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Appendices

German EstSmoke: Estimating adult smoking-related costs and consequences of smoking cessation for Germany

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Appendix 1: Incidence rate and probability of first-ever acute MI, stroke, lung cancer or COPD in the general German population, by age and sex

		MI		Stroke		Lung cancer		COPD	
Sex	**Age groups in years**	**Incidence per 1,000 inhabitants**	**1-year probability in the general population[1]**	**1-year incidence rate of stroke per person**	**1-year probability in the general population[1]**	**Incidence per 100,000 person years**	**1-year probability in the general population[1]**	**9-year incidence per 1000 person years**	**1-year probability in the general population[1]**
Men	35-39	104	0.00104	0.00014	0.00014	2.47	0.00002	2.6	0.00029
	40-44	104	0.00104	0.00014	0.00014	7.42	0.00007	4.7	0.00052
	45-49	104	0.00104	0.00128	0.00128	24.24	0.00024	4.7	0.00052
	50-54	104	0.00104	0.00128	0.00128	60.33	0.00060	4.7	0.00052
	55-59	503	0.00501	0.00188	0.00188	120.34	0.00120	4.7	0.00052
	60-64	503	0.00501	0.00188	0.00188	176.54	0.00177	4.7	0.00052
	65-69	876	0.00872	0.00610	0.00608	263.97	0.00264	4.7	0.00052
	70-74	876	0.00872	0.00610	0.00608	307.33	0.00307	4.7	0.00052
	75-79	1,295	0.01287	0.01288	0.01280	335.56	0.00336	4.7	0.00052
	80-84	1,735	0.01720	0.01288	0.01280	402.29	0.00402	4.7	0.00052
	85+	2,117	0.02095	0.02415	0.02386	268.45	0.00268	4.7	0.00052
Women	35-39	23	0.00023	0.00029	0.00029	2.38	0.00002	2.6	0.00029
	40-44	23	0.00023	0.00029	0.00029	8.22	0.00008	4.7	0.00052
	45-49	23	0.00023	0.00081	0.00081	19.81	0.00020	4.7	0.00052
	50-54	23	0.00023	0.00081	0.00081	38.65	0.00039	4.7	0.00052
	55-59	23	0.00023	0.00203	0.00203	67.07	0.00067	4.7	0.00052
	60-64	23	0.00023	0.00203	0.00203	82.84	0.00083	4.7	0.00052
	65-69	389	0.00389	0.00437	0.00436	109.74	0.00110	4.7	0.00052
	70-74	389	0.00389	0.00437	0.00436	101.15	0.00101	4.7	0.00052
	75-79	633	0.00631	0.01197	0.01190	103.97	0.00104	4.7	0.00052
	80-84	931	0.00927	0.01197	0.01190	107.59	0.00108	4.7	0.00052
	85+	1,304	0.01296	0.02013	0.01993	91.40	0.00091	4.7	0.00052

[1] One-year probabilities for smoking-related diseases were derived by using the following equation (29): $\text{Probability}_{1-year} = 1 - \exp(-\text{Incidencerate}_{1-year} * 1)$.

Appendix 2a: Age- and sex-specific probability (expressed as percentage chance) of developing first-ever MI-based on smoking status

