



Centre for Health
Equity Studies

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Born out of wedlock in early twentieth century Sweden: health related implications across three generations



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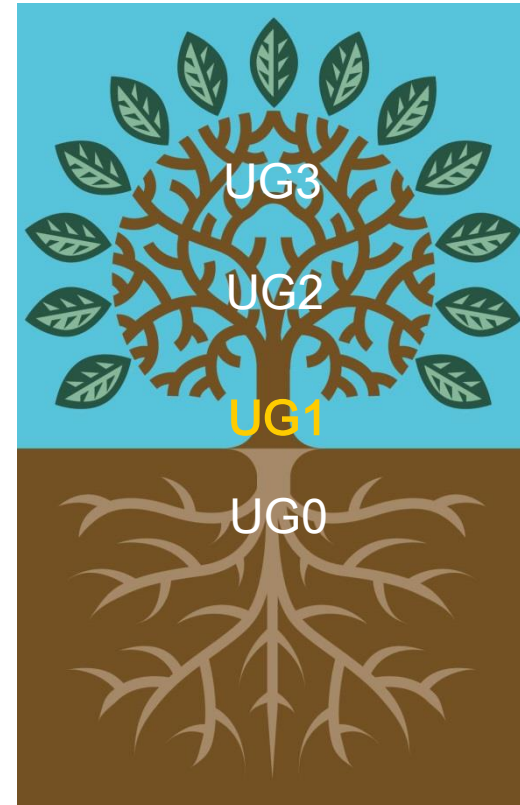


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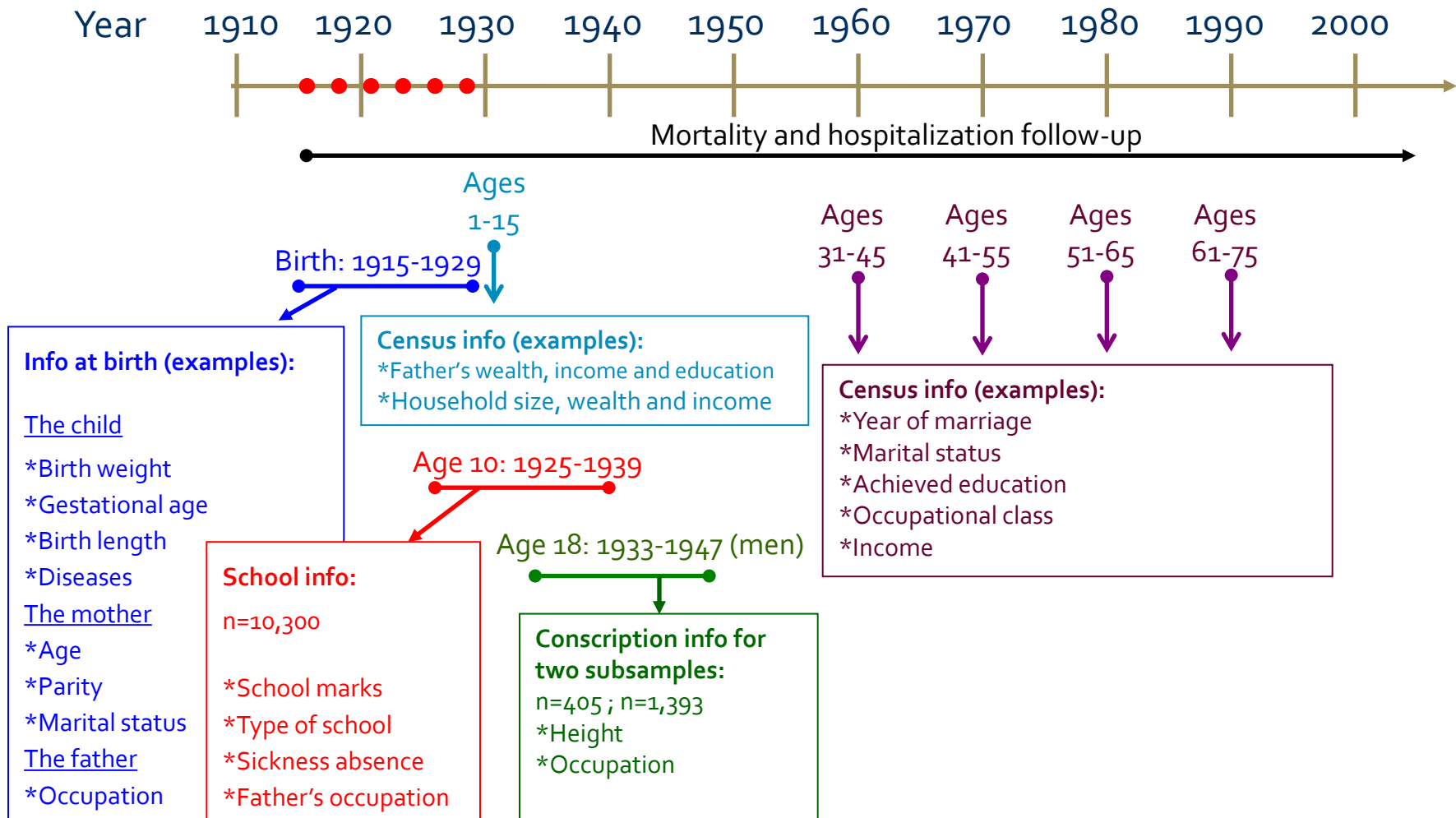
UBCoS Multigen



The whole study emanates from all **14,193** babies who were born alive at Uppsala Academic Hospital in 1915-1929: The Uppsala Birth Cohort Study (UBCoS)

Uppsala Birth Cohort Study (UBCoS)

