

# Modelling Ageing Populations to 2030

**Michael Murphy**  
*London School of Economics*  
*on behalf of the MAP2030 project team*  
**Prepared for INDEPENDENT HEALTHY AGEING**  
**Meeting**  
**Thursday 13 November 2008**

# The background

- In the UK the number of people over the state pension age is projected to rise by about 40% in the next 25 years.
- The number aged 80 and over, where care needs are greatest, will double.
- Consistent projections of their financial, family, social and health resources are lacking.

# The 3-year programme objectives

To produce high quality analysis to inform public debate and development of future long-term care and pensions policy up to 2030 by:

- **projecting the numbers, disability status, family circumstances, income, savings and care needs of older people**
- assessing the affordability and distribution of costs and benefits of combined policy options for pensions and long-term care
- accounting for links between care needs and economic resources in later life

# Key issues relevant to Independent Healthy Ageing among older people:

- accumulation and distribution of income & assets
- ability to meet care costs
- **how trends in mortality and morbidity will evolve & will the extra years of life will be lived in good health?**
- **the consequences of family change for the availability of informal care & social participation**
- **availability and need for informal & formal care**
- how these domains are inter-related & how they differ between socio-economic and income groups.

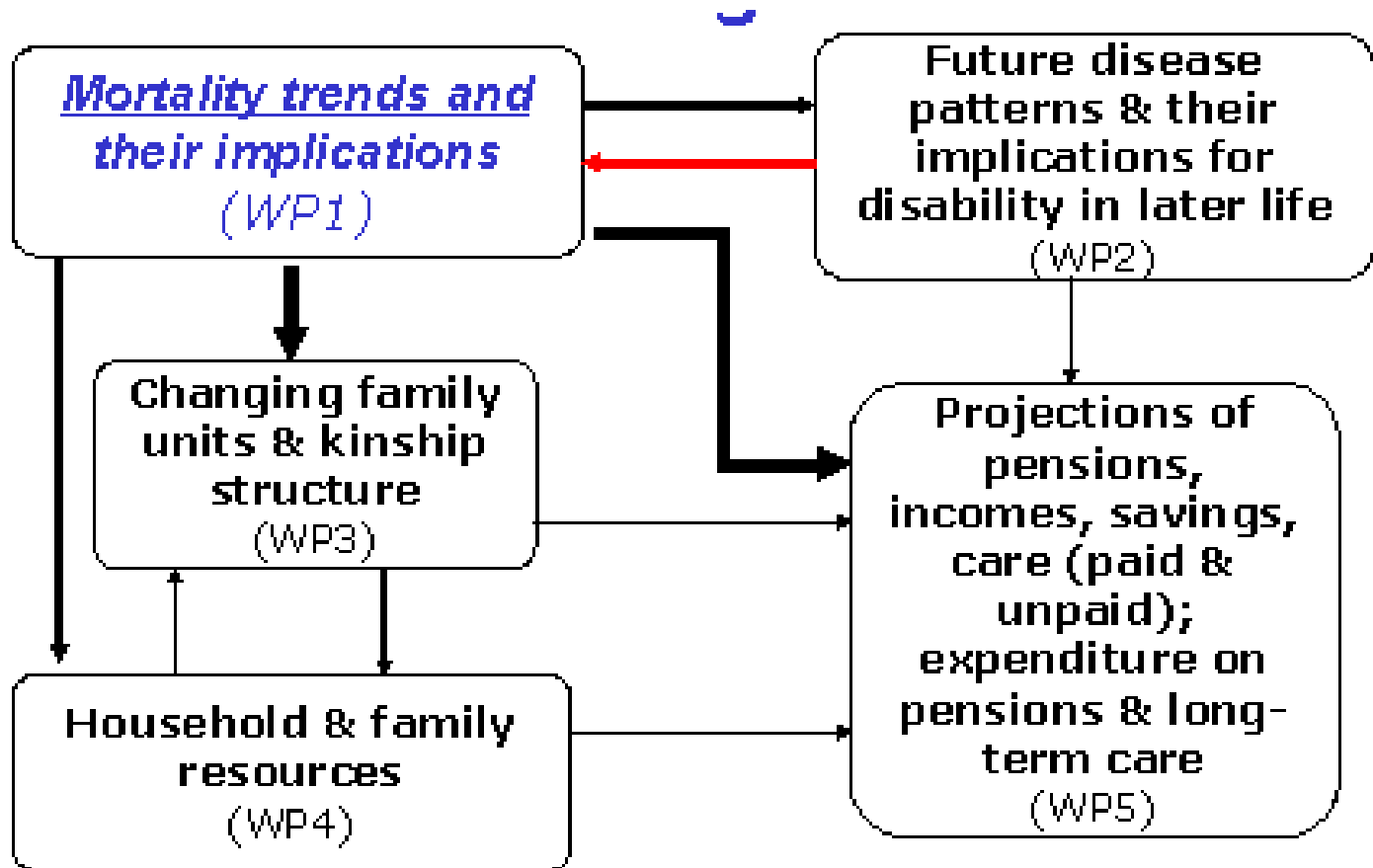
# The people involved

- Mike Murphy, Mariachiara di Chesare (LSE)
- Carol Jagger, James Lindesay, Ruth Matthews (Leicester)
- Emily Grundy & Sanna Read (LSHTM)
- Ruth Hancock & Marcello Morciano (UEA)
- Raphael Wittenberg, Adelina Comas-Herrera, Linda Pickard, Derek King, Juliette Malley & Megan Challis (PSSRU)
- Chris Curry, Adam Steventon, Sean James (PPI)

## Supporting partner

- Department for Work and Pensions

# Work packages



# Demographic factors important to Independent Healthy Ageing and demand for services

- **Population size**
- **Age structure**
- **Living arrangements**
  - living alone
  - marital status
- **Kin support**
  - children

# In the next 25 years (by 2031)

Total UK expected population growth  
approx 10.5 million

- **6.1 million more older people (65+)**  
– **of which 2.7 million 80 & over**
- 3.1 million more 'working age' (20-64)
- 1.3 million more children (0-19)

