

Global Effects of Smoking, of Quitting and of Taxing Tobacco

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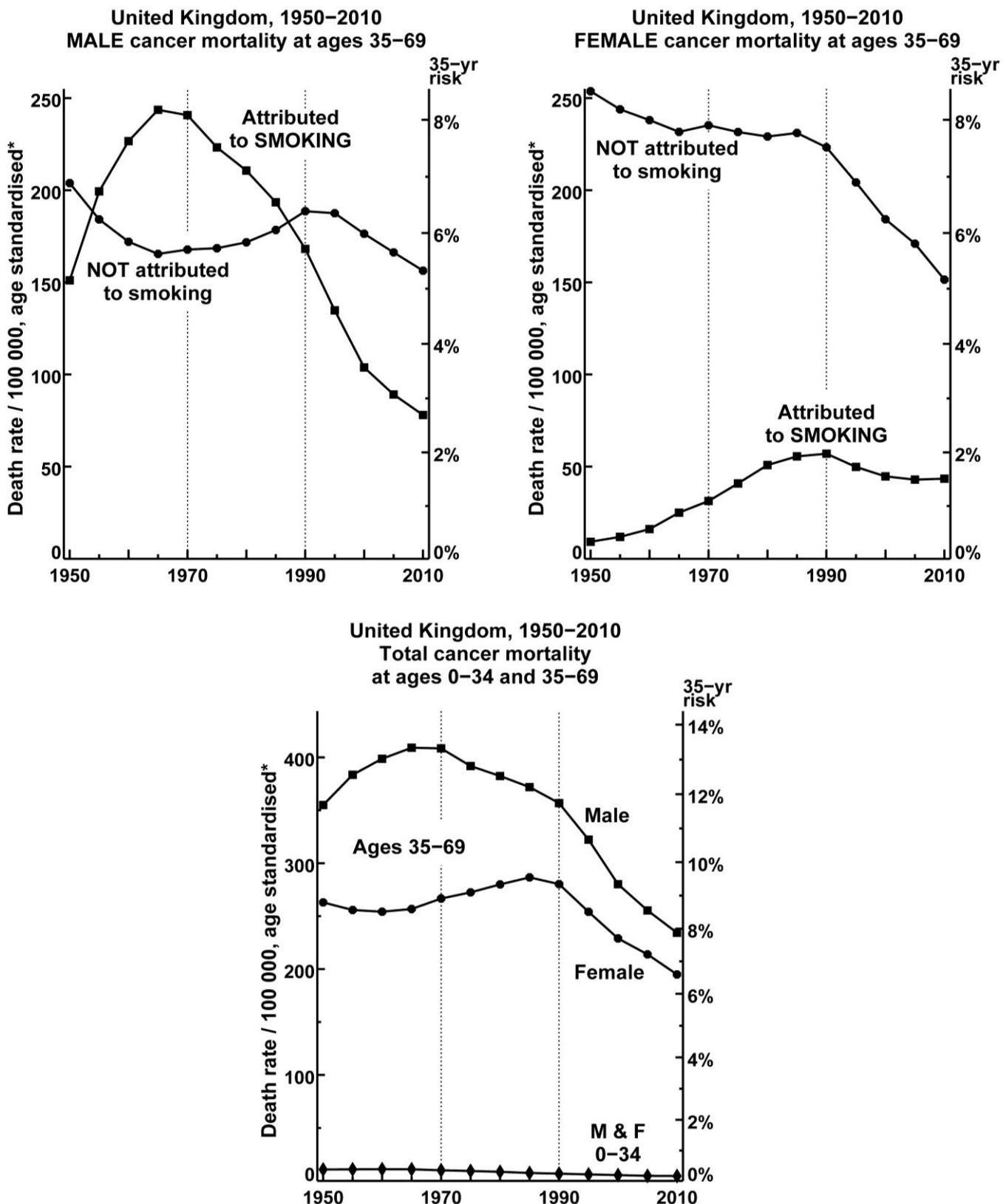
2 Jan 2014

Web-appendix:

UK, US and Poland - National trends from 1950s to 2010 in tobacco-attributed mortality.

References:

1. Peto R, Lopez AD, Boreham J, Thun M. Mortality from smoking in developed countries, 1950–2010. (Accessed August 4, 2013 at <http://www.ctsu.ox.ac.uk/~tobacco>).
2. Peto R, Lopez AD, Boreham J, Thun M, Heath C Jr. Mortality from tobacco in developed countries: indirect estimation from national vital statistics. *Lancet*. 1992 23;339:1268-78.
3. Peto R, Lopez AD, Boreham J, Thun M, Heath C Jr. Mortality from smoking in developed countries, 1950–2000. 1st edition. Oxford: Oxford University Press, 1994.
4. Thun M, Peto R, Boreham J, Lopez AD. Stages of the cigarette epidemic on entering its second century. *Tobacco Control* 2012; 21:96-101.



Webfig 1. UK, 1950–2010. Total cancer mortality rates at ages 0-34 & 35-69, with the rates at 35-69 subdivided into parts attributed, and not, to smoking
 Sources: WHO mortality data and UN population estimates. The rate for a 35-year period is the mean of the 7 annual death rates in the component 5-year age ranges. (Hence, without other causes of death, a rate of R per 100,000 would imply a 35-year risk of $1 - \exp[-35R/100,000]$.) The mortality attributed to smoking is estimated indirectly from the national mortality statistics, using the absolute lung cancer rate as a guide to the fraction of the deaths from other causes, or groups of causes, attributable to smoking (Peto, Lopez et al, 1992,1994).

