Socioeconomic and Gender Inequalities in Trajectories of Frailty

James Nazroo and Alan Marshall

james.nazroo@manchester.ac.uk

An ageing world

[Nothing] is more likely to shape economic, social, and political developments in the early twenty-first century than the simultaneous aging of Japan, Europe, and the United States … The human life cycle is undergoing unprecedented change. To preserve economic security, we must adapt the social institutions built around it to these new realities.

Demographic aging brings with it a systematic transformation of all spheres of social life … beneath even the daunting fiscal projections, lies a longer-term economic, social and cultural dynamic … What will it be like to live in societies that are much older than any we have ever known or imagined?

The Commission on Global Aging (1999)

Research questions

- What is the evidence for compression of morbidity?
  - Are there differences in levels and growth of frailty across age cohorts?

- Do we see differences in these frailty cohort effects according to gender and social class?
  - If so, what might be explaining these differences?

The English Longitudinal Study of Ageing
(www.ifs.org.uk/elsa)

- A panel study of people aged 50 and older, recently finished our sixth wave of data collection, with additional wave 0 data available
- Sample at wave 1 (2002) was approximately 11,400 people born before 1st March 1952 who were in the private household sector. Drawn from Health Survey for England (wave 0).
- Face to face interview every two years since 2002, with a biomedical assessment carried out by a nurse every four years.
- Those incapable of doing the interview have a proxy interview.
- End of life interviews are carried out with the partners or carers of people who died after wave 1.
- Detailed content on: demographics, health, performance, biomarkers, wellbeing, economics, housing, employment, social relationships, social civic and cultural participation, life history.
- Sister study to HRS, SHARE, KLOSA, CHARLS, etc.

ELSA English Longitudinal Study of Ageing

fRail

Defining and operationalising frailty

- Specific definitions and models of frailty are contested
- Broad agreement that frailty is a non-specific state reflecting age-related declines in multiple systems, which lead to adverse outcomes (mortality, hospitalisation)
- Two common approaches to characterise frailty:
  - Frailty index – counts the accumulation of ‘deficits’ (Rockwood and colleagues)
  - Frailty phenotype – a standardised, diagnostic, definition of frailty (Fried and colleagues)

Frailty Index

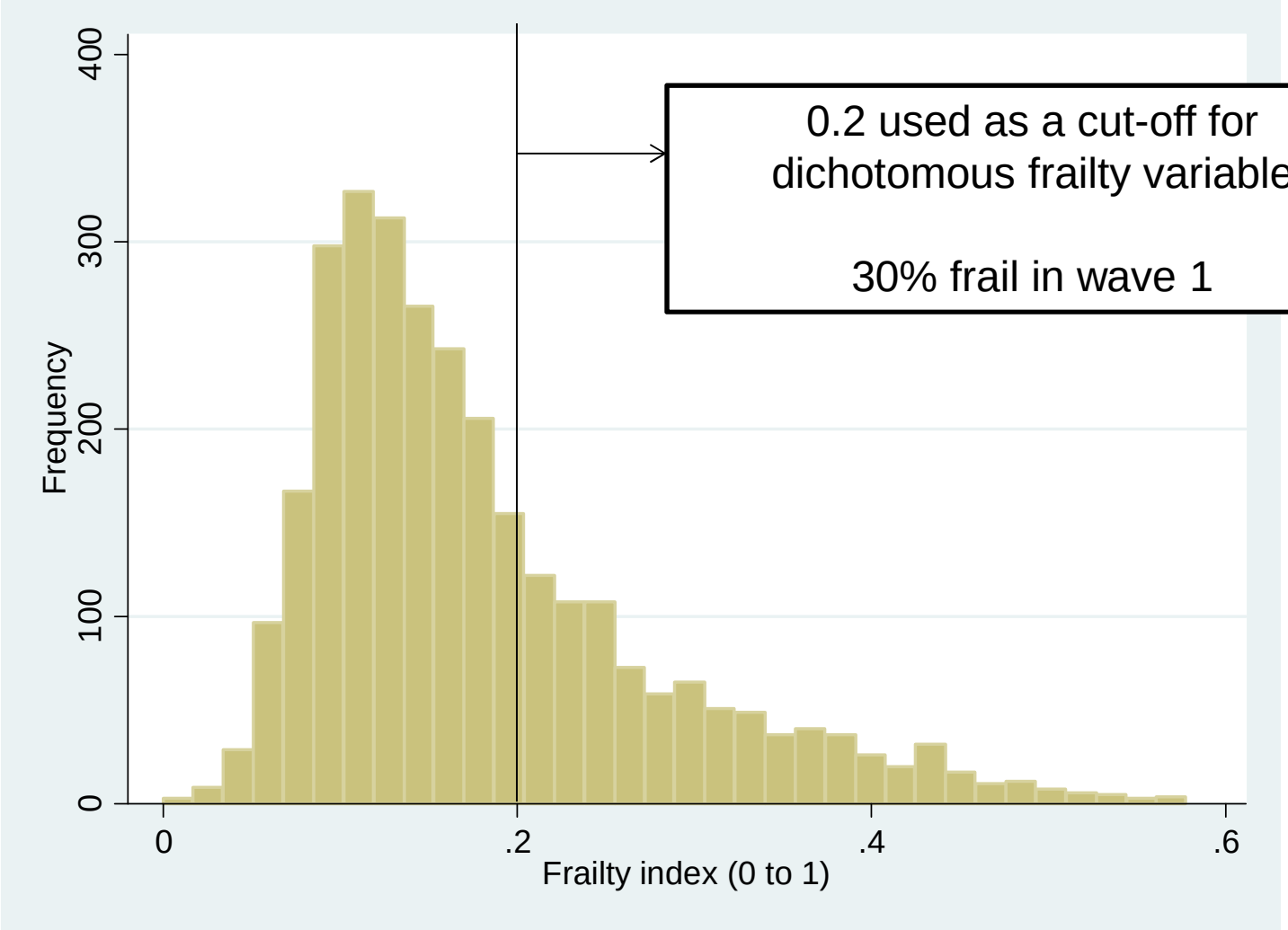
- Based on accumulation of ‘deficits’ (from 30 items)
  - Activities of Daily Living
  - Cognitive function
  - Chronic diseases
  - CVD
  - Depression/mental health
  - Poor eyesight/hearing
  - Falls, fractures and joint replacements
- 0-1 scale for each component
- Calculate the proportion of deficits held (so 0-1 scale)
- Can be divided into three categories
  - Robust (0-0.12)
  - Pre-frail (0.13-0.21)
  - Frail (>0.21)

