

This is a repository copy of *German EstSmoke:Estimating adult smoking-related costs and consequences of smoking cessation for Germany*.

White Rose Research Online URL for this paper:

<https://eprints.whiterose.ac.uk/119626/>

Version: Accepted Version

Article:

Sonntag, Diana, Gilbody, Simon orcid.org/0000-0002-8236-6983, Volker, Winkler et al. (1 more author) (2018) *German EstSmoke:Estimating adult smoking-related costs and consequences of smoking cessation for Germany*. *Addiction*. pp. 125-136. ISSN 1360-0443

<https://doi.org/10.1111/add.13956>

Reuse

Items deposited in White Rose Research Online are protected by copyright, with all rights reserved unless indicated otherwise. They may be downloaded and/or printed for private study, or other acts as permitted by national copyright laws. The publisher or other rights holders may allow further reproduction and re-use of the full text version. This is indicated by the licence information on the White Rose Research Online record for the item.

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.

Appendices

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

Diana Sonntag^{1,2}, PhD, Simon Gilbody³, DPhil/PhD, MMedSc, Winkler Volker⁴, PD, PhD,
Shehzad Ali², PhD, MBBS

¹ Mannheim Institute of Public Health, Social and Preventive Medicine, Medical Faculty Mannheim of the Heidelberg University, Germany

² Department of Health Sciences, University of York, York, UK

³ Department of Health Sciences and HYM, University of York, York, UK

⁴ Institute of Public Health, Heidelberg University Hospital, Germany

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): $Probability_{1-year} = 1 - \exp(-Incidence_{rate}_{1-year} * 1)$.

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%	0.08%	0.07%
	40-44	0.05%	0.16%	0.09%	0.08%	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%	0.08%	0.07%
	50-54	0.05%	0.16%	0.09%	0.08%	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%	0.48%	0.43%
	60-64	0.31%	0.78%	0.58%	0.51%	0.51%	0.50%	0.50%	0.50%	0.44%
	65-69	0.58%	1.47%	1.09%	0.96%	0.96%	0.94%	0.94%	0.94%	0.84%
	70-74	0.58%	1.47%	1.09%	0.96%	0.96%	0.94%	0.94%	0.94%	0.84%
	75-79	0.90%	2.26%	1.67%	1.47%	1.47%	1.44%	1.44%	1.44%	1.29%
	80-84	1.20%	3.02%	2.23%	1.97%	1.97%	1.92%	1.92%	1.92%	1.72%
85+	1.46%	3.68%	2.71%	2.39%	2.39%	2.33%	2.33%	2.33%	2.09%	
Women	35-39	0.01%	0.04%	0.02%	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%	0.02%	0.01%
	45-49	0.01%	0.04%	0.02%	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%	0.02%	0.01%
	55-59	0.01%	0.05%	0.02%	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%	0.02%
	65-69	0.32%	0.67%	0.59%	0.52%	0.52%	0.51%	0.51%	0.51%	0.45%
	70-74	0.32%	0.67%	0.59%	0.52%	0.52%	0.51%	0.51%	0.51%	0.45%
	75-79	0.54%	1.15%	1.01%	0.89%	0.89%	0.87%	0.87%	0.87%	0.77%
	80-84	0.79%	1.70%	1.48%	1.30%	1.30%	1.27%	1.27%	1.27%	1.14%
85+	1.11%	2.37%	2.06%	1.82%	1.82%	1.78%	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%	0.01%
	40-44	0.01%	0.02%	0.01%	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%	0.11%	0.06%
	50-54	0.09%	0.18%	0.13%	0.11%	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%	0.17%	0.09%
	60-64	0.14%	0.29%	0.21%	0.17%	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%	0.59%	0.31%
	70-74	0.50%	1.00%	0.73%	0.59%	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%	1.32%	0.65%
	80-84	1.11%	2.22%	1.63%	1.32%	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%	2.47%	1.22%	
Women	35-39	0.02%	0.05%	0.03%	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%	0.03%	0.06%
	45-49	0.05%	0.13%	0.10%	0.08%	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%	0.08%	0.11%
	55-59	0.14%	0.37%	0.27%	0.22%	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%	0.22%	0.56%
	65-69	0.36%	0.94%	0.69%	0.56%	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%	0.56%	1.24%
	75-79	1.07%	2.77%	2.03%	1.64%	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%	1.64%	2.73%
85+	1.79%	4.65%	3.41%	2.76%	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%	

