

Ageing, health and work potential

Vegard Skirbekk

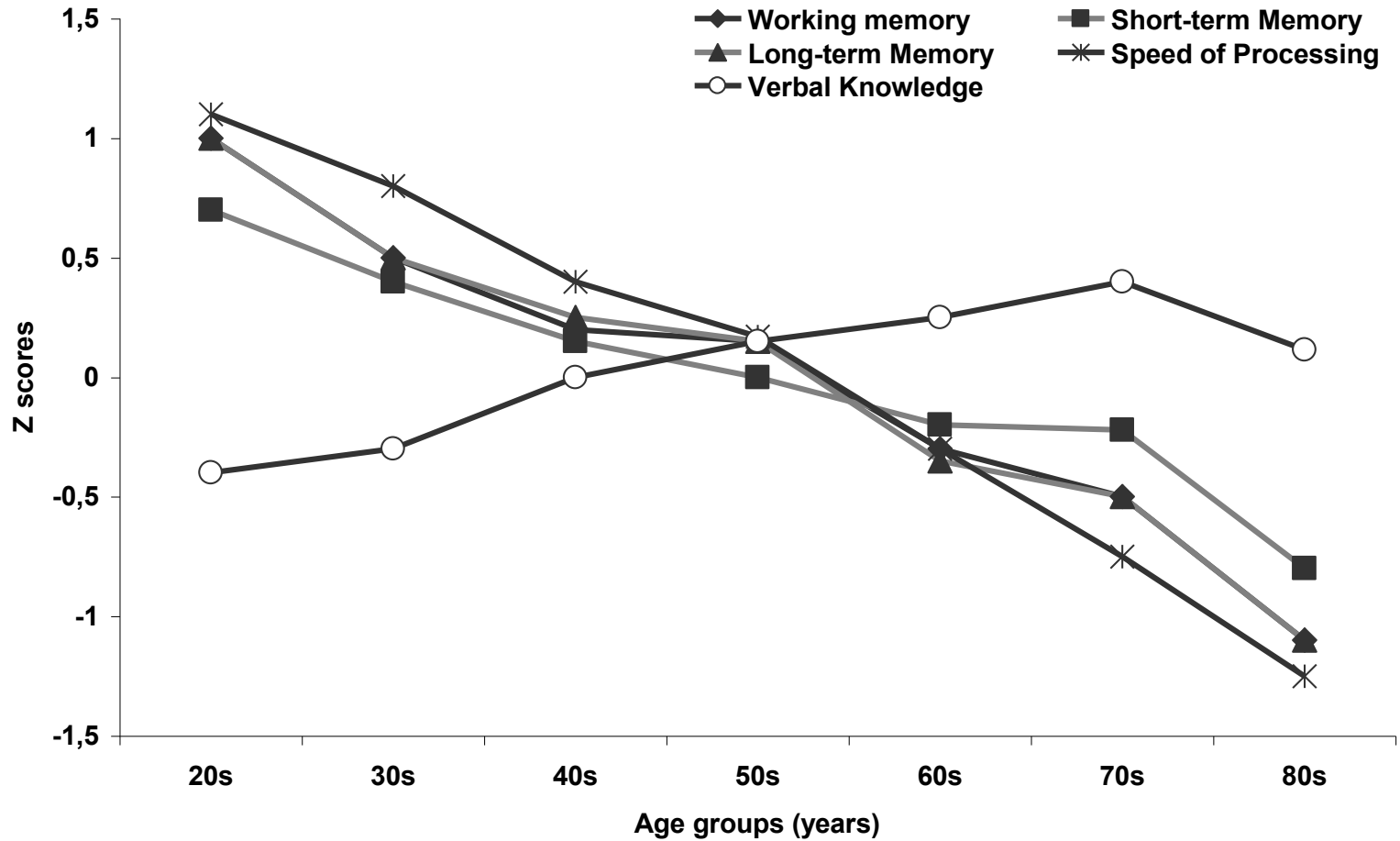
Columbia Aging Centre - Columbia University
Norwegian Institute of Public Health

Causes of age-variation in productivity

Cognitive ability scores predict job performance better **than any other observable characteristic** (Schmidt and Hunter 2004, Jenkins 2001). **Fluid cognitive abilities** (memory, learning, perceptual speed and reasoning abilities) **decline by age**, **crystallized abilities** (vocabulary size and semantic meaning) **are more age-stable** (Schaie 1994, Park et al. 2002).

Additional **experience** benefits productivity only up to a point: It possibly takes **10 years** to attain expert performance in analytic work and research (Ericsson and Lehmann 1996, Lesgold 1984). Only 0.6% of employers prefer workers with more than 10 years of experience (Econ 1998).

