

Supplementary appendix

Supplement to: Baum P, et al. Trends in age- and sex-specific lung cancer mortality in Europe and Northern America:

Analysis of vital registration data from the WHO Mortality Database between 2000 and 2017.

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Figure S1: Average annual lung cancer mortality (×100 000 population) in Northern America, the EU, and the EFTA, overall and by country, males, years 2015/17.

Subregion/ Country	Annual deaths	Pop. (millions)	Crude rate (95% CI)	Age-specific rates																	Age-std. rate (95% CI)	
				0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84		≥85
Northern America	91 624	177.8	51.5 (51.3-51.7)	0.0	0.0	0.0	0.0	0.1	0.2	0.5	1.2	3.4	9.6	28.0	64.3	109.3	171.5	262.5	340.4	406.3	422.9	70.5 (70.2-70.8)
Canada	10 586	18.0	58.7 (58.0-59.3)	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.8	2.5	6.7	20.8	52.5	104.4	170.9	269.9	380.1	476.9	518.3	74.7 (73.8-75.5)
United States	81 038	159.8	50.7 (50.5-50.9)	0.0	0.0	0.0	0.0	0.1	0.2	0.5	1.3	3.5	9.9	28.9	65.7	109.9	171.6	261.5	335.5	397.0	411.1	70.0 (69.7-70.3)
Eastern Europe	35 567	41.4	85.9 (85.4-86.5)	0.0	0.0	0.0	0.1	0.1	0.3	0.7	2.2	6.5	24.0	62.1	143.4	244.3	342.9	393.6	438.9	409.3	297.9	104.5 (103.9-105.2)
Bulgaria	2656	3.5	76.4 (74.7-78.1)	0.0	0.0	0.2	0.2	0.2	0.4	1.2	4.4	9.4	31.2	70.2	142.5	215.9	285.3	280.9	276.0	197.4	115.6	79.2 (77.4-81.0)
Czechia	3598	5.2	68.9 (67.6-70.2)	0.0	0.1	0.0	0.1	0.1	0.2	0.2	1.3	3.7	11.0	29.2	68.2	161.2	264.9	353.1	378.8	388.8	326.6	82.4 (80.8-84.0)
Hungary	5413	4.6	116.8 (115.0-118.6)	0.0	0.0	0.0	0.0	0.0	0.2	1.3	2.5	8.0	32.9	96.9	220.0	344.1	463.9	513.8	524.4	491.3	385.8	139.2 (137.0-141.4)
Poland	15 971	18.4	86.7 (85.9-87.5)	0.0	0.0	0.0	0.0	0.0	0.1	0.6	1.4	3.9	16.3	53.3	127.9	240.7	362.6	429.9	527.6	535.0	382.3	113.6 (112.5-114.6)
Romania	7928	9.6	82.3 (81.2-83.3)	0.0	0.1	0.1	0.2	0.3	0.7	0.9	3.5	10.9	35.0	78.7	179.7	254.9	319.8	346.3	359.5	274.4	177.2	96.8 (95.6-98.1)
Northern Europe	27 947	48.8	57.2 (56.9-57.6)	0.0	0.0	0.0	0.0	0.1	0.2	0.4	1.0	3.7	9.3	23.1	49.7	102.7	163.0	242.1	335.1	402.9	433.3	67.3 (66.8-67.7)
Denmark	1892	2.8	66.6 (64.9-68.4)	0.0	0.0	0.0	0.0	0.0	0.4	0.2	1.0	2.5	8.4	23.9	60.2	117.6	168.9	286.5	383.2	483.6	501.4	76.9 (74.9-79.0)
Estonia	484	0.6	78.3 (74.3-82.5)	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.7	0.7	2.8	12.8	32.1	85.9	186.4	317.2	411.2	510.2	519.5	103.7 (98.3-109.3)
Finland	1478	2.7	54.6 (53.0-56.3)	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.9	1.8	4.8	18.0	43.6	91.2	154.4	227.9	309.5	335.3	59.9 (58.1-61.7)
Iceland	62	0.2	37.2 (32.0-42.9)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	6.2	0.0	25.2	50.7	64.9	115.1	243.8	225.7	276.3	53.0 (45.5-61.2)
Latvia	730	0.9	80.6 (77.2-84.0)	0.0	0.0	0.0	0.0	0.0	0.5	0.5	2.1	3.0	16.9	44.7	110.8	214.4	315.9	419.5	468.2	459.4	324.0	101.4 (97.1-105.8)
Lithuania	1028	1.3	77.2 (74.5-80.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.7	2.3	7.1	20.0	52.4	120.5	215.0	300.3	386.7	394.2	402.9	336.7	96.6 (93.1-100.1)
Norway	1179	2.6	44.6 (43.1-46.1)	0.2	0.0	0.0	0.0	0.0	0.0	0.7	0.4	1.6	3.9	18.3	36.9	88.3	146.0	223.8	295.2	349.5	378.2	58.5 (56.6-60.5)
Sweden	1845	4.9	37.5 (36.5-38.5)	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.5	1.3	3.8	10.1	23.6	56.7	96.3	163.8	220.7	283.6	246.7	41.6 (40.5-42.7)
United Kingdom	19 250	32.7	58.9 (58.4-59.4)	0.0	0.0	0.0	0.0	0.0	0.2	0.4	1.1	4.4	10.4	23.5	48.0	101.0	165.6	242.5	345.4	420.2	469.6	69.1 (68.6-69.7)
Southern Europe	53 569	66.1	81.0 (80.6-81.4)	0.0	0.0	0.0	0.0	0.1	0.2	0.6	1.6	4.9	15.0	37.8	84.4	150.4	231.4	307.3	382.2	452.6	448.5	84.6 (84.2-85.0)
Cyprus	209	0.4	50.4 (46.6-54.5)	0.0	0.0	0.0	0.0	0.0	0.9	0.0	1.1	2.6	15.7	16.3	44.9	133.4	192.0	284.3	305.3	342.1	229.9	64.7 (59.7-70.1)
Croatia	2112	2.0	104.3 (101.8-106.9)	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.9	2.9	5.8	25.4	67.2	151.3	276.5	363.2	403.4	455.2	513.9	114.9 (112.0-117.8)
Greece	5707	5.2	109.5 (107.9-111.2)	0.1	0.0	0.0	0.1	0.4	0.2	0.4	1.8	6.7	19.0	48.4	125.8	232.0	345.5	439.7	490.6	508.6	423.0	111.3 (109.7-113.0)
Italy	24 105	29.4	81.9 (81.3-82.5)	0.0	0.0	0.0	0.0	0.1	0.2	0.6	1.6	4.3	11.6	26.5	58.0	114.7	199.1	298.6	391.0	486.3	531.8	80.6 (80.0-81.2)
Malta	137	0.2	62.9 (57.0-69.3)	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0	2.1	2.2	0.0	40.5	65.5	128.1	148.6	243.4	349.2	493.8	74.3 (67.0-82.1)
Portugal	3133	4.9	64.1 (62.8-65.4)	0.0	0.0	0.0	0.0	0.0	0.7	1.1	2.5	7.1	18.4	49.0	95.9	139.0	192.8	218.0	257.3	258.4	278.9	65.3 (64.0-66.7)
Slovenia	807	1.0	78.3 (75.2-81.5)	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.4	2.1	12.9	52.1	112.3	180.6	288.3	289.1	364.8	431.0	89.7 (86.0-93.4)
Spain	17 359	22.9	75.8 (75.2-76.5)	0.0	0.0	0.0	0.0	0.1	0.2	0.4	1.4	5.0	17.4	45.8	100.8	169.1	248.5	305.3	363.1	429.6	381.0	85.4 (84.7-86.1)
Western Europe	66 668	94.6	70.5 (70.2-70.8)	0.0	0.0	0.0	0.0	0.1	0.2	0.6	2.3	6.5	16.5	39.2	87.5	152.4	210.5	259.5	320.9	362.7	372.5	75.2 (74.9-75.5)
Austria	2403	4.3	56.0 (54.7-57.3)	0.0	0.0	0.0	0.0	0.0	0.5	0.2	1.3	4.0	9.7	29.1	68.5	134.0	198.8	235.3	264.3	276.9	292.9	63.1 (61.7-64.6)
Belgium	4316	5.6	77.2 (75.9-78.6)	0.0	0.0	0.0	0.0	0.0	0.2	0.4	2.6	6.2	13.2	40.3	79.5	161.0	236.7	320.6	440.6	474.0	486.1	89.8 (88.2-91.3)
France	22 499	31.3	71.8 (71.3-72.4)	0.1	0.0	0.0	0.0	0.1	0.4	0.9	3.6	9.8	25.6	53.1	116.8	182.2	224.9	258.6	300.9	346.9	339.4	79.7 (79.1-80.3)
Germany	29 107	40.5	71.9 (71.4-72.4)	0.0	0.0	0.0	0.0	0.1	0.1	0.4	1.5	4.5	13.0	34.8	79.3	141.9	207.9	252.0	315.3	339.8	361.7	71.6 (71.2-72.1)
Luxembourg	149	0.3	51.0 (46.4-56.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.3	9.4	36.7	56.3	151.4	187.4	266.6	367.2	351.5	405.3	73.5 (66.7-80.8)
Netherlands	6190	8.4	73.3 (72.2-74.4)	0.0	0.1	0.0	0.0	0.0	0.0	0.6	2.0	6.5	13.7	29.8	63.9	124.4	190.9	303.1	415.7	560.1	616.2	86.9 (85.6-88.2)
Switzerland	2004	4.1	48.3 (47.1-49.5)	0.0	0.0	0.0	0.0	0.1	0.0	0.1	1.9	4.0	8.5	23.8	53.0	96.8	139.8	210.2	258.2	325.2	300.9	56.1 (54.7-57.5)
All populations	275 376	428.7	64.2 (64.1-64.4)	0.0	0.0	0.0	0.0	0.1	0.2	0.5	1.6	4.7	13.5	34.6	78.9	139.3	206.2	278.2	350.5	404.1	408.3	76.9 (76.7-77.0)

Notes: Displayed in the first columns are the average annual numbers of deaths from lung cancer and inhabitants in each country between 2015 and 2017. Countries are listed in geographical order from Northern America to Western Europe. Age-specific and age-standardised rates are coloured from lowest to highest using a decile scale. 2017 data for Norway, the United Kingdom, Belgium and France were imputed with forecasts obtained from autoregressive Poisson regression analysis. Estimates for total and subregional populations were obtained by pooling age-specific deaths and populations of each country over the three-year period.

Abbreviations: EU, European Union; EFTA, European Free Trade Association; CI, confidence interval.

Figure S2: Average annual lung cancer mortality (×100 000 population) in Northern America, the EU, and the EFTA, overall and by country, females, years 2015/17.

