

Impact of changing disease on disability projections

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MAP2030 Team

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Aims of MAP2030

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

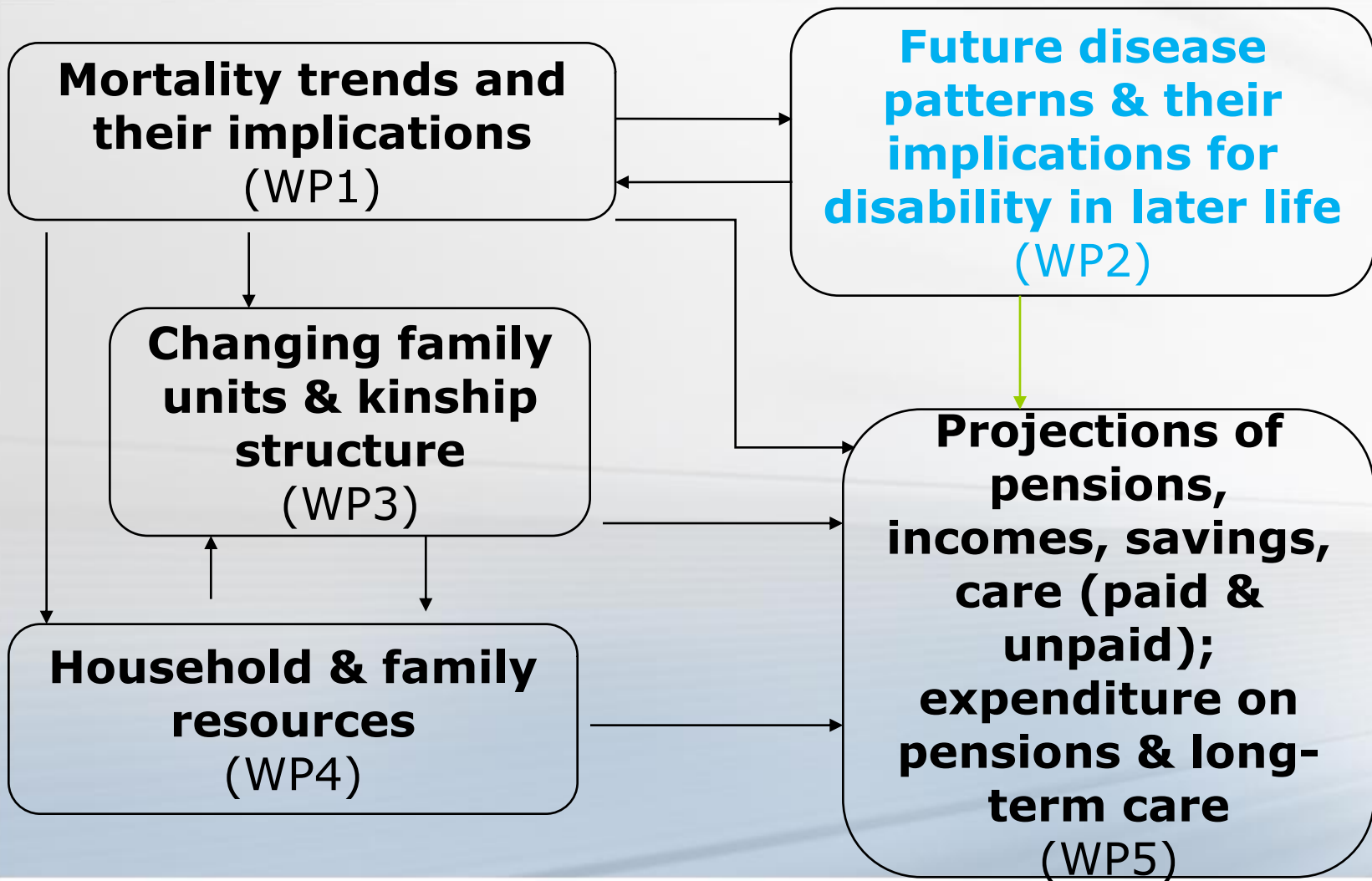
by

- projecting the numbers, disability status, family circumstances, income, savings and care needs of older people, over the next 30 years
- 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

Methods

- an integrated programme of new statistical analysis and modelling
- building on pre-existing models
- sensitivity testing to key trends
- scenarios on key unknowns

MAP2030 design



WP 1: Mortality trends and their implications

To model and project mortality levels and trends:

- Overall patterns in Britain & other developed countries
- Marital-status differences in mortality
- Cause-specific mortality to assess the sensitivity to assumptions about future prevalence and incidence of the key set of diseases
- Sex differentials
- Socio-demographic variables and how they may change in decades to come

WP 3: Changing Family Unit and Kinship Structure

To produce projections of the older population by age, sex and kinship status

- Kinship ties become more important with age, as kin form a major resource in times of need
- Having kin is a precondition for kin interaction and support
- Cumulative lifetime experiences such as total number of partnerships substantially affect interactions with other kin.