Sex	Age groups in years	Non-smokers	Smokers	Ex-smokers: time since quitting					
				>1-3 years	>3-5 years	> 5-10 years	> 10-15 years	> 15-20 years	> 20 years
Men	35-39	0.05%	0.16%	0.09%	0.08%	0.08%	0.08%	0.08%	0.07%
	40-44	0.05%	0.16%	0.09%	0.08%	0.08%	0.08%	0.08%	0.07%
	45-49	0.05%	0.16%	0.09%	0.08%	0.08%	0.08%	0.08%	0.07%
	50-54	0.05%	0.16%	0.09%	0.08%	0.08%	0.08%	0.08%	0.07%
	55-59	0.30%	0.75%	0.56%	0.49%	0.49%	0.48%	0.48%	0.43%
	60-64	0.31%	0.78%	0.58%	0.51%	0.51%	0.50%	0.50%	0.44%
	65-69	0.58%	1.47%	1.09%	0.96%	0.96%	0.94%	0.94%	0.84%
	70-74	0.58%	1.47%	1.09%	0.96%	0.96%	0.94%	0.94%	0.84%
	75-79	0.90%	2.26%	1.67%	1.47%	1.47%	1.44%	1.44%	1.29%
	80-84	1.20%	3.02%	2.23%	1.97%	1.97%	1.92%	1.92%	1.72%
	85+	1.46%	3.68%	2.71%	2.39%	2.39%	2.33%	2.33%	2.09%
Women	35-39	0.01%	0.04%	0.02%	0.02%	0.02%	0.02%	0.02%	0.01%
	40-44	0.01%	0.04%	0.02%	0.02%	0.02%	0.02%	0.02%	0.01%
	45-49	0.01%	0.04%	0.02%	0.02%	0.02%	0.02%	0.02%	0.01%
	50-54	0.01%	0.04%	0.02%	0.02%	0.02%	0.02%	0.02%	0.01%
	55-59	0.01%	0.05%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%
	60-64	0.01%	0.05%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%
	65-69	0.32%	0.67%	0.59%	0.52%	0.52%	0.51%	0.51%	0.45%
	70-74	0.32%	0.67%	0.59%	0.52%	0.52%	0.51%	0.51%	0.45%
	75-79	0.54%	1.15%	1.01%	0.89%	0.89%	0.87%	0.87%	0.77%
	80-84	0.79%	1.70%	1.48%	1.30%	1.30%	1.27%	1.27%	1.14%
	85+	1.11%	2.37%	2.06%	1.82%	1.82%	1.78%	1.78%	1.59%

Appendix 2b: Age- and sex-specific probability (expressed as percentage chance) of developing first-ever stroke based on smoking status

Sex	Age groups in years	Non-smokers	Smokers	Ex-smokers: time since quitting					
				>1-3 years	>3-5 years	> 5-10 years	> 10-15 years	> 15-20 years	> 20 years
Men	35-39	0.01%	0.02%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
	40-44	0.01%	0.02%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
	45-49	0.09%	0.18%	0.13%	0.11%	0.11%	0.11%	0.11%	0.06%
	50-54	0.09%	0.18%	0.13%	0.11%	0.11%	0.11%	0.11%	0.06%
	55-59	0.14%	0.29%	0.21%	0.17%	0.17%	0.17%	0.17%	0.09%
	60-64	0.14%	0.29%	0.21%	0.17%	0.17%	0.17%	0.17%	0.09%
	65-69	0.50%	1.00%	0.73%	0.59%	0.59%	0.59%	0.59%	0.31%
	70-74	0.50%	1.00%	0.73%	0.59%	0.59%	0.59%	0.59%	0.31%
	75-79	1.11%	2.22%	1.63%	1.32%	1.32%	1.32%	1.32%	0.65%
	80-84	1.11%	2.22%	1.63%	1.32%	1.32%	1.32%	1.32%	0.65%
	85+	2.06%	4.14%	3.04%	2.47%	2.47%	2.47%	2.47%	1.22%
Women	35-39	0.02%	0.05%	0.03%	0.03%	0.03%	0.03%	0.03%	0.06%
	40-44	0.02%	0.05%	0.03%	0.03%	0.03%	0.03%	0.03%	0.06%
	45-49	0.05%	0.13%	0.10%	0.08%	0.08%	0.08%	0.08%	0.11%
	50-54	0.05%	0.13%	0.10%	0.08%	0.08%	0.08%	0.08%	0.11%
	55-59	0.14%	0.37%	0.27%	0.22%	0.22%	0.22%	0.22%	0.56%
	60-64	0.14%	0.37%	0.27%	0.22%	0.22%	0.22%	0.22%	0.56%
	65-69	0.36%	0.94%	0.69%	0.56%	0.56%	0.56%	0.56%	1.24%
	70-74	0.36%	0.94%	0.69%	0.56%	0.56%	0.56%	0.56%	1.24%
	75-79	1.07%	2.77%	2.03%	1.64%	1.64%	1.64%	1.64%	2.73%
	80-84	1.07%	2.77%	2.03%	1.64%	1.64%	1.64%	1.64%	2.73%
	85+	1.79%	4.65%	3.41%	2.76%	2.76%	2.76%	2.76%	3.08%

Appendix 2c: Age- and sex-specific probability (expressed as percentage chance) of developing lung cancer based on smoking status

