

ORIGINAL ARTICLE

European cancer mortality predictions for the year 2026: the levelling of female lung cancer mortality

C. Santucci^{1,2}, S. Mignozzi¹, F. Levi³, M. Malvezzi⁴, P. Boffetta^{5,6}, E. Negri⁵ & C. La Vecchia^{1*}

¹Department of Clinical Sciences and Community Health, Department of Excellence 2023-2027, University of Milan, 'La Statale', Milan; ²Fondazione IRCCS Ca' Granda, Ospedale Maggiore Policlinico, Milan; Italy; ³Department of Epidemiology and Health Services Research, Centre for Primary Care and Public Health (Unisanté), University of Lausanne, Lausanne, Switzerland; ⁴Department of Medicine and Surgery, University of Parma, Parma; ⁵Department of Medical and Surgical Sciences, University of Bologna, Bologna, Italy; ⁶Stony Brook Cancer Center, Stony Brook University, Stony Brook, USA



Available online 19 January 2026

Background: We provided updated cancer mortality estimates for 2026 in the European Union (EU) and its five most populous countries, with a focus on lung cancer.

Materials and methods: Cancer death certifications and population data were obtained from the World Health Organization and United Nations databases. For the EU, France, Germany, Italy, Poland, Spain, and the UK, we derived data for all cancers combined and major cancer sites since 1970. Linear regression models, based on the most recent age-specific trends identified by Poisson joinpoint regression, were used to estimate deaths in 2026. The number of averted deaths between 1989 and 2026 was computed by applying the 1988 peak rate to subsequent populations.

Results: For 2026, we estimated ~1 230 000 EU cancer deaths, corresponding to age-standardised rates of 114.1/100 000 males (−7.8% versus 2020-2022) and 74.7/100 000 females (−5.9%). In the EU countries and the whole EU, favourable trends are predicted for most major cancers, except female pancreatic cancer. In the UK, predicted rates are also favourable, except female colorectal cancer. Lung cancer mortality continues to decrease markedly among males, while we predicted a levelling off of rates, around 12.5/100 000, among females in all considered countries and the whole of EU, except for Spain (+2.4%). Among females, lung cancer mortality declines are confined to those aged <65 years, while unfavourable trends continued in older age groups. Around 7.3 (5.0 in males, 2.3 in females) million total cancer deaths have been avoided in the EU since the peak observed in 1988. The corresponding figure for lung cancer is 1.8 million among males, while no averted deaths were recorded among females.

Conclusion: Lung cancer mortality predictions for 2026 indicate a levelling off among EU females, with age- and country-specific differences. Mortality trends in ASRs for most cancers remain favourable in the EU and the UK, though the absolute number of cancer deaths is not declining due to population ageing.

Key words: cancer mortality, predictions, lung cancer, European Union, UK

INTRODUCTION

Predicting cancer mortality rates and trends allows to evaluate the burden of disease as well as the impact of prevention strategies, screening programmes, and advances in cancer treatment and management. Since 2011,¹ we have been providing estimates of cancer mortality for the current year in the main European countries and the

European Union (EU). This study provides an updated overview of mortality patterns in the EU, its five most populous countries, and the UK for 2026.

We also provide a specific focus on lung cancer, offering more in-depth analyses and discussion. Despite continuous progress in treatment and the implementation of anti-smoking policies, lung cancer remains the leading cause of cancer-related deaths in Europe, representing a serious yet preventable public health issue.² Similar to the United States,³ male lung cancer mortality rates have been falling since the 1990s,⁴ reflecting long-term declines in male smoking prevalence. In contrast, no favourable trend has yet been observed among females in the EU whereas rates in the United States started to decline in 2000 and those in the UK have been falling since 2005, albeit from considerably higher levels.

*Correspondence to: Dr Carlo La Vecchia, Department of Clinical Sciences and Community Health, Department of Excellence 2023-2027, University of Milan, 'La Statale', Via Celoria 22, 20133 Milan, Italy. Tel: +39 3488748539
E-mail: carlo.lavecchia@unimi.it (C. La Vecchia).

0923-7534/© 2025 The Author(s). Published by Elsevier Ltd on behalf of European Society for Medical Oncology. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

MATERIALS AND METHODS

Mortality data for stomach, colorectal, pancreas, lung, breast, uterus (cervix and corpus), ovary, prostate, and bladder cancers and leukaemia, and all cancers combined were obtained from the World Health Organization (WHO) database.⁵ The list of corresponding International Classification of Diseases codes according to the 10th revision is available in [Supplementary Table S1](https://doi.org/10.1016/j.annonc.2025.12.005), available at <https://doi.org/10.1016/j.annonc.2025.12.005>. We retrieved resident population data and population predictions from the United Nations database.⁶

We considered the five most populous EU countries (France, Germany, Italy, Poland, and Spain), the EU, and the UK. These countries have good data coverage ($\geq 90\%$) and high data quality (medium for Poland), as defined by the WHO.⁷ Figures were derived from 1970 to 2022 or the most recent available calendar year. We computed sex- and age-specific mortality rates for 5-year age groups, ranging from 0–4 years up to 85+ years, for each cancer site and selected country, and for each calendar year or quinquennium. We derived age-standardised mortality rates (ASRs), based on the world standard population. We focused on lung cancer, for which we calculated the ASR for specific age groups. We also applied joinpoint regression models on ASRs from lung cancer, allowing up to five joinpoints.⁸

To predict 2026 mortality estimates, we applied a log-rithmic Poisson joinpoint regression model on the number of deaths in each 5-year age group, testing up to five joinpoints. We fitted linear regression models to the most recent trend segment identified by the joinpoint model for each age group to obtain estimates of age-specific death numbers and the corresponding 95% prediction intervals (PI) for the year 2026. For lung cancer at the age group 25–44 years, we fitted a log-linear model due to low death numbers. We then computed both age-specific and age-standardised death rates, along with their related 95% PIs. To estimate the number of deaths avoided from all cancers and from lung cancer in the EU and the UK for the period 1988–2026, we compared observed and predicted deaths with those expected based on the 1988 age-specific peak rate.