Modelling frailty trajectories

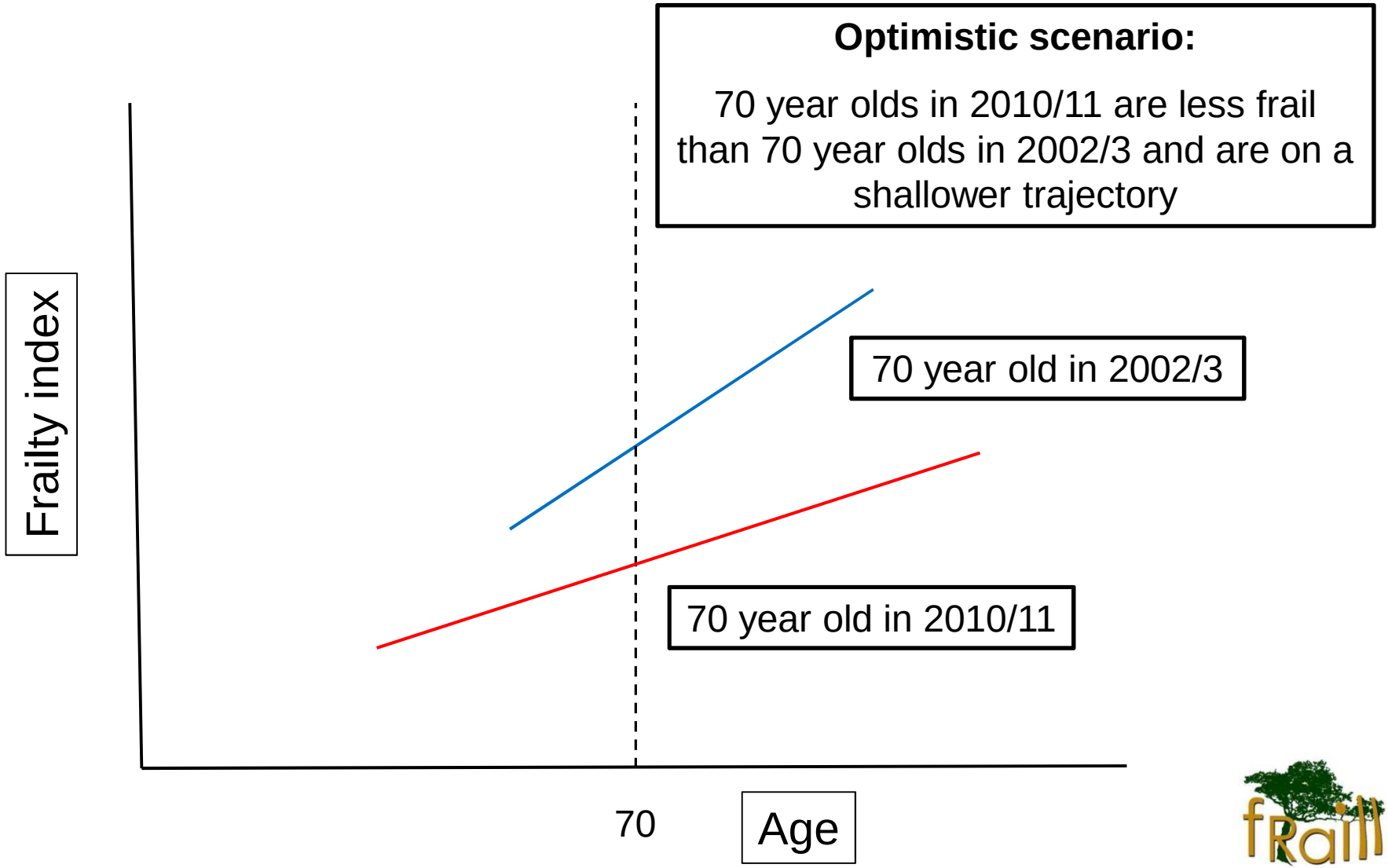
- English longitudinal Study of Ageing
- 5 waves of data covering 8 years (2002 to 2010)
- Cohorts based on 5 year age bands
- Model trajectories of frailty for each cohort
- Multilevel growth curve model – random intercept and random age (growth) term
- Age, Age squared, wave and age*wave interaction
- Interactions with sex and wealth

