Advanced longevity of highly educated married people in Finland, Norway, and Sweden

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Background

Does experience of countries with highest life expectancies tell about prospects of the future longevity?
The best practice (*vanguard*) populations are the first going towards the new frontiers of survival and longevity that will eventually be reached by others (Oeppen & Vaupel, 2002; Vallin & Meslé, 2008).

Similar tendencies can be observed *within* countries:
vanguard groups can show pathways for better health for less advanced population groups (Vallin, 1979, Martelin, 1994, 1996).

This study examines **whether and to what extent the *non-vanguard* populations in Finland, Norway, and Sweden follow mortality trajectories of the vanguard groups in respect to ages and causes of death.**

We define **vanguard population** as a two-dimensional group of highly educated married people. Education and marital status are the two principal health dimensions determining availability of human and social capital.

Data

Collection of the census-linked data on cause-specific deaths and population exposures to risk of death by age, sex, education, and marital status at ages 30 and older for period 1971-2000.

Countries-periods:

Finland: six 5-year time intervals from 1971-75 to 1996-2000.

Norway: three 5-year time intervals (1971-75, 1981-1985, 1991-1995).

Sweden: two 5-year time intervals (1971-75 and 1991-1995).

Sociodemographic variables:

Age: five year age groups (40-44, 80-84, 85+);

Education: High (university), lower than high education

Marital status: Married, non-married.

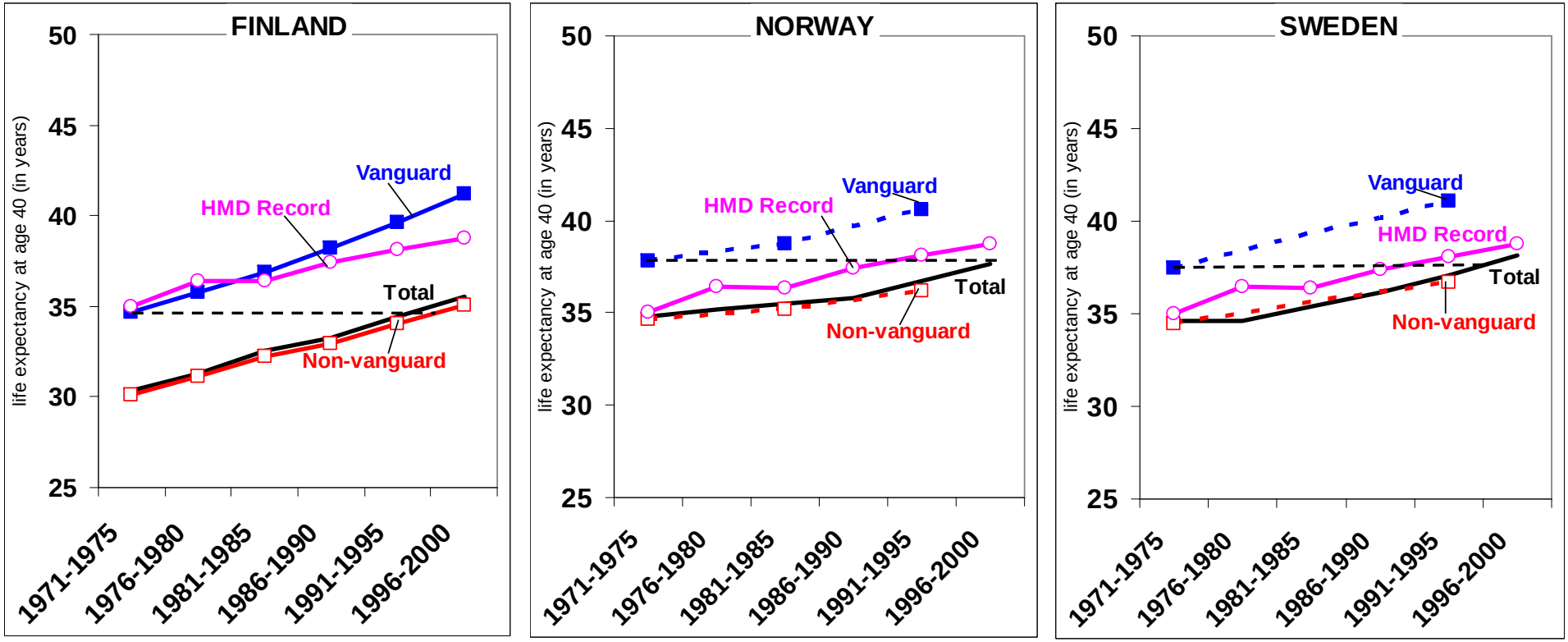
Vanguard group (V)**:** married people with high education

Non-Vanguard group (NV)**:** non-married people with lower than high education

Causes of death: 53 causes of death (Valkonen et al., 1993) grouped into 12 larger groups.