Data analyses were carried out using the software R version 4.3.2 (R Development Core Team, 2022), SAS version 9.4 (SAS Institute Inc., Cary, NC), and Joinpoint Regression Program, Version 5.2.0.0. April 2024 (Statistical Research and Applications Branch, National Cancer Institute).

RESULTS

Table 1 gives numbers of deaths and the ASRs per 100 000 from all cancers combined and selected cancer sites during 2020–2022 and predicted figures for 2026 for the EU and the UK along with the percent change between the two periods. **Figure 1** shows the corresponding information in bar plots, according to sex and cancer site. In the EU, predicted ASRs for all cancers in 2026 are 114.1/100 000 males (-7.8% versus 2020–2022) and 74.7/100 000 females

(-5.9% versus 2020–2022). The number of cancer deaths is expected to increase in the EU, from around 666 900 deaths per year during 2020–2022 to 684 600 in 2026 among males ($+2.7\%$), and from 535 000 to 544 900 among females ($+1.9\%$). In the EU, 2026 ASRs are expected to be favourable for all cancer sites considered and for both sexes, except for pancreatic cancer among females ($+1.0\%$ compared with 2020–2022). Among males, lung cancer remains the leading cause of cancer death in 2026 (22.9/100 000; -22.6% versus 2020–2022), followed by colorectal cancer (13.5/100 000; -7.4%). Predicted rates for females are 12.6/100 000 (-7.6% versus 2020–2022) for breast and 12.5/100 000 (-5.2%) for lung cancer.

In the UK, predicted ASRs from all cancers combined are favourable, declining from 110.7/100 000 in 2020–2022 to 98.3/100 000 in 2026 (-11.3%) in males and from 86.4/100 000 to 80.1/100 000 (-7.3%) in females. Differently from the EU, the number of predicted deaths from cancer does not show a significant rise, changing from 91 000/year in 2020–2022 to 91 400 in 2026 among males ($+0.4\%$), and from 79 980 to 80 500 among females ($+0.7\%$). In the UK, favourable rates for 2026 are predicted for all cancer sites considered and both sexes, except for colorectal cancer ($+3.7\%$) in females. Lung cancer remains the most common cancer among males in 2026, with an ASR of 17.7/100 000 (-18.9% versus 2020–2022), followed by colorectal cancer at 13.8/100 000 (-3.6%). Among females, lung cancer is also the leading cancer, with an ASR of 14.9/100 000 (-13.4% versus 2020–2022), followed by breast cancer at 12.3/100 000 (-10.4%). Country-specific ASR projections for 2026 according to sex and cancer site are provided in [Supplementary Tables S2–S6](https://doi.org/10.1016/j.annonc.2025.12.005), while corresponding results from joinpoint analyses by country and cancer site for males and females in [Tables S7a and S7b](https://doi.org/10.1016/j.annonc.2025.12.005), available at <https://doi.org/10.1016/j.annonc.2025.12.005>.

Figure 2 shows trends in total cancer mortality rates and by cancer site over 5-year calendar periods for males and females, from 1970–1974 to 2020–2024, and the predicted ASRs for 2026 with the corresponding PIs. Mortality rates from stomach cancer among males decreased over the entire period, while most other cancers started to decline in the late 1980s or in the 1990s. Among females, ASR trends for stomach, colorectal, uterine cancers, and leukaemia have been favourable since 1970, while mortality from ovarian cancer began to decline in the early 1990s. Throughout this period, mortality trends were upwards for pancreatic and lung cancer. However, lung cancer rates have levelled off in recent years or even slightly decreased. The corresponding figures for the UK are shown in [Supplementary Figure S1](https://doi.org/10.1016/j.annonc.2025.12.005), while cancer-specific trends and predictions in the selected countries according to sex in [Figures S2 and S3](https://doi.org/10.1016/j.annonc.2025.12.005), available at <https://doi.org/10.1016/j.annonc.2025.12.005>.

Table 2 gives the observed ASRs for lung cancer in the six European countries and the EU in 2015–2019, 2020–2022, and the projected rates for 2026 with the 95% PIs for all ages, and for the EU also by age group. Lower ASRs are predicted for all countries and the EU in 2026 compared

Table 1. Number of predicted deaths and mortality rates for the year 2026 and comparison figures for 2020-2022, for the EU and for the UK, with 95% prediction intervals and the percentage difference between 2020-2022 and 2026

