Increasing higher education and national longevity: compositional and mortality effects

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Longevity and education: beyond persisting gaps and laggards

MAINSTREAM STUDIES ON LONGEVITY DIFFERENTIALS:

-> Main focus on **A)** size and changes in inequalities;
B) worst performing population groups.

DEMOGRAPHIC CONTRIBUTIONS:

→ **Focus on best-performing groups** (vanguards) **providing new perspectives on human longevity** **under current macroscopic conditions at the national level:**

- Does longevity of highly educated increases as fast as before?
- Is this progress slower or faster than in the remaining population and world's best-practice longevity at the national level?

→**Identifying importance of changing compositional contexts:**

- contributions of composition improvement on national longevity.
- longevity trends of vanguards and laggards in the context of changing composition/meaning of educational groups.

DATA AND METHOD

➔ **FOCUS ON NORDIC COUNTRIES – LONGEVITY VANGUARDS: SWEDEN AND FINLAND**

-> **Register-based census-linked mortality data**

-> **Harmonized data for 3 periods**: 1971-75, 1991-95, and 2011-15

➔ **HIGH MORTALITY CONTEXT – LITHUANIA:**

-> Census-linked mortality datasets in format of frequencies

-> **Harmonized data for 2 periods**: 2001-04 and 2011-15.

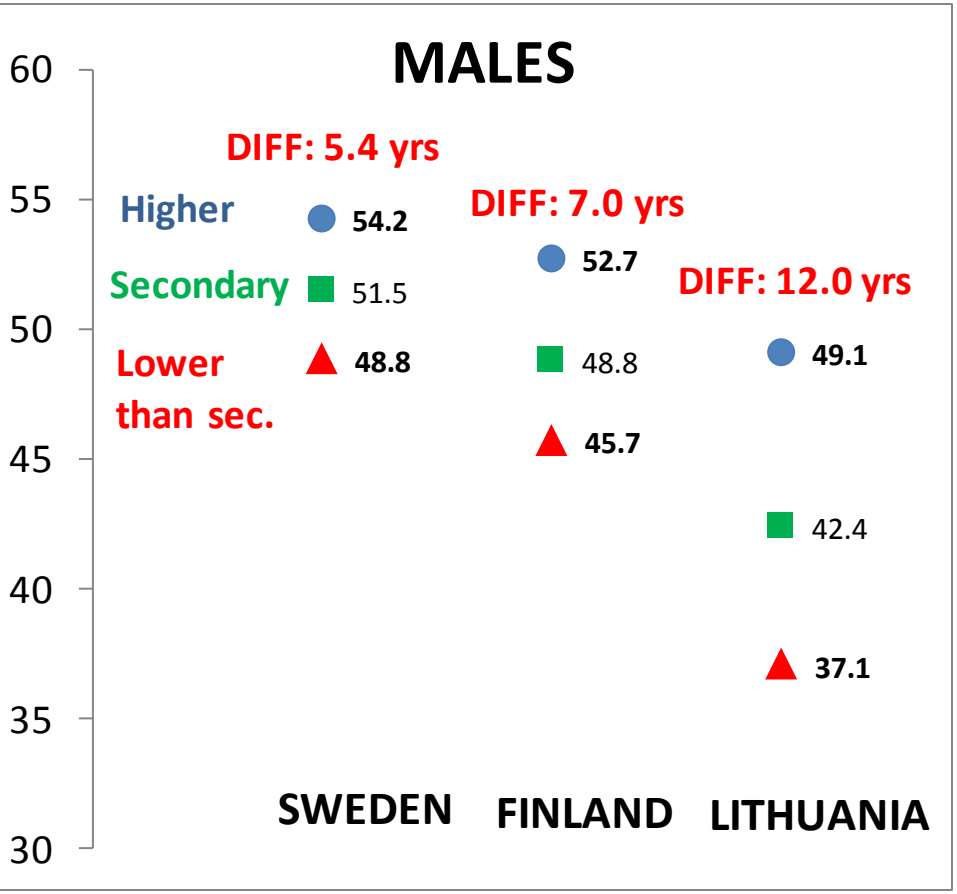
➔ **DECOMPOSITION METHOD (ANDREEV, SHKOLNIKOV, BEGUN, 2002):**

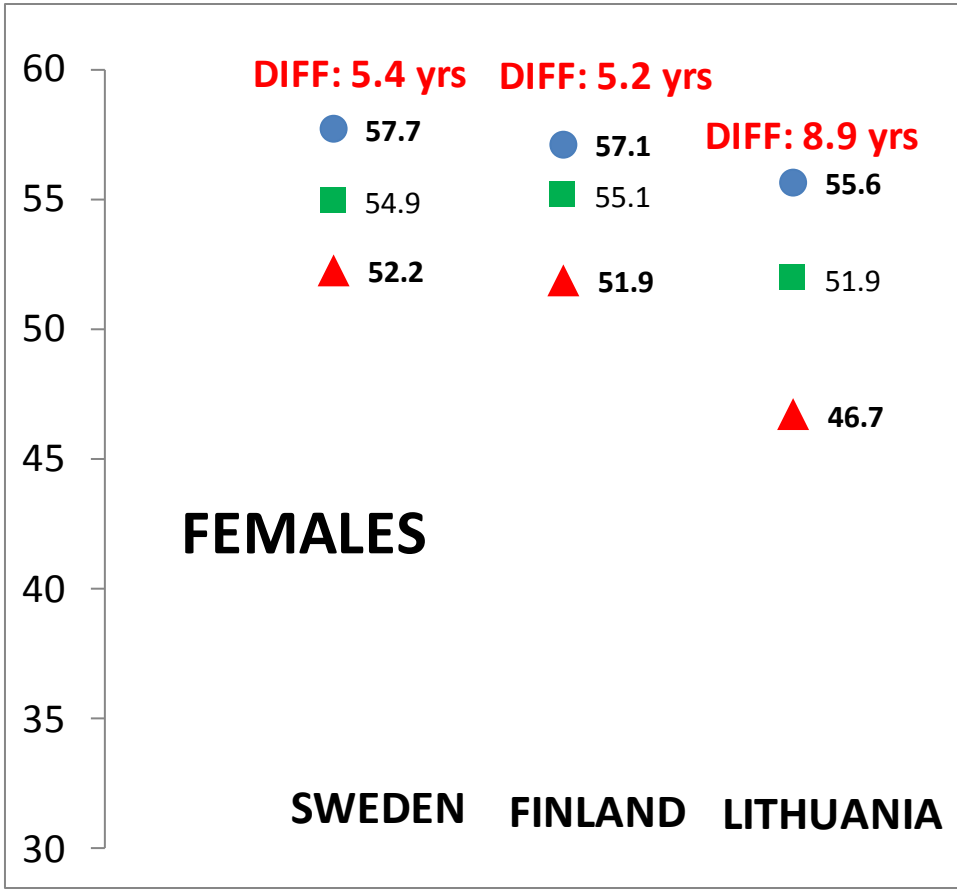
-> Allows to **decompose the change or difference in an aggregated demographic measure into:**

A) a contribution of compositional change/difference.

B) a contribution of change/group-specific in demographic process.

