The impact of disease on Healthy Active Life Expectancy at older ages

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29 January 2009 – Older people living longer, healthier lives

Older people are living longer, healthier lives than they did ten years ago, according to a report published today.

Not only has life expectancy for those over 65 increased, but healthy life expectancy and disability-free life expectancy at age 65, have increased.

Pensioners are also better off than they were ten years ago with their average income growing faster than earnings and their net income growing 29% between 1997-2007.

Minister Rosie Winterton said:

"We should celebrate the fact that people are now living longer, healthier lives. In the next 20 years more than half of us will be over 50. It is vital that we address the needs of increasing numbers of older people across a whole range of areas and that is why we are developing a new strategy for an ageing society.

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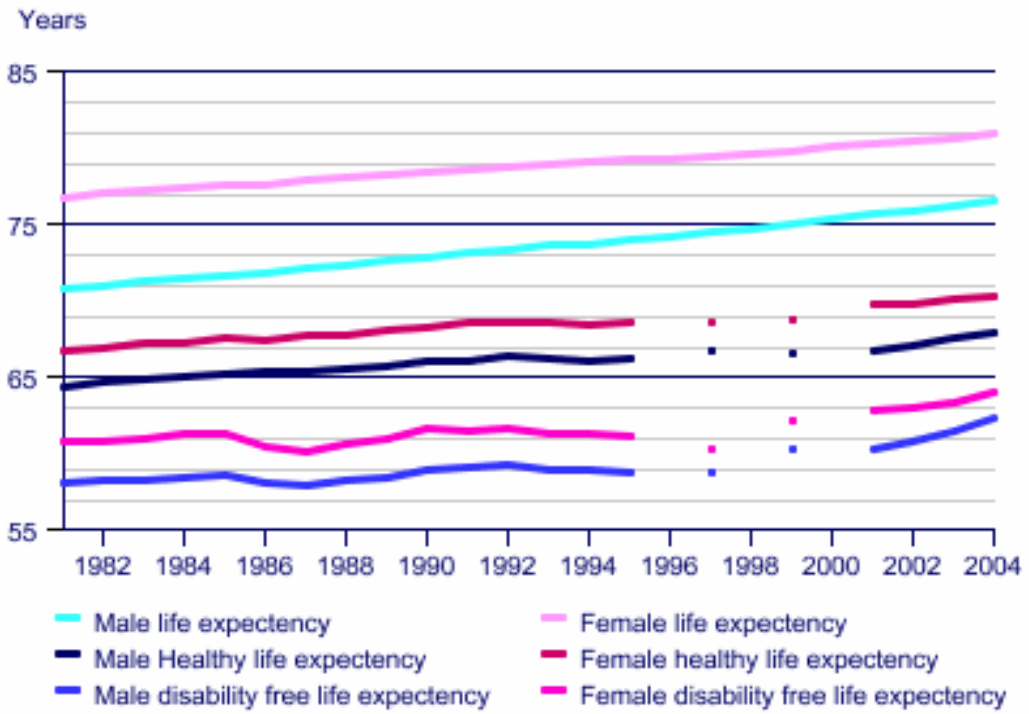
HEALTH AND CARE ▶ printer-friendly

Health Expectancy

Living longer, more years in poor health



Life expectancy, healthy life expectancy and disability-free life expectancy, 1981-2004

The population of Great Britain has been living longer over the past 23 years, but the extra years have not necessarily been in good health or free from illness or disability. Life expectancy, healthy life expectancy (the expected years of life in good or fairly good health) and disability-free life expectancy (the expected

Related Links

▶ Healthy Life Expectancy at birth and at 65 in Great Britain and England
▶ Health Statistics Quarterly

External Links

▶ GAD Life Tables

Suggested Links

▶ Health and care
▶ Life expectancy

Population ageing

- Most countries are seeing year on year increase in life expectancy at birth and at older ages
- Quality as well as the quantity of life at older ages is important
- Are we exchanging longer life for poorer health (expansion of morbidity scenario) or are the extra years spent in good health (compression of morbidity)?

Living longer but healthier?

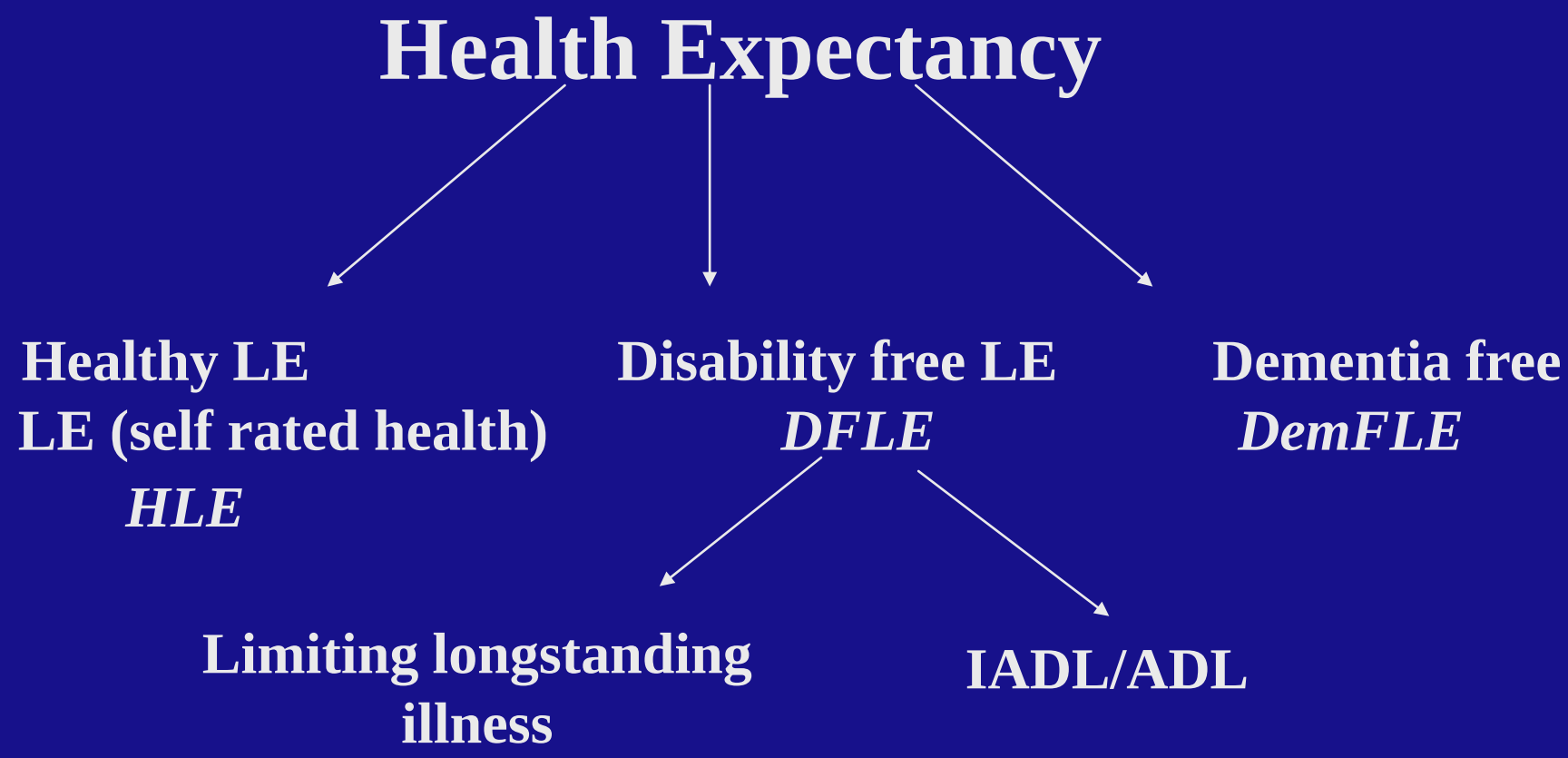
- Keeping the sick and frail alive
  - *expansion of morbidity* (Kramer, 1980).
- Delaying onset and progression
  - *compression of morbidity* (Fries, 1980, 1989).
- Somewhere in between: more disability but less severe
  - *dynamic equilibrium* (Manton, 1982).

Quality or quantity of life?

