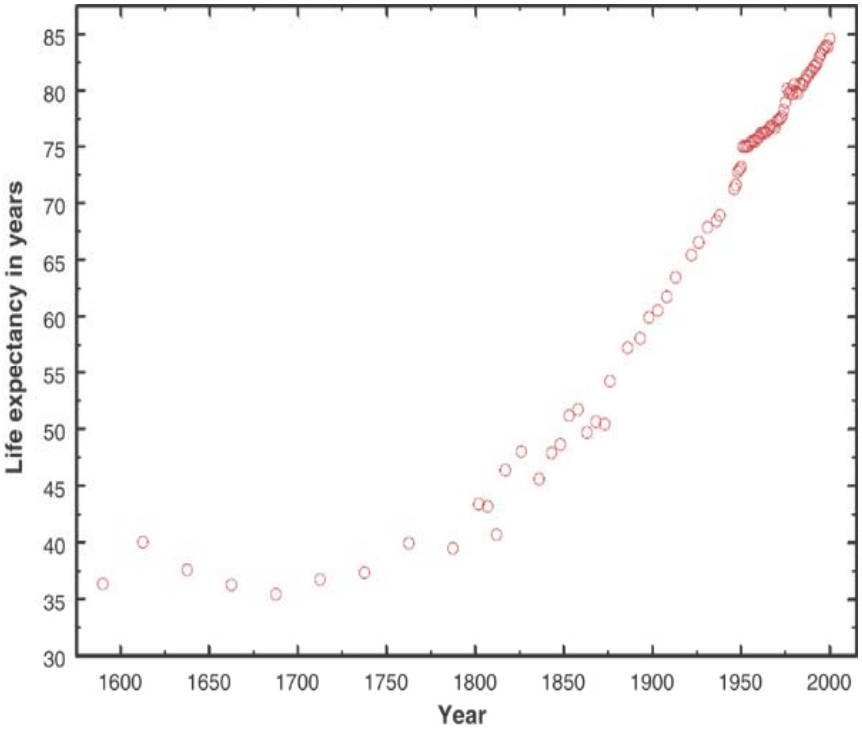
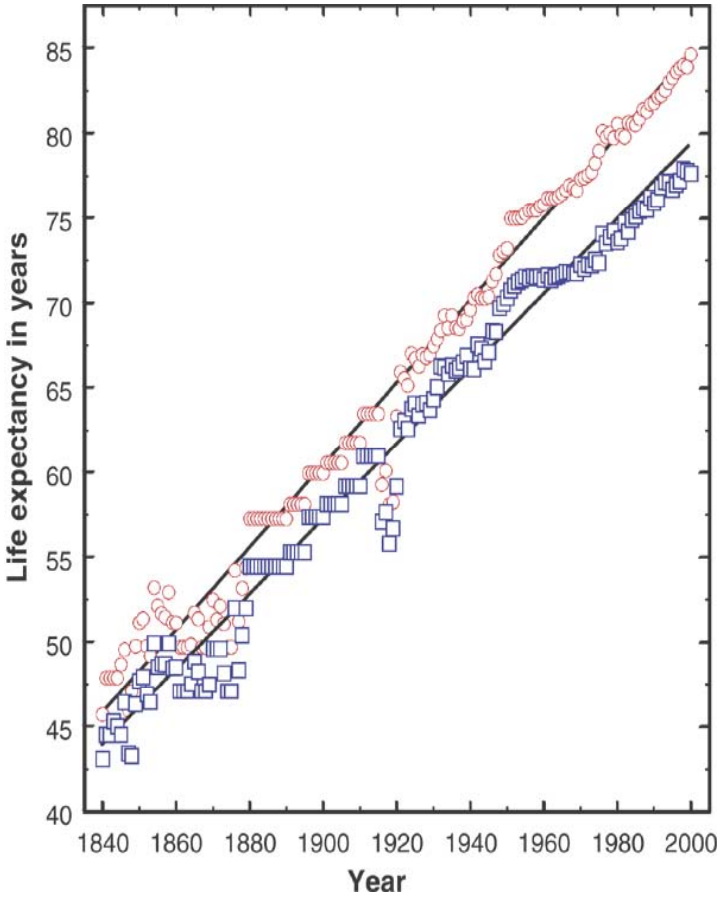
The future health of populations

Albert Hofman, MD, PhD

Department of Epidemiology, Erasmus Medical Center, Rotterdam,

The Netherlands


Life expectancy in years
85
80
75
70
65
60
55
50
45
40
35
30
1600
1650
1700
1750
1800
1850
1900
1950
2000
Year