Age and cognition



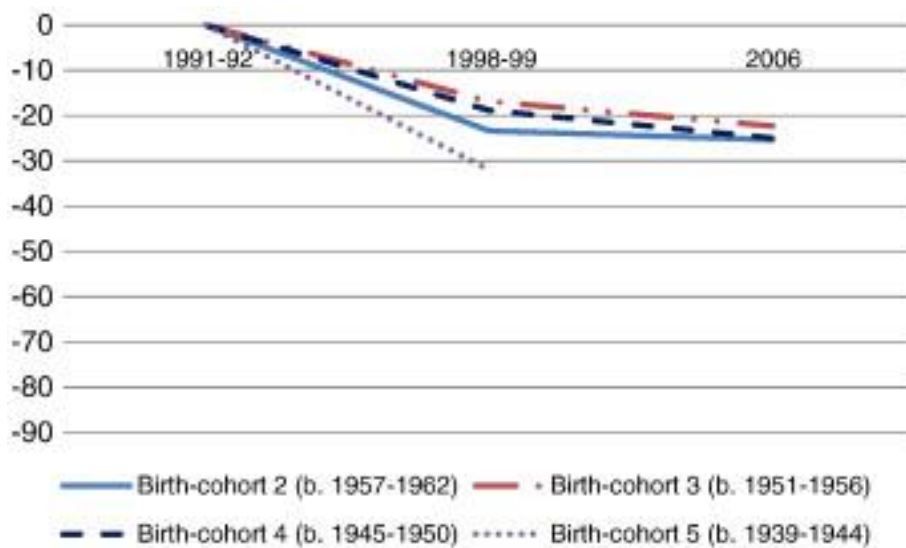
Have older workers adapted well to growing importance of cognition?

- We analyze the consequences of a changing importance of skill by age from the 1980s to the 2000s in Germany
- This period was characterized by rapid technological change (increase in service and ICT; decline in industrial/agricultural employment).
- German Qualification and Career Survey (BIBB/IAB): employee survey
4 waves for the study: 1986, 1992, 1999 and 2006 (1979 excluded)
- Age groups: 30-39, 40-49, 50-59
- Number of observations (after selections):
 - N(1986)=11,737
 - N(1992)=10,500,
 - N(1999)=11,318
 - N(2006)=6,687

(Gordo and Skirbekk, Labour Economics 2013)

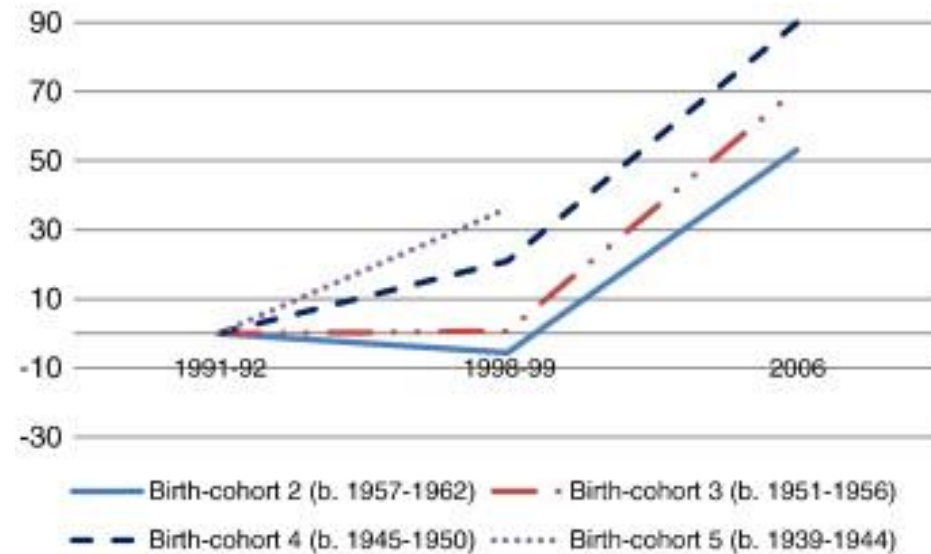
Cognition increasingly important for work

Physical strength demands



Source: BIBB-IAB, own calculations. Weighted values.