Health expectancy

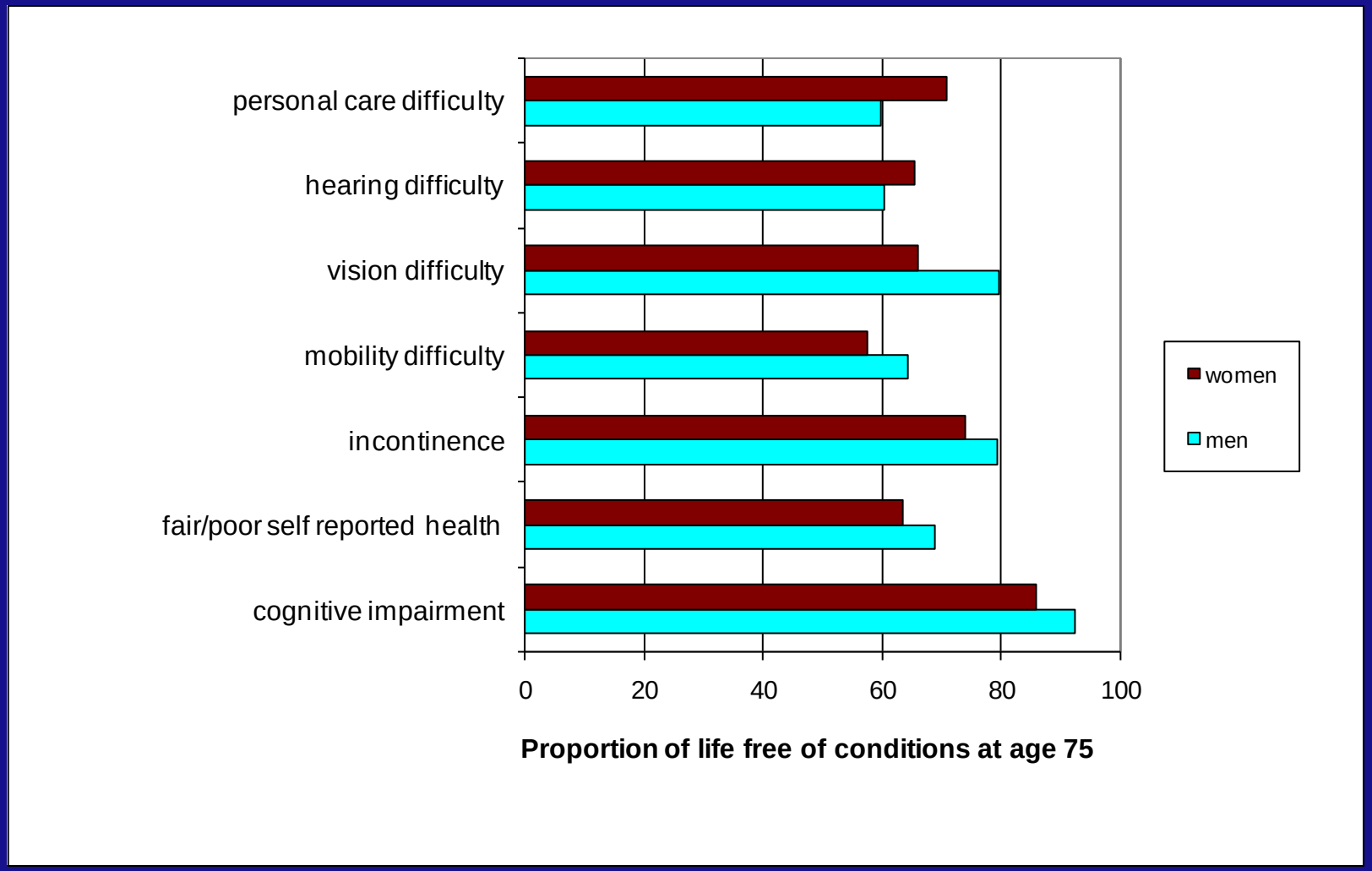
- partitions years of life at a particular age into years healthy and unhealthy
- adds information on quality
- is used to:
  - monitor population health over time
  - compare countries (EU Healthy Life Years)
  - compare regions within countries
  - compare different social groups within a population (education, social class)

Terminology of health expectancies



Many measures of health = many health expectancies!

Many health expectancies!



How do different diseases affect disability-free life expectancy?

Journal of Gerontology: MEDICAL SCIENCES
2007, Vol. 62A, No. 4, 408–414

The Burden of Diseases on Disability-Free Life Expectancy in Later Life

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[2]Medical Research Council Biostatistics Unit, Institute of Public Health, University of Cambridge, United Kingdom.
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[5]Institute of Public Health, University of Cambridge, United Kingdom.

Background. The consequences of diseases in later life have been judged predominantly through mortality, resulting in an emphasis on the fatal rather than the nonfatal disabling conditions. We use a longitudinal study with follow-up at 2, 6, and 10 years to assess the impact of different diseases on both total life expectancy (TLE) and disability-free life expectancy (DFLE).

Methods. The Medical Research Council Cognitive Function and Ageing Study investigators interviewed 13,004 people aged 65 years and older from five U.K. centers starting in 1991. Persons aged 75 years and older were oversampled. Disability (mild, moderate, and severe) was assessed through basic Activities of Daily Living (ADL) and Instrumental ADL (IADL) scales at baseline and at follow-ups at 2, 6, and 10 years. TLE and DFLE were compared for persons with and without each of nine conditions.

Results. At age 65, men had a TLE of 15.3 years of which 12.1 (79%) were free of any disability, whereas women of the same age had an average TLE of 19.4 years, 11.0 years (57%) disability-free. Men (women) aged 65 years without stroke had 4.8 (4.6) more years of TLE and 6.5 (5.8) more years DFLE. Without diabetes, men (women) lived 4.4 (5.6) years longer and had 4.1 (5.1) years disability-free.

Conclusions. More disability-free years were gained than total life years in persons free of stroke, cognitive impairment, arthritis, and/or visual impairment at baseline. This finding suggests that elimination of these conditions would result in a compression of disability.

Why is this important?

- Targets for reduction of diseases usually focus on mortality
- All models of the disablement process put disease/pathology at the beginning of the process
- Many diseases/conditions of older people significantly affect quality sometimes as well as but sometimes instead of the quantity of life
- Looking at the gains in Disability-free Life Expectancy through the (hypothetical) elimination of diseases is one way of capturing both
- Much of this work to date has been using prevalence data and cause-deleted life tables – can only look at fatal diseases

MRC CFAS

- Five centres
- stratified random sample aged 65+
- includes those in institutions
- 13004 interviewed at baseline in 1991
- 2, 6 (Ely only) and 10 year follow-ups
- death information from ONS

Definitions - disability

- Disability based on hierarchies in IADLs (household care activities) and ADLs (personal care activitives):
  - Moderate+ disability - Unable to perform at least one of five ADLS/IADLs independently
  - Mild disability - Able to perform all five above but required help with at least one of: shopping (including carrying heavy bags) and heavy housework

Definitions – diseases/conditions

Diagnostic subscales for

angina*, peripheral vascular disease (PVD), cognitive impairment

Have you ever

suffered from…?

heart attack*, arthritis, asthma, bronchitis

been given medical treatment for…?

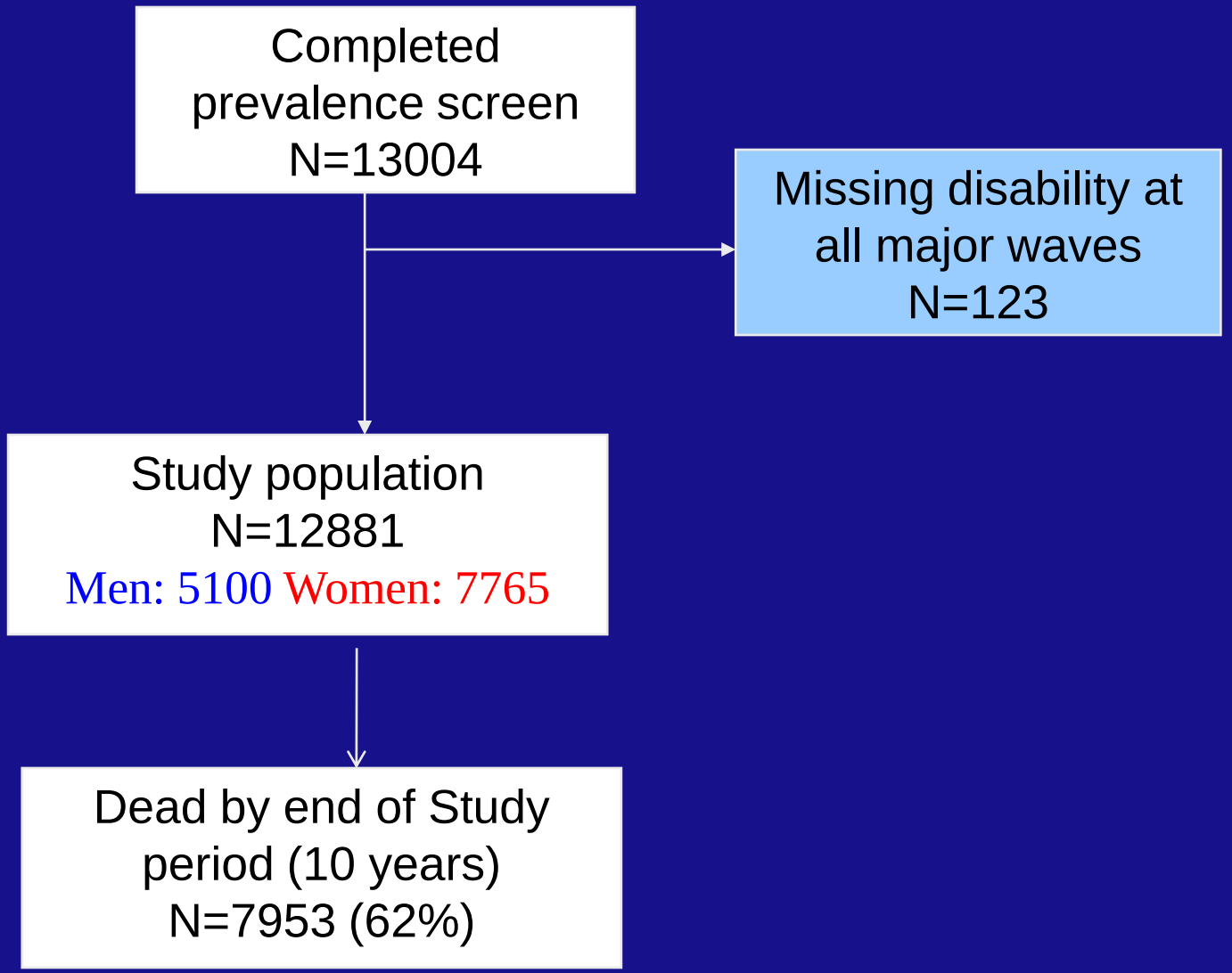
high blood pressure, stroke, diabetes

Do you have a problem with ..which interferes with day-to-day living?

