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Anthropometric history and the measurement of wellbeing

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Plan



1. Introduction
2. Net nutritional status
3. Some issues
 - Selection effects
 - The importance of different foods
 - Genetics and ethnicity
4. Height, wages and mortality
5. Height and subjective wellbeing
6. Conclusions

Background



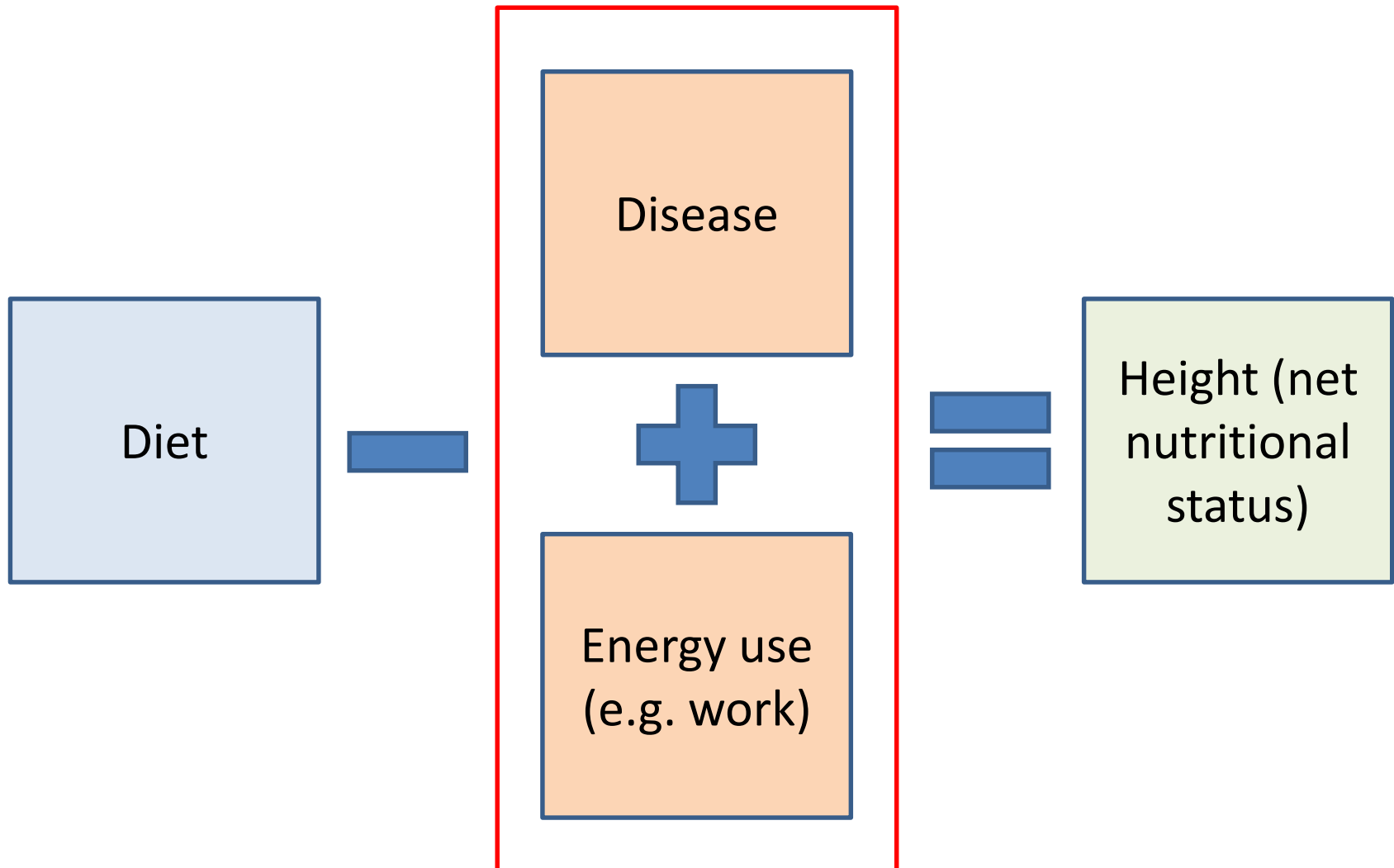
- Nutrition and the decline of mortality
- Height and the standard of living during the industrial revolution
- Height as a measure of *welfare*
 - ‘Average height is also conceptually consistent with Sen’s framework of functionings and capabilities though, of course, height registers primarily conditions of health during the growing years as opposed to one’s status with respect to commodities more generally’ (Steckel 1992: 284)

Net nutritional status



- *Circa 80%* of the variation in *individual* heights is associated with genetics
- But the extent to which a person achieves their potential height is influenced by the conditions under which they grow up
- So variations over time and between different groups reflect the impact of environmental and nutritional circumstances

Net nutritional status, cont.