Subregion/ Country	Annual deaths	Pop. (millions)	Crude rate (95% CI)	Age-specific rates																	Age-std. rate (95% CI)		
				0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84		≥85	
Northern America	77 959	181.5	42.9 (42.8-43.1)	0.0	0.0	0.0	0.0	0.1	0.1	0.4	1.0	3.1	9.2	25.2	52.0	76.7	117.7	182.3	236.5	272.0	248.9	48.7 (48.5-48.9)	
Canada	9518	18.3	51.9 (51.3-52.5)	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.6	0.9	2.6	7.6	24.7	56.1	94.9	138.9	212.4	267.5	300.9	276.1	55.2 (54.5-55.8)
United States	68 441	163.2	41.9 (41.8-42.1)	0.0	0.0	0.0	0.0	0.1	0.1	0.4	1.1	3.2	9.4	25.3	51.5	74.6	115.2	178.7	232.7	268.3	245.5	47.9 (47.7-48.1)	
Eastern Europe	15 836	43.9	36.1 (35.7-36.4)	0.0	0.0	0.0	0.0	0.1	0.1	0.5	1.5	3.8	11.0	26.5	54.4	88.4	113.6	119.2	112.5	112.3	99.0	34.0 (33.6-34.3)	
Bulgaria	725	3.7	19.7 (18.9-20.6)	0.0	0.0	0.0	0.0	0.2	0.3	1.0	1.7	5.5	11.2	19.7	33.3	40.5	51.1	46.8	56.8	48.0	46.6	17.2 (16.5-17.9)	
Czechia	1739	5.4	32.2 (31.3-33.1)	0.0	0.0	0.0	0.0	0.3	0.1	0.6	1.7	2.7	6.6	17.0	31.5	65.7	103.2	117.6	115.1	124.3	108.9	30.0 (29.2-30.8)	
Hungary	3386	5.1	66.2 (64.9-67.5)	0.2	0.0	0.0	0.0	0.1	0.1	0.3	1.6	5.6	22.3	59.6	113.4	162.4	189.8	194.8	182.5	192.4	161.9	60.0 (58.8-61.1)	
Poland	7645	19.6	39.1 (38.5-39.6)	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.9	2.5	9.0	25.4	58.2	103.0	137.9	139.8	128.3	116.3	101.2	37.9 (37.4-38.4)	
Romania	2341	10.2	23.0 (22.5-23.6)	0.1	0.1	0.1	0.0	0.1	0.2	0.6	2.3	5.2	11.0	19.9	35.6	48.3	59.8	73.0	73.8	86.3	71.7	21.9 (21.3-22.4)	
Northern Europe	22 559	50.3	44.9 (44.5-45.2)	0.0	0.0	0.0	0.1	0.1	0.1	0.4	1.0	2.9	7.5	18.5	40.0	73.3	118.3	171.4	204.6	234.7	224.3	43.8 (43.5-44.1)	
Denmark	1786	2.9	62.2 (60.6-63.9)	0.0	0.0	0.0	0.0	0.2	0.2	0.6	1.1	3.4	9.7	31.2	63.3	119.7	149.1	231.0	260.2	366.7	265.4	60.6 (59.0-62.3)	
Estonia	175	0.7	25.0 (22.9-27.2)	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.8	2.2	6.3	10.2	24.9	34.8	66.3	74.7	82.6	91.1	113.5	20.9 (19.1-22.8)	
Finland	773	2.8	27.7 (26.6-28.9)	0.0	0.0	0.0	0.2	0.2	0.0	0.4	0.2	1.1	3.9	9.1	24.1	48.6	68.6	100.7	103.5	108.5	115.4	24.0 (23.1-25.0)	
Iceland	70	0.2	42.5 (36.9-48.6)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	9.6	21.4	47.2	65.8	128.0	255.0	276.2	314.3	240.3	53.9 (46.8-61.7)	
Latvia	207	1.1	19.4 (17.9-21.0)	0.0	0.0	0.0	0.8	0.0	0.5	1.0	1.0	3.4	3.0	9.2	21.3	27.6	50.4	61.3	59.8	53.2	80.2	15.9 (14.6-17.2)	
Lithuania	259	1.6	16.6 (15.5-17.8)	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	3.6	2.9	13.5	16.7	26.0	45.7	45.1	44.8	70.2	61.2	14.0 (13.0-15.0)	
Norway	1016	2.6	39.0 (37.6-40.4)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	2.2	3.6	15.0	39.6	76.4	125.9	171.1	200.8	234.2	174.2	42.4 (40.9-43.9)	
Sweden	1856	4.9	37.8 (36.8-38.8)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.3	5.5	12.3	29.8	62.9	98.1	166.3	174.4	180.0	141.9	35.7 (34.8-36.7)	
United Kingdom	16 416	33.6	48.9 (48.4-49.3)	0.0	0.0	0.0	0.1	0.1	0.1	0.5	1.1	3.3	8.6	19.9	43.1	78.5	129.9	186.5	235.2	267.6	265.1	49.0 (48.5-49.4)	
Southern Europe	18 040	69.7	25.9 (25.7-26.1)	0.0	0.0	0.0	0.0	0.1	0.1	0.3	1.2	3.3	8.5	19.0	35.7	49.4	58.0	69.5	80.0	93.5	101.5	22.3 (22.2-22.5)	
Cyprus	56	0.4	12.9 (11.0-15.0)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.4	2.4	7.2	17.5	36.9	26.3	57.6	57.3	72.4	106.2	15.4 (13.2-17.9)	
Croatia	771	2.2	35.3 (33.9-36.8)	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.9	2.9	13.7	26.2	50.5	84.7	92.3	104.5	93.4	113.2	91.4	30.7 (29.5-32.0)	
Greece	1441	5.4	26.7 (25.9-27.5)	0.2	0.1	0.0	0.0	0.0	0.4	0.6	1.0	2.8	8.9	19.9	33.6	51.2	67.5	81.9	79.4	94.0	94.3	23.3 (22.6-24.1)	
Italy	9762	31.2	31.3 (30.9-31.7)	0.0	0.0	0.0	0.0	0.1	0.2	0.4	1.2	3.1	7.0	16.6	33.3	49.1	65.1	84.9	99.2	120.0	129.6	25.2 (24.9-25.5)	
Malta	47	0.2	21.8 (18.3-25.6)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.4	24.4	30.4	50.9	61.1	62.8	68.5	102.0	53.6	20.4 (17.1-24.0)	
Portugal	975	5.4	17.9 (17.3-18.6)	0.0	0.0	0.0	0.0	0.1	0.0	0.3	1.0	4.7	7.7	17.1	24.9	29.4	34.2	42.6	54.0	63.3	80.6	15.3 (14.8-15.9)	
Slovenia	401	1.0	38.4 (36.3-40.7)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.9	9.0	23.0	59.7	94.9	108.2	99.3	120.0	135.2	129.2	34.5 (32.5-36.5)	
Spain	4587	23.8	19.3 (19.0-19.6)	0.0	0.0	0.0	0.0	0.0	0.1	0.2	1.2	3.4	10.4	21.9	39.8	48.2	45.7	46.6	51.0	58.3	66.0	18.2 (17.9-18.5)	
Western Europe	34 628	98.3	35.2 (35.0-35.4)	0.0	0.0	0.0	0.0	0.1	0.1	0.5	1.5	4.3	12.1	26.9	52.0	76.5	94.0	106.6	111.5	114.8	111.8	31.8 (31.6-32.0)	
Austria	1499	4.5	33.6 (32.6-34.6)	0.2	0.0	0.0	0.0	0.0	0.3	0.8	1.6	3.8	8.4	25.2	46.6	74.7	104.9	112.4	118.2	99.9	104.6	31.6 (30.6-32.5)	
Belgium	1952	5.8	33.9 (33.0-34.7)	0.0	0.0	0.0	0.0	0.1	0.1	0.4	1.6	3.7	11.6	29.0	51.7	87.3	97.7	114.8	101.4	116.3	110.5	32.8 (31.9-33.6)	
France	9292	33.3	27.9 (27.6-28.2)	0.0	0.0	0.0	0.1	0.1	0.2	0.5	1.9	5.5	14.8	29.9	51.9	64.6	63.8	70.5	82.0	92.9	100.1	26.2 (25.9-26.5)	
Germany	16 236	41.7	38.9 (38.6-39.2)	0.0	0.0	0.0	0.0	0.1	0.1	0.4	1.1	3.7	10.7	24.6	50.3	78.5	107.9	114.8	114.5	116.7	116.6	33.0 (32.7-33.3)	
Luxembourg	81	0.3	28.0 (24.6-31.8)	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	14.9	14.2	40.4	73.9	82.7	119.1	175.8	120.7	140.2	33.1 (29.0-37.6)	
Netherlands	4307	8.5	50.5 (49.6-51.3)	0.0	0.0	0.0	0.0	0.0	0.1	0.6	2.4	4.7	14.8	34.3	71.6	112.2	147.9	182.6	193.4	207.5	158.3	49.6 (48.7-50.4)	
Switzerland	1261	4.2	29.8 (28.9-30.8)	0.0	0.0	0.0	0.0	0.3	0.1	0.9	1.2	2.0	6.3	16.5	37.6	62.3	87.0	105.1	138.6	124.9	103.6	29.4 (28.4-30.3)	
All populations	169 022	443.8	38.1 (38.0-38.2)	0.0	0.0	0.0	0.0	0.1	0.1	0.4	1.2	3.5	9.8	23.9	48.4	73.5	102.4	136.8	155.8	170.6	167.4	37.4 (37.3-37.5)	

Notes: Displayed in the first columns are the average annual numbers of deaths from lung cancer and inhabitants in each country between 2015 and 2017. Countries are listed in geographical order from Northern America to Western Europe. Age-specific and age-standardised rates are coloured from lowest to highest using a decile scale. 2017 data for Norway, the United Kingdom, Belgium and France were imputed with forecasts obtained from autoregressive Poisson regression analysis. Estimates for total and subregional populations were obtained by pooling age-specific deaths and populations of each country over the three-year period.

Abbreviations: EU, European Union; EFTA, European Free Trade Association; CI, confidence interval.

Figure S3: Annual lung cancer age-standardised mortality (×100 000 population) between 2000 and 2017 in Northern America, the EU, and the EFTA, overall and by country.

Country	Annual lung cancer age-standardised mortality rates																	AAPC (95% CI)	
	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16		'17
Canada	76.9	77.4	78.5	77.5	76.8	76.0	75.5	74.9	73.5	73.1	71.9	69.6	69.5	67.4	68.1	65.2	63.3	62.0	-1.3* (-1.6, -1.0)
United States	82.7	81.7	81.4	80.5	79.3	78.6	76.9	75.4	73.8	71.9	70.4	68.2	66.9	64.8	63.0	60.7	57.4	54.9	-2.4* (-2.5, -2.3)
Bulgaria	..	..	..	..	..	46.7	44.6	45.5	46.3	43.4	43.6	44.3	47.5	47.7	45.6	45.1	43.7	43.7	-0.6 (-2.3, 1.1)
Czechia	71.3	69.3	67.8	66.6	67.2	64.8	63.9	61.7	60.1	59.6	59.7	59.3	58.1	55.3	52.9	52.1	51.7	52.2	-1.8* (-2.4, -1.1)
Hungary	90.5	90.6	89.9	92.2	92.3	83.7	85.0	89.1	91.2	92.2	94.3	91.9	95.1	91.1	92.1	91.5	91.8	90.5	0.1 (-0.7, 0.9)
Poland	74.6	75.7	76.9	75.0	74.3	74.5	74.2	74.2	74.4	72.6	71.6	69.7	69.8	68.7	69.4	69.6	68.6	66.0	-0.8* (-1.4, -0.1)
Romania	47.5	48.0	47.8	47.7	47.3	49.8	49.5	49.7	51.0	52.5	52.5	52.9	53.3	53.5	54.4	55.0	53.8	53.7	0.7* (0.4, 1.0)
Denmark	79.3	79.1	75.4	77.3	80.6	79.5	82.3	72.9	77.6	74.9	75.8	71.7	74.2	71.6	70.5	68.9	67.3	66.0	-0.8* (-1.3, -0.4)
Estonia	57.0	57.1	56.9	59.3	54.4	53.3	58.5	57.8	57.8	49.5	51.8	52.2	54.7	51.6	55.8	52.1	50.5	48.0	-0.8* (-1.2, -0.4)
Finland	43.9	44.5	42.4	43.3	41.1	42.0	42.7	42.4	40.9	40.7	43.5	40.6	41.0	41.0	39.1	39.6	39.3	38.7	-0.7* (-0.8, -0.5)
Iceland	61.2	59.3	54.4	62.9	62.5	66.1	61.1	68.7	65.1	62.8	67.3	63.7	63.7	57.7	56.4	48.7	62.6	48.1	-0.7 (-1.5, 0.2)
Latvia	50.9	53.9	51.2	51.8	51.2	52.7	56.9	52.5	49.4	50.7	49.9	49.3	48.5	49.1	46.5	43.8	46.2	48.8	-0.8* (-1.2, -0.4)
Lithuania	50.7	53.1	50.9	51.6	49.0	48.9	51.6	50.9	48.9	48.7	45.9	48.9	47.4	45.5	46.2	46.3	44.6	42.2	-1.0* (-1.2, -0.8)
Norway	49.0	50.1	52.5	52.4	52.1	52.6	53.4	55.2	55.0	52.7	54.5	54.3	53.4	51.6	50.2	50.0	50.1	..	0.0 (-0.4, 0.4)
Sweden	37.2	38.8	38.3	38.4	40.0	41.7	41.0	40.2	41.0	39.7	40.2	40.1	39.1	39.0	38.9	37.9	37.8	38.3	0.1 (-0.2, 0.3)
United Kingdom	..	67.8	67.7	66.5	65.2	65.4	65.8	65.4	65.6	64.0	62.6	62.1	61.3	60.5	60.3	58.6	57.8	..	-1.0* (-1.2, -0.8)
Cyprus	..	..	..	..	33.2	34.2	29.6	29.1	31.4	37.2	31.1	38.3	39.0	35.7	36.9	34.8	37.7	42.1	1.9* (0.9, 2.8)
Croatia	63.6	67.2	65.6	65.9	65.8	65.4	66.7	66.9	66.0	66.8	65.3	66.7	65.1	64.6	64.6	64.0	65.0	67.5	0.1 (-0.3, 0.6)
Greece	..	..	..	..	..	..	..	..	..	..	..	..	..	..	64.1	64.0	63.0	62.8	-0.9* (-1.1, -0.6)
Italy	..	..	..	57.3	55.8	55.1	55.1	54.8	54.3	54.0	53.7	53.0	51.7	50.8	49.7	49.7	48.7	48.1	-1.2* (-1.4, -1.0)
Malta	44.9	49.1	45.6	44.0	40.5	39.3	41.1	38.4	43.6	44.6	43.6	43.0	48.9	39.4	42.7	45.9	43.7	41.1	-0.6 (-2.2, 1.0)
Portugal	..	..	33.4	34.4	..	..	..	34.3	33.2	34.0	35.4	35.4	34.6	37.3	36.2	36.7	36.7	37.6	0.8* (0.5, 1.1)
Slovenia	58.9	58.4	57.6	60.9	61.4	62.0	59.9	63.2	60.8	55.7	59.6	58.2	57.5	53.9	57.9	57.9	57.6	57.8	0.1 (-0.7, 0.8)
Spain	50.1	51.7	50.5	51.3	50.9	49.9	49.9	50.0	49.7	49.5	49.6	49.4	49.6	49.4	47.9	47.9	48.4	47.5	-0.4* (-0.5, -0.3)
Austria	..	..	49.4	47.3	47.6	46.4	46.8	46.2	47.9	46.5	47.0	45.8	45.7	45.4	46.8	45.6	45.8	44.1	-0.4* (-0.5, -0.2)
Belgium	70.0	69.1	67.6	66.4	64.8	67.4	66.9	65.4	66.5	64.4	66.1	65.2	60.6	61.7	61.5	58.2	57.6	..	-1.1* (-1.4, -0.7)
France	50.5	50.3	50.7	50.5	50.9	51.9	52.0	51.8	51.6	52.0	51.1	50.9	51.0	49.7	50.8	50.5	49.3	..	0.0 (-0.2, 0.1)
Germany	53.2	52.0	52.0	51.3	51.2	51.6	51.2	51.4	51.8	51.0	51.3	51.8	51.6	51.4	50.8	50.3	50.3	48.9	-0.4* (-0.6, -0.2)
Luxembourg	60.2	52.6	53.4	63.0	52.3	54.8	52.8	64.7	41.0	58.7	50.7	51.3	56.1	46.0	59.2	51.4	51.8	50.0	-0.5* (-1.0, -0.1)
Netherlands	72.2	72.5	72.6	70.9	73.2	73.1	71.7	72.9	72.5	71.4	71.7	72.4	69.4	67.6	66.9	65.9	66.2	63.0	-0.7* (-0.9, -0.6)
Switzerland	48.2	46.7	45.0	45.8	44.9	45.9	45.4	45.6	45.3	43.0	44.5	44.3	42.2	42.4	42.0	41.7	40.8	40.7	-1.0* (-1.8, -0.3)
All populations	69.6	68.7	67.8	67.0	66.4	65.8	65.2	64.5	63.6	62.7	61.8	60.9	60.0	59.1	58.0	56.8	55.3	53.9	-1.5* (-1.5, -1.5)