# Ageing of the older population

**The elderly population is itself ageing. The proportion of the UK population aged 65 & over who were 85 & over**

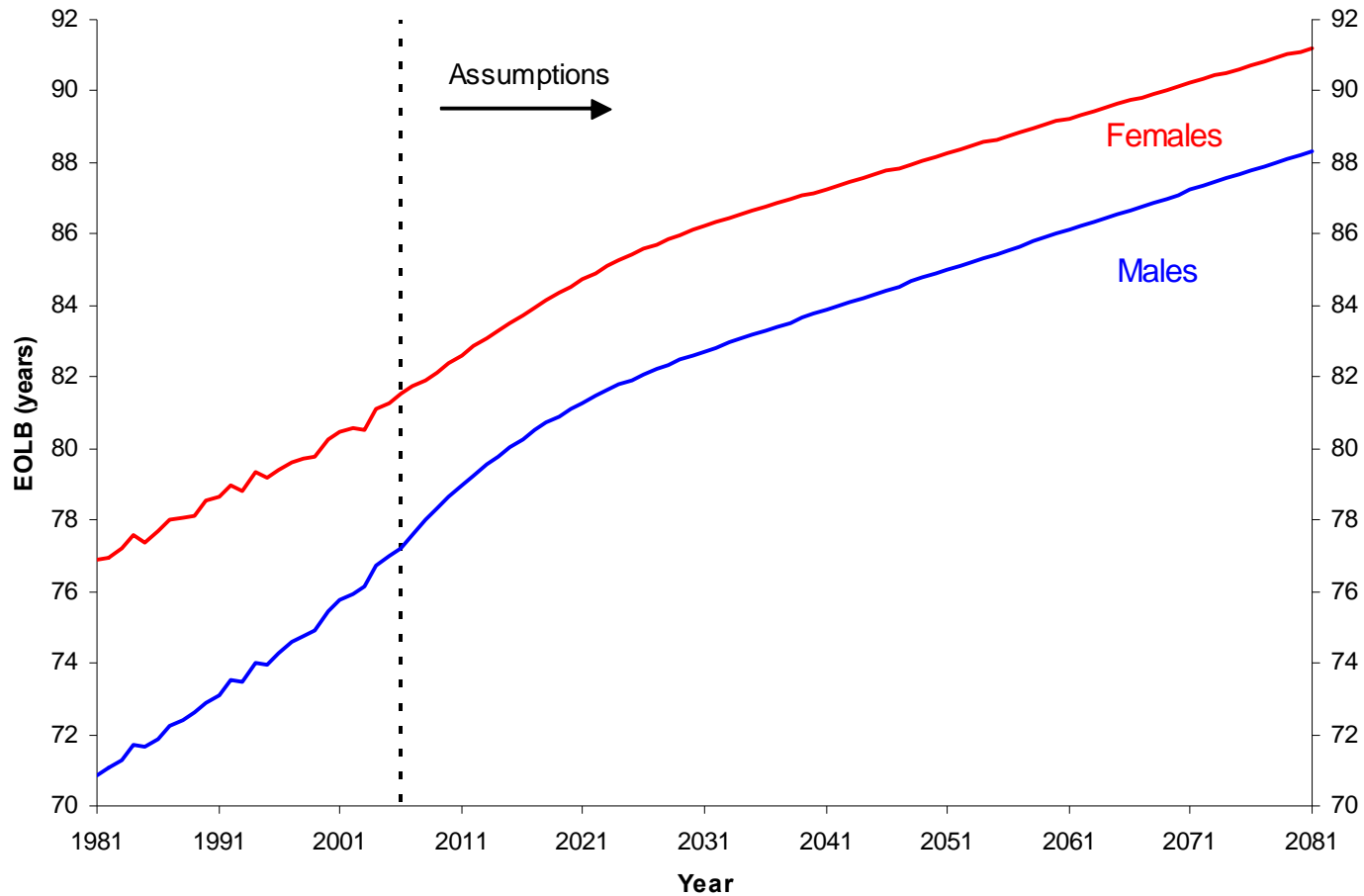
**1981 7%**

**2006 13%**

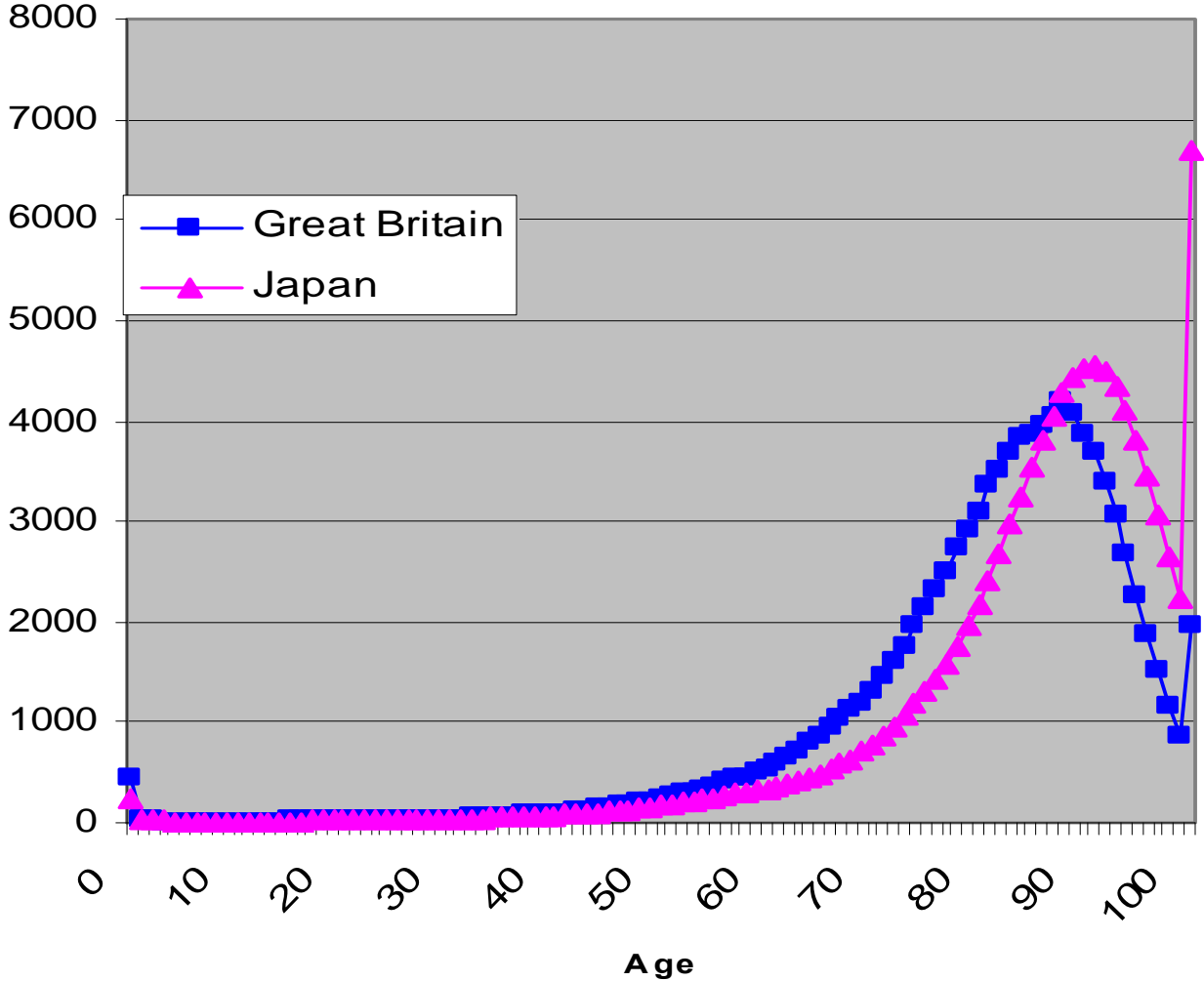
**2031 18%**

**Recent increases in the number of very old people have been larger than expected because of unanticipated falls in mortality among the elderly.**

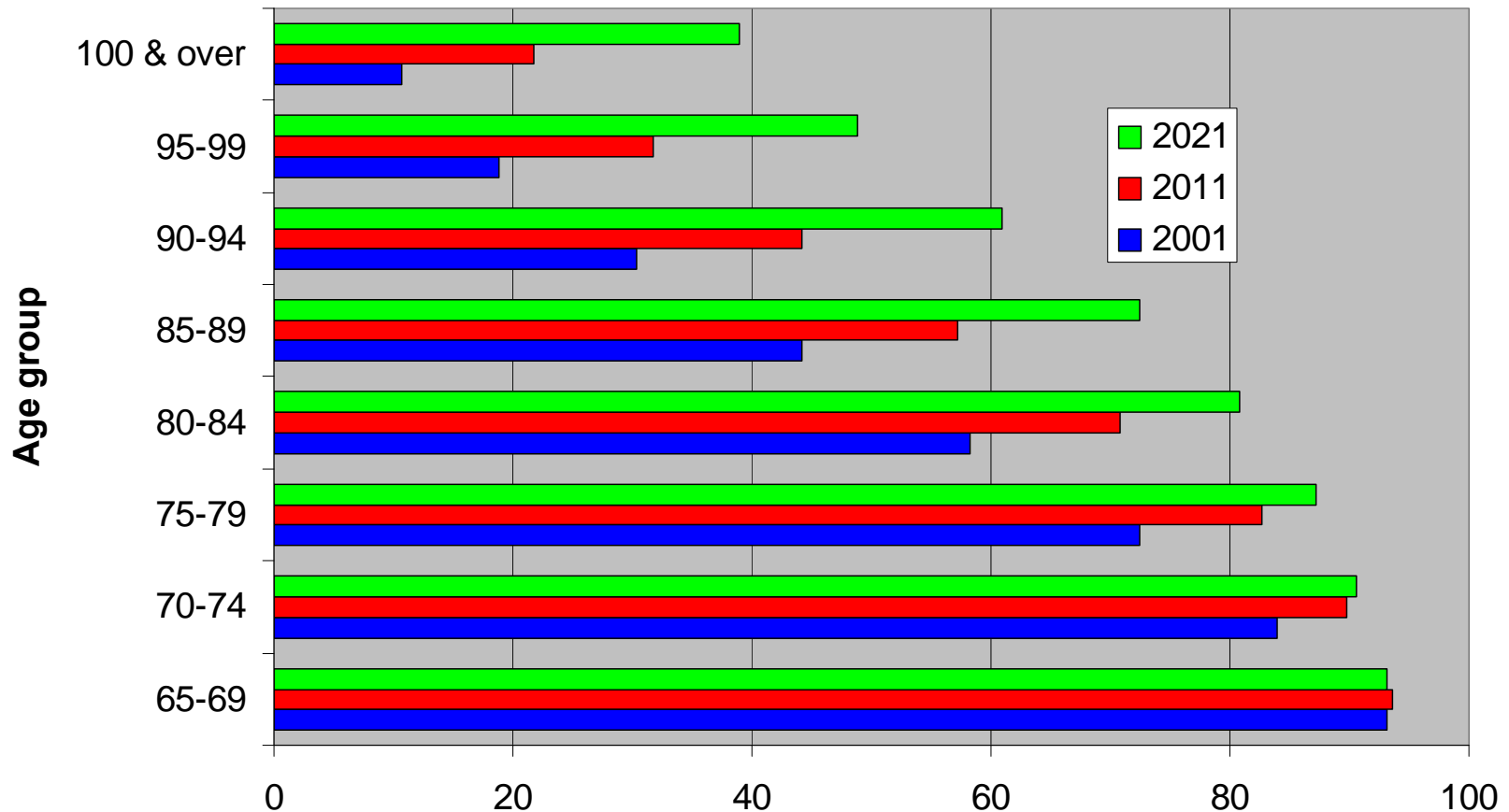
# Projected expectation of life at birth, United Kingdom 1981-2081