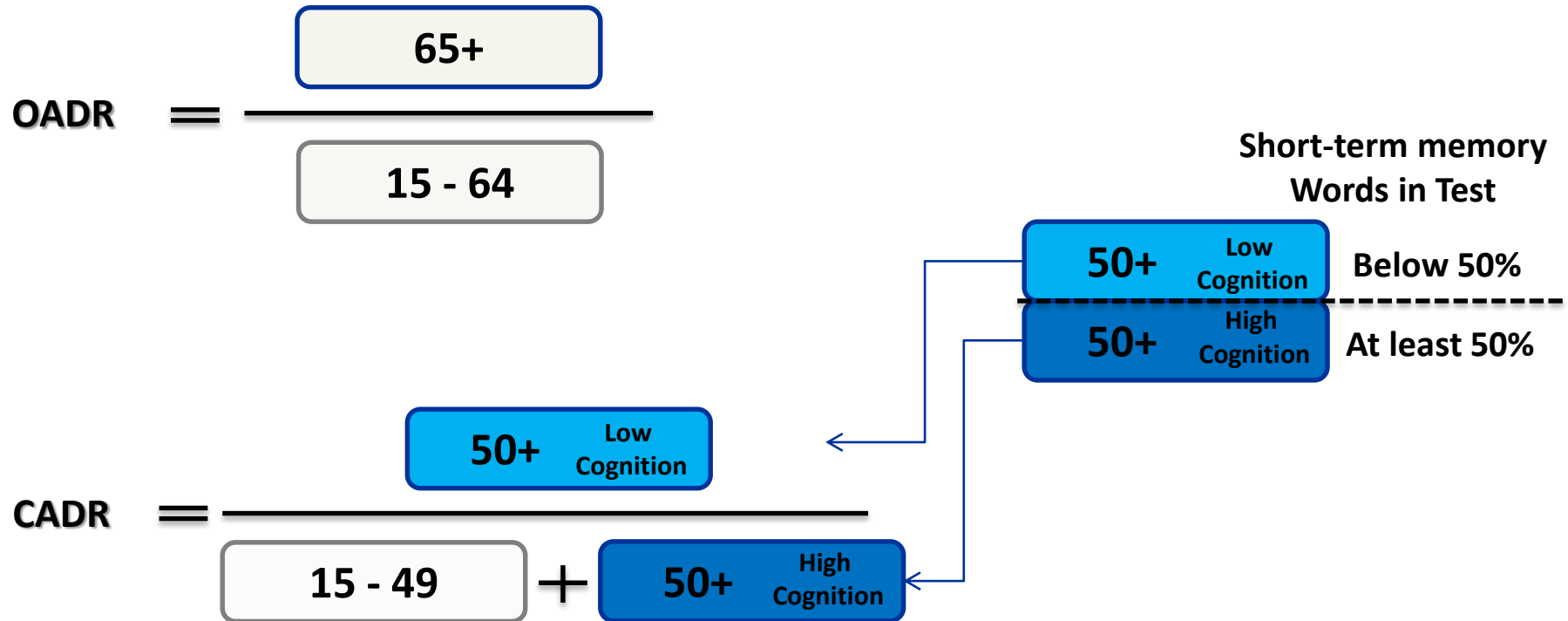
Importance of cognition



Source: BIBB-IAB, own calculations. Weighted values.

(Gordo and Skirbekk, Labour Economics 2013)