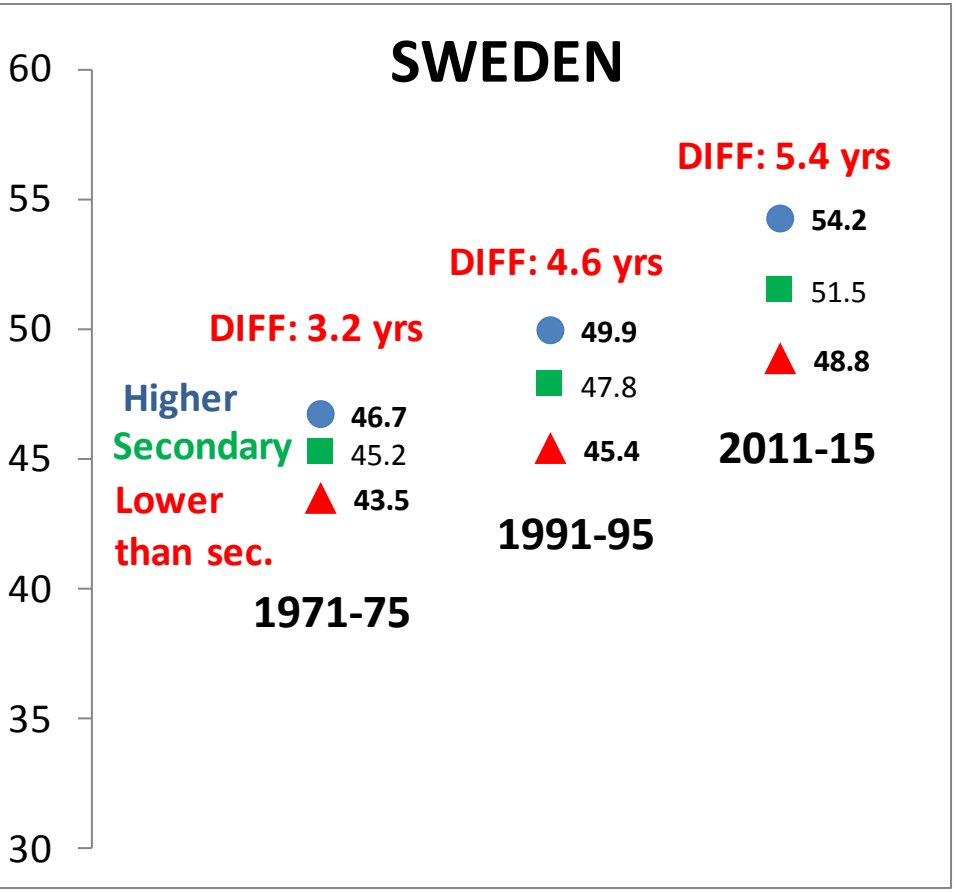
Life expectancy at age 30 by education: Sweden, Finland, and Lithuania: 2011-15

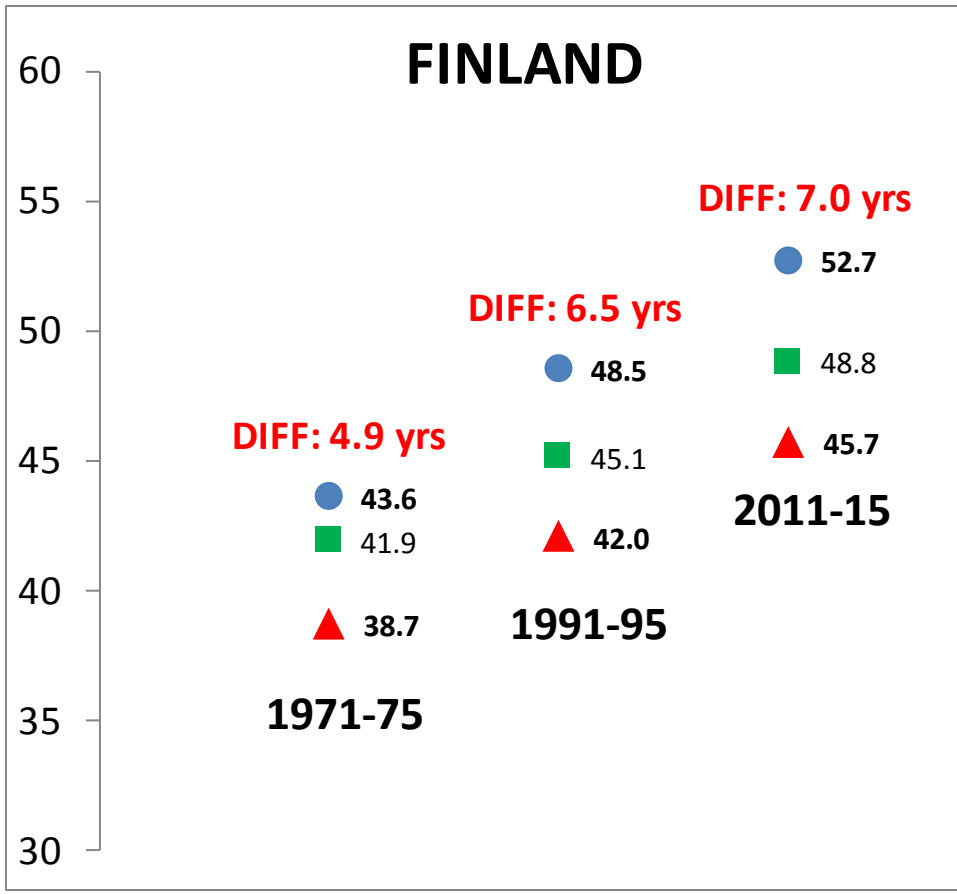




Source: Jasilionis, Martikainen, Shkolnikov, 2017.unpublished data by Statistics Finland, Statistics Sweden.

Increase in life expectancy gap by education for Swedish and Finnish men, 1971-75 - 2011-15