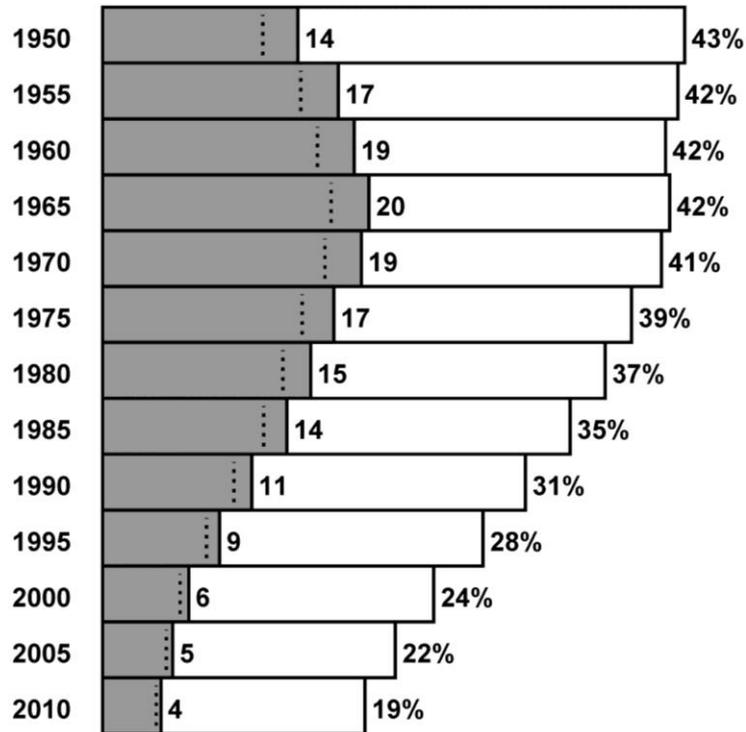
1950–2010: UNITED KINGDOM

Probability of infant dying before age 35

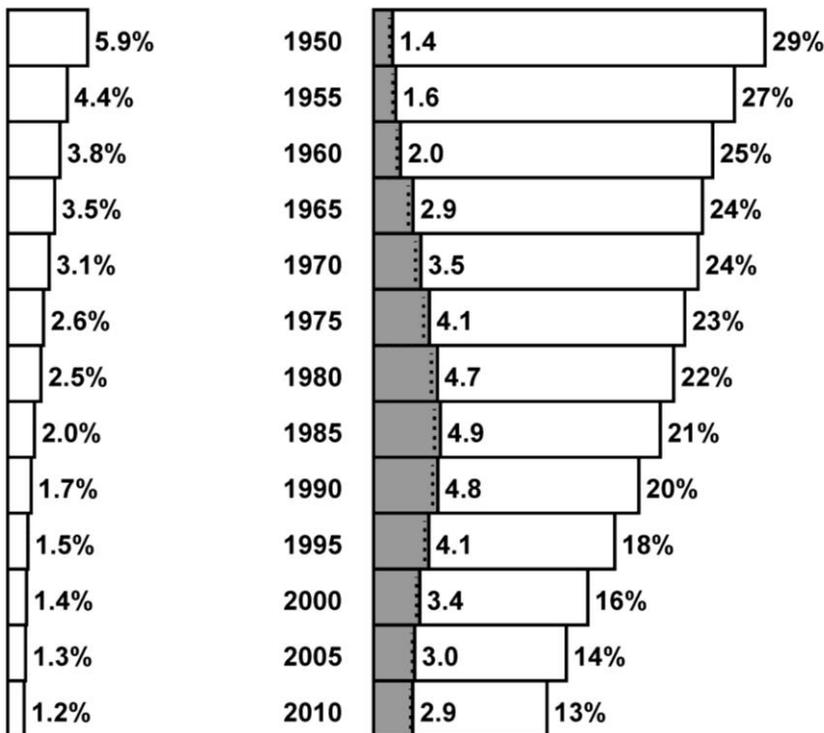


MALE

Probability of a 35-year-old dying before age 70 from smoking (shaded) or from any cause (shaded + white)



FEMALE



Webfig 2. UK, 1950-2010. Probabilities of death at ages 0-34 (left) & 35-69, with probabilities of death from smoking shaded

Most of those killed by smoking would otherwise have survived beyond age 70, but a minority (shaded area to right of dotted line) would have died by 70 anyway. Sources: WHO mortality data and UN population estimates. The mortality attributed to smoking is estimated indirectly from the national mortality statistics (Peto, Lopez et al, 1992,1994).