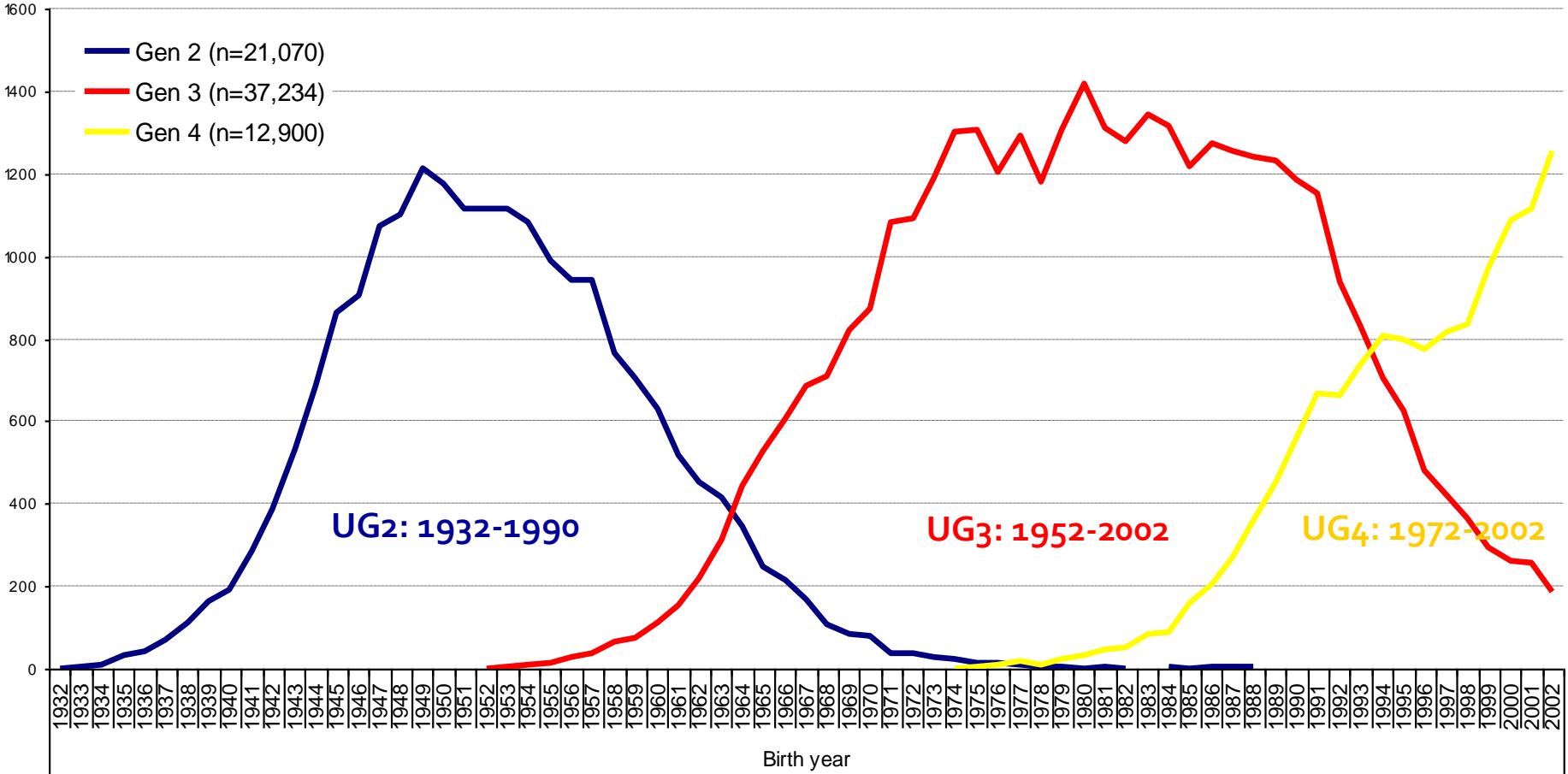
All 14,609 births that took place at the Uppsala Academic Hospital in 1915-1929 of which 14,192 were live births



UBCoS Multigen

- UBCoS = Index population = **UG₁**
- Had to be alive in 1947
- Social security number (PNR) had to be identified
n=12,168 (86% of all live births at UAH)
- **G₁** = UBCoS member and their partners
(n=19,709)
- UBCoS children (**UG₂**) had to be born in 1932 or later and alive in 1961 in order to be included in UBCoS Multigen