# Distribution of deaths out of 100,000 births, Females GB 2004-6 & Japan 2006



# Sex Ratio (Males per 100 Females), England & Wales 2001, 2011 & 2021 (2006-based projections)

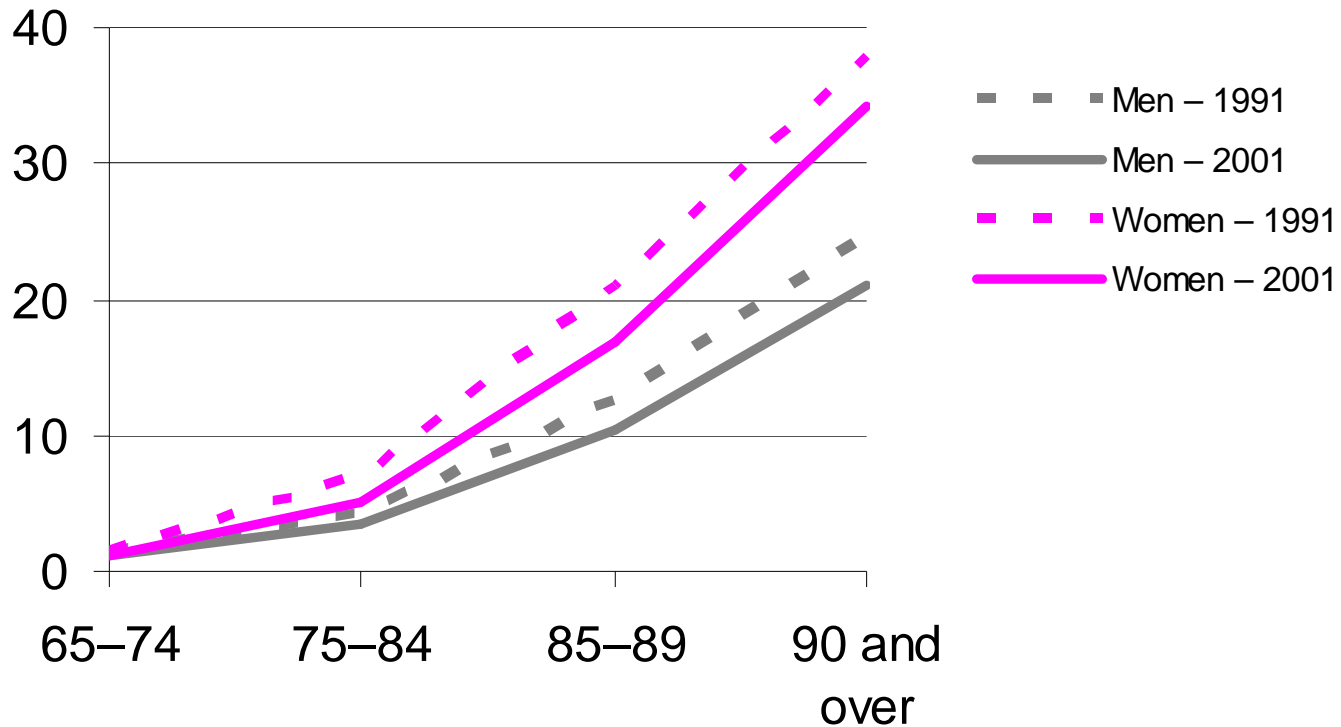


2006-based official projections <http://www.gad.gov.uk/>

# Household status of older people

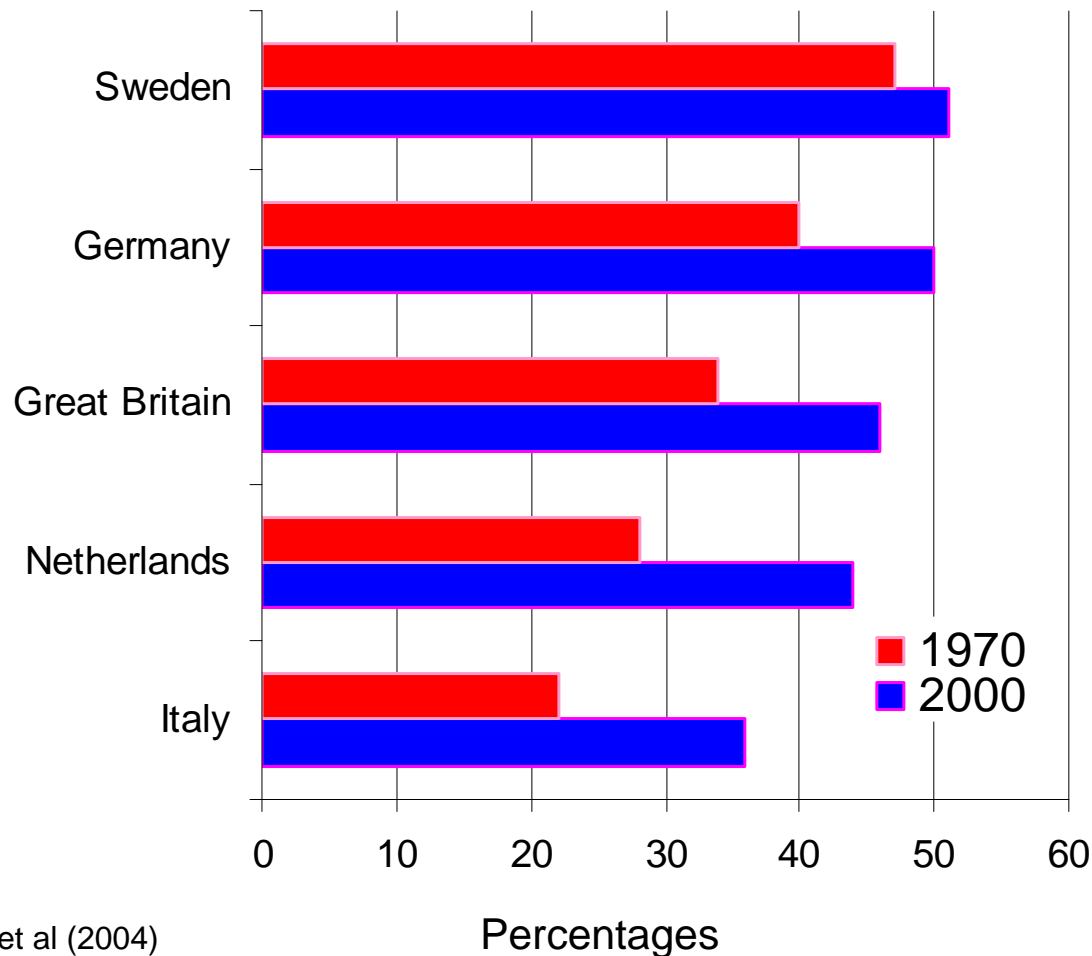
- the proportion in institutions was higher at the beginning of the 20<sup>th</sup> century than the 21<sup>st</sup>
- the growth in one-person elderly households, especially among widows and widowers, is substantial
- similar trends are evident in other industrialised countries

