Table A1. ICD codes of causes of death selected for the analysis

Causes of death	ICD-9 codes	ICD-10 codes
Ischemic heart disease	410–414	I20–I25
Cerebrovascular disease	430–438	I60–I69
Lung cancer	162 [1]	C33–C34 [1]
Liver cirrhosis [2]	571.0–571.3, 577.0–577.1 [3]	K70, K85–K86.0 [3]
Road traffic accidents	E800–E829 [4]	V01–V89, Y85 [4]
Cardiovascular diseases	390–459	I00–I99
Cancers	140–239	C00–D48
Other diseases	Rest (001–799)	Rest (A00–R99)
External causes	E800–E999	V01–Y98

[1] 162–163, 165 (ICD-9) and C33–C34, C39 (ICD-10) in most studies in the 1990s

[2] Alcoholic cirrhosis of liver and pancreas

[3] Not available for Estonia and Lithuania

[4] In Barcelona, England, Estonia and Lithuania, road traffic accidents were combined with other traffic accidents coded as E800–E848 (ICD-9) and V01–V99, Y85 (ICD-10)

Table A2. Data design and length of follow-up of Eurothine and EURO-GBD-SE datasets, with a note on the method of adjustment for age at baseline

1990s			2000s		
Country	**Design**	**Follow-up (years)**	**Country**	**Design**	**Follow-up (years)**
Finland	age at baseline	10	Finland	age at death	7
Sweden	age at baseline	10	Sweden	age at baseline	6
Norway	age at baseline	10	Norway	age at baseline	5
Denmark	age at baseline	5	Denmark	age at baseline	5
England &W	age at baseline	5.5	England &W	age at death	5
Belgium	age at baseline	5	Belgium	age at baseline	2
France	age at baseline	10	France	age at death	6
Switzerland	age at baseline	10	Switzerland	age at baseline	5
Barcelona	CS linked	7	Barcelona	CS linked	7
Basque C	age at death	5	Basque C	age at death	5
Madrid	CS linked	1.5	Madrid	CS linked	1.5
Turin	age at baseline	10	Turin	age at death	5
Hungary	CS unlinked	4	Hungary	CS unlinked	4
Lithuania	CS unlinked	3	Lithuania	CS unlinked	3
Estonia	CS unlinked	5	Estonia	CS unlinked	5

Note: In longitudinal studies with classification by age at baseline, people are not allowed to move into the next age category as they grow older, and therefore age-specific mortality estimates obtained in these studies will be upwardly biased as compared to studies with classification by age at death. This upward bias will be larger with longer follow-up periods (and is generally absent in cross-sectional (CS) linked or unlinked studies). For longitudinal studies with classification by age at baseline we therefore developed an adjustment method based on the proportion of person years spent outside the correct age interval and the observed increase of the death rate by age. This method was validated with 2000s mortality data for three countries that could provide both data classified by age at baseline and age at death (Finland, France, and Sweden), and was found to work satisfactorily (27). As we did not have 1990s mortality data classified both by age at baseline and age at death, we could not directly validate this method for this time-period in which length of follow-up was generally larger. We were, however, able to compare our adjusted results with data from the Human Mortality Database (http://www.mortality.org/), and again found the method to work well, although the upward bias could not completely be removed for countries with long follow-up periods. We therefore restrict analyses of changes in absolute levels of mortality between the 1990s and 2000s to within-country comparisons of low and high educated, which are unlikely to be substantially biased, because the upward bias will have roughly the same effects on the low and high educated within a single country.

Table A3. Age-standardized mortality rates (per 100 000 person-years), by country, educational group, time-period and sex