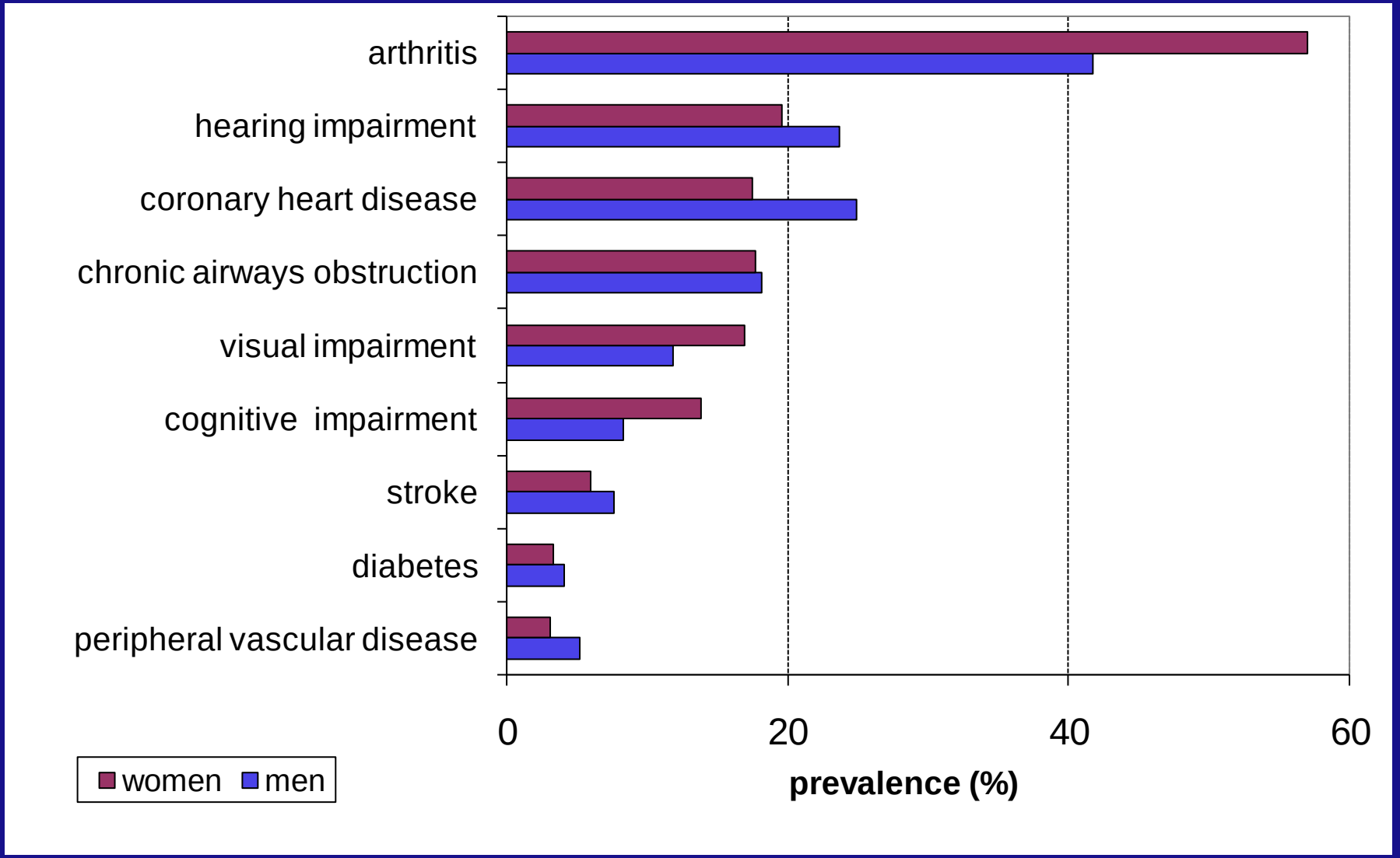
hearing, eyesight

*CHD= angina+heart attack

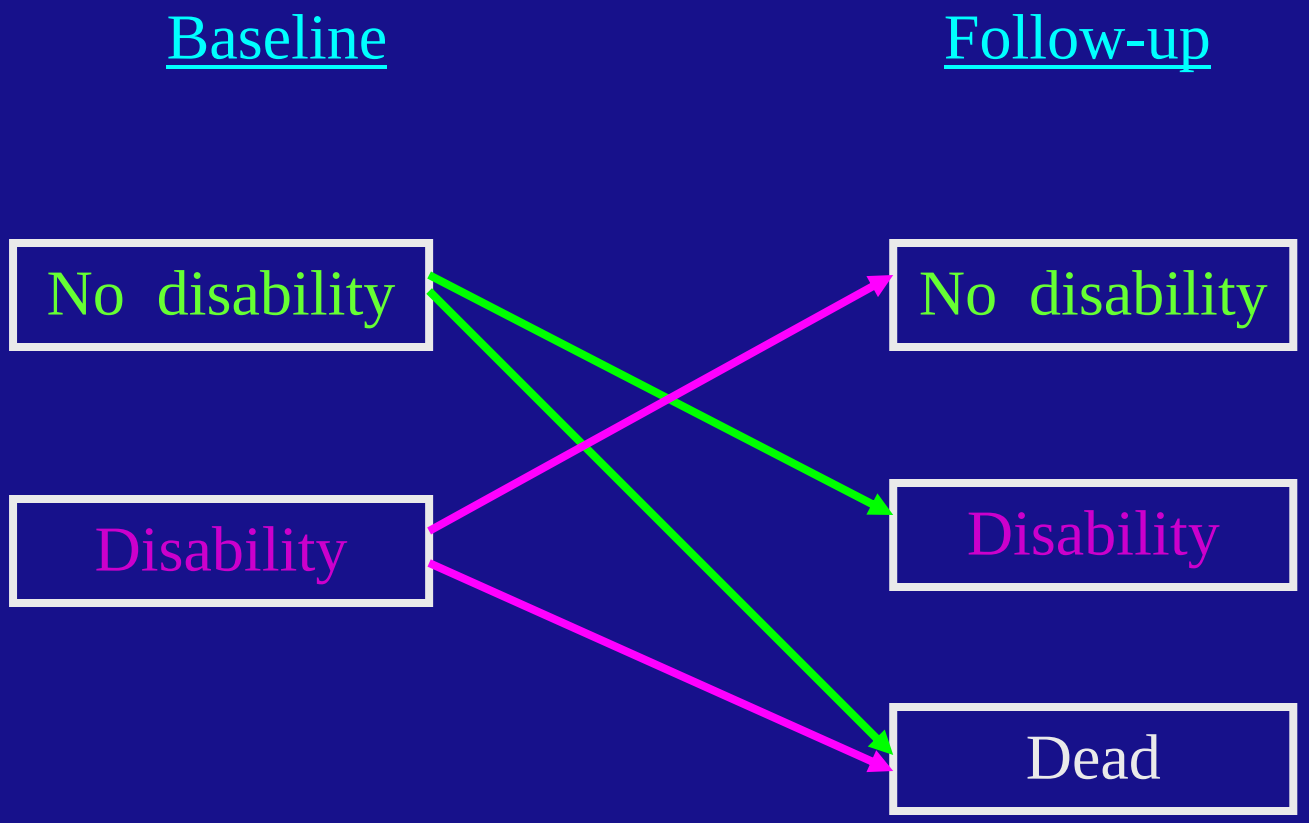
Study population



Prevalence of diseases at baseline

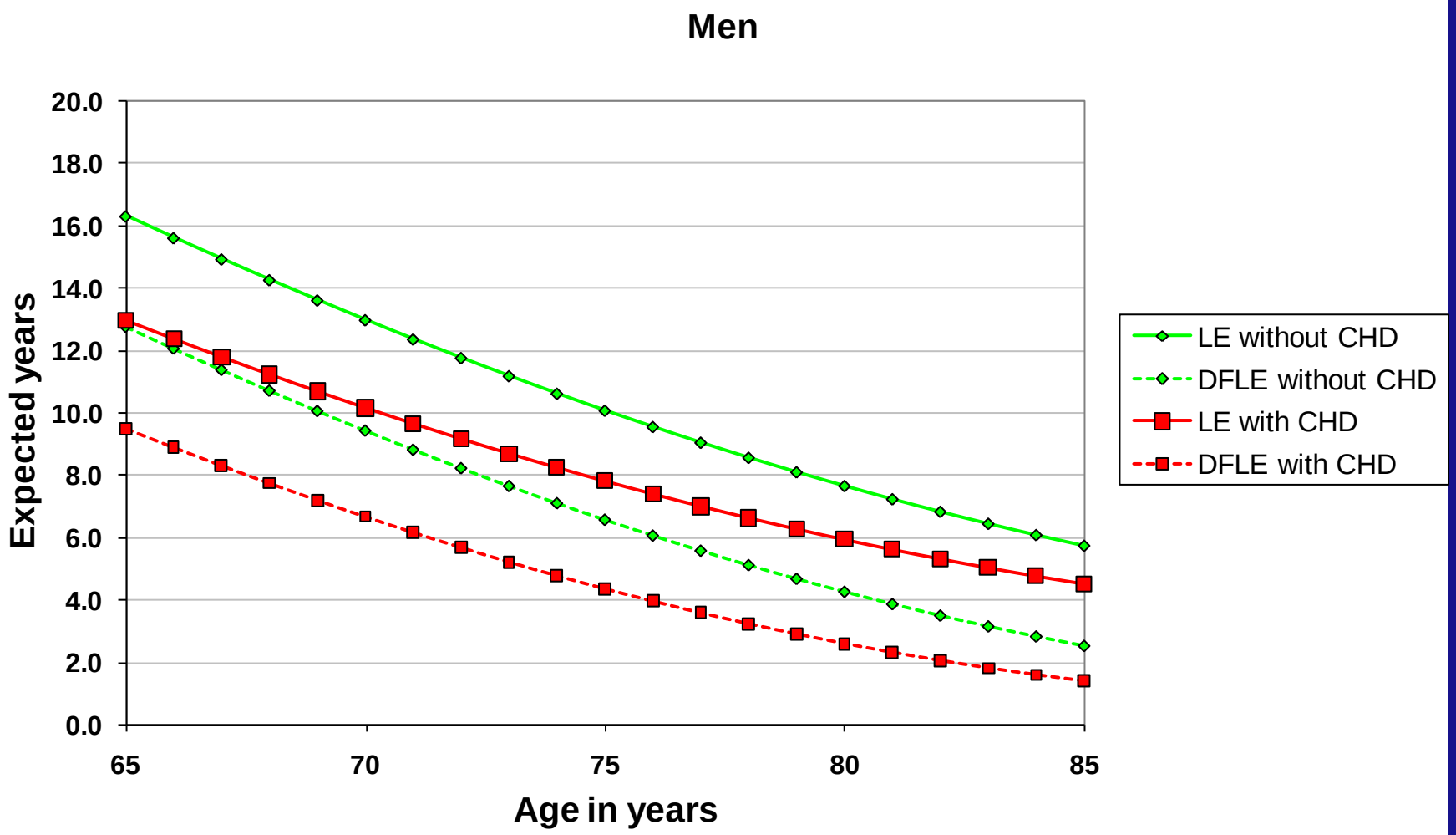


HE calculation with longitudinal data



with and without each disease

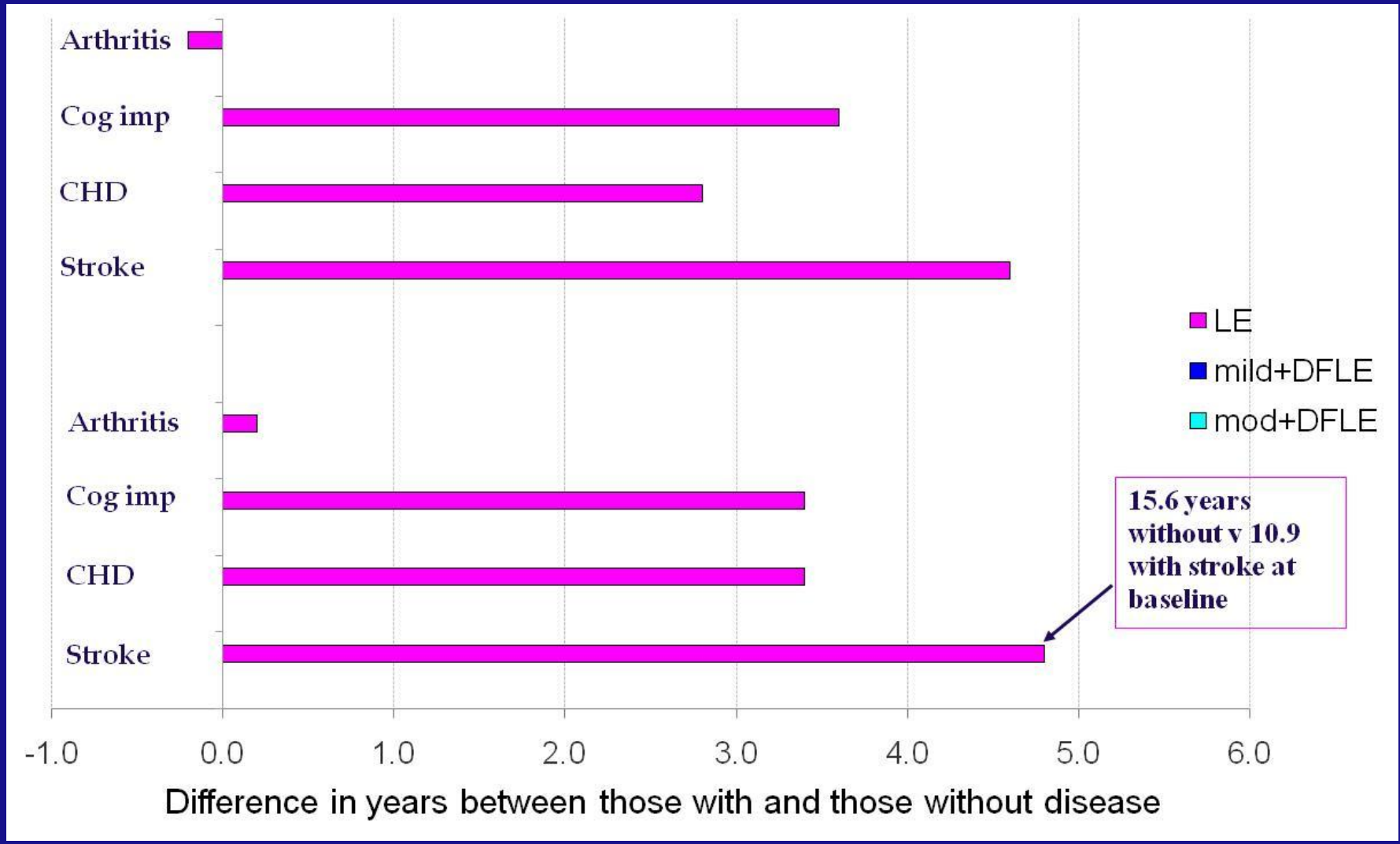
Coronary Heart Disease



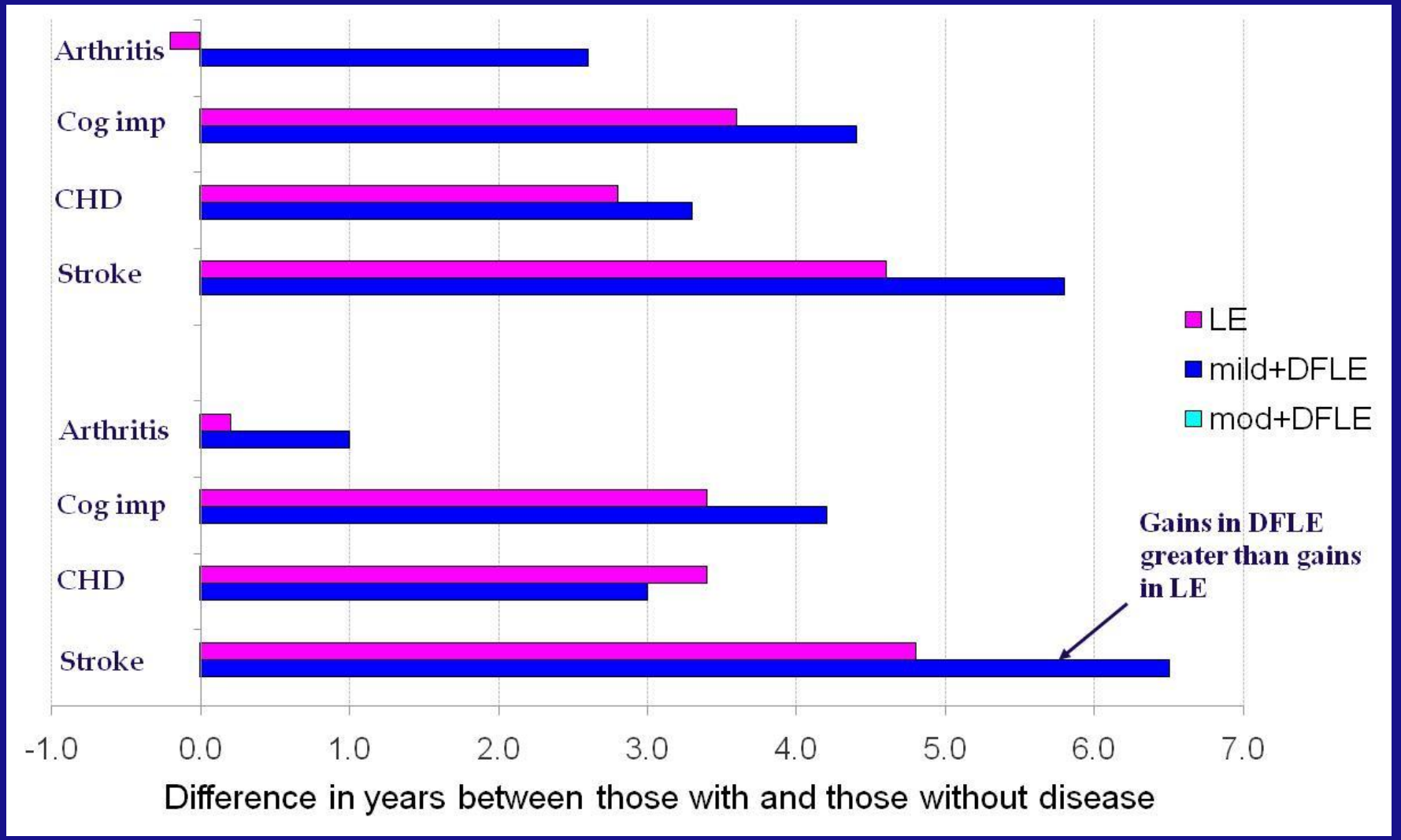
Change in LE at age 65

WOMEN

MEN



