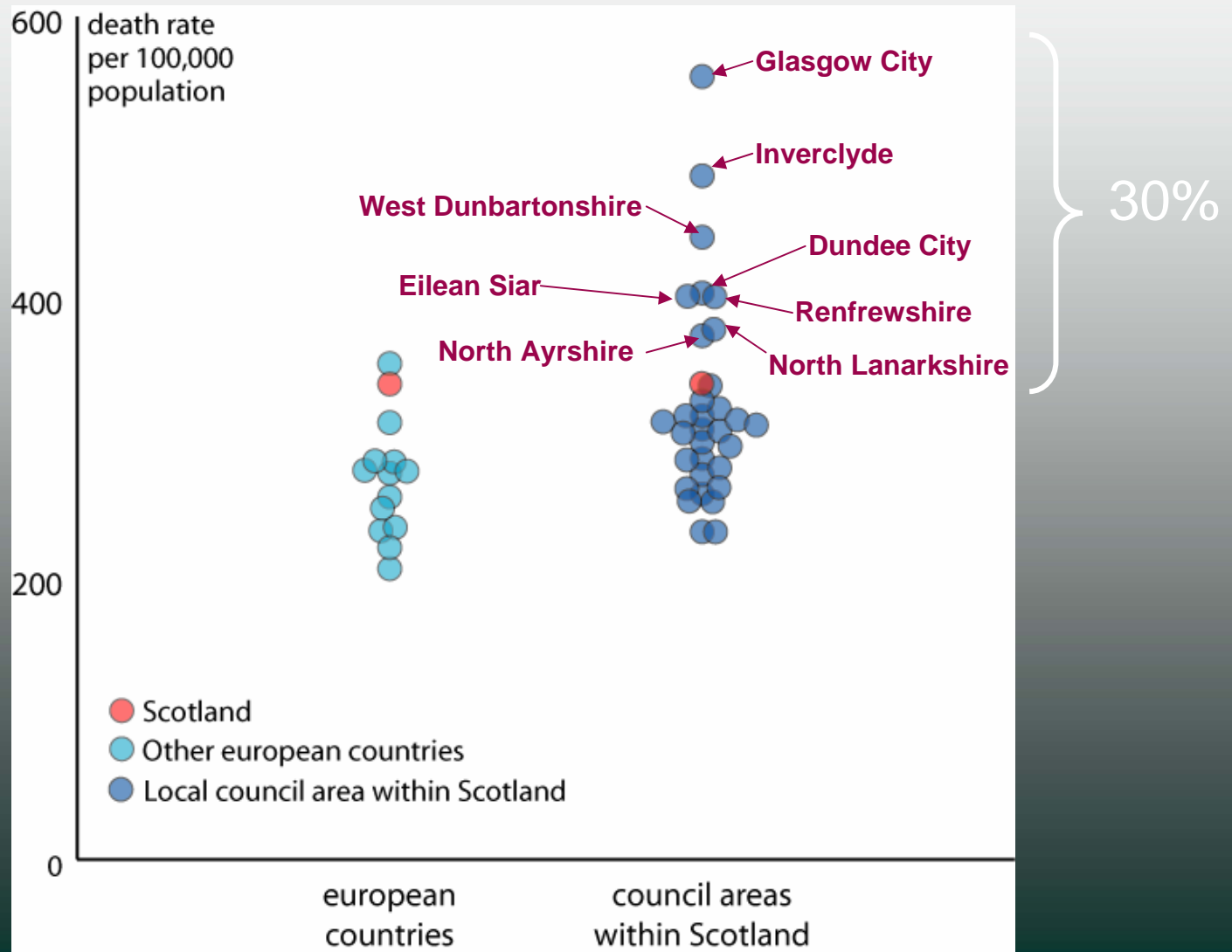
Trends in life expectancy - males



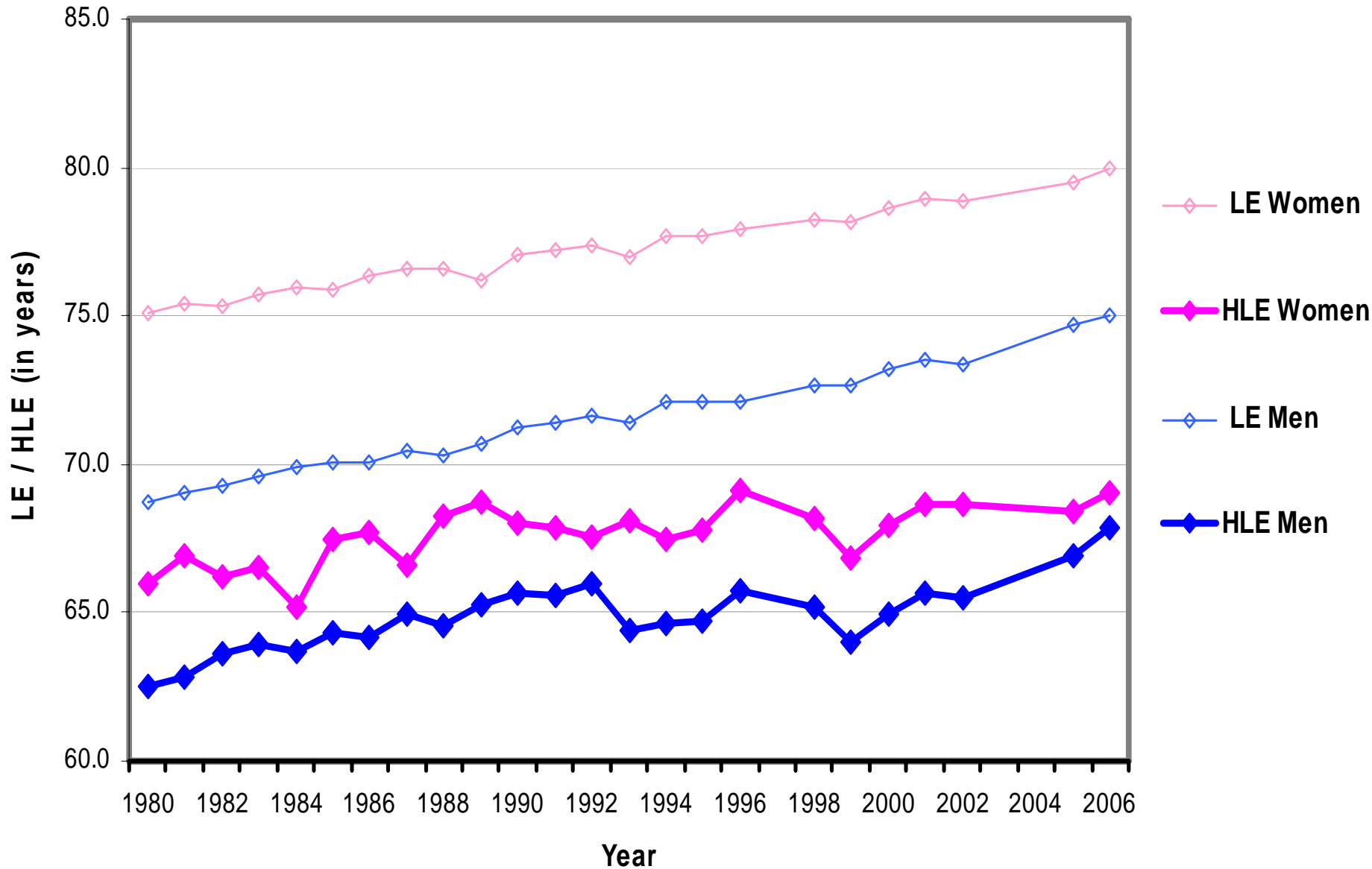
All cause death rates, M 0-64, 2001



All cause death rates, M 0-64, 2001

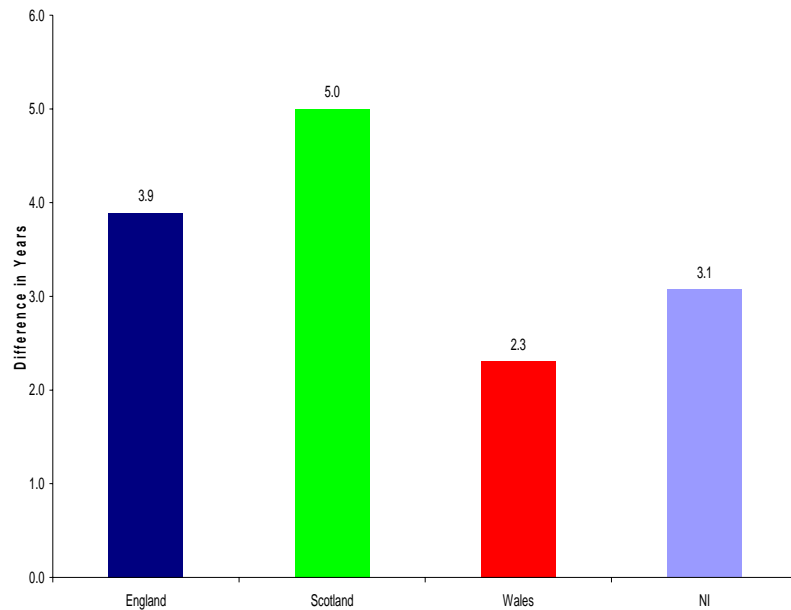


Life Expectancy (LE) and Healthy Life Expectancy (HLE) at Birth, 1980-2006

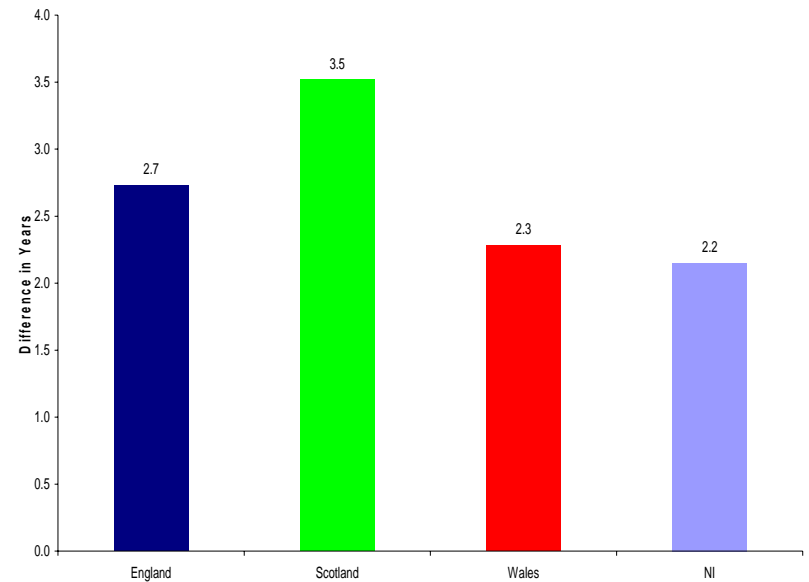


Absolute differences in Life Expectancy By local authority - least and most deprived quintiles

