

Web appendix: Supplementary material

Table A1. Overview of data sources

Country	Inclusion	Years covered by the analysis				Design	Age range
		1990–1995	1995–2000	2000–2005	2005–2010		
Finland	80% representative sample	1990–1995	1995–2000	2000–2005	2005–2010	longitudinal	35–79
Sweden	all	1990–1994	1995–1999	2000–2004	2005–2008	longitudinal	35–79
Norway	all	1990–1995	1995–2001	2001–2006	2006–2009	longitudinal	40–79
Scotland	5.3% representative sample	1991–1995	1996–2000	2001–2005	2006–2010	longitudinal	35–79
England & Wales	1% representative sample	1991–1996	1996–2001	2001–2006	2006–2009	longitudinal	35–79
France	1% sample French-born in mainland	1990–1995	1995–1999	1999–2004	2004–2007	longitudinal	35–79
Switzerland	Swiss nationals	1990–1995	1995–2000	2000–2005	2005–2008	longitudinal	35–79
Spain	Barcelona	1992–1996	1997–2001	2002–2006	2007–2010	repeated cross-sectional	35–79
Italy	Turin	1991–1996	1996–2001	2001–2006	2006–2010	longitudinal	35–79
Slovenia	all	1991–1995	1996–2001	2002–2006	2007–2011	longitudinal	35–79
Lithuania	all	1988–1990	2000–2002			cross-sectional	35–69
Lithuania	all			2001–2005	2006–2009	longitudinal	35–69

Note: Age range applies to data on mortality by education.

Table A2. Distribution of person-years and deaths by education, 1990-94 and 2005-09

a. Men

MEN	1990–1994						2005–2009					
	Low educated		Mid educated		High educated		Low educated		Mid educated		High educated	
Country	Person-ye	Deaths	Person-ye	Deaths	Person-ye	Deaths	Person-ye	Deaths	Person-ye	Deaths	Person-ye	Deaths
Finland	3063862	62445	1700099	12918	1300251	8352	2225260	44471	2501196	21700	1830589	11297
Sweden	3390963	53369	3072943	25055	1616651	7797	2561326	39674	4063560	29929	2350917	11553
Norway	1387322	35141	1778636	25794	716427	5567	604291	11073	1194148	12958	619891	3884
Scotland	245290	4227	22902	156	23690	148	163566	2388	61411	343	64352	389
England & Wales	470395	7823	-	-	111191	789	338753	3664	-	-	101360	551
France	290648	5081	194141	1367	67989	331	161535	2766	215000	1666	84549	406
Switzerland	1283889	30571	3523060	38618	1528247	10773	544751	9248	2127060	17346	1297871	6610
Spain, Barcelona	1253796	20714	350373	2987	351099	2403	800504	10715	437901	2665	416698	2098
Italy, Turin	802371	11829	244066	1824	122248	901	462150	6568	257054	1623	128565	702
Slovenia	1389212	27566	336351	4004	243338	2124	637051	17639	1249137	17325	352609	4034
Lithuania	997479	19950	690954	6642	246705	1609	448465	14935	1670946	23128	449151	3977