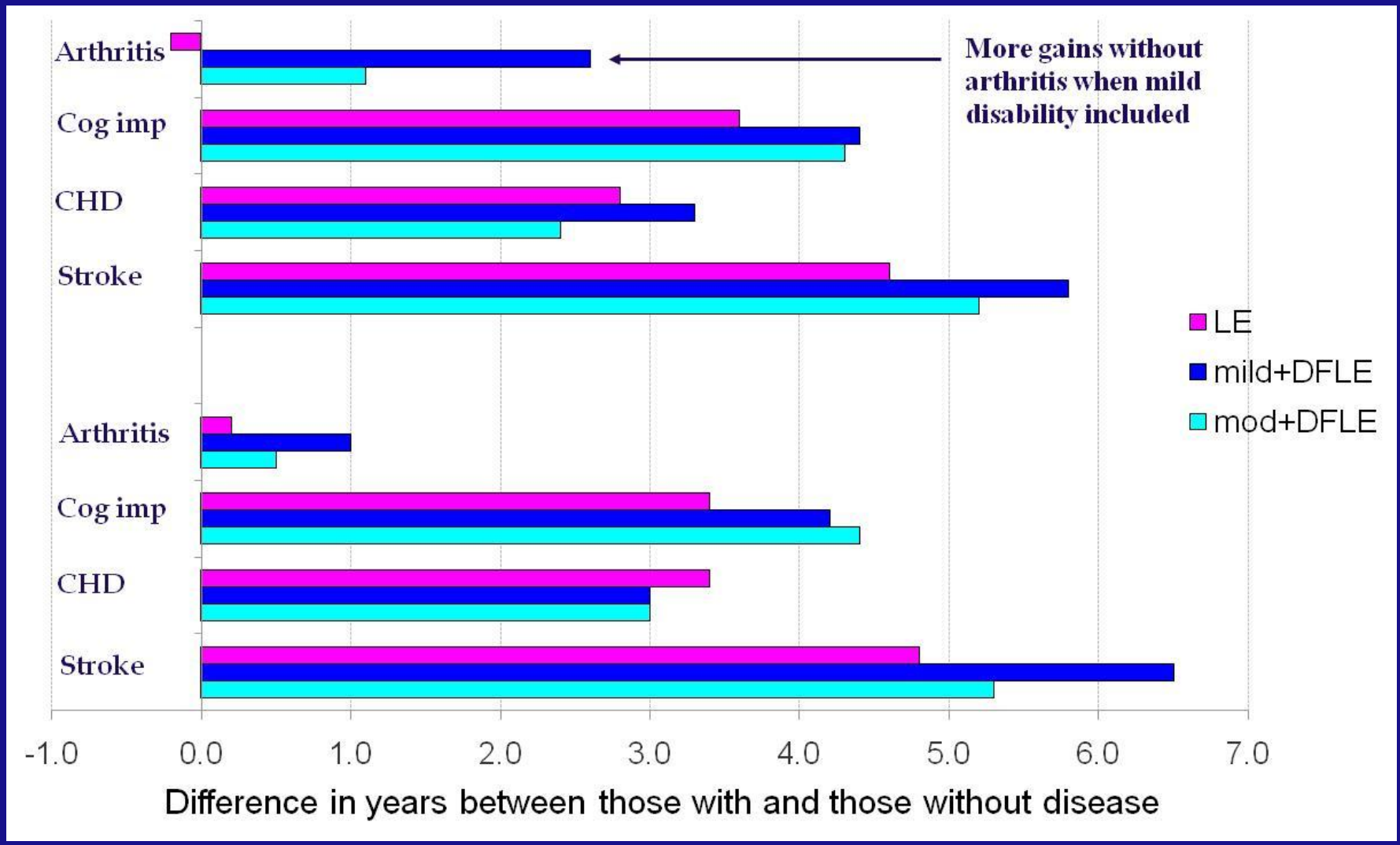
Change in mild+DFLE at age 65



Change in mod+DFLE at age 65

WOMEN

MEN



Conclusions

- Stroke and cognitive impairment have considerable impact on reducing total life years and 'healthy' years free of disability
- For men without stroke, years gained free of disability were greater than total years gained – compression of disability
- Arthritis has little impact on total life years but substantial impact on years free of mild disability

How will different diseases affect future burden of disability?

Age and Ageing Advance Access published March 3, 2009

Age and Ageing 2009; 1–7
doi: 10.1093/ageing/afp016

The effect of dementia trends and treatments on longevity and disability: a simulation model based on the MRC Cognitive Function and Ageing Study (MRC CFAS)*

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*See http://www.cfas.ac.uk.