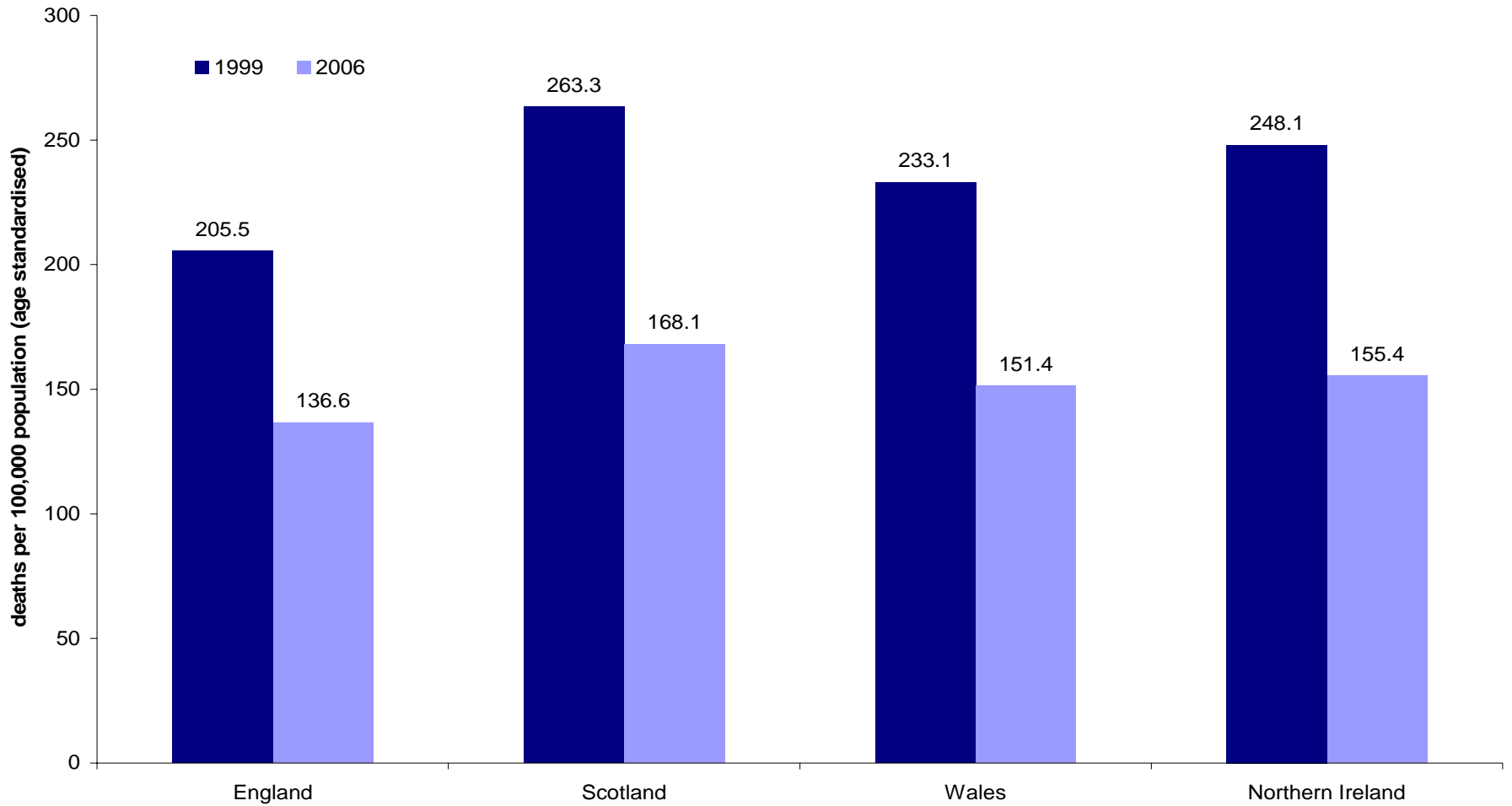
Males



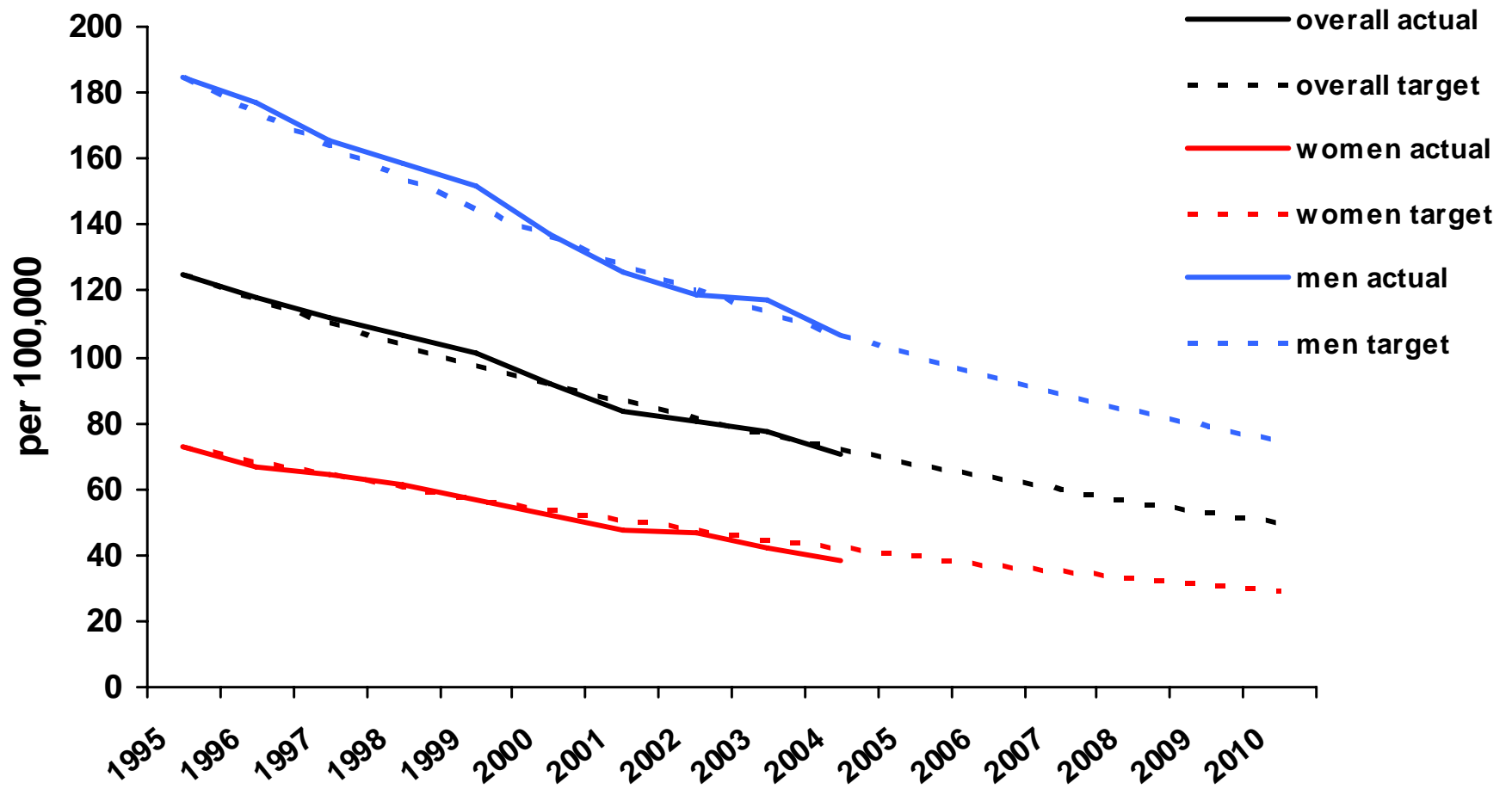
Females



IHD mortality 1999, 2006

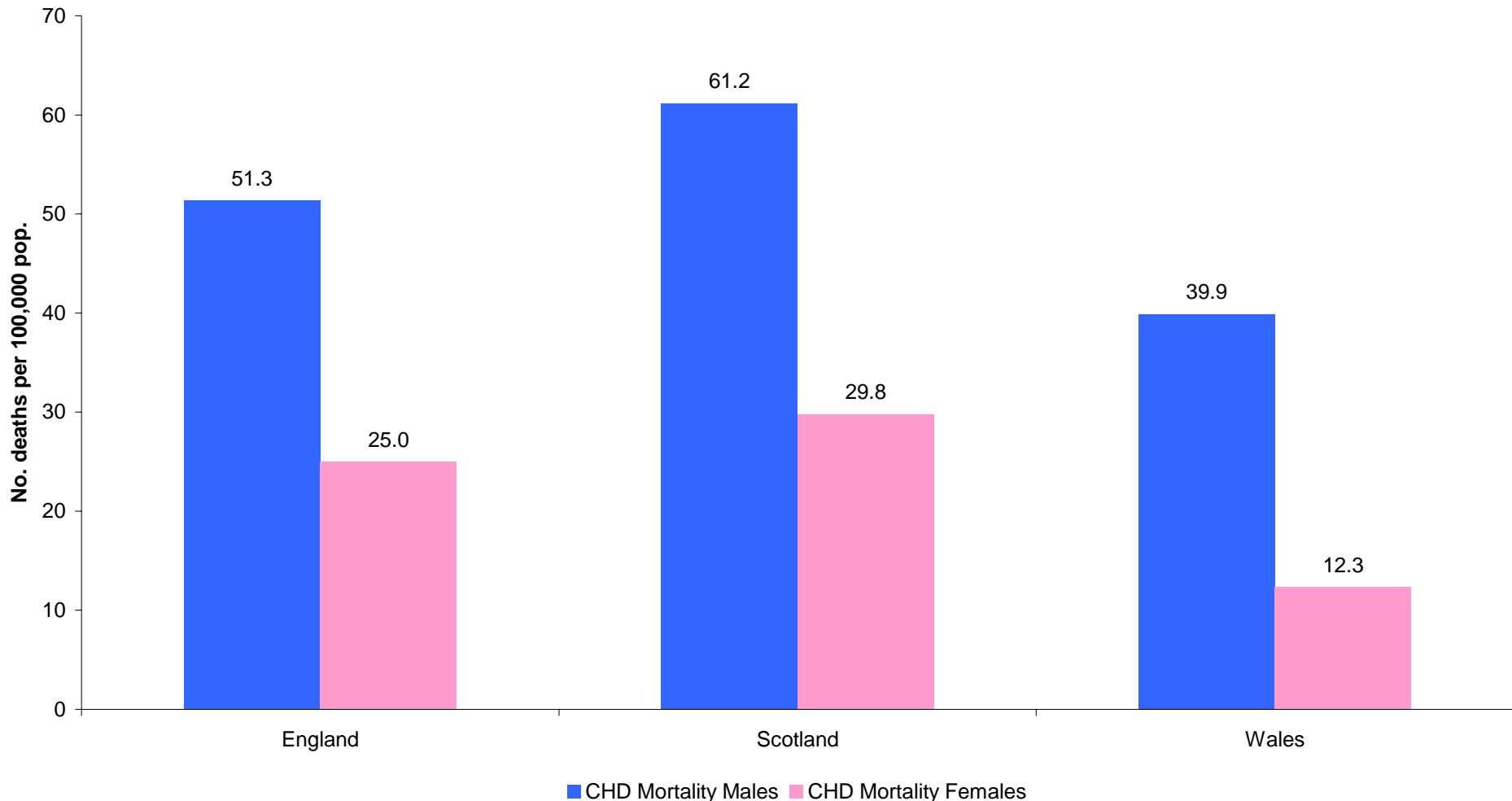


Trends in CHD mortality

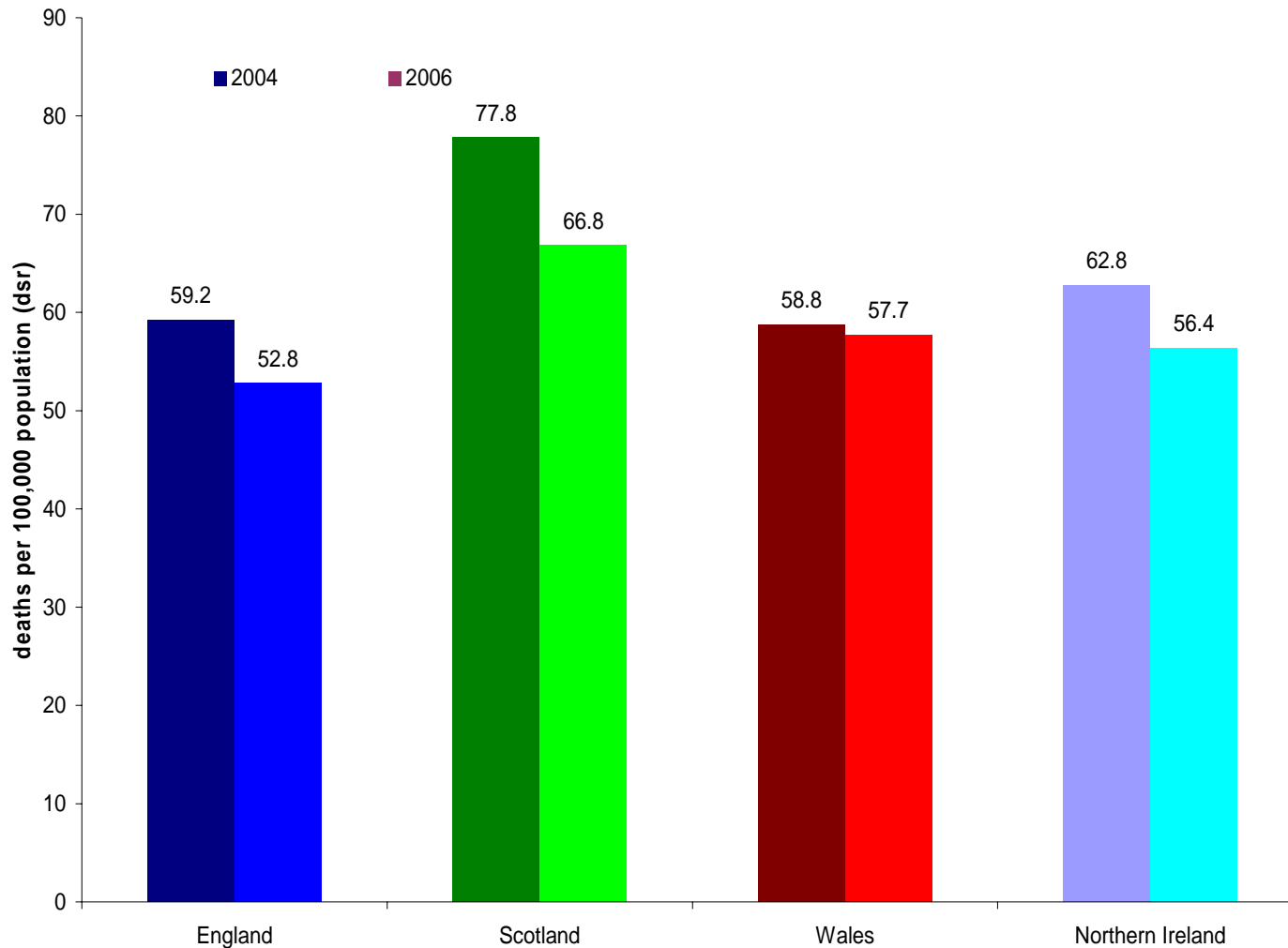


CHD inequalities

Absolute difference in directly standardised mortality rate from CHD between the most deprived quintile of Local Authorities and the least deprived quintile

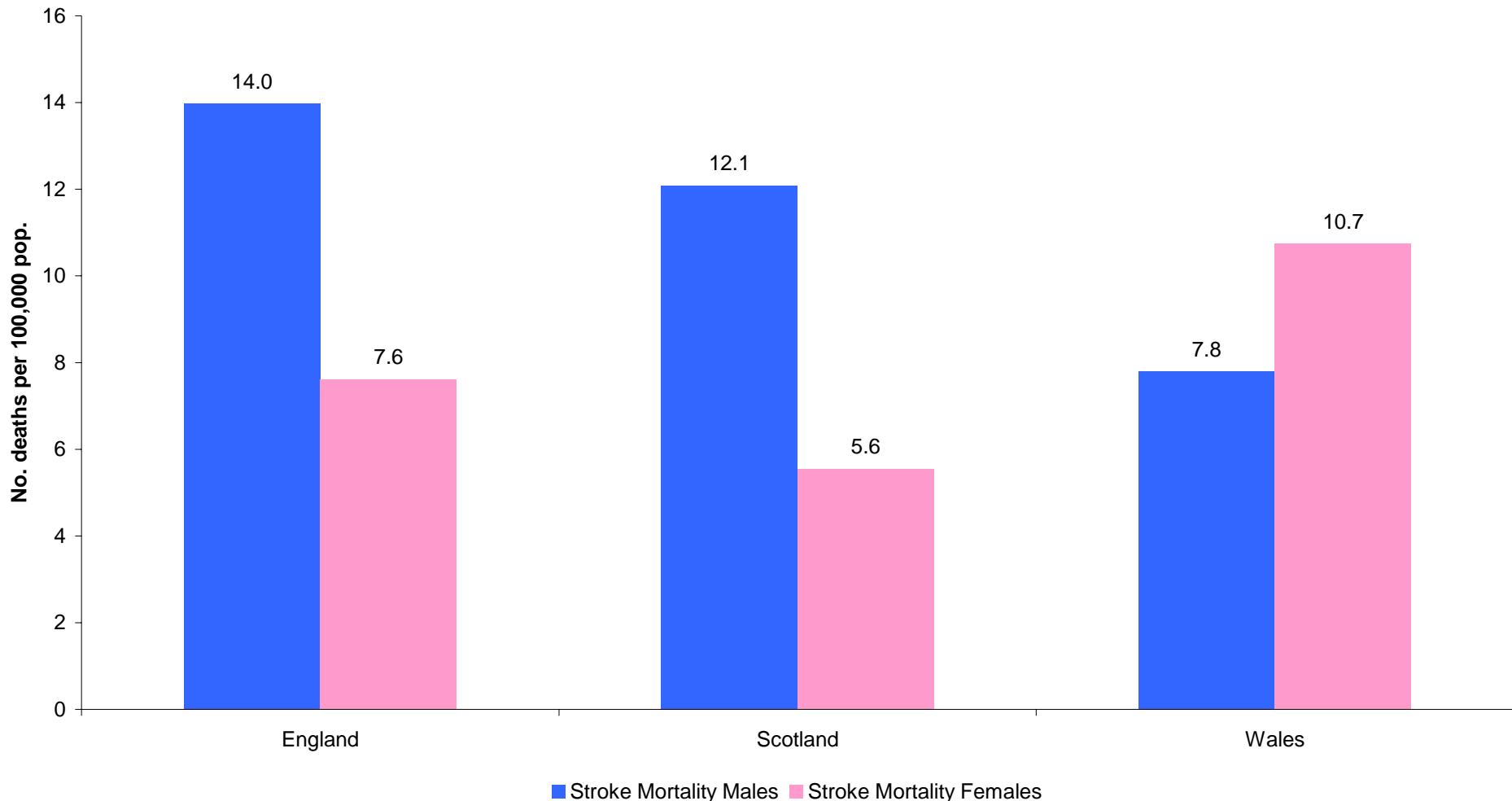


Stroke mortality, 2004, 2006



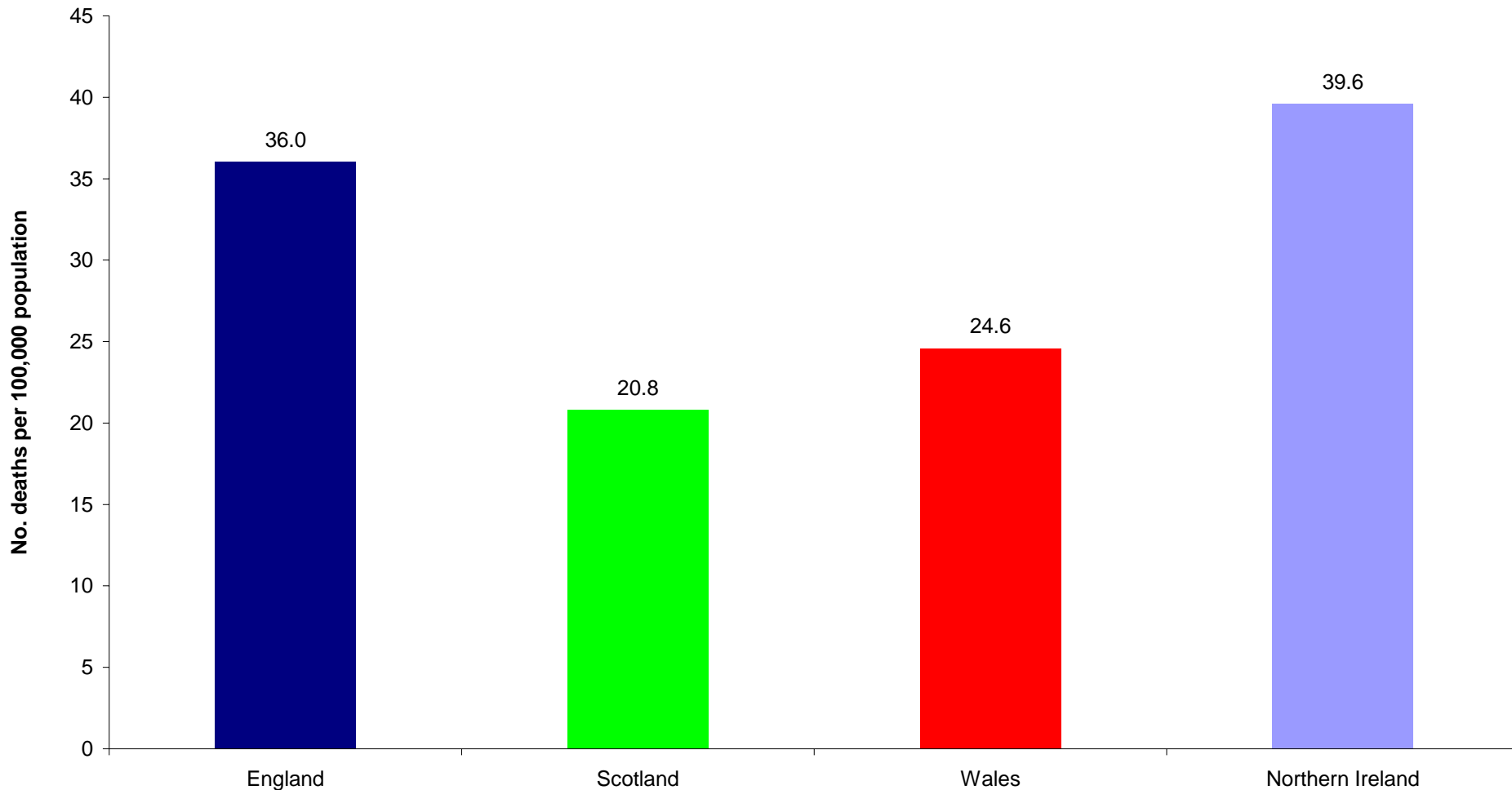
Stroke inequalities

Absolute difference in the directly standardised mortality rate from stroke between the least deprived quintile of local authorities and the most deprived quintile