Notes: Observed annual age-standardised mortality rates are displayed for all countries, which are listed in geographical order (Northern America, Eastern Europe, Northern Europe, Southern Europe, Western Europe). Estimates for the total population of the 31 study countries were obtained from population-averaged regression analysis with spline terms. AAPCs were obtained from segmented regression analysis, and are coloured from lowest to highest using a decile scale on both overall and sex-specific estimates (Figures S3–S5). * indicates that the AAPC is significantly different from zero. Cells have two mid-dots (..) if no data are available.

Abbreviations: EU, European Union; EFTA, European Free Trade Association; AAPC, average annual per cent change; CI, confidence interval.

Figure S4: Annual lung cancer age-standardised mortality (×100 000 population) between 2000 and 2017 in Northern America, the EU, and the EFTA, males, overall and by country.

Country	Annual lung cancer age-standardised mortality rates																	AAPC (95% CI)	
	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16		'17
Canada	107.6	108.2	108.2	105.7	102.1	100.9	97.5	96.3	92.6	92.0	88.9	86.0	85.1	80.3	82.0	77.6	73.7	72.9	-2.3* (-3.0, -1.7)
United States	113.4	111.0	108.6	106.4	104.2	103.3	99.9	96.6	94.5	91.2	89.1	85.6	83.4	80.2	77.4	74.2	69.7	66.2	-3.1* (-3.2, -3.0)
Bulgaria	..	..	..	..	..	85.1	83.1	83.5	85.8	80.4	81.6	80.7	86.7	88.7	81.8	80.4	79.1	78.0	-0.4 (-0.9, 0.1)
Czechia	135.8	128.0	126.8	122.3	124.1	117.5	113.0	107.7	103.6	103.2	101.7	98.2	94.1	89.8	85.1	83.7	81.8	81.7	-3.1* (-3.2, -2.9)
Hungary	163.8	162.9	158.4	162.7	162.1	146.1	147.9	151.1	152.3	155.0	157.9	149.0	153.0	142.2	143.5	139.0	141.9	136.6	-1.2 (-2.7, 0.4)
Poland	148.8	149.4	150.8	145.1	144.5	144.0	141.5	138.9	139.6	132.9	129.9	124.9	124.0	120.3	117.8	118.3	114.6	108.1	-1.8* (-2.1, -1.6)
Romania	86.7	87.8	88.4	86.9	87.5	91.1	89.8	90.9	93.8	96.4	95.9	96.2	96.4	96.4	98.6	99.0	96.4	95.2	0.6* (0.1, 1.1)
Denmark	106.7	104.7	97.8	99.8	102.8	99.3	103.2	89.7	93.9	88.7	89.7	82.1	87.2	82.7	82.5	79.5	76.5	75.1	-2.0* (-2.2, -1.8)
Estonia	127.4	129.6	128.0	135.1	119.1	116.4	129.1	132.2	130.4	109.6	117.8	112.7	117.9	106.4	116.3	110.5	100.3	100.3	-1.2 (-2.7, 0.4)
Finland	85.2	85.4	80.9	79.5	75.4	76.4	78.2	74.7	69.2	69.8	73.3	65.6	63.9	65.0	59.2	60.3	60.2	59.3	-2.3* (-2.5, -2.0)
Iceland	64.8	70.4	60.2	69.0	61.1	80.1	63.5	78.7	67.0	62.7	73.5	71.7	65.5	60.9	61.6	44.0	63.8	51.0	-1.4* (-2.7, -0.1)
Latvia	118.9	126.2	116.8	116.5	122.0	118.7	129.7	117.1	113.0	118.1	115.8	112.4	109.2	107.7	105.2	93.8	102.1	108.3	-1.2* (-1.6, -0.8)
Lithuania	115.6	118.3	118.9	115.7	110.2	110.4	116.5	117.3	112.6	112.2	109.7	114.3	105.9	100.2	101.0	103.9	97.0	89.6	-1.4* (-1.9, -1.0)
Norway	70.9	72.0	77.6	75.3	72.7	72.9	73.8	73.0	71.4	70.8	70.7	70.9	68.0	64.3	61.9	60.7	59.2	..	-1.1* (-1.7, -0.6)
Sweden	49.8	50.2	49.3	49.6	49.7	52.2	50.4	46.6	48.9	46.7	48.1	47.0	45.2	43.3	42.3	41.7	41.8	41.3	-1.1* (-1.6, -0.6)
United Kingdom	..	98.4	96.0	92.7	90.0	89.3	88.0	86.1	85.1	82.5	79.3	78.3	75.3	74.4	73.3	70.5	69.5	..	-2.3* (-2.4, -2.2)
Cyprus	..	..	..	..	62.9	55.9	50.9	48.2	56.1	62.5	54.3	65.9	68.6	67.0	64.4	57.9	61.9	73.7	1.8* (0.5, 3.1)
Croatia	124.2	135.2	128.2	126.7	130.9	124.6	125.9	126.8	123.1	123.8	120.6	118.0	118.8	115.5	113.4	114.3	115.2	115.1	-0.7* (-1.2, -0.3)
Greece	..	..	..	..	..	..	..	..	..	..	..	..	..	..	114.0	113.2	110.1	110.8	-1.3* (-2.1, -0.5)
Italy	..	..	..	108.6	104.1	102.8	101.5	99.8	98.4	96.8	95.9	93.1	90.0	87.3	83.9	83.2	80.3	78.4	-2.2* (-2.4, -2.0)
Malta	83.1	96.2	95.5	88.0	82.6	80.4	84.9	75.1	87.3	87.9	76.4	81.5	91.4	69.8	83.5	82.8	72.9	68.1	-1.2* (-1.7, -0.6)
Portugal	..	..	62.2	64.7	..	..	..	63.1	60.6	61.4	65.1	63.8	62.0	67.6	65.7	64.2	65.4	66.5	0.4* (0.1, 0.7)
Slovenia	118.5	115.5	108.3	114.6	117.0	112.9	110.9	112.9	107.8	96.3	105.3	97.8	93.2	86.9	90.7	95.4	89.4	84.5	-2.0* (-2.4, -1.6)
Spain	103.1	106.5	102.6	103.9	101.7	100.1	98.8	98.3	96.2	95.6	94.4	93.2	92.4	90.7	87.5	86.3	86.7	83.4	-1.4* (-1.5, -1.2)
Austria	..	..	85.6	81.1	78.2	77.4	76.9	71.8	75.1	72.5	71.1	67.9	66.7	67.4	67.0	64.0	63.4	62.0	-1.9* (-2.0, -1.7)
Belgium	137.6	135.4	130.7	125.9	121.2	125.6	121.5	117.0	117.3	113.0	113.3	109.2	101.0	99.9	98.9	91.6	90.9	..	-2.5* (-2.8, -2.2)
France	97.6	96.3	95.5	93.7	94.1	94.9	93.8	92.4	90.9	89.9	88.1	86.8	85.1	83.0	82.6	81.8	79.1	..	-1.2* (-1.4, -1.1)
Germany	98.7	95.1	93.1	90.4	88.6	88.0	86.1	84.9	84.3	81.6	81.1	80.1	78.6	77.1	75.3	73.6	72.2	69.3	-2.0* (-2.2, -1.8)
Luxembourg	117.6	96.4	105.8	110.5	98.4	91.4	94.2	102.4	67.5	93.5	86.5	84.7	83.5	77.0	90.9	75.8	80.8	64.7	-2.1* (-2.7, -1.5)
Netherlands	132.1	130.0	126.4	119.7	122.7	120.1	114.2	113.9	111.0	109.2	107.4	105.3	98.5	94.7	91.6	89.1	88.3	83.5	-2.6* (-2.9, -2.4)
Switzerland	82.8	81.7	75.6	75.8	72.7	75.8	70.4	70.4	70.8	64.2	67.1	64.7	60.4	59.2	59.2	59.0	54.7	54.6	-2.4* (-2.5, -2.2)
All populations	110.6	108.1	105.8	103.8	102.1	100.6	98.9	96.9	94.8	92.5	90.3	88.2	86.1	84.1	81.9	79.5	76.9	74.4	-2.3* (-2.3, -2.3)

Notes: Observed annual age-standardised mortality rates are displayed for all countries, which are listed in geographical order (Northern America, Eastern Europe, Northern Europe, Southern Europe, Western Europe). Estimates for the total population of the 31 study countries were obtained from population-averaged regression analysis with spline terms. AAPCs were obtained from segmented regression analysis, and are coloured from lowest to highest using a decile scale on both overall and sex-specific estimates (Figures S3–S5). * indicates that the AAPC is significantly different from zero. Cells have two mid-dots (..) if no data are available.

Abbreviations: EU, European Union; EFTA, European Free Trade Association; AAPC, average annual per cent change; CI, confidence interval.

