How socioeconomic differentials in the dynamic transitions of disability result in inequalities in DFLE at older ages

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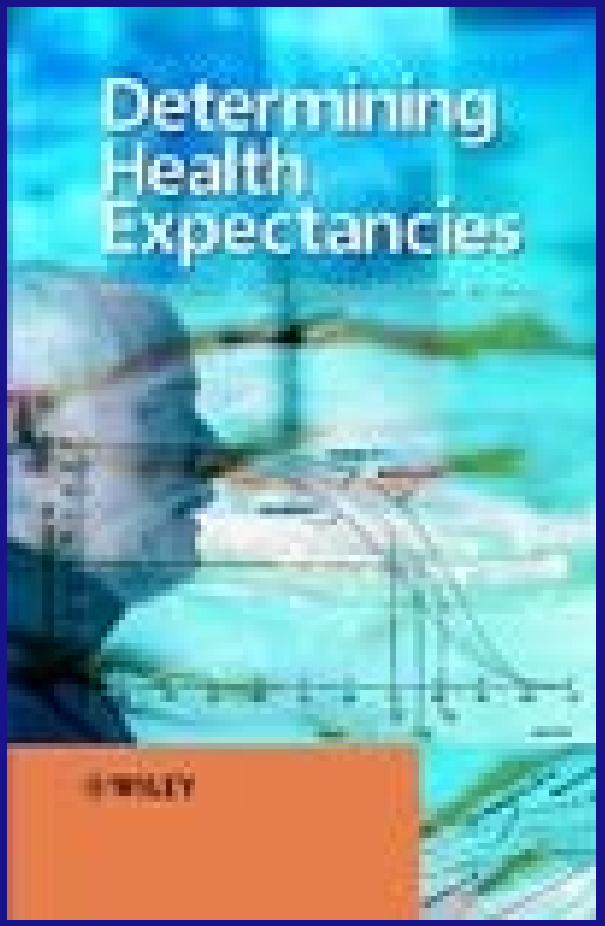
Background

- Socio-economic differences in DFLE and HLE have been reported in a number of countries (see Crimmins and Cambois, 2003) though mostly based on cross-sectional data



Determining Health Expectancies

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Background

- Socio-economic differences in DFLE and HLE have been reported in a number of countries (see Crimmins and Cambois, 2003) though mostly based on cross-sectional data
- Majority find differences in DFLE/HLE greater than in LE
- Results from baseline wave of MRC CFAS showed higher social classes compared to lower had
  - 1.9 extra years in LE and 2.4 extra years disability free for men
  - 1.5 extra years in LE and 1.7 extra years disability-free for women

Disability is dynamic

- Driving force for educational differences in prevalence of disability in EPESE was incidence
- Similar findings in Taiwan and Netherlands
- Chinese population differences between education groups in incidence and recovery of ADL difficulty
- Which transitions are drivers for differences has implications for targetting inequalities

Research questions

- What is the size of differences in DFLE between socio-economic groups defined by education (early life disadvantage)?
- Is it differences in incidence, recovery or mortality that drive these?

MRC Cognitive Function and Ageing Study (MRC CFAS)