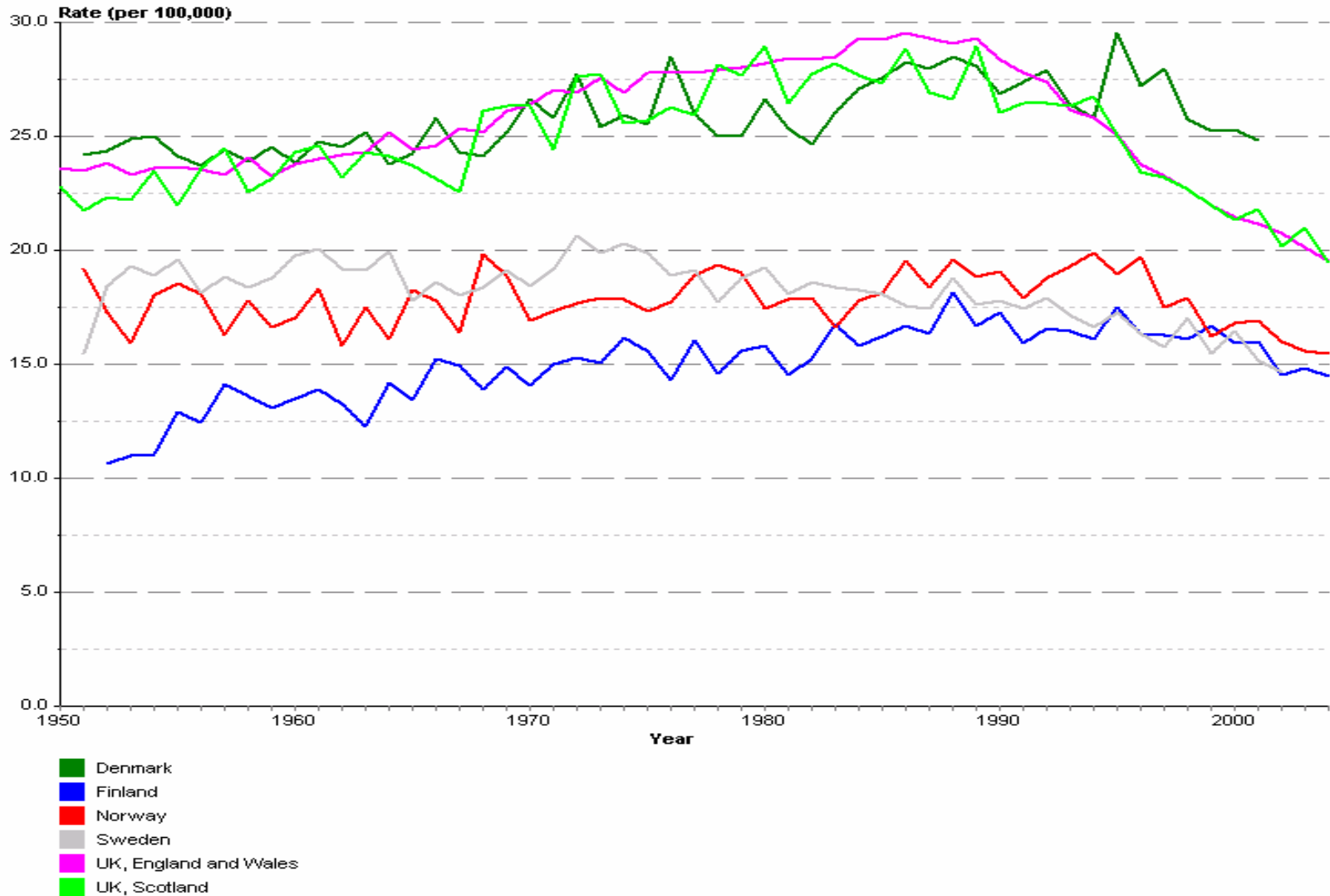


Cancer inequalities

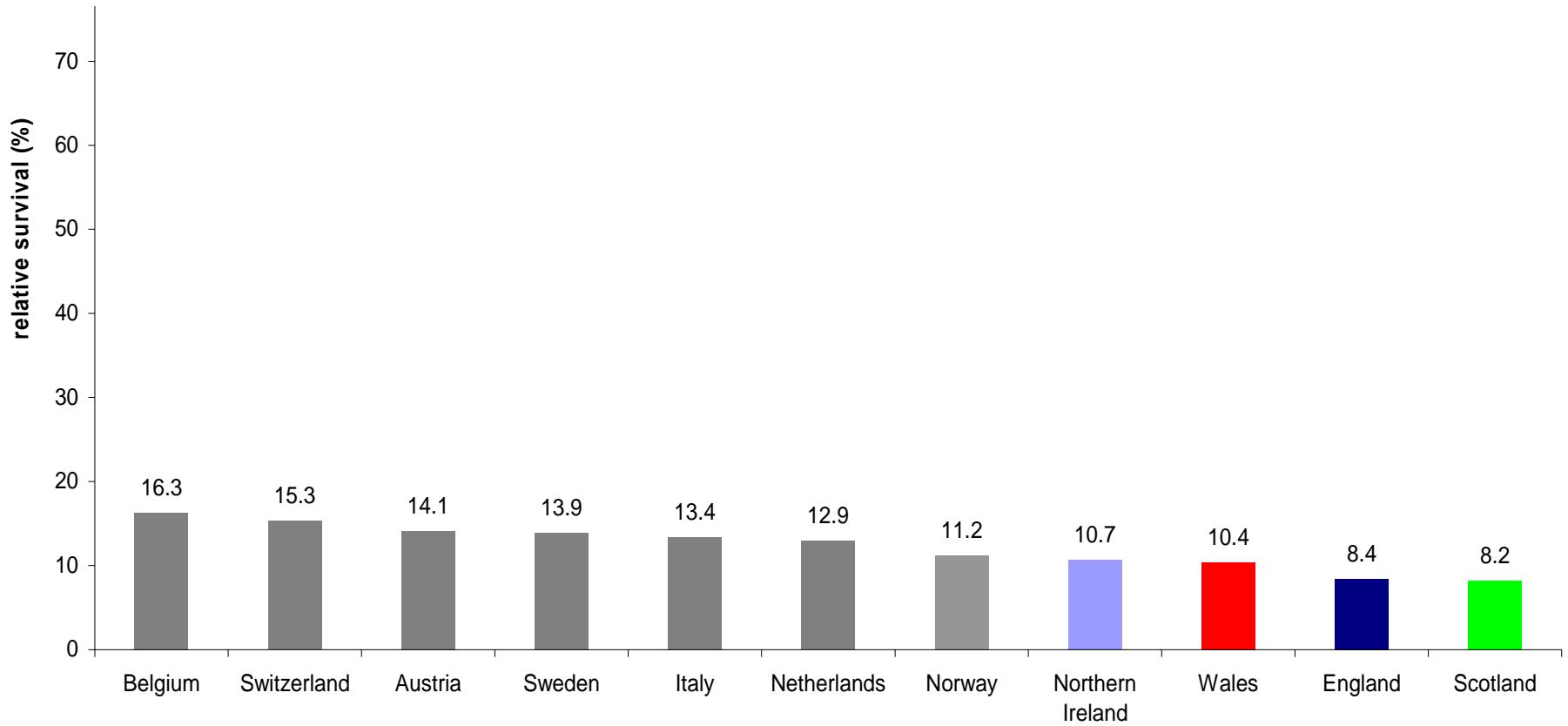
Absolute difference in directly standardised mortality rate per 100,000 population from all cancers between most deprived quintile of Local Authorities and least deprived quintile



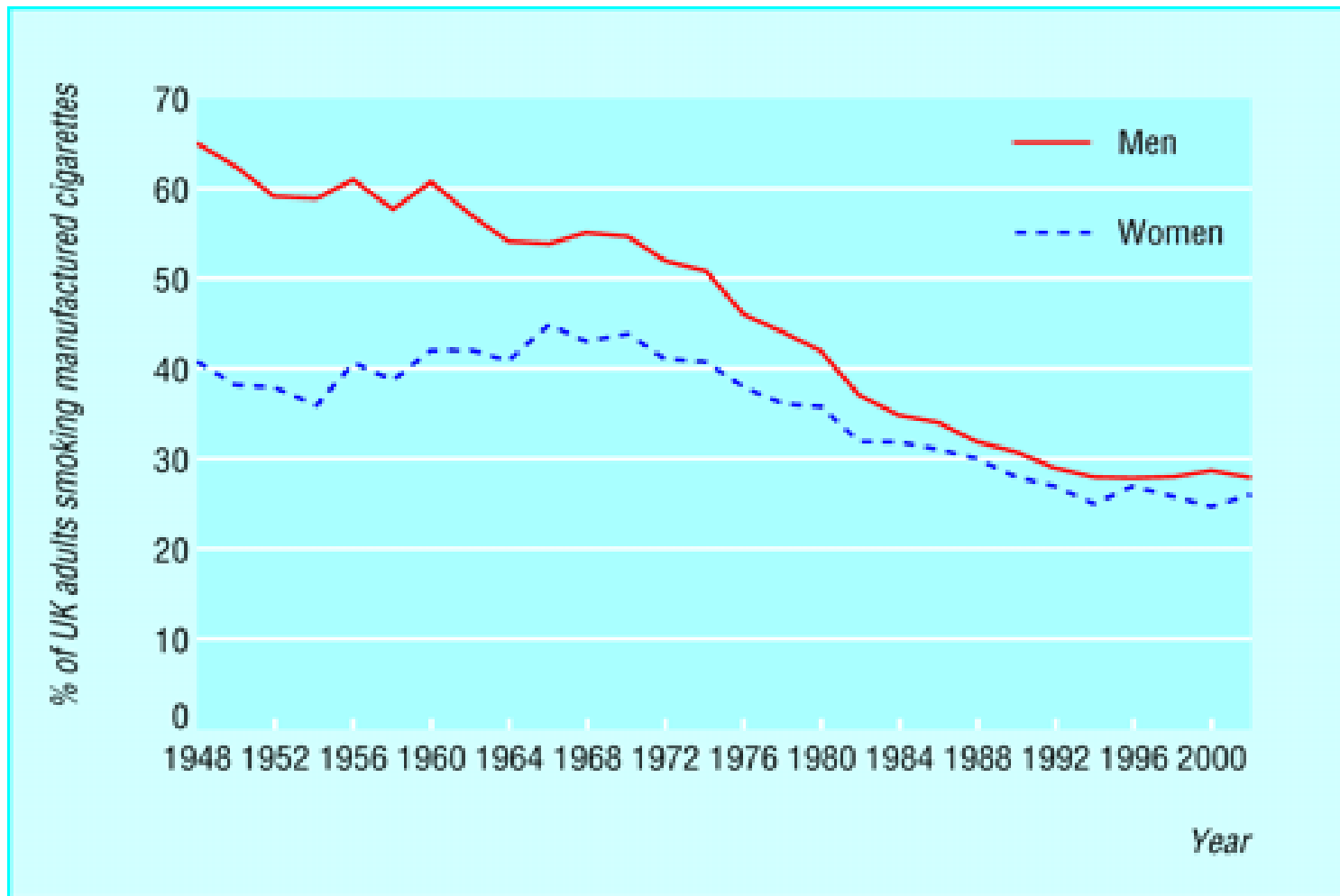
Invasive breast cancer: trends in age-standardised* mortality rates for selected countries, 1950-2004



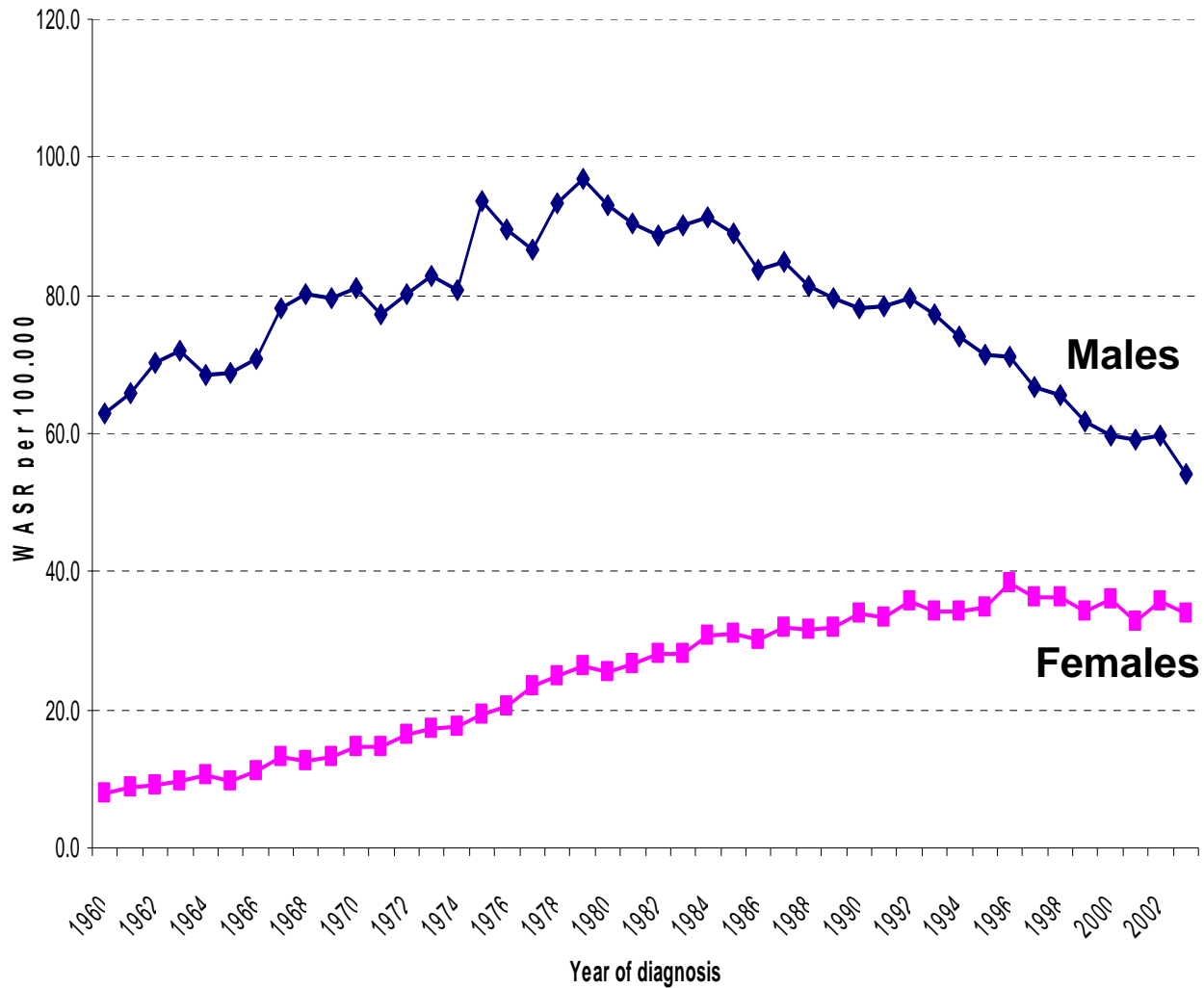
Lung cancer survival



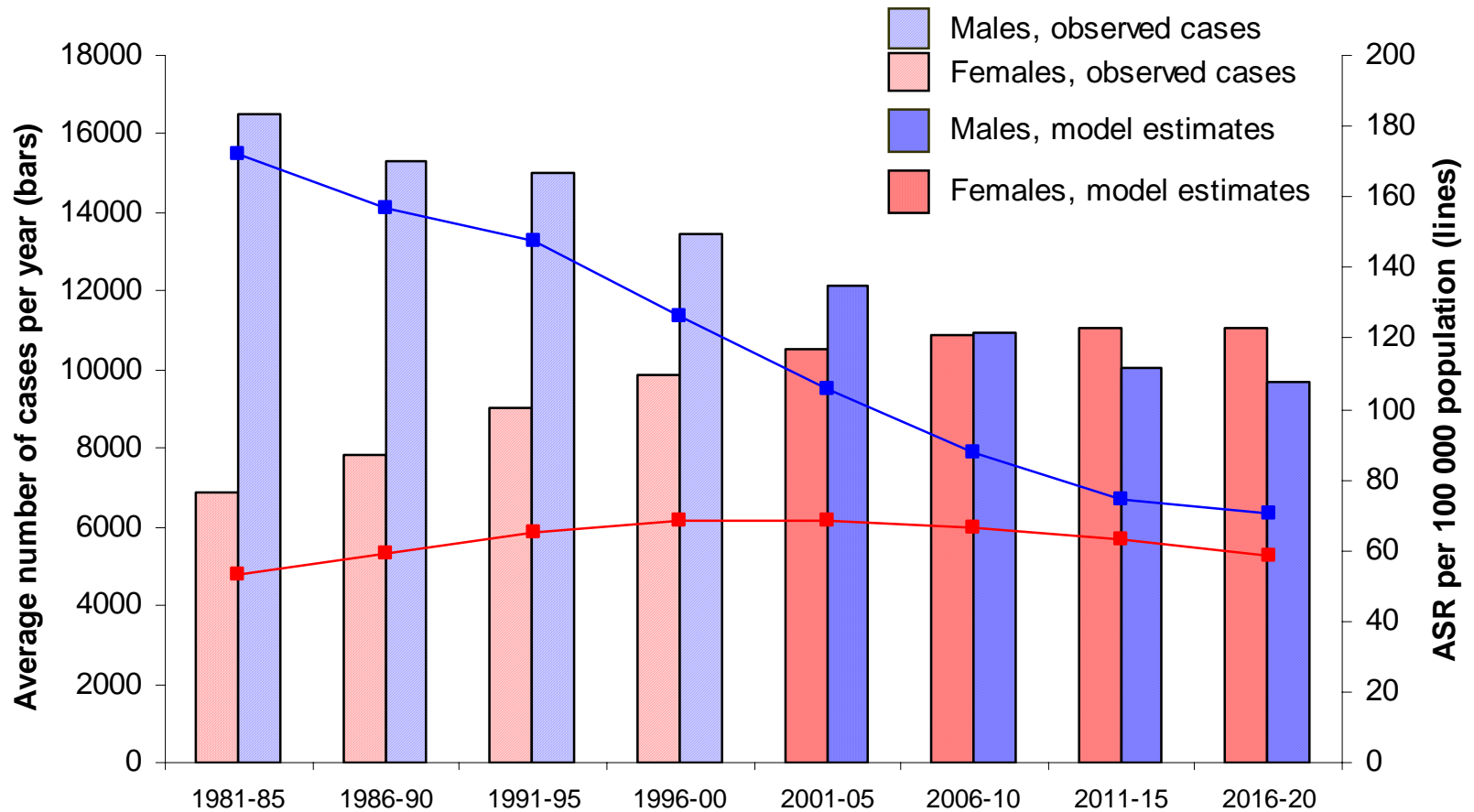
Prevalence of smoking of manufactured cigarettes in Great Britain. Data from Tobacco Advisory Council (1948-70) and General Household Survey (1972-2001)



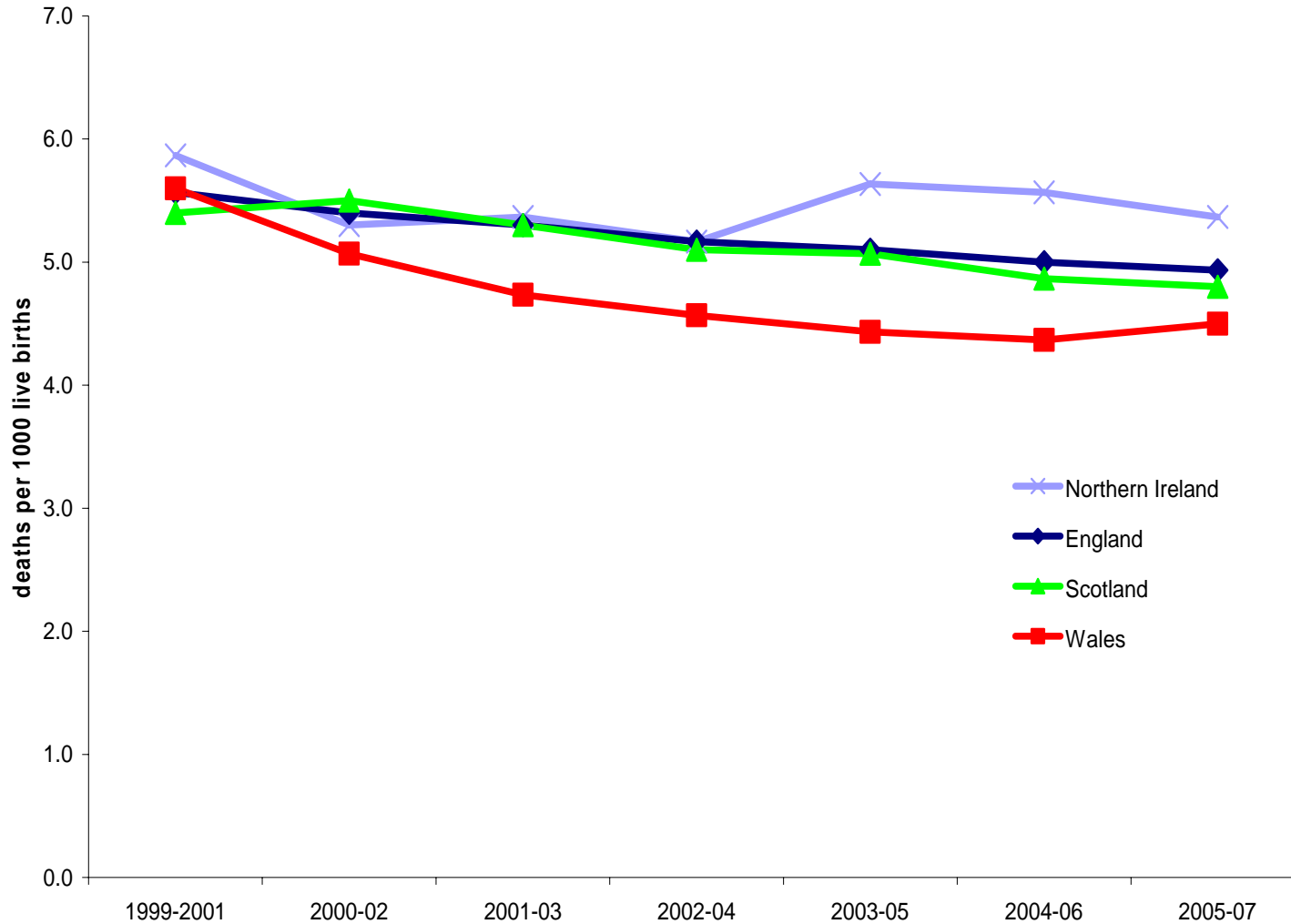
Age-standardised incidence rates of lung cancer by sex, Scotland, 1960-2003