	Country	Education	MEN				WOMEN			
			1990s		2000s		1990s		2000s	
			ASMR	95%-CI	ASMR	95%-CI	ASMR	95%-CI	ASMR	95%-CI
North	Finland	low	1438	(1428–1447)	1076	(1065–1086)	613	(608–618)	490	(483–496)
		mid	1158	(1143–1173)	808	(796–819)	471	(463–480)	340	(333–347)
		high	798	(784–812)	511	(501–522)	399	(389–409)	260	(253–267)
	Sweden	low	944	(938–949)	754	(747–761)	531	(527–534)	469	(464–474)
		mid	745	(739–751)	573	(566–579)	409	(405–414)	344	(340–349)
		high	537	(528–546)	396	(388–404)	285	(279–291)	246	(240–252)
	Norway	low	1254	(1243–1265)	888	(873–903)	630	(624–636)	503	(493–513)
		mid	939	(930–948)	595	(586–605)	458	(452–464)	333	(327–340)
		high	676	(662–689)	381	(369–392)	359	(347–370)	241	(231–251)
	Denmark	low	1142	(1130–1154)	1040	(1028–1052)	708	(700–715)	654	(646–662)
		mid	940	(928–953)	793	(782–803)	540	(529–551)	472	(463–481)
		high	657	(642–673)	534	(521–547)	443	(430–457)	362	(351–373)
West	England & Wales	low *	947	(924–971)	728	(707–748)	552	(536–568)	468	(453–484)
		high	583	(536–631)	472	(434–510)	357	(314–401)	307	(276–338)
	Belgium	low	1035	(1028–1042)	846	(836–855)	485	(481–490)	424	(418–430)
		mid	799	(786–812)	633	(618–648)	382	(372–391)	336	(325–347)
		high	628	(615–642)	461	(448–474)	353	(342–364)	274	(263–284)
	France	low	1099	(1074–1124)	939	(908–971)	413	(400–425)	369	(353–385)
		mid	803	(771–835)	671	(642–700)	303	(281–325)	280	(259–300)
		high	509	(466–552)	412	(374–451)	251	(216–285)	220	(190–251)
	Switzerland	low	1283	(1271–1295)	834	(819–850)	505	(501–510)	365	(358–371)
		mid	895	(887–902)	549	(542–557)	390	(385–395)	259	(244–274)
		high	647	(637–656)	368	(359–376)	352	(339–365)	235	(224–246)
South	Barcelona	low	889	(877–902)	777	(765–789)	327	(321–333)	303	(297–309)
		mid	707	(684–730)	576	(556–596)	266	(250–281)	239	(225–252)
		high	546	(526–567)	485	(469–501)	241	(224–257)	221	(209–233)
	Basque	low	824	(812–836)	759	(747–770)	302	(296–309)	285	(279–292)
		mid	691	(663–718)	597	(575–619)	270	(249–291)	253	(235–270)
		high	587	(558–615)	525	(503–548)	252	(230–274)	232	(215–249)
	Madrid	low	979	(962–996)	861	(846–876)	371	(362–379)	326	(319–334)
		mid	866	(828–903)	721	(693–750)	324	(300–348)	313	(293–332)
		high	661	(631–692)	576	(552–600)	287	(262–313)	257	(238–276)
	Turin	low	1089	(1073–1105)	678	(662–695)	516	(507–525)	322	(312–332)
		mid	836	(806–866)	472	(448–496)	442	(419–464)	293	(273–313)
		high	705	(668–742)	404	(373–434)	397	(361–432)	270	(241–299)
East	Hungary	low	2426	(2414–2438)	2424	(2411–2437)	949	(943–955)	872	(866–878)
		mid	1515	(1494–1535)	1128	(1117–1139)	868	(852–884)	525	(517–533)
		high	1039	(1020–1059)	728	(714–741)	598	(578–618)	461	(447–474)
	Lithuania **	low	1622	(1599–1644)	2315	(2281–2350)	640	(628–651)	924	(903–945)
		mid	1233	(1205–1260)	1367	(1344–1389)	488	(472–504)	444	(432–455)
		high	787	(749–824)	678	(651–705)	401	(374–427)	274	(259–289)
	Estonia	low	2014	(1985–2044)	2567	(2528–2606)	831	(816–846)	1053	(1031–1075)
		mid	1621	(1584–1658)	1904	(1871–1936)	722	(702–742)	694	(678–710)
		high	1200	(1150–1249)	931	(895–968)	554	(521–586)	395	(375–416)
	* low and mid educated combined									
	** age 30–69 years									
	ASMR = age-standardized mortality rate; 95%-CI = 95% confidence interval									

Table A4. Sensitivity analysis: effect of combining low and mid educated in one group. Rate Ratios of mid-low versus high educated, 1990s and 2000s.

	Relative risks									
			MEN				WOMEN			
	Country	Education	1990s		2000s		1990s		2000s	
			RR	95%-CI	RR	95%-CI	RR	95%-CI	RR	95%-CI
North	Finland	low-mid	1.87	(1.83–1.90)	1.89	(1.85–1.93)	1.49	(1.45–1.53)	**1.62**	(1.57–1.67)
		high	1		1		1		1	
	Sweden	low-mid	1.63	(1.60–1.66)	1.68	(1.64–1.72)	1.71	(1.67–1.75)	1.63	(1.59–1.67)
		high	1		1		1		1	
	Norway	low-mid	1.64	(1.61–1.68)	**1.87**	(1.81–1.93)	1.54	(1.49–1.59)	**1.68**	(1.61–1.76)
		high	1		1		1		1	
	Denmark	low-mid	1.63	(1.59–1.68)	**1.76**	(1.72–1.81)	1.5	(1.45–1.55)	**1.65**	(1.60–1.70)
		high	1		1		1		1	
West	England &W	low-mid	1.65	(1.51–1.80)	1.55	(1.43–1.69)	1.55	(1.36–1.75)	1.52	(1.36–1.69)
		high	1		1		1		1	
	Belgium	low-mid	1.61	(1.57–1.65)	**1.74**	(1.69–1.79)	1.34	(1.30–1.39)	**1.48**	(1.42–1.55)
		high	1		1		1		1	
	Switzerland	low-mid	1.59	(1.56–1.61)	**1.7**	(1.66–1.74)	1.27	(1.23–1.32)	1.28	(1.22–1.35)
		high	1		1		1		1	
South	Barcelona	low-mid	1.57	(1.50–1.63)	1.5	(1.45–1.56)	1.39	(1.29–1.49)	1.34	(1.26–1.42)
		high	1		1		1		1	
	Basque	low-mid	1.44	(1.36–1.51)	1.43	(1.37–1.50)	1.23	(1.12–1.35)	1.35	(1.24–1.46)
		high	1		1		1		1	
	Madrid	low-mid	1.5	(1.43–1.58)	1.5	(1.43–1.57)	1.34	(1.22–1.47)	1.28	(1.18–1.39)
		high	1		1		1		1	
	Turin	low-mid	1.51	(1.43–1.59)	1.53	(1.41–1.66)	1.25	(1.14–1.37)	1.19	(1.07–1.33)
		high	1		1		1		1	
East	Hungary	low-mid	2,00	(1.96–2.04)	**2.51**	(2.47–2.56)	1.58	(1.53–1.64)	**1.79**	(1.73–1.84)
		high	1		1		1		1	
	Lithuania *	low-mid	2,00	(1.90–2.10)	**2.42**	(2.33–2.53)	1.47	(1.37–1.58)	**1.99**	(1.87–2.11)
		high	1		1		1		1	
	Estonia	low-mid	1.68	(1.61–1.75)	**2.31**	(2.22–2.41)	1.44	(1.36–1.54)	**1.99**	(1.88–2.10)
		high	1		1		1		1	
	In **bold**: no overlap in 95% CI of RR between 2000s and 1990s									
	* 30–69 years									