WP4: Household and family resources

To improve our understanding of:

- the factors that influence household patterns of older people are how are these likely to change
- the implications of household, family and broader social support for well-being and receipt of help

To produce projections of expenditure on pensions and long-term care to 2031 and beyond

Three models

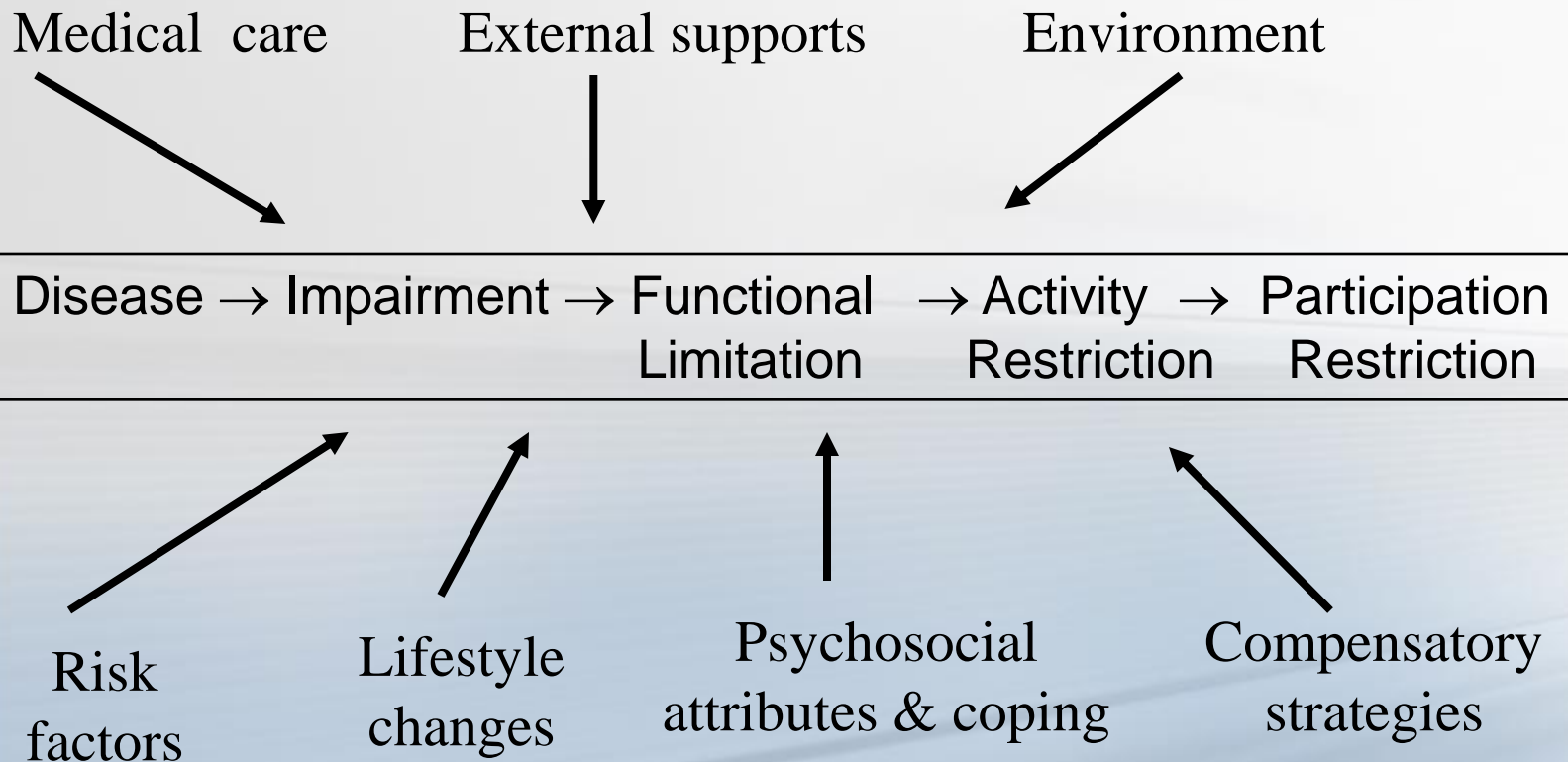
- CARESIM model of older people's incomes and savings;
- PPI models of pensions;
- PSSRU model of long-term care

WP2: Future patterns of disease and the impact on disability at older ages

C. Jagger, R. Matthews, J Lindesay, MRC CFAS

The disablement process

(adapted from Verbrugge & Jette, 1994)



Simulation model

Uses MRC Cognitive Function and Ageing Study (MRC CFAS)

Dynamic macro-simulation model 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

MRC CFAS

- Five centres used
- stratified random sample aged 65+
- includes those in institutions
- N=13004 at baseline (1991)
- 2 year follow-up
- death information from National Death Registry