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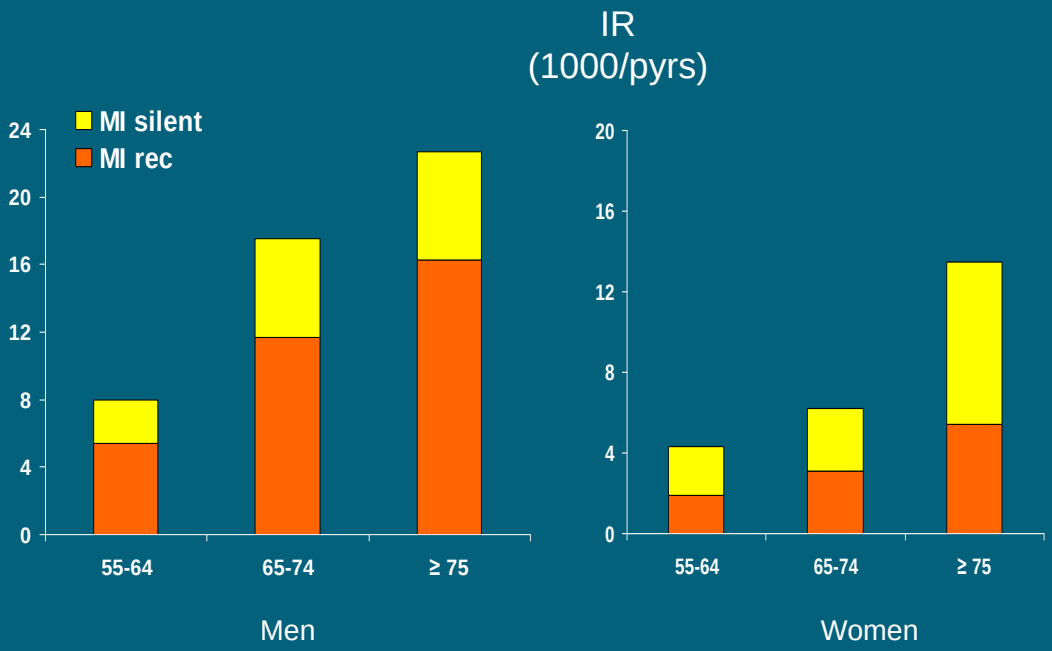
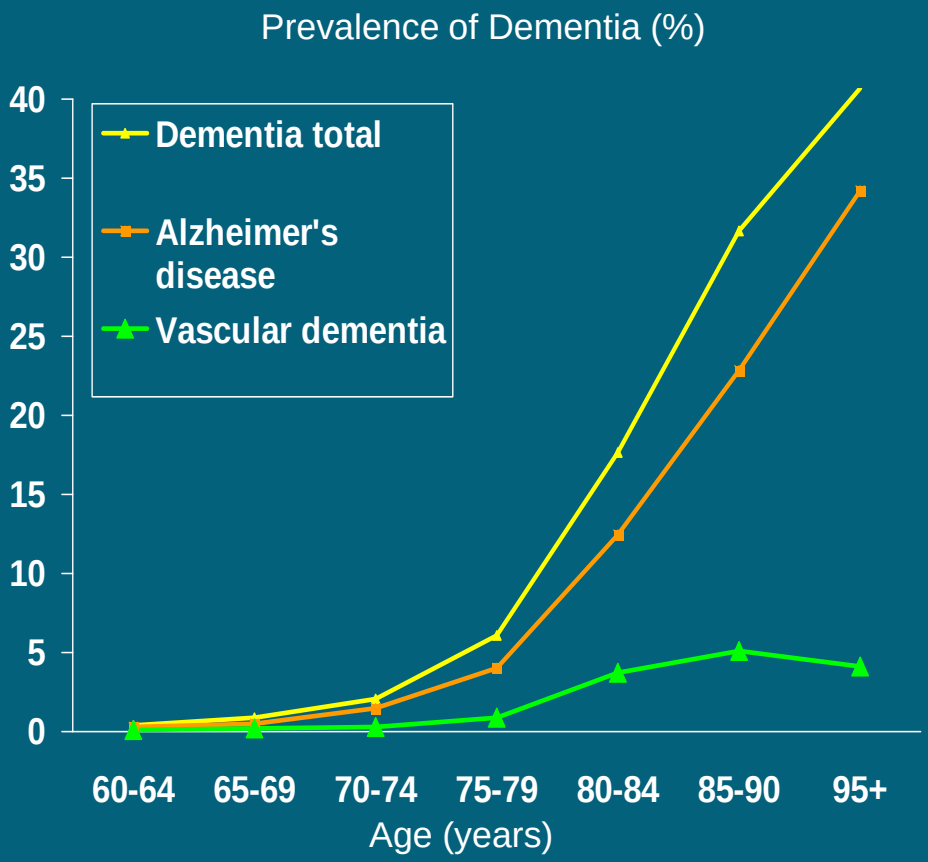
Incidence of heart attacks (recognized and silent)