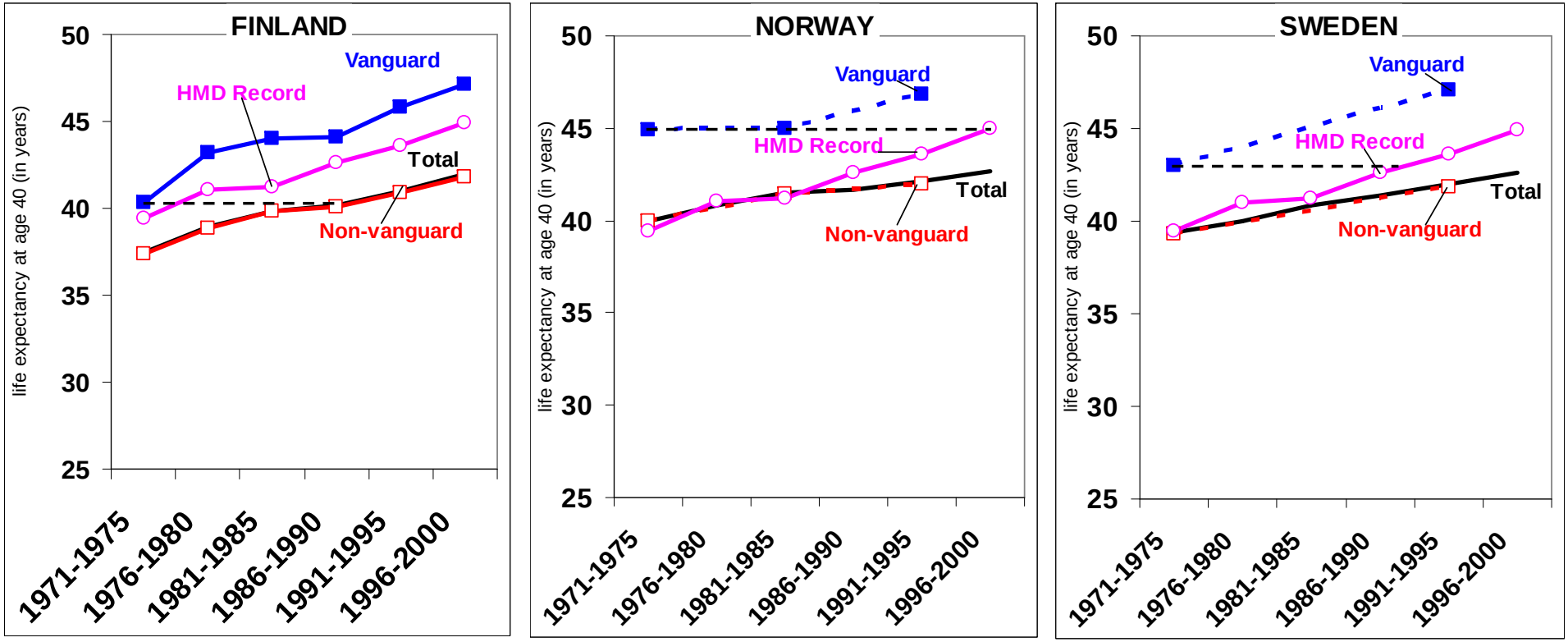
Trends in life expectancy at age 40 for vanguard, non-vanguard, and total populations of Finland, Norway, and Sweden and in the HMD record life expectancy at age 40

MALES

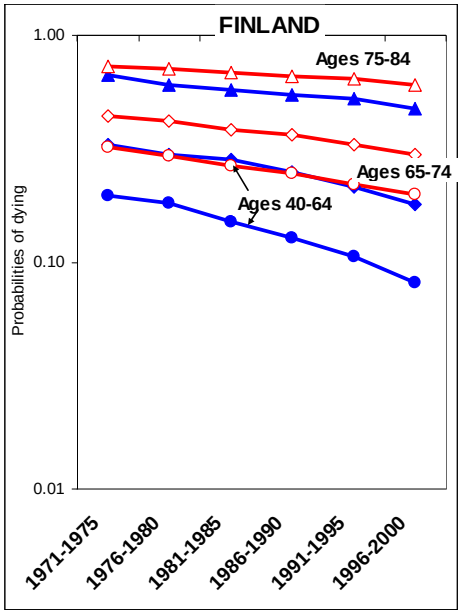


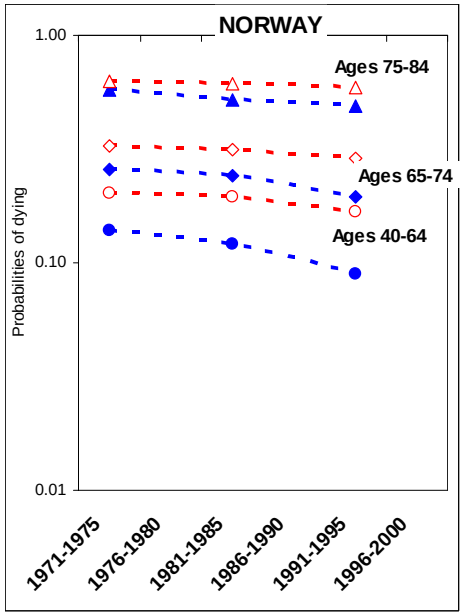
Trends in life expectancy at age 40 for vanguard, non-vanguard, and total populations of Finland, Norway, and Sweden and in the HMD record life expectancy at age 40

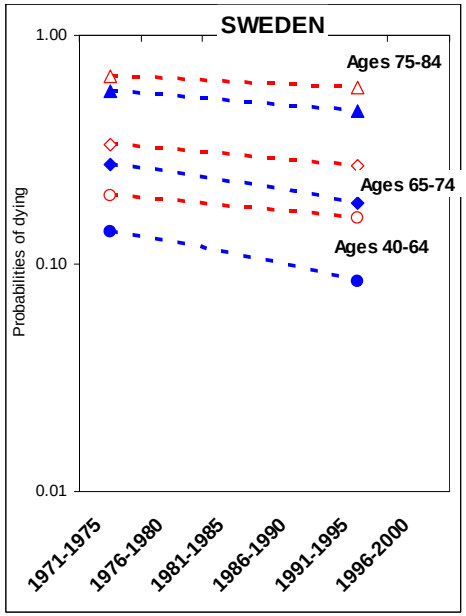
FEMALES



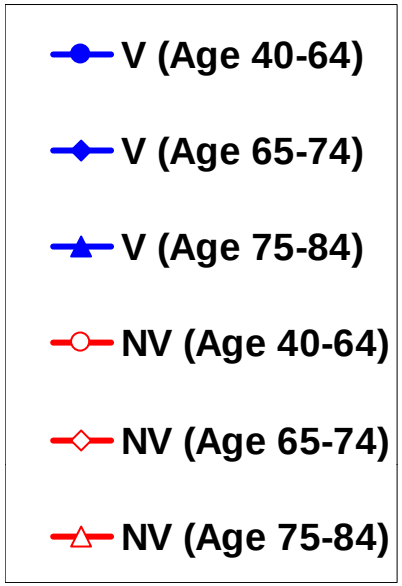
Trends in q(40-64), q(65-74), and q(75-84) for vanguard and non-vanguard populations of Finland, Norway, and Sweden, 1971-1975 – 1996-2000