Sites in Britain



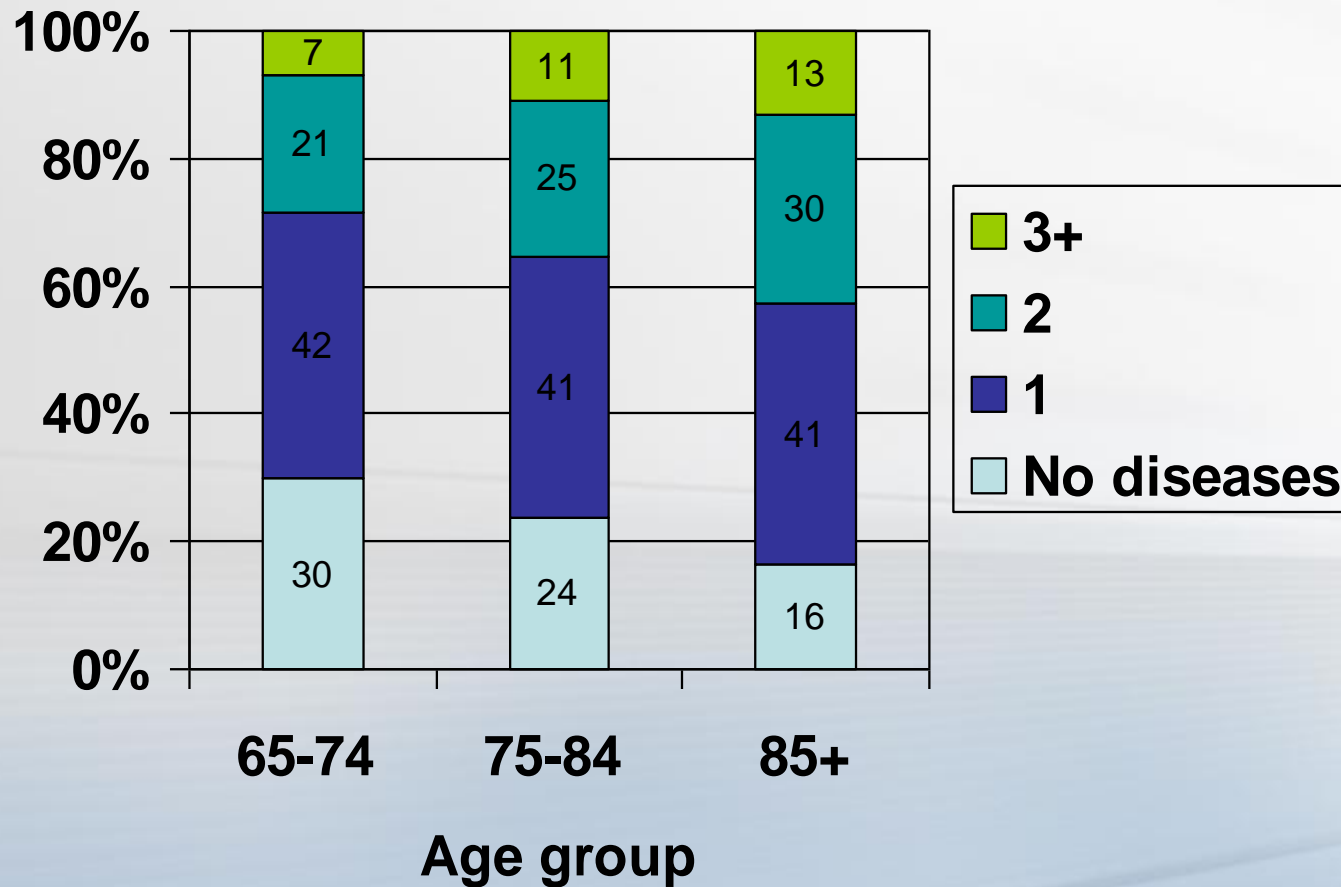
Defining disability and disease

Disability: Unable to perform at least one of three ADLS/IADLs independently - put on shoes and socks, have a bath or all over wash, or transfer to and from bed.

Diseases and conditions: CHD (angina or heart attack), peripheral vascular disease (PVD), cognitive impairment, arthritis, CAO (asthma or bronchitis), hypertension, stroke, diabetes, Parkinson's disease, hearing problems, eyesight problems