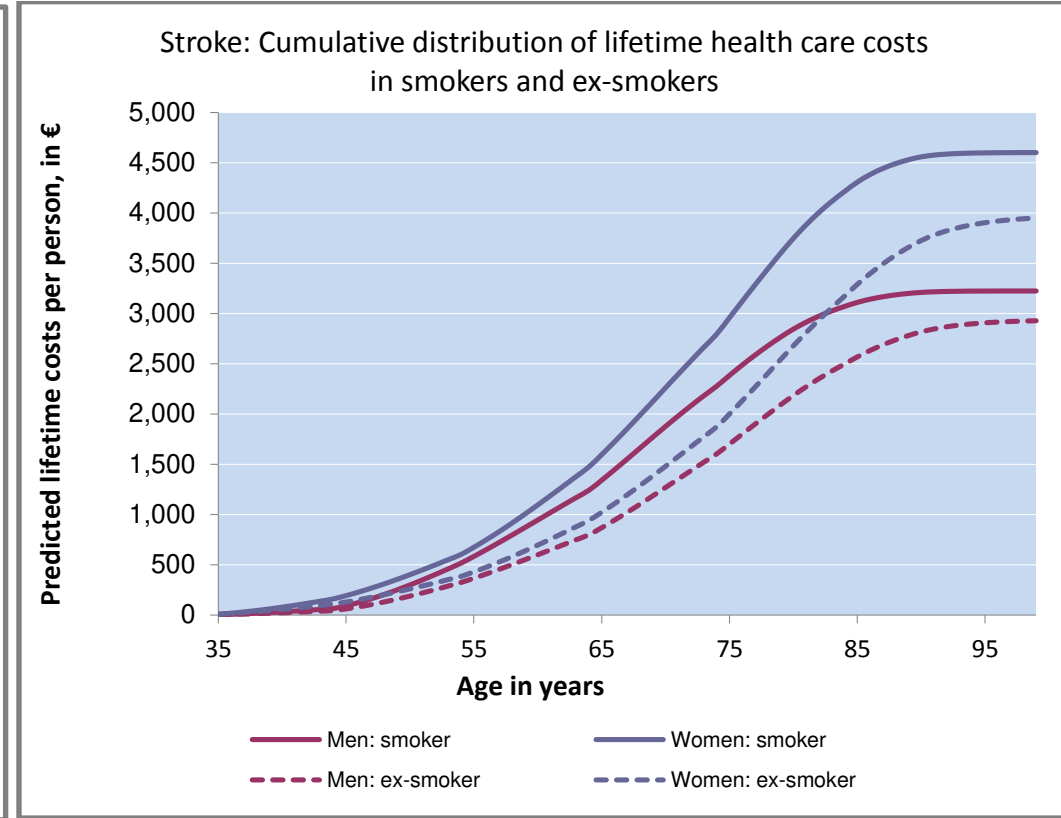
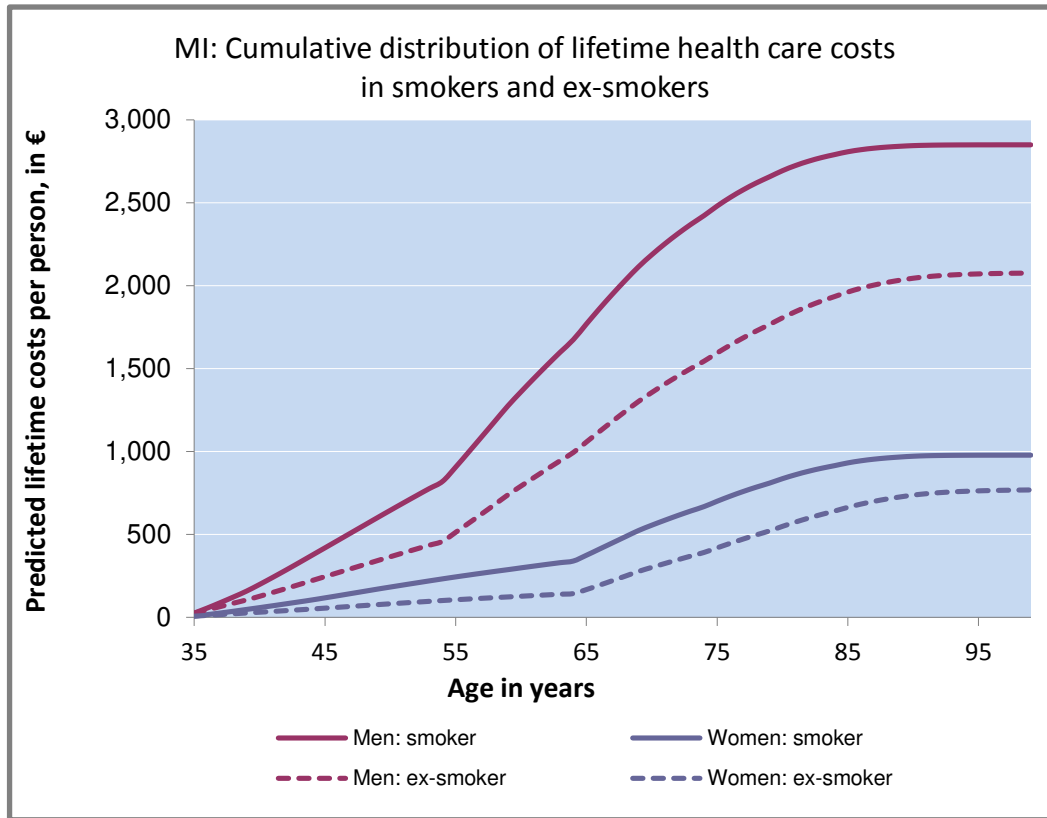
Appendix 3: Age- and sex-specific rates of mortality due to fatal events and other diseases