UNITED KINGDOM: 1950-2010
Numbers of deaths attributed to smoking / total deaths (thousands)

Year	Male (by age)				Female (by age)			
	0-34	35-69	70+	All	0-34	35-69	70+	All
1950	-/30	46/130 (35%)	11/141 (8%)	57/301	-/24	4.9/97 (5%)	1.4/168 (0.8%)	6.3/289
1955	-/23	55/130 (43%)	20/153 (13%)	75/306	-/17	5.7/91 (6%)	2.2/183 (1%)	8.0/290
1960	-/23	62/135 (46%)	28/151 (18%)	90/309	-/15	7.2/88 (8%)	4.7/191 (2%)	12/295
1965	-/23	69/146 (47%)	35/155 (22%)	104/323	-/15	11/89 (12%)	6.0/201 (3%)	17/305
1970	-/20	70/151 (47%)	44/163 (27%)	114/334	-/13	13/90 (15%)	12/218 (5%)	25/321
1975	-/17	62/142 (44%)	52/176 (29%)	114/335	-/10	15/85 (18%)	15/232 (6%)	30/327
1980	-/15	54/130 (41%)	55/187 (29%)	109/332	-/9.1	17/79 (21%)	19/241 (8%)	36/329
1985	-/13	46/117 (39%)	59/202 (29%)	105/332	-/7.5	17/73 (23%)	29/259 (11%)	46/339
1990	-/13	37/107 (35%)	52/195 (27%)	89/315	-/6.9	16/68 (24%)	32/252 (13%)	48/327
1995	-/11	28/93 (30%)	49/206 (24%)	78/311	-/6.0	13/60 (22%)	40/269 (15%)	53/335
2000	-/10	21/83 (25%)	42/197 (21%)	63/290	-/5.3	11/54 (21%)	39/259 (15%)	51/318
2005	-/9.1	18/78 (23%)	37/190 (20%)	55/277	-/4.9	11/51 (21%)	42/249 (17%)	53/306
2010	-/8.0	16/75 (22%)	35/188 (18%)	51/271	-/4.6	11/50 (22%)	39/236 (17%)	50/291

50-year total* (M=millions), mid-1960 to mid-2010: 6.5/ 32M

1960-2010 by age & sex:

-/0.7M	2.2/5.8M	2.3/9.3M	4.6/16M	-/0.4M	0.7/3.6M	1.3/12M	2.0/16M
	(39%)	(25%)			(19%)	(11%)	

*Estimated as 10 times the sum of the annual numbers for 1995 & 2005

UNITED KINGDOM: 2010

Relative importance of deaths in MIDDLE age (35–69) in the year 2010

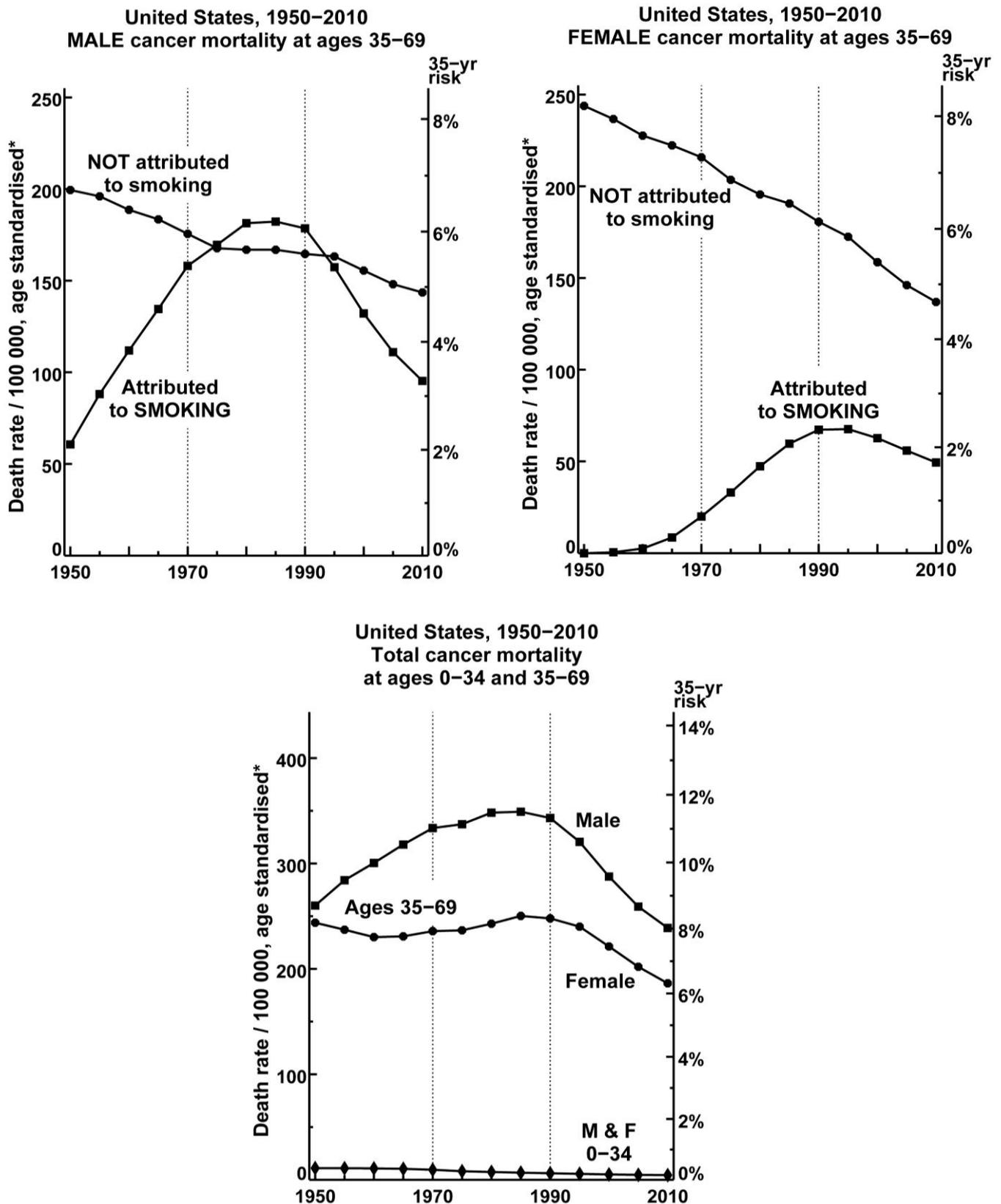
Age range (years)	Deaths attributed to SMOKING /total deaths (thousands)		Mean years lost PER DEATH FROM SMOKING
	Male	Female	
0–34	- / 8.0	- / 4.6	-
35–69	16 / 75	11 / 50	23 years
70+	35 / 188	39 / 236	7 years
All ages	51 / 271	50 / 291	11 years