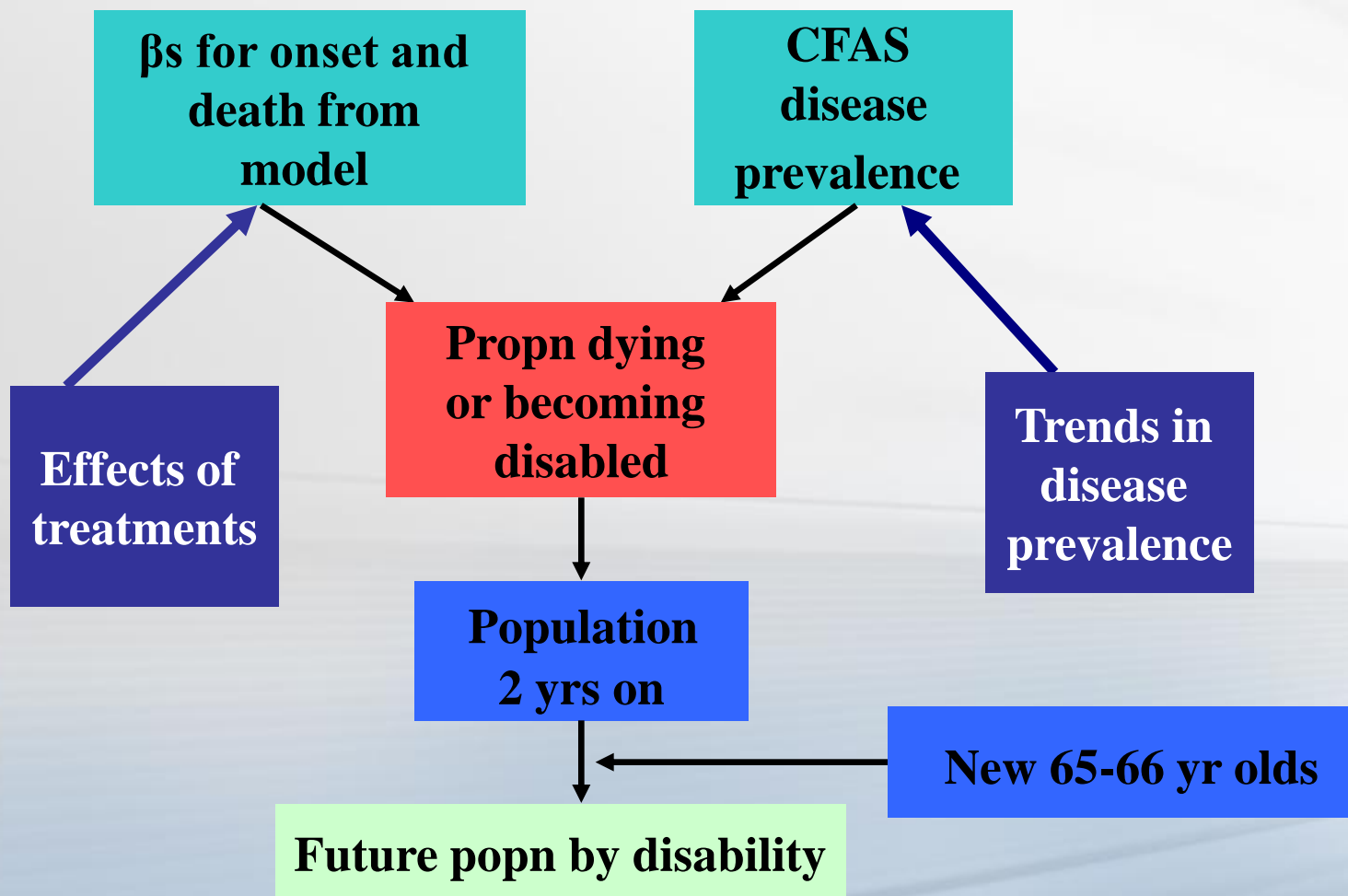
Statistical analysis: Polytomous regression model (non-disabled, disabled, dead) adjusting for socio-demographic and lifestyle factors in those not disabled at baseline (N=8,693)

Comorbidity increases with age



7 diseases: arthritis, stroke, CHD, CAO, PVD, cognitive impairment, diabetes

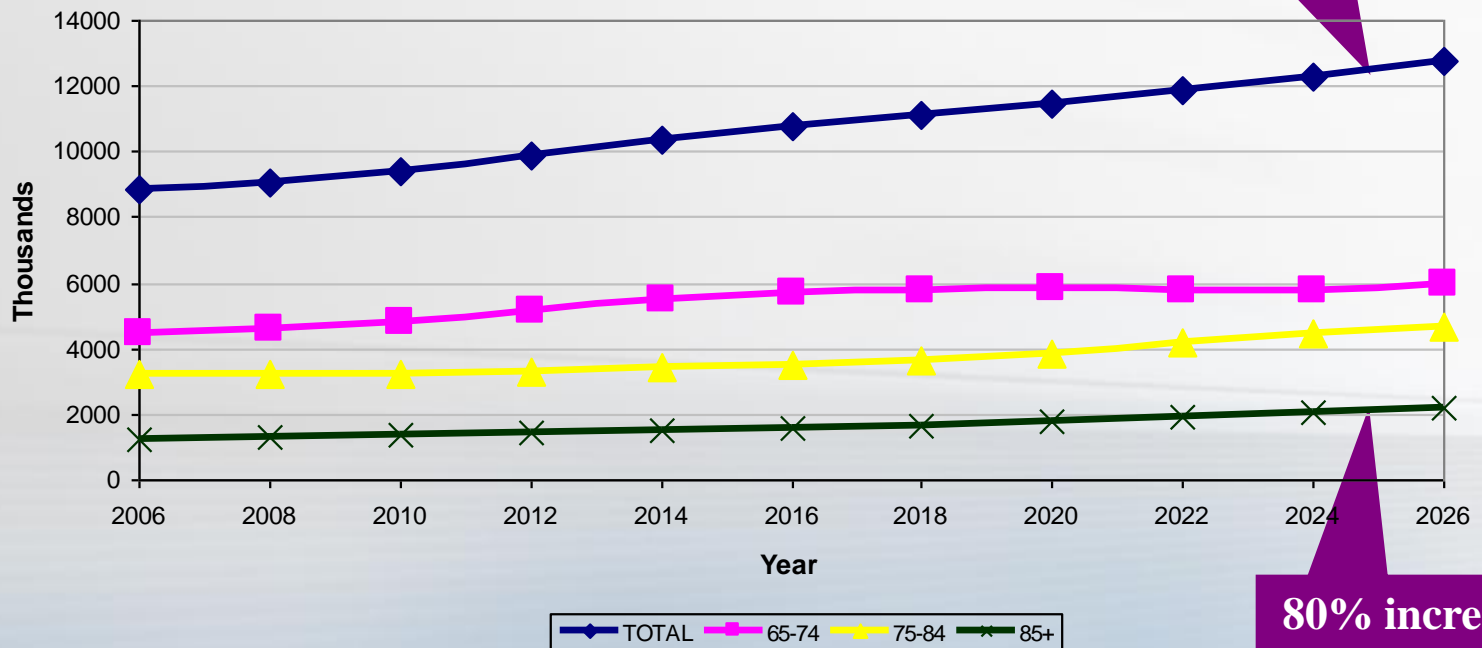
Simulation model



Scenarios - Ageing alone

- Age-specific prevalence of diseases is constant
- 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