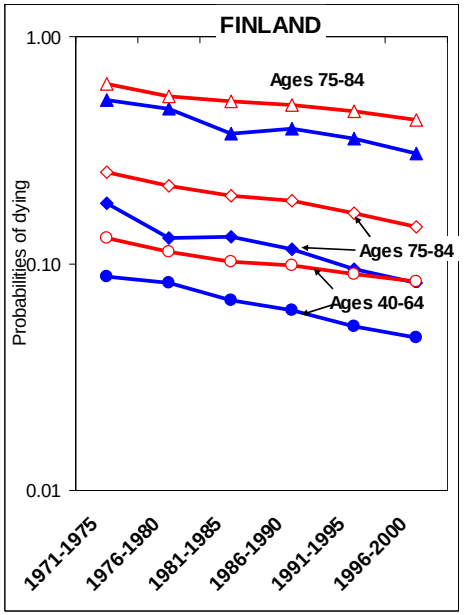


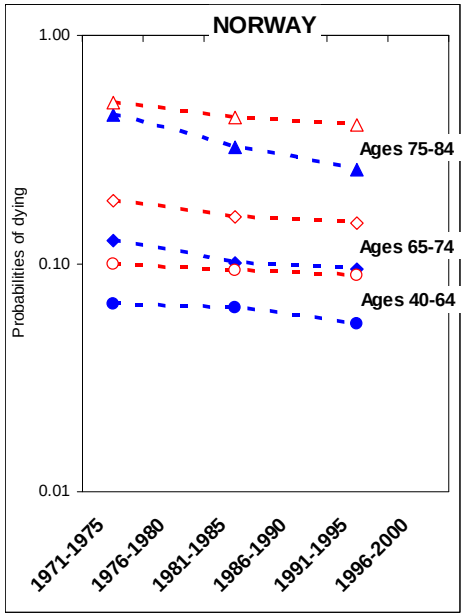


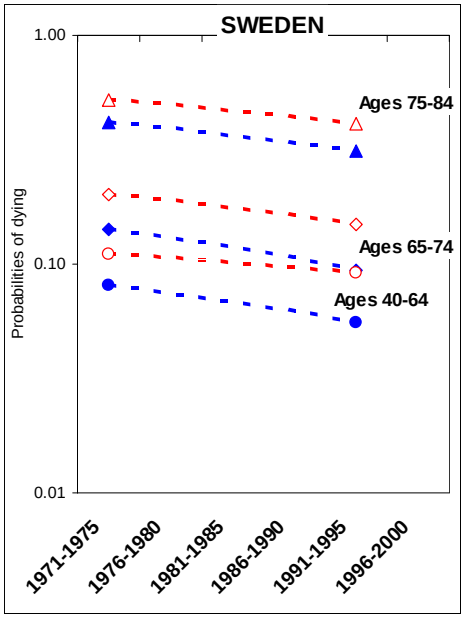


A) MALES



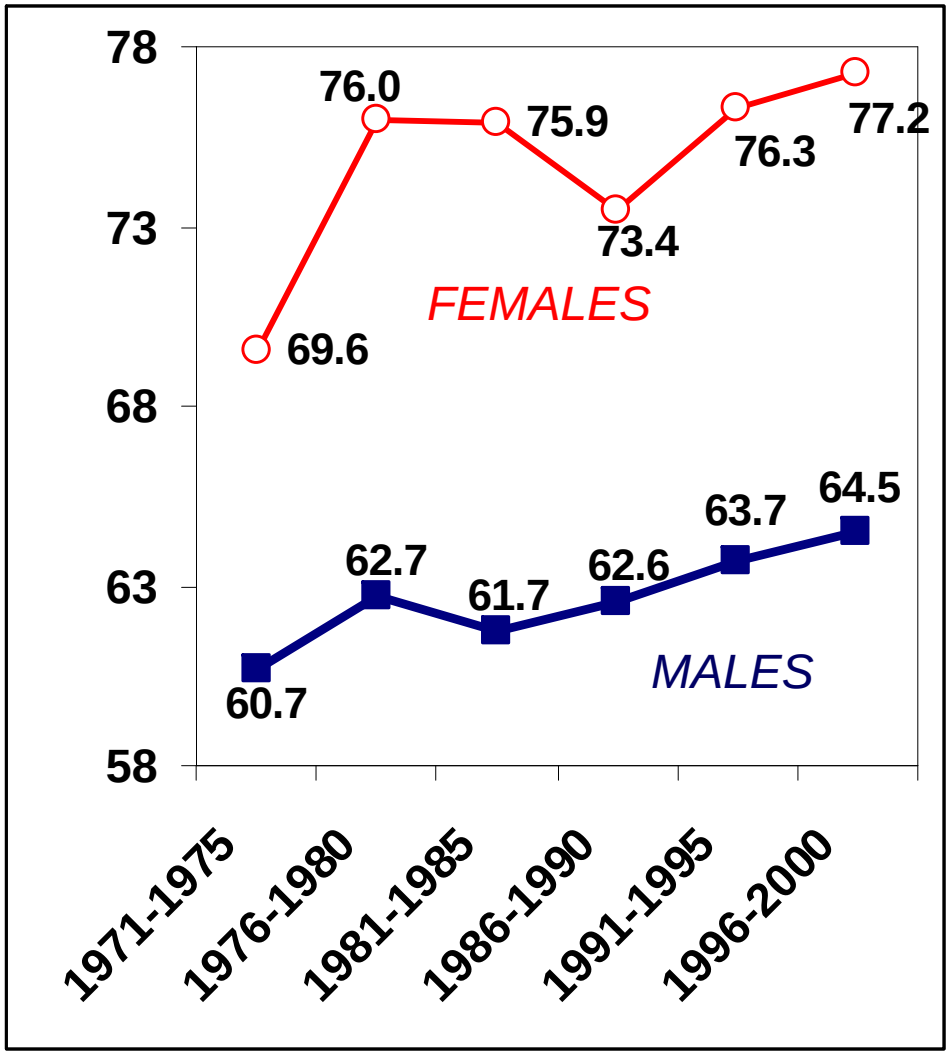






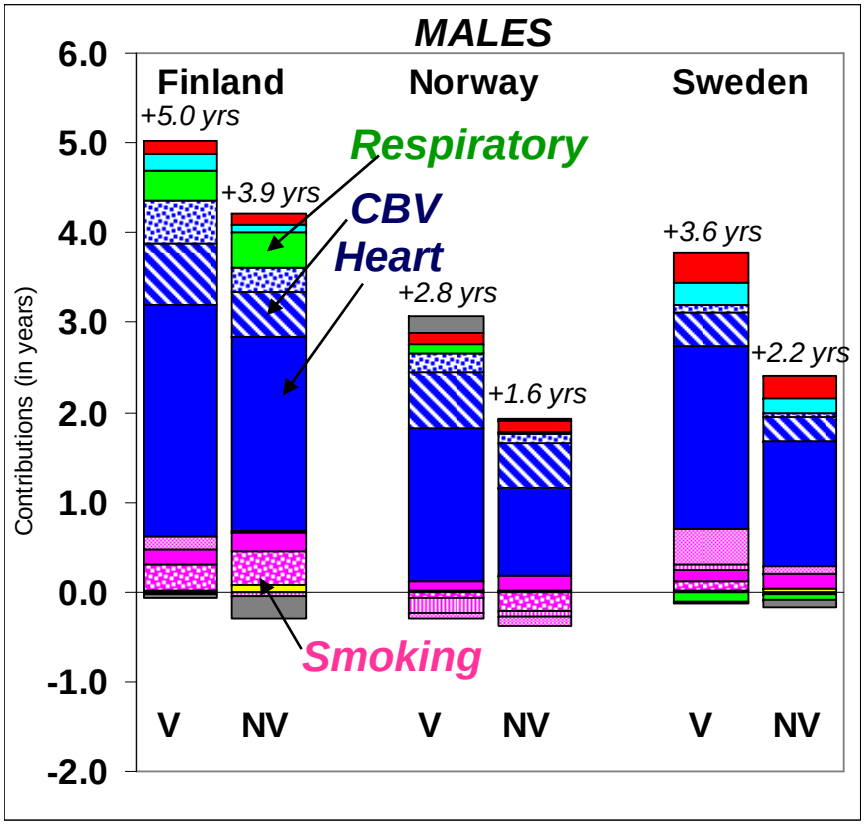
B) FEMALES

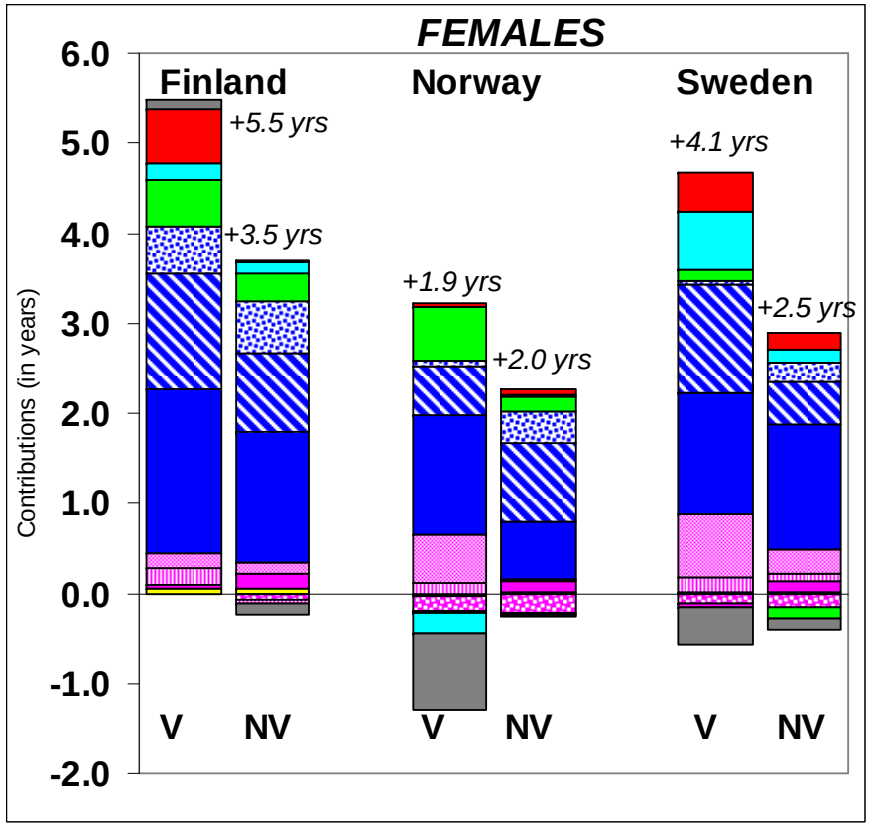
Trends in average age of dissimilarity between vanguard and non-vanguard groups in Finland, 1971-1975 – 1996-2000



Average age of dissimilarity – average age across age-specific contributions of mortality differences into the total difference in life expectancy at age 40 between vanguard and non-vanguard groups.

Cause components of the *total changes* in life expectancy at age 40 in vanguard and non-vanguard populations in Finland, Norway, and Sweden from 1971-1975 to 1991-1995