Country	Sex	Cancer	Observed number of deaths 2020-2022	Predicted number of deaths 2026 (95% PI)	Observed ASR 2020-2022	Predicted ASR 2026 (95% PI)	Δ %
EU	Males	Stomach	28 934	27 400 (26 596-28 256)	5.52	4.80 (4.65-4.96)	-13.04
		Colorectum	81 445	82 300 (80 341-84 218)	14.53	13.45 (13.13-13.77)	-7.43
		Pancreas	42 226	45 200 (44 603-45 723)	8.13	7.92 (7.82-8.01)	-2.58
		Lung	150 920	133 300 (130 295-136 210)	29.58	22.90 (22.27-23.53)	-22.58
		Prostate	67 958	71 700 (69 919-73 568)	9.71	9.15 (8.92-9.37)	-5.77
		Bladder	28 304	28 100 (27 218-28 948)	4.45	3.86 (3.75-3.98)	-13.26
		Leukaemia	21 558	21 100 (20 210-21 906)	3.93	3.32 (3.15-3.49)	-15.52
		All cancers	666 924	684 600 (672 086-697 099)	123.76	114.12 (111.70-116.53)	-7.79
	Females	Stomach	18 201	15 700 (15 180-16 264)	2.59	2.12 (2.05-2.20)	-18.15
		Colorectum	65 888	63 700 (62 887-64 530)	8.49	7.72 (7.58-7.86)	-9.07
		Pancreas	41 878	44 900 (44 078-45 658)	5.75	5.81 (5.70-5.92)	+1.04
		Lung	77 926	82 000 (80 568-83 474)	13.15	12.47 (12.17-12.77)	-5.17
		Breast	84 278	84 600 (83 370-85 772)	13.63	12.59 (12.37-12.80)	-7.63
		Uterus	27 084	28 200 (27 574-28 859)	4.71	4.60 (4.48-4.72)	-2.34
		Ovary	25 782	25 300 (24 825-25 814)	4.37	3.98 (3.89-4.07)	-8.92
		Bladder	9502	9800 (9443-10 070)	1.07	1.04 (1.00-1.08)	-2.80
		Leukaemia	16 816	16 500 (15 983-16 992)	2.29	1.92 (1.81-2.04)	-16.16
		All cancers	534 988	544 900 (538 731-551 138)	79.33	74.65 (73.84-75.46)	-5.90
UK	Males	Stomach	2516	2100 (1934-2191)	3.15	2.38 (2.20-2.57)	-24.44
		Colorectum	11 562	12 100 (11 816-12 452)	14.26	13.75 (13.34-14.16)	-3.58
		Pancreas	5006	5300 (5057-5468)	6.47	6.05 (5.76-6.34)	-6.49
		Lung	17 536	16 100 (15 622-16 586)	21.78	17.66 (17.05-18.26)	-18.92
		Prostate	11 997	12 300 (11 636-12 972)	11.58	10.35 (9.83-10.88)	-10.62
		Bladder	3808	4000 (3862-4187)	3.82	3.52 (3.34-3.69)	-7.85
		Leukaemia	2684	2700 (2491-2906)	3.33	2.79 (2.55-3.02)	-16.22
		All cancers	91 028	91 400 (89 662-93 061)	110.72	98.26 (96.11-100.42)	-11.25
	Females	Stomach	1380	1171 (1052-1291)	1.48	1.31 (1.17-1.45)	-11.49
		Colorectum	9934	10 700 (10 391-11 026)	9.87	10.23 (9.86-10.60)	+3.65
		Pancreas	4908	5147 (4934-5360)	5.13	4.96 (4.68-5.23)	-3.31
		Lung	15 850	15 500 (14 963-15 948)	17.14	14.85 (14.30-15.40)	-13.36
		Breast	11 228	11 000 (10 593-11 462)	13.71	12.29 (11.72-12.86)	-10.36
		Uterus	3458	3700 (3552-3838)	4.31	4.23 (4.00-4.45)	-1.86
		Ovary	4036	3800 (3783-4160)	4.81	4.28 (4.01-4.54)	-11.02
		Bladder	1793	1900 (1780-1991)	1.53	1.49 (1.40-1.59)	-2.61
		Leukaemia	1932	1900 (1793-2042)	2.04	1.73 (1.53-1.93)	-15.20
		All cancers	79 980	80 500 (78 849-82 125)	86.36	80.10 (78.08-82.12)	-7.25

ASR, age-standardised mortality rates (world standard population); EU, European Union; PI, prediction intervals.

with the ones in 2020-2022, except for Spain where the ASR for females is expected to increase by 2.4%. Predicted lung cancer male ASRs varied across different countries, with Italy showing the lowest one (18.7/100 000) and Spain the highest rate (26.6/100 000). Among females, predicted rates ranged between around 10/100 000 in Italy and Spain and 13.8/100 000 in Germany. In the EU, decreases are observed and predicted for all age groups among males, while for females ASRs are predicted to increase in the 65- to 74-year age category (+7.9%) and flat among the 75+-year group (+0.4%). [Supplementary Table S8](https://doi.org/10.1016/j.annonc.2025.12.005), available at <https://doi.org/10.1016/j.annonc.2025.12.005>, shows detailed results for lung cancer by age group and sex in the six European countries considered. As in the EU, male ASRs are decreasing in all age groups, while in females trends are favourable for those under and unfavourable for those aged ≥ 65 .

Figure 3 shows the results of the analysis of the turning points for annual ASRs for lung cancer by selected age groups, by sex, in the EU and the UK between 1970 and 2026. Among males in the EU, lung cancer mortality began to decline in the 1990s for all age groups except those aged 75 years, which only started declining in the past two decades. The corresponding data for males in the UK show

consistently favourable trends for all age groups throughout the entire observation period, though starting from higher values. Among females in the EU, lung cancer mortality declined from 2000 for those aged 25-44 years and over the past decade for those aged 45-64 years also, while unfavourable trends were observed throughout the entire period for the 65- to 74-year and 75+-year age groups, with a levelling off in recent years. The corresponding data for women in the UK show trends consistent with those in the EU for younger age groups. However, declines have been observed since 1990 for women aged 65-74 years, and since 2010 for females aged ≥ 75 years. These rates are higher than those in the EU. [Supplementary Table S9](https://doi.org/10.1016/j.annonc.2025.12.005), available at <https://doi.org/10.1016/j.annonc.2025.12.005>, shows the joinpoint analysis results for the truncated age groups 25-44 years, 45-64 years, 65-74 years, and 75+ years.

Figure 4 displays the estimated number of avoided deaths from all cancers combined for both sexes in the EU and the UK, compared with age-specific rates remaining constant since 1988. Over the period 1988-2026, almost 7.3 million deaths from all cancers have been avoided in the EU (5 012 000 in males and 2 284 000 in females). The corresponding number for the UK was 1 558 000 (1 071 000