Birth year distribution: UG2-UG4

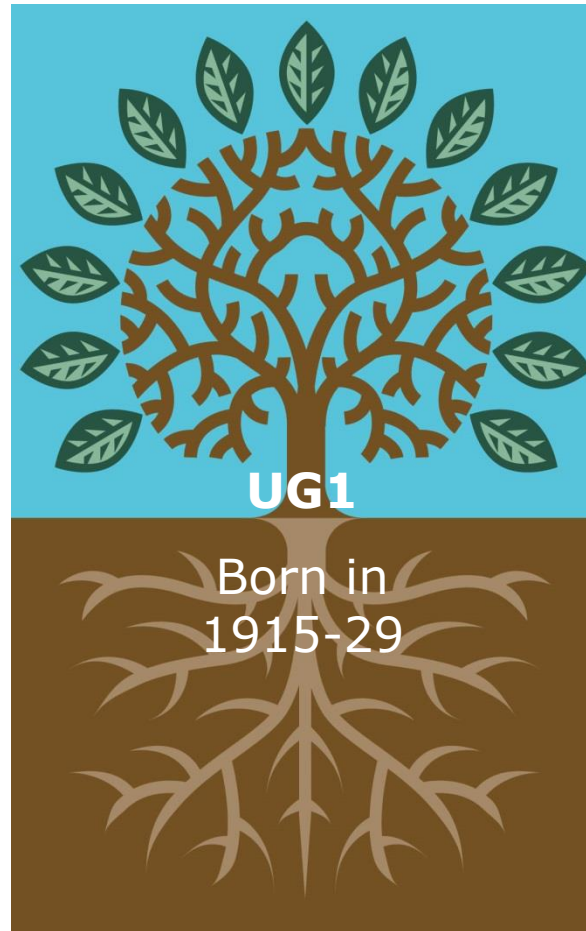


The impact of early twentieth century illegitimacy accross three generations

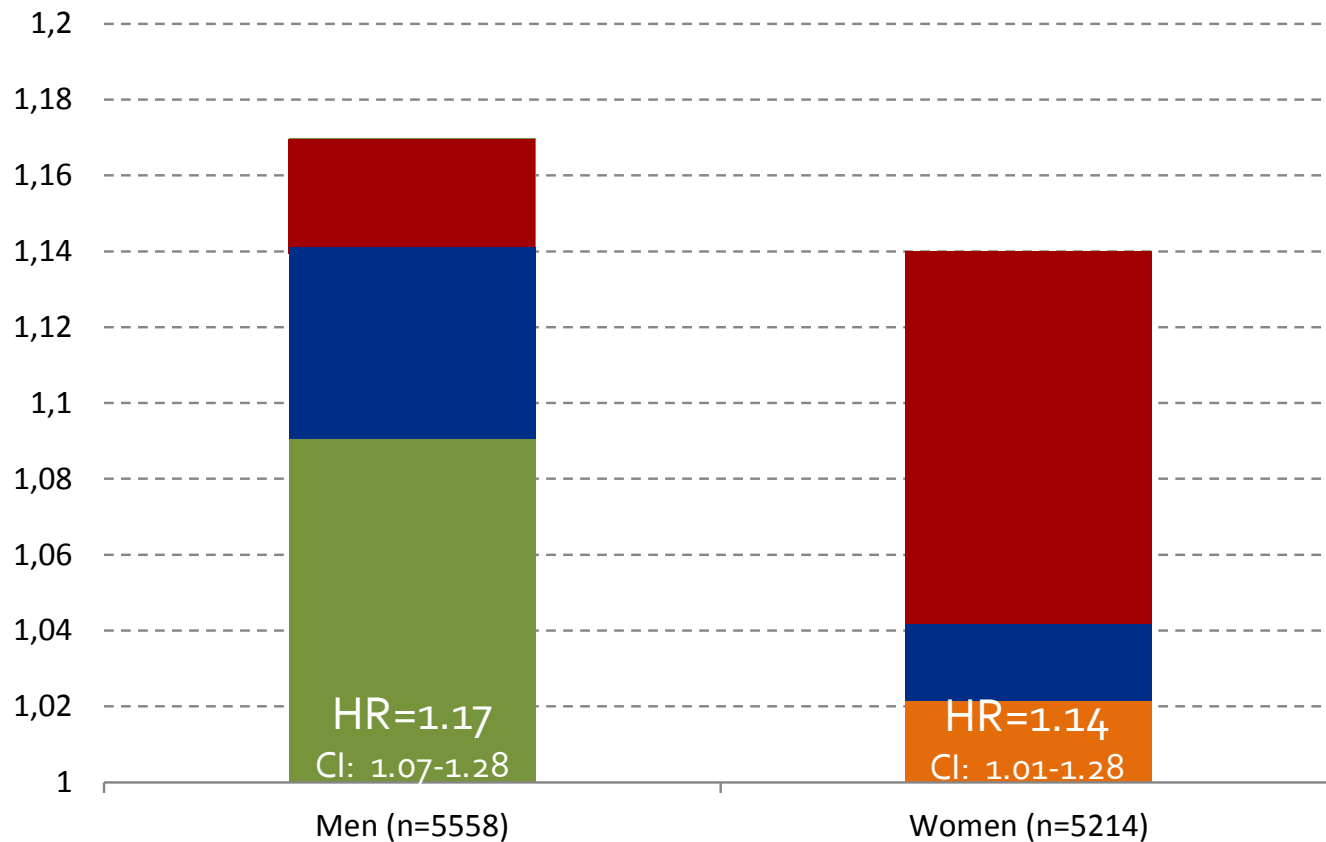


Midwife with new-born baby at Uppsala Akademiska hospital in the early twentieth century.