Cognitively Adjusted Dependency Ratio: CADR



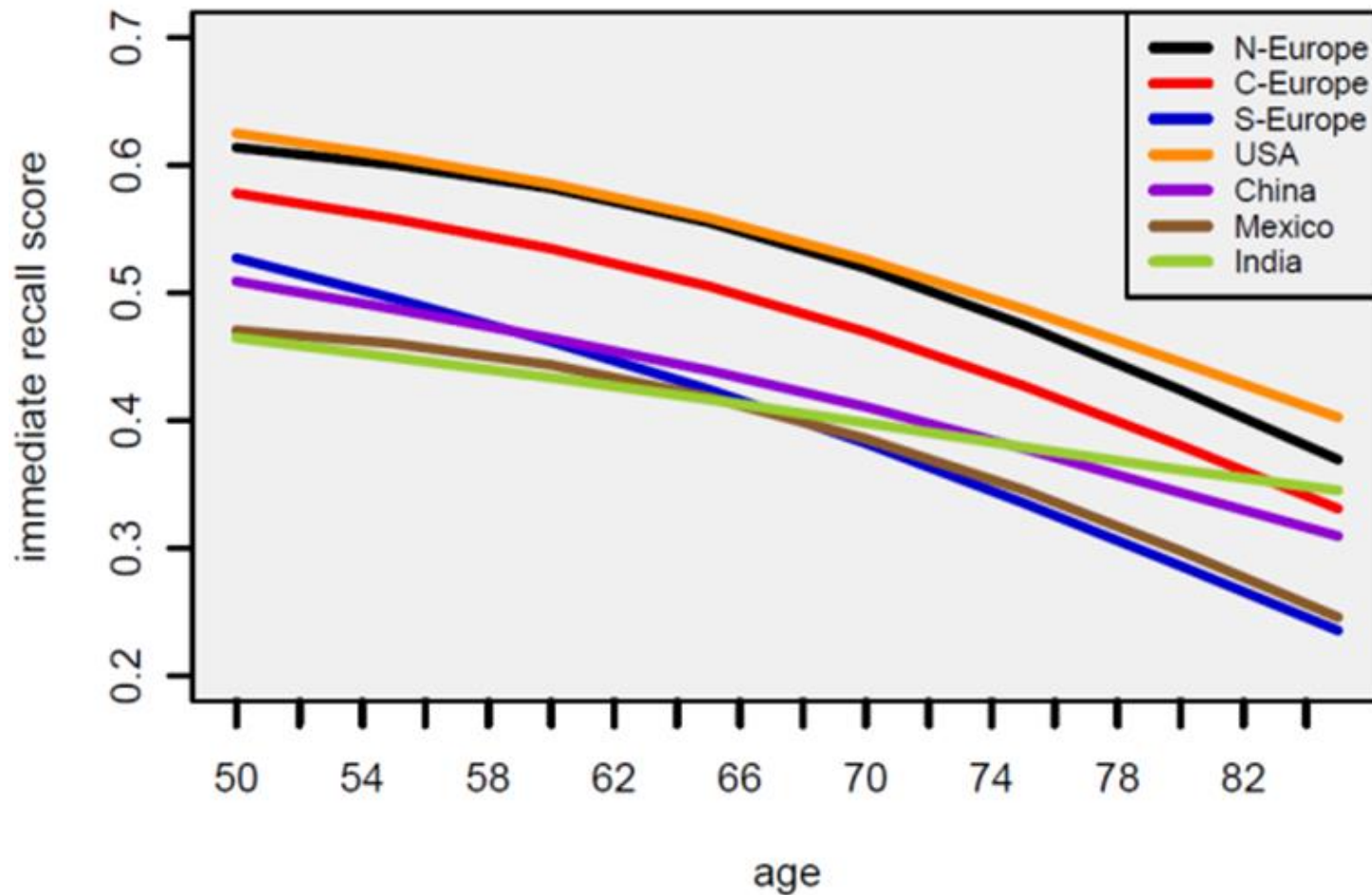
(Skirbekk et al., PNAS, 2012)

Cognitive test - Immediate recall

- Standardized memory test, always given in local language
- Respondents have 1 minute for recalling 10 basic words
- Proportion correct determines cognitive performance

(Skirbekk et al., PNAS, 2012)

Immediate word recall



(Skirbekk et al., PNAS, 2012)