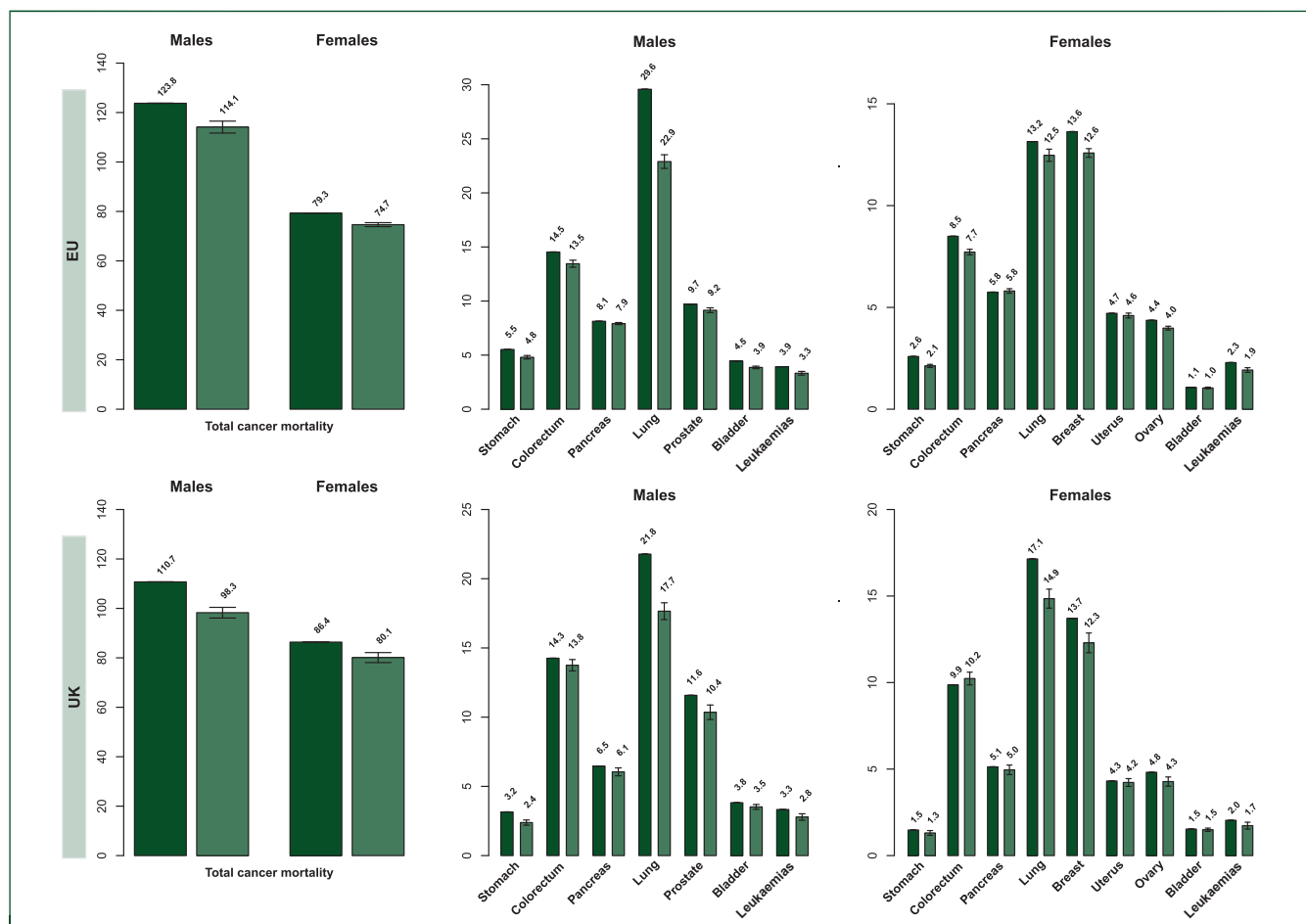


Figure 1. Bar plots of age-standardised mortality rates per 100 000 persons for the years 2020-2022 (dark green) and predicted figures for 2026 (light green) with 95% prediction intervals for all cancers combined and major cancer sites according to sex in the EU (top panels) and the UK (bottom panels). EU, European Union.

in males and 487 000 in females). During the same period, among males over 1.8 million deaths from lung cancer have been avoided in the EU and 624 000 in the UK, while no averted deaths were recorded among females (Figure 5).

DISCUSSION

Favourable trends in overall cancer mortality will continue across the EU, its five most populous countries, and the UK. In the EU, total cancer mortality rates are expected to fall by 7.8% and 5.9% for males and females since 2020-2022, respectively. However, population growth and ageing will result in an increase in the absolute number of cancer deaths, with ~1 230 000 expected in the EU (+2.3% compared with 2020-2022). In the UK, a decline in cancer mortality rates of 11.3% for males and 7.3% for females is predicted, while the number of cancer deaths is expected to remain stable. Overall, these trends reflect the ongoing impact of improvements in prevention, early detection, and treatment. However, disparities persist in terms of countries and gender. Predictions for 2026 indicate that female lung cancer mortality will level off around 12.5 per 100 000 in the EU, as previously reported.^{9,10}

Lung cancer remains the leading cause of cancer death in the EU, with mortality rates continuing to decline among males but projected to remain nearly twice as high as those among females in 2026. In most countries, previous upward trends among females appear to be stabilising, except in Spain where an increase is expected from a low baseline. Age-specific analyses indicate more favourable trends among females younger than 65 years, while older females continue to experience less favourable patterns. Tobacco control remains the cornerstone of lung cancer prevention. Reductions in occupational and environmental exposures, implementation of low-dose computed tomography screening, and therapeutic advances contributed to recent declines, although their overall impact remains smaller than that of tobacco control.¹¹⁻¹³ Comprehensive tobacco policies have averted millions of smoking-related deaths,¹⁴ but enforcement remains uneven across Europe. Nordic countries are moving toward a 'tobacco-free generation',¹⁵ whereas Central and Eastern Europe continue to lag behind.¹⁶ Socioeconomic inequalities further shape mortality patterns, with higher rates among lower socioeconomic groups, likely due to differential tobacco exposure, unequal access to cessation services, and delayed policy