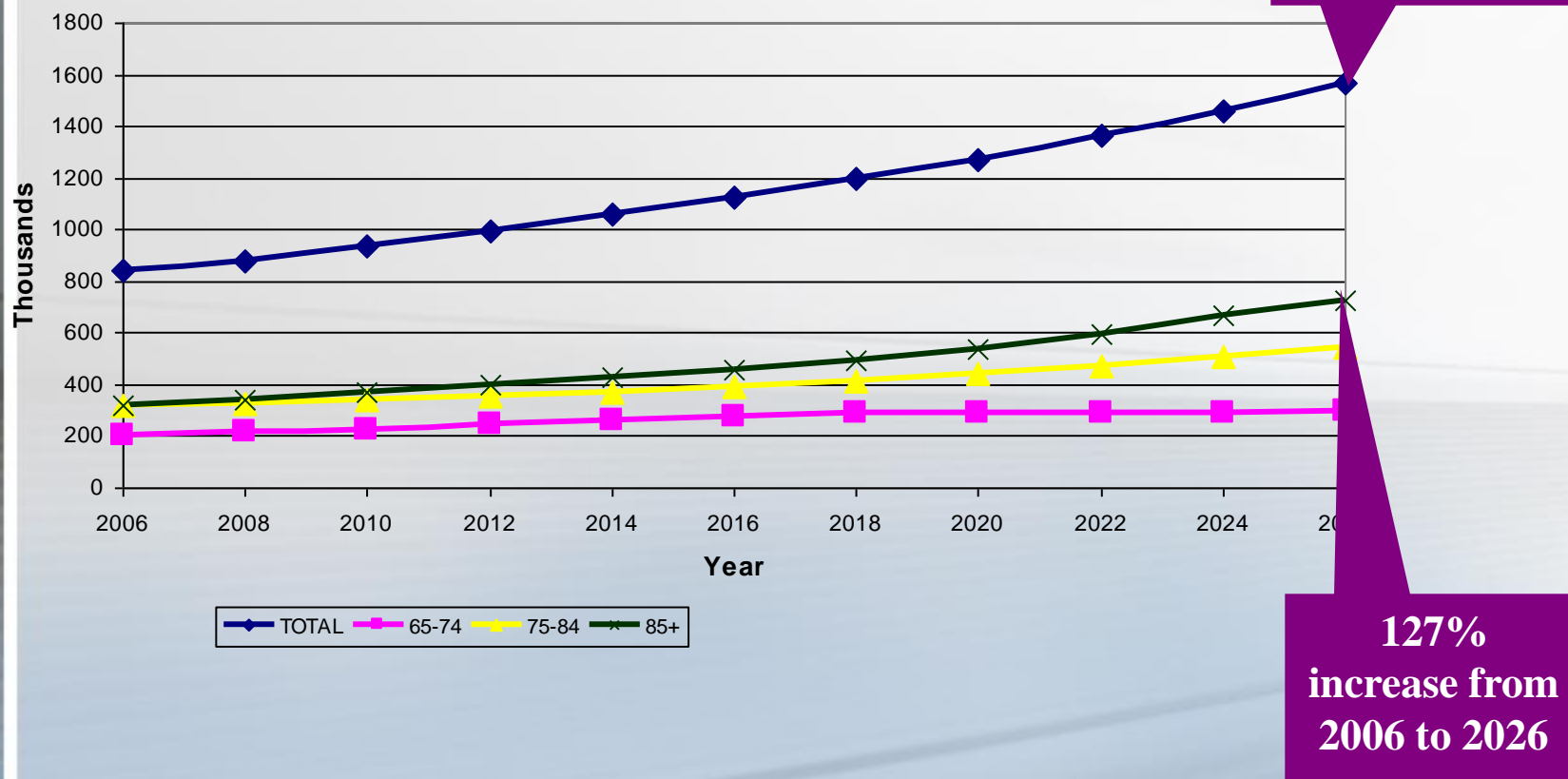
Ageing alone – total population



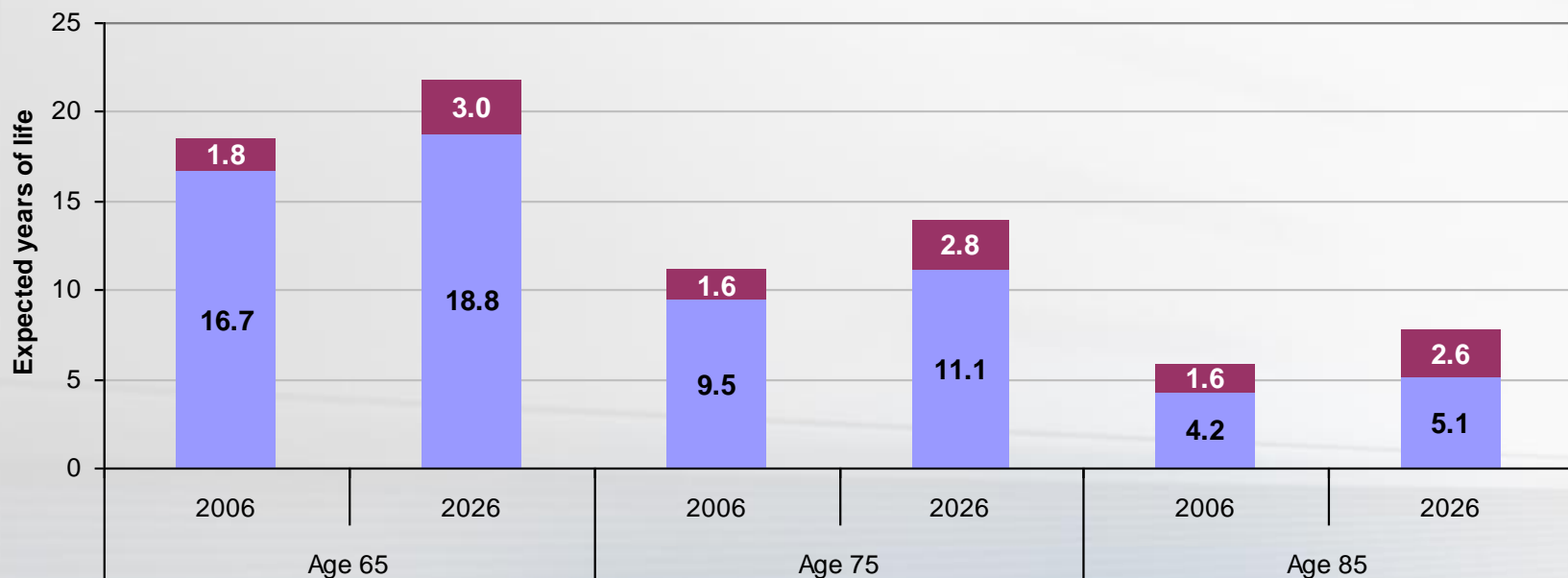
44% increase from 2006 to 2026

80% increase from 2006 to 2026

Ageing of the population – disabled population



Ageing alone – LE and DFLE



%DFLE/LE **90%** **86%** **85%** **80%** **73%** **66%**

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

Scenarios - Poorer population health

Obesity trends of 2% increase annually continue

- increasing prevalence of arthritis, stroke and CHD
- increasing resulting dependency

Emergence of ethnic minorities in significant numbers into the older population

- increases prevalence of stroke and CHD

Some prevention strategies in place but they fail to offset the increasing prevalence

Treatments continue to focus on reducing the mortality from diseases rather than reducing the disabling effects.