Comparison OADR and CADR

A young population does not imply a low ageing burden

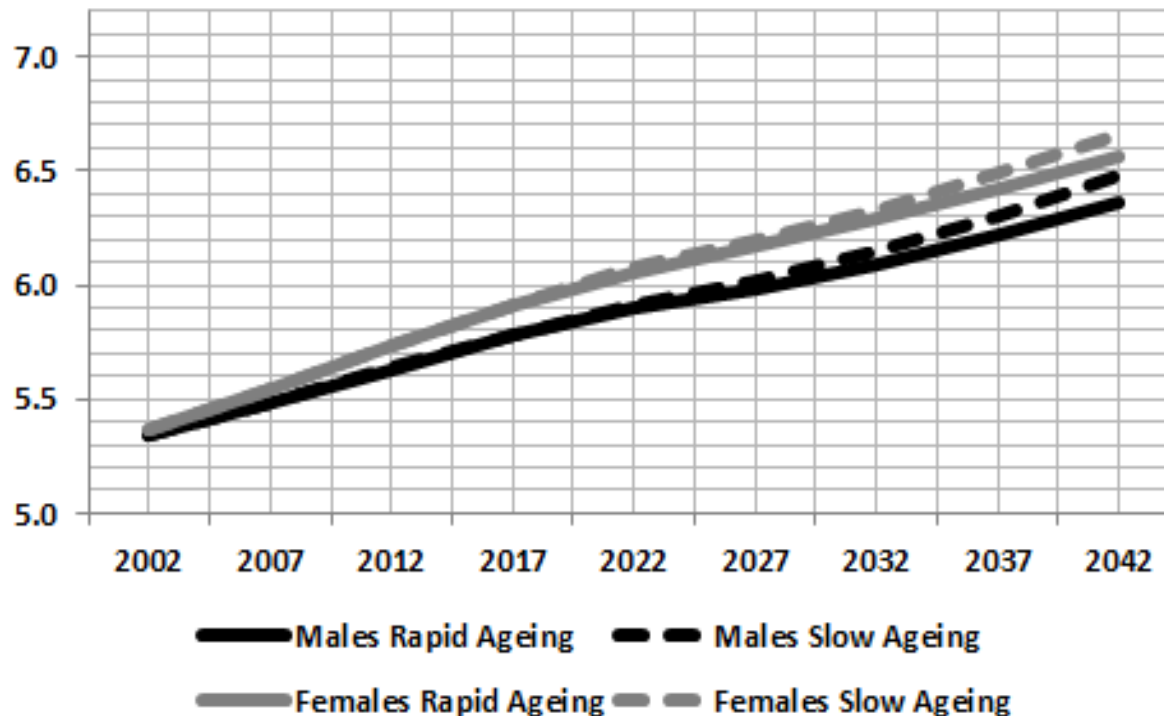
Country	OADR (65+/15-64)
India	1 (0.07)
Mexico	2 (0.09)
China	3 (0.12)
United States of America	4 (0.19)
Northern Europe (Denmark, England, Ireland, Sweden)	5 (0.24)
Continental Europe (Austria, Belgium, Czech Republic, France, Germany, Netherlands, Poland, Switzerland)	6 (0.25)
Southern Europe (Greece, Italy, Spain)	7 (0.27)

OADR = Old Age Dependency Ratio (2005)

Country	CADR
United States of America	1 (0.10)
Northern Europe (Denmark, England, Ireland, Sweden)	2 (0.12)
India	3 (0.14)
Mexico	3 (0.14)
Continental Europe (Austria, Belgium, Czech Republic, France, Germany, Netherlands, Poland, Switzerland)	5 (0.15)
China	6 (0.18)
Southern Europe (Greece, Italy, Spain)	7 (0.32)

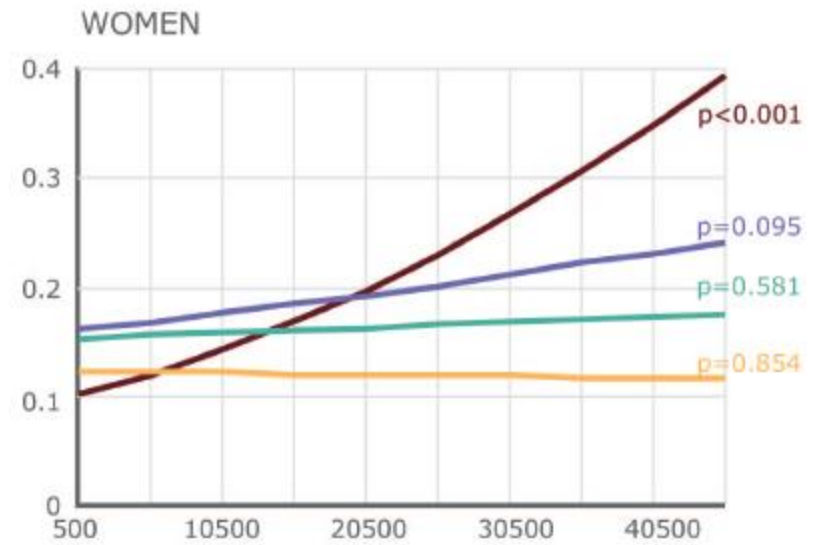
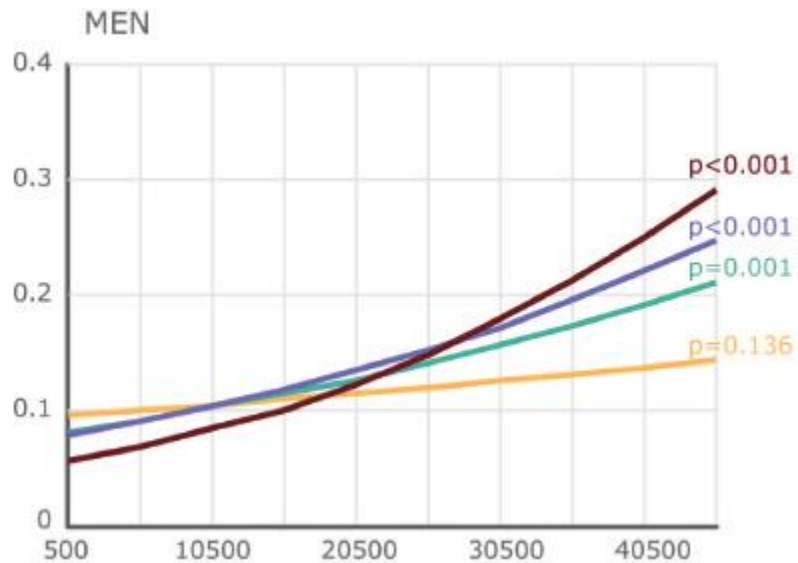
CADR = Cognitively Adjusted Dependency Ratio
(Skirbekk et al., PNAS, 2012)