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

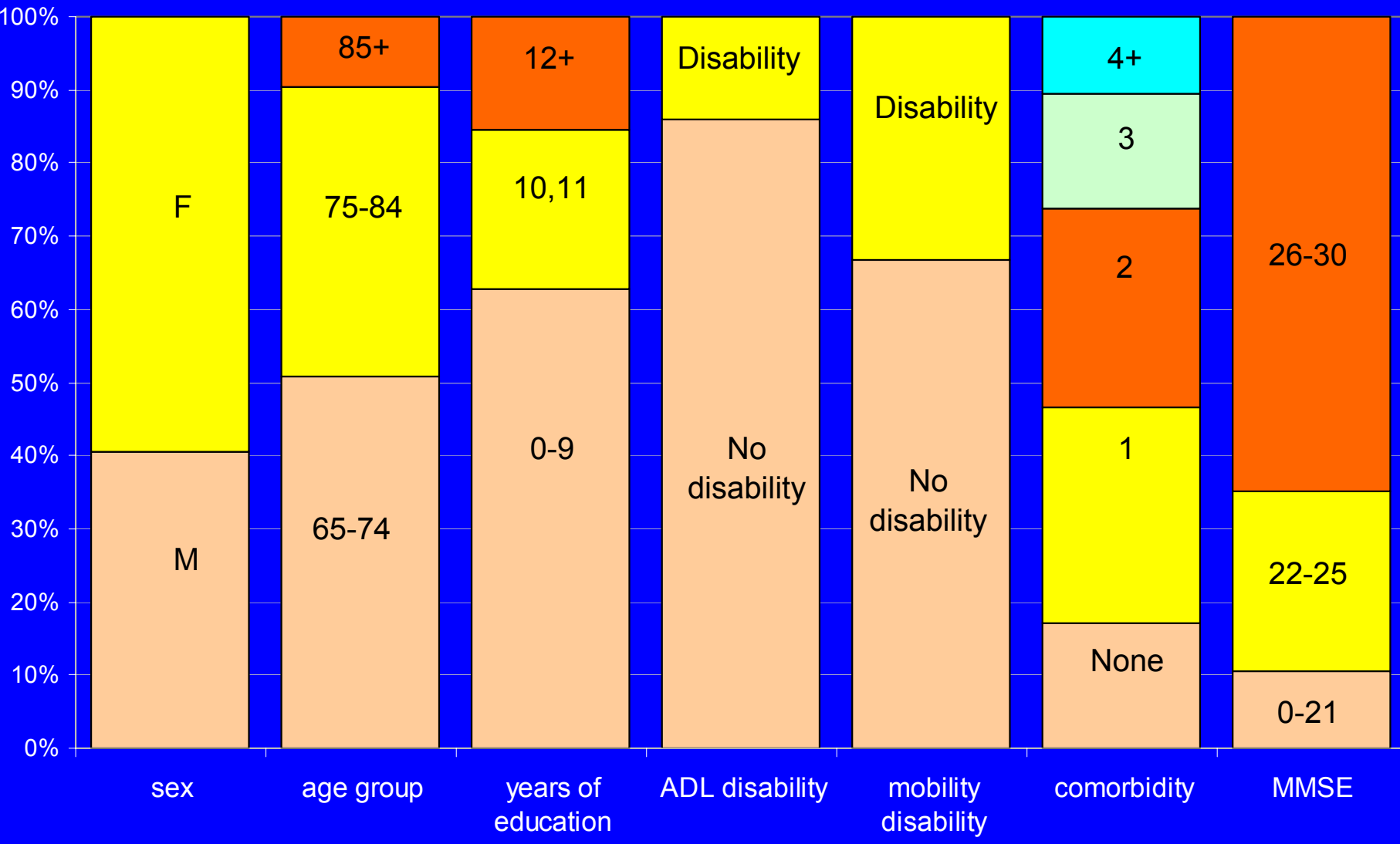
Definitions

- Disability
  - ADL disability - Unable to perform at least one of five ADLS/IADLs independently
  - Mobility disability – Having some difficulty or requiring help to get up and down stairs
- Years of education
  - 0-9 (9 years statutory for this generation)/ 10, 11/ 12+
- Number of comorbid conditions
  - stroke, CHD, peripheral vascular disease, bronchitis, asthma (not childhood), visual impairment, hearing impairment, treated diabetes, Parkinson's disease, treated hypertension, depression and arthritis
- Cognitive impairment
  - MMSE 0-21/ 22-25/26-30