# People aged 65 & over in communal establishments: by sex & age, 1991 and 2001, GB



Source: Census 1991 and Census 2001, Office for National Statistics;  
Census 1991 and Census 2001, General Register Office for Scotland

# Women aged 65 and over living alone in selected European countries, 1970 & 2000



Source: Tomassini et al (2004)

# Family support influenced by:

- Kin availability (determined by levels and patterns of mortality, fertility and marriage)
- Willingness/ability of younger relatives to provide support and of older people's preferences for family care rather than formal care

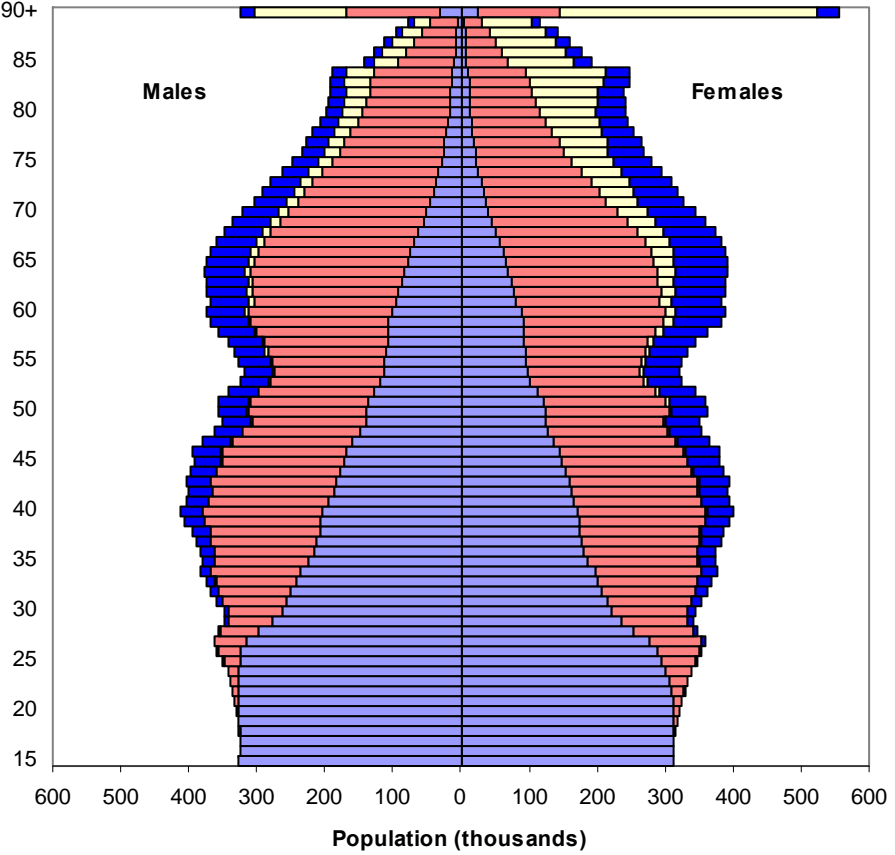
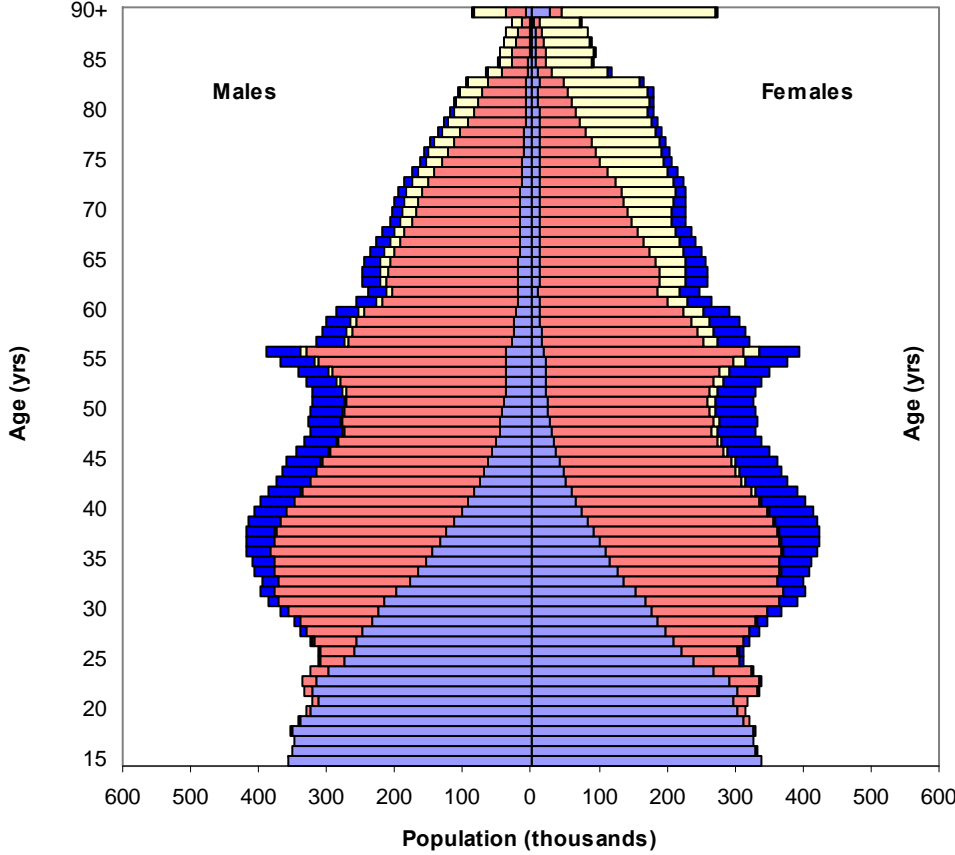
# Projected population by age, sex and legal marital status, England & Wales, 2003 & 2031, (000s)

(<http://www.gad.gov.uk/>)

2003-based marital status and cohabitation projections for England and Wales, Population Trends 121)