Kors et al. Lancet 1998;352:601-5


Prevalence of Dementia (%)
40
35
30
25
20
15
10
5
0
Dementia total
Alzheimer's disease
Vascular dementia
60-64
65-69
70-74
75-79
80-84
85-90
95+
Age (years)

Two basic ideas

- Prospective cohort studies
- Developmental epidemiology

Die

Kinder der Tuberkulösen

Von

Dr. med. Wilhelm Weinberg

Sanitätsrat in Stuttgart

Mit einem Begleitwort von

Obermedizinalrat Professor Dr. **Max von Gruber** in München

1913

"The mathematics of Weinberg seemed abstruse".

Cohort studies: archetypes

- **Framingham Heart Study: 1948, n=5,000**
- **British doctors study: 1950: n=40,000**

Cohort studies: history

- Framingham Heart Study: 1948, n=5,000
- British doctors study: 1950, n=40,000
- American Cancer Society: 1960s, n=800,000
- Nurses Health Study: 1970s, n=70,000
- Physicians' Study: 1980s, n=12,000
- Rotterdam Study: 1990, n=15,000
- UK Biobank: 2000s, n=500,000 (planned)

Sir Richard Doll's summary

"Cohort studies in the modern sense…have established themselves as essential tools for epidemiological research…and cohort studies have, I suspect, an even more important part to play in the future of medical research than they have had in the past"

THE LANCET, MAY 10, 1986

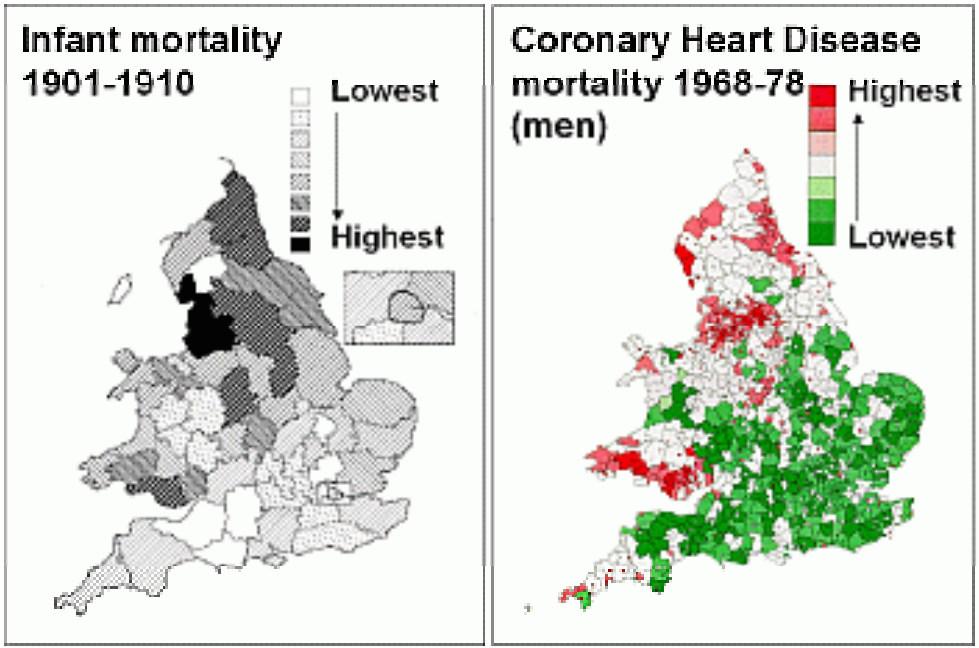
Epidemiology

INFANT MORTALITY, CHILDHOOD NUTRITION, AND ISCHAEMIC HEART DISEASE IN ENGLAND AND WALES

D. J. P. BARKER C. OSMOND

MRC Environmental Epidemiology Unit, University of Southampton, Southampton General Hospital, Southampton SO9 4XY

Summary Although the rise in ischaemic heart disease in England and Wales has been associated with increasing prosperity, mortality rates are highest in the least affluent areas. On division of the country into two hundred and twelve local authority areas a strong geographical relation was found between ischaemic heart disease mortality rates in 1968–78 and infant mortality in 1921–25. Of the twenty-four other common causes of death only bronchitis, stomach cancer, and rheumatic heart disease were similarly related to infant mortality. These diseases are associated with poor living conditions and mortality from them is declining. Ischaemic heart disease is strongly correlated with both neonatal and postneonatal mortality. It is suggested that poor nutrition in early life increases susceptibility to the effects of an affluent diet.