Analysis

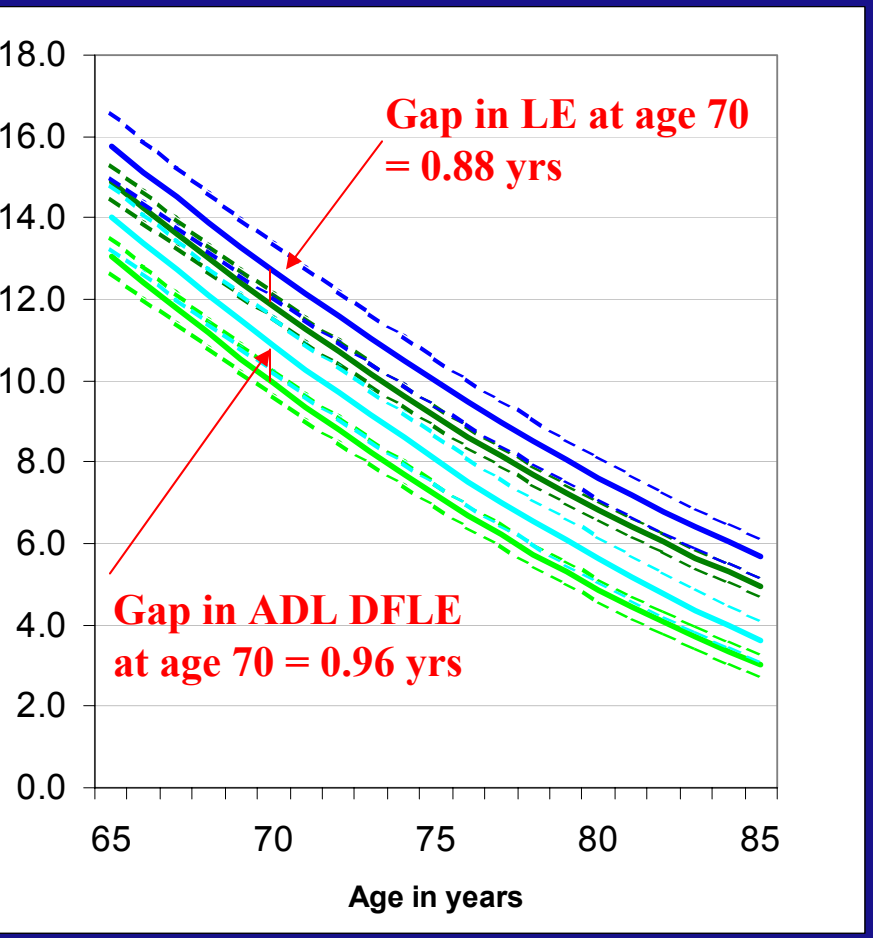
- IMaCH 0.98h for DFLEs separately for men and women
- Cox proportional hazards regression for mortality from disabled and non-disabled states
- Logistic regression for incidence to (and recovery from) disability with time between last report of no disability and first disability (time between last report of disability and first report of no disability) included as covariate
- All analyses weighted for oversampling of those 75+

Baseline characteristics (N=12060)

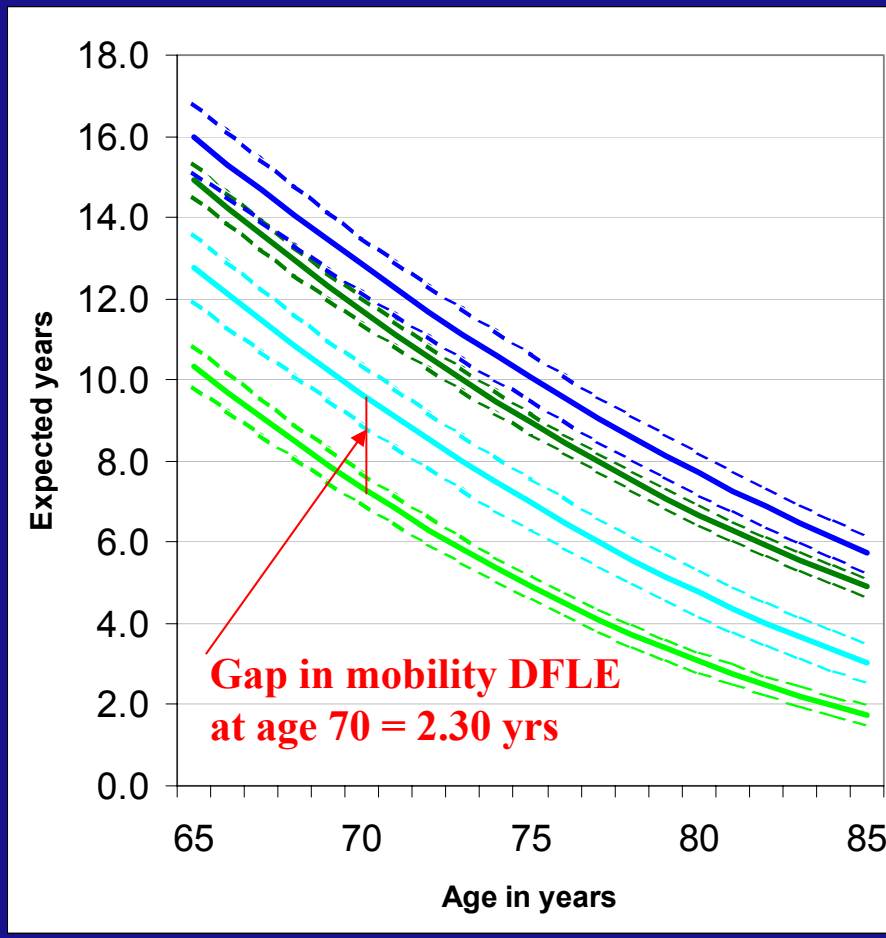


ADL and mobility DFLE for high and low education groups (men)