## 2003

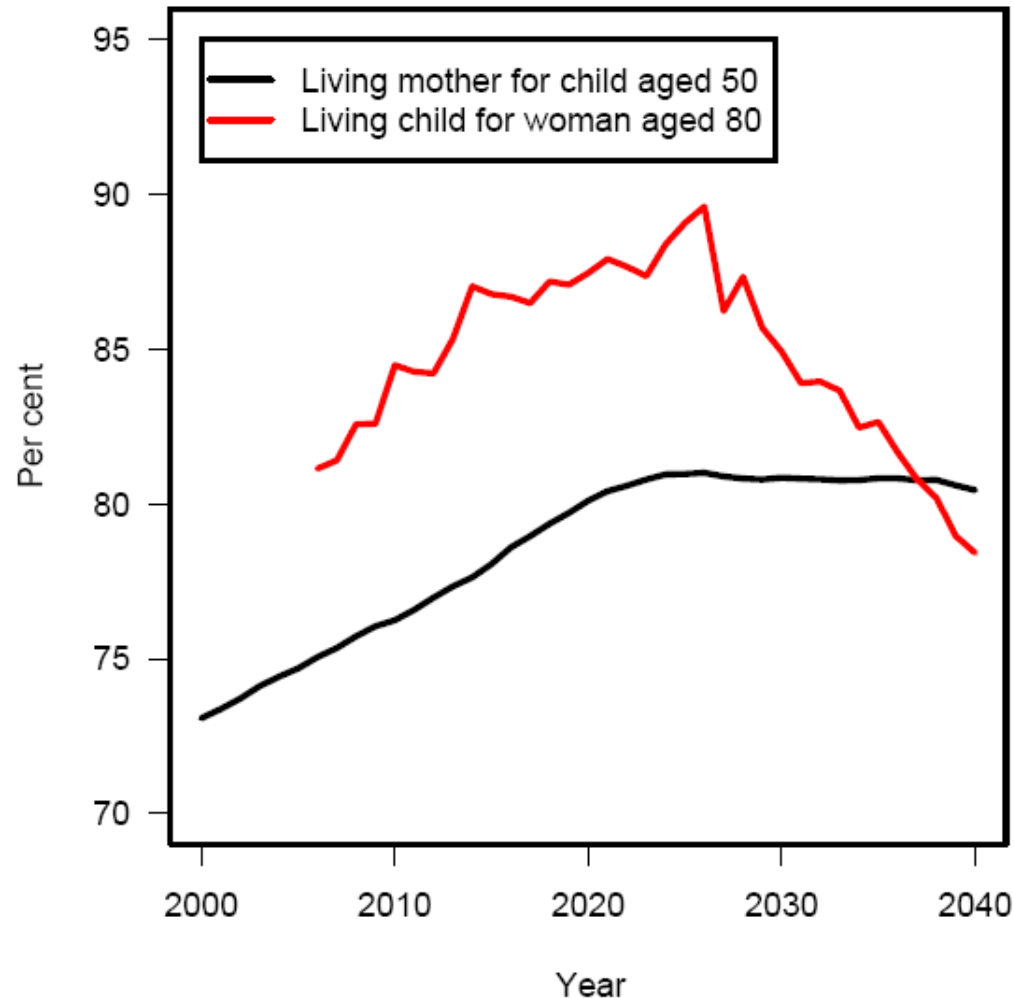
## 2031



Legend: Never Married (blue), Married (red), Widowed (yellow), Divorced (dark blue)

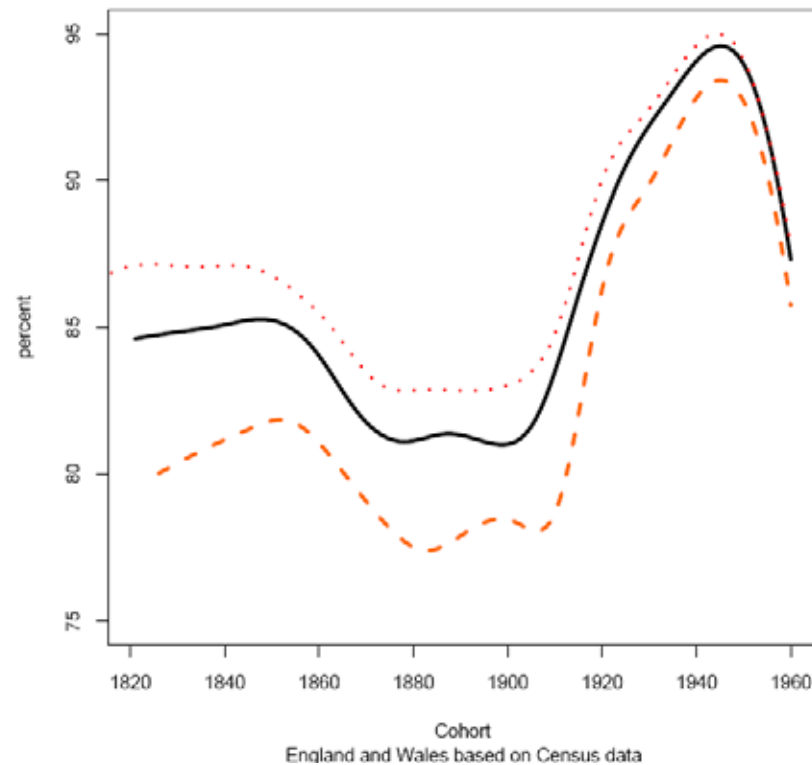
Legend: Never Married (blue), Married (red), Widowed (yellow), Divorced (dark blue)

# The Next Four Decades: Living mothers of 50-year-olds and living children of 80-year-old women, England & Wales



Murphy, M and E. Grundy (2003) Mothers with living children and children with living mothers: the role of fertility and mortality in the period 1911–2050. Pp 36-44 in *Population Trends* 112 Summer 2003.

# Proportions of women ever-married by exact ages 35, 40 and 45



# Independent Healthy Ageing: How will changing disease patterns affect the future burden of disability at older ages?

C. Jagger, R. Matthews, MRC CFAS

# Simulation model

- Uses MRC Cognitive Function and Ageing Study (MRC CFAS)
- Has two stages:
  - Transition builds on earlier work modelling the impact of diseases on the onset of disability and death (Spiers et al 2005)
  - Projection applies transition rates to 'age' the population

# Scenarios - Improving population health

- Individuals take health seriously
  - decline in risk factors, particularly smoking and obesity
- New treatments or technologies emerge that
  - reduce the disabling effects of arthritis, dementia, stroke and CHD
  - make further gains in survival with these diseases
- Health service is responsive with
  - high rates of technology uptake for disease prevention
  - excellent diffusion of new treatments to all who can benefit

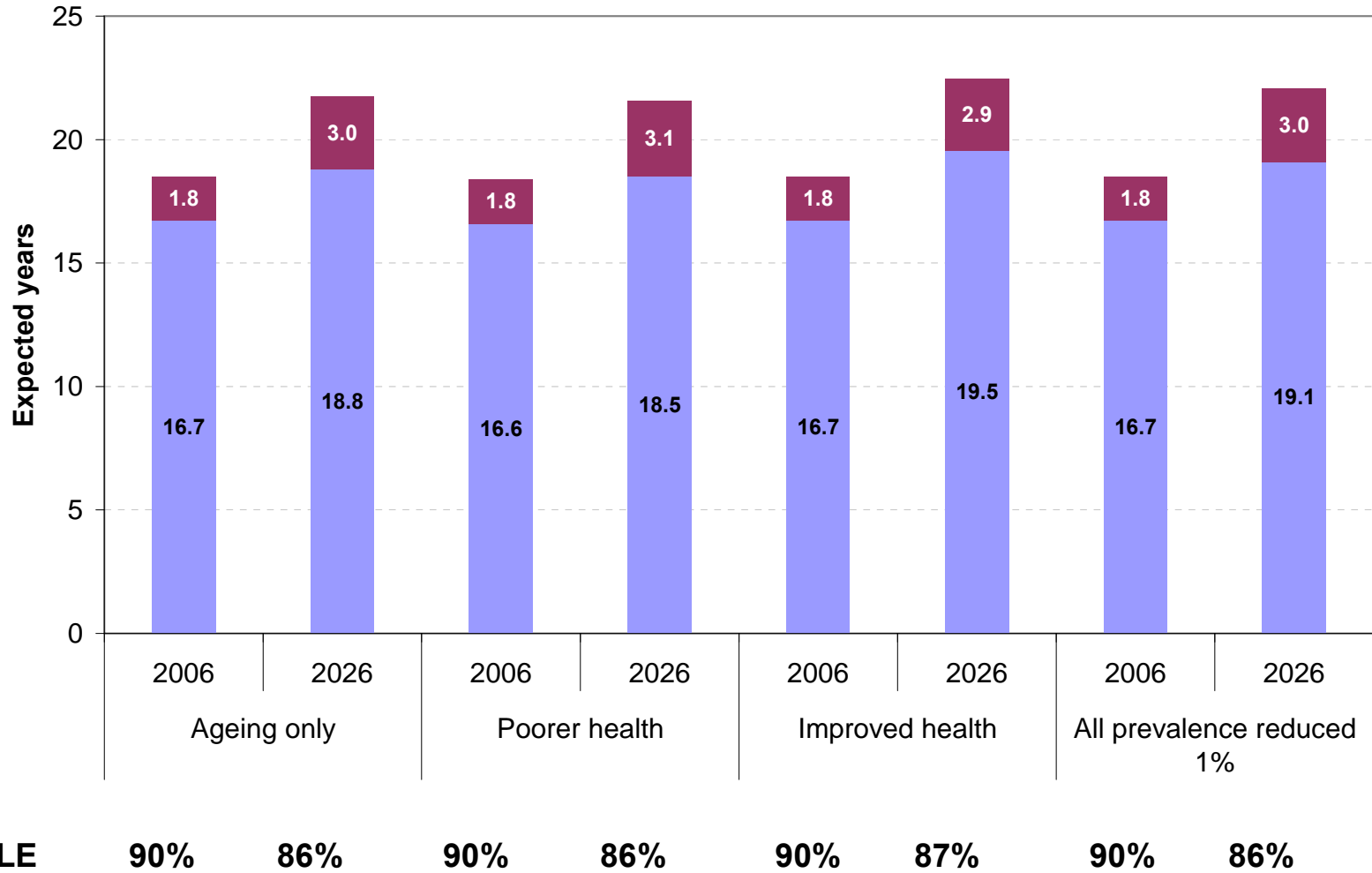
# Model parameters- Improving health

- reductions in the prevalence of arthritis, stroke, CHD and mild dementia by 1% every two years from 2012 and for moderate/severe dementia of every two years from 2016
- decrease of 10% in transitions to disability for arthritis, stroke, CHD and mild dementia from 2012
- reduction of 5% in mortality for stroke, CHD and mild dementia from 2016