Barker DJ, Lancet 1986

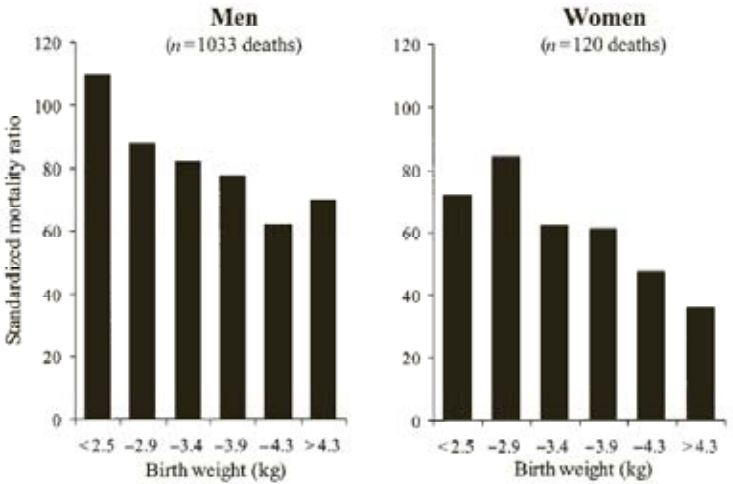


FIGURE 1. Coronary heart disease death rates, expressed as standardized mortality ratios, in 10 141 men and 5585 women born in Hertfordshire, United Kingdom, from 1911 to 1930, according to birth weight. Derived from Osmond et al (12).

Fetal Origins of Adult Diseases Hypothesis

"An adverse intrauterine environment in critical periods leads to suboptimal development and to permanent changes in organ structure or function and may have detrimental effects on health in later life"

Barker DJ, BMJ 1995

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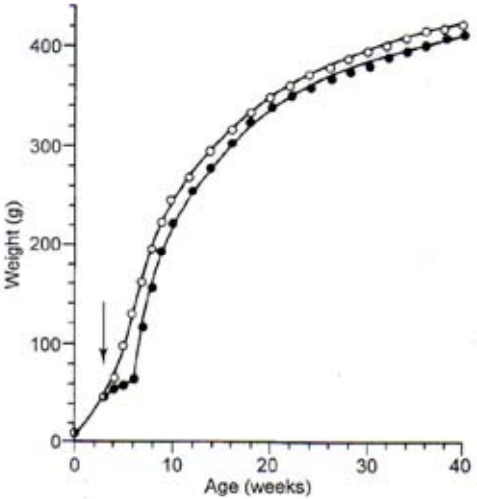
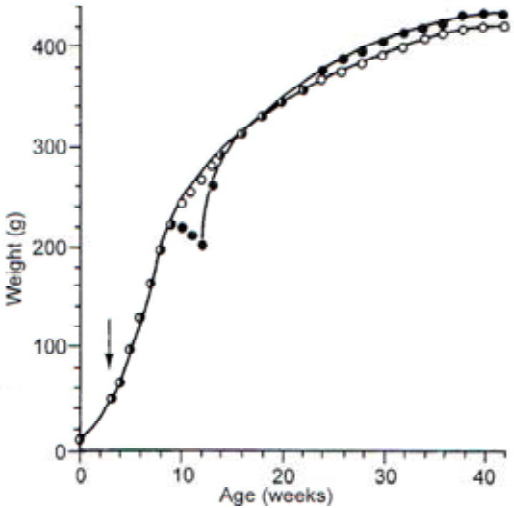
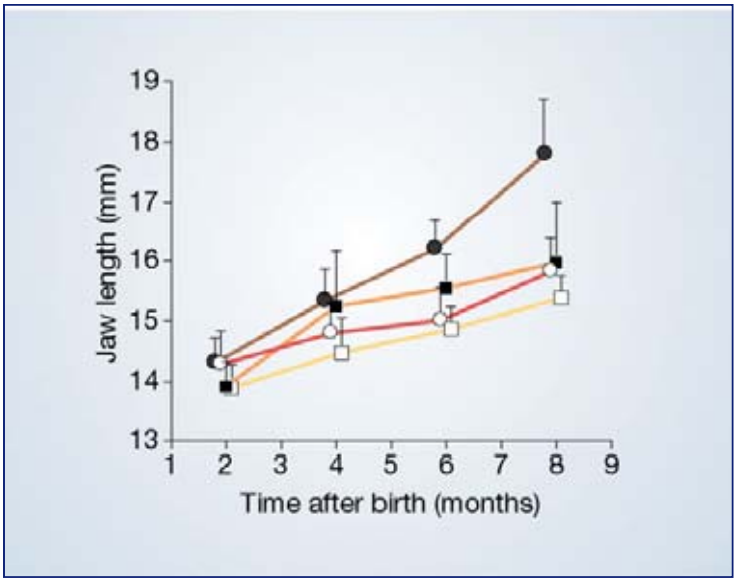
Widdowsen and McCance Critical periods