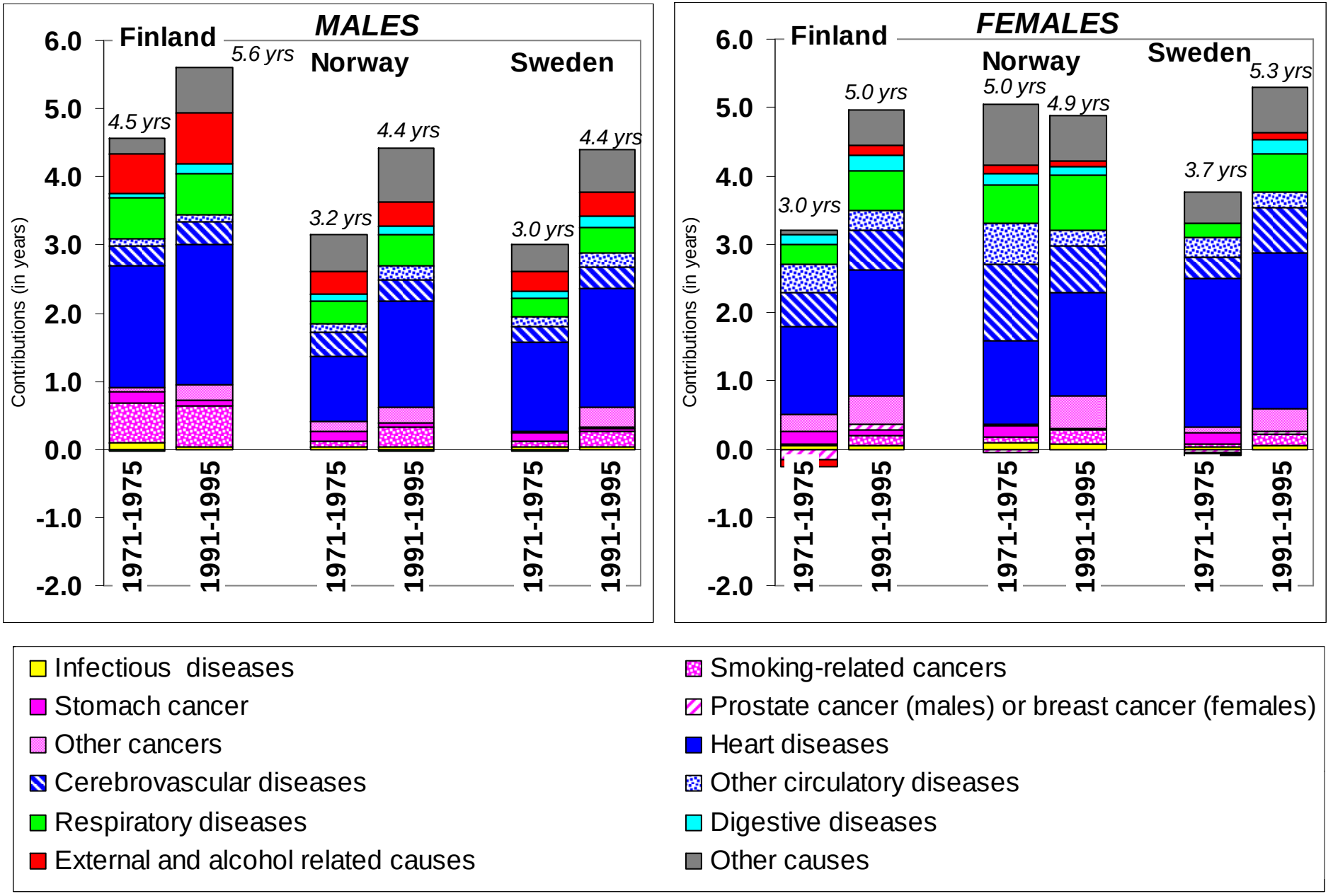




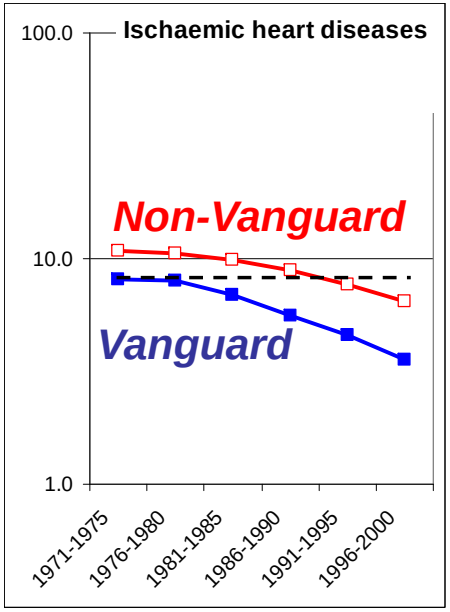
- Infectious diseases
- Lung cancer
- Stomach cancer
- Prostate cancer
- Other cancer
- Heart diseases
- Cerebrovascular diseases
- Other circulatory diseases
- Respiratory diseases
- Digestive diseases
- External and alcohol related causes
- Other causes

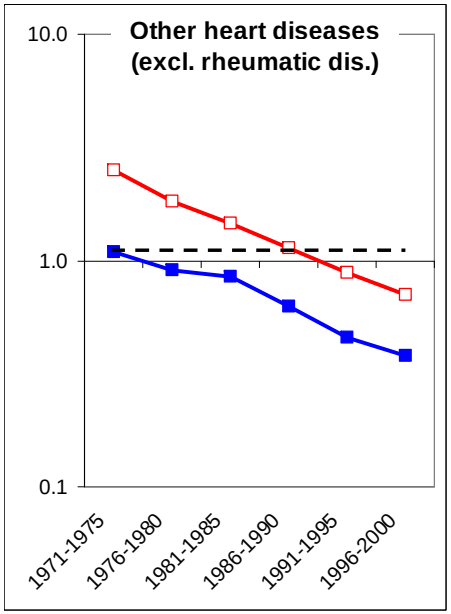
"V" – vanguard group; "NV" – non-vanguard group

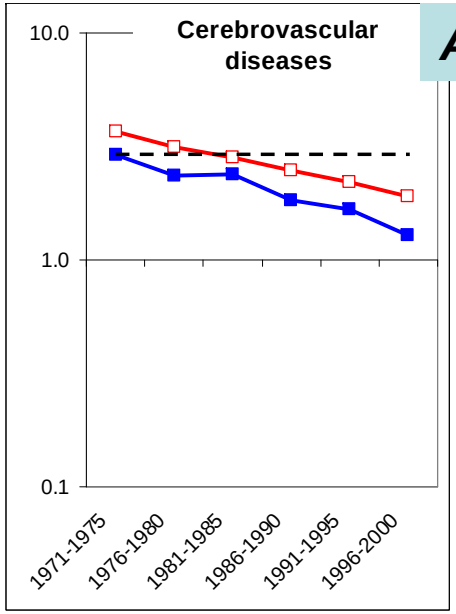
Cause components of the *differences* in life expectancy at age 40 between vanguard and non-vanguard populations in Finland, Norway, and Sweden, 1971-1975 and 1991-1995



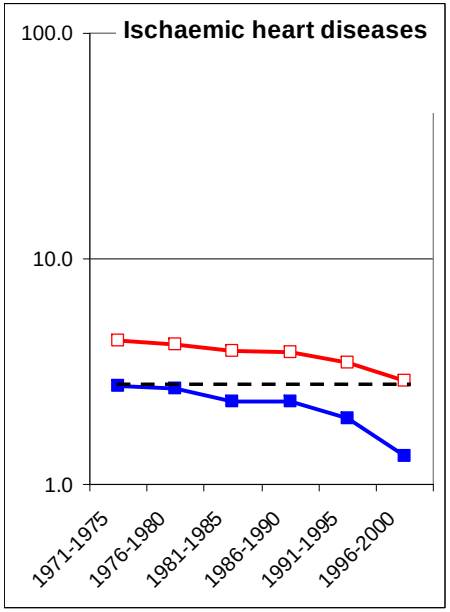
SDRs for cardiovascular system diseases for vanguard and non-vanguard groups, Finland, 1971-1975 - 1996-2000