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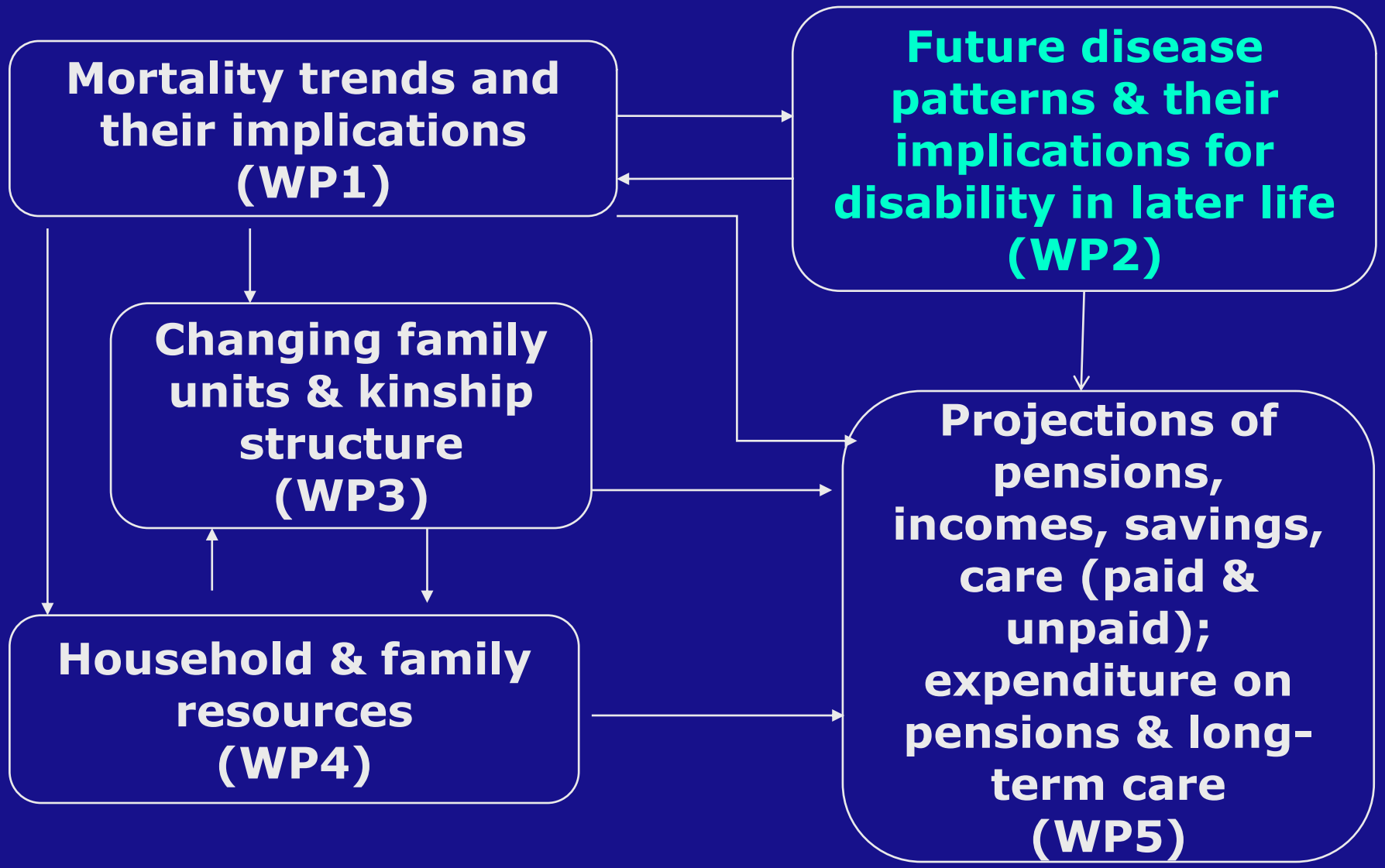
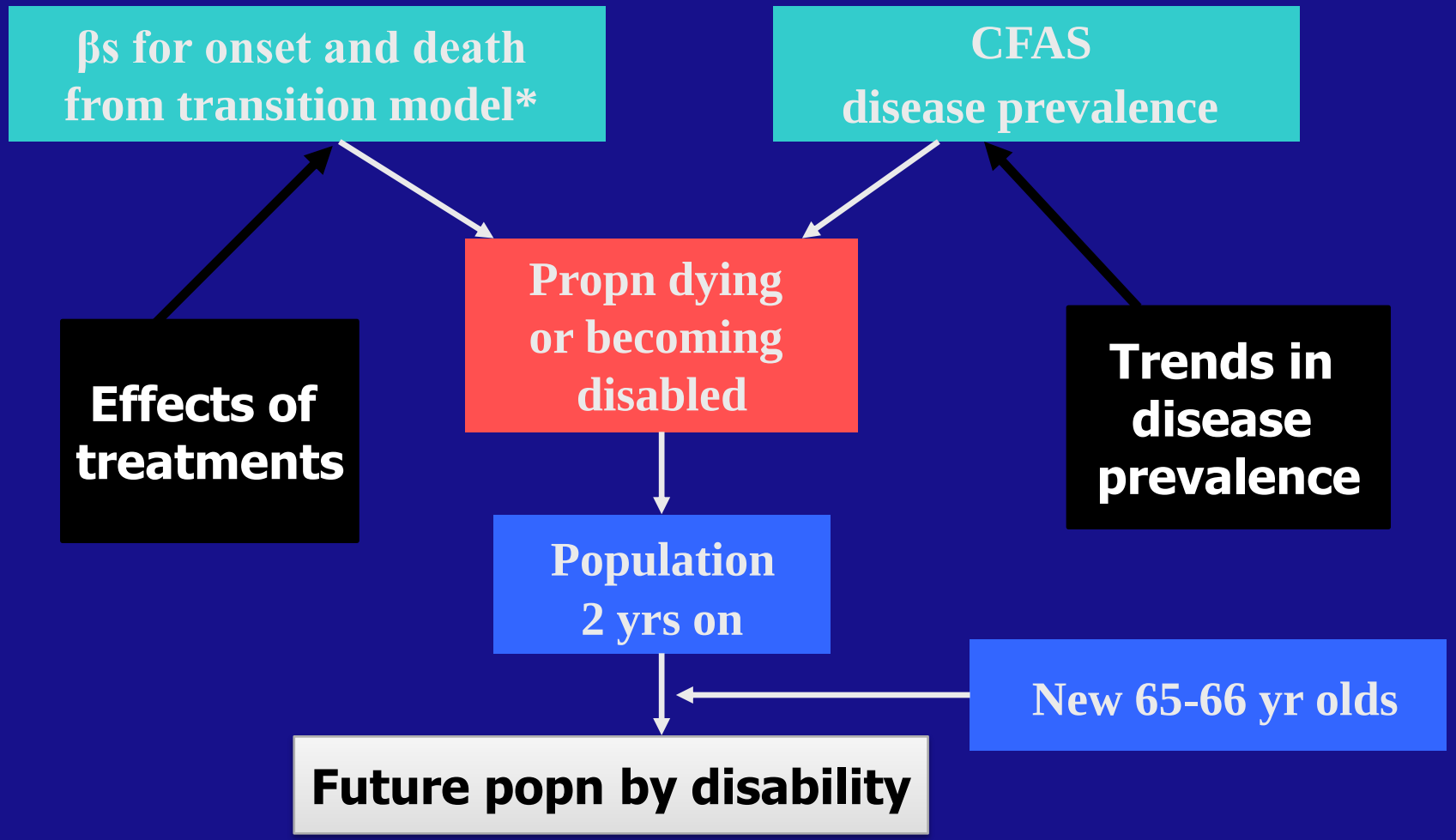


Simulation model I

Table A.1: Trichotomous logistic regression model of self-reported diseases associated with onset of disability and death in those free of disability at baseline interview in MRC-CFAS (n=8693)

		Onset of disability	Death
		Coefficient (SE)	Coefficient (SE)
Chronic conditions			
Stroke		0.98 (0.20)	0.58 (0.16)
Peripheral vascular disease		0.14 (0.29)	0.20 (0.19)
Coronary heart disease (Angina & HA)		0.23 (0.15)	0.54 (0.10)
Treated hypertension		0.09 (0.13)	0.18 (0.10)
Arthritis		0.51 (0.12)	-0.03 (0.09)
Treated diabetes		0.46 (0.29)	0.64 (0.20)
Chronic airways obstruction		0.54 (0.15)	0.34 (0.11)
Parkinson's disease		1.43 (0.35)	0.92 (0.40)
Hearing problems		0.09 (0.13)	-0.02 (0.10)
Eyesight problems		0.67 (0.14)	0.18 (0.12)
MMSE[a]	22-25	0.44 (0.14)	0.88 (0.10)
	0 -21	1.07 (0.20)	2.03 (0.16)
Control variables			
Age[b]	70-74 years	0.20 (0.21)	0.36 (0.15)
	75-79 years	0.56 (0.20)	0.78 (0.14)
	80-84 years	1.30 (0.20)	1.18 (0.15)
	85+ years	1.60 (0.23)	1.70 (0.18)
Male sex		-0.12 (0.13)	0.55 (0.10)
Living status[c]	Living with others	0.02 (0.19)	0.04 (0.15)
	Living alone	-0.09 (0.14)	0.08 (0.11)
Social class[d]	III	0.10 (0.14)	0.09 (0.11)
	IV & V	0.32 (0.17)	0.28 (0.13)
	Armed forces personnel/missing	-0.51 (0.44)	-0.59 (0.33)