Deaths, by cause, attributed to SMOKING / total deaths (thousands) in the year 2010

Cause	Male (by age)				Female (by age)			
	0–34	35–69	70+	All	0–34	35–69	70+	All
Lung Cancer	-/0.0	6.1/7.2	11/12	17/19	-/0.0	4.3/5.5	8.5/10	13/15
All Cancer	-/0.7	9.1/28 (33%)	16/54 (30%)	26/83	-/0.6	5.4/25 (22%)	12/50 (24%)	17/75
Vascular	-/0.5	3.3/21	5.7/66	9.0/88	-/0.3	1.8/8.8	8.9/83	11/92
Respiratory	-/0.2	2.2/5.7	9.4/30	12/35	-/0.2	2.2/4.4	12/36	14/41
All Other	-/6.6	1.6/20	2.9/39	4.5/65	-/3.5	1.6/12	6.7/68	8.3/84
All Causes	-/8.0	16/75 (22%)	35/188 (18%)	51/271	-/4.6	11/50 (22%)	39/236 (17%)	50/291

Cancer deaths, and all deaths, attributed to SMOKING / total deaths (thousands) in the year 2010

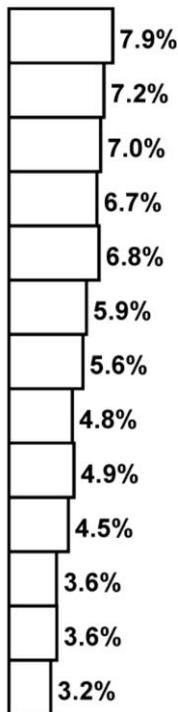
Cause	Male	Female	Male + Female
All Cancer	26 / 83 (31%)	17 / 75 (23%)	43 / 158 (27%)
All Causes	51 / 271 (19%)	50 / 291 (17%)	101 / 562 (18%)



Webfig 3. US, 1950–2010. Total cancer mortality rates at ages 0-34 & 35-69, with the rates at 35-69 subdivided into parts attributed, and not, to smoking
 Sources: WHO (& 2009-10 US NCHS) mortality data and UN population estimates. The rate for a 35-year period is the mean of the 7 annual death rates in the component 5-year age ranges. (Hence, without other causes of death, a rate of R per 100,000 would imply a 35-year risk of $1 - \exp[-35R/100,000]$.) The mortality attributed to smoking is estimated indirectly from the national mortality statistics, using the absolute lung cancer rate as a guide to the fraction of the deaths from other causes, or groups of causes, attributable to smoking (Peto, Lopez et al, 1992,1994).