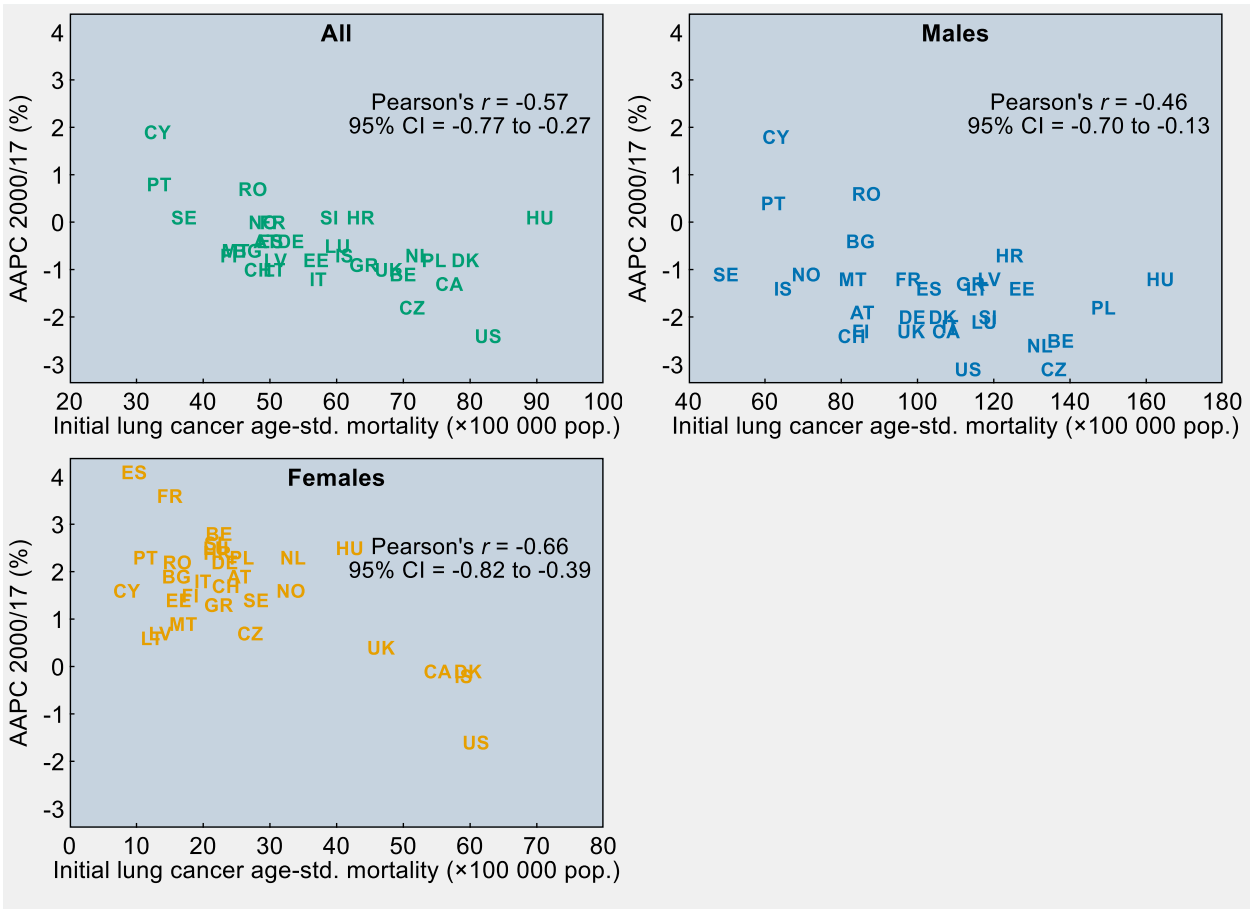
Figure S5: Annual lung cancer age-standardised mortality ($\times 100\ 000$ population) between 2000 and 2017 in Northern America, the EU, and the EFTA, females, overall and by country.

Country	Annual lung cancer age-standardised mortality rates																	AAPC (95% CI)	
	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16		'17
Canada	55.2	55.3	57.1	57.3	58.8	58.1	60.0	59.2	59.5	59.2	59.4	57.4	57.9	57.9	57.7	56.0	55.6	53.9	-0.1 (-0.3, 0.2)
United States	60.9	60.6	61.7	61.5	61.0	60.6	59.9	59.7	58.4	57.4	56.3	54.9	54.2	52.9	51.9	50.2	47.7	46.0	-1.6* (-1.8, -1.5)
Bulgaria	..	..	..	..	..	16.0	13.7	15.2	14.8	14.1	13.7	15.7	16.8	15.8	17.6	17.6	16.6	17.4	1.9* (1.0, 2.7)
Czechia	27.1	28.5	27.2	27.9	27.7	28.1	29.5	28.7	29.0	28.3	29.5	31.4	32.1	30.3	29.6	29.5	29.6	30.9	0.7 (-0.8, 2.1)
Hungary	42.0	42.6	44.3	45.4	46.0	42.4	43.6	48.2	51.1	51.5	54.0	54.8	57.2	57.5	59.0	60.6	58.9	60.4	2.5* (2.1, 2.8)
Poland	25.8	26.8	28.1	28.7	27.8	29.2	29.9	31.7	31.7	33.0	33.6	33.5	34.0	34.5	37.7	37.6	37.8	38.1	2.3* (2.1, 2.5)
Romania	16.1	16.2	15.6	16.8	15.6	17.3	18.0	17.5	17.8	18.5	19.1	19.7	20.3	20.9	20.7	21.7	21.6	22.3	2.2* (2.0, 2.4)
Denmark	59.7	61.6	59.9	61.7	65.3	66.7	67.5	61.1	66.2	65.8	66.3	64.5	65.1	63.6	61.5	61.9	60.8	59.1	-0.1 (-0.5, 0.4)
Estonia	16.4	17.3	16.9	17.3	19.3	18.6	19.5	17.6	18.9	17.2	17.3	19.9	21.0	21.7	22.1	20.4	23.0	19.3	1.4 (-1.0, 4.0)
Finland	18.1	19.1	18.2	20.0	18.5	19.7	19.7	20.6	21.7	20.8	23.0	22.9	24.4	23.7	25.0	24.4	24.3	23.5	1.5* (0.9, 2.0)
Iceland	59.1	50.5	50.1	59.8	63.8	54.2	59.3	60.4	65.0	62.6	63.5	59.5	62.9	55.2	53.2	54.3	62.2	45.2	-0.2 (-1.6, 1.3)
Latvia	13.6	13.6	13.7	15.2	12.9	16.4	16.5	16.9	12.4	14.1	14.6	15.4	15.7	16.4	14.2	16.7	15.0	16.0	0.7* (0.1, 1.4)
Lithuania	12.3	14.2	11.1	13.8	12.6	13.2	13.7	12.3	12.8	13.1	10.6	12.0	14.2	13.7	14.2	13.2	14.2	14.5	0.6 (-0.1, 1.2)
Norway	33.2	34.3	34.0	35.6	37.1	38.2	38.3	41.9	43.2	38.9	42.6	42.0	42.5	42.2	41.6	42.0	43.4	..	1.6* (1.2, 2.0)
Sweden	28.0	30.5	30.3	29.9	33.2	34.4	34.4	35.8	35.4	35.0	34.6	35.1	34.6	36.2	36.6	35.4	35.3	36.4	1.4* (0.9, 1.9)
United Kingdom	..	46.7	47.6	48.0	47.5	48.7	50.1	50.4	51.5	50.4	50.2	49.8	50.6	49.8	50.2	49.5	48.7	..	0.4* (0.1, 0.6)
Cyprus	..	..	..	..	8.6	16.6	11.9	12.6	11.0	15.6	11.4	14.8	13.9	9.1	13.4	14.9	16.9	14.4	1.6 (-0.4, 3.6)
Croatia	22.2	20.7	22.3	23.5	22.5	24.0	25.0	25.0	25.9	26.1	26.9	30.2	27.8	28.8	30.2	28.7	29.6	33.8	2.4* (2.1, 2.7)
Greece	..	..	..	..	..	..	..	..	..	..	..	..	..	..	22.3	23.1	23.8	23.0	1.3 (-2.8, 5.5)
Italy	..	..	..	20.0	20.6	20.5	21.3	22.0	22.3	22.8	23.1	23.8	23.6	24.0	24.4	24.9	25.1	25.5	1.8* (1.6, 1.9)
Malta	17.1	13.5	7.7	11.8	8.9	9.0	9.0	12.0	10.9	13.8	18.5	15.2	18.4	17.0	12.2	18.1	22.4	20.6	0.9 (-8.0, 10.7)
Portugal	..	..	11.4	11.1	..	..	..	12.2	12.1	12.8	12.6	13.6	13.4	14.0	13.8	15.7	14.9	15.4	2.3* (2.1, 2.6)
Slovenia	21.5	22.3	24.4	26.5	25.1	27.7	25.5	28.8	28.5	27.9	29.2	30.5	31.5	30.4	34.6	30.8	33.7	38.6	2.6* (2.2, 2.9)
Spain	9.7	9.9	10.5	10.9	11.6	11.4	12.0	12.5	13.4	13.6	14.9	15.0	16.0	16.8	16.5	17.5	18.0	19.0	4.1* (3.9, 4.3)
Austria	..	..	25.4	24.3	25.9	24.8	25.2	28.0	28.4	27.1	29.1	29.3	30.0	28.7	31.7	31.7	32.5	30.5	1.9* (1.5, 2.2)
Belgium	22.4	21.4	22.4	23.4	24.4	26.0	27.1	27.6	28.8	28.2	31.3	32.5	30.3	32.9	33.1	33.1	32.5	..	2.8* (2.2, 3.4)
France	15.0	15.6	16.9	17.7	18.2	19.5	20.3	20.6	21.5	22.6	23.0	24.5	23.5	25.8	25.9	25.9	25.9	..	3.6* (3.3, 3.9)
Germany	23.3	23.5	24.2	24.5	25.1	26.4	26.7	27.5	28.4	28.7	29.6	30.8	31.3	31.9	32.1	32.6	33.4	32.9	2.2* (2.1, 2.4)
Luxembourg	22.0	22.3	17.5	30.9	21.5	28.0	23.3	39.1	21.2	31.9	25.2	28.7	36.0	24.9	34.7	32.6	27.8	38.8	2.5* (1.7, 3.3)
Netherlands	33.5	34.2	36.4	38.3	39.8	42.1	43.1	45.3	46.6	45.7	46.9	49.5	49.3	49.1	49.8	50.0	50.5	48.2	2.3* (1.7, 2.9)
Switzerland	23.4	21.6	22.8	23.9	24.6	24.0	27.3	27.2	26.1	27.3	27.9	29.0	28.7	29.7	28.7	28.3	30.1	29.6	1.7* (1.1, 2.2)
All populations	40.7	40.6	40.6	40.6	40.6	40.7	40.7	40.8	40.8	40.8	40.7	40.6	40.5	40.3	40.0	39.6	38.9	38.3	-0.3* (-0.4, -0.3)

Notes: Observed annual age-standardised mortality rates are displayed for all countries, which are listed in geographical order (Northern America, Eastern Europe, Northern Europe, Southern Europe, Western Europe). Estimates for the total population of the 31 study countries were obtained from population-averaged regression analysis with spline terms. AAPCs were obtained from segmented regression analysis, and are coloured from lowest to highest using a decile scale on both overall and sex-specific estimates (Figures S3–S5). * indicates that the AAPC is significantly different from zero. Cells have two mid-dots (..) if no data are available.

Abbreviations: EU, European Union; EFTA, European Free Trade Association; AAPC, average annual per cent change; CI, confidence interval.