If improvement continues: Better average cognition among 50 plus population – in spite of demographic ageing



(Skirbekk, et al. , Intelligence, 2013)

Countries that invested in education experienced less BMI growth following income growth



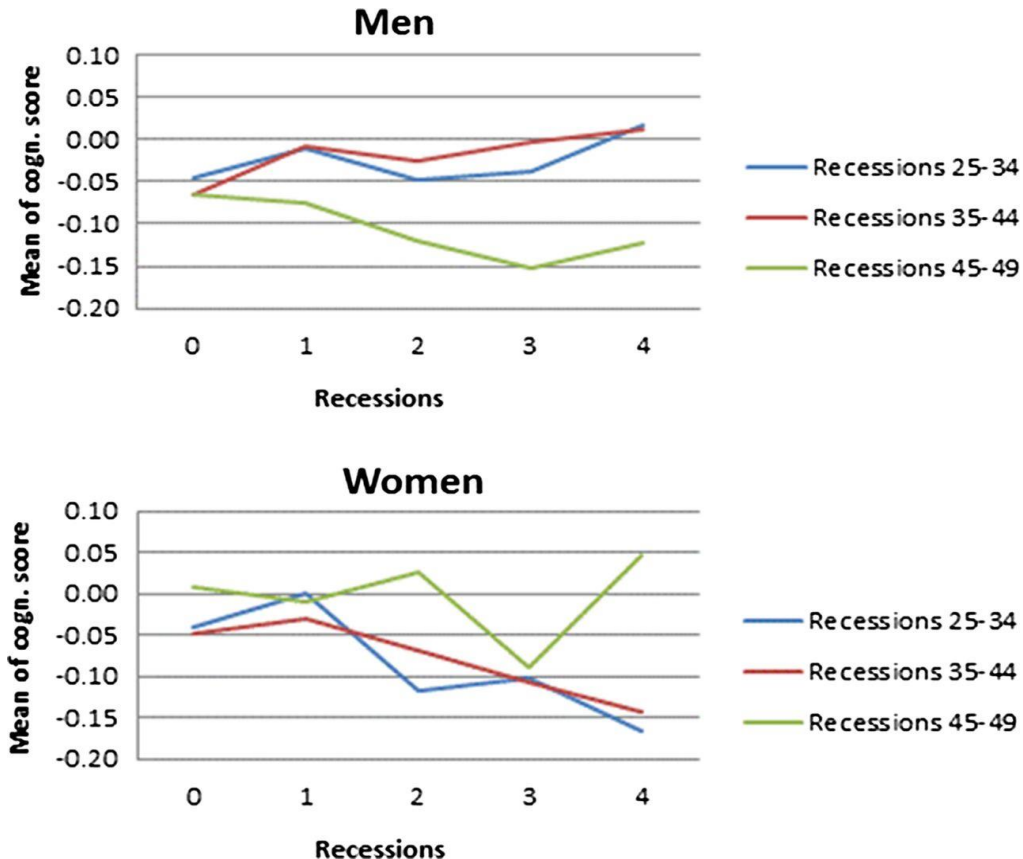
GDP per capita in 2008, PPP (constant 2005\$)

■ No education ■ Primary ■ Secondary ■ Tertiary

(Kinge et al., 2015, JECH)

Life histories of health outcomes at older ages

Predicted Cognitive Functioning (Z) Scores at Ages 50+ in Relationship Number of Recessions at Ages 25-49: Data from SHARE for 11 European countries



Leist, Anja K., Philipp Hessel, and Mauricio Avendano. "Do economic recessions during early and mid-adulthood influence cognitive function in older age?." *Journal of epidemiology and community health* (2013).