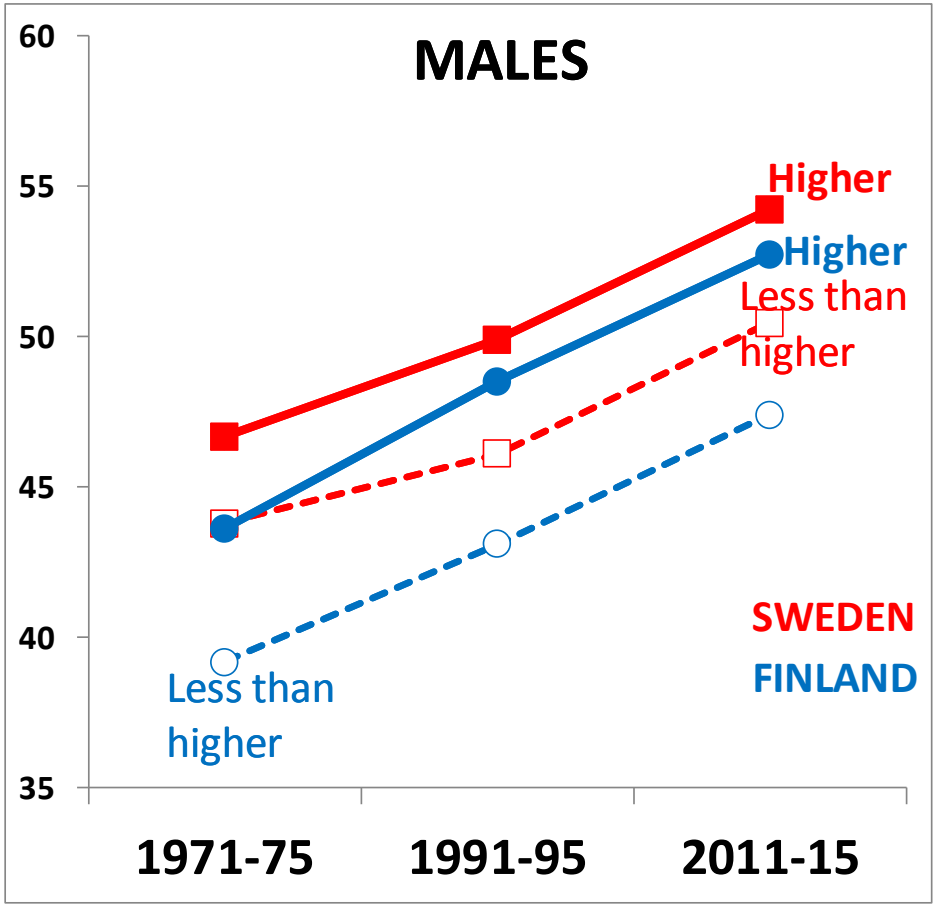


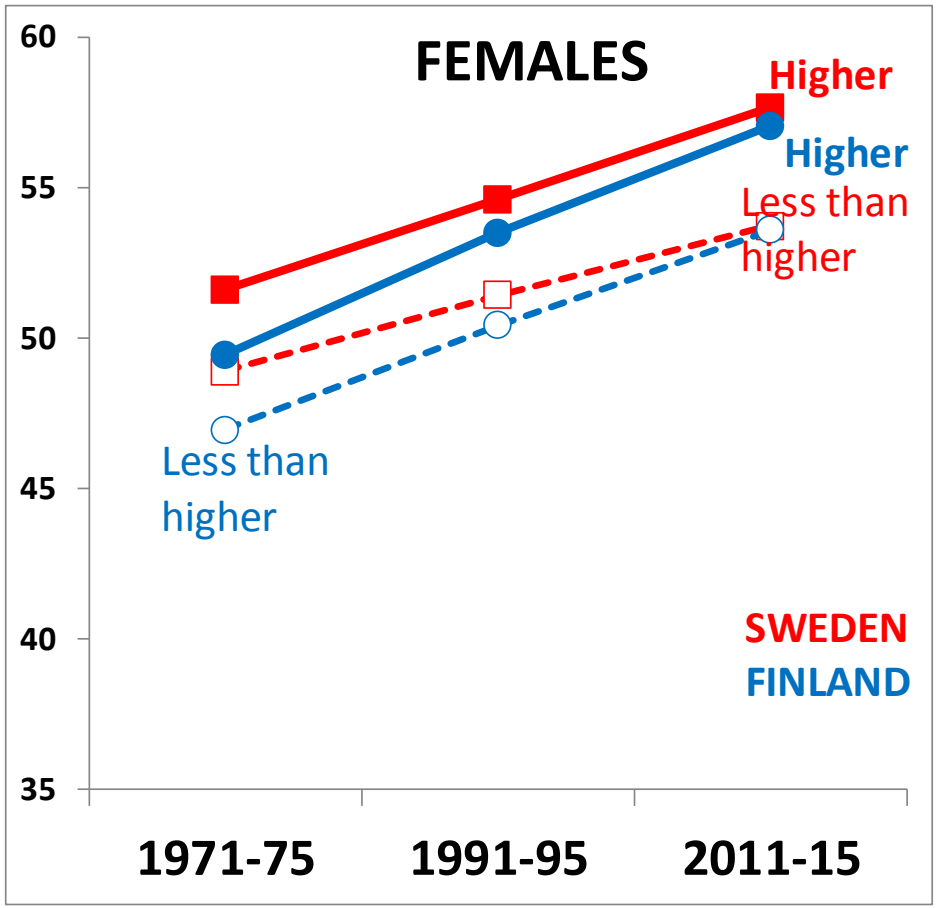


Source: Jasilionis, Martikainen, Shkolnikov, 2017.unpublished data by Statistics Finland, Statistics Sweden.

Higher educated vanguards vs. remaining population. Life expectancy at age 30: Sweden & Finland, 1971-75 - 2011-15

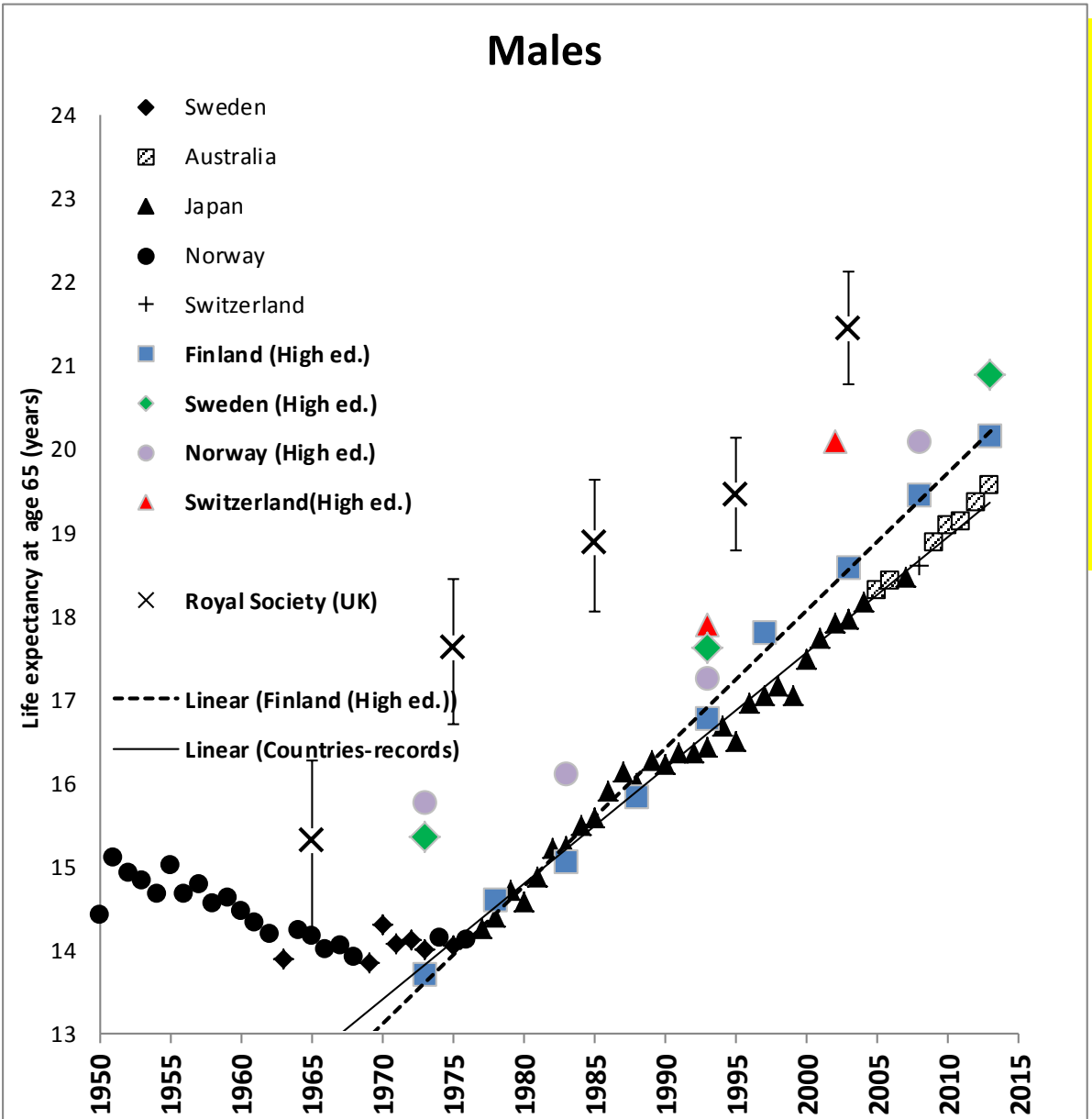
No signs of catching up or convergence – increasing longevity disadvantage