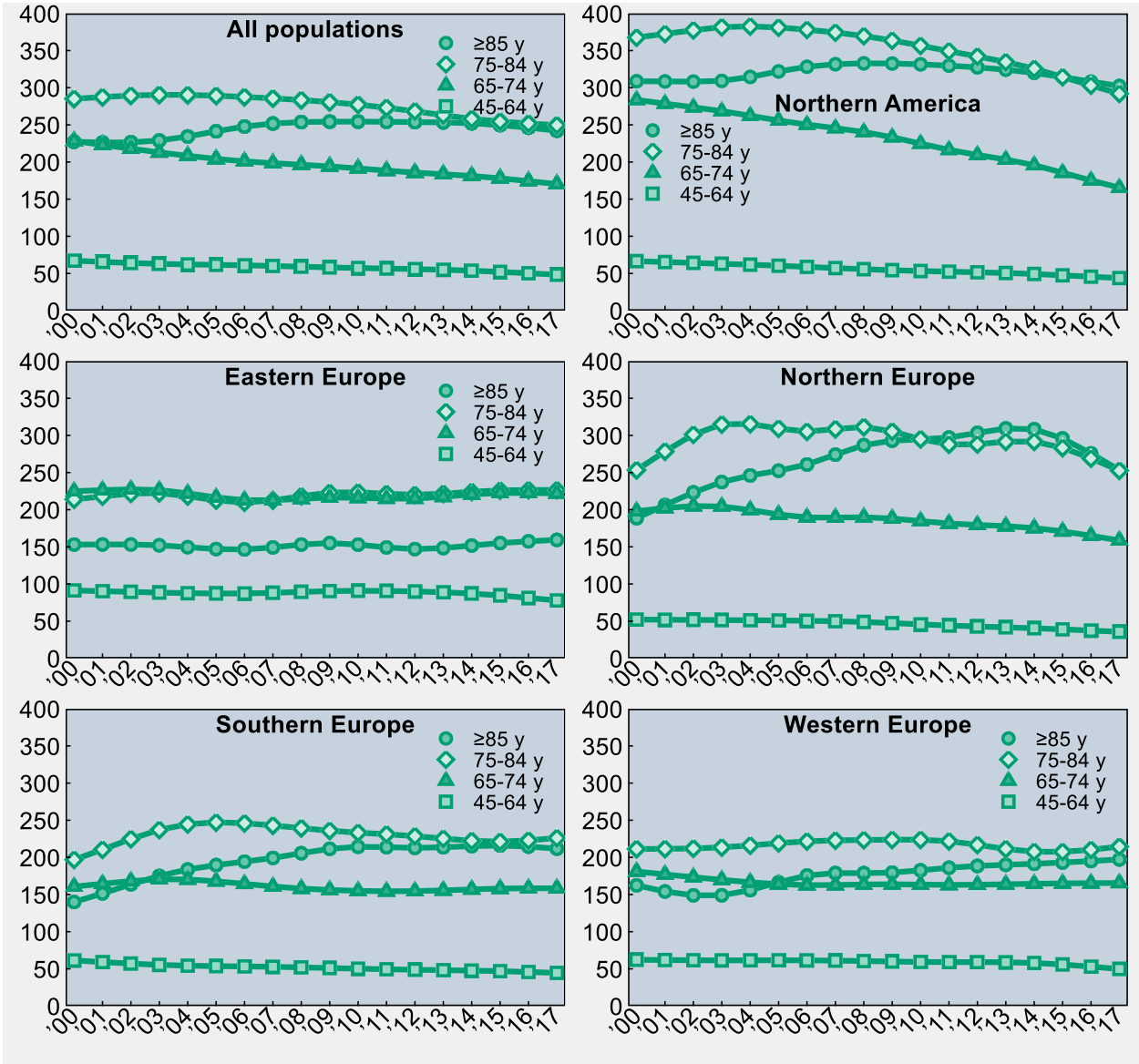
Figure S6: Scatter plot of country-specific average annual per cent changes (AAPCs) in lung cancer age-standardised lung cancer mortality between 2000 and 2017 versus lung cancer age-standardised mortality rates observed in 2000 (or first available year), overall and by sex.



Notes: The 95% confidence interval (CI) around the Pearson correlation coefficient (Pearson's r) is based on Fisher's r -to- z transformation.

Abbreviations: AT, Austria; BE, Belgium; BG, Bulgaria; CA, Canada; CH, Switzerland; CY, Cyprus; CZ, Czechia; DE, Germany; DK, Denmark; EE, Estonia; ES, Spain; FI, Finland; FR, France; GR, Greece; HR, Croatia; HU, Hungary; IS, Iceland; IT, Italy; LT, Lithuania; LU, Luxembourg; LV, Latvia; MT, Malta; NL, Netherlands; NO, Norway; PL, Poland; PT, Portugal; RO, Romania; SE, Sweden; SI, Slovenia; UK, United Kingdom; US, United States.

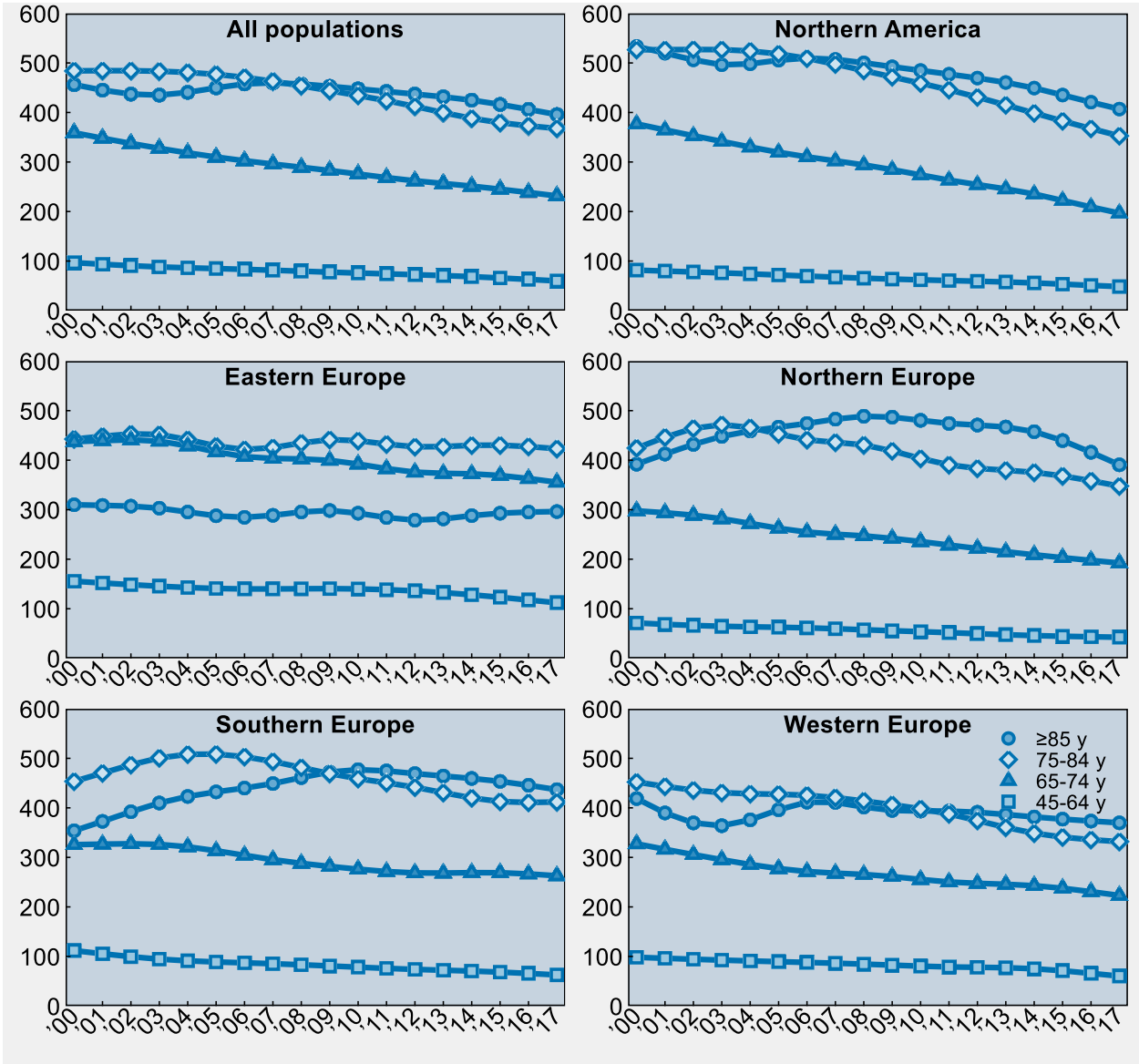
Figure S7: Time trends in lung cancer age-specific mortality (×100 000 population) between 2000 and 2017 in Northern America, the EU, and the EFTA, ages ≥45 years, overall and by age group and subregion.



Notes: Time trends were obtained from population-averaged regression analysis with restricted cubic splines. Northern America includes Canada and the United States; Eastern Europe includes Bulgaria, Czechia, Hungary, Poland and Romania; Northern Europe includes Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway, Sweden and the United Kingdom; Southern Europe includes Cyprus, Croatia, Greece, Italy, Malta, Portugal, Slovenia and Spain; Western Europe includes Austria, Belgium, France, Germany, Luxembourg, the Netherlands and Switzerland.

Abbreviations: EU, European Union; EFTA, European Free Trade Association.

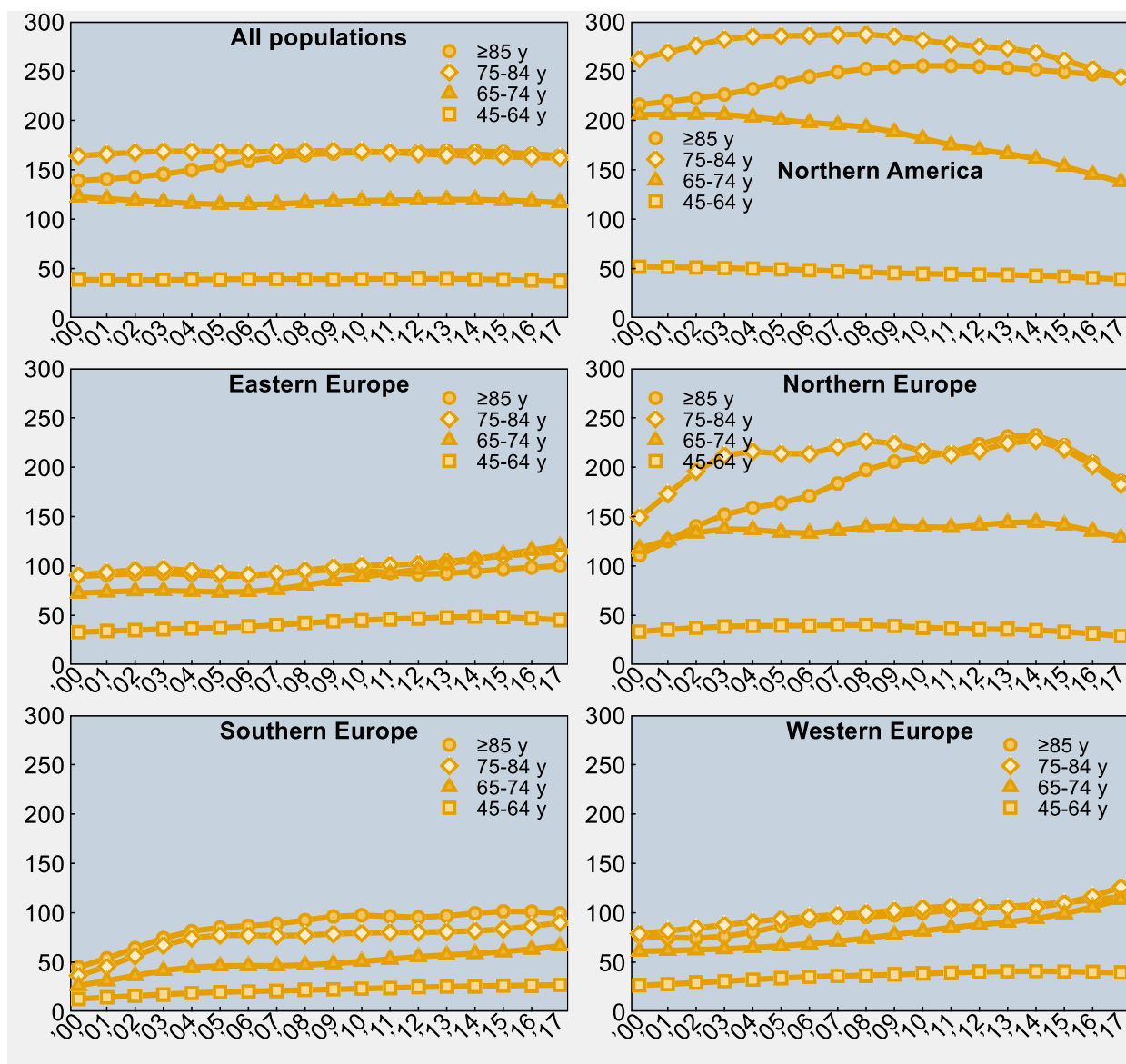
Figure S8: Time trends in lung cancer age- specific mortality (×100 000 population) between 2000 and 2017 in Northern America, the EU, and the EFTA, ages ≥45 years, males, overall and by age group and subregion.