- Graph predicted trajectories for each cohort

Frailty index: distribution (wave 1)

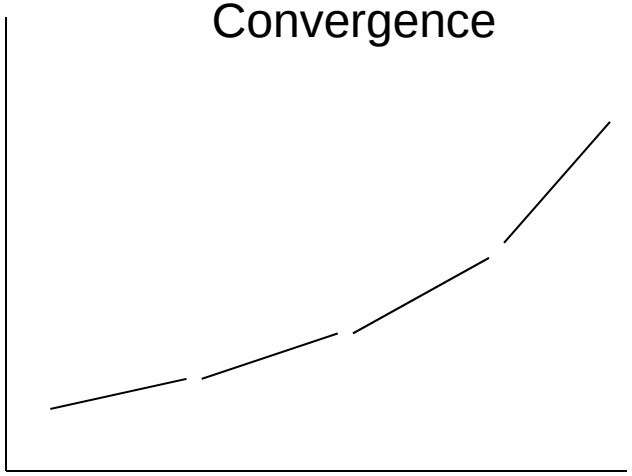


Modelling frailty trajectories by age cohort

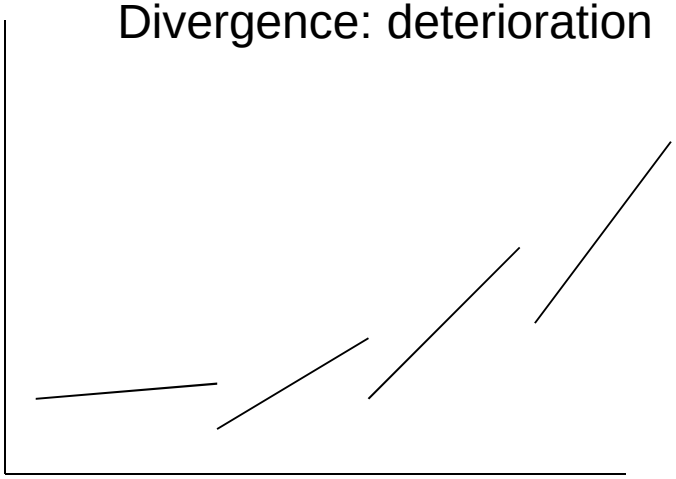


Age trajectories: convergence or divergence?