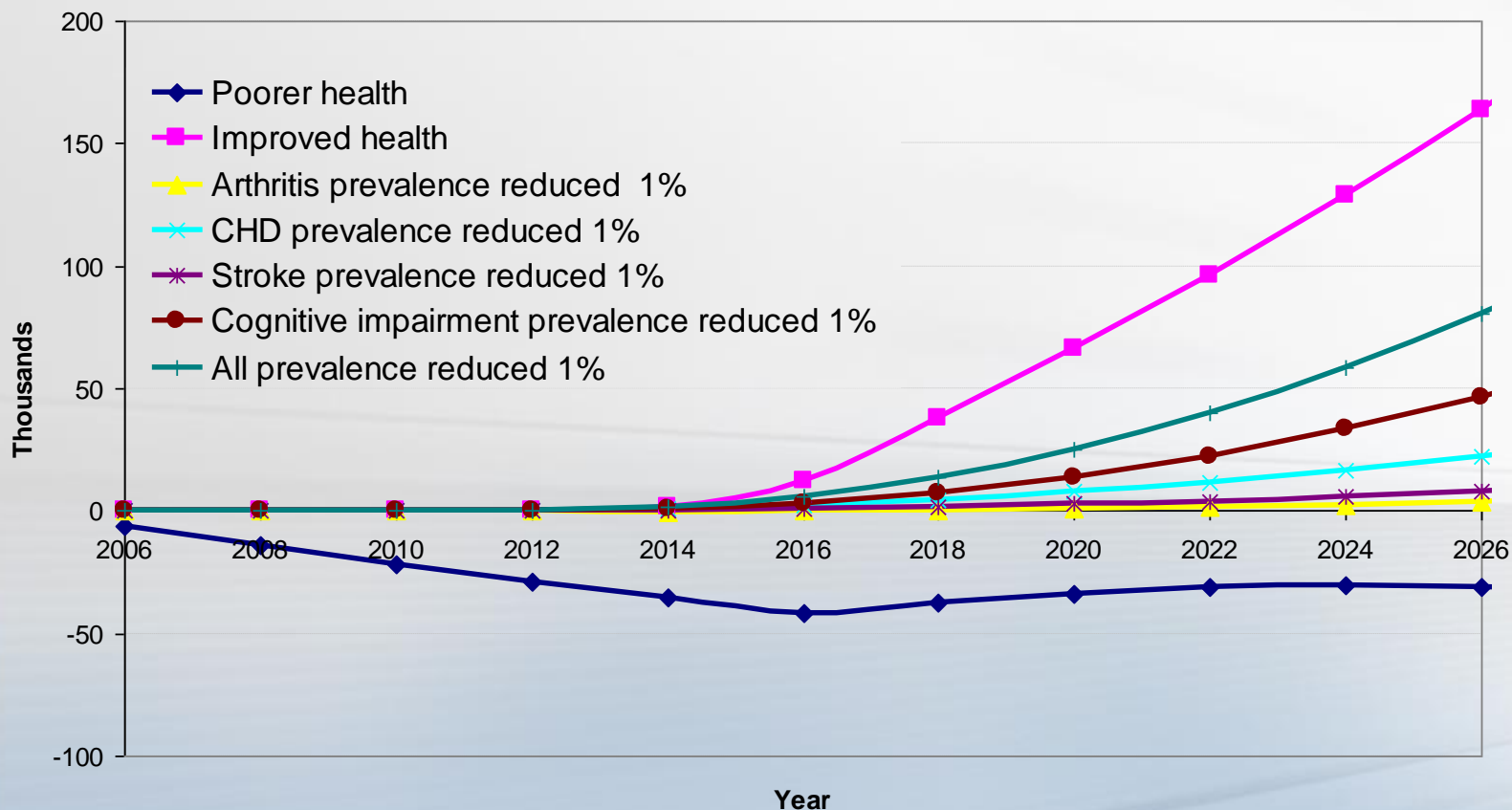
Scenarios - Disease specific

Prevalence reduced by 1% every 2 years for:

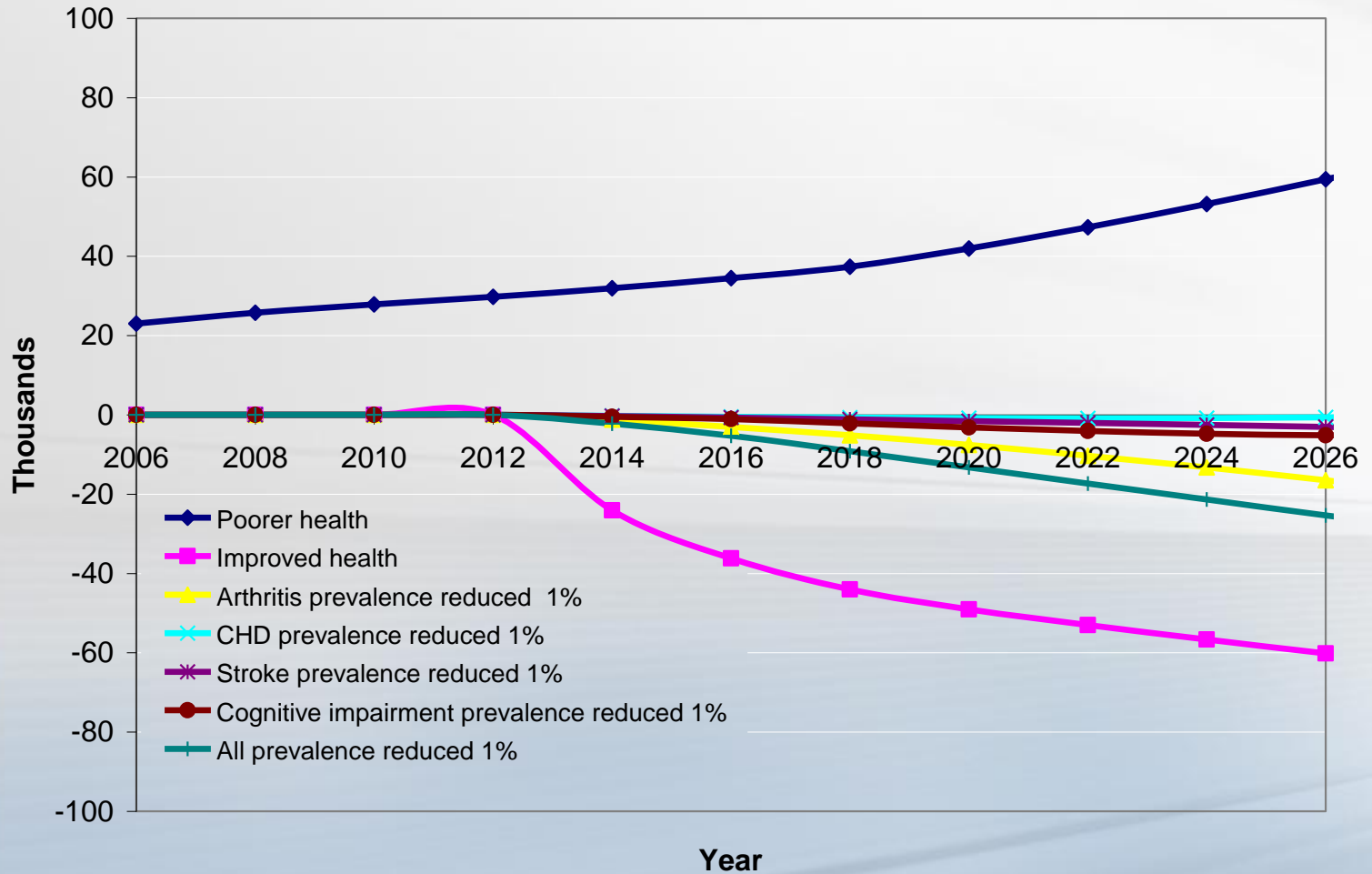
- Arthritis
- Stroke
- CHD
- Cognitive impairment