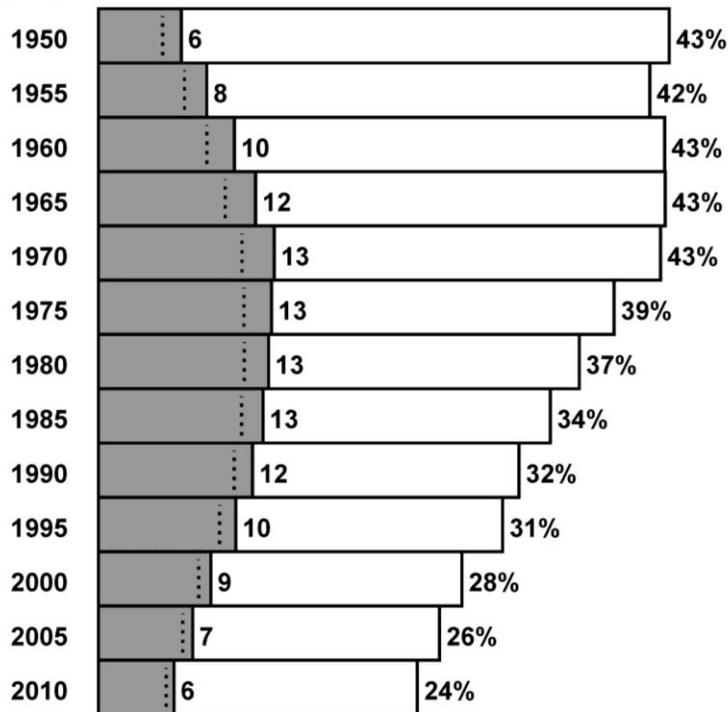
1950-2010: UNITED STATES

Probability of infant dying before age 35

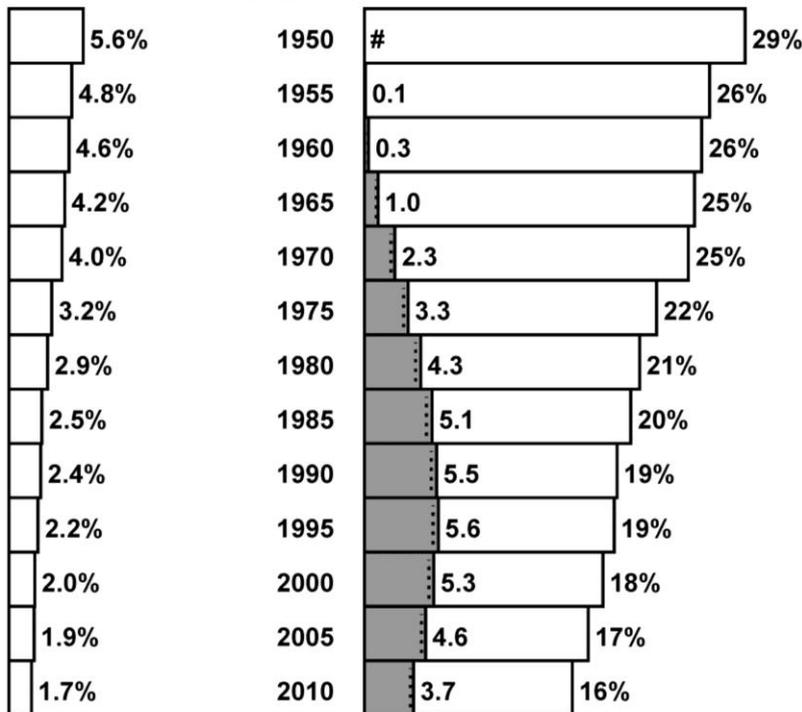


Probability of a 35-year-old dying before age 70 from smoking (shaded) or from any cause (shaded + white)

MALE



FEMALE



Real risk too low to estimate reliably

Webfig 4. US, 1950-2010. Probabilities of death at ages 0-34 (left) & 35-69, with probabilities of death from smoking shaded

Most of those killed by smoking would otherwise have survived beyond age 70, but a minority (shaded area to right of dotted line) would have died by 70 anyway. Sources: WHO (& 2009-10 US NCHS) mortality data and UN population estimates. The mortality attributed to smoking is estimated indirectly from the national mortality statistics (Peto, Lopez et al, 1992,1994).

UNITED STATES: 1950-2010
Numbers of deaths attributed to smoking / total deaths (thousands)

Year	Male (by age)				Female (by age)			
	0-34	35-69	70+	All	0-34	35-69	70+	All
1950	-/122	62/398 (16%)	8.2/308 (3%)	70/828	-/85	0.0/248	0.0/292	0.0/625
1955	-/119	83/403 (20%)	17/350 (5%)	99/873	-/79	0.7/241 (0.3%)	0.0/336	0.7/656
1960	-/123	109/439 (25%)	30/413 (7%)	139/976	-/81	3.6/254 (1%)	0.0/401	3.6/736
1965	-/118	131/460 (28%)	47/458 (10%)	178/1035	-/74	12/265 (5%)	0.8/454 (0.2%)	13/793
1970	-/119	154/482 (32%)	66/477 (14%)	220/1078	-/68	27/276 (10%)	6.5/498 (1%)	34/843
1975	-/109	155/457 (34%)	83/485 (17%)	238/1051	-/56	40/262 (15%)	15/524 (3%)	55/842
1980	-/110	156/439 (36%)	103/526 (20%)	259/1075	-/54	54/261 (21%)	36/600 (6%)	90/915
1985	-/98	154/425 (36%)	123/575 (21%)	277/1098	-/48	66/261 (25%)	65/680 (10%)	131/989
1990	-/103	149/415 (36%)	134/595 (23%)	283/1113	-/48	72/257 (28%)	101/730 (14%)	173/1035
1995	-/93	138/423 (33%)	148/657 (22%)	286/1173	-/44	75/262 (28%)	140/833 (17%)	214/1139
2000	-/74	119/405 (29%)	152/699 (22%)	271/1178	-/38	73/268 (27%)	169/920 (18%)	242/1226
2005	-/77	113/432 (26%)	148/699 (21%)	261/1208	-/39	73/284 (26%)	179/918 (19%)	251/1240
2010	-/70	104/455 (23%)	137/708 (19%)	241/1233	-/36	70/300 (23%)	172/901 (19%)	243/1236

50-year total* (M=millions), mid-1960 to mid-2010: 19/ 106M

1960-2010 by age & sex:

-/4.9M	6.9/22M	5.5/29M	12/56M	-/2.6M	2.7/13M	4.0/34M	6.6/50M
	(31%)	(19%)			(20%)	(12%)	

*Estimated as 10 times the sum of the annual numbers for 1965, 1975, 1985, 1995 & 2005