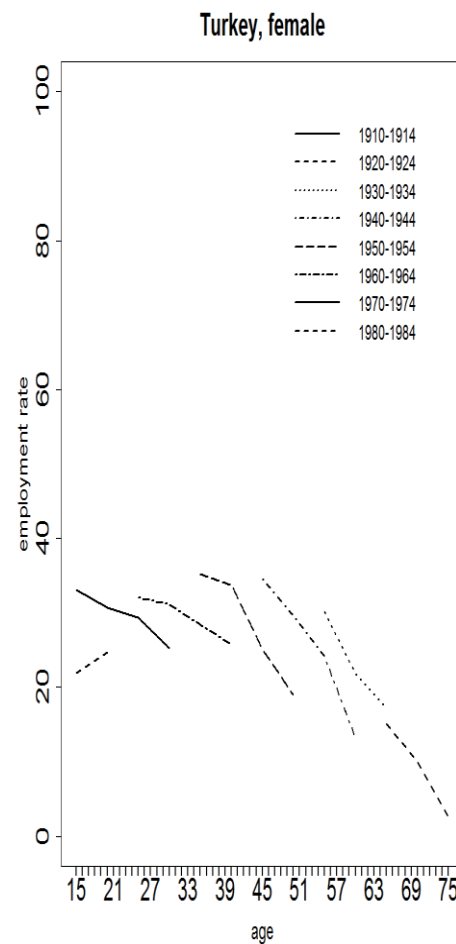
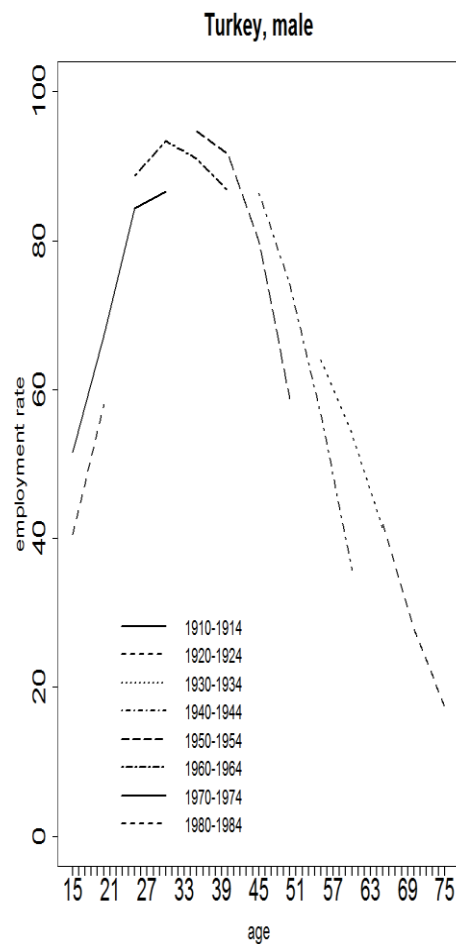
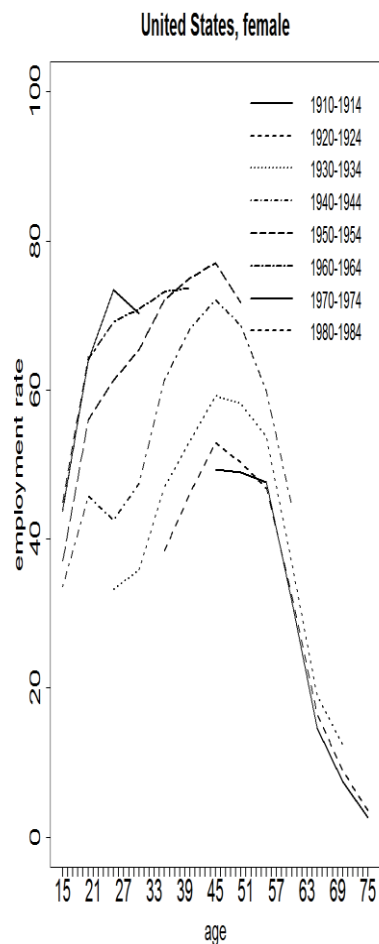
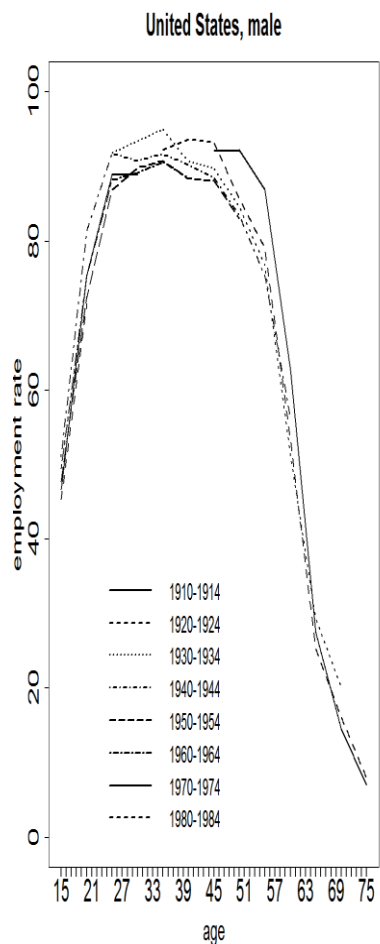
Positive image of aging important