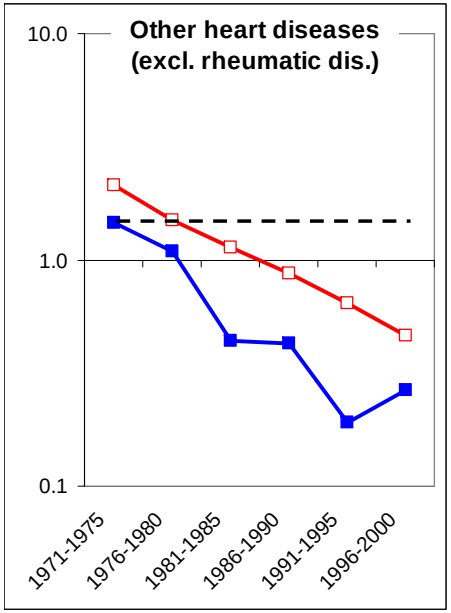


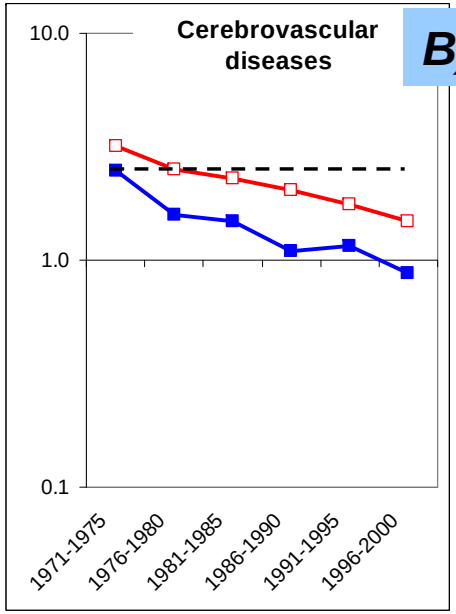




A) MALES

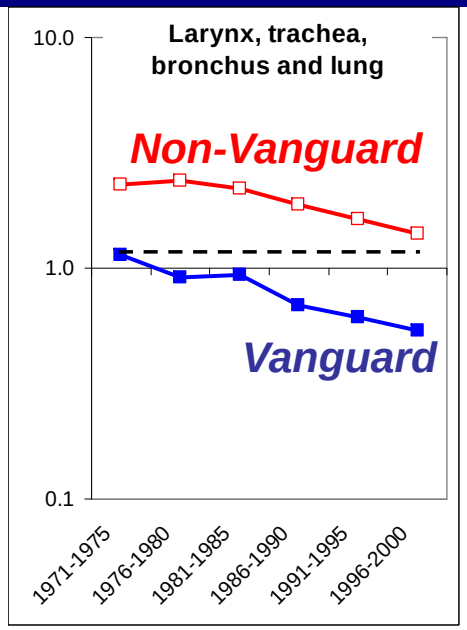


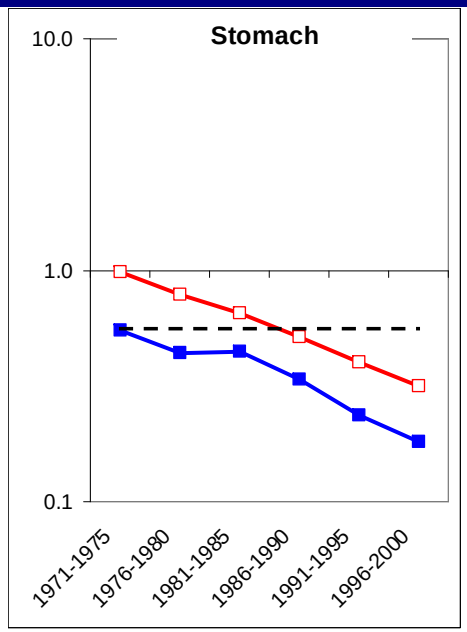


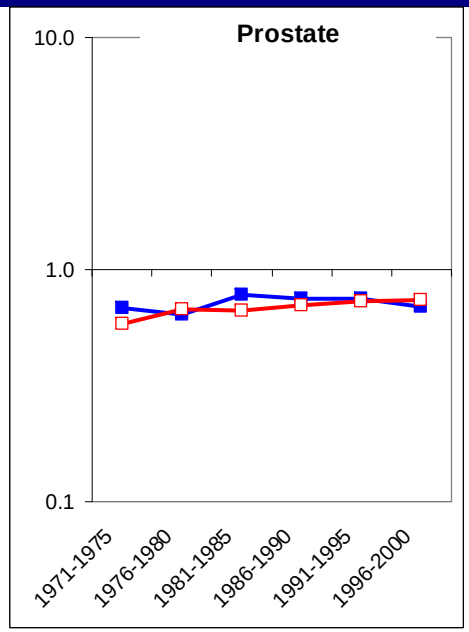


B) FEMALES

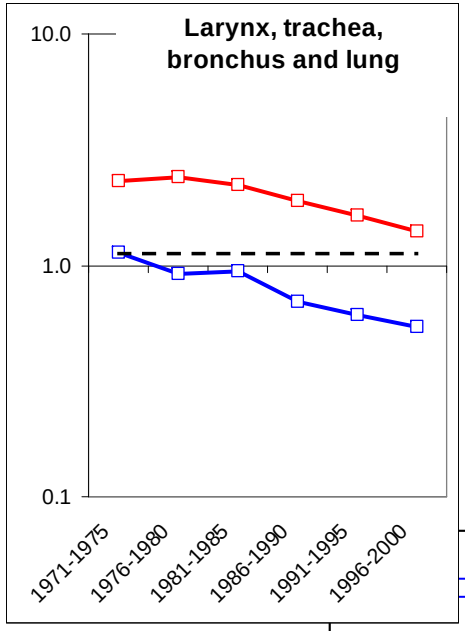
SDRs for selected cancers for vanguard and non vanguard groups, Finland, 1971-1975 - 1996-2000