Simulation model II



**Spiers NA et al. J Gerontol Med Sci 2005*

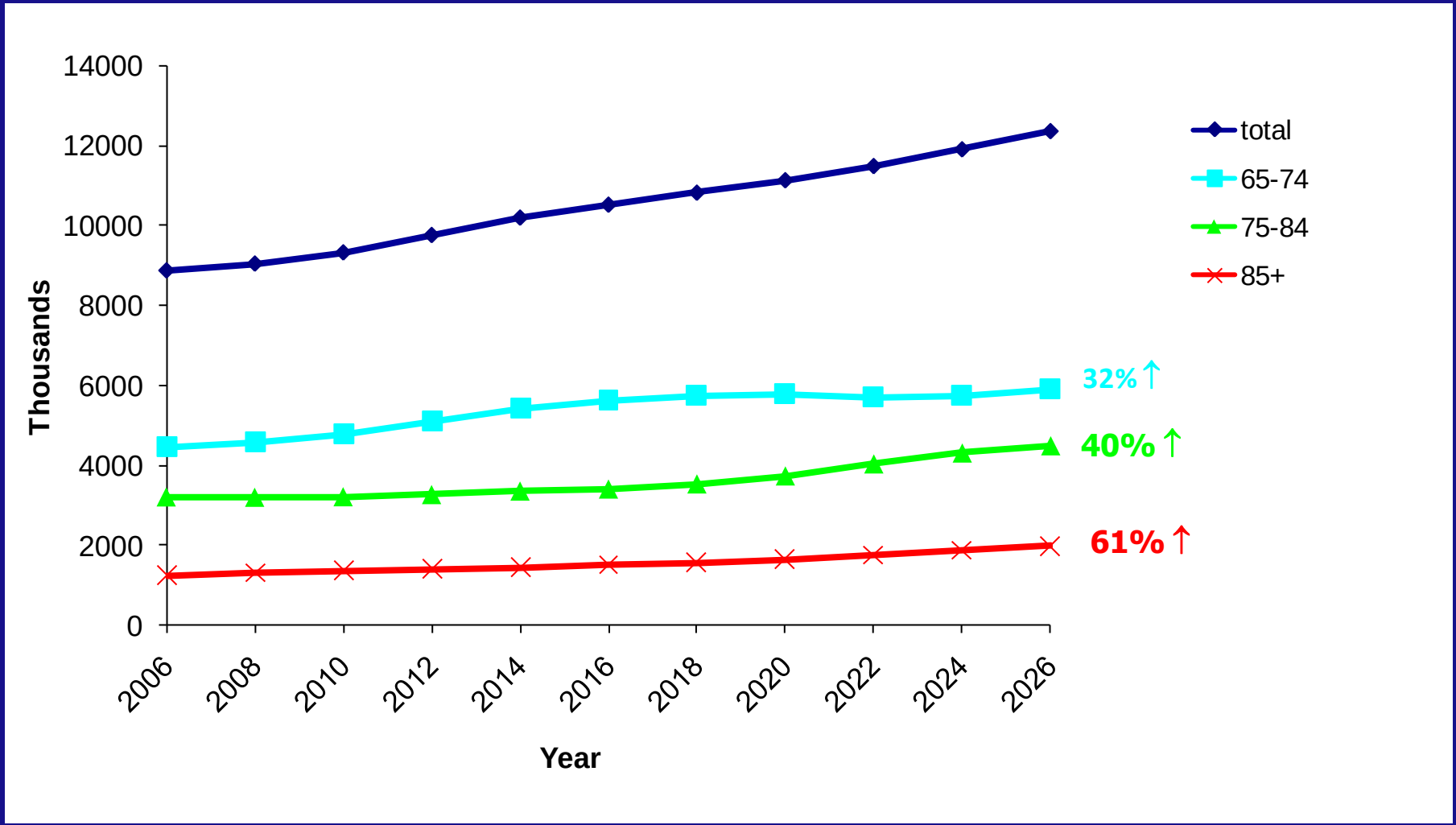
Scenarios

- Ageing alone
  - Age-specific prevalence of diseases is constant (except diabetes which was increased to match HSE)
  - Prevention strategies and effective treatments simply offset the negative influences of obesity and other cohort trends
  - Incidence of and recovery rates to dependency remain the same with no further effect of treatments
  - Mortality rates continue as GAD principal projections

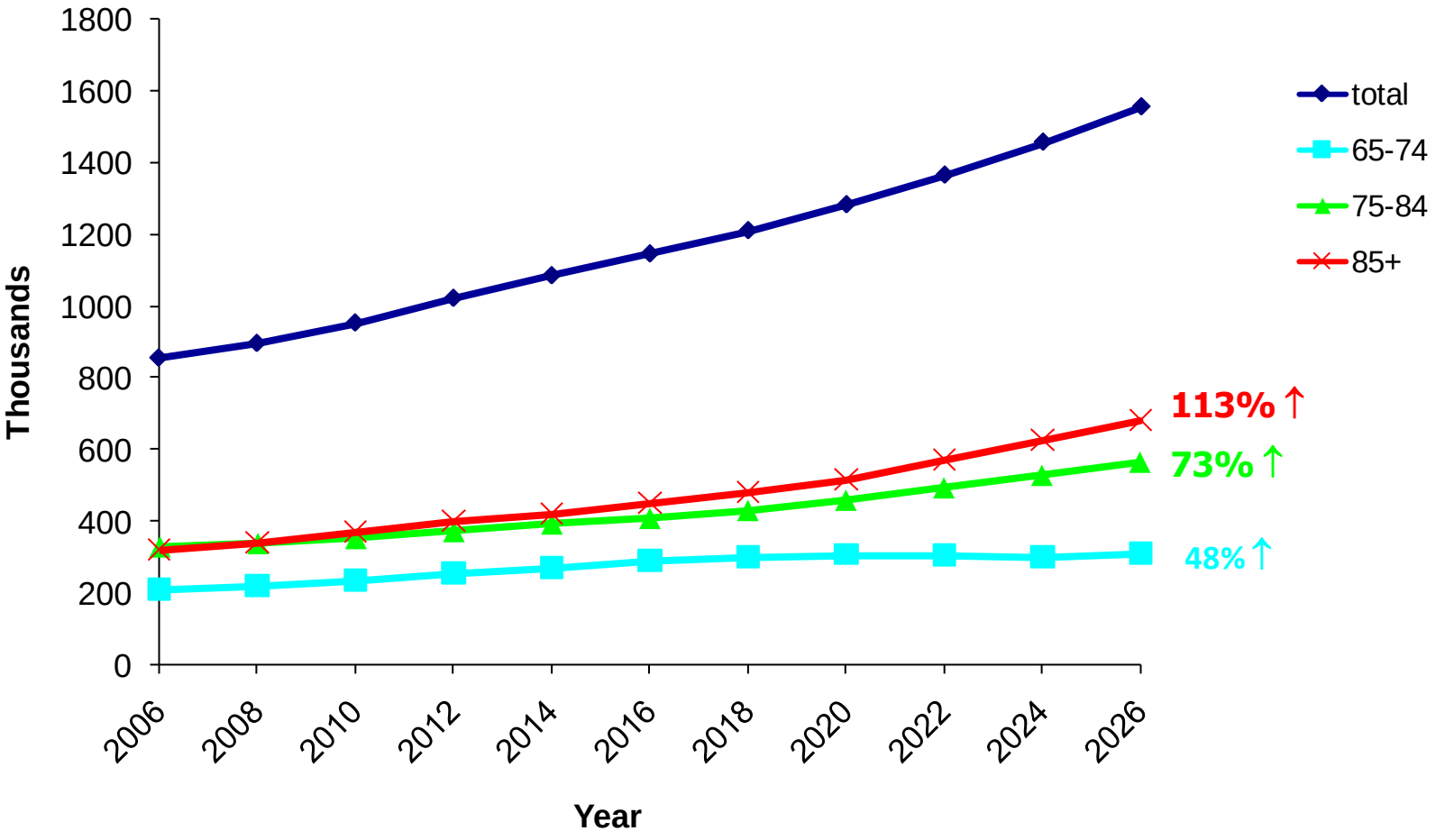
Dementia scenarios

- Reduced incidence of dementia of 10% from 2012
  - reflect assumptions of delayed onset or better control of hypertension
- Improved survival with dementia
  - consequent upon control of vascular risk factors in those with mild cognitive impairment
- Reduced disability with dementia
  - in line with evidence that cholinesterase inhibitors (CEIs) could delay the time to functional decline by 6 months to 1 year
  - Also explored greater uptake of CEIs as uptake in those who might potentially benefit is low
- Combined scenario
  - in keeping with optimal control of vascular risk factors