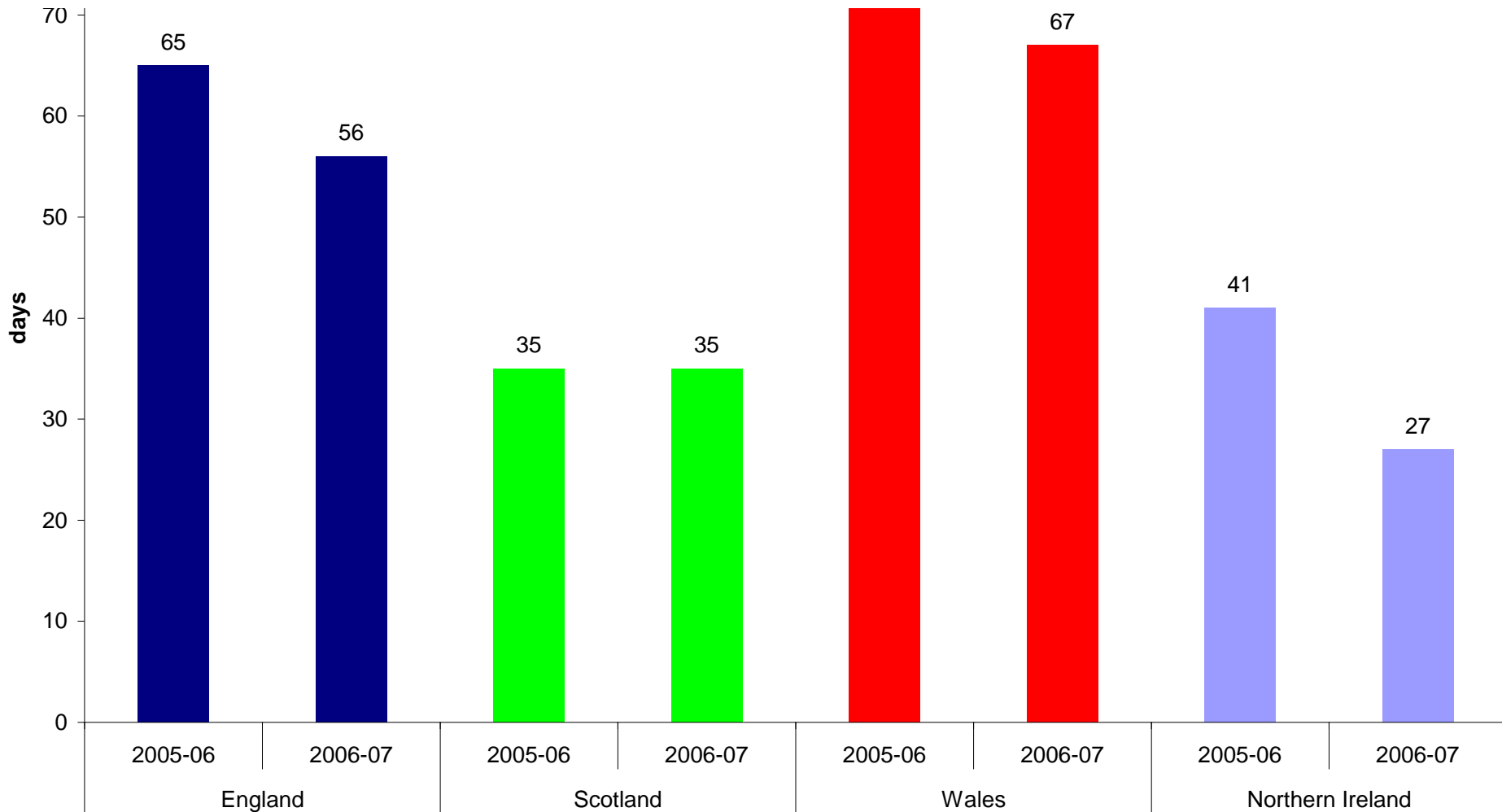
Lung cancer incidence



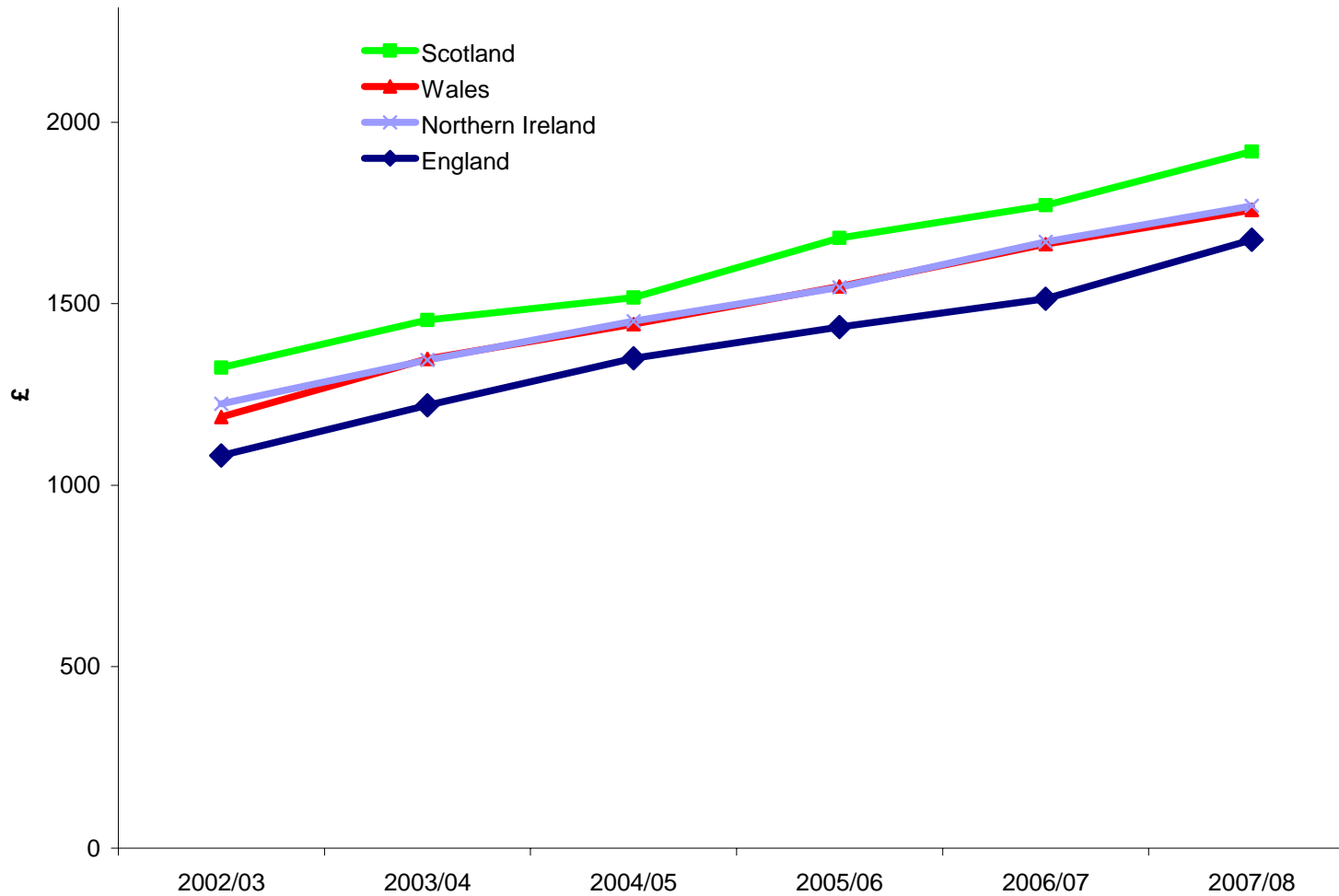
Infant mortality rates



Median waits for cataract surgery



Expenditure per capita

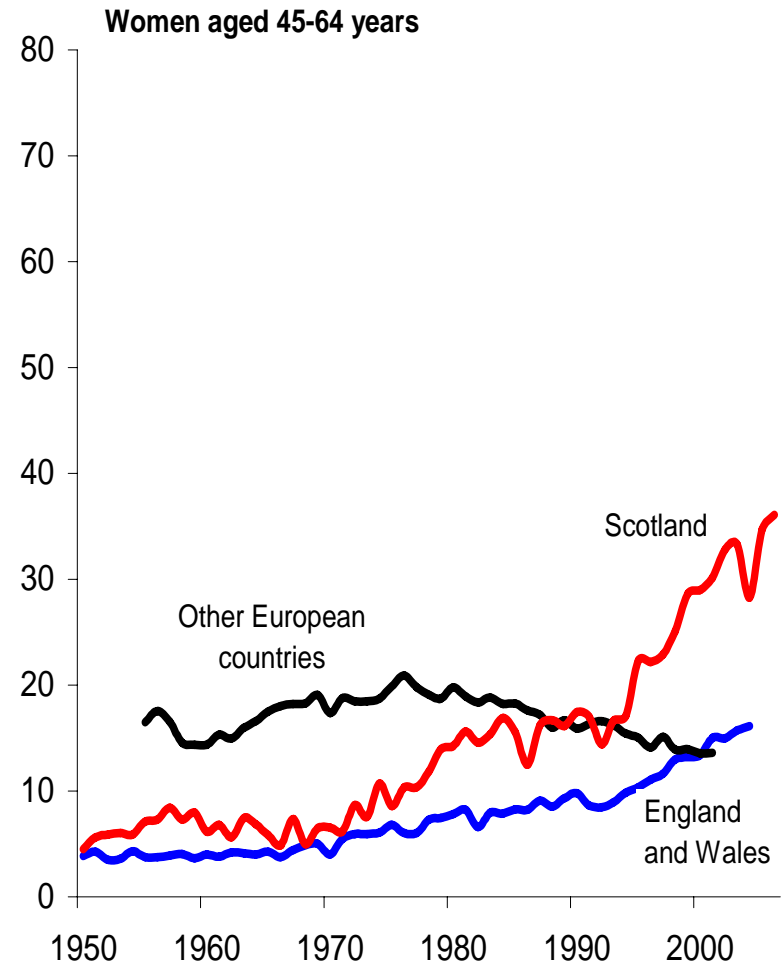
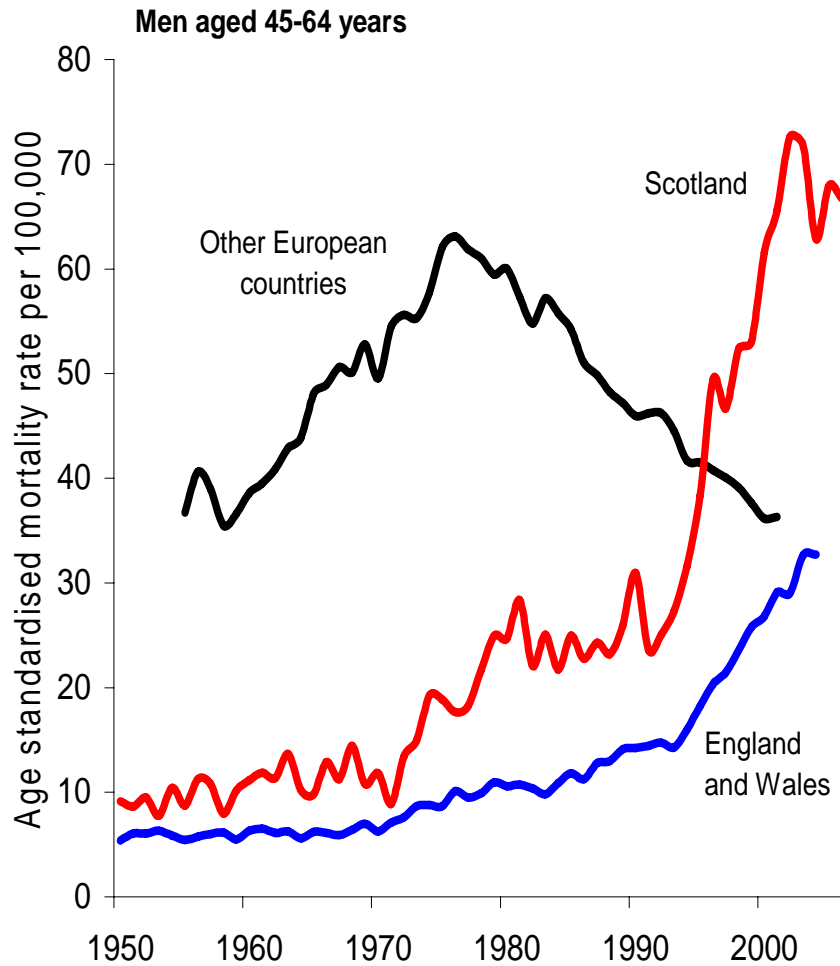


Death rate per 100,000 men 0-64

				% Change	
IHD	166	115	64	-32	-44
All Cancers	118	107	92	-10	-14
Lung Cancer	49	37	26	-25	-30
Chronic Respiratory	17	11	9	-38	-18
Liver Disease	9	9	23	6	155
Suicide	18	21	26	15	24
Drugs	0	1	10	239	1253
Alcohol	5	4	9	-4	99
Assault	2	3	3	55	3
All Causes	495	388	339	-22	-13

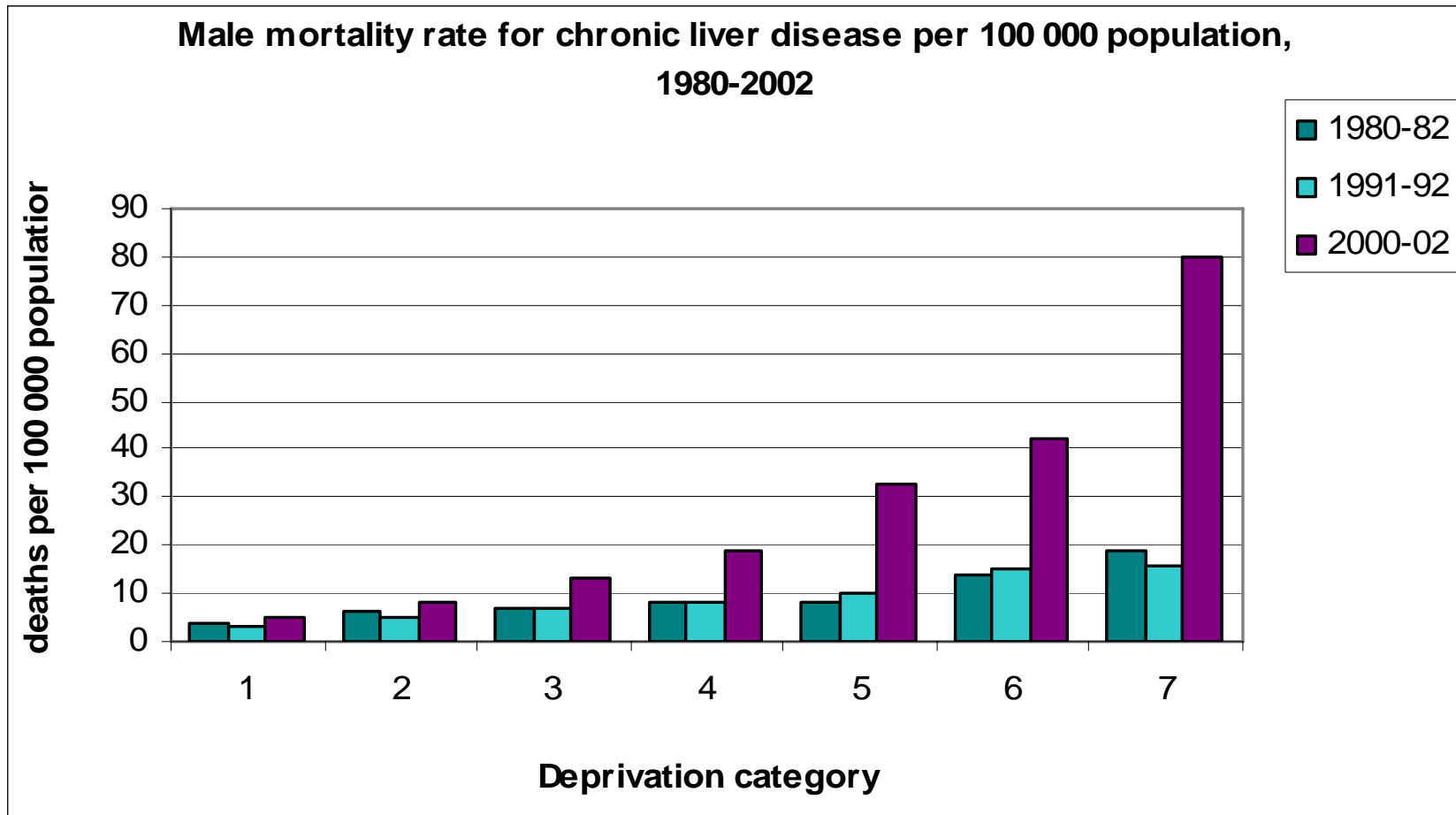
Chronic Liver Disease mortality rates per 100,000 population 1950-2006

updated from Leon and McCambridge, Lancet 367 (2006)