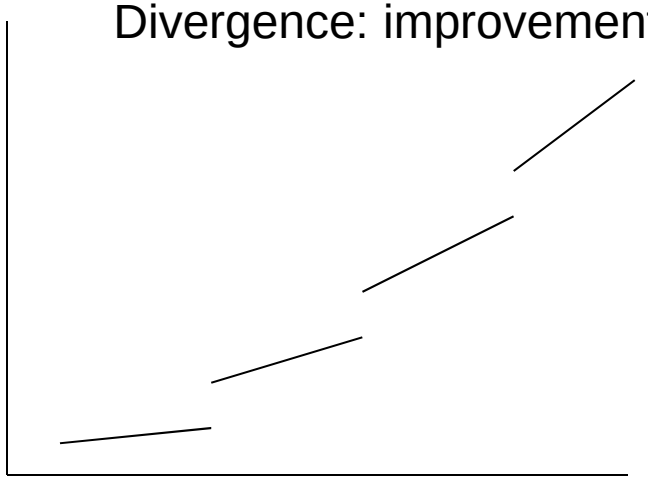
Convergence



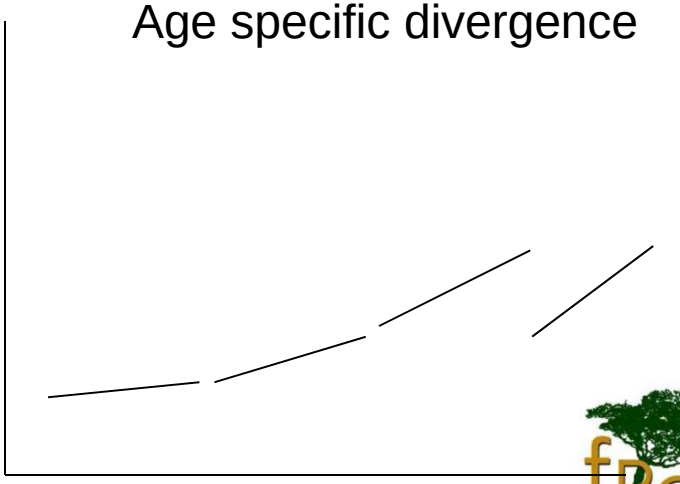