Critical periods



Figure 1. Boys' velocity standards (1965)

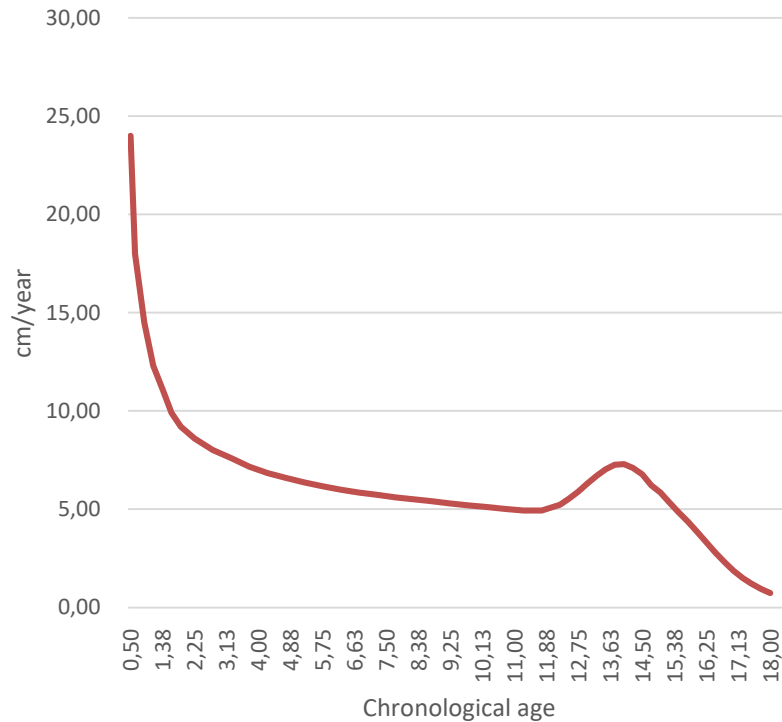
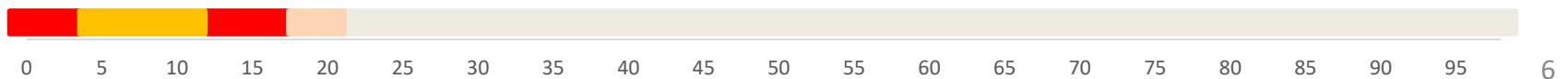