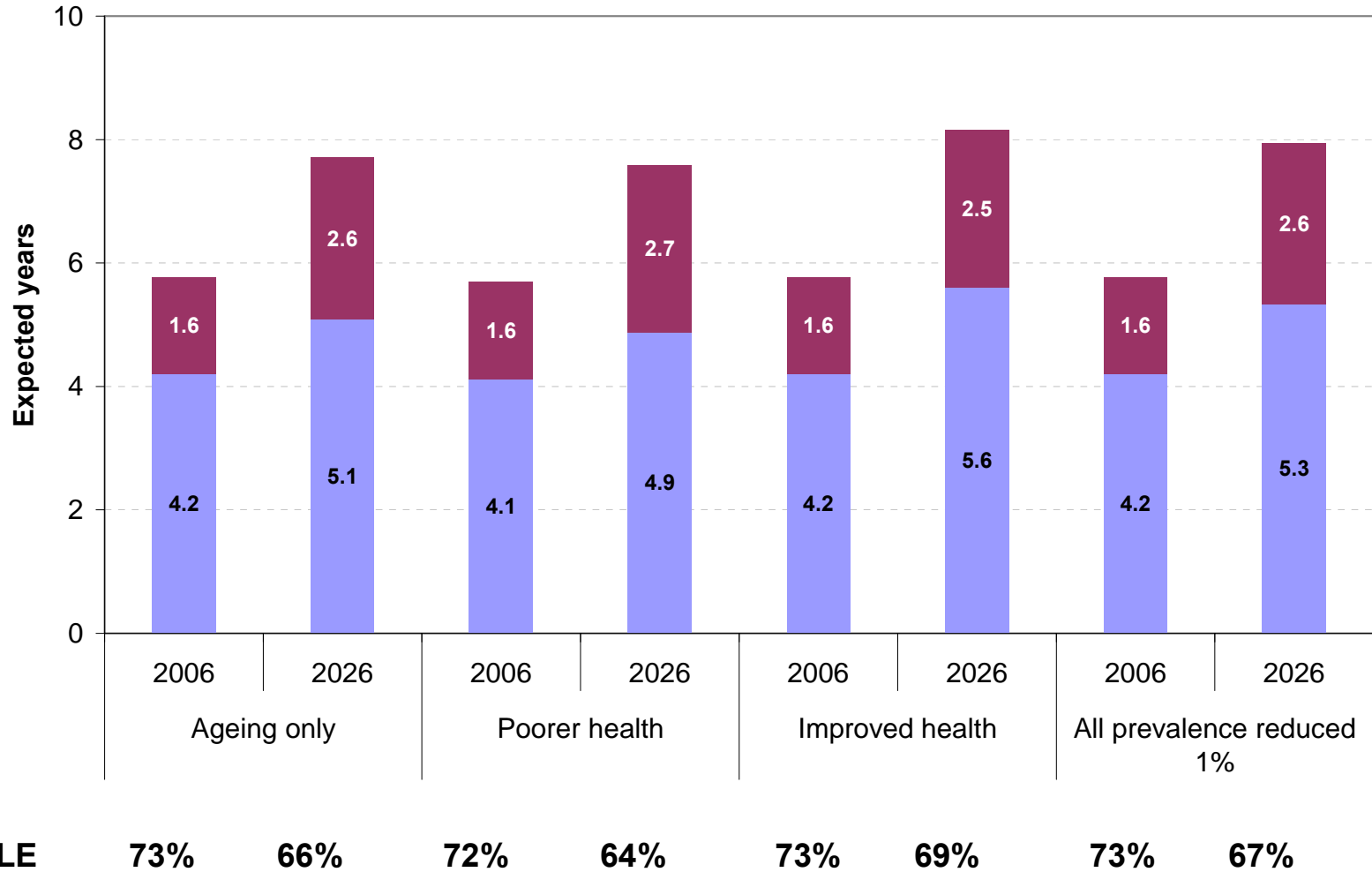
# Model parameters - Poorer health

- increases in the prevalence of arthritis, stroke, CHD by 0.5% every two years from 2002
- increase of 10% in the transitions to disability for arthritis, stroke, CHD from 2002
- reduction of 5% in mortality from mild dementia, stroke and CHD from 2016

# LE and DFLE at age 65 in 2006 and 2026



# LE and DFLE at age 85 in 2006 and 2026



# Conclusions: future health status

- Ageing of the population alone will result in considerable increases over the next 20 years in
  - the total number of older people (45%) and
  - the numbers with significant disability (86%)
- Numbers with major diseases will also increase by 40-50%
- LE increases > DFLE increases and %DFLE/LE decreases therefore relative expansion of disability

# Conclusions

Modest improvements in population health will

- further increase the total numbers of older people
- reduce the numbers with disability
- give more extra years disability-free

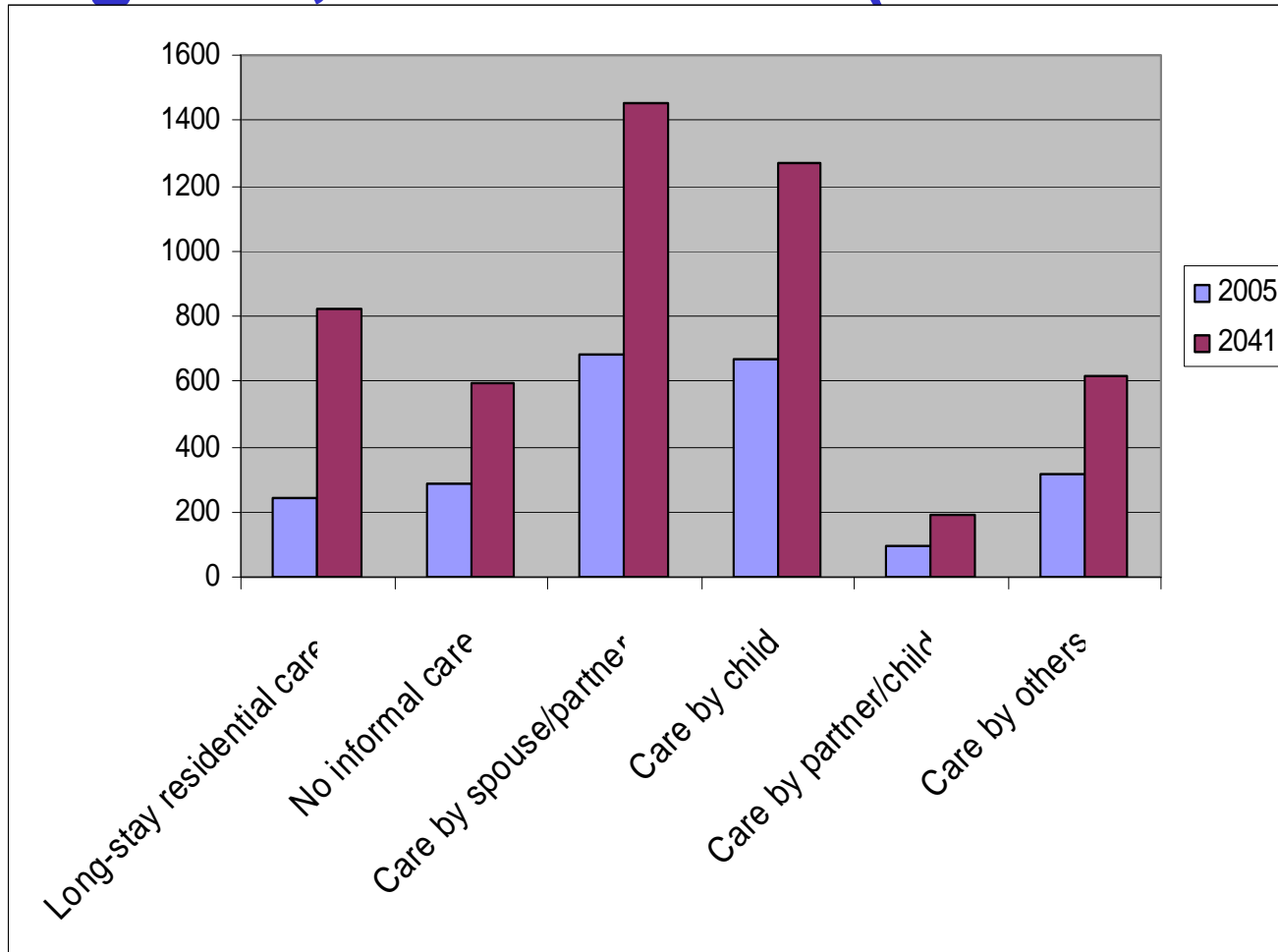
# Independent Healthy Ageing: Informal Care for Older People by their Adult Children to 2041: Projections of Demand & Supply in England