b. Women

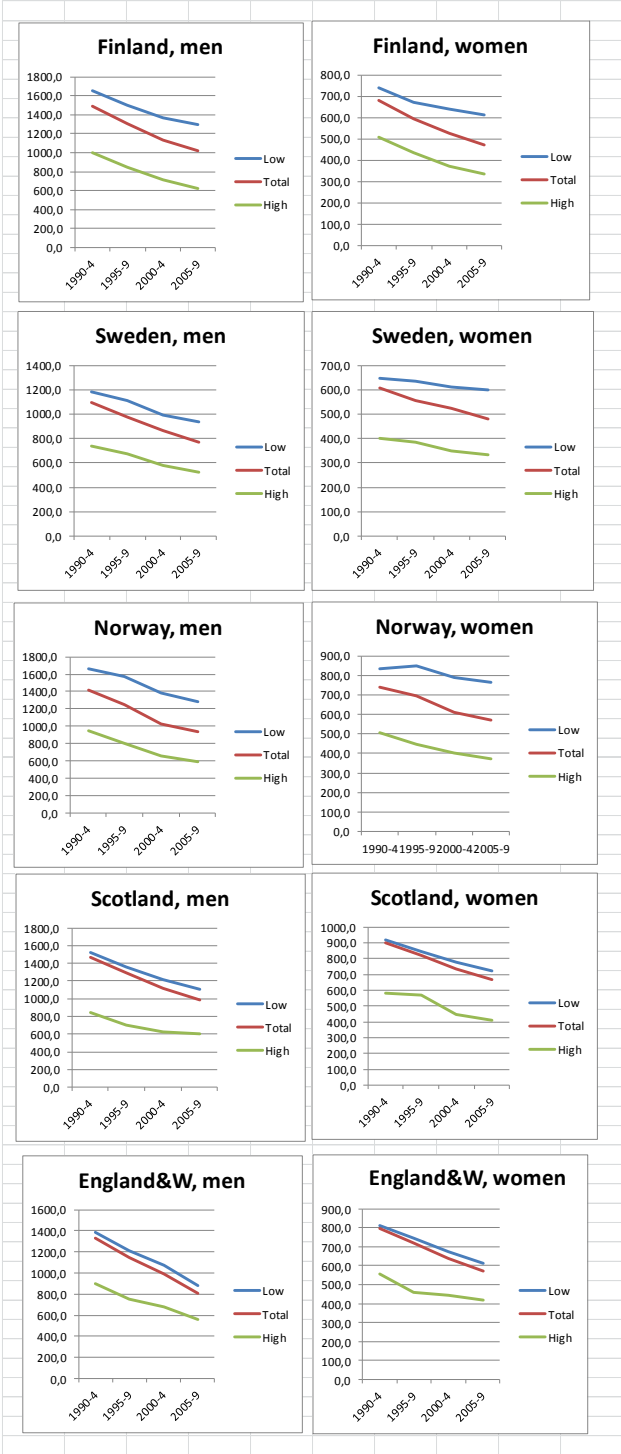
WOMEN	1990–1994						2005–2009					
	Low educated		Mid educated		High educated		Low educated		Mid educated		High educated	
Country	Person-ye	Deaths	Person-ye	Deaths	Person-ye	Deaths	Person-ye	Deaths	Person-ye	Deaths	Person-ye	Deaths
Finland	3616611	44570	1819277	7497	1229839	3835	2285947	25905	2439843	10876	2164519	6152
Sweden	3600641	36340	3056631	13287	1651135	4017	2396182	28058	4076962	20276	2581654	8010
Norway	1845399	27363	1775108	13548	530154	2208	747100	9148	1137416	7729	587137	2043
Scotland	275194	3327	30634	177	13900	50	195522	1969	55360	180	67565	261
England & Wales	547626	6175	-	-	82117	366	397372	3170	-	-	100753	405
France	410618	3238	156270	440	55601	111	231945	1925	188133	632	89985	175
Switzerland	3085539	31549	3788304	17508	505370	1709	1276367	11091	2500486	9891	559904	1485
Spain, Barcelona	1797952	13941	264286	871	272812	677	1043170	7027	404584	1174	434797	849
Italy, Turin	1050104	8665	215140	785	84622	262	595399	4689	254662	791	124908	331
Slovenia	1725409	22372	394192	2368	178632	616	1101551	23038	1063572	8431	358818	1707
Lithuania	1230942	11417	862164	3214	274248	807	407801	6096	1993197	10379	648590	2106