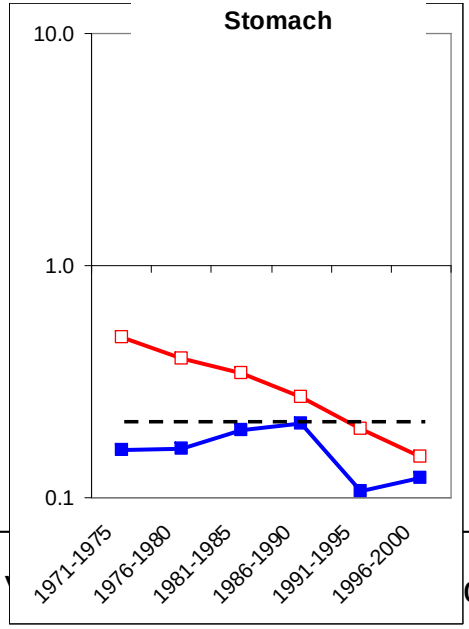


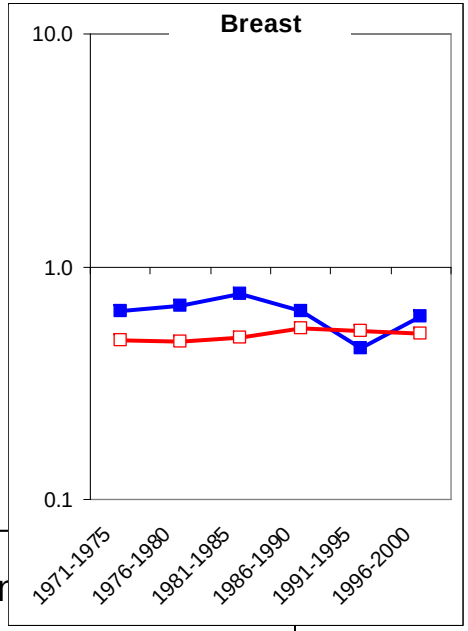




A) MALES

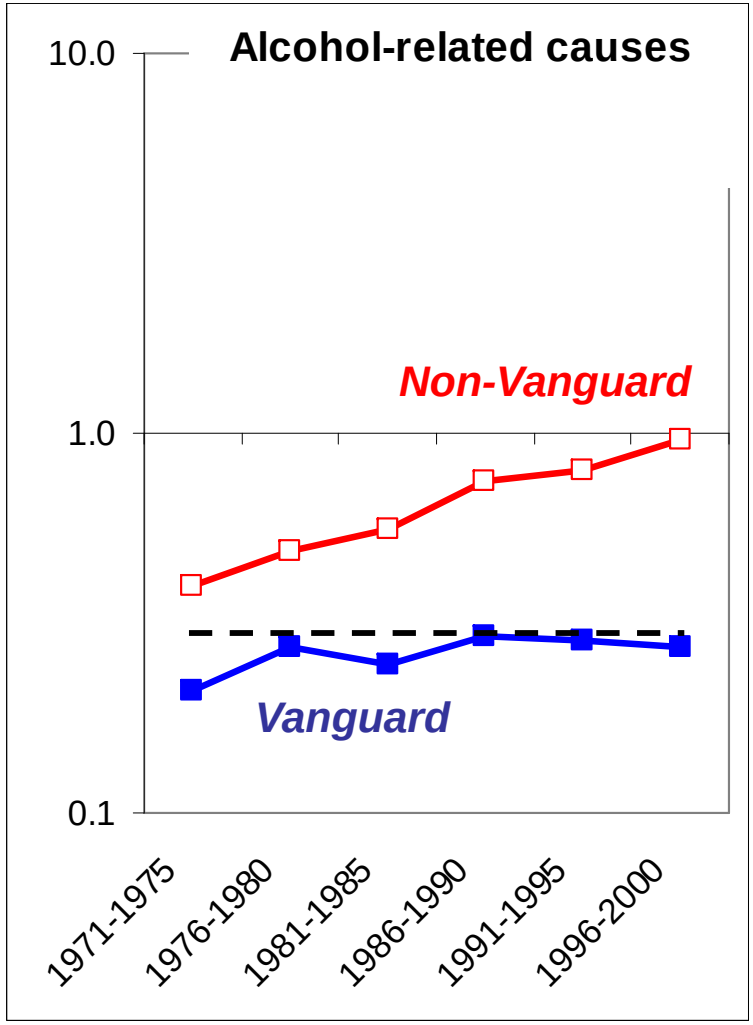


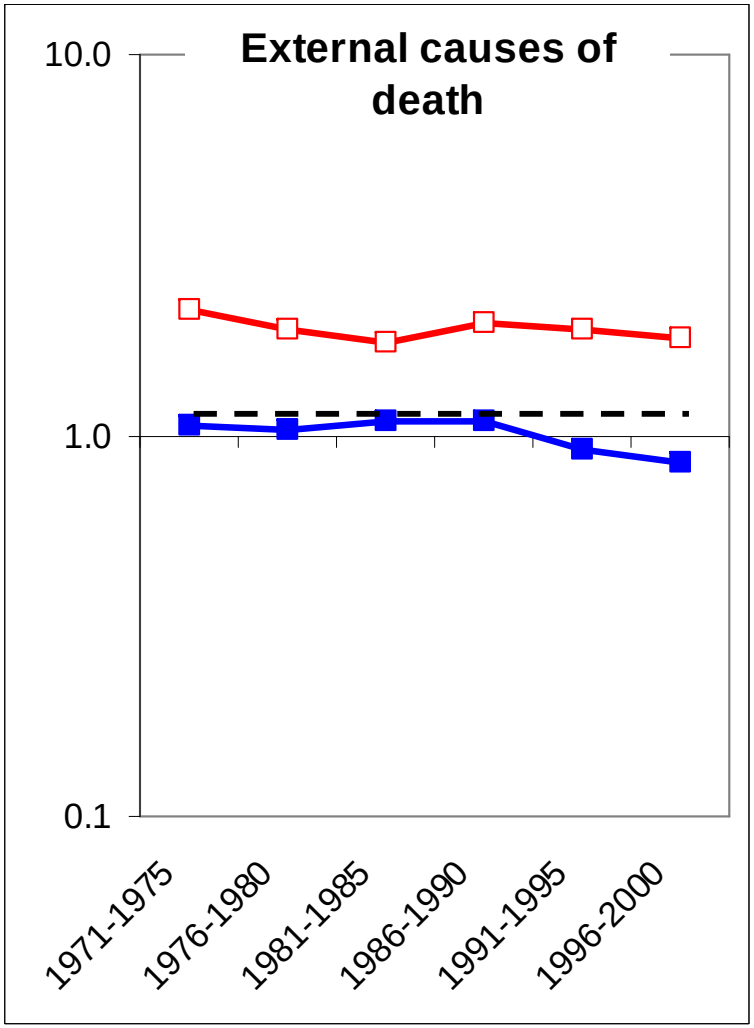




B) FEMALES

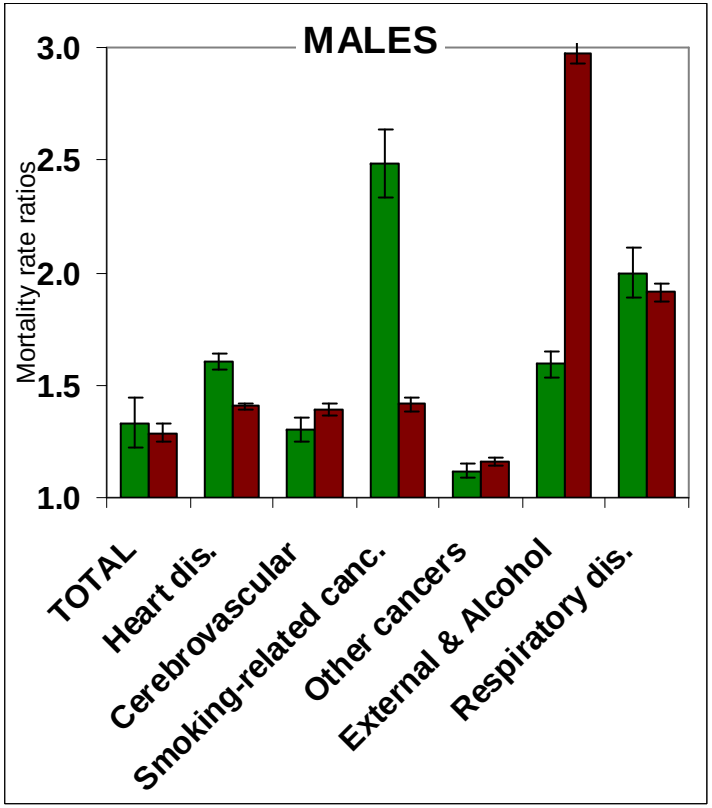
Male SDRs for external and alcohol-related causes of death for vanguard and non-vanguard groups, Finland, 1971-1975 - 1996-2000

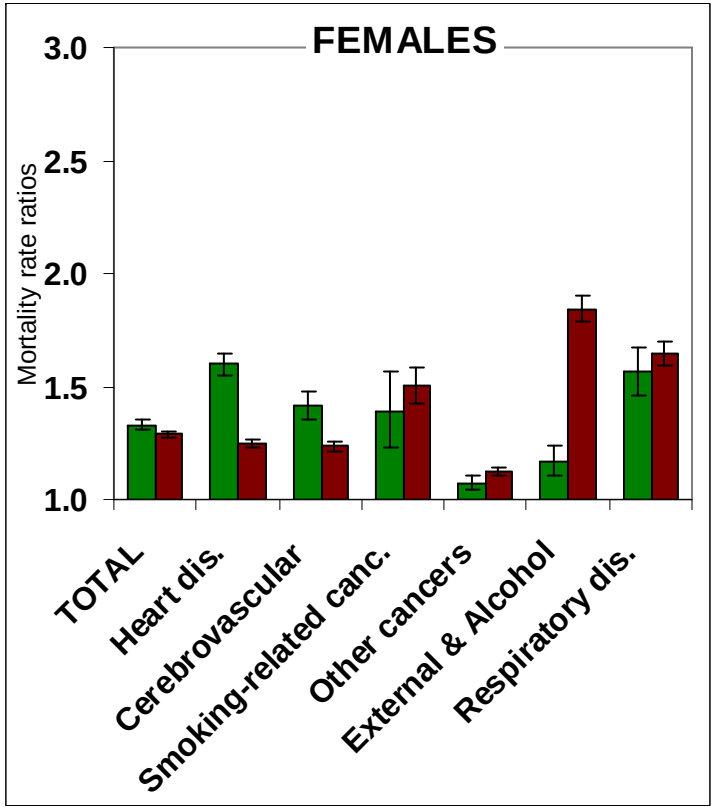




How education and marital status impact risk of dying from different causes of death

Poisson regression mortality rate ratios:
low education vs. high education (ref.), non-married vs married (ref)
Controlled for: age, period, education, marital status.





Summary of findings / discussion

Strengths: high quality & comparable across countries data.
Weaknesses: few points for Sweden and Norway; possible impact of changes in ICD on cause of death series.

Main findings:
No signs of convergence in life expectancy at age 40 between vanguard and non-vanguard groups even in egalitarian Nordic countries.

No signs of mortality convergence within different age ranges (40-64, 65-74, 75-84).

Smaller contributions of CVD mortality in NV group + persisting burden of smoking-related, alcohol-related, and external causes.
➔huge time lags (>20 years) between V and NV groups.