Source: Jasilionis, Martikainen, Shkolnikov, 2017.unpublished data by Statistics Finland, Statistics Sweden.

National-level record (best practice) male LE at age 65, male LE for high education group in Finland, Sweden, Norway, and Switzerland, and members of Royal Academy of Sciences (UK)



Highly educated vanguards:

➔ Life expectancy levels **close or above** best practice national life expectancies.

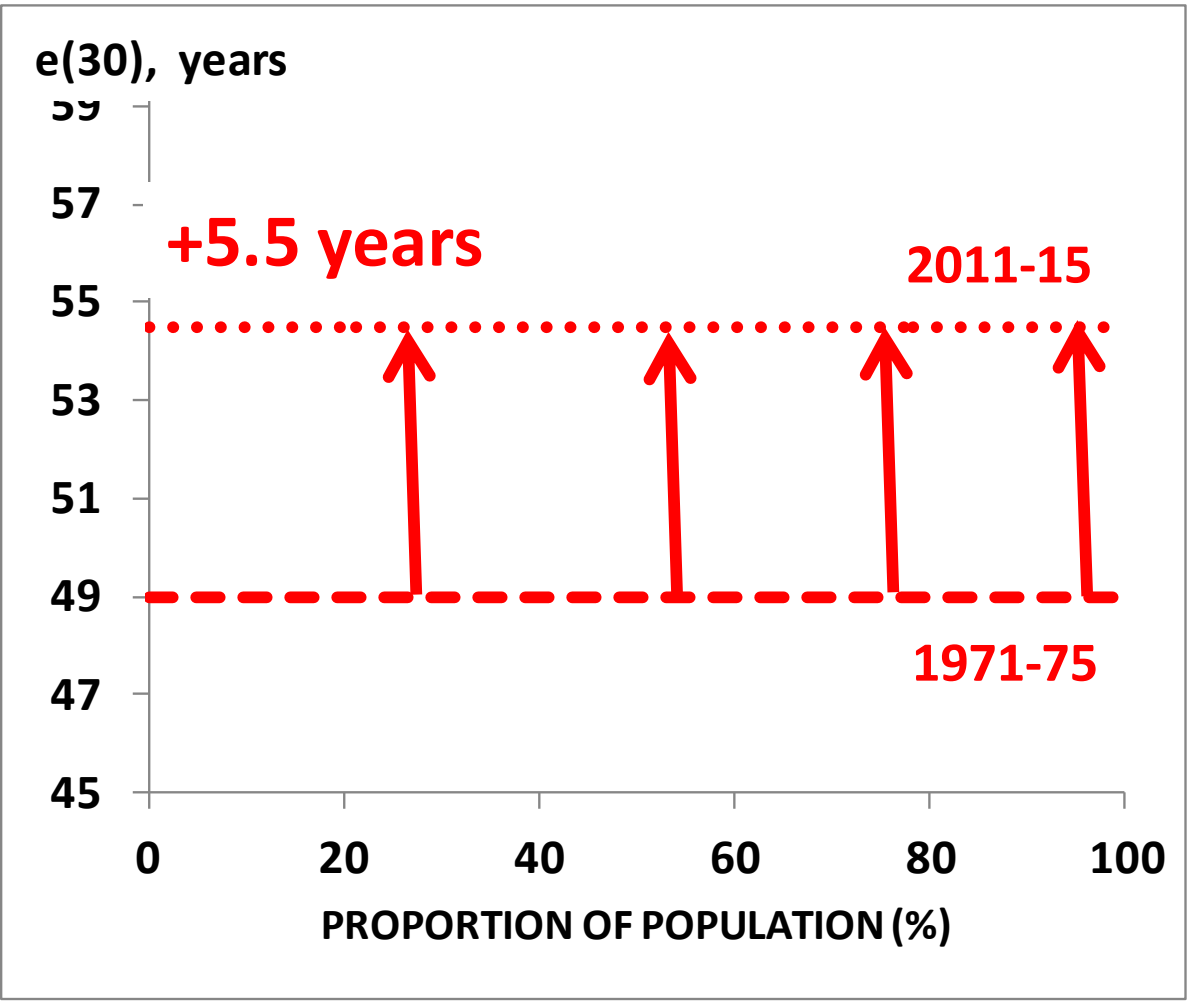
➔ Systematic further increases **despite initially very high levels** of life expectancies

➔ No signs of stagnation or substantial deceleration.

Data sources: Human Mortality Database 2015; unpublished data by Statistics Finland, Statistics Norway, and Statistics Sweden; Martikainen et 2013; Schumacher and Vilpert 2004; OECD/Murtin et al. 2017; Andreev et al, 2011.