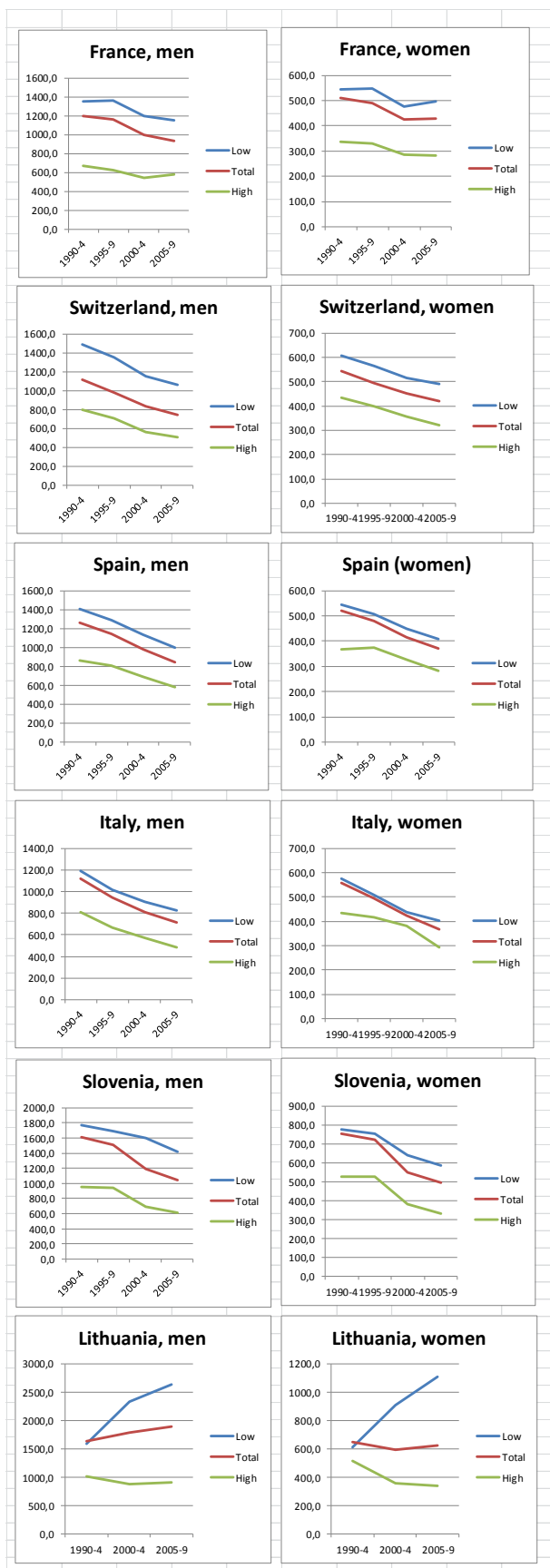
Note: In England & Wales, the 'low' educated group contains both the 'low' educated (ISCED 0-2) and the 'mid' educated (ISCED 3-4).