UNITED STATES: 2010

Relative importance of deaths in MIDDLE age (35–69) in the year 2010

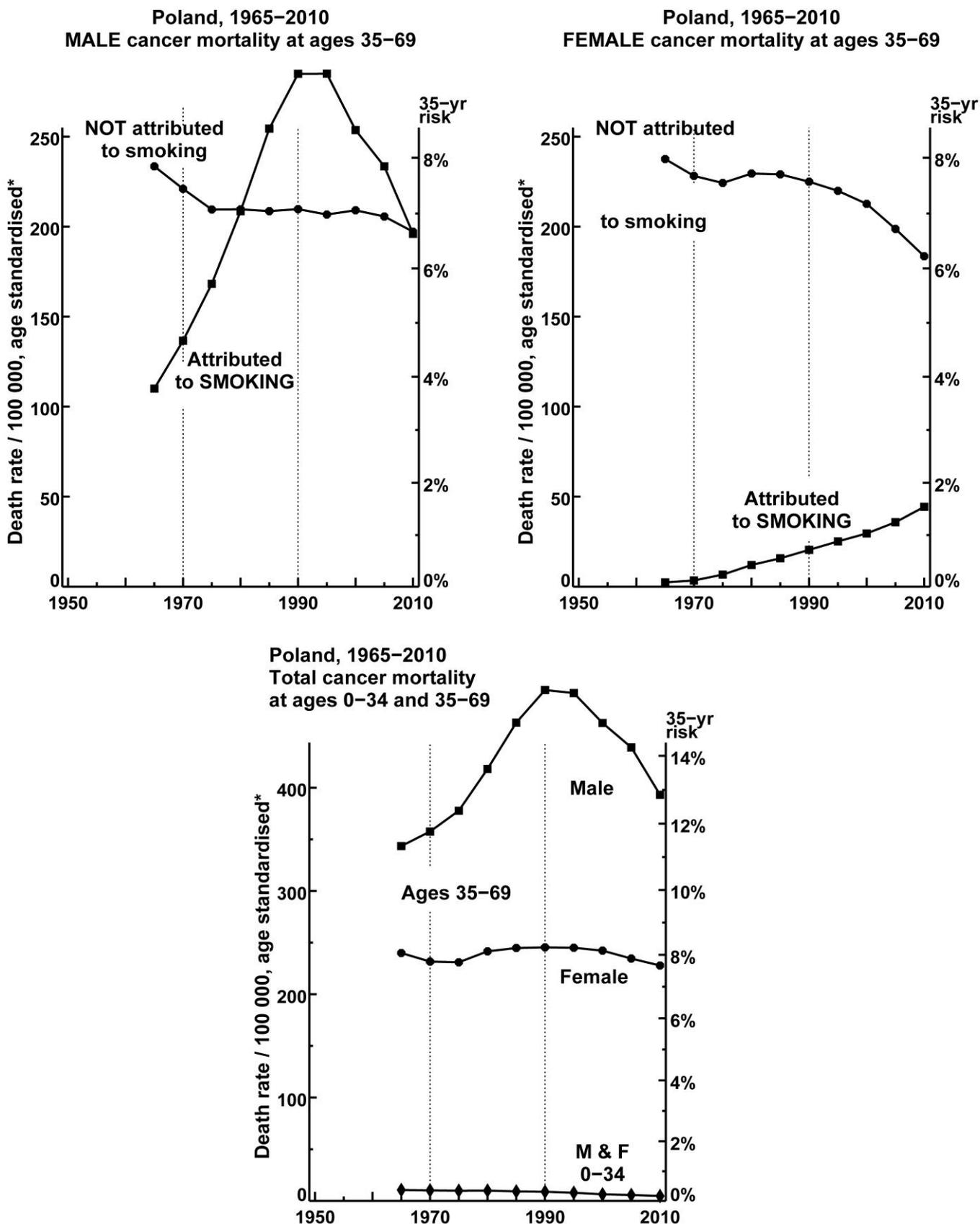
Age range (years)	Deaths attributed to SMOKING /total deaths (thousands)		Mean years lost PER DEATH FROM SMOKING
	Male	Female	
0–34	- / 70	- / 36	-
35–69	104 / 455	70 / 300	23 years
70+	137 / 708	172 / 901	7 years
All ages	241 / 1233	243 / 1236	13 years

Deaths, by cause, attributed to SMOKING / total deaths (thousands) in the year 2010

Cause	Male (by age)				Female (by age)			
	0–34	35–69	70+	All	0–34	35–69	70+	All
Lung Cancer	-/0.1	36/39	44/48	80/88	-/0.1	24/29	36/42	60/71
All Cancer	-/3.5	51/130 (39%)	61/167 (37%)	112/301	-/3.1	28/112 (25%)	45/159 (28%)	74/274
Vascular	-/4.2	25/131	24/251	49/386	-/2.3	15/66	41/331	56/399
Respiratory	-/1.5	13/28	37/85	50/115	-/1.1	13/25	50/97	63/123
All Other	-/61	17/166	17/205	34/431	-/29	14/98	36/314	51/441
All Causes	-/70	104/455 (23%)	137/708 (19%)	241/1233	-/36	70/300 (23%)	172/901 (19%)	243/1236

Cancer deaths, and all deaths, attributed to SMOKING / total deaths (thousands) in the year 2010