COMPOSITIONAL CHANGE AND NATIONAL LONGEVITY

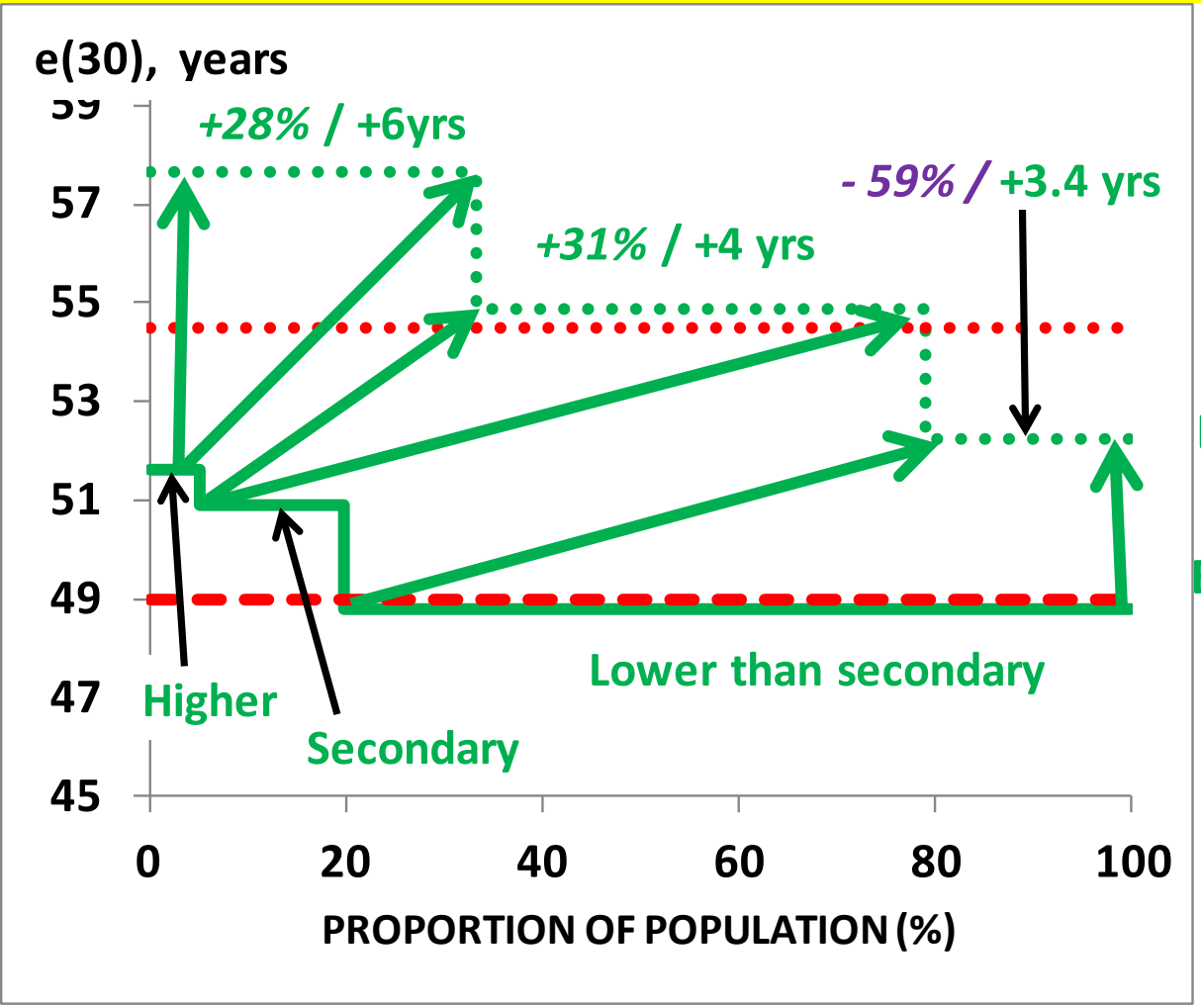
Changes in national female life expectancy at age 30, Sweden, 1971-75 – 2011-15.



Authors' calculations based on unpublished data by Statistics Finland and Statistics Sweden, 2017.

COMPOSITIONAL CHANGE AND NATIONAL LONGEVITY

Changes in national and group-specific female life expectancy at age 30, Sweden, 1971-75 – 2011-15.



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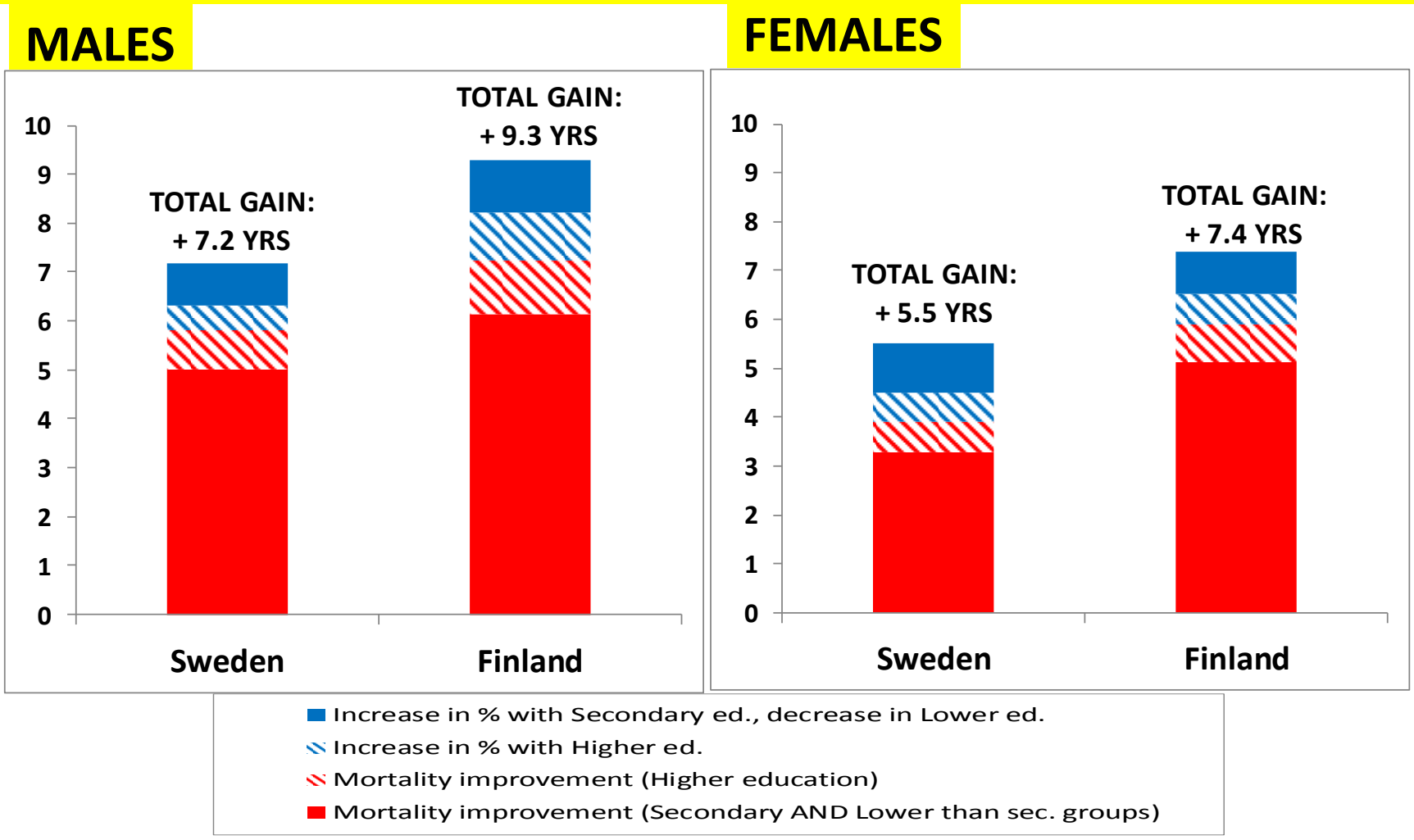
Educational growth as a factor of national longevity rise: Sweden and Finland, 1971-75 – 2011-15

Contributions of A) reductions in group-specific mortality and B) improvements in education structure to the total gain in NATIONAL life expectancy at age 30.