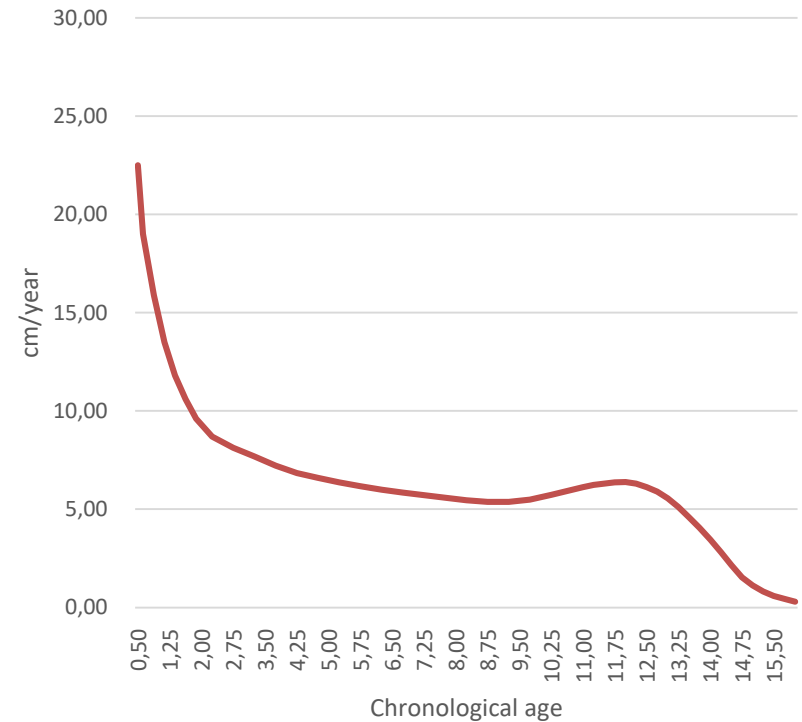
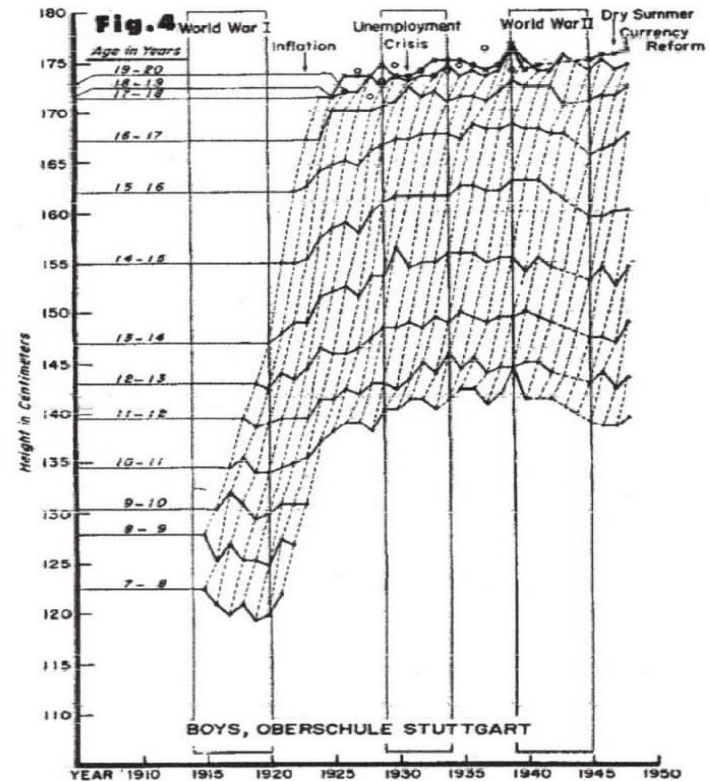
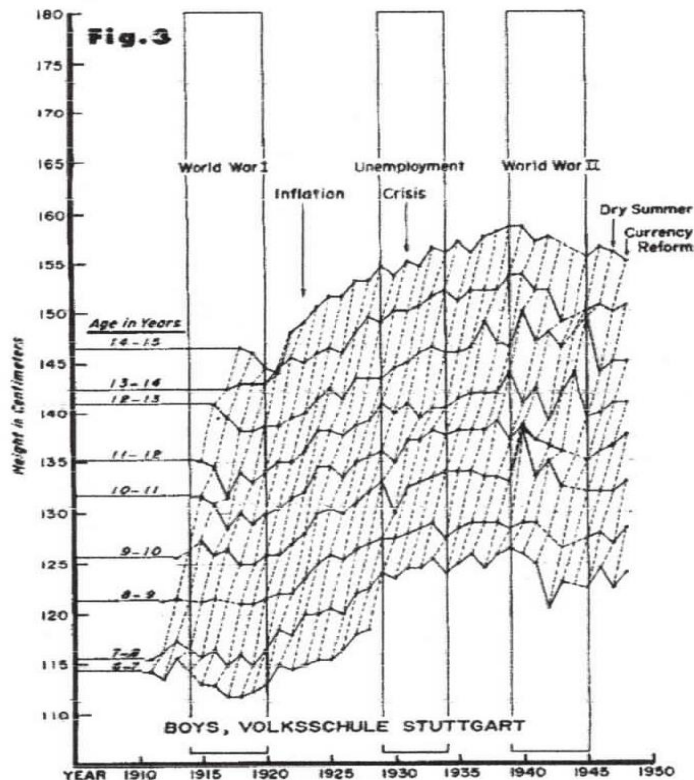