Sex	Age groups in years	Non-smokers	Smokers	Ex-smokers: time since quitting		
				2-5 years	6-10 years	26-35 years
Men	35-39	0.00%	0.01%	0.00%	0.00%	0.00%
	40-44	0.00%	0.02%	0.01%	0.01%	0.00%
	45-49	0.00%	0.05%	0.04%	0.02%	0.01%
	50-54	0.01%	0.14%	0.10%	0.06%	0.02%
	55-59	0.02%	0.37%	0.28%	0.17%	0.04%
	60-64	0.02%	0.54%	0.41%	0.24%	0.07%
	65-69	0.05%	1.14%	0.88%	0.52%	0.14%
	70-74	0.06%	1.33%	1.02%	0.60%	0.16%
	75-79	0.08%	1.99%	1.52%	0.90%	0.24%
	80-84	0.10%	2.38%	1.82%	1.08%	0.29%
	85+	0.07%	1.59%	1.22%	0.72%	0.20%
Women	35-39	0.00%	0.00%	0.00%	0.00%	0.00%
	40-44	0.00%	0.01%	0.01%	0.01%	0.00%
	45-49	0.00%	0.03%	0.03%	0.02%	0.00%
	50-54	0.01%	0.06%	0.05%	0.03%	0.01%
	55-59	0.02%	0.12%	0.11%	0.06%	0.02%
	60-64	0.02%	0.15%	0.13%	0.08%	0.02%
	65-69	0.04%	0.28%	0.24%	0.14%	0.04%
	70-74	0.03%	0.25%	0.22%	0.13%	0.03%
	75-79	0.04%	0.30%	0.25%	0.15%	0.04%
	80-84	0.04%	0.31%	0.26%	0.16%	0.04%
	85+	0.03%	0.26%	0.22%	0.13%	0.03%

Appendix 2d: Age- and sex-specific probability (expressed as percentage chance) of developing COPD based on smoking status

Sex	Age groups in years	Non-smokers	Smokers	Ex-smokers
Men	35-39	0.01%	0.05%	0.01%
	40-44	0.02%	0.10%	0.02%
	45-49	0.02%	0.10%	0.02%
	50-54	0.02%	0.10%	0.02%
	55-59	0.02%	0.13%	0.03%
	60-64	0.02%	0.13%	0.03%
	65-69	0.03%	0.16%	0.04%
	70-74	0.03%	0.16%	0.04%
	75-79	0.03%	0.20%	0.04%
	80-84	0.03%	0.20%	0.04%
	85+	0.03%	0.20%	0.04%
Women	35-39	0.02%	0.05%	0.02%
	40-44	0.03%	0.09%	0.03%
	45-49	0.03%	0.09%	0.03%
	50-54	0.03%	0.09%	0.03%
	55-59	0.03%	0.11%	0.04%
	60-64	0.03%	0.11%	0.04%
	65-69	0.04%	0.13%	0.05%
	70-74	0.04%	0.13%	0.05%
	75-79	0.05%	0.14%	0.05%
	80-84	0.05%	0.14%	0.05%
	85+	0.05%	0.14%	0.05%