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Educational growth as a factor of national longevity rise: Sweden & Finland: 1971-75 – 1991-95 VS 1991-95-2011-15

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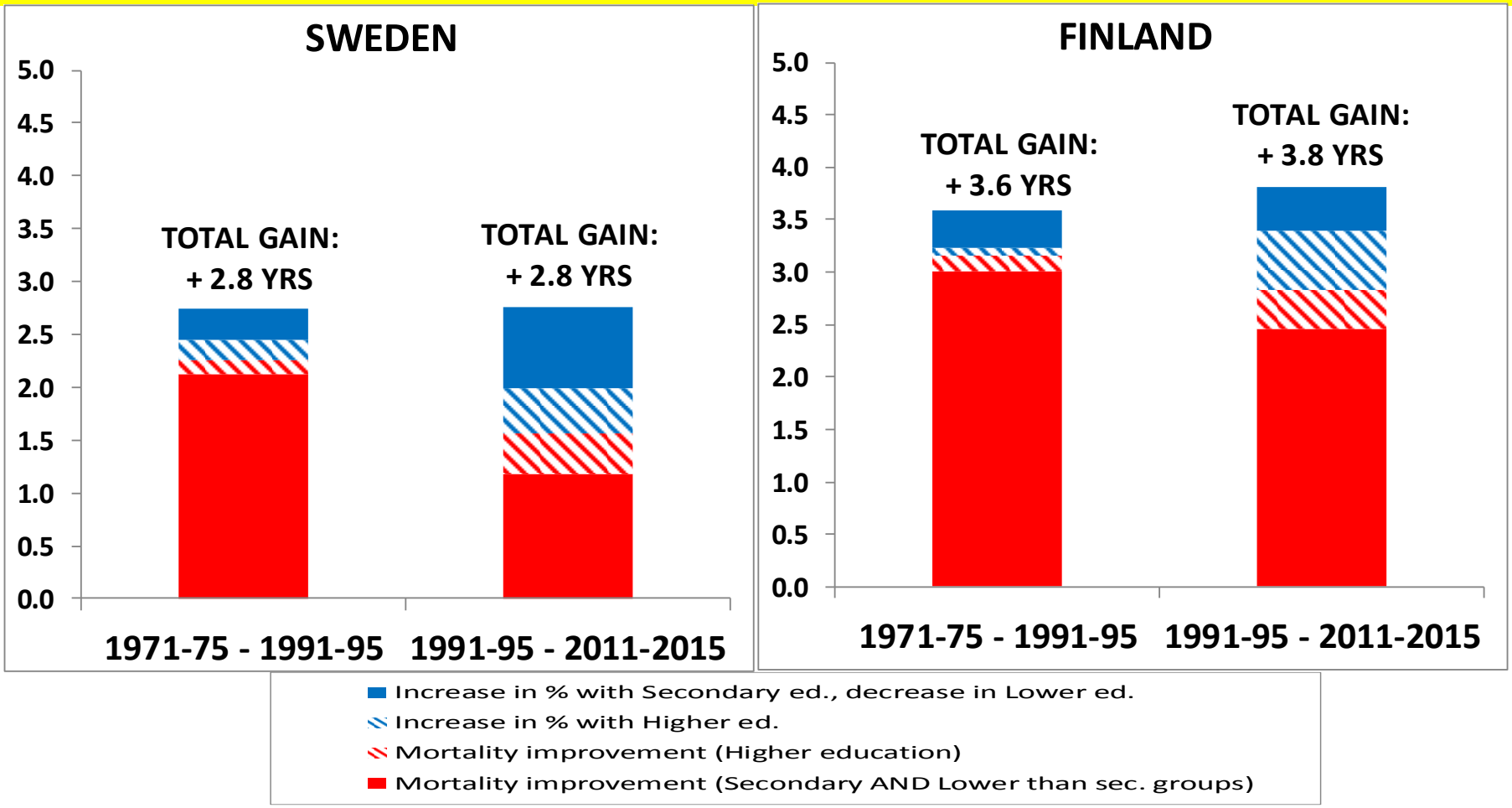

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Educational growth as a factor of national longevity rise: FEMALES in Sweden & Finland: 1971-75 –2011-15

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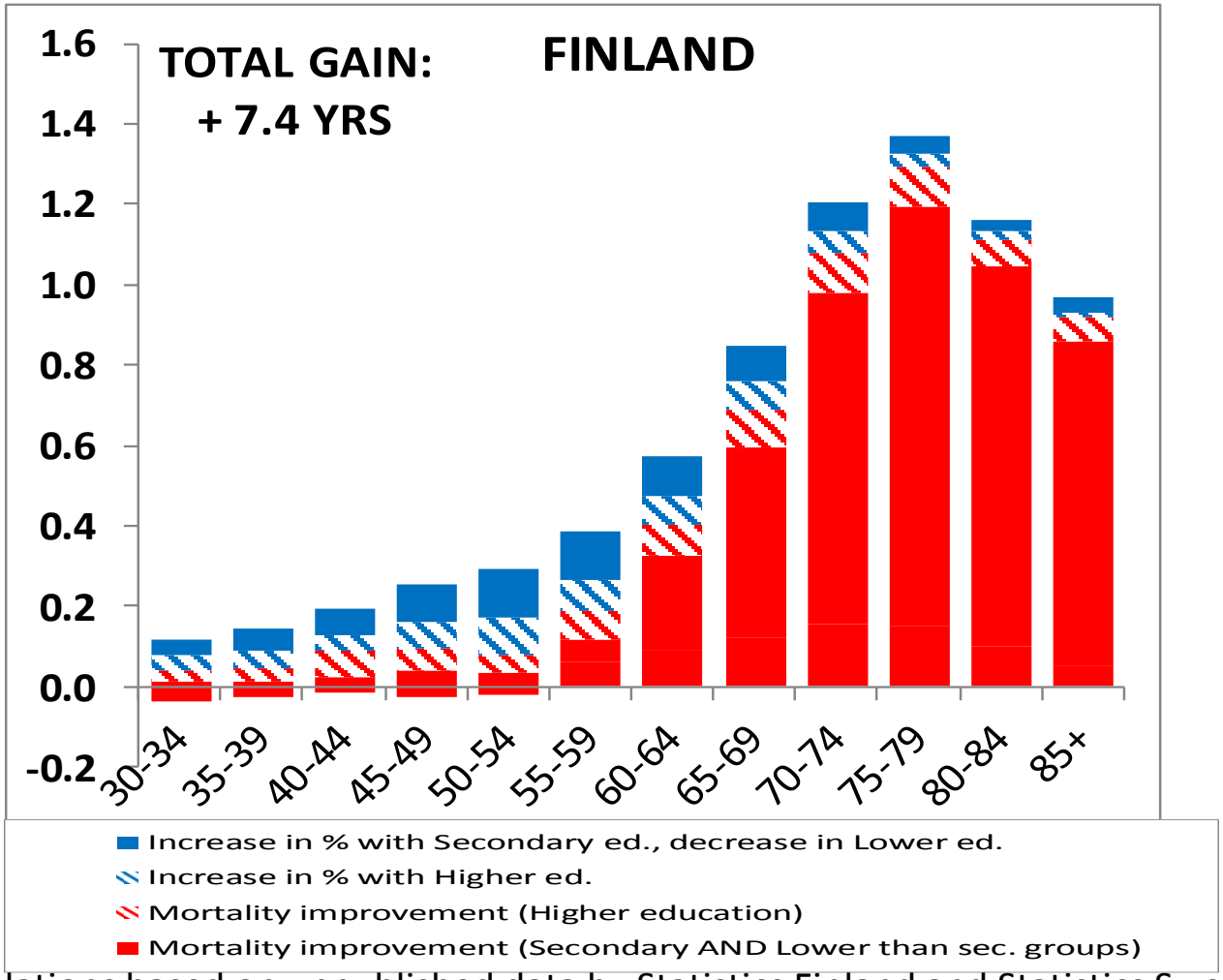