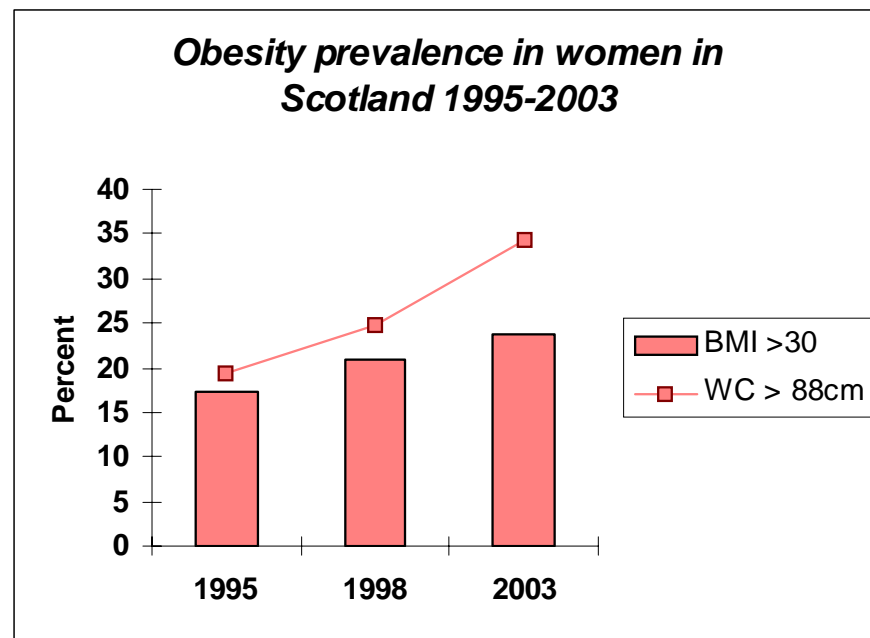
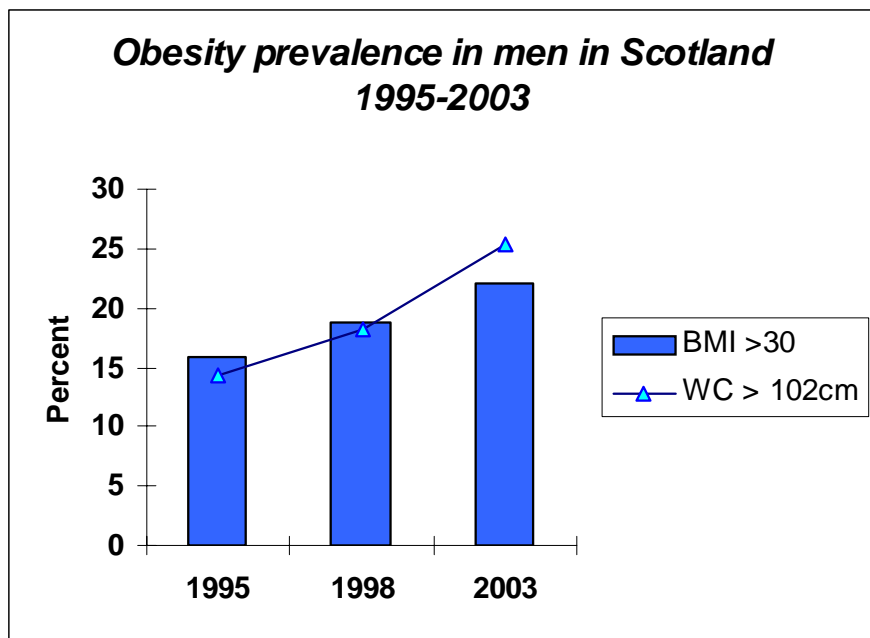


Chronic Liver Disease Mortality by Deprivation, Scotland (Men)

data from Leyland et al Inequalities in Scotland 1981-2001 MRC 2007

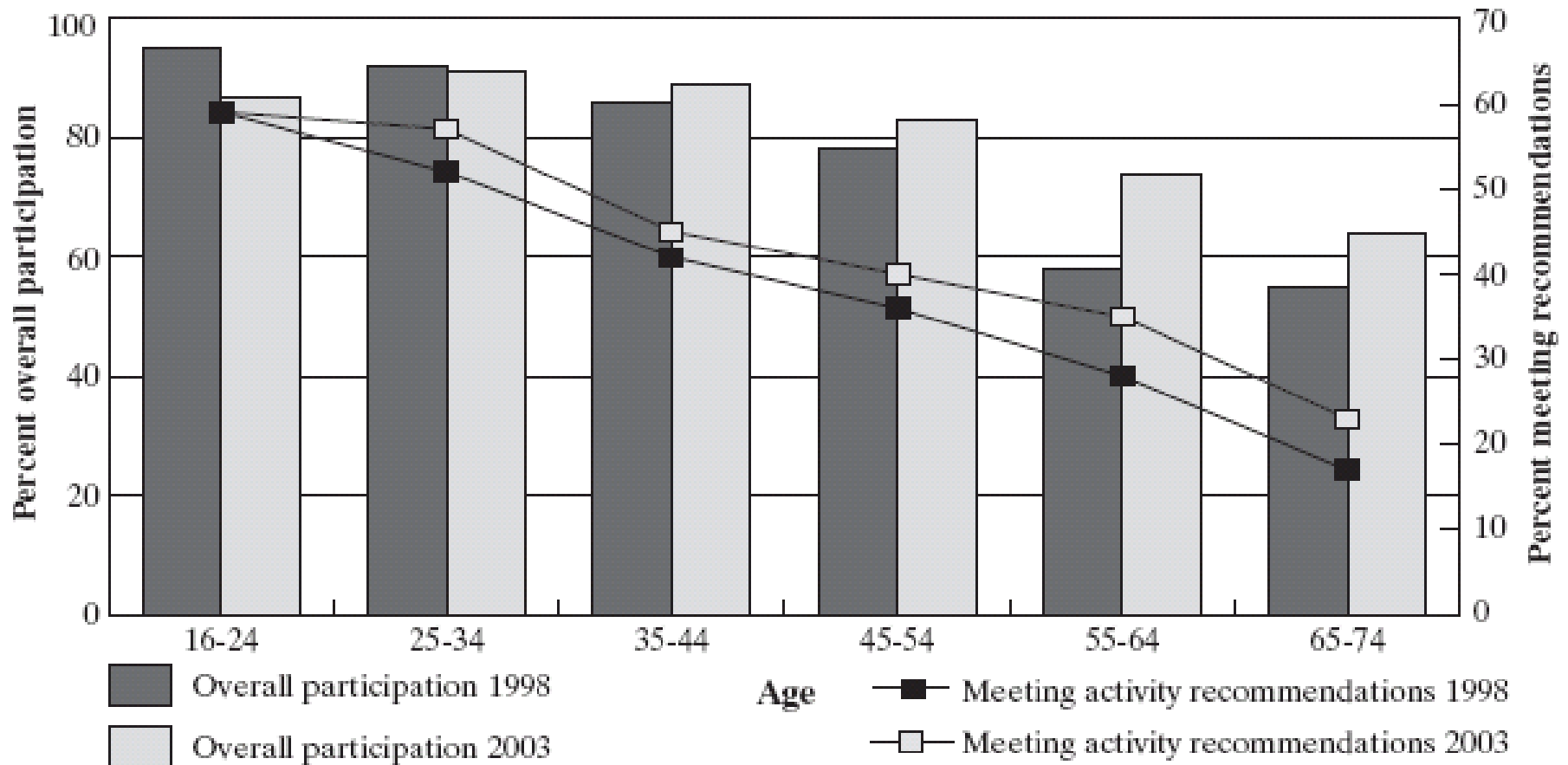


Obesity Trends in Scottish Adults



Source: Scottish Health Survey

Exercise participation



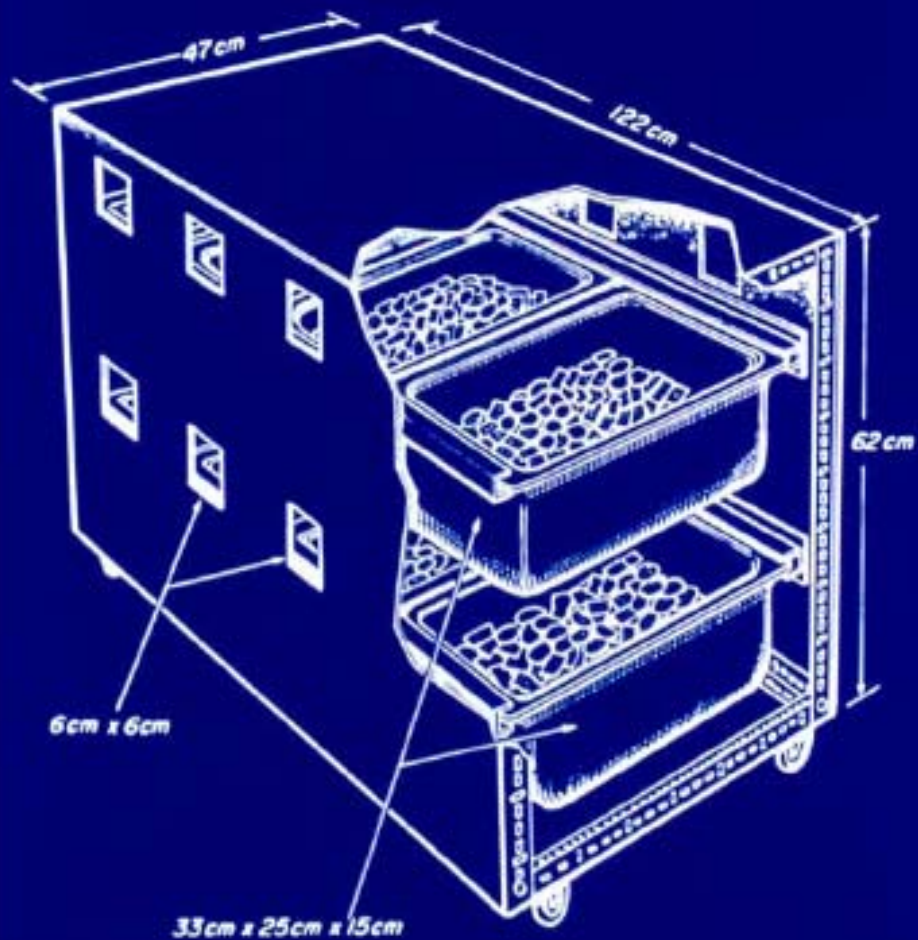
Social circumstances and health





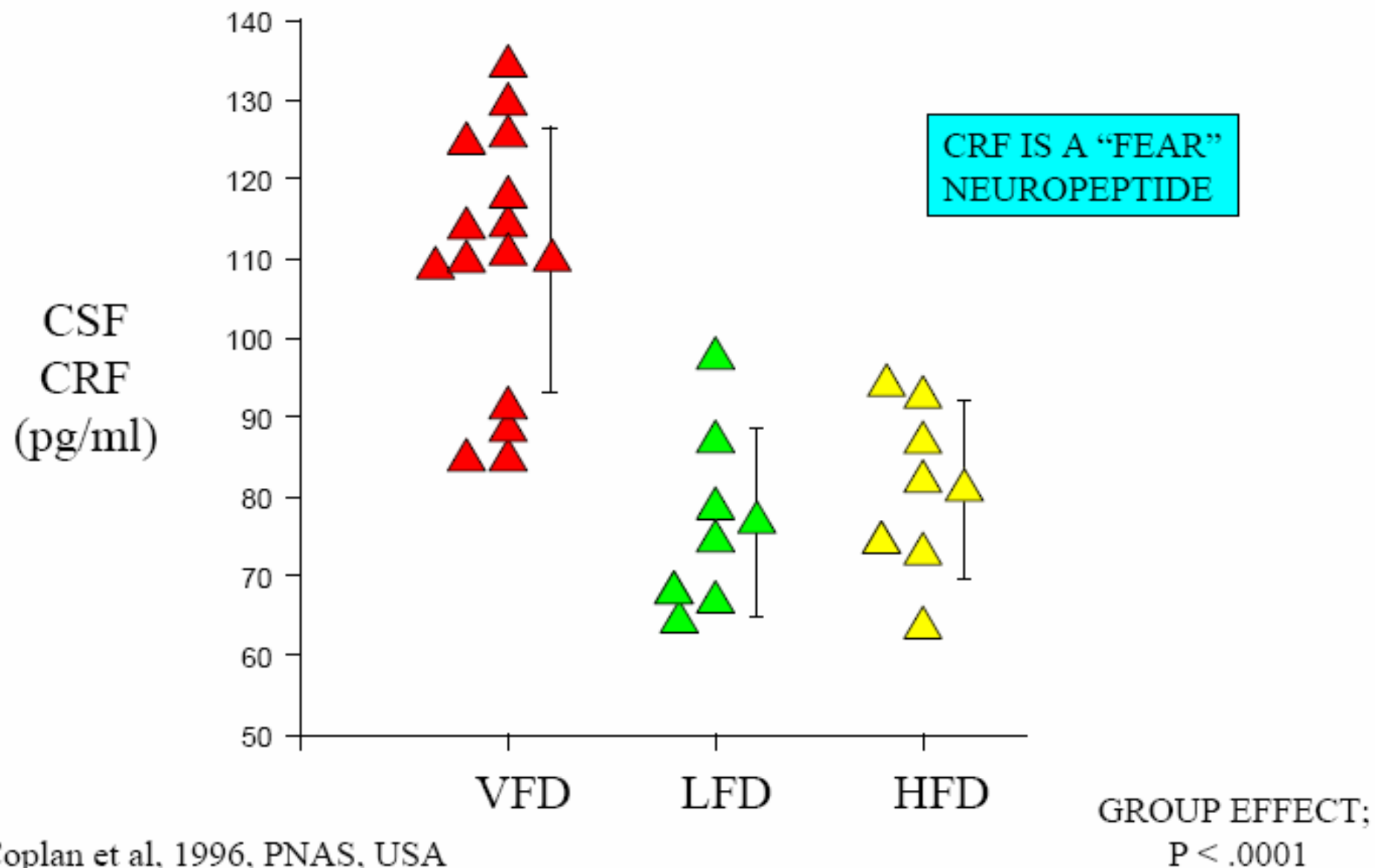


DIGGING CART FOR HIGH FORAGING DEMAND



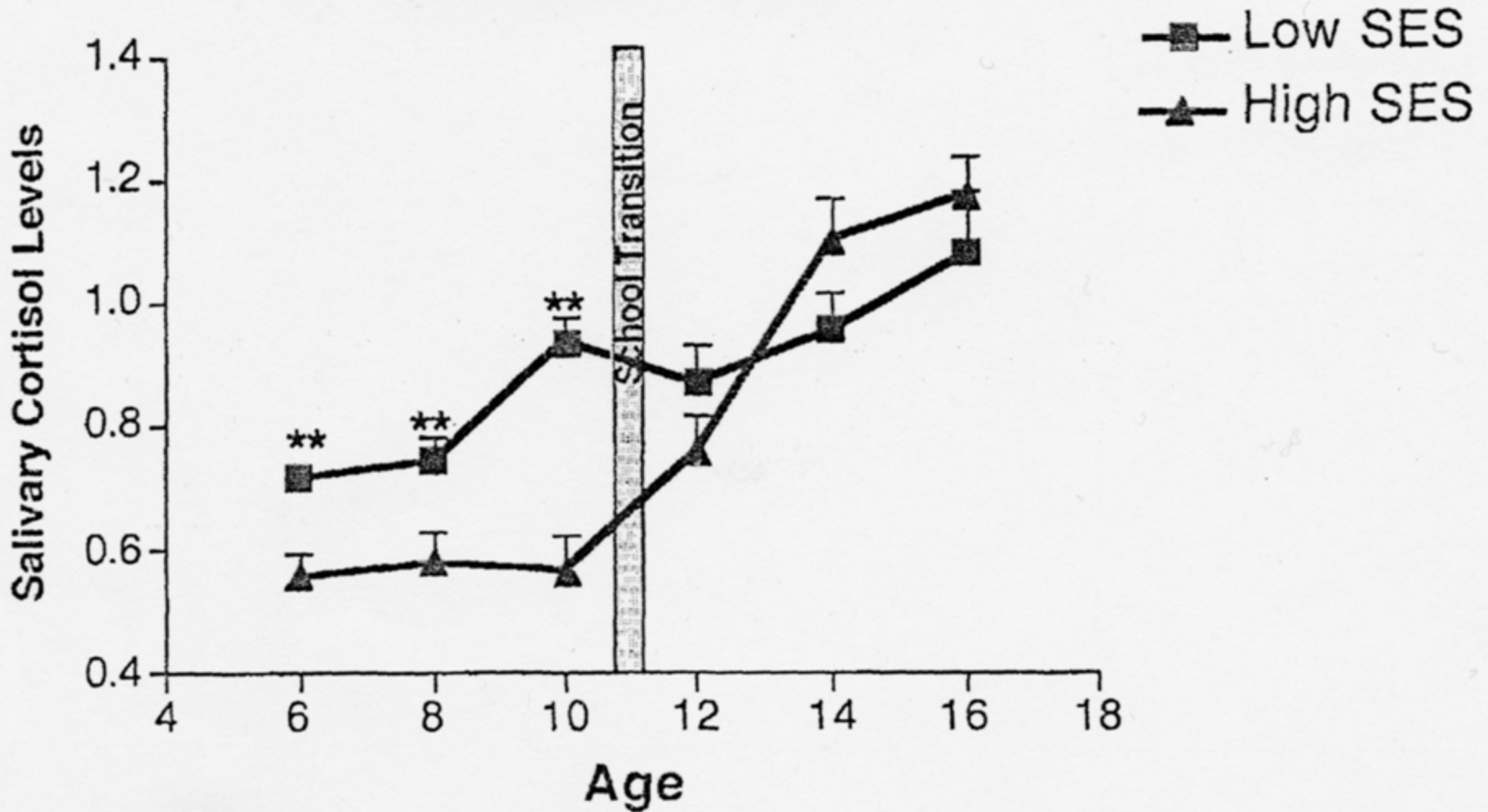


CSF CRF CONCENTRATIONS IN DIFFERENTIALLY-REARED JUVENILE PRIMATES:

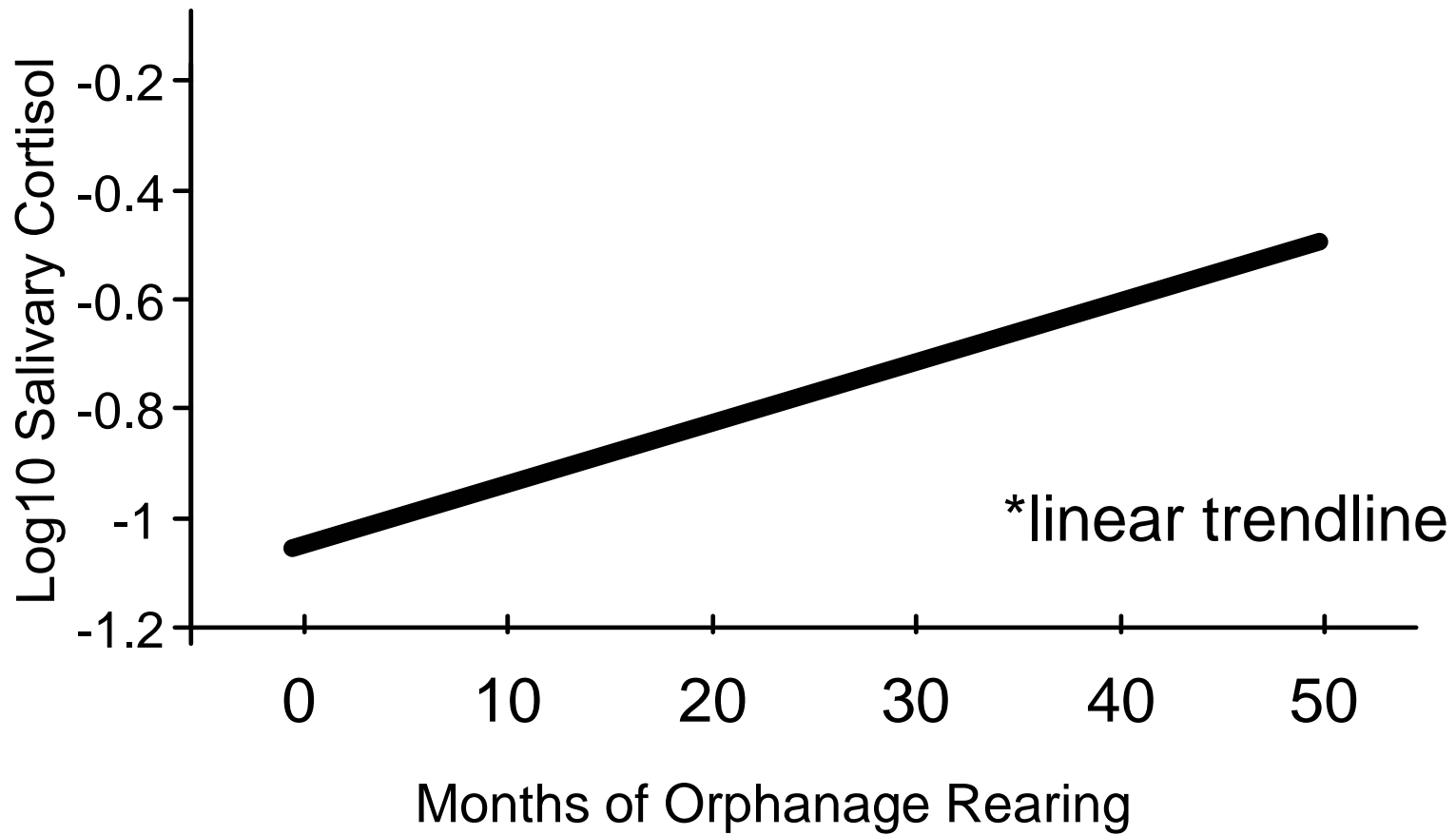




Cortisol Levels



Evening Cortisol Levels Increase with Months of Orphanage Rearing *



The Human Brain Under Stress: key brain regions

Prefrontal cortex

Executive function, working memory

Atrophy

Hippocampus

Contextual, episodic, spatial
memory

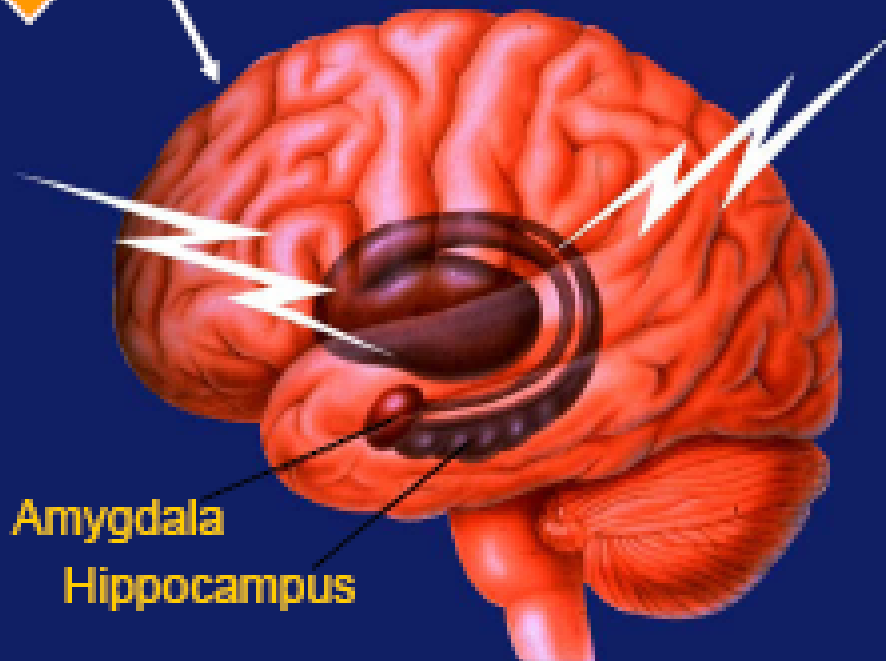
Atrophy

Amygdala

Emotion, fear, anxiety

Hypertrophy.

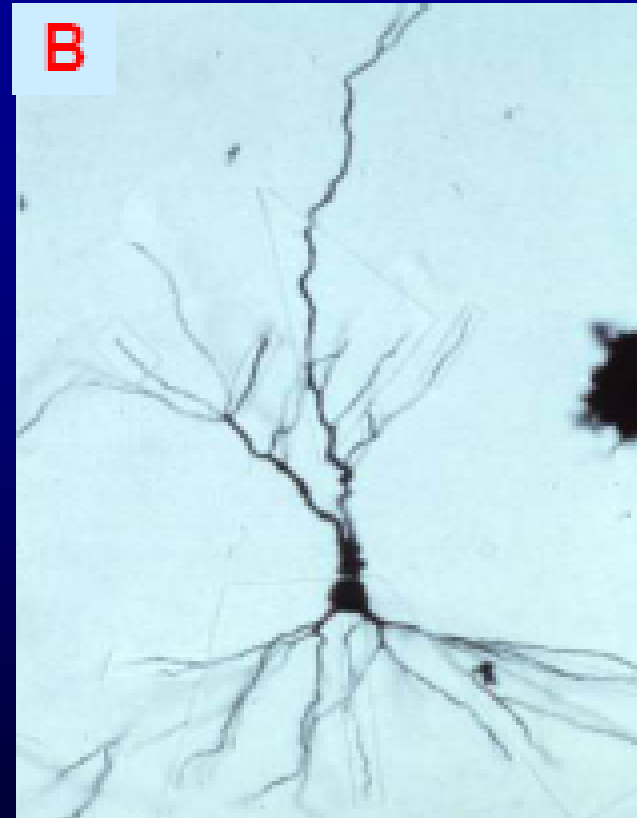
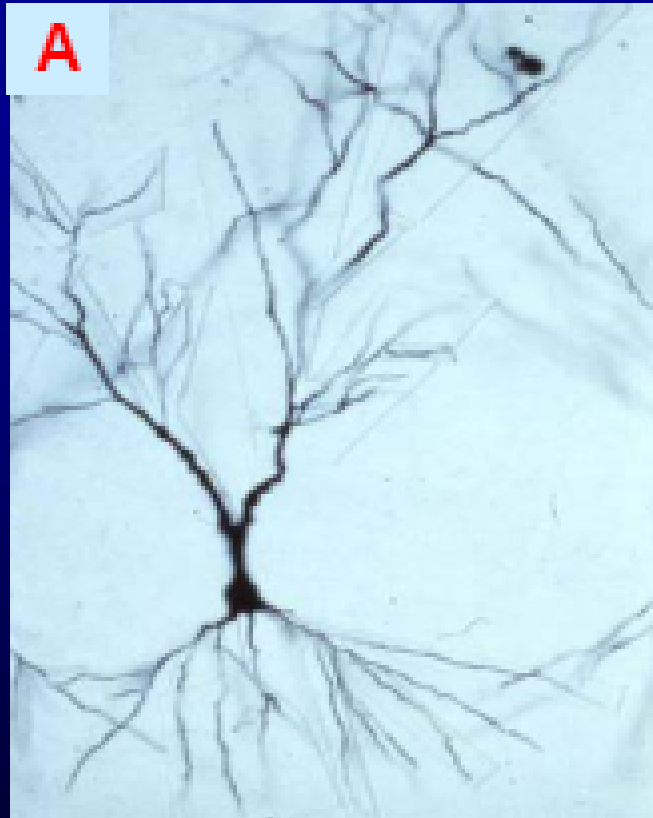
later atrophy



Amygdala

Hippocampus

Hippocampus: Dendritic atrophy after stress



Rat hippocampal neuron before (A)
and after (B) 3-week repeated stress

Chronic Confrontation with Dominant Causes Remodeling of Hippocampus

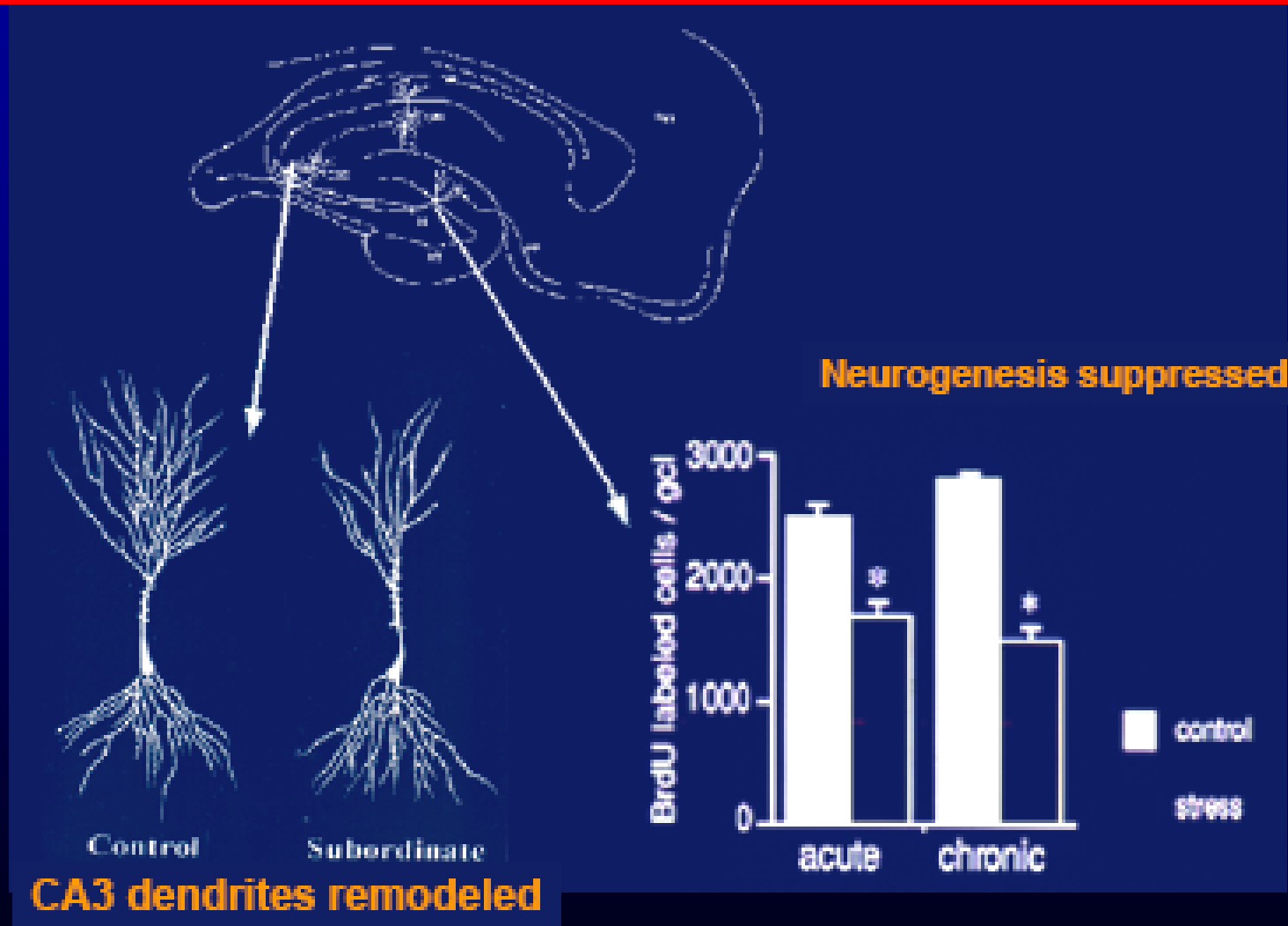
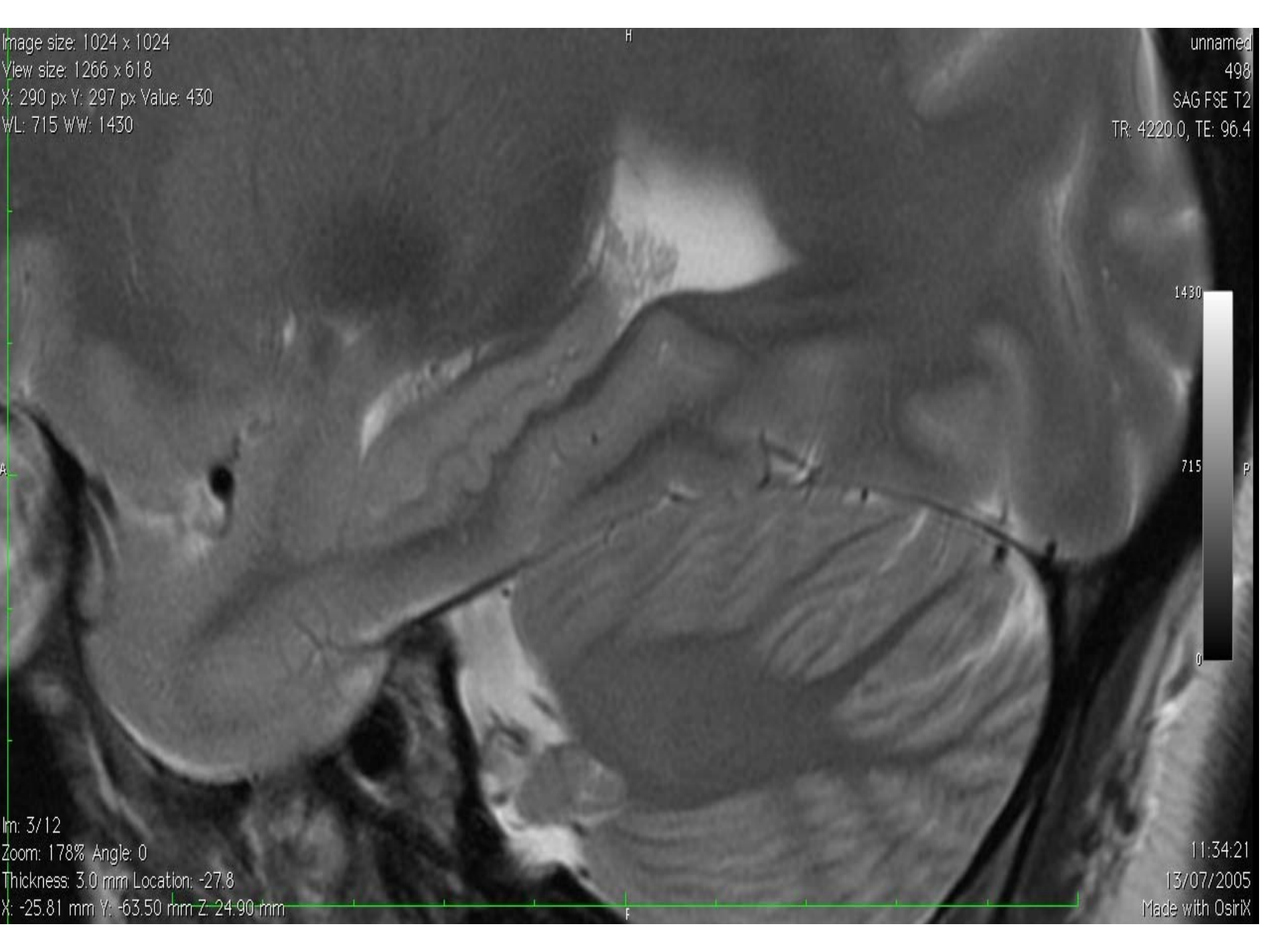


Image size: 1024 x 1024
View size: 1266 x 618
X: 290 px Y: 297 px Value: 430
WL: 715 WW: 1430

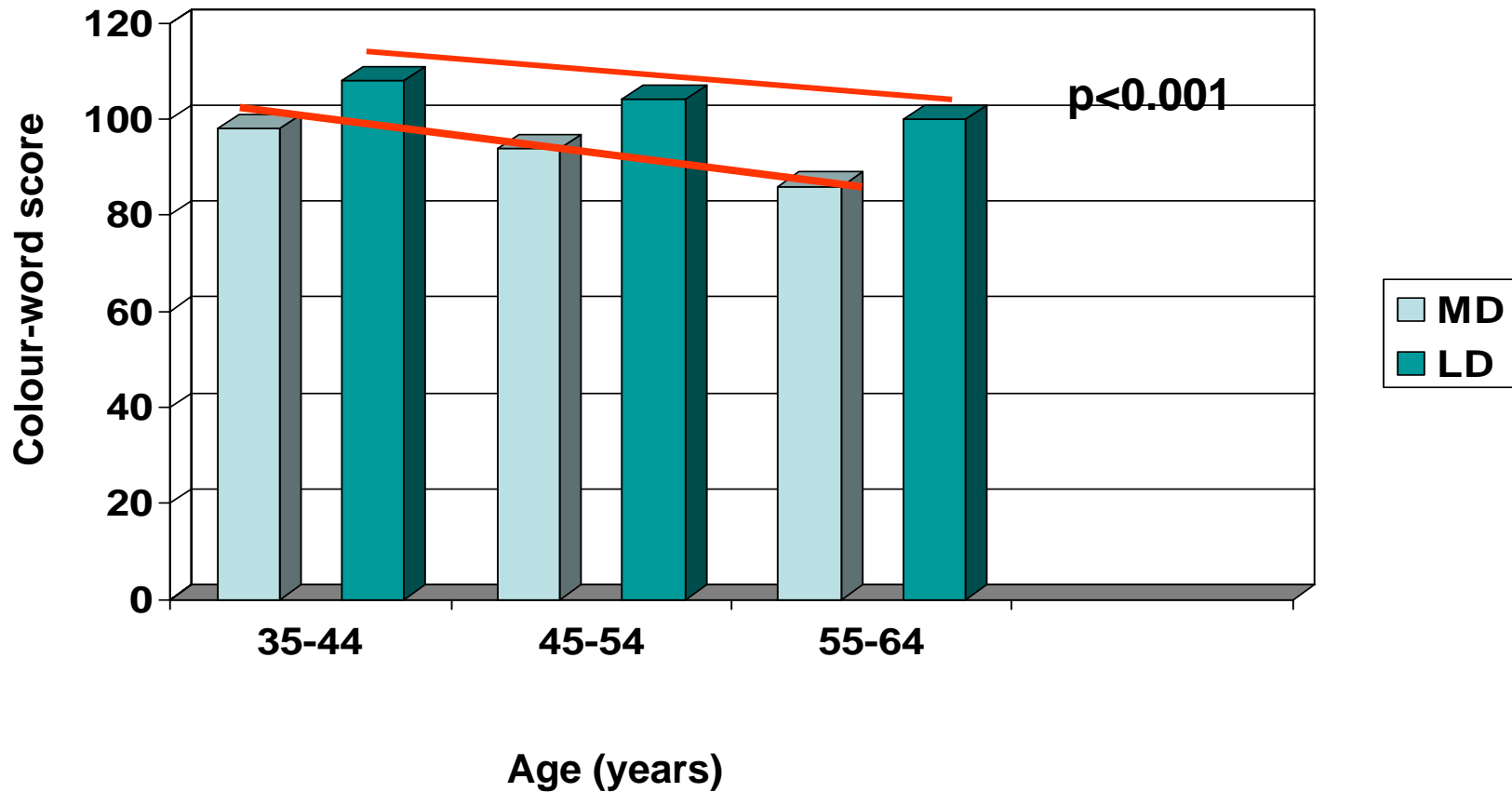
unnamed
498
SAG FSE T2
TR: 4220.0, TE: 96.4