Divergence: deterioration



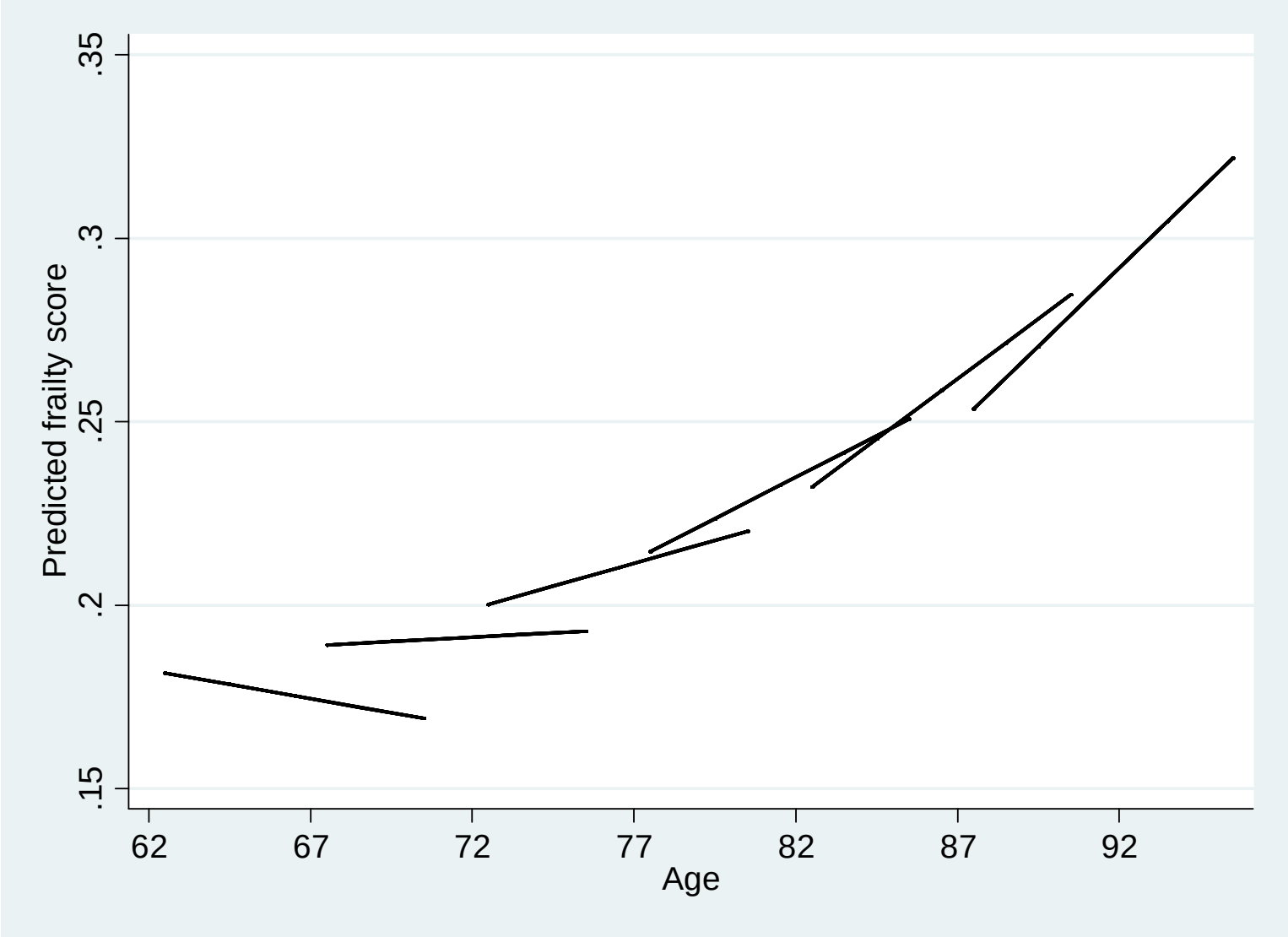
Divergence: improvement