Prevalence of all diseases reduced by 1% every 2 years simultaneously

Total population aged 65+ compared to ageing alone



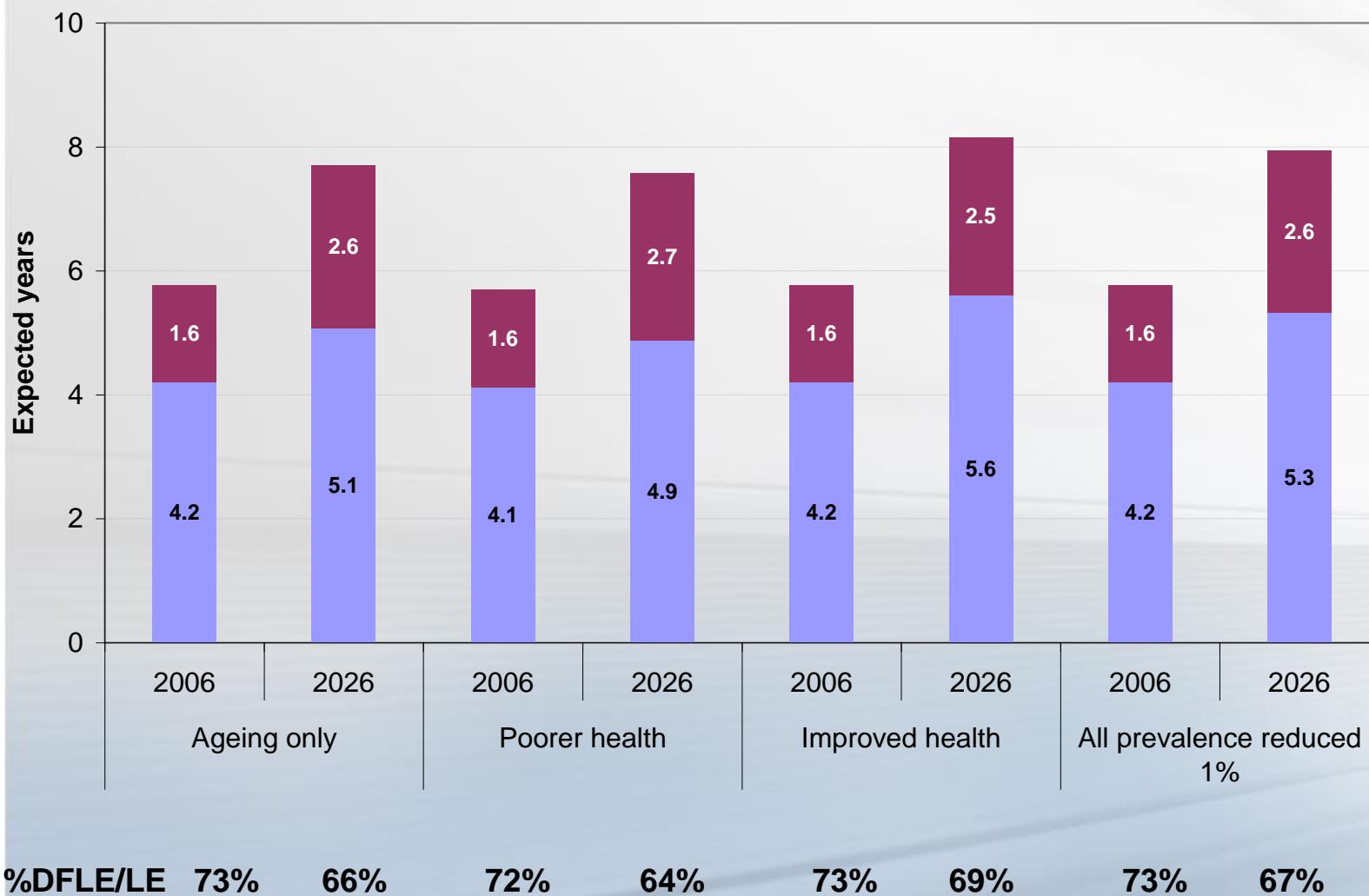
Disabled pop 65+ compared to ageing alone



LE and DFLE at age 65 in 2006 and 2026



LE and DFLE at age 85 in 2006 and 2026



Conclusions

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 greater than DFLE increases

Improved population health with a modest decline in risk factors, new treatments that reduce the disabling effects of diseases and further gains in survival will

- further increase the total numbers of older people
- reduce the numbers with disability

Future work

Gender-specific projections

- Refitting models separately by gender

Range of measures of disability

- Hierarchy of FL/IADL/ADL

Further scenarios

- diabetes
- ethnic minorities

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