

# Trajectories of healthy ageing phenotype of older Britons 2004-203

Gindo Tampubolon

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University of Manchester

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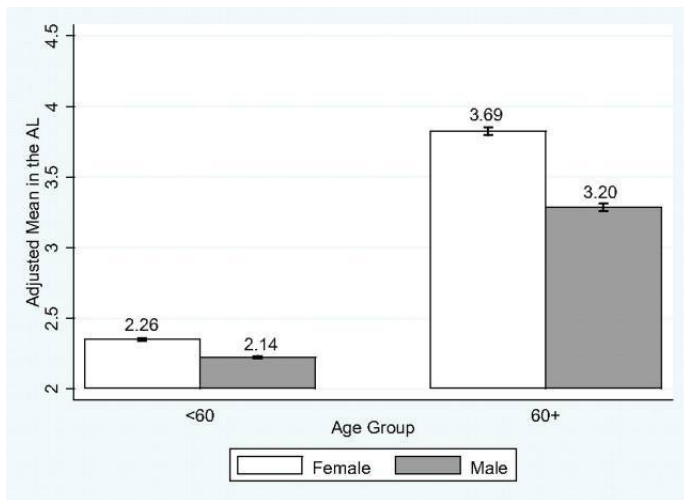
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# Population ageing demanding healthy and active ageing

- Population ageing
- Biomarkers-based foundation of healthy ageing: healthy ageing phenotype & healthy ageing index
- Broad based organ systems: cardiovascular function, glucose balance, lung function, lipid metabolism, inflammation system

Women's advantage in life expectancy: but not in allostatic load (US, Yang & Kozloski 2010 JGMS)?



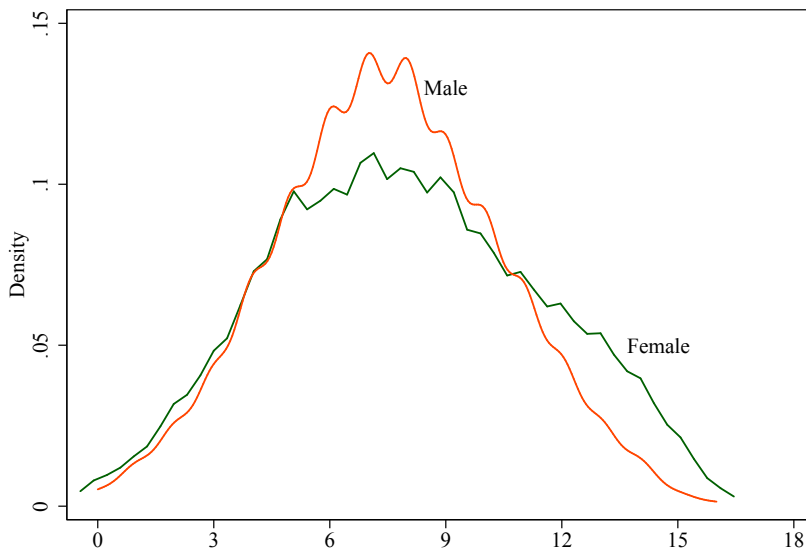
# ELSA waves 2, 4, 6, $N = 14812$

- The primary longitudinal ageing study in England  
[www.ifs.org.uk/elsa](http://www.ifs.org.uk/elsa)
- A spectrum of outcomes and indicators including biomarkers
- Covariates: sex, age, wealth, social class (manual), education, social support, social connection, household size, marital status, chronic conditions (COPD, cancer, angina ...), smoking, drinking, physical exercise

## Healthy ageing phenotype (Lara et al 2013)

- arterial blood pressure
- fasting glucose & glycated haemoglobin
- forced expiratory volume in 1 s
- waist circumference
- HDL cholesterol, triglycerides
- C-reactive protein
- *sum of tertiles codes (0, 1, 2): higher – healthier*