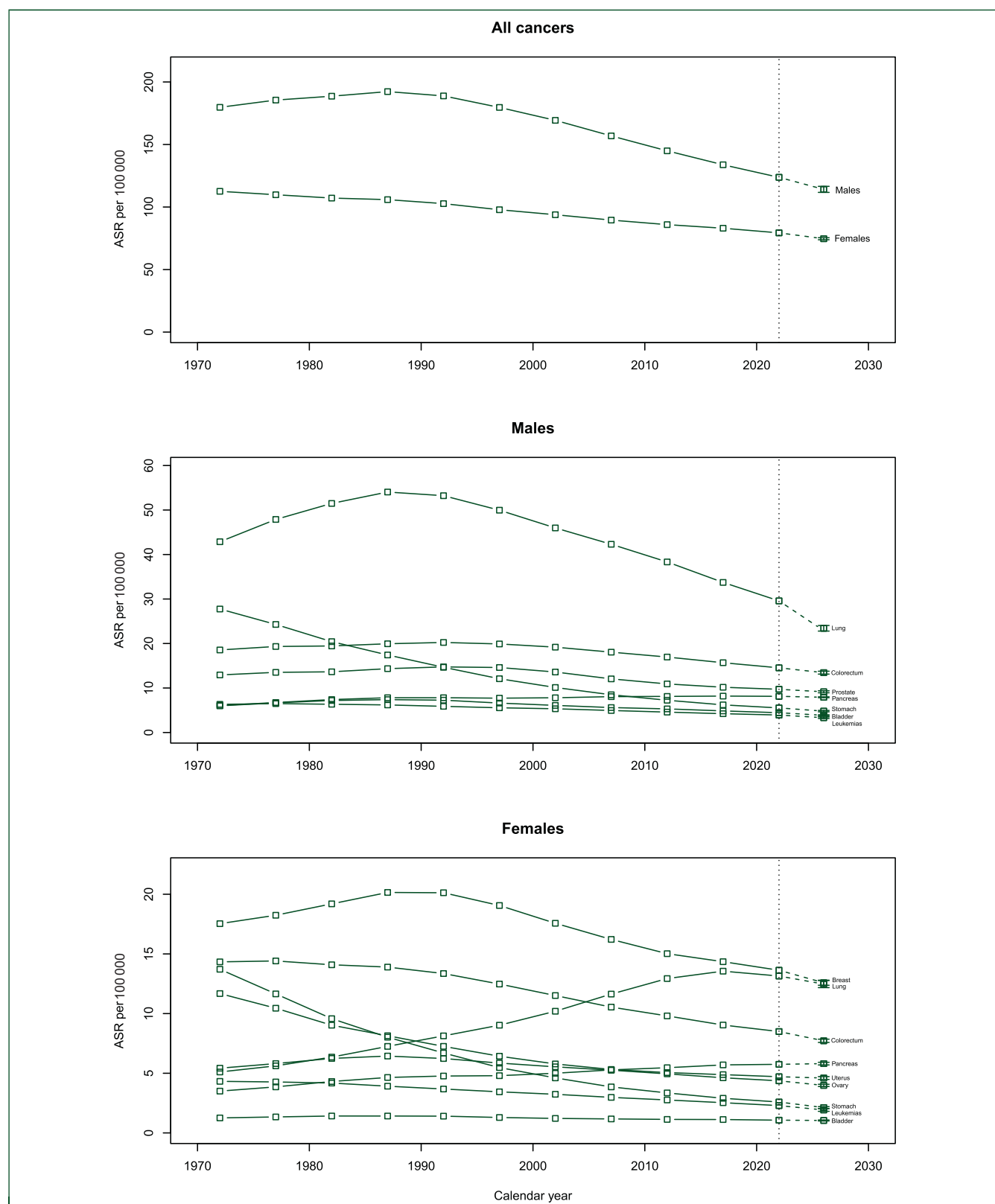


Figure 2. Quinquennial age-standardised cancer mortality rate (ASR) trends from 1970-1974 to 2020-2024 and predicted rates for 2026 with 95% prediction intervals, for all cancers combined and for major cancer sites in males and females, in the EU. EU, European Union.

Table 2. Age-standardised lung cancer mortality rates per 100 000 males and females during 2015-2019, 2020-2022, and predicted figures for the year 2026 for all ages in selected European countries, and for the EU for the age groups 25-44 years, 45-64 years, 65-74 years, and 75+ years, with percentage differences between 2020-2022 and 2026

Country	Age	Males				Females			
		ASR 2015-2019	ASR 2020-2022	Predicted ASR 2026 (95% PI)	Δ% 2026 versus 2020- 2022	ASR 2015-2019	ASR 2020-2022	Predicted ASR 2026 (95% PI)	Δ% 2026 versus 2020-2022
France	All ages	33.57	28.92	22.72 (21.76-23.68)	-21.44	12.63	12.32	11.98 (11.47-12.50)	-2.76
Germany		29.10	26.64	20.15 (18.90-21.41)	-24.36	15.15	14.82	13.84 (13.16-14.52)	-6.61
Italy		29.41	25.33	18.73 (17.96-19.49)	-26.06	10.84	10.57	10.20 (9.76-10.64)	-3.50
Poland		45.74	35.98	25.38 (23.25-27.50)	-29.46	17.75	16.08	13.20 (12.21-14.18)	-17.91
Spain		34.85	30.80	26.57 (25.78-27.35)	-13.73	9.15	9.89	10.13 (9.67-10.59)	+2.43
EU	All ages	33.73	29.58	22.90 (22.27-23.53)	-22.58	13.56	13.15	12.47 (12.17-12.77)	-5.17
	25-44 years	1.88	1.66	1.23 (1.22-1.24)	-25.90	1.25	1.02	0.84 (0.83-0.85)	-17.65
	45-64 years	68.07	55.77	38.11 (35.78-40.44)	-31.67	33.17	29.06	23.97 (22.59-25.36)	-17.52
	65-74 years	258.24	235.43	195.66 (187.35-203.97)	-16.89	94.81	100.72	108.66 (106.10-111.21)	+7.88
	75+ years	369.08	338.45	288.58 (281.75-295.41)	-14.73	108.75	115.88	116.36 (113.83-118.88)	+0.41

ASR, age-standardised mortality rates (world standard population); EU, European Union; PI, prediction intervals.

adoption.^{17,18} The narrowing gender gap reflects later smoking uptake and slower cessation rates among females, highlighting the need for gender-responsive prevention strategies.¹⁹

Stomach cancer mortality rates have persistently declined,^{20,21} largely due to reductions in *Helicobacter pylori* infection, tobacco control, healthier diet, and better food preservation.²²⁻²⁴