Cause	Male	Female	Male + Female
All Cancer	112 / 301 (37%)	74 / 274 (27%)	185 / 575 (32%)
All Causes	241 / 1233 (20%)	243 / 1236 (20%)	484 / 2469 (20%)

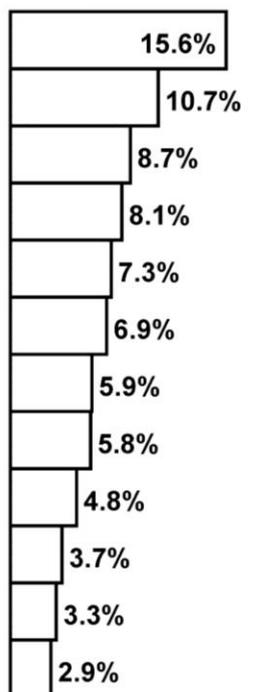


Webfig 5. Poland, 1965–2010. Total cancer mortality rates at ages 0-34 & 35-69, with the rates at 35-69 subdivided into parts attributed, and not, to smoking

Sources: WHO mortality data and UN population estimates. The rate for a 35-year period is the mean of the 7 annual death rates in the component 5-year age ranges. (Hence, without other causes of death, a rate of R per 100,000 would imply a 35-year risk of $1 - \exp[-35R/100,000]$.) The mortality attributed to smoking is estimated indirectly from the national mortality statistics, using the absolute lung cancer rate as a guide to the fraction of the deaths from other causes, or groups of causes, attributable to smoking (Peto, Lopez et al, 1992,1994).

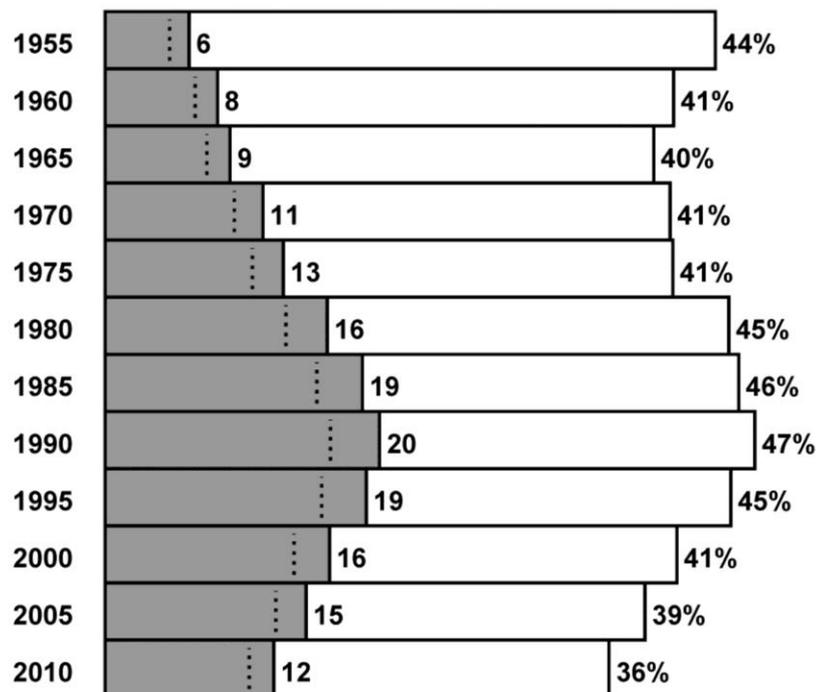
1955-2010: POLAND

Probability of infant dying before age 35

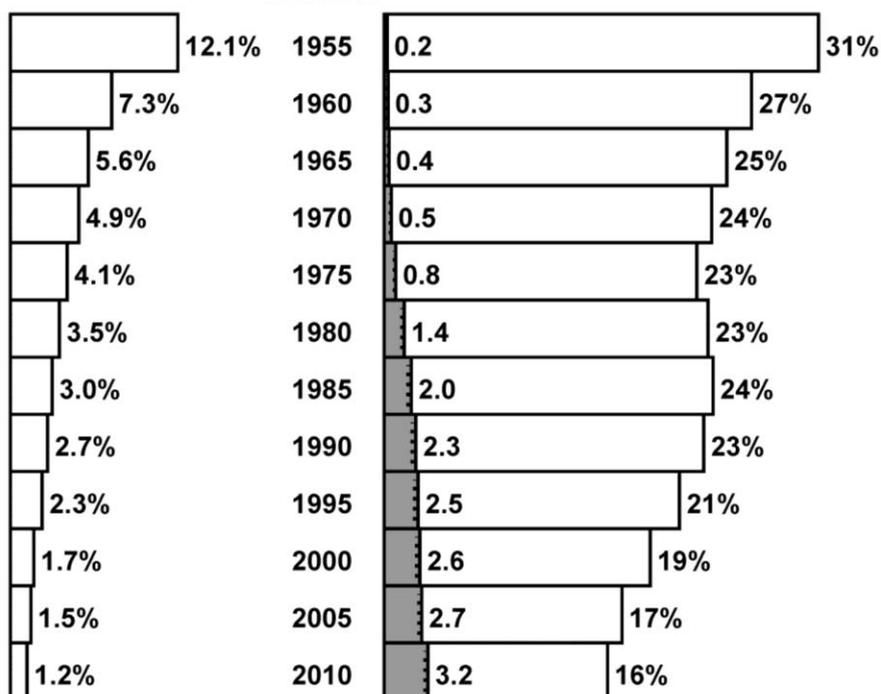


Probability of a 35-year-old dying before age 70 from smoking (shaded) or from any cause (shaded + white)

MALE



FEMALE



Webfig 6. Poland, 1955-2010. Probabilities of death at ages 0-34 (left) & 35-69, with probabilities of death from smoking shaded

Most of those killed by smoking would otherwise have survived beyond age 70, but a minority (shaded area to right of dotted line) would have died by 70 anyway. Sources: WHO mortality data and UN population estimates. The mortality attributed to smoking is estimated indirectly from the national mortality statistics (Peto, Lopez et al, 1992,1994).