Intra-generational health implications of being born out of wedlock

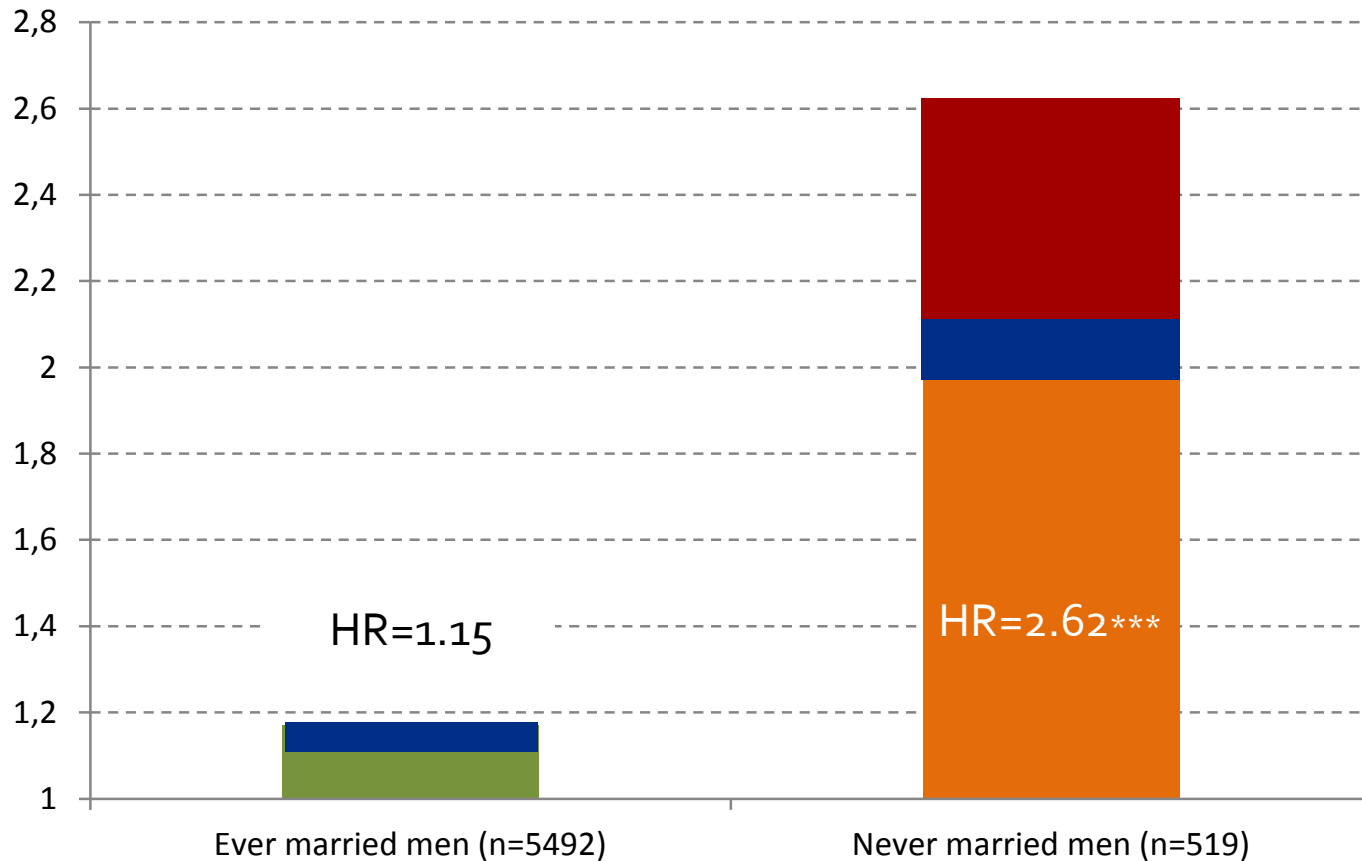


Hazard ratios of all-cause mortality (1970-2002) for men and women born outside (versus inside) marriage 1915-29



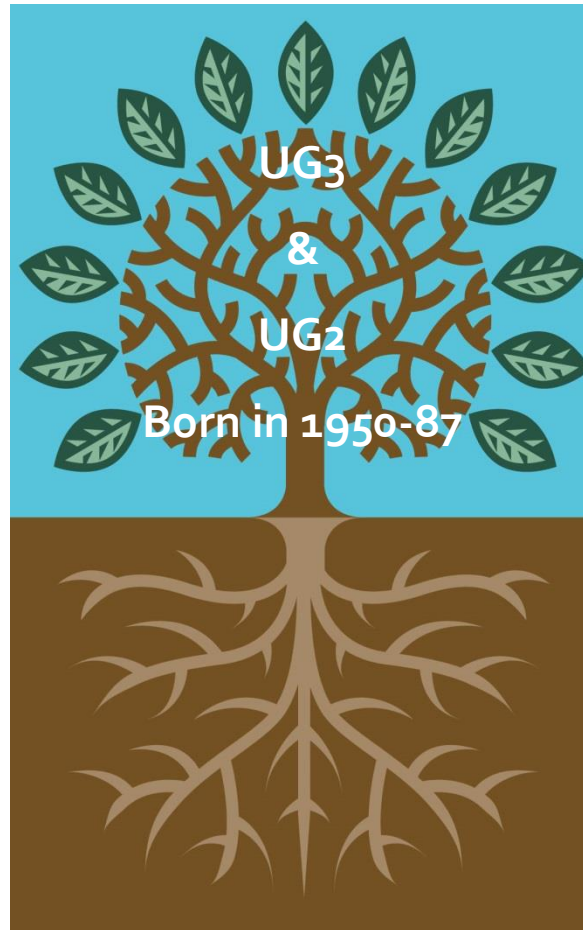
- Adjusted: intrauterine growth and social class at birth
- + marital history, adult social class, education and income

Hazard ratios of **IHD mortality** (age 55-80 years) for ever and never married men born outside (versus inside) marriage 1915-29