Colorectal cancer, the second most common cause of cancer death in Europe, shows long-term reductions in mortality. This is attributable to improved detection and removal of adenomas via colonoscopy, advances in surgery, systemic therapies, targeted treatments, and immunotherapy.^{25,26} However, the effectiveness of screening is reduced by less than optimal participation, coverage, and equitable access.²⁷ For the UK, we predicted unfavourable mortality rates for females in 2026, likely due to an increase in overweight and obesity and consequently diabetes.^{28,29}

Although the global burden of pancreatic cancer has risen substantially over the past two decades,³⁰ mortality in the EU showed diverging pattern by sex, with rates stabilising among males but still increasing among females. This is consistent with trends observed in smoking prevalence in males and females, since tobacco remains the major recognised risk factor for pancreatic cancer.³¹ Other high-income countries showed unfavourable trends in pancreatic cancer rates, too,^{3,32} reflecting increased prevalence of obesity, diabetes, and high fasting plasma glucose levels, together with only modest progress in early detection and treatment.³³⁻³⁵ Smoking explains part of the observed rates, but its declining prevalence contrasts with the rising impact of metabolic risk factors, which now account for a growing share of mortality.³⁴ This highlights the need to reinforce preventive strategies targeting modifiable metabolic risks, alongside the development of more effective diagnostic and therapeutic approaches, since survival is low and showed only modest increases over the past decades, if any.³⁶

Breast cancer mortality continues to decline due to successful treatment regimens, as well as, though to a lesser degree, wider adoption of screening and early detection.^{37,38} Incidence trends vary, with increases observed in northern and eastern Europe, stable trends in several countries, and decreases in southern Europe.³⁹ These, however, largely reflect improved diagnosis and registration. Improvements in chemotherapy, endocrine and targeted therapies, radiotherapy, new adjuvant therapies, and surgery have substantially improved prognosis, while no favourable change has been observed in reproductive factors, the recognised risk factors for breast cancer, obesity, and physical inactivity.⁴⁰⁻⁴³

Projections for 2026 indicate a stabilisation of uterine cancer mortality in the EU, with an estimated rate of 4.6 deaths per 100 000. From death certification we were unable to distinguish cervical from endometrial/corpus uteri cancer in several countries, underscoring the need for better certification efforts in order to monitor these aetiologically different neoplasms.⁴⁴ The increase in endometrial cancer mortality observed in some European countries is likely due to increased prevalence of overweight and obesity.⁴⁵ In the United States, mortality rates increased by ~1.5% per year since 2013.³

Favourable mortality trends for ovarian cancer persist across Europe, with projected decreases in deaths through 2026. This is largely due to the widespread use of combined oral contraceptives (OC) in subsequent generations of European women, since OCs have a long-term favourable effect on the risk of ovarian cancer.⁴⁶ Advances in surgery and novel chemotherapeutic regimens, as well as diagnosis and management, have likely had some additional impact on recent trends.⁴⁷ However, the lack of reliable screening tests and frequent late-stage diagnosis continue to pose significant challenges.

Prostate cancer mortality continues to decline in the EU as in the United States,³ driven by advances in treatment, disease management, and early detection, mainly due to