POLAND: 1955-2010

Numbers of deaths attributed to smoking / total deaths (thousands)

Year	Male (by age)				Female (by age)			
	0-34	35-69	70+	All	0-34	35-69	70+	All
1950
1955	-/54	6.8/50 (14%)	1.3/32 (4%)	8.1/136	-/40	0.2/41 (0.6%)	0.1/45 (0.2%)	0.3/126
1960	-/34	9.5/50 (19%)	3.2/32 (10%)	13/117	-/24	0.3/38 (0.9%)	0.3/46 (0.6%)	0.6/107
1965	-/24	13/58 (23%)	3.2/39 (8%)	17/121	-/15	0.5/41 (1%)	0.2/55 (0.4%)	0.7/111
1970	-/22	19/67 (28%)	6.8/52 (13%)	26/141	-/13	0.9/42 (2%)	0.7/71 (1%)	1.6/126
1975	-/22	22/72 (31%)	10/64 (16%)	33/158	-/11	1.5/42 (4%)	1.3/85 (2%)	2.9/139
1980	-/23	30/83 (36%)	15/83 (18%)	45/189	-/11	2.7/44 (6%)	2.2/106 (2%)	4.9/161
1985	-/20	37/89 (42%)	17/94 (18%)	54/202	-/9.8	3.8/46 (8%)	3.3/124 (3%)	7.1/179
1990	-/18	45/105 (42%)	15/87 (18%)	60/209	-/7.8	5.1/52 (10%)	4.4/120 (4%)	9.5/179
1995	-/13	43/105 (41%)	17/87 (20%)	61/206	-/5.9	5.6/49 (11%)	5.2/125 (4%)	11/180
2000	-/10	37/95 (38%)	20/90 (23%)	57/195	-/4.0	5.9/44 (13%)	5.8/124 (5%)	12/173
2005	-/9.1	34/92 (37%)	22/95 (23%)	56/197	-/3.4	6.5/40 (16%)	6.7/128 (5%)	13/171
2010	-/8.2	30/91 (33%)	21/101 (21%)	51/200	-/2.8	7.8/40 (20%)	7.9/136 (6%)	16/179

50-year total* (M=millions), mid-1960 to mid-2010: 2.6/ 17M

1960-2010 by age & sex:

-/0.9M	1.5/4.2M	0.7/3.8M	2.2/8.8M	-/0.5M	0.2/2.2M	0.2/5.2M	0.3/7.8M
	(36%)	(19%)			(8%)	(3%)	

*Estimated as 10 times the sum of the annual numbers for 1965, 1975, 1985, 1995 & 2005

POLAND: 2010

Relative importance of deaths in MIDDLE age (35–69) in the year 2010

Age range (years)	Deaths attributed to SMOKING /total deaths (thousands)		Mean years lost PER DEATH FROM SMOKING
	Male	Female	
0–34	- / 8.2	- / 2.8	-
35–69	30 / 91	7.8 / 40	22 years
70+	21 / 101	7.9 / 136	8 years
All ages	51 / 200	16 / 179	16 years

Deaths, by cause, attributed to SMOKING / total deaths (thousands) in the year 2010

Cause	Male (by age)				Female (by age)			
	0–34	35–69	70+	All	0–34	35–69	70+	All
Lung Cancer	-/0.0	8.5/9.0	6.6/7.1	15/16	-/0.0	2.9/3.6	1.7/2.5	4.6/6.2
All Cancer	-/0.5	13/26 (50%)	9.7/25 (39%)	23/52	-/0.4	3.6/18 (20%)	2.2/22 (10%)	5.8/41
Vascular	-/0.6	9.8/30	6.6/51	16/81	-/0.2	2.3/10	3.5/82	5.8/93
Respiratory	-/0.2	1.8/3.6	3.2/7.7	5.0/11	-/0.1	0.6/1.4	1.1/6.3	1.7/7.8
All Other	-/6.9	5.5/31	1.8/17	7.3/55	-/2.1	1.3/9.5	1.0/26	2.4/37
All Causes	-/8.2	30/91 (33%)	21/101 (21%)	51/200	-/2.8	7.8/40 (20%)	7.9/136 (6%)	16/179

Cancer deaths, and all deaths, attributed to SMOKING / total deaths (thousands) in the year 2010

Cause	Male	Female	Male + Female
All Cancer	23 / 52 (44%)	5.8 / 41 (14%)	29 / 93 (31%)
All Causes	51 / 200 (26%)	16 / 179 (9%)	67 / 378 (18%)