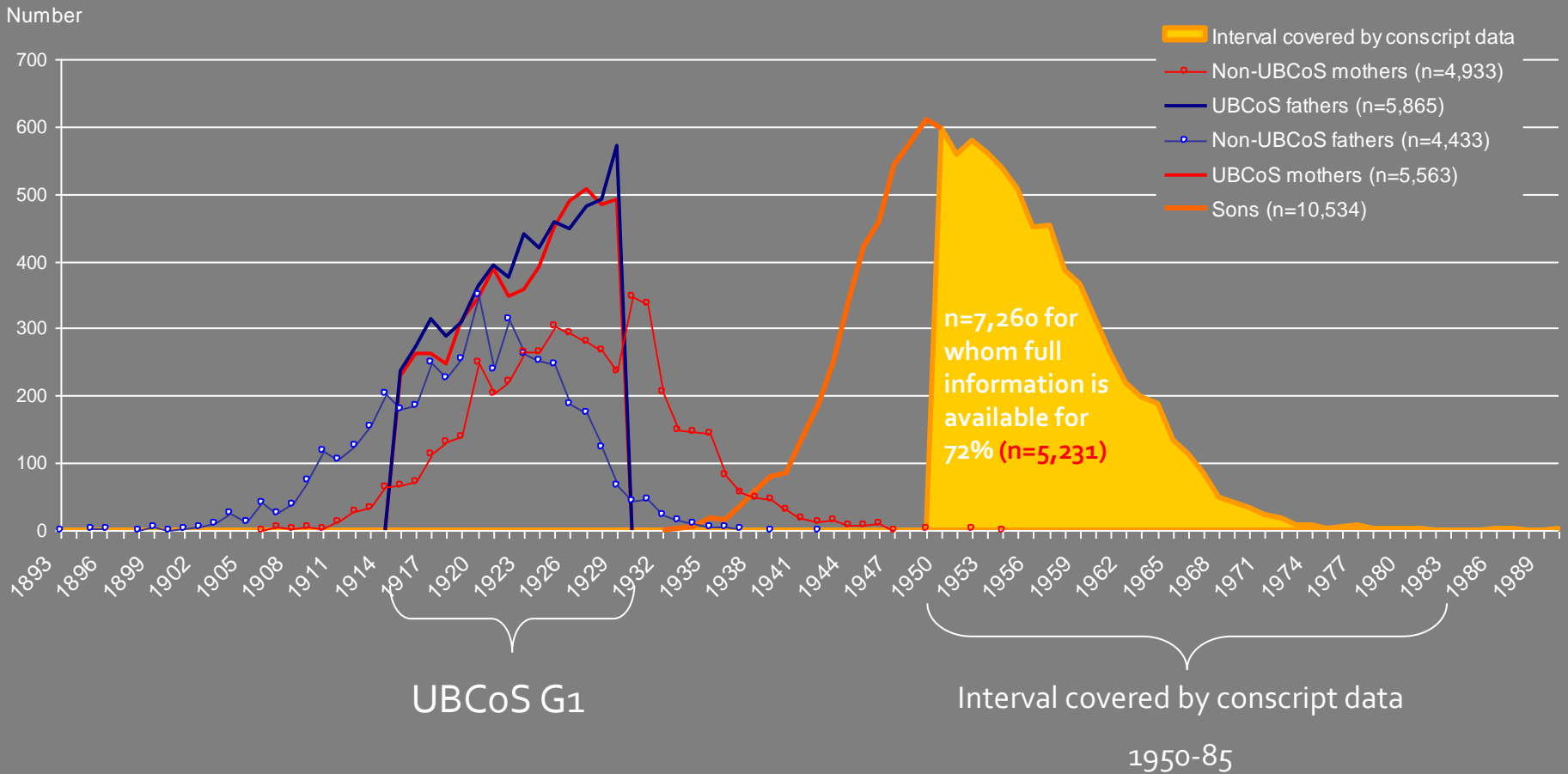


- Adjusted: birth weight, gestational age and social class at birth
- + adult social class, education and income

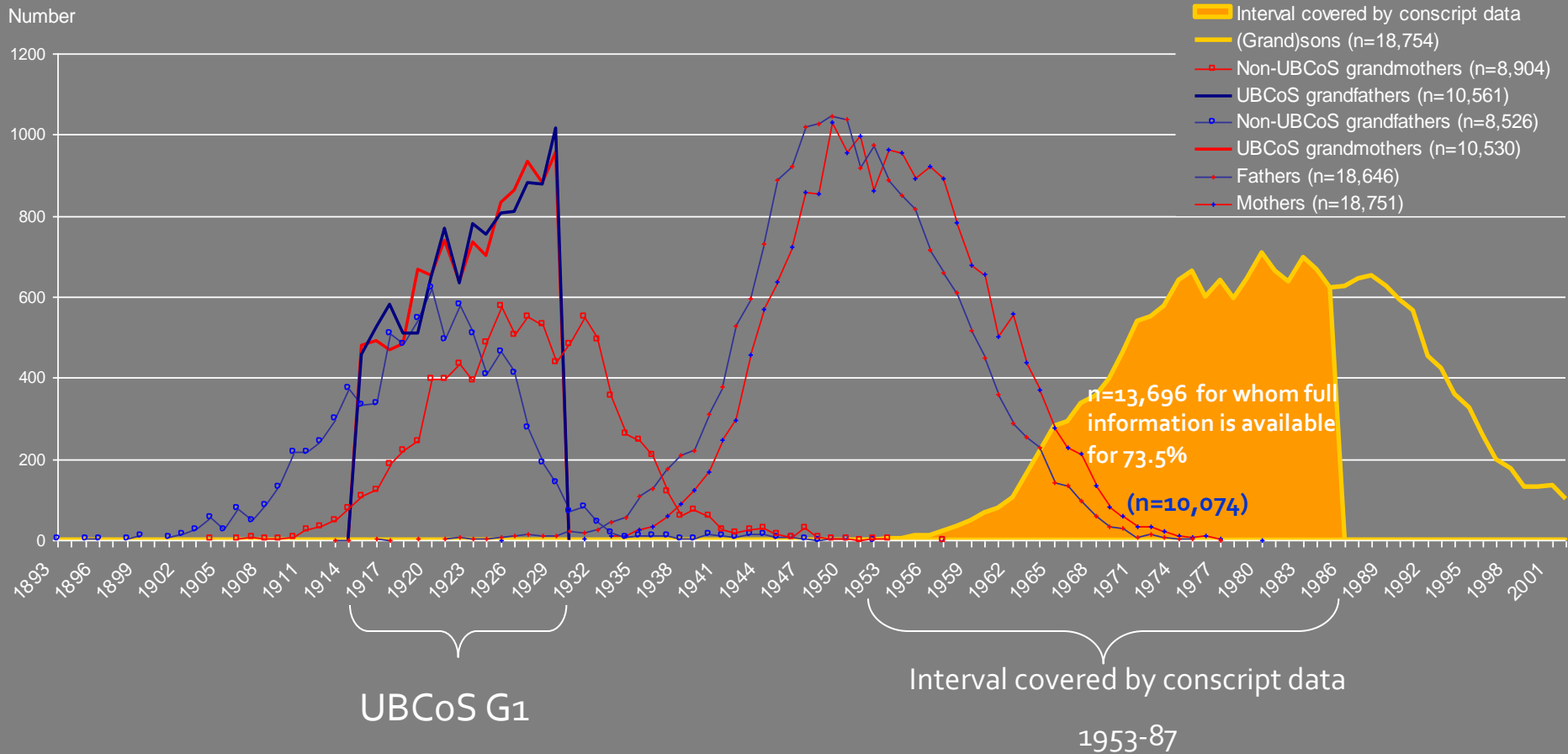
Inter-generational health implications of being born out of wedlock