Notes: Time trends were obtained from population-averaged regression analysis with restricted cubic splines. Northern America includes Canada and the United States; Eastern Europe includes Bulgaria, Czechia, Hungary, Poland and Romania; Northern Europe includes Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway, Sweden and the United Kingdom; Southern Europe includes Cyprus, Croatia, Greece, Italy, Malta, Portugal, Slovenia and Spain; Western Europe includes Austria, Belgium, France, Germany, Luxembourg, the Netherlands and Switzerland.

Abbreviations: EU, European Union; EFTA, European Free Trade Association.

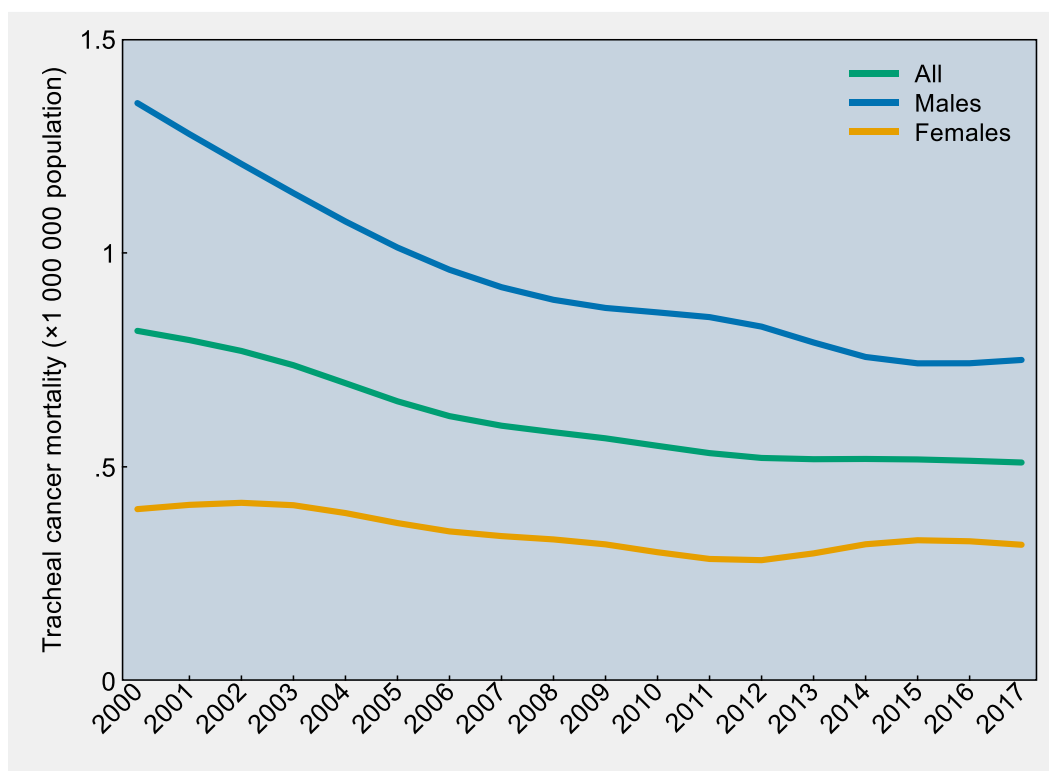
Figure S9: Time trends in lung cancer age-specific mortality (×100 000 population) between 2000 and 2017 in Northern America, the EU, and the EFTA, ages ≥45 years, females, overall and by age group and subregion.



Notes: Time trends were obtained from population-averaged regression analysis with restricted cubic splines. Northern America includes Canada and the United States; Eastern Europe includes Bulgaria, Czechia, Hungary, Poland and Romania; Northern Europe includes Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway, Sweden and the United Kingdom; Southern Europe includes Cyprus, Croatia, Greece, Italy, Malta, Portugal, Slovenia and Spain; Western Europe includes Austria, Belgium, France, Germany, Luxembourg, the Netherlands and Switzerland.

Abbreviations: EU, European Union; EFTA, European Free Trade Association.

Figure S10: Time trends in tracheal cancer age-standardised mortality ($\times 1\ 000\ 000$ population) between 2000 and 2017 in Northern America, the EU, and the EFTA, overall and by sex.



Notes: Time trends were obtained from population-averaged regression analysis with restricted cubic splines. Northern America, the EU, and the EFTA includes Canada, the United States, Bulgaria, Czechia, Hungary, Poland, Romania, Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway, Sweden, the United Kingdom, Cyprus, Croatia, Greece, Italy, Malta, Portugal, Slovenia, Spain, Austria, Belgium, France, Germany, Luxembourg, the Netherlands, and Switzerland.

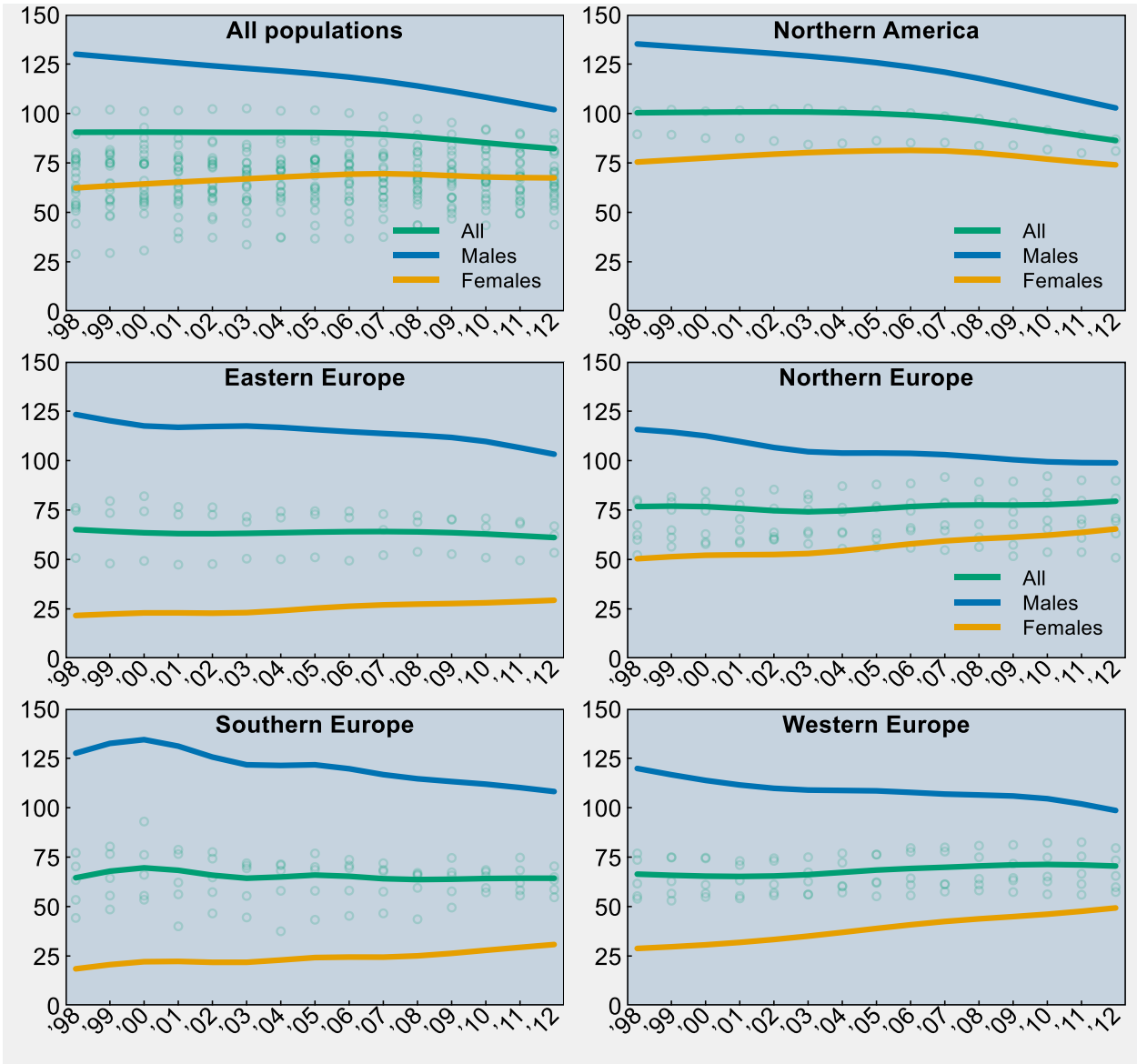
Abbreviations: EU, European Union; EFTA, European Free Trade Association.

S11 Methods: Time-trend analysis of lung cancer incidence between 1998 and 2012.

A time-trend analysis was performed on annual lung cancer incidence rates estimated from the *CI5plus* database (latest update: April 2019), a collection made available by the World Health Organization and the International Agency for Research on Cancer that contains aggregate data of new cancer cases from 108 cancer registries worldwide (Ferlay, Colombet and Bray, 2018). The observation period for this analysis ranged from 1998 (first year available for the US) to 2012 (last year available for all countries), for a total of 15 years. All incidence rates of lung cancer (ICD-10 C34) were directly standardised according to the European Standard Population and expressed per 100,000 inhabitants, and analysed using the statistical models described in the main paper (population-averaged autoregression and segmented regression). Nine study countries that did not provide any data to the *CI5plus* program were discarded (Hungary, Romania, Finland, Latvia, Sweden, Greece, Portugal, Belgium and Luxembourg), while other nine countries contributed to the analysis with subnational data: Canada (nine provinces and one territory), the US (National Program of Cancer Registries), Poland (one registry), the UK (ten registries), Italy (eight registries), Spain (nine registries), France (nine registries), Germany (two registries) and Switzerland (three registries).

Ferlay J, Colombet M, Bray F. Cancer Incidence in Five Continents, *CI5plus*: IARC CancerBase No. 9 [Internet]. Lyon, France: International Agency for Research on Cancer; 2018. Available from: <http://ci5.iarc.fr>

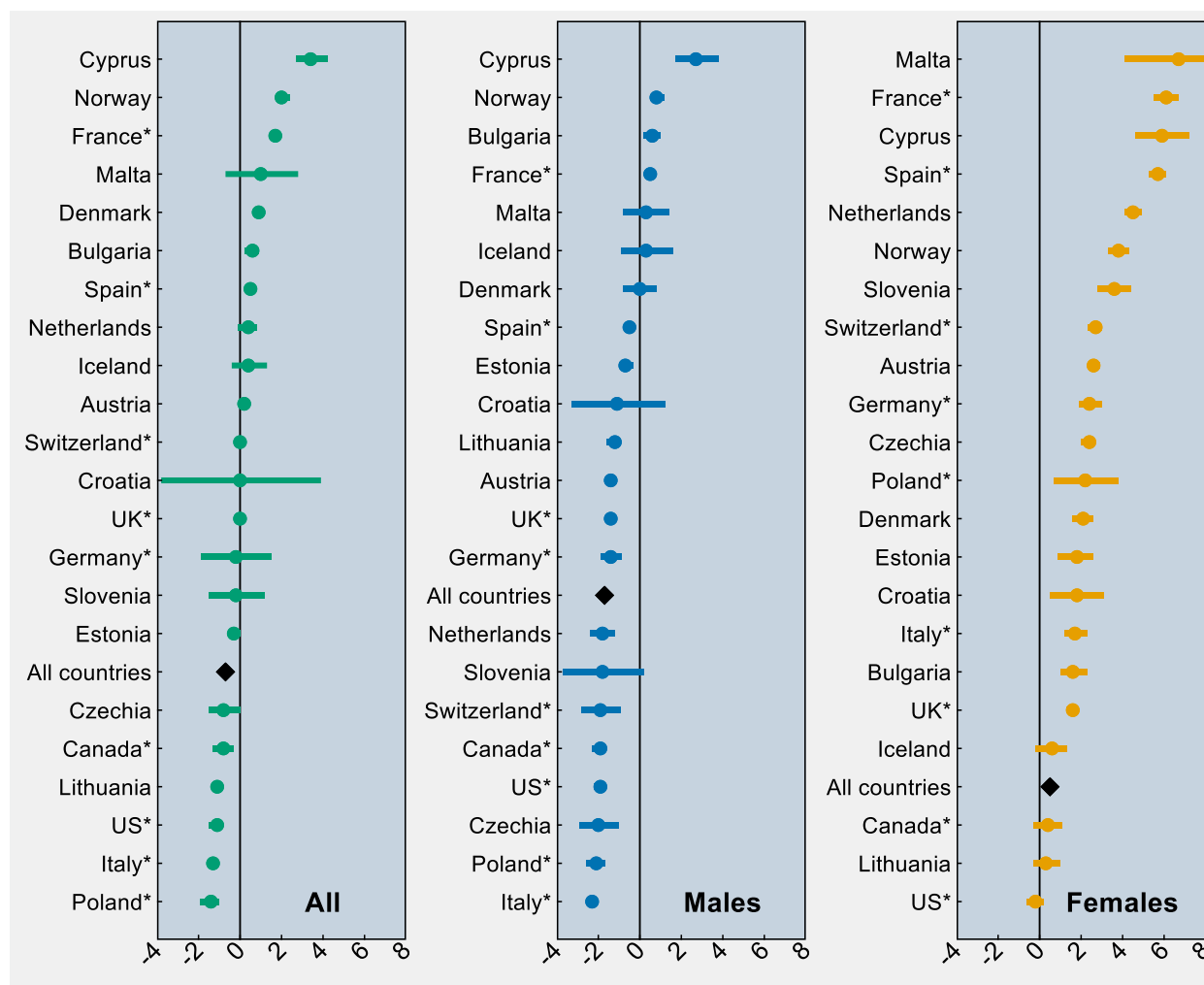
Figure S12: Time trends in lung cancer age-standardised incidence (×100 000 population) between 1998 and 2012 in Northern America, the EU, and the EFTA, overall and by sex and subregion (data available for 22 out of 31 countries).