Discussion:
+ “traditional” factors (materialistic, life style, human & social capitals,...)
➔ convergence in future is possible.
or/and
+ specific (often unobserved) factors (selection, genetic, …)
➔ each group has “own” pathway to low mortality.

Acknowledgement

We are very grateful to Statistics Finland, Statistics Sweden, and Statistics Norway for providing high quality census-linked data.

Country	Period	Males			Females		
		High	Medium	Low	High	Medium	Low
Finland	1971-1975	5.88	13.66	80.45	4.04	12.19	83.77
	1976-1980	6.91	16.40	76.69	4.77	14.64	80.59
	1981-1985	8.33	20.67	71.00	5.87	18.31	75.82
	1986-1990	10.12	26.58	63.30	7.44	23.64	68.92
	1991-1995	11.70	32.11	56.19	9.09	29.23	61.68
	1996-2000	13.34	37.63	49.03	11.63	34.82	53.56
Sweden	1971-1975	6.05	16.83	77.12	3.63	10.86	85.52
	1976-1980	7.04	20.24	72.72	4.63	13.33	82.04
	1981-1985	-	-	-	-	-	-
	1986-1990	-	-	-	-	-	-
	1991-1995	16.50	26.29	57.21	15.26	23.54	61.20
	1996-2000	18.72	29.76	51.52	18.11	27.81	54.09
Norway	1971-1975	8.37	21.25	70.38	3.38	15.10	81.52
	1976-1980	9.54	22.76	67.70	3.98	16.41	79.62
	1981-1985	13.27	38.12	48.61	7.61	34.37	58.02
	1986-1990	15.81	40.86	43.32	9.47	37.90	52.63
	1991-1995	19.30	44.07	36.62	12.82	41.47	45.71
	1996-2000	21.20	46.42	32.39	15.17	44.20	40.63