ADL



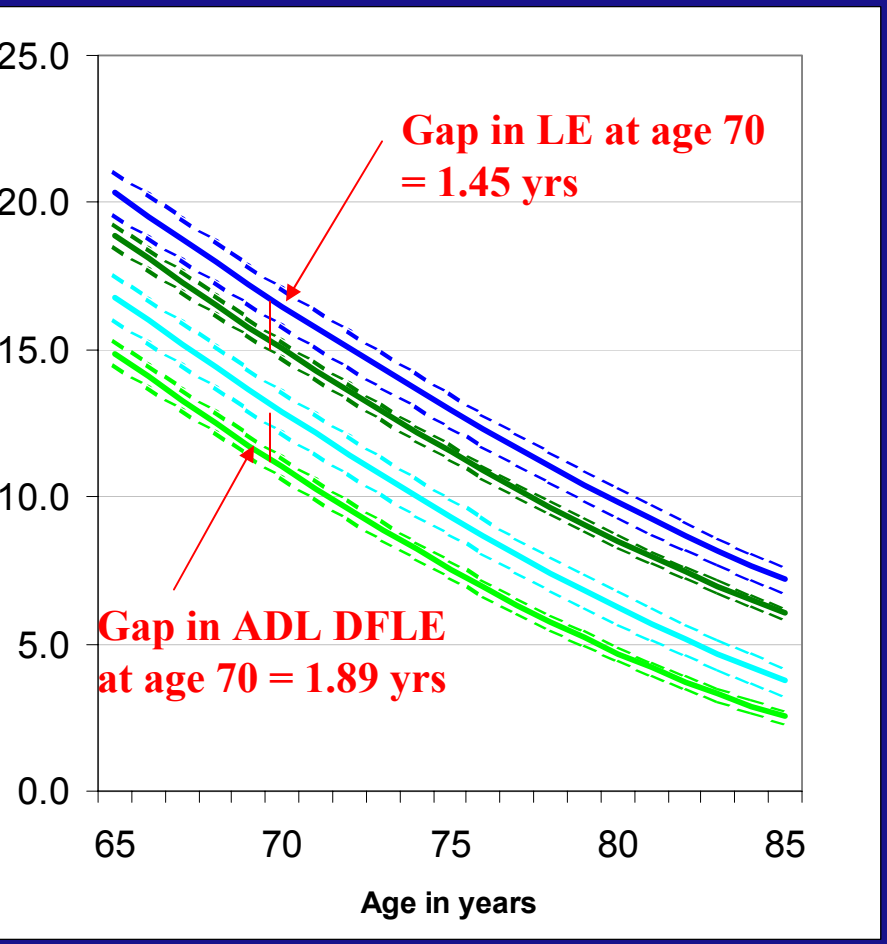
Mobility



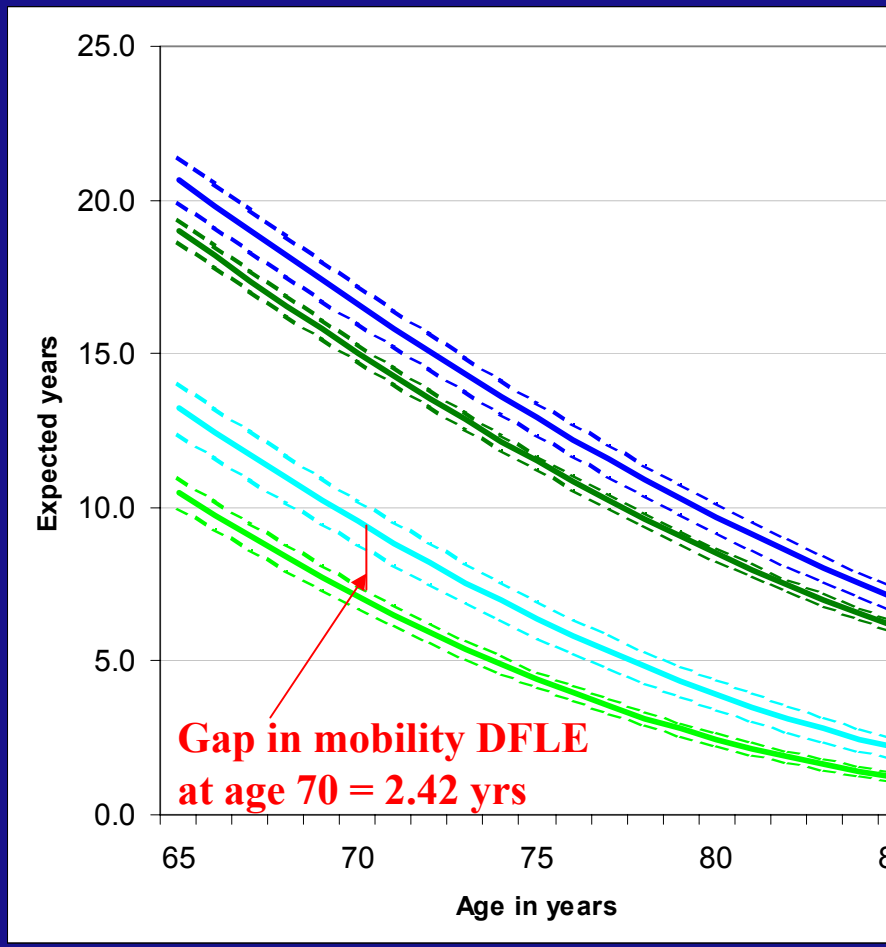
TLE high TLE low DFLE high DFLE low

ADL and mobility DFLE for high and low education groups (women)

ADL



Mobility



TLE high TLE low DFLE high DFLE low

State-specific mortality

	Death from			
	no mobility disability	no ADL disability	mobility disability	ADL disability
	OR (95%CI)	OR (95%CI)	OR (95%CI)	OR(95%CI)
MEN				
Yrs of education				
12+	1	1	1	1
10,11	1.0 (0.9,1.1)	1.0 (0.9,1.1)	1.0 (0.8,1.2)	1.1 (0.8,1.6)
0-9	1.1 (1.0,1.2)	1.1 (1.0,1.2)	1.1 (1.0,1.3)	1.2 (0.9,1.6)
WOMEN				
Yrs of education				
12+	1	1	1	1
10,11	1.1 (1.0,1.3)	1.1 (1.0,1.2)	1.0 (0.8,1.2)	1.0 (0.8,1.2)
0-9	1.2 (1.1,1.3)**	1.2 (1.1,1.3)***	1.0 (0.9,1.2)	1.1 (0.9,1.3)

OR adjusted for age * p<0.05, ** p<0.01. *** p<0.001

Incidence and recovery

	Incidence of		Recovery from	
	mobility disability OR (95%CI)	no ADL disability OR (95%CI)	mobility disability OR (95%CI)	ADL disability OR(95%CI)
MEN				
Yrs of education				
12+	1	1	1	-
10,11	1.4 (1.0,1.8)*	1.1 (0.8,1.5)	0.9 (0.6,1.4)	-
0-9	1.7 (1.4,2.2)***	1.1 (0.8,1.5)	0.6 (0.4,0.9)*	-
WOMEN				
Yrs of education				
12+	1	1	1	-
10,11	1.2 (0.9,1.4)	1.2 (1.0,1.6)	0.8 (0.5,1.1)	-
0-9	1.5 (1.2,1.8)***	1.5 (1.2,1.9) ***	0.7 (0.5,1.0)	-

OR adjusted for age, comorbidity and MMSE * p<0.05, ** p<0.01. *** p<0.001

Strengths and limitations

- Strengths
  - Large study
  - Includes those in institutions
  - Ten years of follow-up
  - Nationally representative
- Limitations
  - Loss to follow-up (though mortality complete)
  - Incomplete adjustment for comorbid conditions
  - Still few transitions to no disability especially for ADL
  - Long time between follow-ups (may miss transitions)

Conclusions

- What is the size of differences in DFLE between socio-economic groups defined by education (early life disadvantage)?
  - Larger for mobility disability than ADL disability
  - Greater differentials in DFLE than TLE for men and women
  - Greater differentials for women than men in both TLE and DFLE

Conclusions

- Is it differences in incidence, recovery or mortality that drive these?
  - Incidence - though some differences in recovery of mobility disability in men
  - Differentials in incidence not a result of increased burden of disease in those with fewer years of education

What drives relationship between education and disability?

- Blane* suggests 5 possible causal processes:
  - the long-term effect of childhood circumstances on adult health
  - education is mediated through its influence on later occupation and income which themselves affect adult health
  - education impacts on the ability to take in and act upon health education messages
  - a further background variable affects both the capacity to complete education and maintain health
  - ill-health during childhood limits education and predisposes to later ill-health

Blane D. Commentary: Explanations of the difference in mortality risk between ifferent educational groups. International Journal of Epidemiology 2003; 32:355-

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