Table A3. ICD code numbers

	ICD-10	ICD-9	ICD-8
Cardiovascular disease	I00–I99	390–459	390–458
Cancer	C00–D48	140–239	140–239
Other diseases	Rest (A00–R99)	Rest (001–799)	Rest (000–796)
External causes	Rest (V01–Y98)	Rest (E800–E999)	Rest (E800–E999)
Ischemic heart disease	I20–I25	410–414	410–414
Smoking-related causes ^a	C32–C34, J40–J44, J47	161, 162, 490–492, 494, 496	161, 162, 490–492, 518
Alcohol-related causes ^b	F10, I42.6, K70, X45	291, 303, 305.0, 425.5, 571.0–571.3, E860	291, 303, 425, 571.0, E860
Road traffic accidents ^c	V01–V89, Y85	E800–E829	E800–E827
Causes amenable to medical interventions ^d	A00–B99, C18–C21, C53, C62, C81, C91–C95, I00–I09, I10–I15, I26–I42.5, I42.7–I49, I51–I52, I60–I69, I98, J10–J18, J45–J46, K25–K28, K35–K38, K40–K46, K56, K80–K83, N40, O00–O99, Q20–Q24, P00–P96	001–139, 153–154, 180, 186, 201, 204–208, 390–398, 401–405, 415–417, 420–425.4, 425.6–427, 429–438, 480–487, 493, 531–534, 540–543, 550–553, 560, 574–576, 600, 630–677, 745–746, 760–779	000–136, 153–154, 180, 186, 201, 204–207, 390–398, 400–404, 420–424, 426, 427.2–438, 470–474, 480–483, 485–486, 493, 531–534, 540–543, 550–553, 560, 574–576, 600, 630–678, 746, 760–779
^a Norway: smoking-related causes based only C33–C34 (ICD-10); 162 (ICD-9); 162 (ICD-8)			
Lithuania: smoking-related causes differ for ICD-9 – 161, 162, 490–492, 494–496			
^b Lithuania: alcohol-related causes missing the following codes I42.6 (ICD-10); 305.0, 425.5 (ICD-9); 425 (ICD-8)			
^c Lithuania: road traffic accidents were combined with other traffic accidents – V01–V99, Y85 (ICD-10); E800–E848 (ICD-9); E800–E845 (ICD-8)			
^d Switzerland: amenable causes missing the following codes C18–C21 (ICD-10); 153–154 (ICD-9); 153–154 (ICD-8)			
Norway: amenable causes based only on A00–B99, C18–C21, C53, C91–C95, J10–J18, I10–I15, I26–I49, I51–I52, I60–I69, I98, K25–K28, N40 (ICD-10); 001–139, 153–154, 180, 204–208, 401–405, 415–417, 420–427, 429–438, 480–487, 531–534, 600 (ICD-9); 000–136, 153–154, 180, 204–207, 400–404, 420–426, 427.2–438, 470–474, 480–483, 485–486, 531–534, 600 (ICD-8)			
Lithuania: amenable causes based only on A00–B19, B25–B99, C18–C21, C53, I00–I09, I10–I15, I26–I42.5, I42.7–I49, I51–I52, I60–I69, J10–J18, J45–J46, N40, O00–O99 (ICD-10); 001–041, 045–139, 153–154, 180, 390–398, 401–405, 423.9, 424.0, 424.1, 424.3, 415–422, 423.0–423.8, 424.2, 424.4–424.9, 425–438, 480–487, 493, 600, 630–677 (ICD-9); 001–136, 153–154, 180, 390–398, 400–404, 420–424, 426–426.9, 427.2–438, 470–474, 480–483, 485–486, 493, 600, 630–678 (ICD-8)			

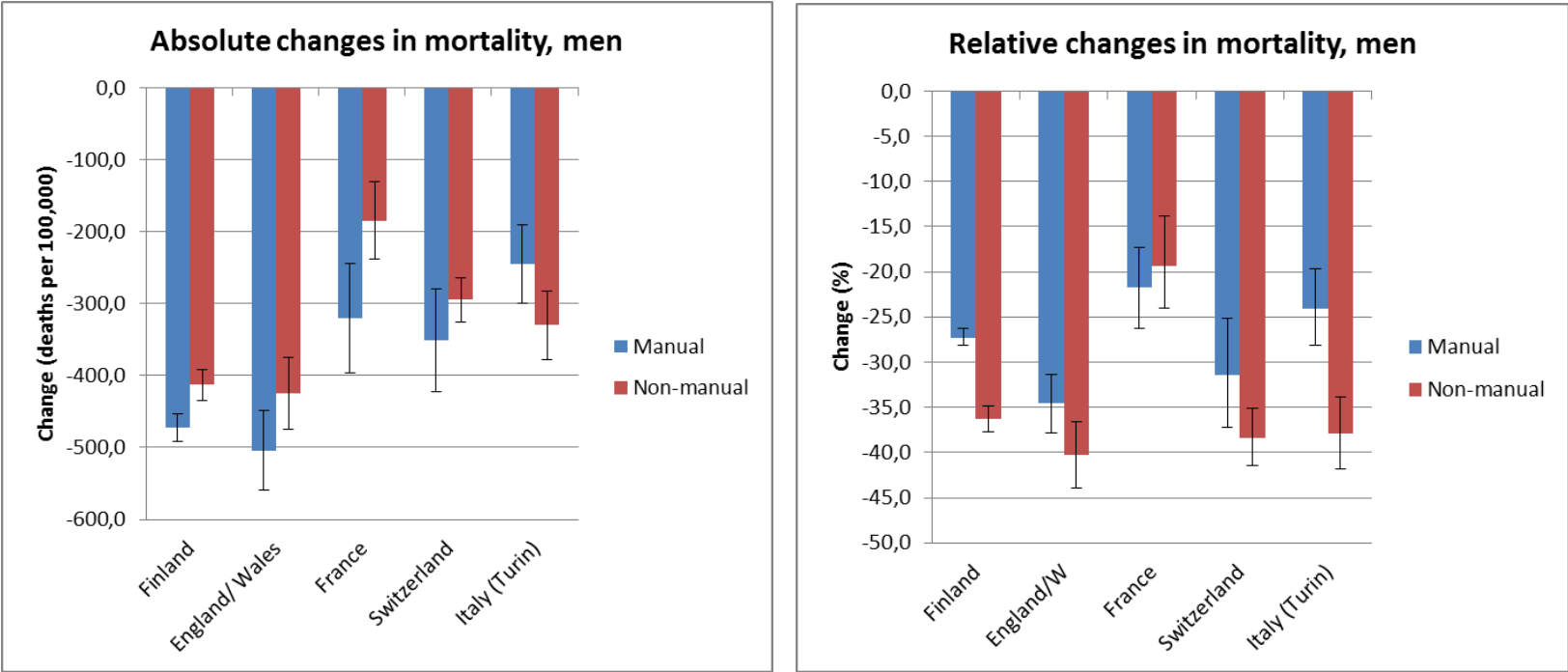
Figure A1. Trends in all-cause mortality by education, country and sex