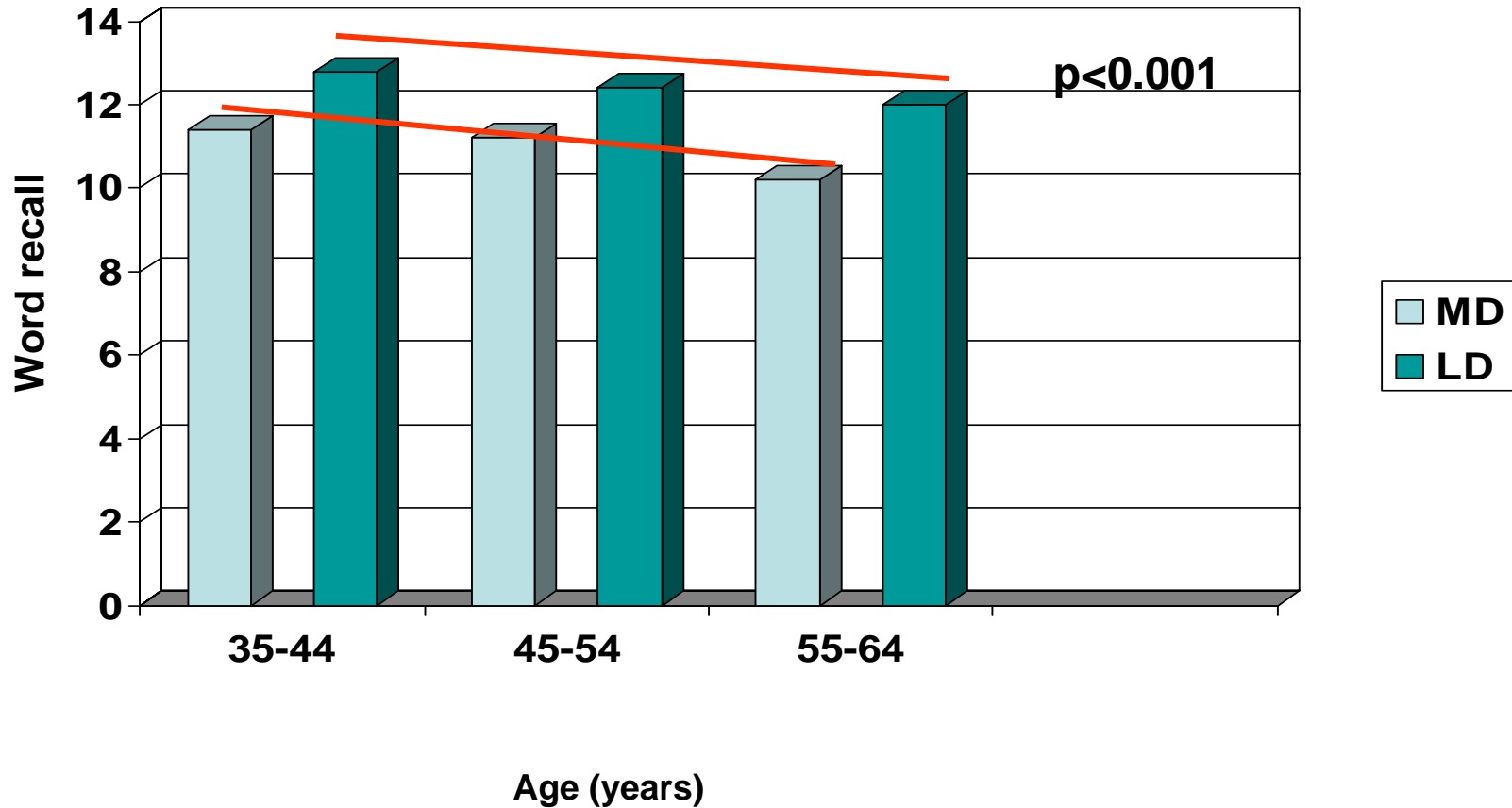
Im: 3/12
Zoom: 178% Angle: 0
Thickness: 3.0 mm Location: -27.8
X: -25.81 mm Y: -63.50 mm Z: 24.90 mm

11:34:21
13/07/2005
Made with OsiriX

pSoBid: Stroop test

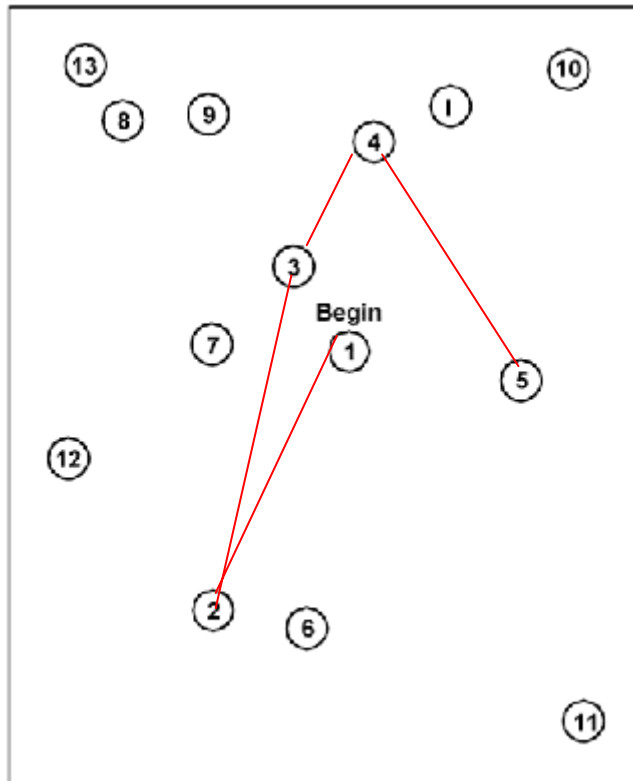


pSoBid: Verbal Learning

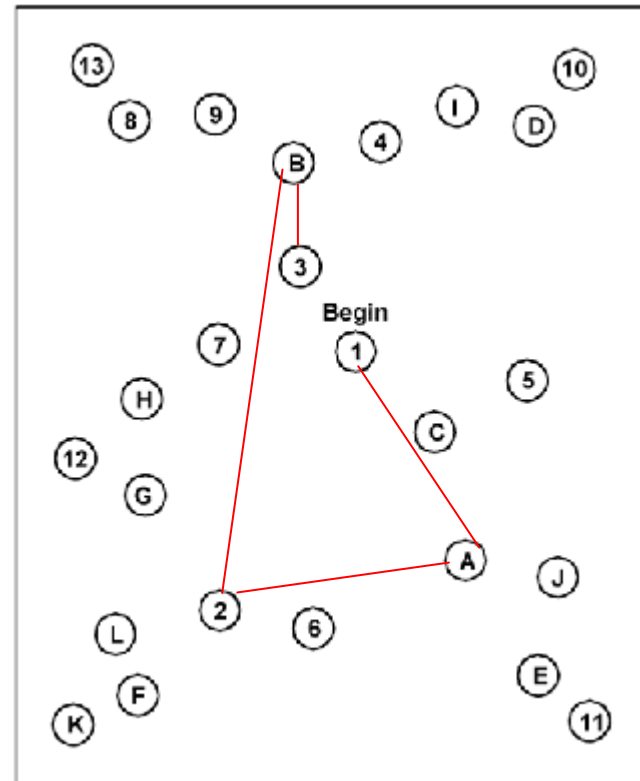


The Trails Test: a test of “executive function”

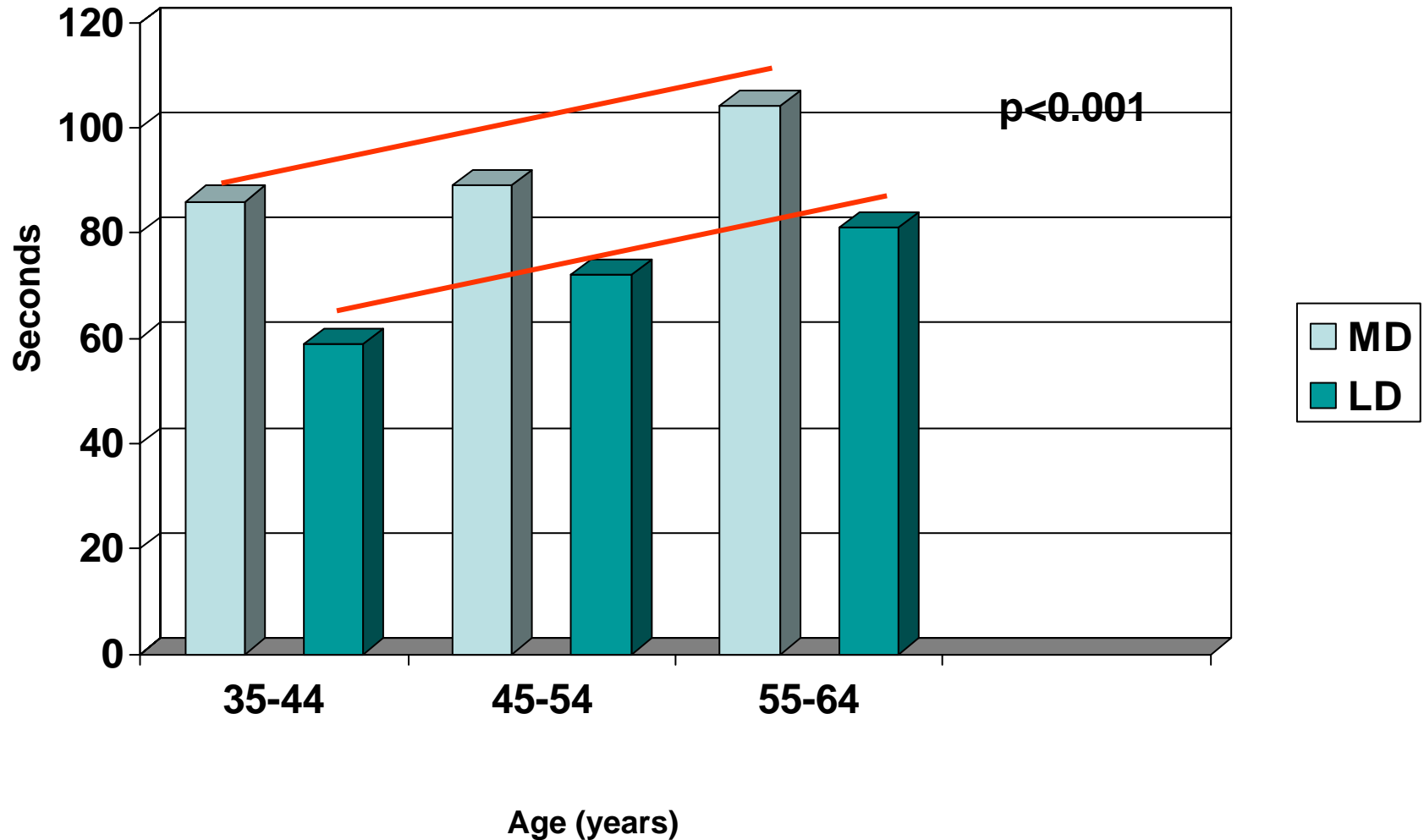
Trails “A”



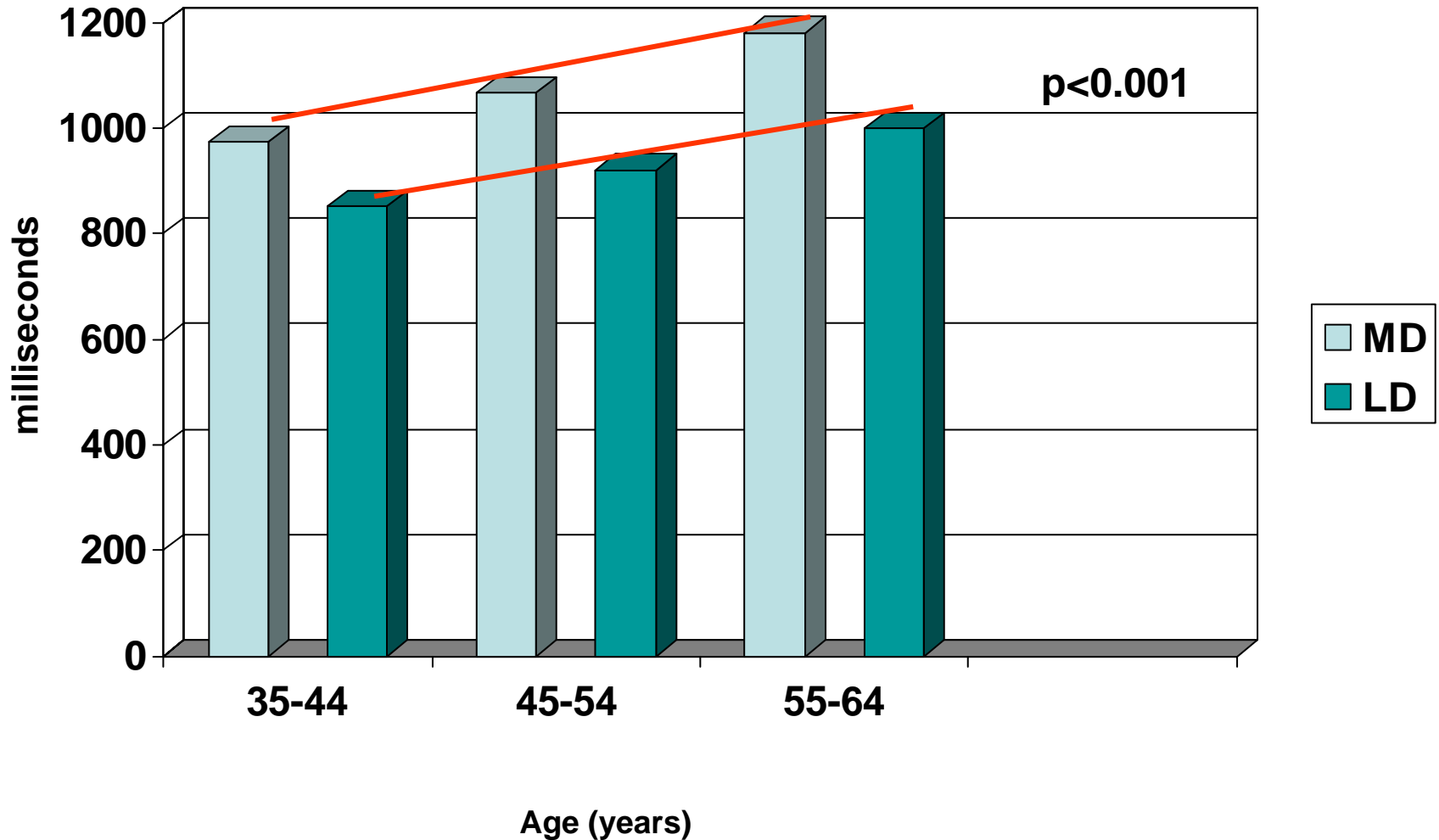
Trails “B”