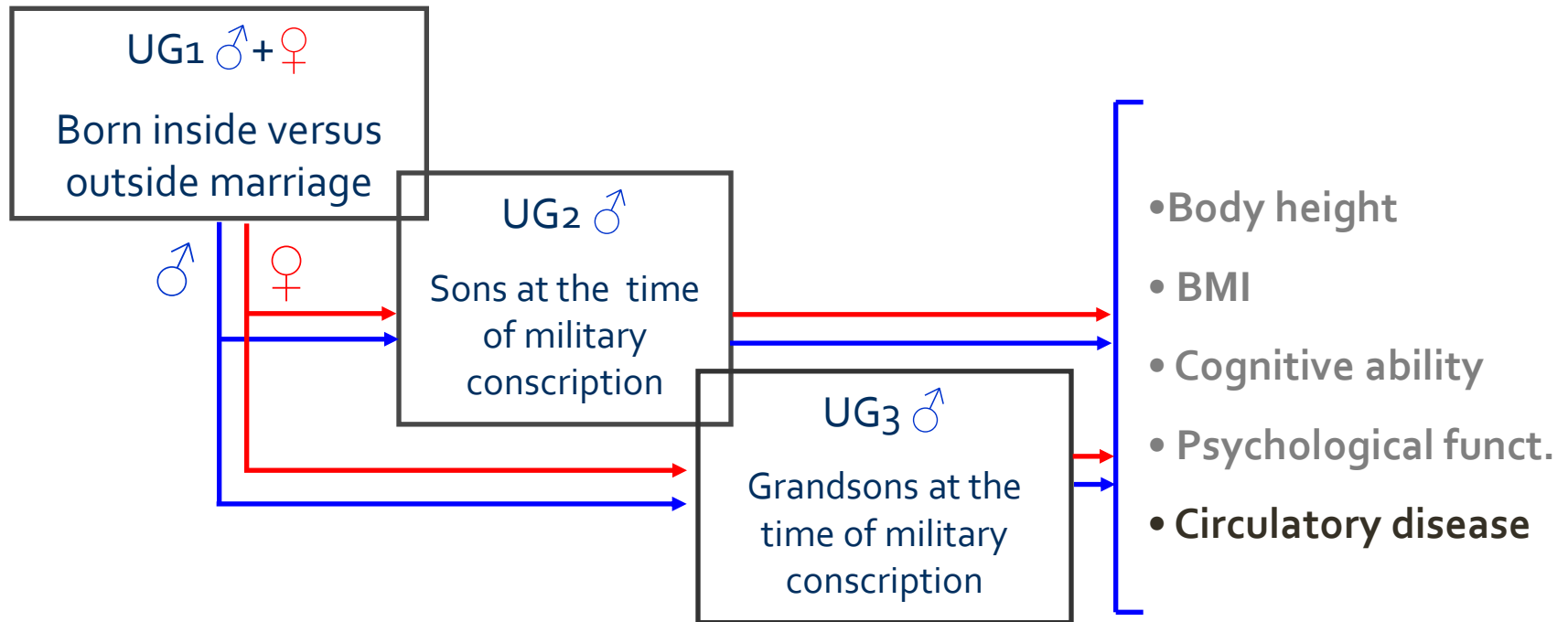
Birth year distributions of sons (UG₂) to UBCoS individuals and their partners



Birth year distributions of grandsons (UG₃) to UBCoS individuals and their partners



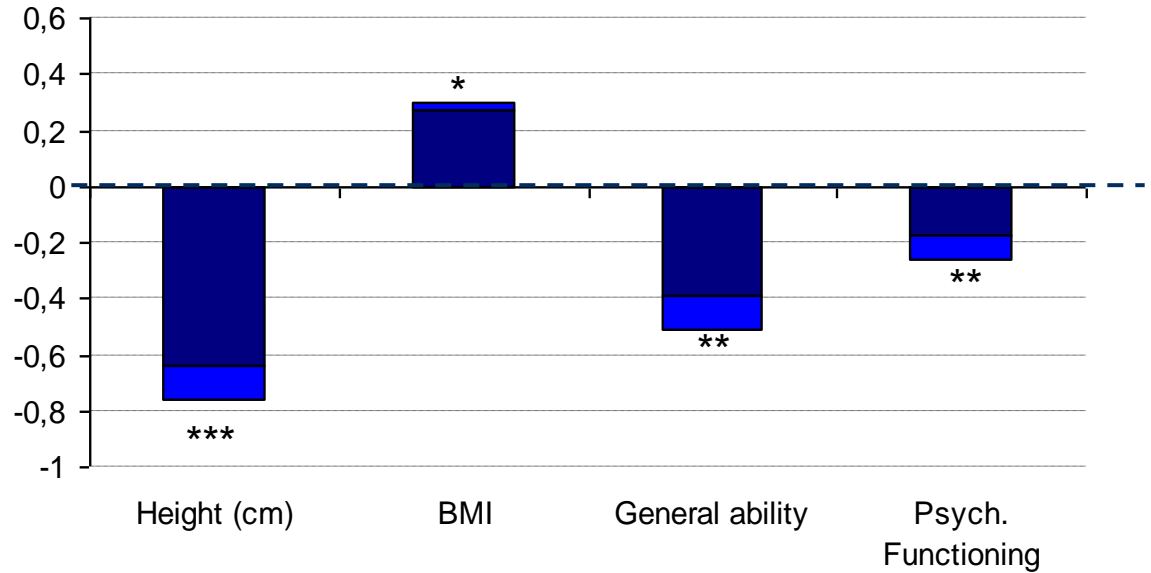
Birth year distributions of sons (UG2) to UBCoS individuals and their partners (G1)



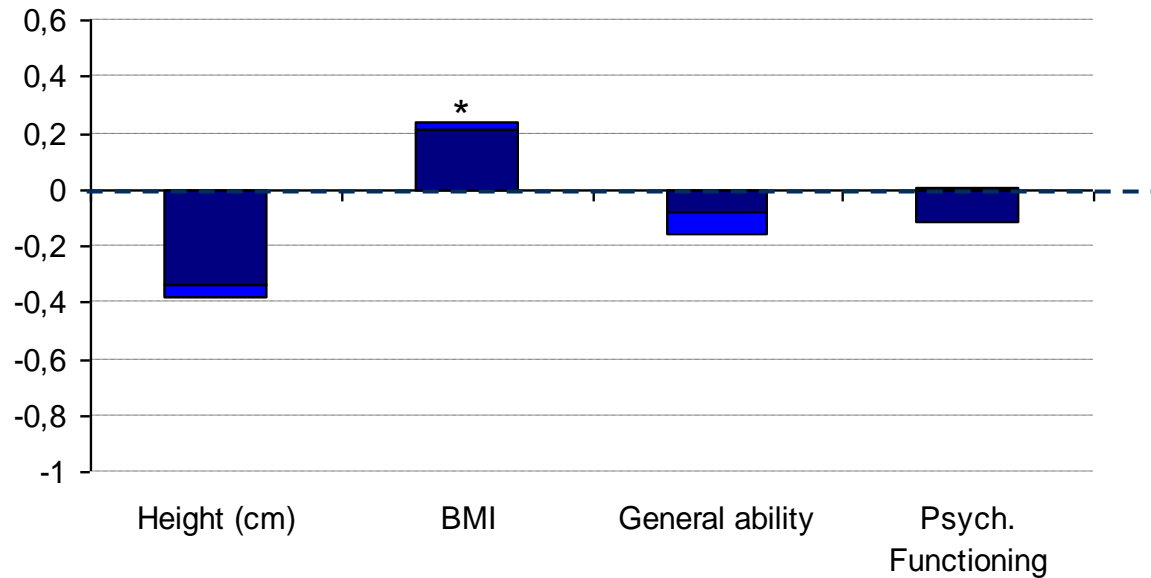
OLS-regression

b- coefficients
Sons

- Male ancestor born outside marriage
- Part of association "explained" by social class background