Note: Age-standardised mortality rates per 100,000 person-years. In England & Wales, the 'low' educated group contains both the 'low' educated (ISCED 0-2) and the 'mid' educated (ISCED 3-4).

Figure A2. Absolute and relative changes in mortality among manual and non-manual men, ca. 1990-94 vs. ca. 2005-09, by country



Note: All data age-standardised.

Table A4. Relative Indices of Inequality and Slope Indices of Inequality of all-cause mortality by education, by country and sex, ca. 1990-4 and ca. 2005-9

a. Men

	Absolute inequalities					Relative inequalities				
	1990–1994		2005–2009		Change	1990–1994		2005–2009		Change
	SII	95%-CI	SII	95%-CI		p-value	RII	95%-CI	RII	
Finland	1098	1059 1136	880	856 905	<0,001	2,2	2,1 2,2	2,5	2,5 2,6	<0,001
Sweden	654	627 680	526	507 544	<0,001	1,8	1,8 1,9	2,0	2,0 2,1	<0,001
Norway	866	831 905	831	795 864	0,167	1,9	1,8 1,9	2,6	2,5 2,7	<0,001
Scotland	1634	1353 1890	591	427 749	<0,001	3,3	2,6 4,2	1,8	1,5 2,1	<0,001
England/Wales	NA	NA NA	647	549 738	NA	NA	NA NA	2,3	2,0 2,7	NA
France	932	815 1056	718	621 802	0,005	2,3	2,0 2,5	2,2	2,0 2,5	0,579
Switzerland	788	760 817	642	615 667	<0,001	2,1	2,0 2,1	2,5	2,4 2,6	<0,001
Spain (Barcelona)	956	893 1023	618	565 669	<0,001	2,2	2,1 2,4	2,2	2,0 2,3	>0,999
Italy (Turin)	613	526 699	501	436 567	0,043	1,8	1,6 1,9	2,1	1,9 2,3	0,019
Slovenia	1412	1690 1876	824	1598 1731	<0,001	2,6	2,4 2,7	2,3	2,2 2,4	0,001
Lithuania	1112	1045 1182	2021	1967 2076	<0,001	1,9	1,8 2,0	3,3	3,2 3,4	<0,001