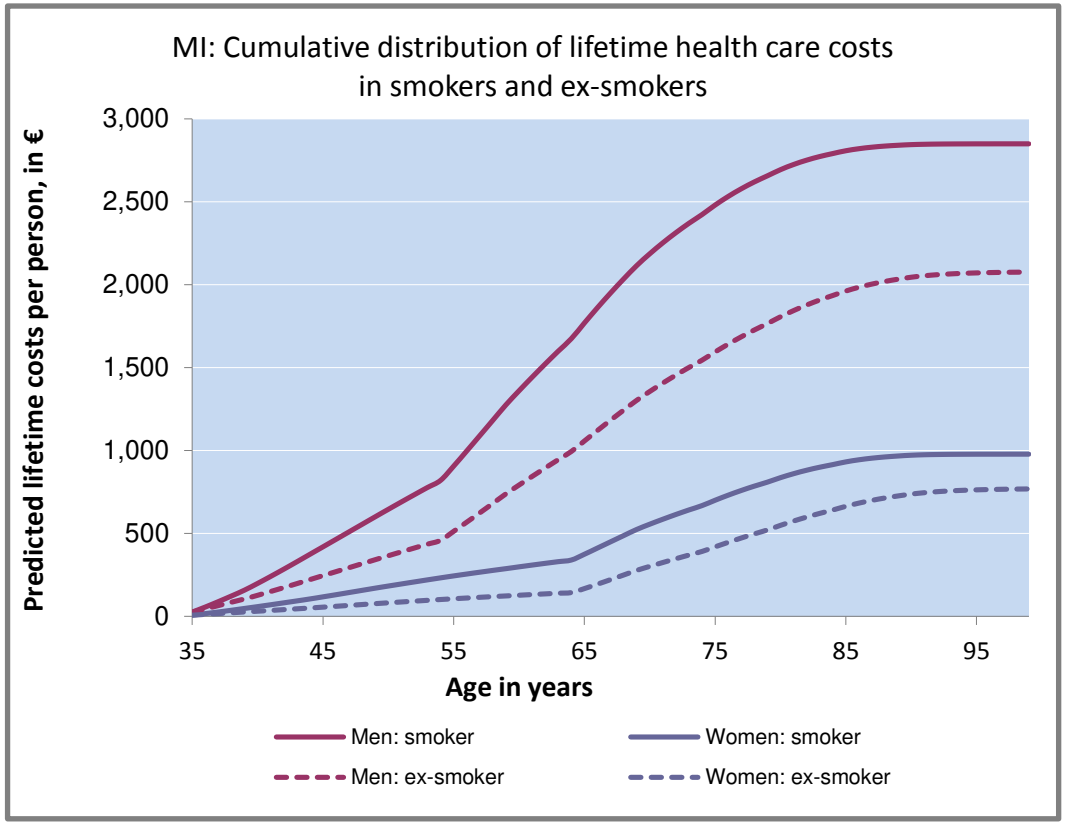
Appendix 3: Age- and sex-specific rates of mortality due to fatal events and other diseases

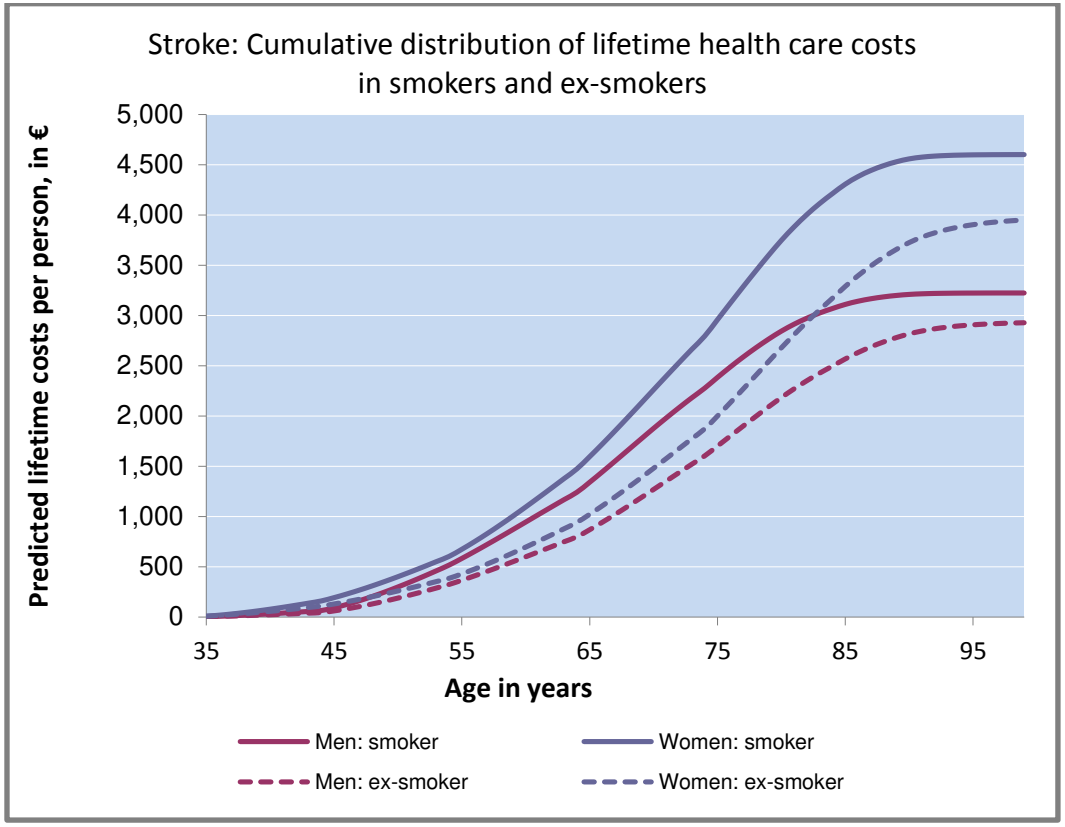
Sex	Age Groups	MI	Stroke	Lung Cancer[2]	COPD[2]	Other Diseases[3]
Men	35-39	0.315	0.194	0.007	0.00004	0.001
	40-44	0.221	0.194	0.007	0.00004	0.001
	45-49	0.254	0.194	0.021	0.00004	0.002
	50-54	0.262	0.194	0.021	0.00004	0.003
	55-59	0.284	0.194	0.077	0.00004	0.005
	60-64	0.422	0.194	0.077	0.00004	0.007
	65-69	0.450	0.194	0.156	0.00004	0.011
	70-74	0.543	0.194	0.156	0.00004	0.015
	75-79	0.543	0.194	0.206	0.00004	0.026
	80-84	0.543	0.194	0.206	0.00004	0.047
	85+	0.543	0.194	0.206	0.00004	0.086
Women	35-39	0.245	0.194	0.007	0.00013	0.000
	40-44	0.294	0.194	0.007	0.00013	0.001
	45-49	0.200	0.194	0.014	0.00013	0.001
	50-54	0.268	0.194	0.014	0.00013	0.002
	55-59	0.378	0.194	0.042	0.00013	0.003
	60-64	0.294	0.194	0.042	0.00013	0.004
	65-69	0.388	0.194	0.056	0.00013	0.007
	70-74	0.543	0.194	0.056	0.00013	0.011
	75-79	0.543	0.194	0.063	0.00013	0.020
	80-84	0.543	0.194	0.063	0.00013	0.041
	85+	0.543	0.194	0.063	0.00013	0.083