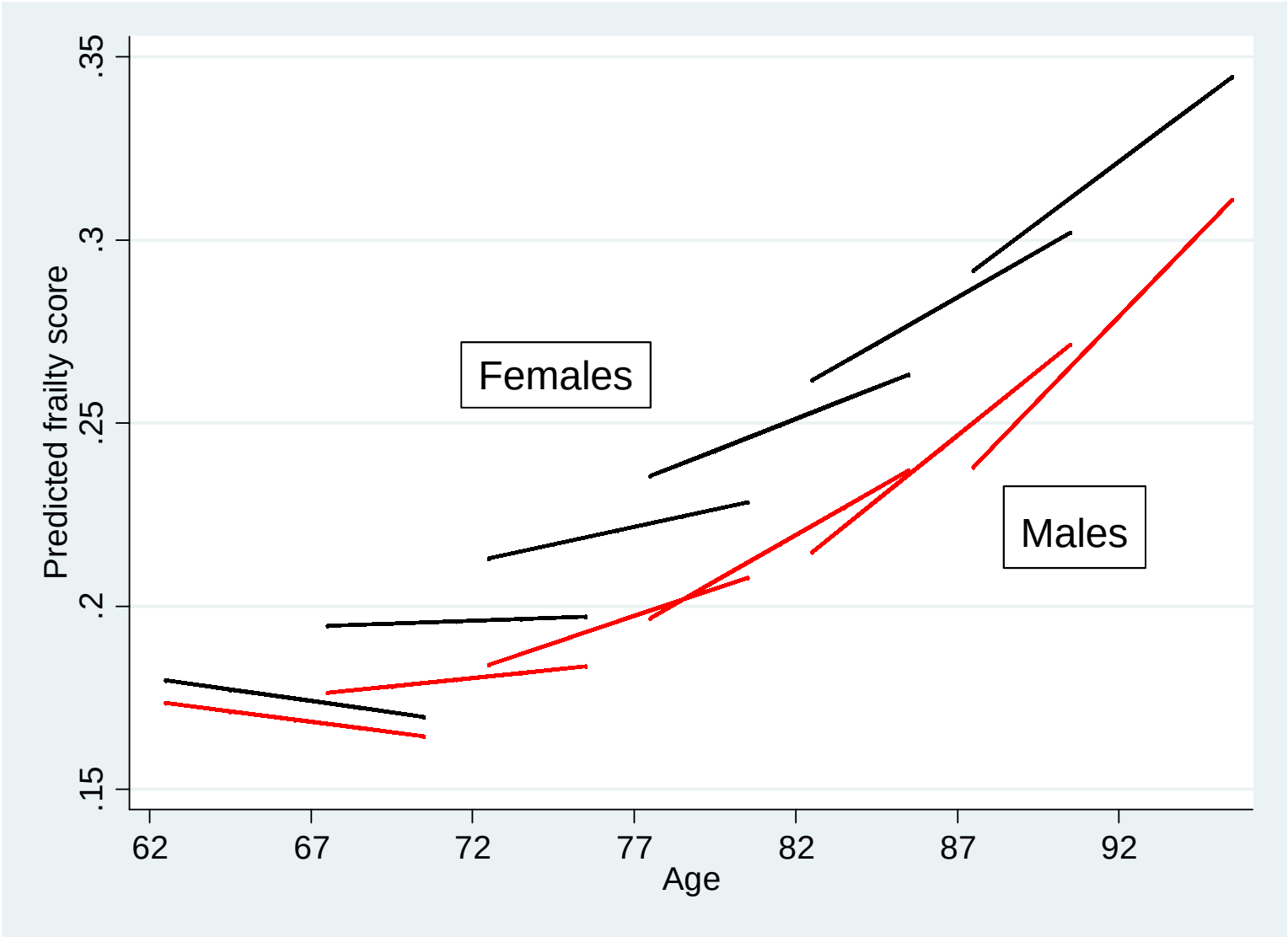
Age specific divergence



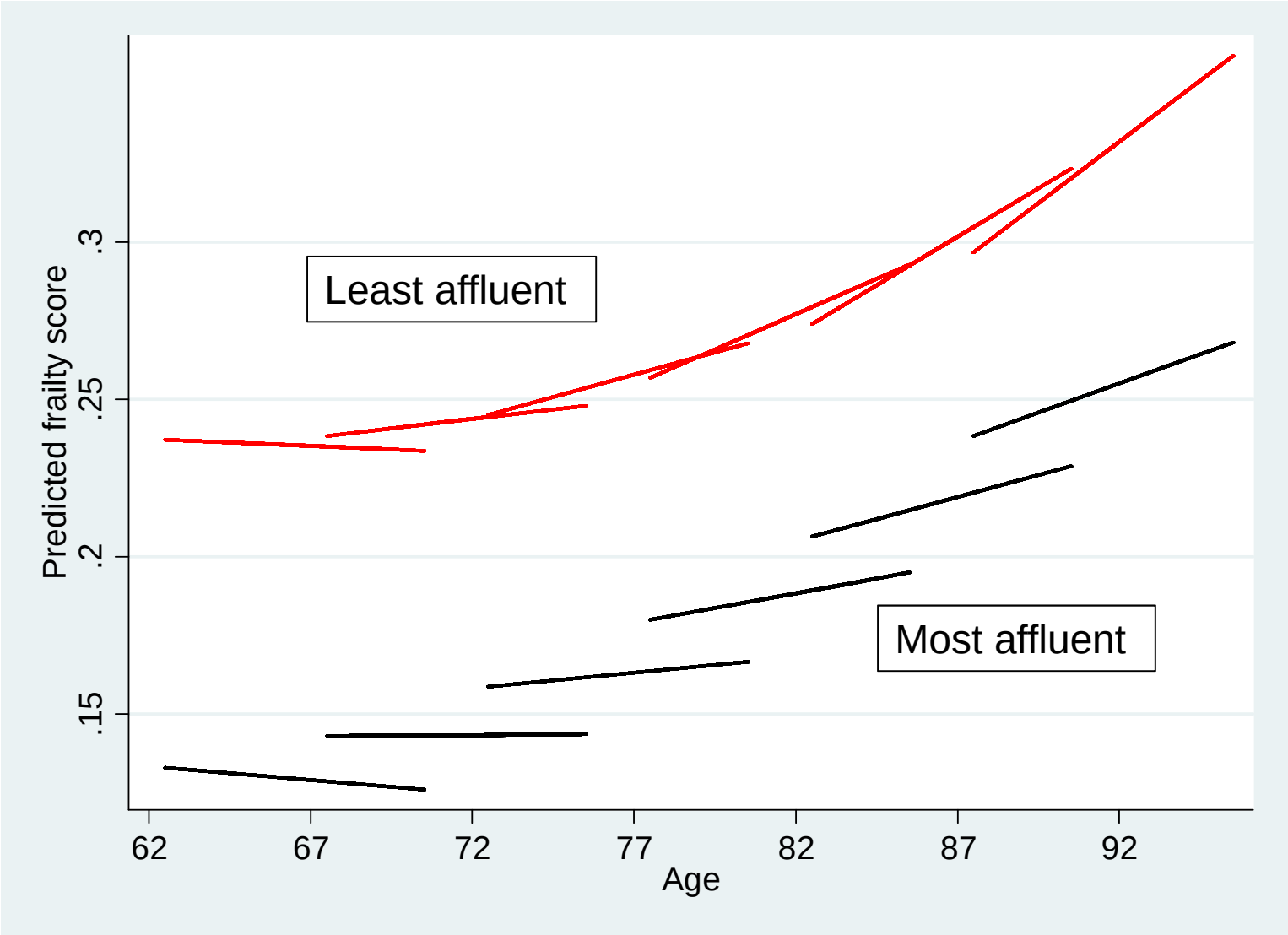