b. Women

	Absolute inequalities					Relative inequalities				
	1990–1994		2005–2009		Change	1990–1994		2005–2009		Change
	SII	95%-CI	SII	95%-CI		p-value	RII	95%-CI	RII	
Finland	391	364 418	357	340 374	0,036	1,8	1,7 1,9	2,2	2,1 2,3	<0,001
Sweden	368	349 389	343	329 358	0,046	1,9	1,8 1,9	2,1	2,0 2,2	0,001
Norway	420	391 449	506	479 535	<0,001	1,8	1,7 1,9	2,6	2,4 2,7	<0,001
Scotland	601	377 830	317	177 461	0,037	2,0	1,5 2,6	1,6	1,3 2,0	0,229
England/Wales	NA	NA NA	401	333 482	NA	NA	NA NA	2,1	1,8 2,4	NA
France	336	246 423	301	238 367	0,537	2,0	1,6 2,4	2,1	1,7 2,5	0,729
Switzerland	259	241 279	227	207 247	0,023	1,6	1,6 1,7	1,7	1,7 1,8	0,006
Spain (Barcelona)	350	301 399	190	157 225	<0,001	2,0	1,8 2,2	1,7	1,5 1,9	0,038
Italy (Turin)	257	188 322	178	129 223	0,057	1,6	1,4 1,8	1,6	1,4 1,9	>0,999
Slovenia	449	529 679	296	645 751	0,001	1,9	1,7 2,0	1,9	1,8 1,9	>0,999
Lithuania	307	264 350	708	679 735	<0,001	1,5	1,4 1,5	3,6	3,4 3,9	<0,001

Note: In **bold**: change between 1990-94 and 2005-09 statistically significant ($p < 0.05$). The Relative Index of Inequality (RII) can be interpreted as the rate ratio of mortality between those with the lowest and those with the highest socioeconomic position in the population, and was calculated using Poisson regression with educational or occupational rank as an independent variable, controlling for age as a dummy variable (in 5-year age groups). Educational or occupational rank was calculated as the proportion of the population with a higher educational or occupational position. The SII was calculated as follows: $SII = 2 * ASMR * (RII - 1) / (RII + 1)$, in which ASMR is the age-standardised mortality in the whole population. The SII can be interpreted as the rate difference (in deaths per 100,000 person-years) between those with the lowest and those with the highest socioeconomic position in the population. The RII and SII take into account the size of socioeconomic groups, and adjust the relative position of each group to its share in the population, which increases comparability over time and between countries if there are substantial differences in distribution of the population over socioeconomic groups. 95% Confidence Intervals were calculated using bootstrapping of 1000 replicas. RIIs and SIIs not available for England & Wales in 1990-94 because only two educational levels could be distinguished in the 1991 census.

Web table A5. Differences between low and high educated in all-cause and cause-specific mortality change between ca. 1990-94 and ca. 2004-9, by country and sex

a. Men

	MEN									
	Difference in mortality change between low and high educated									
	All-cause	Cardio-vascular disease	Cancer	Other diseases	External causes	Ischaemic heart disease	Road traffic	Smoking-related	Alcohol-related	Amenable causes
Finland	10	-55	3	53	9	-60	0	-25	51	-17
Sweden	-33	-76	14	13	16	-66	3	10	-1	-11
Norway	-23	-131	39	53	17	-115	4	18	-4	-5
Scotland	-179	-133	-73	14	13	-111	-	-49	4	1
England&Wales	-176	-109	-80	12	1	-88	7	-44	9	-36
France	-104	-64	-23	-2	-14	-8	-4	-7	-11	-47
Switzerland	-131	-52	-23	-24	-32	-17	-9	-33	-12	-52
Spain (Barcelona)	-140	-24	-60	-56	0	-5	-7	-31	-1	-44
Italy (Turin)	-43	-21	-10	-8	-5	-7	0	-9	2	-4
Slovenia	-9	-19	26	-20	-	34	-	-52	65	-16
Lithuania	1153	409	101	300	281	210	-	44	130	248