Figure 2. Girls' velocity standards (1965)



Critical periods, cont.



Figs. 1-4. AVERAGE WEIGHT in kilograms, and height in centimeters, of boys in the Volksschule of Stuttgart, Germany, 1915 to 1948. *Solid lines* connect points for boys of the same age. *Dotted lines* connect averages of the succeeding years and approximate growth curves.

Source: P. Howe and M. Schiller, 'Growth responses of the schoolchild to changes in diet and environmental factors', *Journal of Applied Physiology*, 5 (2), 51-61, at p. 54.

Critical periods, cont.



- ‘The question of whether undernutrition in the first one or two years of life necessarily leads to an adult deficit ... has been discussed frequently and inconclusively ... much depends on the circumstances obtaining when the severe episode of malnutrition is over’ (Eveleth and Tanner 1990: 195)
- ‘The power to stabilise and return to a predetermined growth curve after being pushed off ... persists throughout the whole period of growth’ (Tanner 1990: 165)
- ‘Substantial height catch-up occurs between 24 mo[nths] and midchildhood and again between midchildhood and adulthood, even in the absence of any interventions’ (Prentice *et al.* 2013: 911)

Methodological choices and selection effects



- UK heights in the late-18th and early-19th centuries
- Selection effects and ‘volunteer’ samples
- ‘Mortality rates remained stubbornly high through the early decades of industrialisation ... and in some cases actually increased.... Real wages rarely fell, but there is reason to doubt that feeble nominal wage growth protected the lowest strata from ... food-price shocks’ (Bodenhorn *et al.* 2017: 202).

Growth-promoting (and growth-inhibiting) foods, cont.

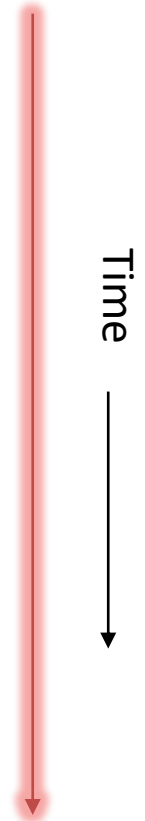


- ‘It is sometimes assumed that [living standards and nutritional status] ... are positively correlated – but the evidence suggests that this correlation is a loose one.... [H]igh nutritional status can be reconciled with low incomes, when local diets are based on abundant and nutritious staples, such as the potato, or when rural environments inflict fewer health insults on the poor’ (Mokyr and Ó Gráda 1996: 163-4).