(from the PSSRU Long-term Care projections model)

Linda Pickard with Raphael Wittenberg, Derek King, Juliette  
Malley, Adelina Comas-Herrera

Personal Social Services Research Unit (PSSRU)  
London School of Economics & Political Science

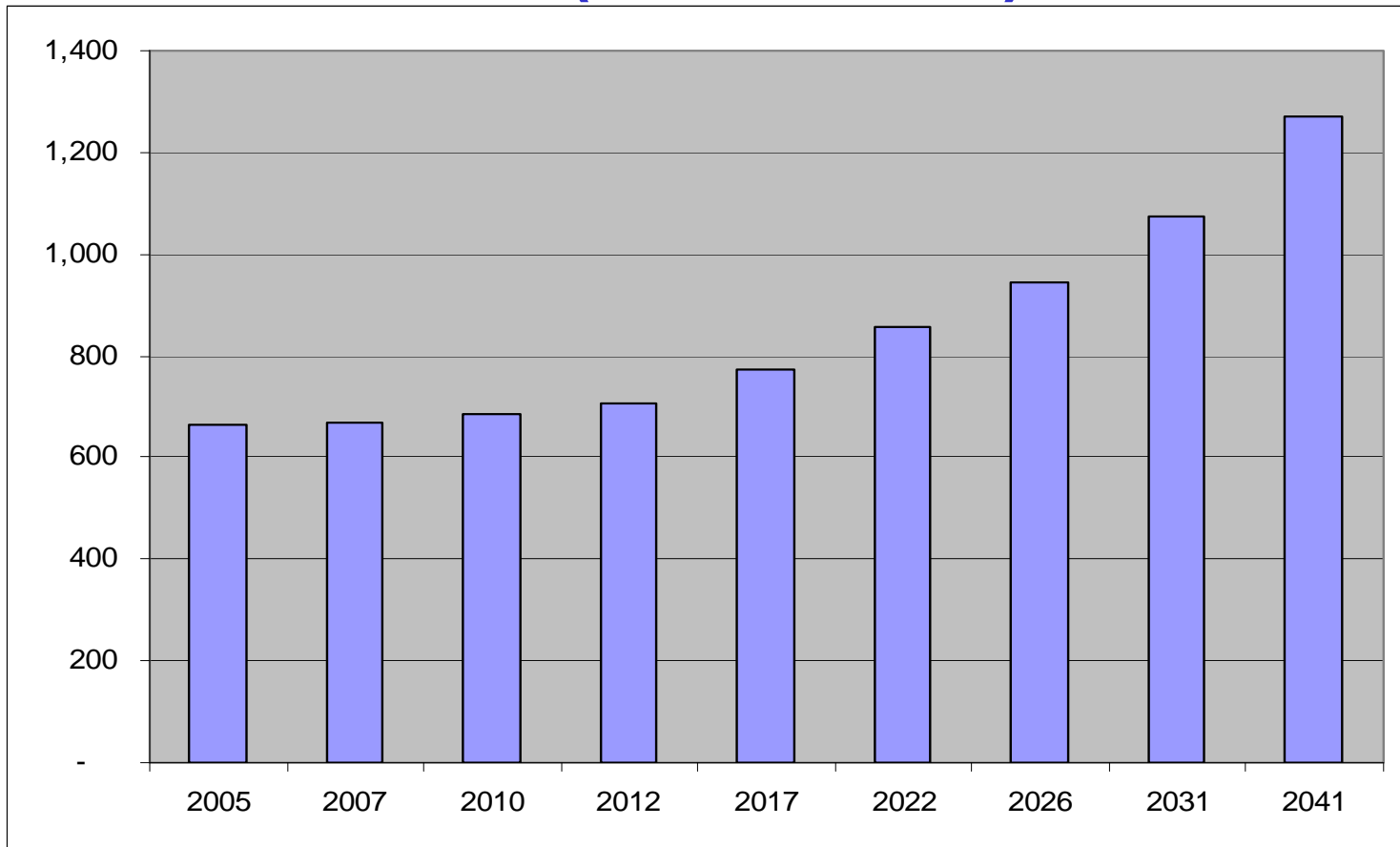
# People aged 65+ with a functional disability, by source of informal care, England, 2005 & 2041 (thousands)



# ***Demand for care from children in the future***

- Currently around 600,000 disabled older people in England receive informal care from adult children
- Assuming constant probabilities of receiving care by key characteristics, the number of disabled older people projected to receive informal care from adult children is projected to rise by 90% to around 1.3 million in 2041

# People aged 65+ with a functional disability projected to receive care from adult children, England, 2005-2041 (thousands)