Notes: Overall rates (males plus females) observed in all country-years are displayed in the background of each plot, below population-averaged cubic splines. Northern America includes Canada and the United States; Eastern Europe includes Bulgaria, Czechia, and Poland; Northern Europe includes Denmark, Estonia, Iceland, Lithuania, Norway and the United Kingdom; Southern Europe includes Cyprus, Croatia, Italy, Malta, Slovenia and Spain; Western Europe includes Austria, France, Germany, the Netherlands and Switzerland. Nine countries (Canada, the United States, Poland, the United Kingdom, Italy, Spain, France, Germany and Switzerland) contributed to the CI5plus database with subnational data, while no data were available for Hungary, Romania, Finland, Latvia, Sweden, Greece, Portugal, Belgium and Luxembourg.

Abbreviations: EU, European Union; EFTA, European Free Trade Association.

Figure S13: Average annual per cent change (AAPC) in lung cancer age-standardised incidence between 1998 and 2012 for each country of Northern America, the EU, and the EFTA, overall and by sex (data available for 22 out of 31 countries).



Notes: All AAPCs were obtained from segmented regression analysis, are presented along with 95% confidence intervals (CIs) and are sorted into descending order. If the 95% CI does not cross the vertical zero-line, the AAPC is statistically significant. Malta's 95% CI for female incidence was trimmed for the sake of convenience. Year-specific rates used to compute the AAPCs for the total population of the 22 countries (black diamonds) were obtained from population-averaged regression analysis with spline terms. * denotes countries that contributed to the CI5plus database with subnational data; no data were available for Hungary, Romania, Finland, Latvia, Sweden, Greece, Portugal, Belgium and Luxembourg.

Abbreviations: EU, European Union; EFTA, European Free Trade Association; UK, United Kingdom; US, United States.

Figure S14: Annual lung cancer age-standardised incidence (×100 000 population) between 1998 and 2012 in Northern America, the EU, and the EFTA, overall and by country (data available for 22 out of 31 countries).

Country	Annual lung cancer age-standardised incidence rates														AAPC (95% CI)	
	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11		'12
Canada (subnational)	89.5	89.3	87.6	87.5	86.1	84.3	84.9	86.3	85.2	85.3	83.7	84.0	81.8	80.1	81.1	-0.8* (-1.3, -0.3)
United States (subnational)	101.3	102.0	101.2	101.6	102.3	102.6	101.4	101.7	100.3	98.6	97.4	95.4	91.7	89.4	87.0	-1.1* (-1.5, -0.8)
Bulgaria	50.8	48.0	49.3	47.4	47.7	50.5	50.2	51.1	49.5	52.2	53.9	52.7	51.0	49.6	53.5	0.6* (0.2, 0.9)
Czechia	76.2	73.5	74.4	72.7	72.6	71.7	74.3	72.9	71.2	73.0	72.2	70.4	70.9	69.1	66.9	-0.8* (-1.5, 0.0)
Poland (subnational)	74.8	79.6	82.0	76.6	76.4	69.0	71.2	74.5	74.4	65.0	69.0	70.1	66.4	68.1	62.3	-1.4* (-1.9, -1.0)
Denmark	79.1	81.6	84.3	84.1	85.4	82.9	87.1	88.0	88.5	91.7	89.2	89.5	92.1	90.1	89.9	0.9* (0.7, 1.1)
Estonia	62.3	64.9	62.9	65.1	63.7	63.1	63.9	60.5	64.8	64.7	61.2	57.4	65.5	61.0	63.1	-0.3 (-0.6, 0.0)
Iceland	67.4	75.1	74.7	70.6	61.5	80.6	74.2	77.1	74.6	78.8	80.5	74.2	83.8	68.0	69.4	0.4 (-0.4, 1.3)
Lithuania	60.0	61.2	58.7	58.3	60.4	57.9	55.5	56.2	55.9	54.8	56.3	51.7	53.7	53.7	50.9	-1.1* (-1.3, -0.9)
Norway	52.3	56.5	57.8	59.2	60.1	64.1	63.4	63.2	66.0	67.4	67.9	67.8	69.8	70.3	70.9	2.0* (1.7, 2.4)
United Kingdom (subnational)	80.1	79.1	79.3	77.7	75.9	75.2	76.3	76.3	78.6	78.3	79.0	78.8	78.7	79.8	80.9	0.0 (-0.2, 0.2)
Cyprus	28.9	29.5	30.8	36.9	37.3	33.7	37.2	36.8	36.8	37.6	43.4	46.8	43.5	49.3	43.8	3.4* (2.7, 4.2)
Croatia	70.3	80.4	93.0	78.8	77.6	72.0	70.9	76.9	73.7	72.0	65.8	74.6	68.5	74.8	70.4	0.0 (-3.8, 3.9)
Italy (subnational)	77.2	76.6	76.2	76.6	74.3	70.7	68.2	70.0	70.8	67.8	66.3	67.3	65.4	68.3	65.0	-1.3* (-1.5, -1.0)
Malta	44.3	48.6	53.5	40.1	46.6	44.6	37.6	43.4	45.3	46.6	43.6	49.6	57.2	55.6	54.7	1.0 (-0.7, 2.8)
Slovenia	63.5	64.4	66.1	62.2	64.8	69.4	71.4	68.6	69.5	68.6	67.1	65.8	67.6	62.0	63.4	-0.2 (-1.5, 1.2)
Spain (subnational)	53.4	55.6	55.5	56.2	57.3	55.4	58.0	58.0	58.1	57.6	59.5	57.7	59.4	58.3	58.7	0.5* (0.4, 0.7)
Austria	55.3	56.6	56.6	54.2	55.7	56.1	57.1	55.2	55.7	57.6	58.2	57.4	56.2	56.0	57.4	0.2 (0.0, 0.4)
France (subnational)	54.0	53.0	54.9	55.4	56.9	56.1	60.5	62.4	60.9	61.4	64.1	64.5	65.2	66.6	65.6	1.7* (1.5, 2.0)
Germany (subnational)	73.6	74.8	74.8	71.0	73.2	67.4	72.2	76.3	77.7	77.9	75.0	71.7	74.9	75.4	73.4	-0.2 (-1.9, 1.5)
Netherlands	76.9	75.0	74.4	73.1	74.5	75.0	77.0	76.4	79.7	80.0	80.8	81.2	82.2	82.6	79.6	0.4 (-0.1, 0.8)
Switzerland (subnational)	61.7	62.8	61.1	63.2	61.2	62.7	60.1	62.0	64.3	61.2	61.2	63.3	62.8	61.4	59.8	0.0 (-0.2, 0.1)
All populations	90.5	90.6	90.6	90.5	90.5	90.4	90.4	90.4	90.1	89.4	88.2	86.7	85.1	83.6	82.2	-0.7* (-0.7, -0.7)

Notes: Observed annual age-standardised incidence rates are displayed for all countries, which are listed in geographical order (Northern America, Eastern Europe, Northern Europe, Southern Europe, Western Europe). Estimates for the total population of the 22 study countries were obtained from population-averaged regression analysis with spline terms. AAPCs were obtained from segmented regression analysis, and are coloured from lowest to highest using a decile scale on both overall and sex-specific estimates (Figures S14–S16). * indicates that the AAPC is significantly different from zero. No data were available for Hungary, Romania, Finland, Latvia, Sweden, Greece, Portugal, Belgium and Luxembourg in the CI5plus database.

Abbreviations: EU, European Union; EFTA, European Free Trade Association; AAPC, average annual per cent change; CI, confidence interval.

Figure S15: Annual lung cancer age-standardised incidence (×100 000 population) between 1998 and 2012 in Northern America, the EU, and the EFTA, males, overall and by country (data available for 22 out of 31 countries).

Country	Annual lung cancer age-standardised mortality rates														AAPC (95% CI)	
	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11		'12
Canada (subnational)	119.3	118.7	112.6	112.7	109.3	106.1	105.5	104.8	102.6	102.9	98.5	99.4	95.3	92.4	92.1	-1.9* (-2.3, -1.6)
United States (subnational)	136.4	136.4	133.6	132.7	132.4	131.7	129.1	128.0	124.9	122.1	119.5	116.5	111.0	107.8	103.9	-1.9* (-2.2, -1.7)
Bulgaria	94.2	88.1	93.2	88.7	88.6	94.8	93.9	96.0	92.5	97.6	101.3	98.8	96.3	91.4	97.9	0.6* (0.2, 1.0)
Czechia	144.2	137.5	136.7	131.1	133.9	132.5	132.9	128.8	123.1	125.0	122.0	116.5	119.0	111.9	107.4	-2.0* (-2.9, -1.0)
Poland (subnational)	151.6	161.6	158.7	146.8	153.8	140.1	140.8	146.1	136.4	123.7	132.8	134.0	123.2	124.2	111.5	-2.1* (-2.6, -1.7)
Denmark	104.0	104.8	111.0	108.7	107.2	103.9	108.2	107.0	105.1	108.7	104.5	104.5	104.5	101.6	103.0	0.0 (-0.8, 0.8)
Estonia	139.8	147.5	132.9	146.7	141.2	142.9	137.2	132.2	140.4	144.5	132.7	126.0	138.2	130.5	129.4	-0.7* (-1.0, -0.3)
Iceland	72.3	76.3	85.8	67.1	67.6	88.0	82.6	84.7	80.3	98.5	80.3	80.6	82.6	76.1	66.6	0.3 (-0.9, 1.6)
Lithuania	133.6	138.6	127.6	129.3	136.6	127.4	122.5	122.2	124.9	124.1	125.6	114.3	120.8	116.5	108.1	-1.2* (-1.6, -0.9)
Norway	78.4	80.9	81.9	84.5	85.1	88.8	86.4	85.9	86.3	87.1	85.4	86.5	85.8	89.2	87.0	0.8* (0.5, 1.2)
United Kingdom (subnational)	118.9	115.4	113.8	110.8	105.9	102.8	104.4	102.1	103.9	101.7	101.1	99.5	98.4	98.7	98.3	-1.4* (-1.6, -1.2)
Cyprus	54.7	51.4	54.7	68.0	64.4	63.4	62.7	63.6	56.4	64.5	72.4	79.7	74.1	82.8	74.9	2.7* (1.7, 3.8)
Croatia	142.8	161.2	186.8	152.5	147.6	138.6	134.3	140.4	134.6	134.8	123.1	133.3	123.2	128.3	124.5	-1.1 (-3.3, 1.2)
Italy (subnational)	145.1	143.2	141.5	140.9	137.0	129.7	123.6	124.4	123.8	120.2	114.7	112.7	110.5	114.1	100.6	-2.3* (-2.6, -2.1)
Malta	85.8	96.8	103.9	76.8	93.2	88.0	72.0	84.8	85.7	93.1	81.9	96.0	100.7	99.3	86.2	0.3 (-0.8, 1.4)
Slovenia	128.2	122.6	127.4	115.7	120.2	127.9	132.4	123.6	122.5	117.3	119.1	110.0	111.1	98.7	100.7	-1.8 (-3.7, 0.2)
Spain (subnational)	108.2	111.5	110.1	112.1	111.6	107.6	113.5	110.9	110.3	107.6	110.6	105.3	107.7	102.7	103.1	-0.5* (-0.7, -0.2)
Austria	98.0	97.3	96.2	91.3	92.6	91.2	90.6	87.5	86.4	86.4	88.0	85.0	81.9	79.3	80.5	-1.4* (-1.6, -1.2)
France (subnational)	104.9	100.7	104.6	103.4	104.8	102.3	108.5	108.9	107.9	107.5	109.0	109.2	109.0	110.4	106.4	0.5* (0.4, 0.7)
Germany (subnational)	132.2	128.2	129.7	117.6	120.1	109.2	115.5	119.9	122.4	115.3	110.4	106.1	107.1	110.8	104.0	-1.4* (-1.9, -0.9)
Netherlands	137.4	132.6	128.1	122.2	122.4	120.0	121.4	115.8	119.0	117.8	116.1	116.8	114.2	113.3	105.2	-1.8* (-2.4, -1.2)
Switzerland (subnational)	103.5	102.1	99.4	103.1	98.7	98.7	93.6	97.3	95.8	90.5	89.7	91.3	87.9	84.5	80.2	-1.9* (-2.8, -0.9)
All populations	130.0	128.5	127.0	125.5	124.1	122.8	121.5	120.1	118.4	116.4	113.9	111.2	108.2	105.1	102.0	-1.7* (-1.8, -1.7)