b- coefficients
Grandsons



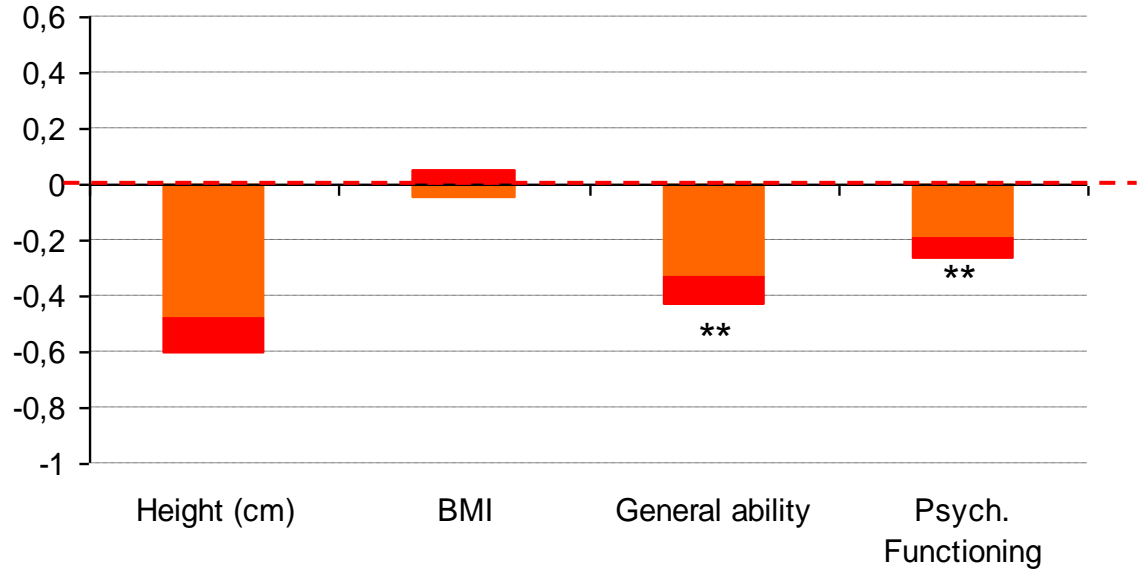
OLS-regression

b-coefficients:

Sons

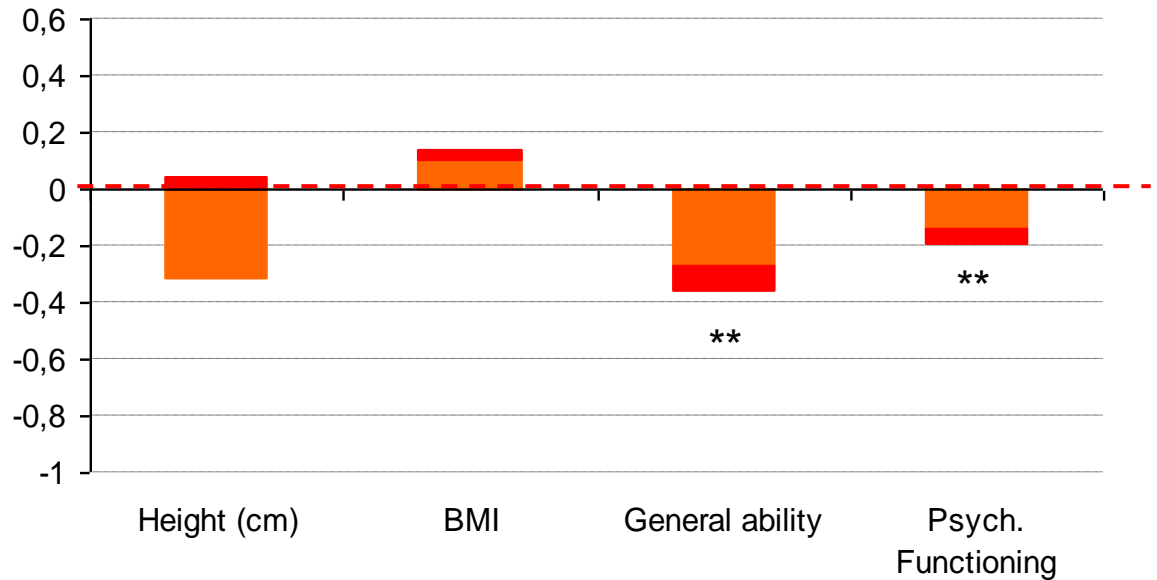


- Female ancestor born outside marriage
- Part of association "explained" by social class background