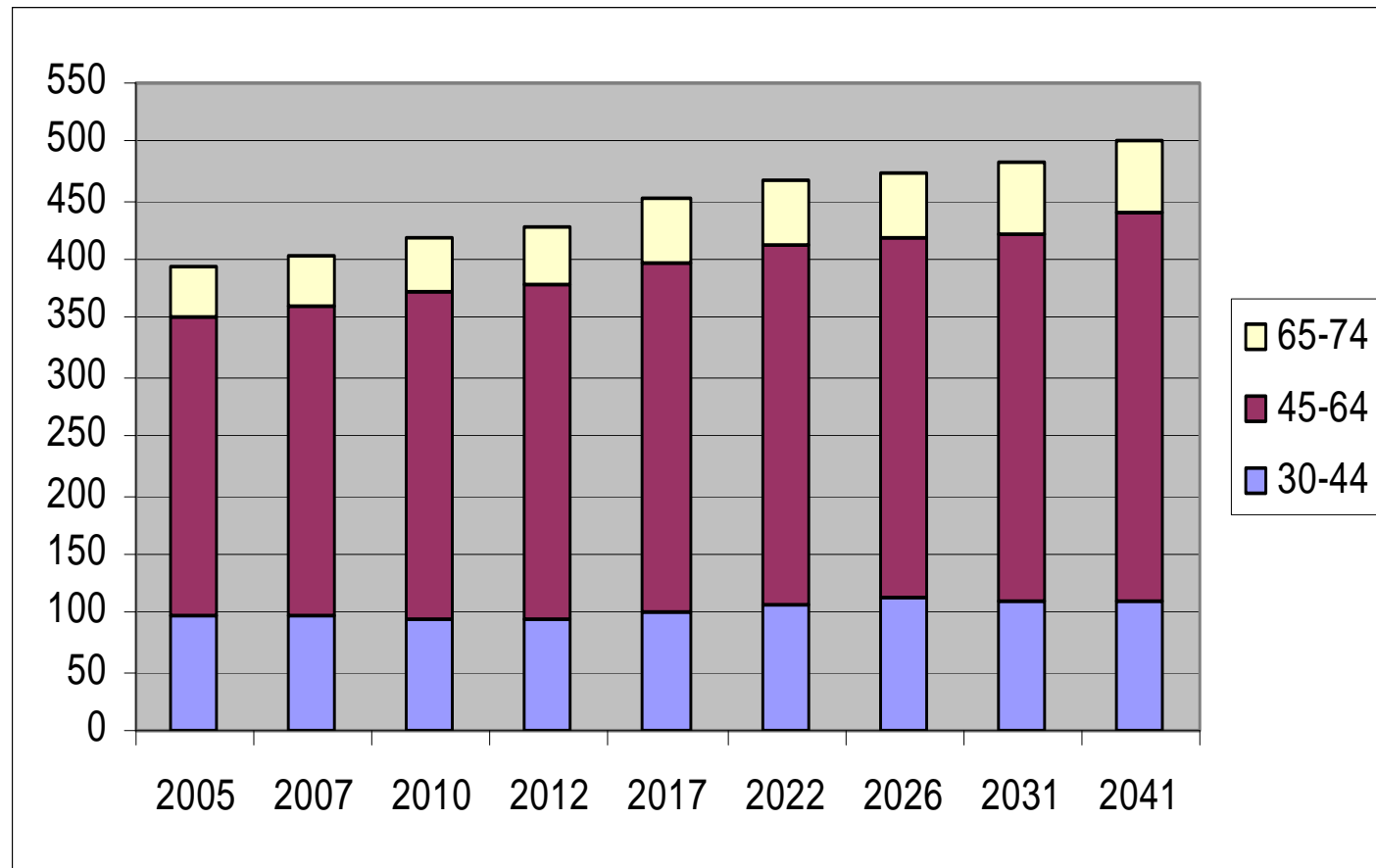


Wittenberg *et al* 2008

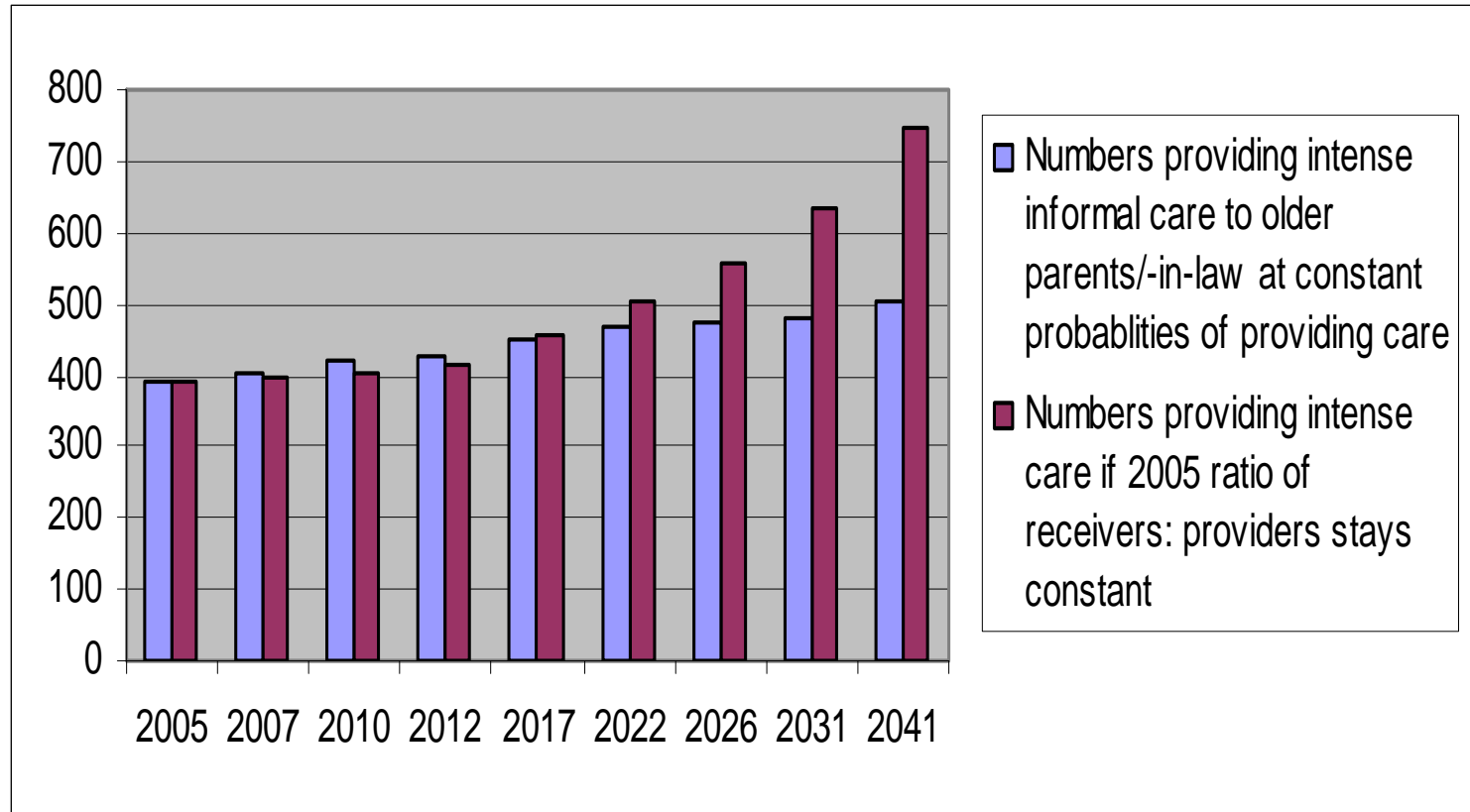
# Future *supply* of care by adult children

- There are currently around 400,000 people providing intense informal care to older parents
- This is projected to rise by 27.5% to 500,000 by 2041
- Around 90% of those providing care are under 65 years old and this is still likely to be the case in 2041
- Around two thirds of those providing care are women and this is also still likely to be the case in 2041

# Projected numbers people (aged 30 to 74) providing care for 20 or more hours a week to parents aged 65 and over, England, 2005-2041 (thousands)



# The 'care gap': difference between supply of intense intergenerational care & demand for care by disabled older people, England 2005-2041



# Will the supply of intense intergenerational care keep pace with demand?

- Trends in supply and demand suggest that there will be a fall in the ratio of care-receivers to providers of intense care (from 0.6 in 2005 to 0.4 in 2041)
- This change will result in a shortfall of 250,000 intense carers or 250,000 fewer disabled older people receiving intense informal care by 2041
- 'Care-gap' is primarily driven by demographic changes

# ***Summary: factors relevant independent healthy ageing in next quarter century or so***

- **Population size & age structure in next quarter century**
  - Growth of 'young old' (3 million) & 'old old' (3 million)
- **Health status in next 20 years**
  - Growth in numbers with significant disability (86%)
  - Numbers with major diseases will also increase by 40-50%
  - LE increases >DFLE increases and %DFLE/LE decreases therefore relative expansion of disability
- **Living arrangements**
  - Some decrease in prevalence of living alone among old people (but overall numbers increase)
  - More married, especially women (& more divorced)
- **Kin support**
  - More living children available for some decades
  - But an increasing 'care gap' in decades to come

# References

- Hancock R., Juarez-Garcia A., Comas-Herrera A., King D., Malley J., Pickard L. and Wittenberg R. (2007) 'Winners and Losers: Assessing the Distributional Effects of Long-Term Care Funding Regimes' *Social Policy and Society* 6 (3) 379-395
- Hancock R., Wittenberg R., Pickard L., Comas-Herrera A., Juarez-Garcia A., King D. and Malley J. (2006) Paying for Long-Term Care for Older People in the UK: Modelling the Costs and Distributional Effects of a Range of Options PSSRU discussion paper 2336/2 available at <http://www.pssru.ac.uk/>
- Berthoud R. and Hancock R. (2008) 'Disability Benefits and Paying for Care' in Churchill N (ed) *Advancing Opportunity: Older People and Social Care*. London: The Smith Institute
- Pickard L (2008a) *Informal Care for Older people provided by their Adult Children: Projections of Supply and Demand to 2041 in England. Report to the Strategy Unit (Cabinet Office) and the Department of Health*. PSSRU Discussion Paper 2515 ([www.pssru.ac.uk/pdf/dp2515.pdf](http://www.pssru.ac.uk/pdf/dp2515.pdf))
- Wittenberg R, Pickard L, Malley J, King D, Comas-Herrera A, Darton R (2008) *Future demand for Social Care, 2005 to 2041: Projections of Demand for Social Care for Older People in England. Report to the Strategy Unit (Cabinet Office) and the Department of Health*. PSSRU Discussion Paper 2514 ([www.pssru.ac.uk/pdf/dp2514.pdf](http://www.pssru.ac.uk/pdf/dp2514.pdf))

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