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Educational growth as a factor of national longevity in high mortality contexts: Russia and Estonia, ~1990 - ~2000

Life expectancy at age 30 for total population and by educational groups

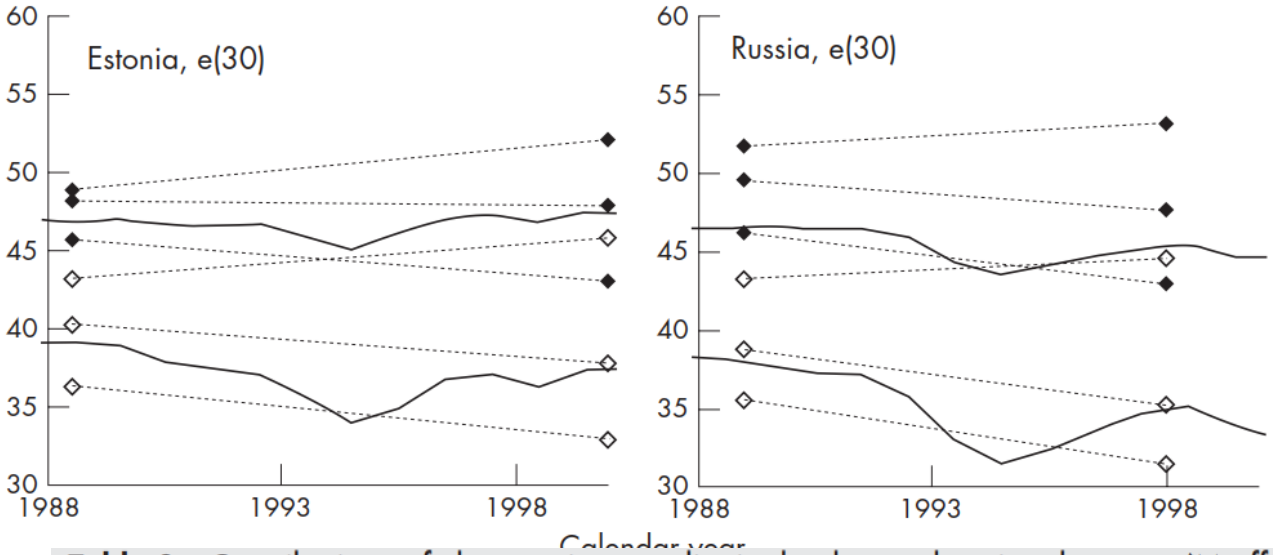
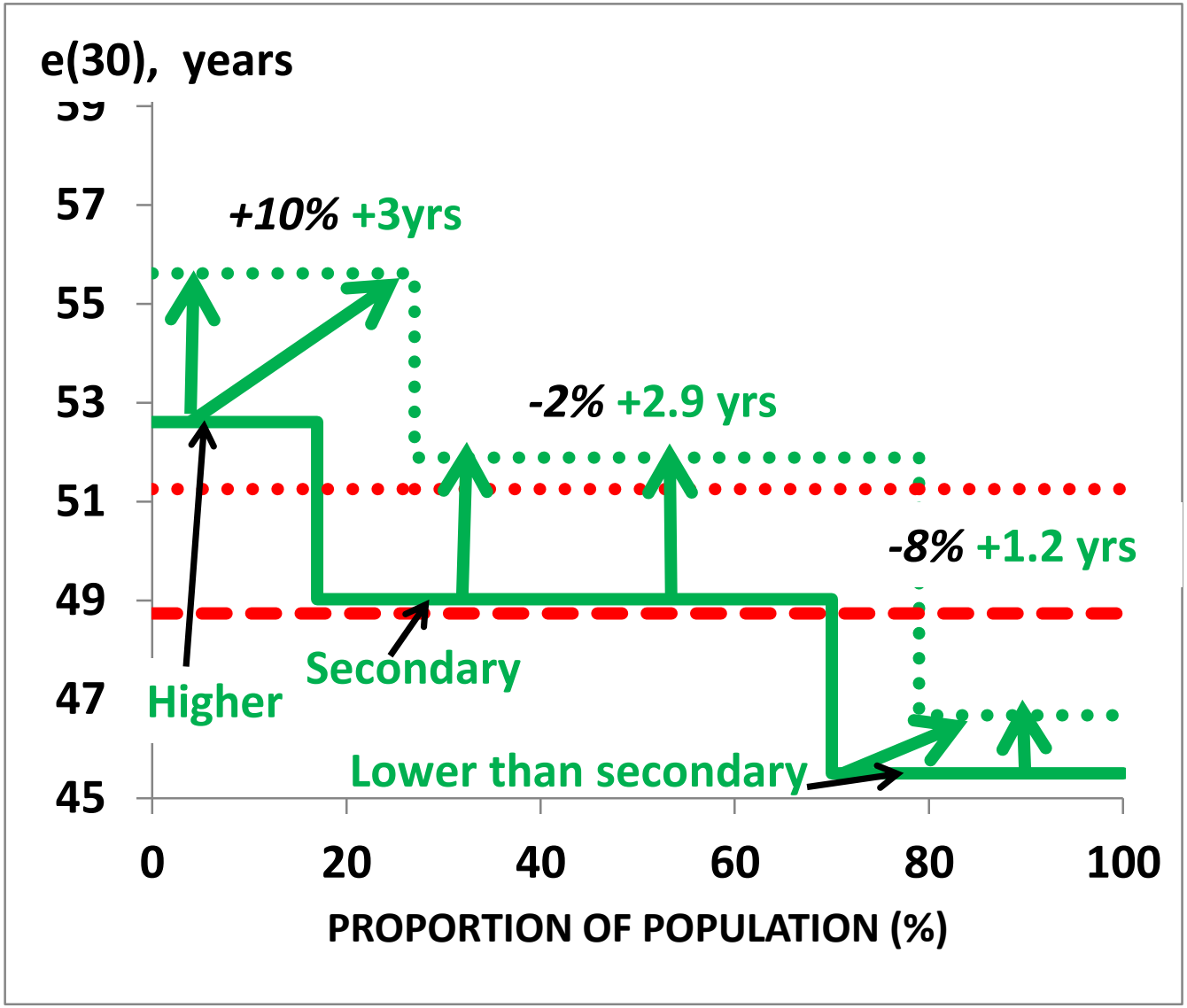


Table 3 Contributions of changes in mortality in the three educational groups (M effects) and of changes in the population educational structure (P effects) to the change in total life expectancy

	Total change	M effects			P effect
		High education	Middle education	Low education	
Men					
Finland, e(30), 1988–89–1998–99	2.58	0.20	0.52	1.38	0.48
Czech Republic, e(40), 1984–85–1999–2000	2.52	0.17	0.49	1.58	0.28
Estonia, e(30), 1988–89–1999–2000	−1.29	0.18	−1.09	−1.35	0.96
Russia, e(30), 1988–89–1998	−2.46	−0.01	−1.54	−1.70	0.79

Source: Shkolnikov et al., 2006.