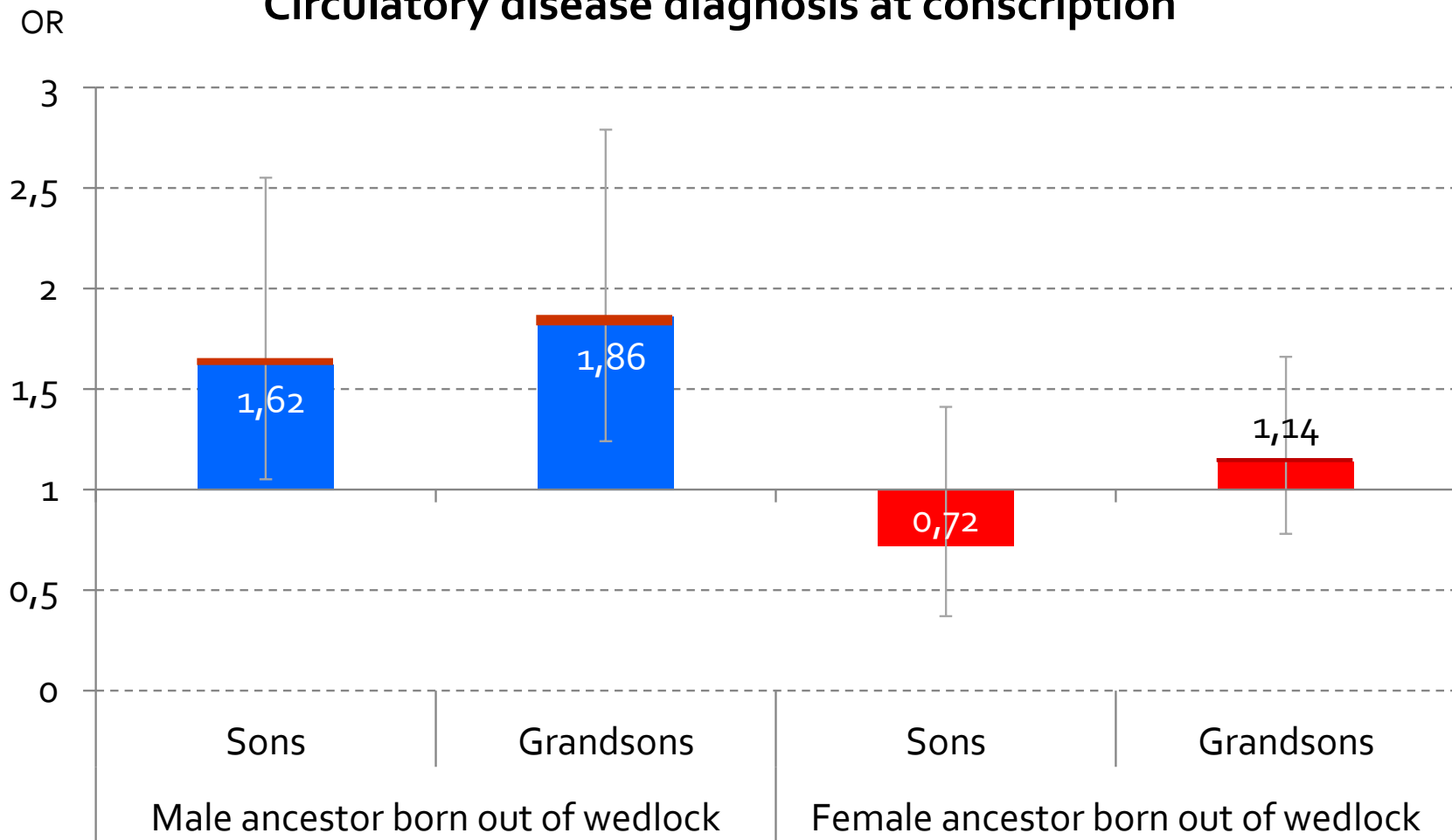


b-coefficients:

Grandsons



Circulatory disease diagnosis at conscription



Model 1: Adjusted for own birth year, parent's birth year and region of enlistment

Additional adjustment for BMI and height at conscription, father's social class and UG1:s circulatory disease history

Summary table: inter-generational health implications of early 20th century illegitimacy

Physiological outcomes

Psychological outcomes


Remains after adjustent for social class background

Outcomes at 18 → Ancestors ↓	Circulatory	Height	BMI	Cognitive ability	Psychol. funct.
Mother BOW				x	x
Grandmother BOW				x	x
Father BOW	x	x	x	x	x
Grandfather BOW	x		x		



Summary and potential pathways...


Intra-generational

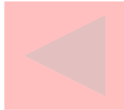
1.  Men, but not women, who were born out of wedlock had an increased risk of all-cause and IHD mortality after conditions at birth had been adjusted for.


Inter-generational

Physiological outcomes Psychological outcomes

	Physiological outcomes			Psychological outcomes	
	Circulatory	Height	BMI	Cognitive	Psychol.
♀ Mother BOW				x	x
♀ Grandmother BOW				x	x
♂ Father BOW	x	x	x	x	x
♂ Grandfather BOW	x		x		

3. 

2. 



1. Potential **intra-generational** pathways...

GENDERED SOCIETY: The risk of entering a marginalized life-path may have been higher for out-of-wedlock-born men than for the corresponding women during the period in question...

1. Low socio-economic attainment was probably not as obstructive for family formation and marriage, nor as disturbing to one's sense of accomplishment, among women as it was for men at that time.
2. The lack of a father figure during upbringing may have affected the sons' future coping strategies and social skills more negatively than it did the daughters'.
3. During the period in question it was more likely for men than for women to resort to alcohol as a consolation for various disillusionments in life.



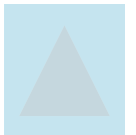
2. Potential pathways from **mothers and grandmothers** born out of wedlock...

1. Intrauterine environment provided by mothers born out of wedlock and their daughters: our results would then suggest that the fetal environment provided by these mothers should be more detrimental to their son's cognitive development than to their physiological development.
2. Mother-child attachment: Research has shown that parents tend to reproduce their childhood attachment experiences in relation to their own children, thereby causing unfavourable effects across several generations.
3. Gendered society: The fact that mothers had the principal responsibility for the household and the fostering of the children during this time may have left a more lasting impact on their children, thus increasing the risk of regenerating inferior ways of transmitting cognitive and psychological skills to their children.



3. Potential pathways from fathers and grandfathers born out of wedlock...

1. Assortative mating: either by height and BMI or by social class background and educational level in G1 and G2 could be a possible pathway. Through such spousal correlations the phenotypic variation in the next generation would be affected leading to shorter stature and higher BMI among descendants of illegitimately born men.
2. Poor food/health habits passed on from one generation to the next, may adversely affect the individual's physique and could, because of the "social heritage" have been more common among sons and grandsons of individuals BOW.
3. Psychosocial family history: men who grew up with an unwed mother (lacking a father-figure) may have been less able than their female counterparts to transmit a constructive "outlook on life" to their children. In this way, a marginalized life-style may in some cases have been transmitted from father to child, resulting in elevated susceptibility to circulatory disease.





Thank you!