- Positive attitudes central to how well one ages
- Negative attitudes has been found to decrease performance and evaluations
- A new study found that greater economic activity related to more positive outcomes, controlling for national variation in cognition, education and GDP



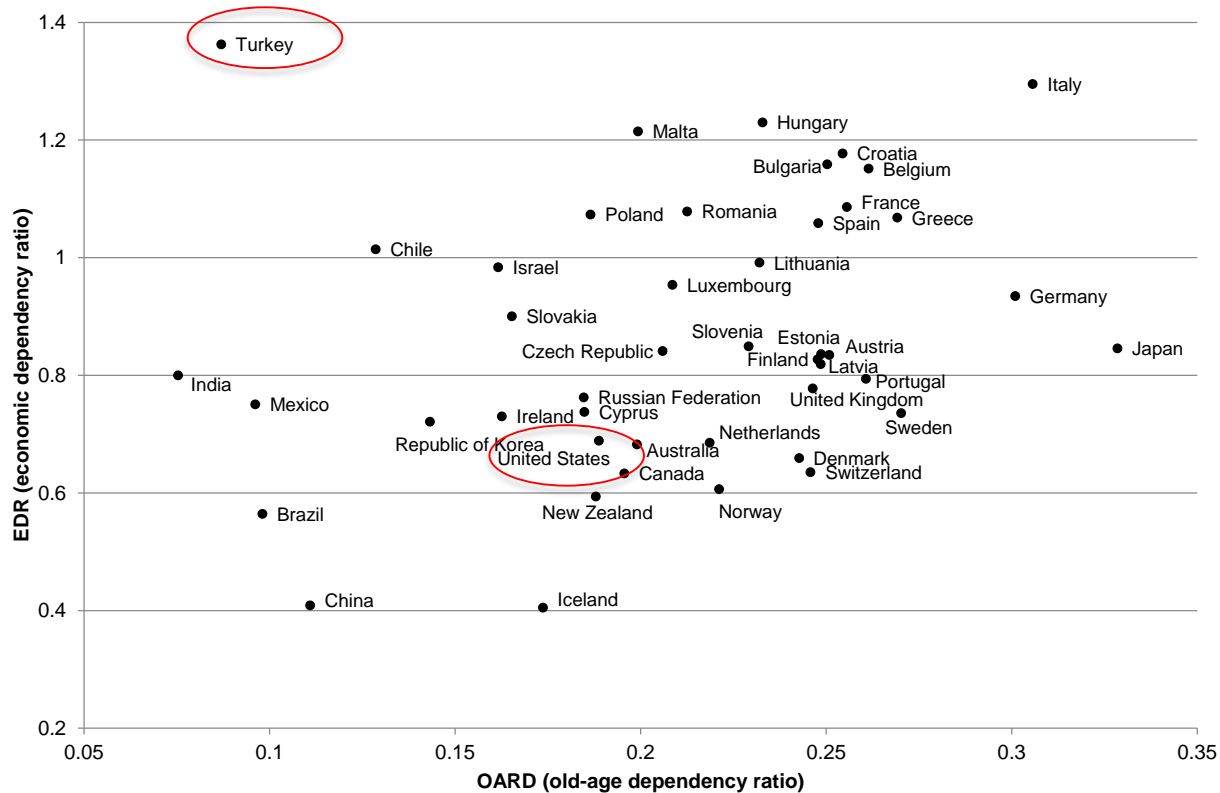
(Bowen and Skirbekk, Journals of Gerontology: Social Sciences 2013)

Economic activity across nations: Economies differ in the way they cope with ageing



(Loichinger and Skirbekk, 2016, Compar Pop Studies)

Economic dependency versus old age dependency ratio



(Loichinger and Skirbekk, 2016, Compar Pop Studies)

Conclusion

- Nations that age better have tended to invest more in education and health. These determinants of productivity variation are central for how well a nation ages (Skirbekk 2002)
- Productive ageing also depends on socioeconomic dimensions
 - Culture and beliefs
 - Adjustments to economic fluctuations