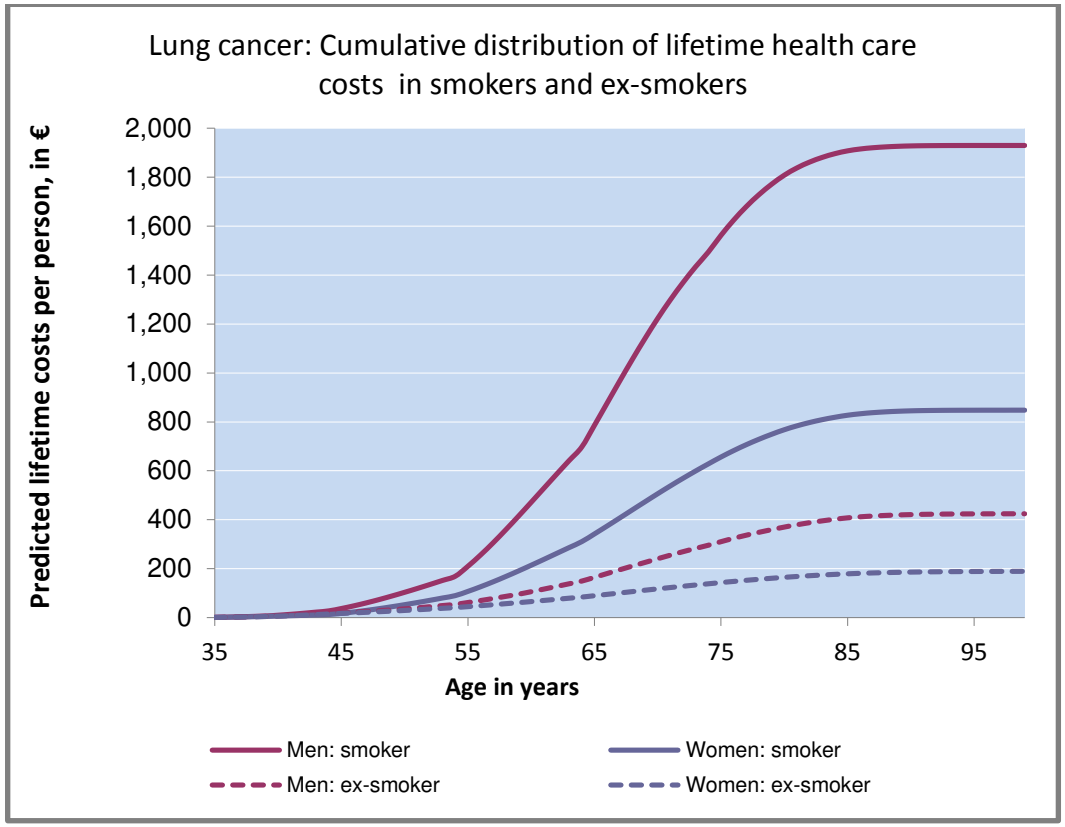
[2] We followed Tammemagi et al. (55) and Keistinen et al. (56) to rescale the probability of death from lung cancer and COPD.