Frailty trajectories by cohort



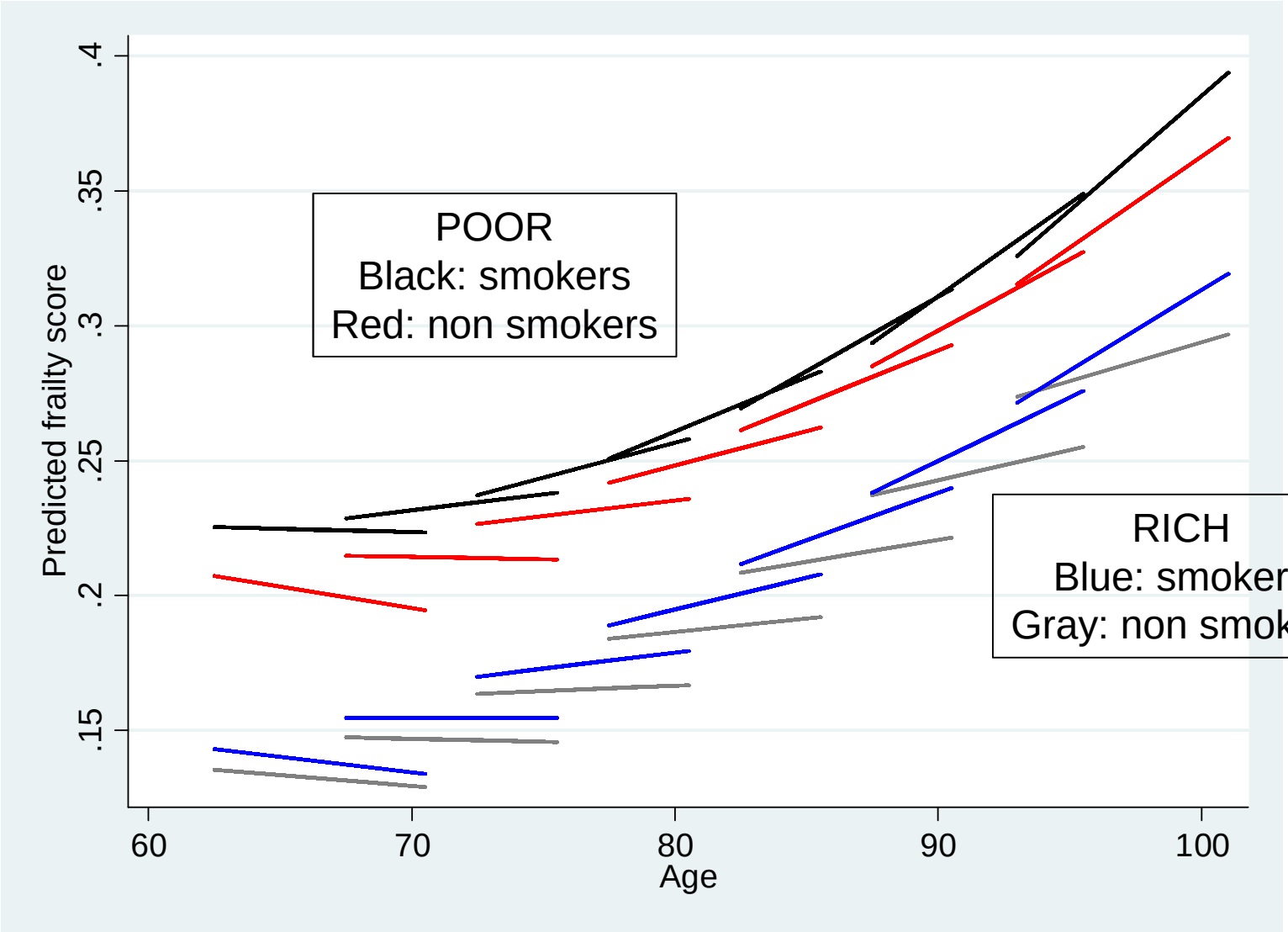
Frailty trajectories by cohort and gender