Sex	Age Groups	MI	Stroke	Lung Cancer²	COPD²	Other Diseases³
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	

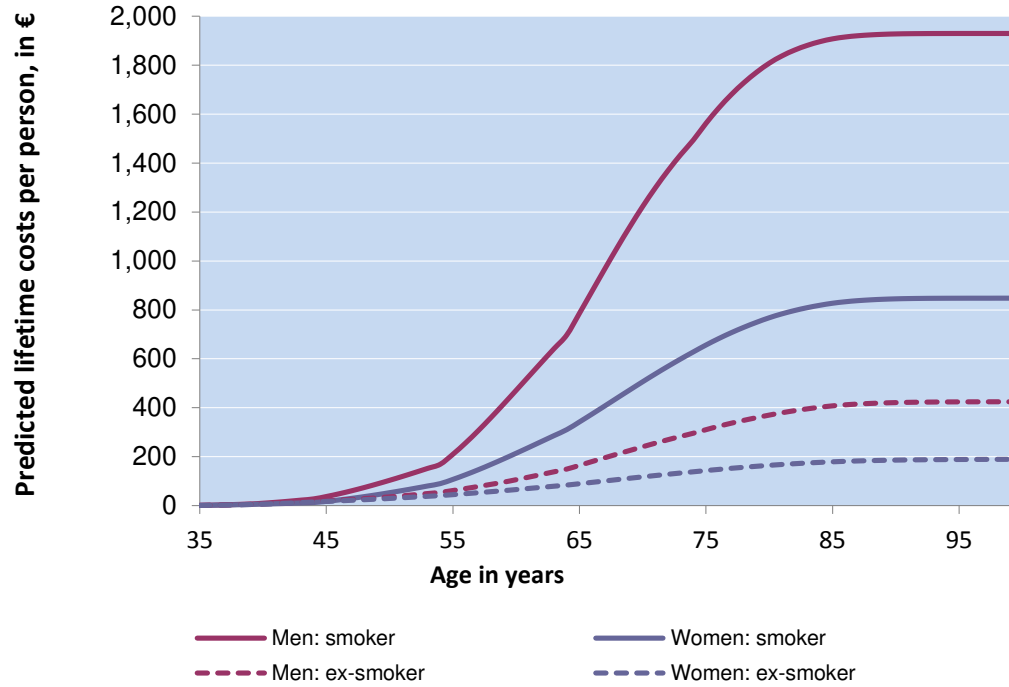
² We followed Tammemagi et al. (55) and Keistinen et al. (56) to rescale the probability of death from lung cancer and COPD.

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



COPD: Cumulative distribution of lifetime health care costs in smokers and ex-smokers