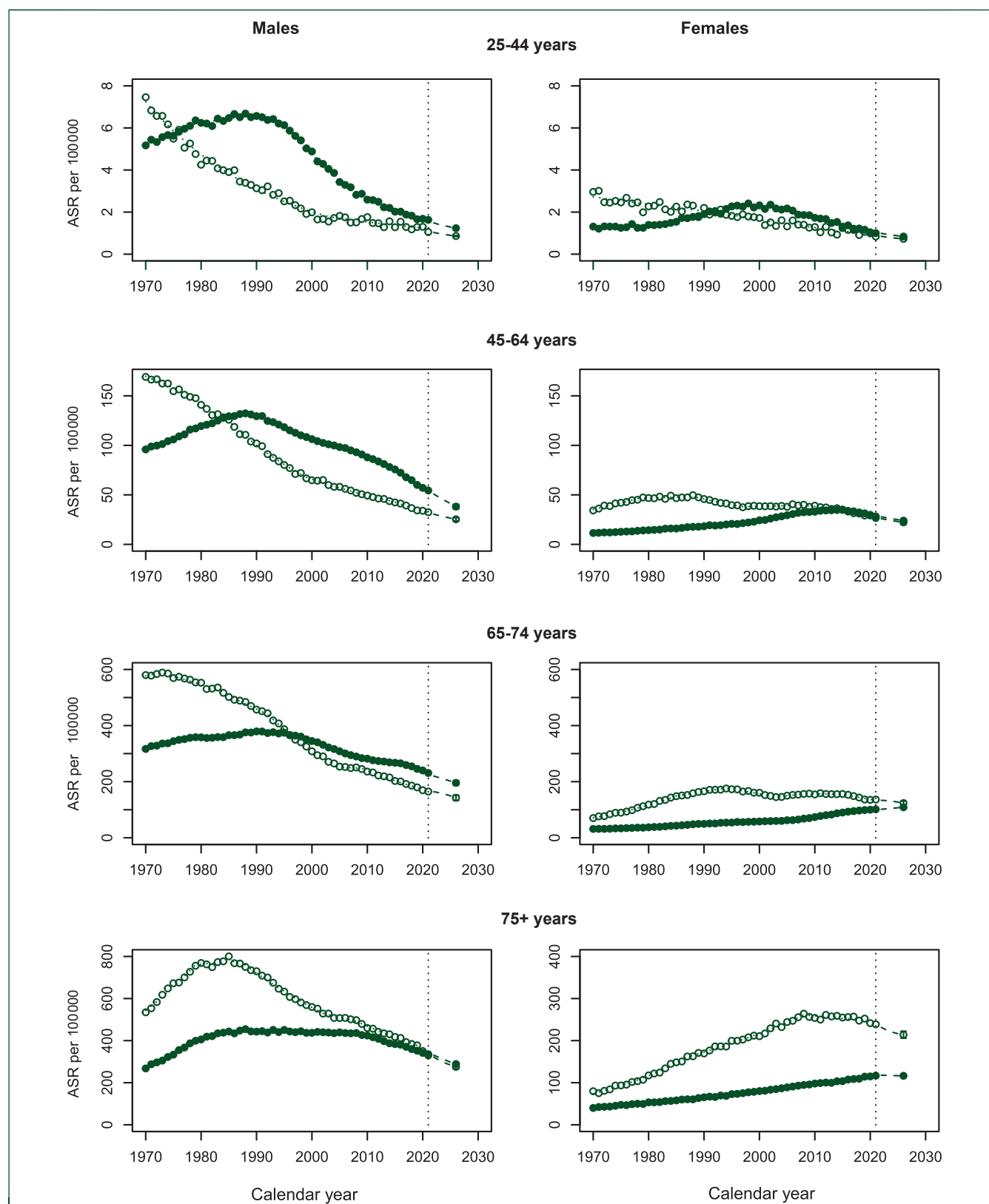


Figure 3. Joinpoint analysis of lung cancer mortality rates among males and females aged 25-44 years, 45-64 years, 65-74 years, and 75+ years in the EU (filled circles) and the UK (empty circles) over the period 1970-2021 and the predicted rates for 2026 with 95% prediction intervals. ASR, age-standardised cancer mortality rate; EU, European Union.

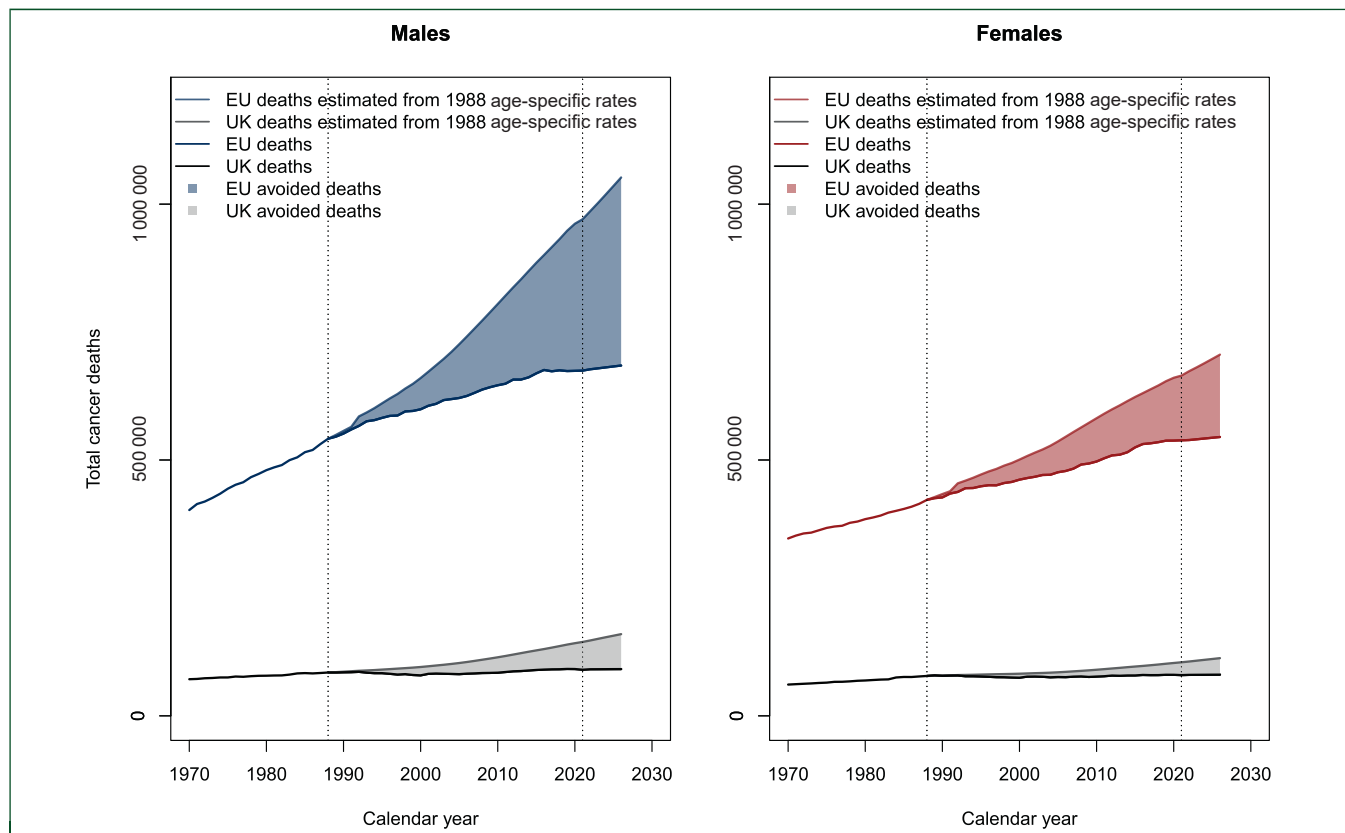


Figure 4. Total avoided cancer deaths for males and females in the EU and the UK between the top rate in 1988 and 2026; observed numbers of cancer deaths from 1970 to 2021 and predicted cancer deaths from 2022 to 2026; estimated numbers of total cancer deaths by applying 1988 age-specific peak mortality rate. During the 38-year period, 7 296 000 deaths from cancer have been avoided (respectively 5 012 000 in males and 2 284 000 in females) in the EU. The corresponding number for the UK was 1 558 000 (1 071 000 in males and 487 000 in females). EU, European Union.

widespread—though not organised—prostate-specific antigen testing.⁴⁸

Bladder cancer mortality also continues to decline among males in the EU, whereas no improvement was observed among females. In 2026, the rate is predicted to be ~3.5 times higher in males than in females. This favourable trend among men is likely due to a decline in smoking prevalence and reduced exposure to occupational and environmental carcinogens.⁴⁹ Primary prevention, mainly through smoking cessation, is the most effective strategy for reducing the burden of bladder cancer.⁵⁰

Projections for leukaemia mortality remain favourable, reflecting ongoing improvements in treatment and access to high-quality specialised care.^{51,52} Nevertheless, significant disparities persist across countries and socioeconomic groups, highlighting the need for interventions targeting disadvantaged populations.⁵³