Developmental plasticity



Aubret F, Nature 2004

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Relation of birth weight and childhood respiratory infection to adult lung function and death from chr

Relation of fetal and infant growth to plasma fibrinogen and factor VII concentrations in adult life

A Lee, C Osmond, K Phipps, Y Stirling

Early growth and abdominal fatness in adult life

C M Law, D J P Barker, C Osmond, C H D Fall, S J

Growth in utero and serum cholesterol concentrations in adult life

C Osmond, C N Hales, C H D Fall

THE LANCET

Fetal growth, length of gestation, and polycystic ovaries in adult life

Birth weight and the risk of depressive disorder in late life

N, HOLLY SYDDALL, IAN RODIN, CLIVE OSMOND

Maternal Height, Childhood Growth and Risk of Hip Fracture in Later Life: A Longitudinal Study

C. Cooper[1], J. G. Eriksson[2], T. Forsén[2], C. Osm

[1]The MRC Environmental Epidemiology Unit, University of
and [2]The National Public Health Institute, Diabetes and Gen

Size at birth, the metabolic syndrome and 24-h salivary cortisol profile

Early Growth, Adult Income, and Risk of Stroke

J.G. Eriksson, MD, PhD; T. For
C. Osmond, PhD; D.J.

Microalbuminuria in Adults after Prenatal Exposure to the Dutch Famine

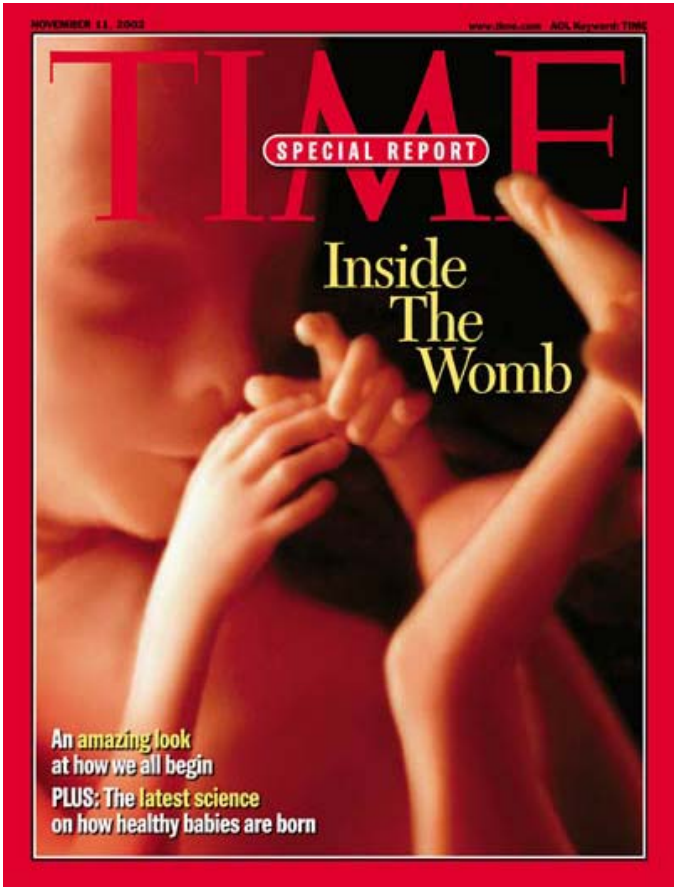
ert A. van Montfrans,[a] Patrick M.M. Bossuyt,[a]
id J.P. Barker,[b] and Otto P. Bleker[a]

Infant growth and income 50 years later

D J P Bark

Prenatal growth and subsequent marital status: longitudinal study

David I W Phillips, David J Handelsman, Johan G Eriksson, Tom Forsén, Clive Osmond, David J P Barker



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