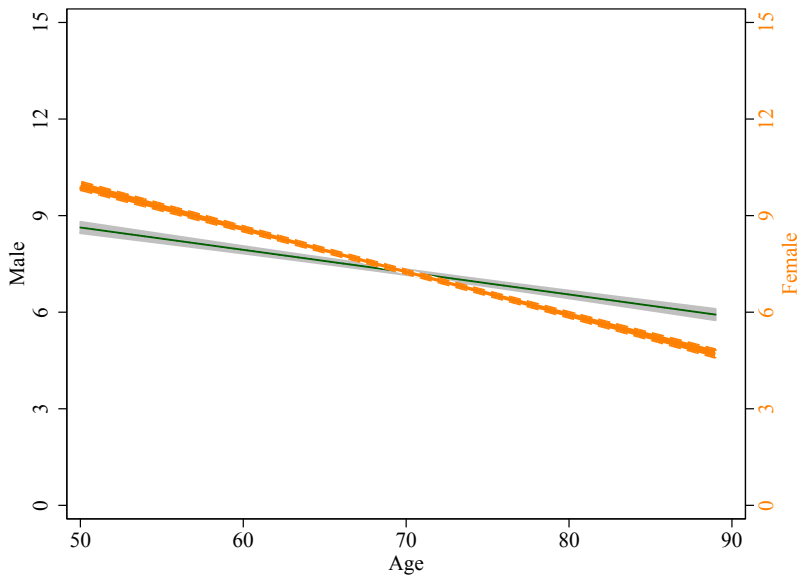
# Empirical distribution of healthy ageing phenotype: gender difference



## Estimates of linear mixed model and selection model

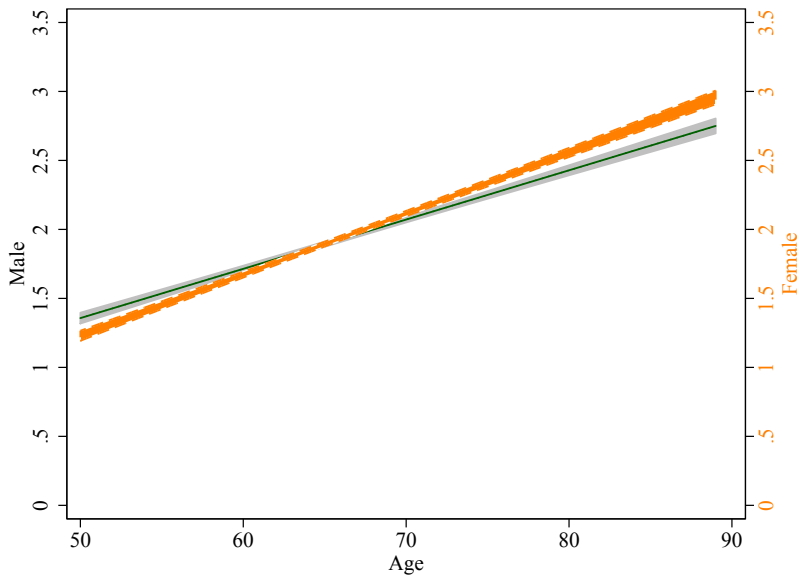
	Mixed model	Selection model
	$\beta$ [CI]	$\beta$ [CI]
Sex, Female	3.691 [2.760,4.622]	2.545 [1.446,3.644]
Age	-0.242 [-0.352,-0.131]	-0.028 [-0.043,-0.013]
× Female	-0.051 [-0.065,-0.037]	-0.035 [-0.051,-0.019]
Current smoker	-0.685 [-0.858,-0.513]	-0.672 [-0.909,-0.435]
Drink daily	0.412 [0.307,0.517]	0.509 [0.359,0.658]
Physical activ.	0.237 [0.174,0.301]	0.374 [0.285,0.463]
Intermediate	0.137 [-0.028,0.303]	0.161 [-0.059,0.381]
Managerial	0.070 [-0.089,0.228]	-0.009 [-0.190,0.172]
High school	0.342 [0.190,0.493]	0.270 [0.086,0.454]
College	0.582 [0.399,0.765]	0.449 [0.223,0.676]
Middle wealth	0.298 [0.169,0.426]	0.339 [0.169,0.508]
Wealthiest	0.641 [0.502,0.780]	0.705 [0.510,0.900]

# Predicted healthy ageing phenotype





## Predicted allostatic load (ELSA waves 2, 4, 6)



# Biomarkers in social survey

- Socially structured at different stages of the lifecourse: occupation and education
- A half-puzzle: women are not always on top
- Selection model reduces the puzzle but doesn't resolve it

## References and Q & A

- Tampubolon. 2015. Trajectories of healthy ageing phenotype of middle aged and older Britons 2004-2013. *Maturitas*. [10.1016/j.maturitas.2016.03.002](https://doi.org/10.1016/j.maturitas.2016.03.002)
- Tampubolon. 2015. Repeated systemic inflammation was associated with cognitive deficits in older Britons. *Alzheimer's & Dementia*. [10.1016/j.dadm.2015.11.009](https://doi.org/10.1016/j.dadm.2015.11.009)
- Tampubolon. 2015. Cognitive ageing in Great Britain in the new century: Cohort differences in episodic memory. *PLoS One*. [10.1371/journal.pone.0144907](https://doi.org/10.1371/journal.pone.0144907)