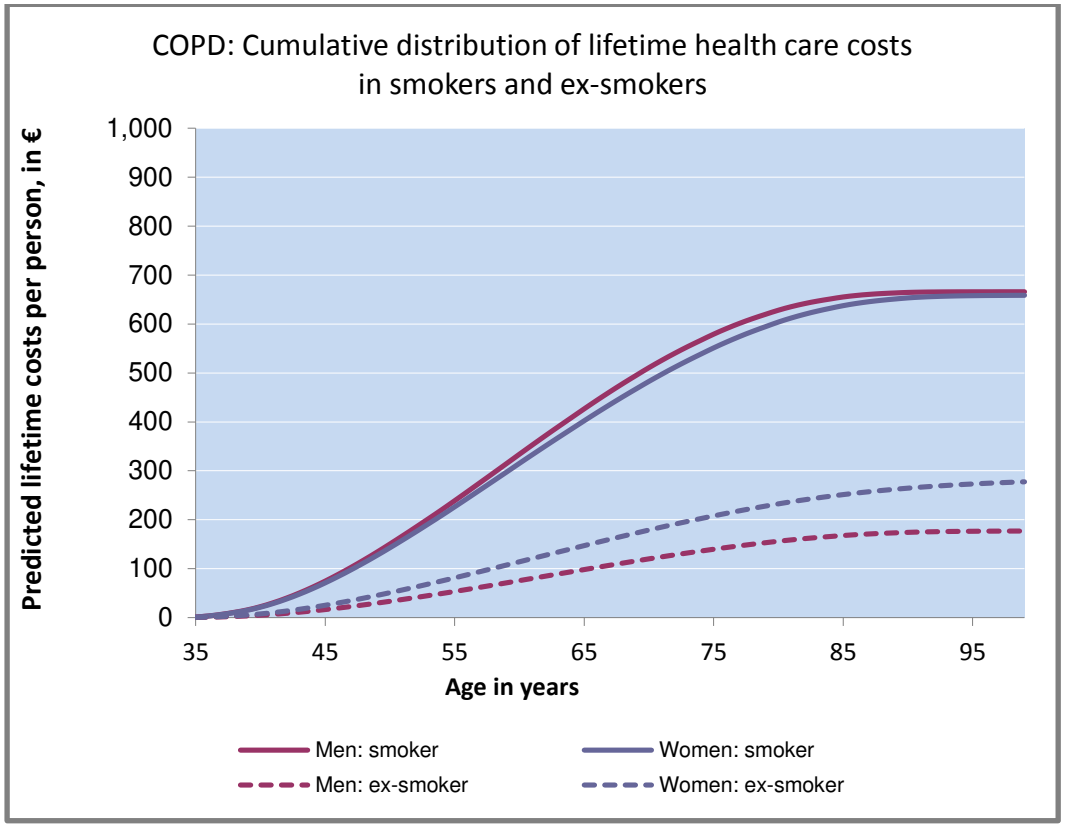
[3] Without MI, stroke, lung cancer and COPD.

Appendix 4: Distribution of health care costs associated with MI, stroke, lung cancer and COPD






Lung cancer: Cumulative distribution of lifetime health care costs in smokers and ex-smokers
Predicted lifetime costs per person, in €
2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
35
45
55
65
75
85
95
Age in years
Men: smoker
Women: smoker
Men: ex-smoker
Women: ex-smoker


COPD: Cumulative distribution of lifetime health care costs in smokers and ex-smokers
Predicted lifetime costs per person, in €
1,000
900
800
700
600
500
400
300
200
100
0
35
45
55
65
75
85
95
Age in years
Men: smoker
Women: smoker
Men: ex-smoker
Women: ex-smoker