Notes: Observed annual age-standardised incidence rates are displayed for all countries, which are listed in geographical order (Northern America, Eastern Europe, Northern Europe, Southern Europe, Western Europe). Estimates for the total population of the 22 study countries were obtained from population-averaged regression analysis with spline terms. AAPCs were obtained from segmented regression analysis, and are coloured from lowest to highest using a decile scale on both overall and sex-specific estimates (Figures S14–S16). * indicates that the AAPC is significantly different from zero. No data were available for Hungary, Romania, Finland, Latvia, Sweden, Greece, Portugal, Belgium and Luxembourg in the CI5plus database.

Abbreviations: EU, European Union; EFTA, European Free Trade Association; AAPC, average annual per cent change; CI, confidence interval.

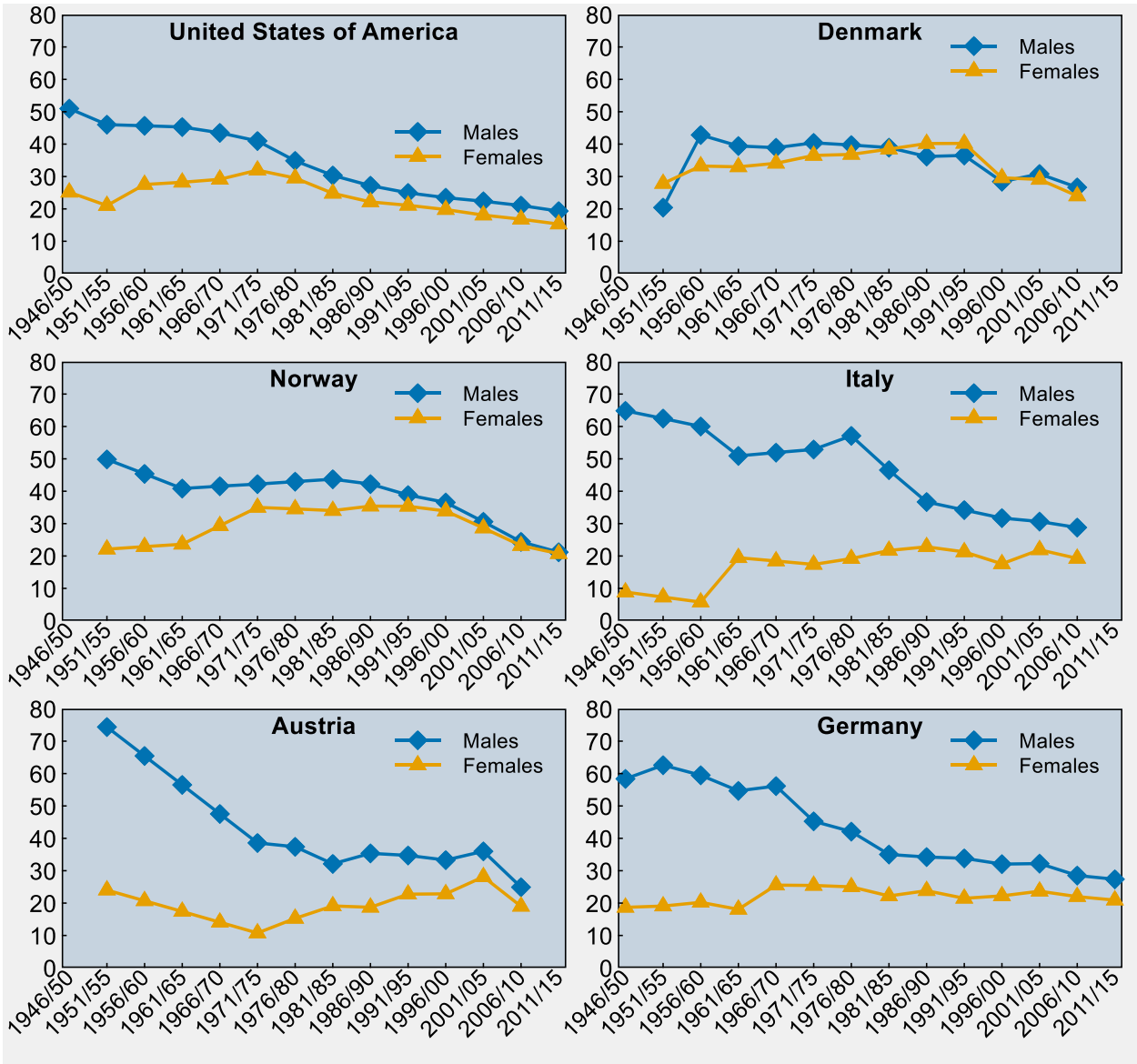
Figure S16: Annual lung cancer age-standardised incidence ($\times 100\ 000$ population) between 1998 and 2012 in Northern America, the EU, and the EFTA, females, overall and by country (data available for 22 out of 31 countries).

Country	Annual lung cancer age-standardised mortality rates														AAPC (95% CI)	
	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11		'12
Canada (subnational)	67.9	67.5	69.1	69.0	69.3	68.5	69.9	72.8	72.7	72.4	73.0	72.7	71.7	71.0	73.2	0.4 (-0.3, 1.1)
United States (subnational)	76.2	77.3	77.8	79.3	80.6	81.4	81.2	82.4	82.1	81.3	80.9	79.8	77.1	75.5	74.3	-0.2 (-0.6, 0.2)
Bulgaria	14.4	14.6	13.4	13.3	14.1	14.1	14.7	15.0	14.9	16.0	16.3	16.1	15.4	16.3	18.4	1.6* (1.0, 2.3)
Czechia	28.5	27.9	30.2	31.0	30.0	29.2	33.0	33.2	34.0	35.8	36.2	37.2	36.5	38.3	37.2	2.4* (2.0, 2.7)
Poland (subnational)	17.9	20.7	25.9	24.7	20.4	19.3	22.2	23.6	29.9	23.4	23.7	25.9	26.3	27.3	27.6	2.2* (0.7, 3.8)
Denmark	61.4	65.4	64.7	66.7	69.7	68.3	72.7	75.0	77.0	79.7	78.7	78.8	84.1	82.5	80.8	2.1* (1.6, 2.6)
Estonia	16.8	18.9	22.6	19.6	19.7	19.4	22.9	20.7	23.4	20.5	22.0	19.1	25.9	23.4	25.9	1.8* (0.9, 2.6)
Iceland	63.8	74.1	66.9	73.6	57.0	73.4	69.0	71.2	70.9	62.3	80.9	70.4	88.0	61.8	72.7	0.6 (-0.2, 1.3)
Lithuania	15.0	14.8	16.5	15.5	14.3	15.9	15.4	16.7	14.6	13.9	16.0	15.8	14.4	16.6	17.2	0.3 (-0.3, 1.0)
Norway	32.2	38.7	40.6	40.9	41.5	46.1	46.7	47.0	50.6	52.8	55.0	53.6	58.5	56.2	59.1	3.8* (3.3, 4.3)
United Kingdom (subnational)	53.8	54.3	55.4	54.6	54.7	55.8	56.3	58.1	60.3	61.4	63.0	63.7	64.1	65.9	68.0	1.6* (1.3, 1.9)
Cyprus	8.0	10.9	10.4	10.9	14.6	9.3	16.2	14.8	20.0	14.9	19.3	18.8	17.2	20.8	16.7	5.9* (4.6, 7.2)
Croatia	21.0	25.5	31.7	27.3	28.6	25.6	27.0	31.2	31.0	27.3	24.5	32.1	29.9	35.6	32.1	1.8* (0.5, 3.1)
Italy (subnational)	28.0	27.9	29.1	29.4	29.0	28.5	28.0	30.9	32.2	29.9	31.4	34.1	32.5	33.5	38.0	1.7* (1.2, 2.3)
Malta	12.6	12.7	15.1	12.7	11.6	11.7	12.0	13.2	15.5	12.8	15.5	17.0	24.5	24.7	32.6	6.7* (4.1, 9.4)
Slovenia	21.6	24.4	25.9	27.3	28.0	29.9	30.0	31.8	30.8	34.6	31.5	34.8	37.0	35.3	35.4	3.6* (2.8, 4.4)
Spain (subnational)	9.8	11.3	11.8	11.6	14.2	13.8	13.6	15.4	15.9	17.0	17.9	19.1	20.2	21.7	22.1	5.7* (5.3, 6.1)
Austria	27.4	28.7	29.1	28.8	30.5	30.9	33.3	31.5	33.6	36.3	36.4	36.3	36.7	38.4	39.8	2.6* (2.4, 2.9)
France (subnational)	14.8	15.9	15.7	17.8	19.1	19.6	22.7	25.5	23.7	25.0	28.2	28.9	30.0	31.9	32.4	6.1* (5.5, 6.7)
Germany (subnational)	35.9	39.7	38.0	40.5	41.3	38.0	41.9	44.8	45.7	50.9	48.2	46.5	50.8	48.9	50.6	2.4* (1.9, 3.0)
Netherlands	34.2	34.3	36.5	37.9	40.0	43.2	45.3	48.1	51.7	52.8	55.6	55.6	58.8	60.1	61.5	4.5* (4.1, 4.9)
Switzerland (subnational)	30.5	34.2	33.1	34.0	34.5	36.7	35.0	36.2	40.7	39.4	39.6	42.8	44.3	44.6	44.6	2.7* (2.3, 3.0)
All populations	62.4	63.4	64.4	65.3	66.2	67.0	67.8	68.6	69.3	69.6	69.2	68.6	67.9	67.6	67.5	0.5* (0.5, 0.6)

Notes: Observed annual age-standardised incidence rates are displayed for all countries, which are listed in geographical order (Northern America, Eastern Europe, Northern Europe, Southern Europe, Western Europe). Estimates for the total population of the 22 study countries were obtained from population-averaged regression analysis with spline terms. AAPCs were obtained from segmented regression analysis, and are coloured from lowest to highest using a decile scale on both overall and sex-specific estimates (Figures S14–S16). * indicates that the AAPC is significantly different from zero. No data were available for Hungary, Romania, Finland, Latvia, Sweden, Greece, Portugal, Belgium and Luxembourg in the CI5plus database.

Abbreviations: EU, European Union; EFTA, European Free Trade Association; AAPC, average annual per cent change; CI, confidence interval.

Figure S17: Time trends in age-standardised prevalence of current cigarette smoking (%) in the populations aged ≥ 15 years of six countries of Northern America and Europe with available data over the period 1946–2015, by sex.



Notes: Prevalence rates of current cigarette smoking were gathered from the International Mortality and Smoking Statistics (IMASS) database, which contains international estimates of smoking prevalence, tobacco consumption, and mortality from smoking related-diseases (<http://www.pnlee.co.uk/IMASS.htm>). IMASS smoking data are drawn from survey-based sources and tabulated by 5-year age groups and sex in 5-year periods. All prevalence rates of current cigarette smoking were directly standardised according to the European Standard Population and visualised with the aid of line charts. Six countries with sufficient data before 1960s were included in the analysis: the US, Denmark, Norway, Italy, Austria and Germany.