Educational growth as a factor of national longevity in high mortality context: Lithuanian FEMALES, 2001-04 – 2011-15



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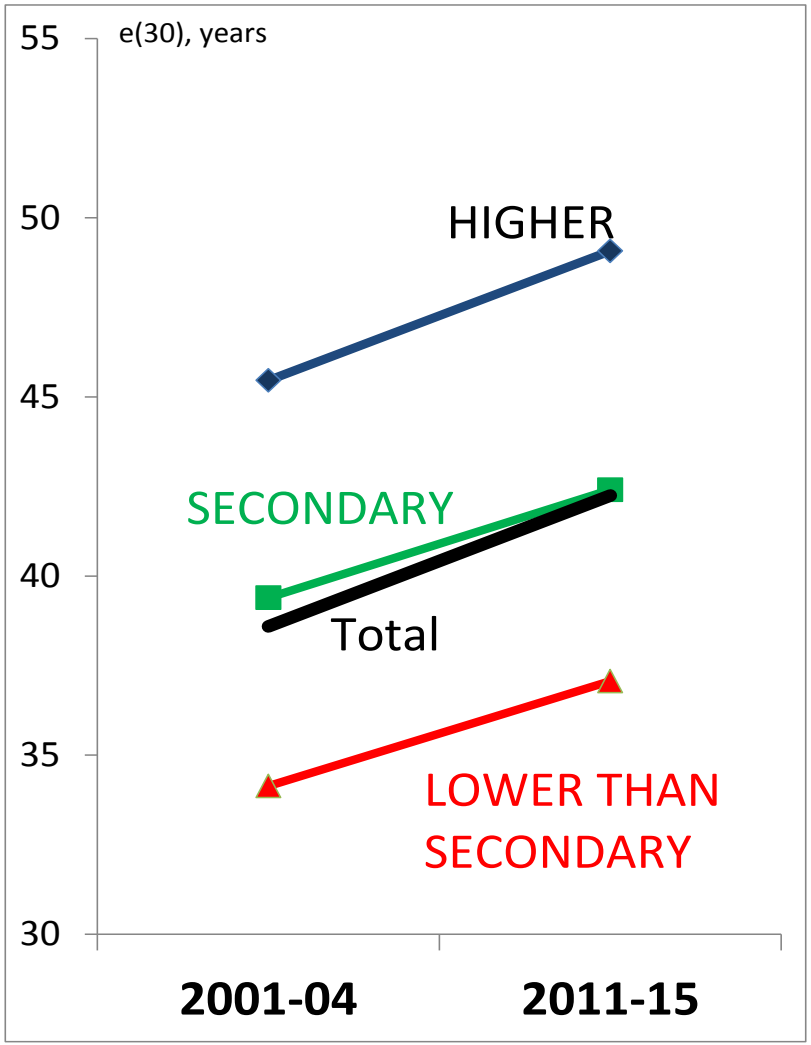

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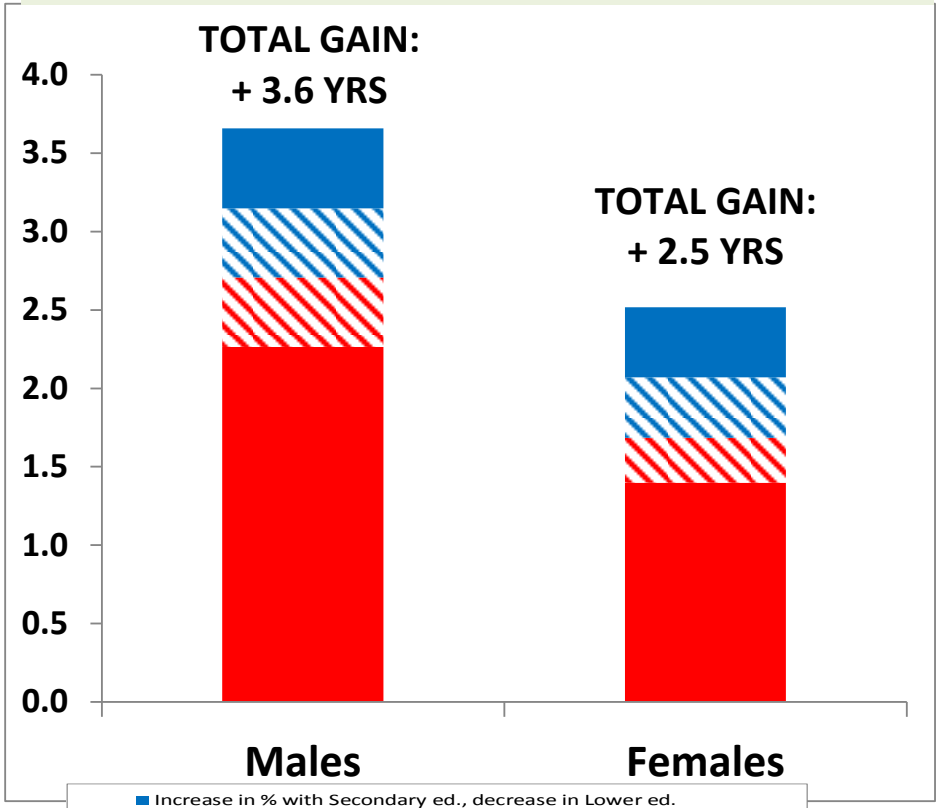

TWO EMPIRICAL EXERCISES → TWO MAJOR OBSERVATIONS

→**Continuation of longevity progress among highly educated at the same or even faster pace** despite increase in size and change in composition of the group**.**
Faster pace than remaining populations and national longevity record-holders at older age.

→**Compositional effects of educational improvements** make substantial and even increasing contributions to national longevity gains **in societies with lowest/decreasing and high/unstable mortality**.

→ **A substantial potential for further sustainable longevity gains at the national level?**

IMPORTANT QUESTIONS

➔ **Meaning of changing educational categories:**
What is behind the education labels?
Direct and indirect selection?
A need for better measurement?

➔ **Where are the limits of expansion of high education?**

➔ **Health transition context: a convergence phase inevitable?**
Slow-down among vanguards or more rapid progress among lower educated?

➔ **Opposite effects of other compositional factors**
e.g. decreasing proportion of married people.
increase in obesity and other unfavourable biomedical factors, environmental factors and their uncertain impacts for future longevity trends.

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Dmitri A. Jdanov (Max Planck Institute for Demographic Research & International Laboratory for Population and Health, HSE, Moscow, Russia)

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