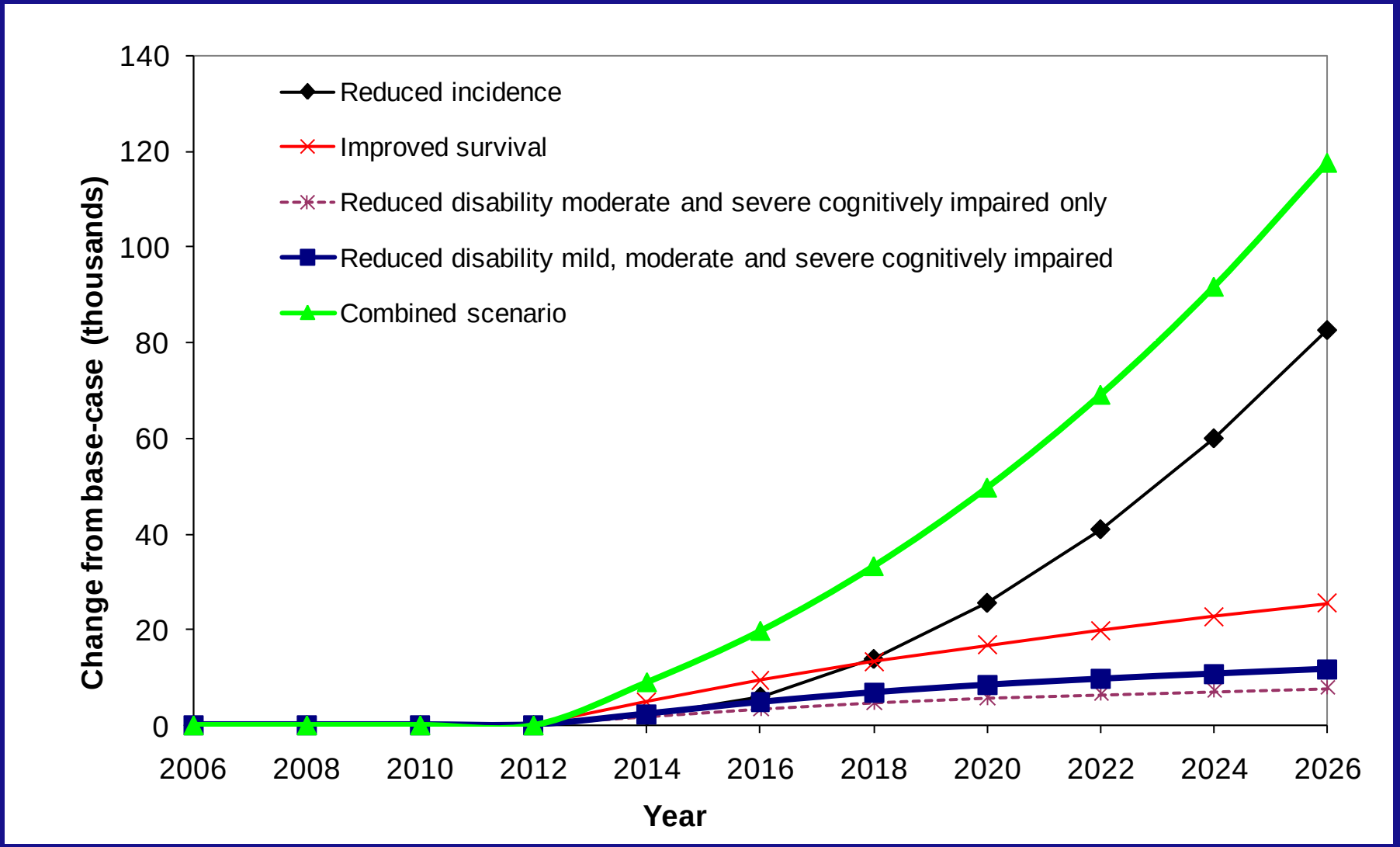
Ageing only – total population



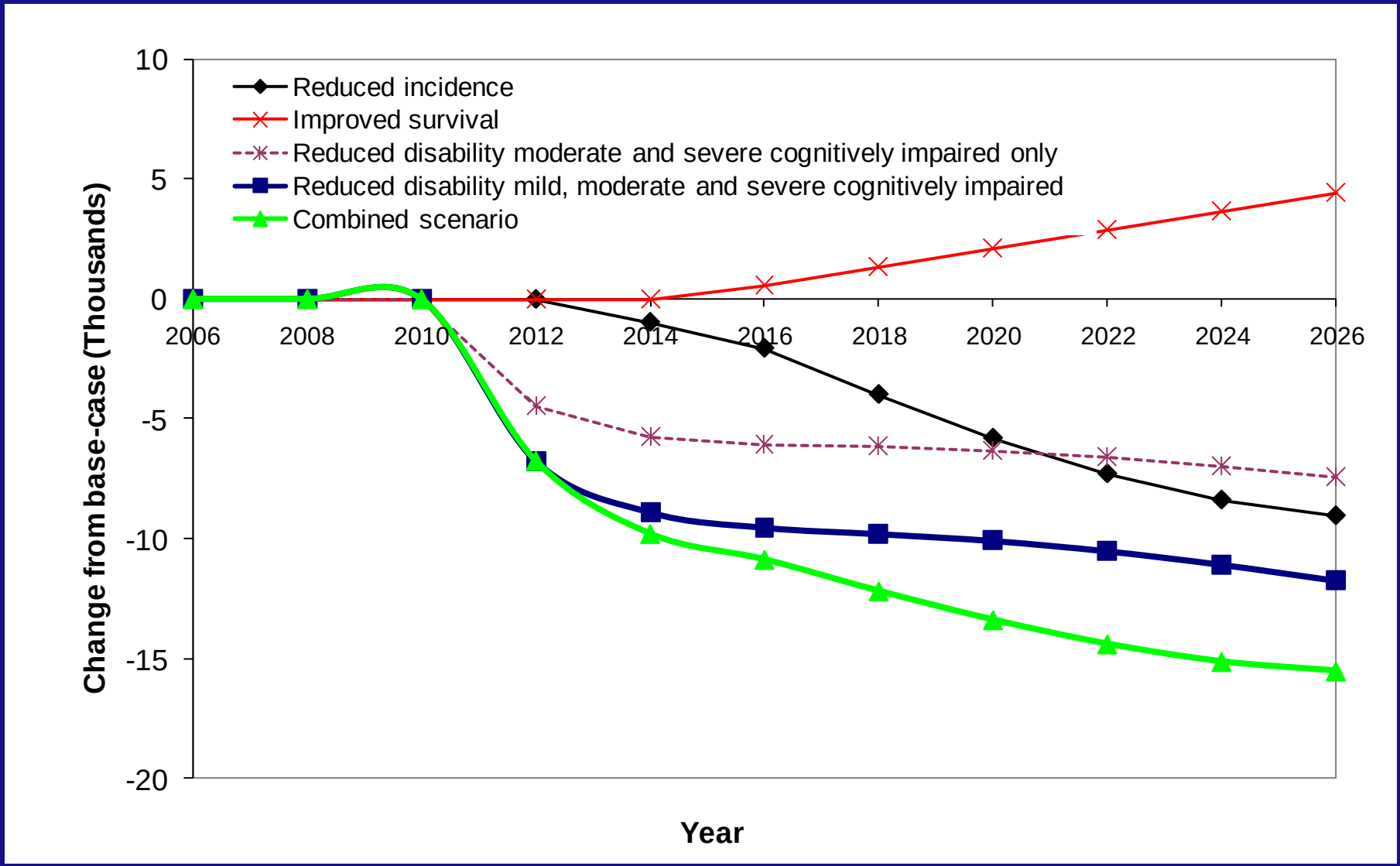
Ageing only – disabled population



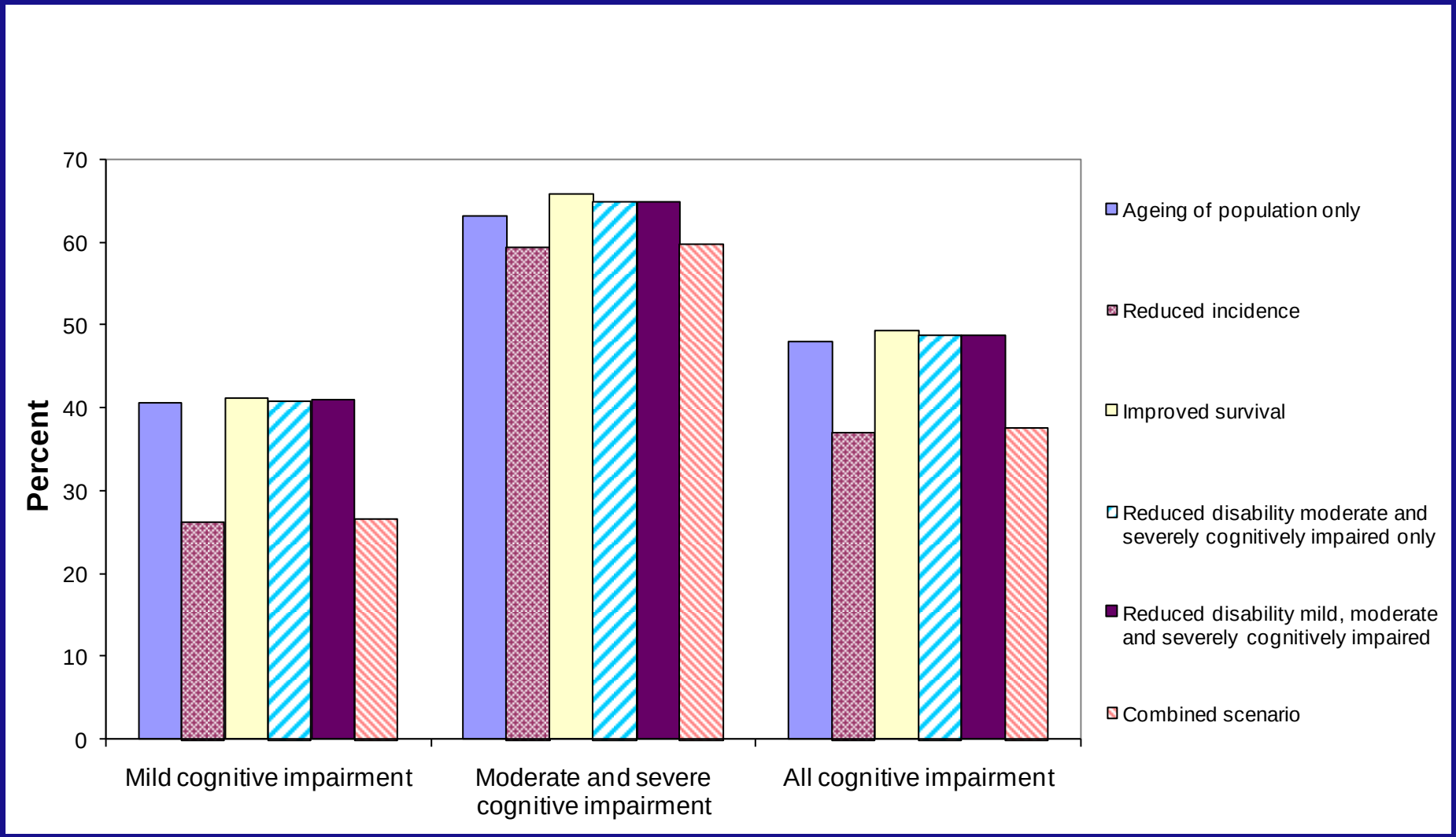
Scenarios – total population



Scenarios – disabled population



Scenarios – cog impaired popn



Conclusions

Over the next 20 years

- population ageing alone will result in
  - 39% increase in the numbers aged 65+
  - 500,000 more with moderate and severe cognitive impairment
  - over 700,000 more with disability
- the largest contribution will be in the population aged 85+ whose numbers will increase by 60%

Conclusions

- Greatest reduction in disabled population was from delayed onset, reduced disability and improved survival - optimal control of vascular risk factors
- This represents only a 1% reduction in the size of the disabled population
- Model suggests need to halve dementia-related disability to get 10% reduction in numbers disabled
- But focus on treatments (for all diseases) is to reduce mortality!

Next steps

- Model has been extended to output DFLE
  - Can explore how much health improvement needed to produce compression of disability
- Comparison of different diseases (arthritis, CHD, stroke, dementia, diabetes)
- Future model will incorporate uncertainty

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