b. Women

	WOMEN									
	Difference in mortality change between low and high educated									
	All-cause	Cardio-vascular disease	Cancer	Other diseases	External causes	Ischaemic heart disease	Road traffic	Smoking-related	Alcohol-related	Amenable causes
Finland	46	-51	20	47	29	-41	1	18	27	-15
Sweden	19	-39	28	21	8	-30	0	29	3	-15
Norway	64	-66	46	64	20	-44	5	37	3	-19
Scotland	-28	15	-3	-49	8	-28	-	-29	2	-7
England&Wales	-60	-58	0	-21	19	-60	3	-21	0	-18
France	7	-14	2	8	10	0	13	22	10	-3
Switzerland	0	-37	22	12	2	-19	-1	25	3	-22
Spain (Barcelona)	-52	-33	1	-16	-3	-12	-3	-2	1	-24
Italy (Turin)	-33	-41	14	-12	7	-11	2	10	-1	-40
Slovenia	3	-83	56	39	-	-24	-	18	14	-79
Lithuania	672	218	145	188	109	88	-	21	59	189

Note: Difference in mortality change between low and high educated (in deaths per 100,000) calculated as $(ASMR_{2004-9, low} - ASMR_{1990-4, low}) - (ASMR_{2004-9, high} - ASMR_{1990-4, high})$. All data age-standardised. In **bold**: change between 1990-94 and 2005-09 statistically significant ($p < 0.05$). External causes data not available for Slovenia; road traffic accident data not available for Scotland, Slovenia and Lithuania.

Table A6. Rate Ratios and Rate Differences of all-cause mortality, manual versus non-manual men, by country, ca. 1990-4 and ca. 2005-9

	Absolute inequalities						Relative inequalities					
	1990-94		2005-09		Change	1990-94		2005-09		Change		
	RD	95%-CI	RD	95%-CI		RR	95%-CI	RR	95%-CI			
Finland	593,9	569,4 617,3	534,0	518,8 550,2	0,000	1,5	1,5 1,5	1,7	1,7 1,8	0,000		
England/Wales	399,7	344,0 452,8	320,9	273,2 375,5	0,039	1,4	1,3 1,4	1,5	1,4 1,6	0,080		
France	522,5	453,3 593,1	387,0	323,1 452,3	0,005	1,5	1,5 1,6	1,5	1,4 1,6	1,000		
Switzerland	347,2	298,8 396,6	291,0	232,5 350,7	0,151	1,5	1,4 1,5	1,6	1,5 1,8	0,215		
Italy (T)	143,2	79,9 203,6	228,1	193,3 265,0	0,020	1,2	1,1 1,2	1,4	1,3 1,5	0,001		

Note: RD = Rate Difference comparing the manual to non-manual men, in deaths per 100,000. RR = Rate Ratio comparing manual to manual men. All data age-standardised. In **bold**: change between 1990-94 and 2005-09 statistically significant ($p < 0.05$).

1 **Table A7. Differences between manual and non-manual men in all-cause and cause-specific mortality change between ca. 1990-94 and ca.**
 2 **2004-9, by country**

	Difference in mortality between manual and non-manual class									
	All causes	Cardio-vascular diseases	Cancer	Other causes	External causes	Smoking-related	Alcohol-related	Amenable causes	Ischemic heart disease	Road traffic accidents
MEN										
Finland	-60	-4	-4	19	-30	-30	34	-21	-46	-2
England & Wales	-79	-57	-56	30	4	-43	13	-15	-50	5
France	-136	-44	-22	-55	-14	-2	-11	-65	-	-
Switzerland	-56	-31	0	-5	-20	-54	-11	-21	-8	-6
Italy (Turin)	85	74	-3	7	7	2	0	39	42	10

3
 4
 5 Note: Difference in mortality change between manual and non-manual men (in deaths per 100,000) calculated as $(ASMR_{2004-9, \text{manual}} - ASMR_{1990-4, \text{manual}}) - (ASMR_{2004-9, \text{non-manual}} - ASMR_{1990-4, \text{non-manual}})$. All data age-standardised. In **bold**: change between 1990-94 and 2005-09 statistically significant ($p < 0.05$).