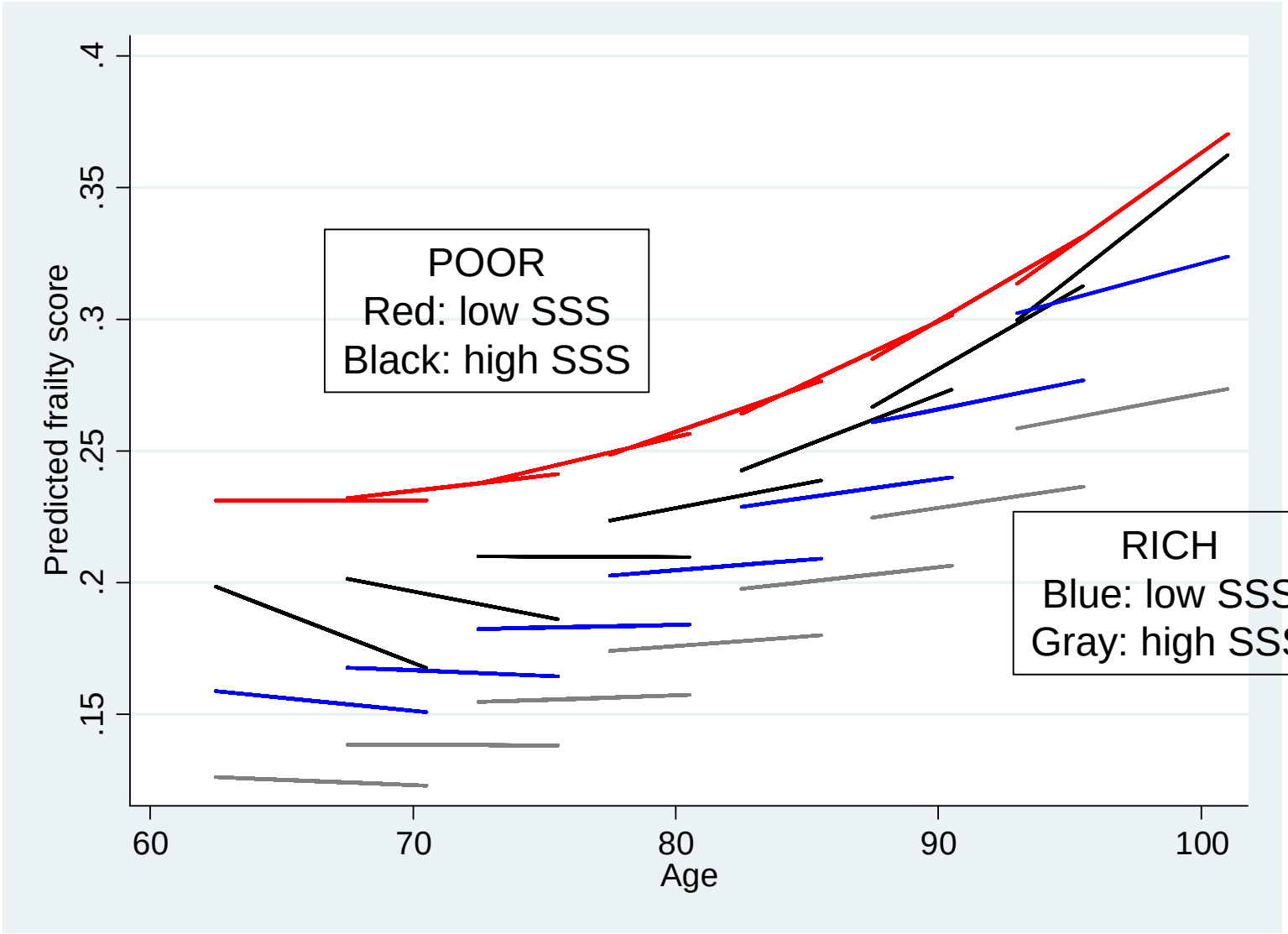
Frailty trajectories by cohort and wealth



Frailty trajectories by cohort, wealth and smoking



Frailty trajectories by cohort, wealth and subjective social status



Conclusions

- For total population some evidence of improvement in frailty for younger cohorts.
- Convergence of trajectories of frailty across older cohorts.
- Stronger improvement in frailty across cohorts for women compared with men.
- Levels of frailty considerably higher for the poor compared with the rich.
- Declines in frailty across cohorts for rich, but no decline for the poor.
- Subjective social status may be an important mediator of differences in wealth-based trajectories of frailty.
- Health behaviours appear to be unimportant for wealth differences.

- Reducing gender inequalities?
- But, enduring, or increasing, class-based inequalities.

Social mobility: odds to be in a professional or managerial class for four age cohorts

	Year of birth				
	< 1920	**1920-29**	**1930-39**	**1940-45**	**1946-52**
Class of origin					
Semi/un-skilled manual	1	1	1	1	1
Skilled manual	1.46	1.39*	**1.35**	**1.51**	**1.26**
Administrative/Skilled non-manual	1.86*	**3.30**	**2.76**	**2.31**	**2.06**
Manager/professional	**2.76**	**4.94**	**4.02**	**3.40**	**3.32**
Female	**0.37**	**0.29**	**0.53**	**0.61**	**0.65**

Bold figures $p < 0.05$, *$p < 0.1$

Acknowledgements

- Funders

- A range of colleagues
  - Bram Vanhoutte
  - Stephen Jivraj
  - Kris Mekli
  - Gindo Tampubolon
  - Tarani Chandola
  - Neil Pendleton