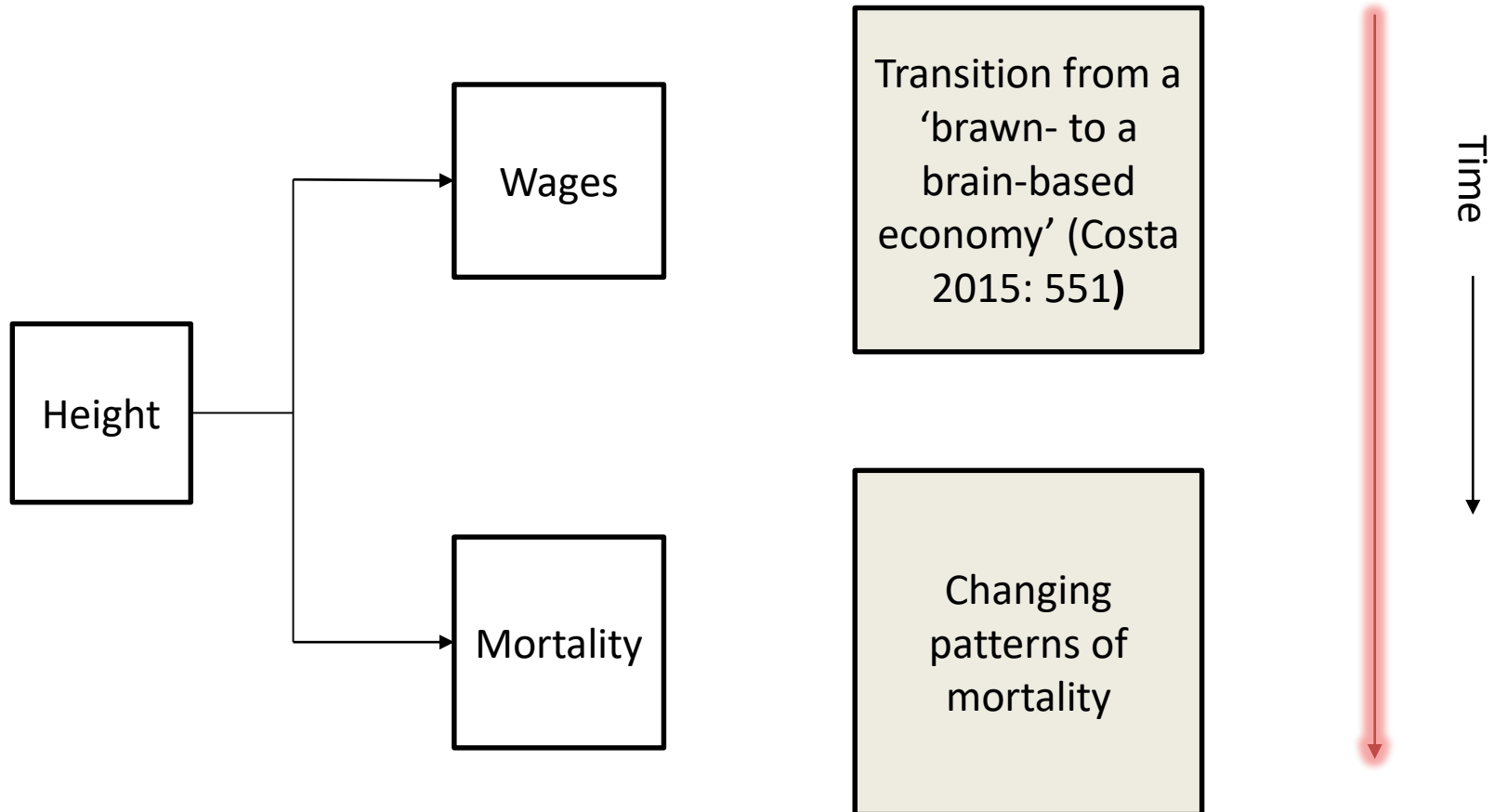
'Race' and ethnicity



- 'In populations of European descent ... heritability is - 0.8, which means that, within a population, about 80% of the variation in height among individuals is due to genetic factors' (Visscher 2008: 489)
- 'Mean heights in southern Europe today are not fully explained by *either* economic variables *or* rough measures of health ... it is quite likely that genetic differences play a role here' (A'Hearn 2016: 783)
- *But* note that A'Hearn used e_0 as a proxy for the disease environment; the correlation between height and child mortality is stronger



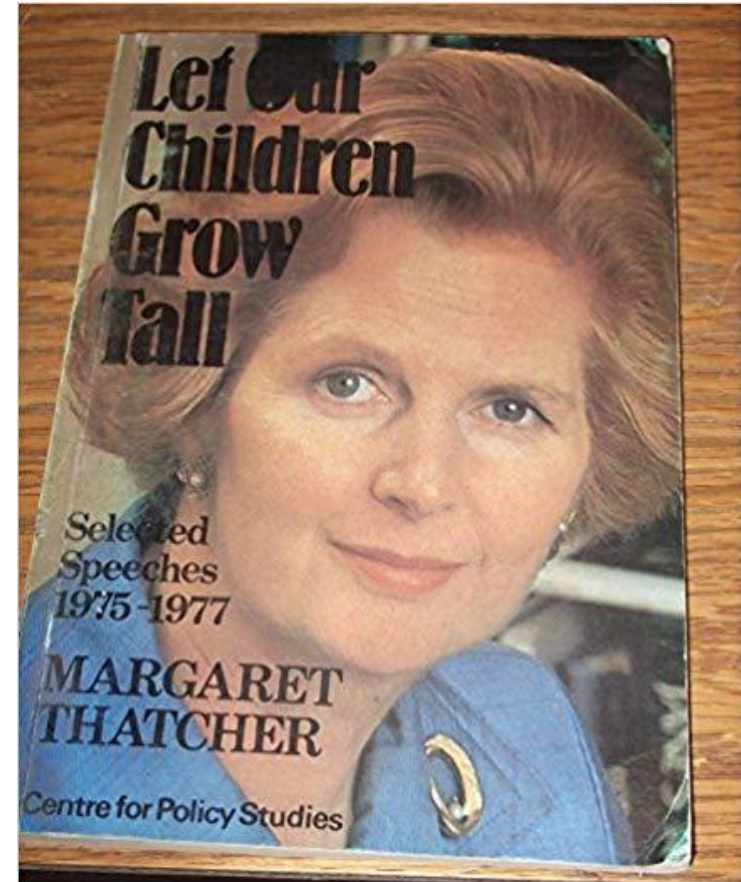
Height, wages and mortality



The social value of height



- Height and happiness
- Height and the marriage market
- Do societies always seek to 'maximise' height?



Conclusions



- Growth as a ‘mirror of the condition of society’ (Tanner 1987) and index of wellbeing
- Cumulative measure of environmental and nutritional conditions from conception to maturity
- Net impact of dietary inputs and environmental demands
- But...

Conclusions, cont.



- Role of individual foods
- Impact of time on relationships between height and other variables
- Data limitations (esp. female data)
- Parental choices
- Disaster effects