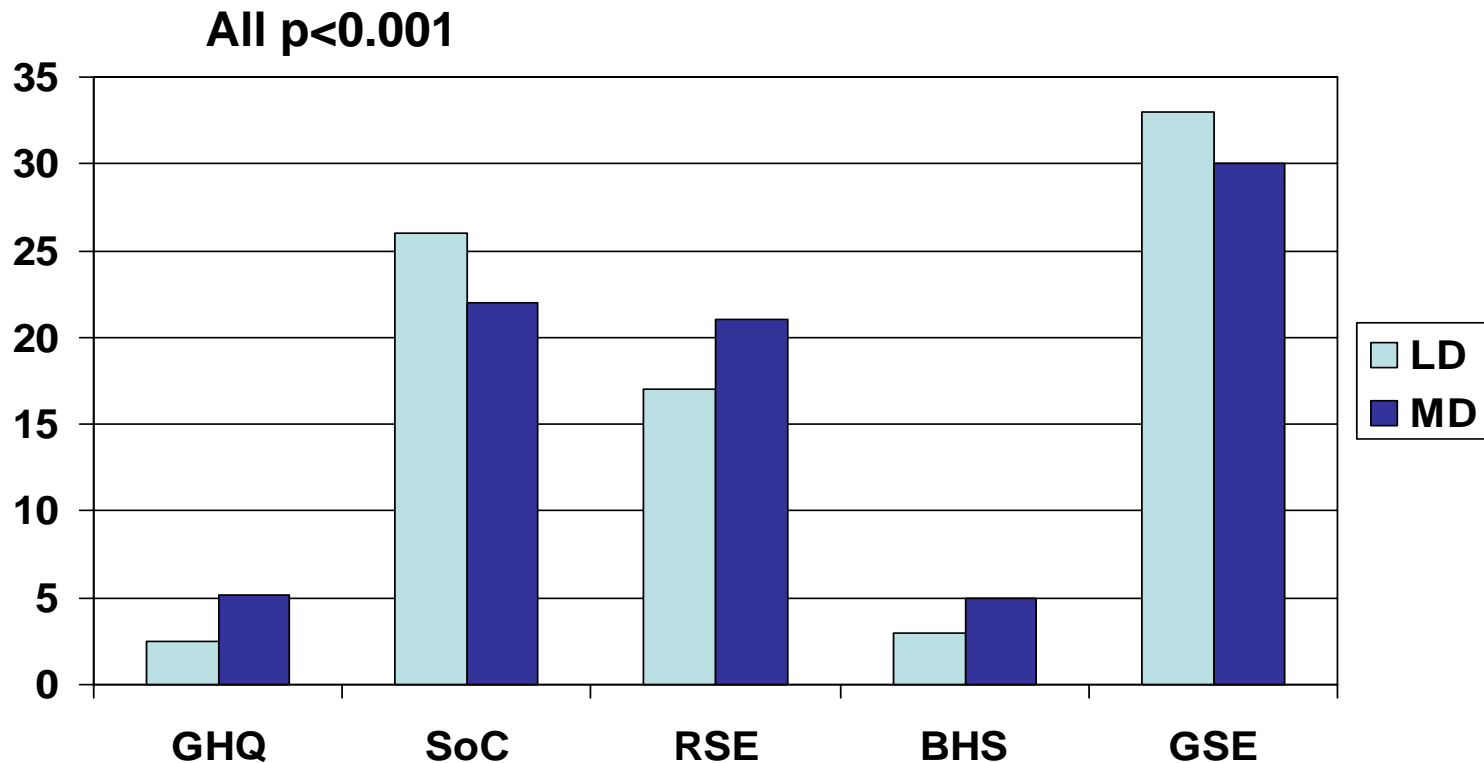
pSoBid: Trails B



pSoBid: Choice reaction time

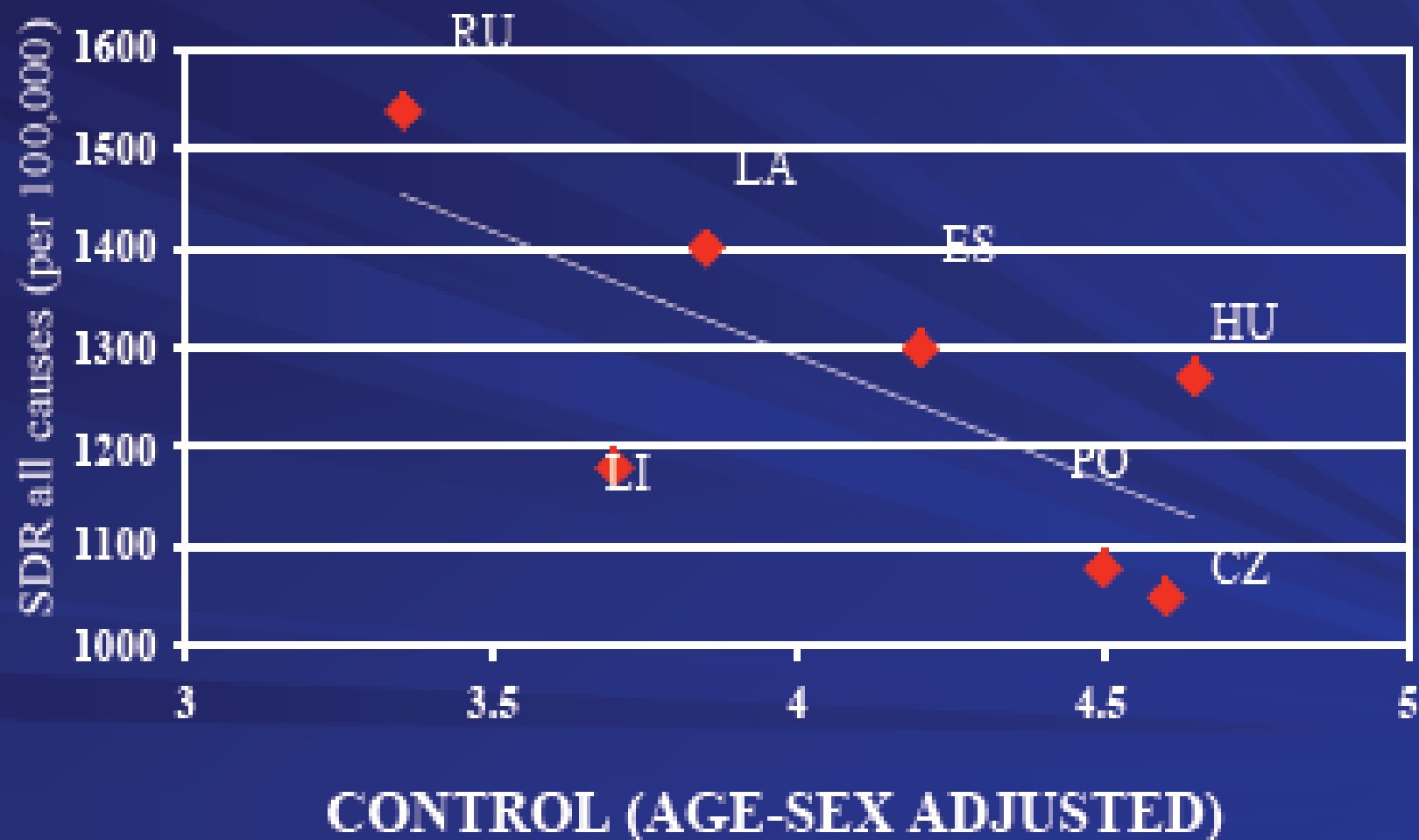


pSoBid: psychological state



GHQ = General Health Questionnaire; SoC = Sense of Coherence; RSE = Rosenberg Self-Esteem Scale; BHS = Beck Hopelessness Scale; GSE = Generalised Self-Efficacy Scale

PERCEIVED CONTROL IN NATIONAL SAMPLES AND ALL CAUSE MORTALITY



Pikhart, Bobak et al 2000

Determinants of early brain development

- At birth, development shifts from genetic to environmental influences
- There are 100 billion neurons but they are not part of functional networks
- First few years are spent forming permanent neural networks - 'Neurons that fire together wire together'
- ***Social interaction determines brain development***

Attachment theory

- Ainsworth
 - Deep emotional connection that infant develops with primary caregiver
 - Reflects an “internal working model” expressing the infant’s expectations of parental behaviour in meaningful situations
 - Basis for development of later relationships
- Increasingly recognised as determinant of later emotional, cognitive and social outcomes

Attachment theory

“Infants develop the attachment behaviours that optimally enhance their survival in their own characteristic environments.”

Crittenden, 2000

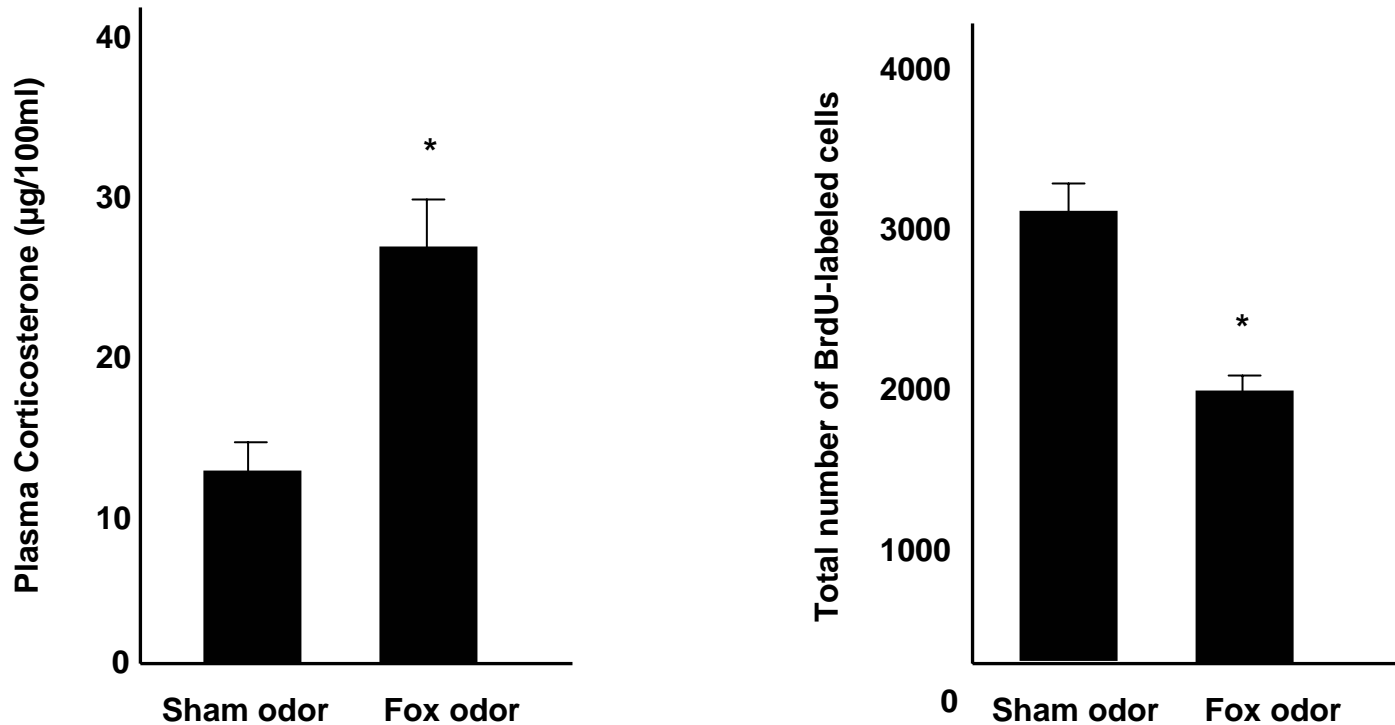
“Serve and return”



“The ‘instruction’ to attend to the primary caregiver is genetic, the outcome depends on what happens”

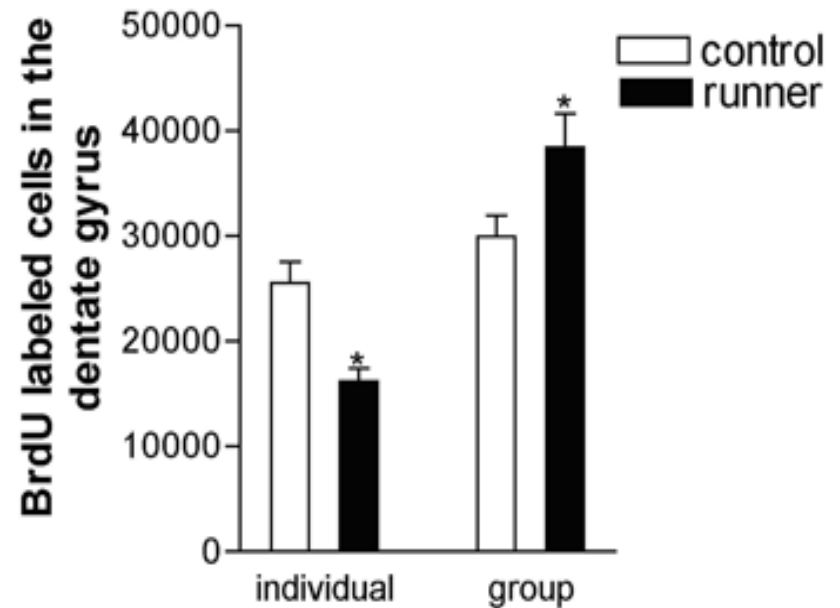
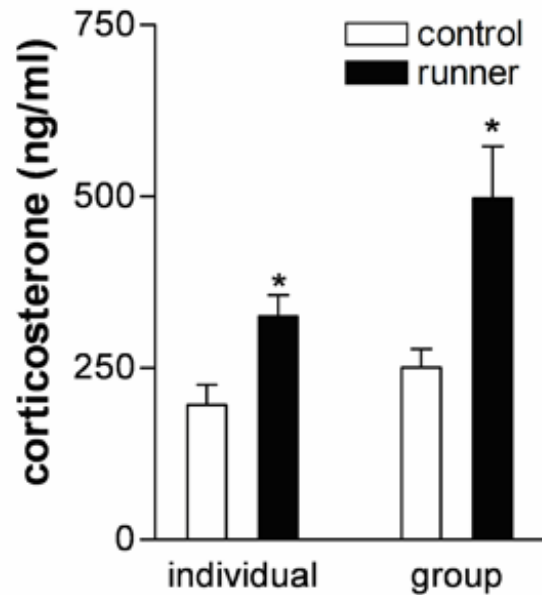
Balbernie, 2001

Exposure to predator odor elevates glucocorticoid levels and inhibits adult neurogenesis in rats



Similar effect with other aversive stressors and in other species

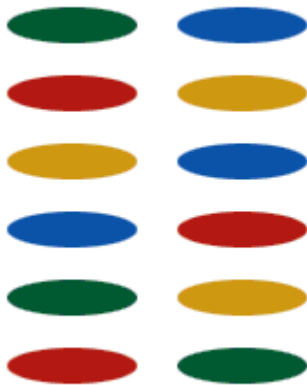
Does social housing affect the response to a positive stressor?



The Stroop Test

a test of 'response inhibition'

Shapes

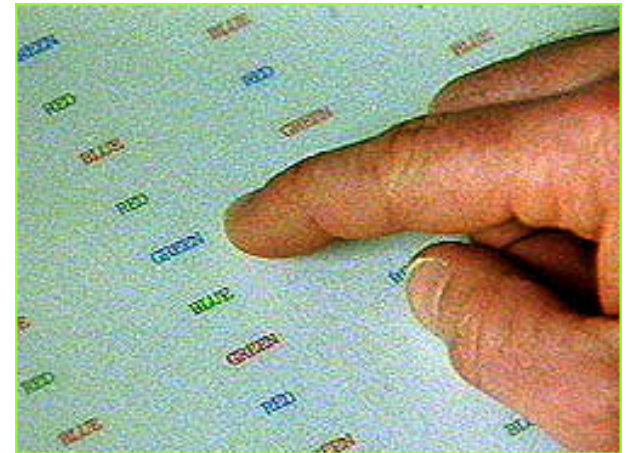


Say the colour names of the shapes

Words

green	blue
red	yellow
yellow	blue
blue	red
green	yellow
red	green

Say the word names



Say the names of the colours that the words are printed in

The Dunedin cohort

- 1000 children recruited in late 1972/3
- At age 3, “at risk” children identified on the basis of chaotic circumstances, emotional behaviour, negativity and poor attentiveness
- As adults, those “at risk” were more likely to :
 - be unemployed
 - have criminal convictions (especially for violence)
 - been pregnant as a teenager
 - have a substance abuse problem
 - exhibit signs of insulin resistance and metabolic syndrome



Health related
behaviours

Opportunity to escape
poverty, decent housing,
social networks, self esteem
and sense of control

Consistent parenting, safe,
nurturing early years,
supportive education

He can't tell
anyone
his mum's too
drunk to
look after him.

But you can.



If you are concerned about any child's welfare,
call the Child Protection Line: 0800 022 3222.



“

scotland's health is improving rapidly but it is not improving fast enough for the poorest sections of our society. Health inequalities ... remain our major challenge.

”

equally
well

report of the ministerial task force on health inequalities



Equally Well recommendations

- Support for families and young people
- Mental health and wellbeing
- Poverty and employment
- Physical environments
- Alcohol, drugs, violence
- Healthcare system

Equally Well-test sites

- **Glasgow City**- integrating health into current and future city planning
- **Govanhill, Glasgow** - community regeneration and development
- **Whitecrook, West Dunbartonshire** - targeting the high prevalence of smoking in the area
- **Lanarkshire** - sustained employment and barriers to finding employment
- **East Lothian** - health inequalities in early years in Prestonpans, Musselburgh East and Tranent
- **Blairgowrie** - looking at delivering health inequality sensitive services in a rural setting for people with multiple and complex needs
- **Fife** - anti-social behaviour in relation to alcohol and underage drinking
- **Dundee** - methods of improving wellbeing

Tackling wicked problems

- Authoritative or collaborative strategies?
- Narrow or broad approach?
- Firm trajectory or innovative “hunches?”
- Organisational focus or cross organisation?
- Tight governance or “project review?”
- Regulation or persuasion?

Management of complex systems

- Order generating rules
- The importance of instability
- Emergence of solutions
- Conditioning emergence
- “Deep structures and archetypes”
- Paradox and contradiction

It all matters!

- Smoking, abuse of alcohol and drugs, obesity and lack of exercise damage health and need to be tackled
- Poverty, unemployment, poor educational attainment all damage self esteem and sense of control
- Consistent, supportive and nurturing early life provide the basis for successful social and physical development into adulthood

“The success of an economy and of a society cannot be separated from the lives that the members of the society are able to lead... we not only value living well and satisfactorily, but also appreciate having control over our lives.”

Amartya Sen, *Development as Freedom*
(1999)

The intervention ladder

Eliminate choice

Restrict choice

Guide choice by disincentives

Guide choice by incentives

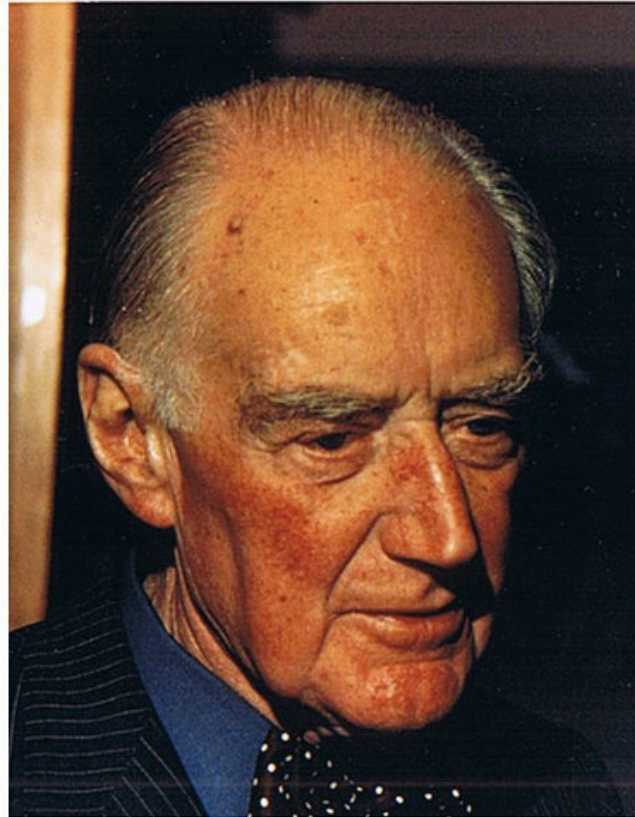
Guide choice by changing the default policy

Enable choice

Provide information

Do nothing

Wicked problems



Horst Rittel and Melvin Webber

Wicked Problems

Rittel and Webber 1973

- There is no definitive formulation of a wicked problem.
- Wicked problems have no stopping rule
- Solutions to wicked problems are not true-or-false, but better or worse.
- There is no ultimate test of a solution to a wicked problem.
- Every solution to a wicked problem is a "one-shot operation"; every attempt counts significantly.
- Wicked problems do not have an enumerable set of potential solutions, nor is there a well-described set of permissible operations that may be used in the plan.

Wicked Problems

Rittel and Webber 1973

- Every wicked problem is essentially unique.
- Every wicked problem can be considered to be a symptom of another problem.
- The existence of a discrepancy representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution.
- The planner has no right to be wrong (planners are liable for the consequences of the actions they generate).

Examples of wicked problems

- Reverse climate change
- Prevent terrorism
- Fix bank
- Give America a functioning health care system
- Sort out Glasgow's hospitals
- Improve cancer care
- Implement a SIGN guideline

Tackling wicked problems

- Authoritative or collaborative strategies?
- Narrow or broad approach?
- Firm trajectory or innovative “hunches?”
- Organisational focus or cross organisation?
- Tight governance or “project review?”
- Regulation or persuasion?



Calling on physicians to assess and review every patient's physical activity program at every visit.

Creates broad awareness that exercise is indeed medicine.

Makes "level of physical activity" a standard vital sign question for each patient .

Helps physicians and other healthcare providers to become consistently effective in counselling and referring patients as to their physical activity needs.

Leads to policy changes in public and private sectors that support physical activity counselling and referrals in clinical settings.

Produces an expectation among the public and patients that their healthcare providers should and will ask about and prescribe exercise.

Appropriately encourages physicians and other healthcare providers to be physically active themselves.