Our predictions are based on official WHO death certification from the most populous European countries, which have high coverage and quality.⁷ Still, our findings should be interpreted with some caution, as they assume that the factors driving the latest trends will not change in the short term. Predictions rely on age-specific joinpoint models, which may be less sensitive to shifts in cohort trends. Nevertheless, our previous cancer mortality projections for

Europe have proven to be reliable. When we compared observed cancer deaths in 2021 with our earlier predictions, the errors were below 5% for most neoplasms in all the countries considered.⁵⁴ The impact of the coronavirus disease 2019 (COVID-19) pandemic on cancer mortality appears less pronounced than on vascular, metabolic, and neurological diseases.^{55,56}

In conclusion, the overall cancer mortality projection for the EU and the UK in 2026 remains favourable, except for female pancreatic cancer in the EU and female colorectal cancer in the UK. Lung cancer mortality continues to decline among males, while rates among females are stabilising, albeit differences across age and country persist. These findings underscore the need for comprehensive, equitable, and gender-sensitive tobacco control strategies. Strengthening taxation, implementing advertising bans, creating smoke-free environments, and providing cessation support are essential for closing regional and socioeconomic gaps, and achieving sustained reductions in lung cancer mortality across Europe. Additionally, controlling overweight and obesity, improving dietary habits, controlling alcohol consumption, and extending and improving the implementation of population screening for the early detection of cervical, breast, and colorectal cancers remain key strategies for cancer prevention.

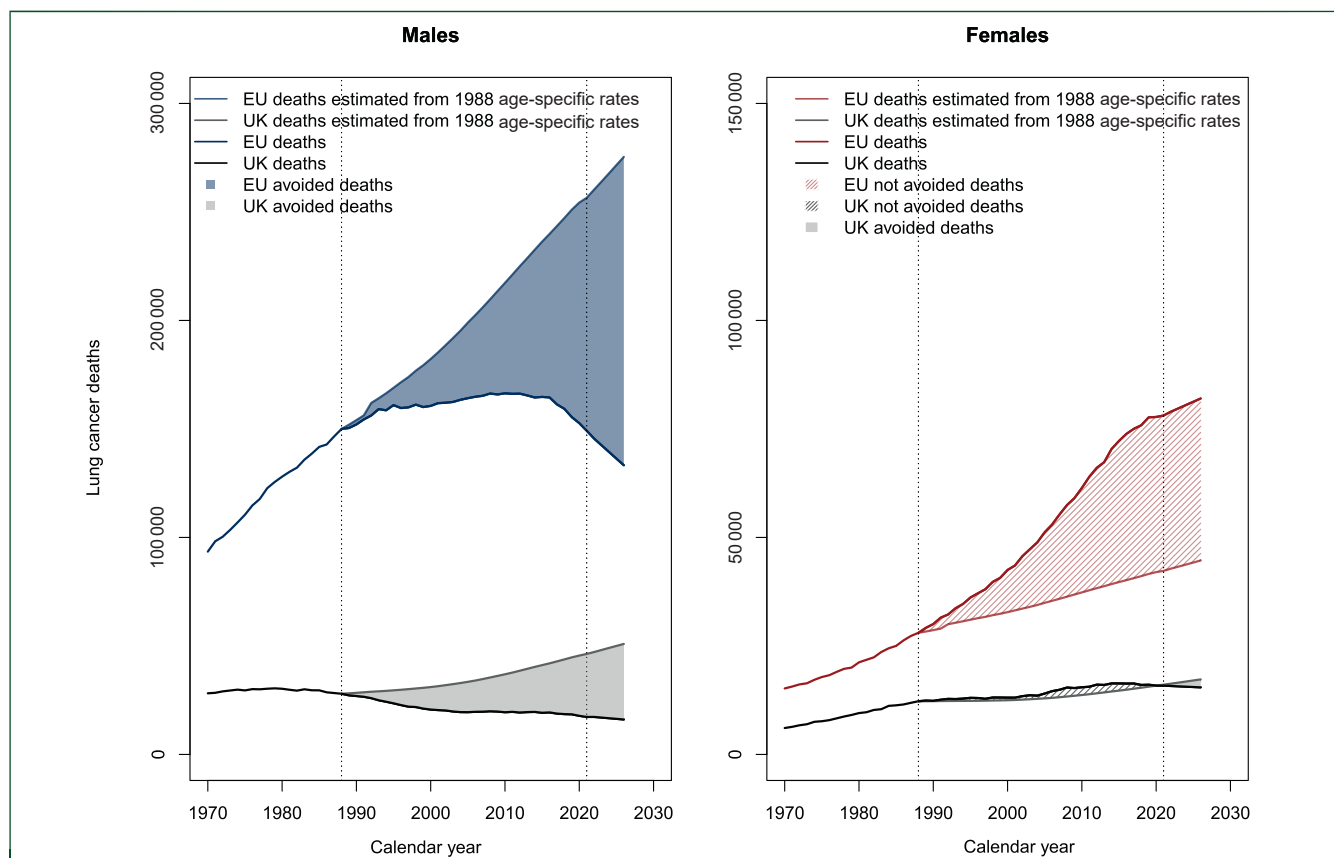


Figure 5. Lung cancer avoided deaths for males and females in the EU and the UK between the top rate in 1988 and 2026; observed numbers of cancer deaths from 1970 to 2021 and predicted lung cancer deaths from 2022 to 2026; estimated numbers of total cancer deaths by applying 1988 age-specific peak mortality rate. During the 38-year period, 1 804 000 male deaths from lung cancer were avoided in the EU, and 624 000 in the UK. However, no female deaths were avoided. EU, European Union.

FUNDING

This work was supported by the AIRC (Associazione Italiana per la Ricerca sul Cancro) Foundation, Italy [grant number 22987 to EN]. CS and partly CLV were also supported by EU funding within the NextGenerationEU-MUR PNRR Extended Partnership initiative [grant number PE00000007, INF-ACT]. The funding sources had no role in the study design, data collection and analysis, decision to publish, or preparation of the manuscript.

DISCLOSURE

The authors have declared no conflicts of interest.

REFERENCES

- Malvezzi M, Arfe A, Bertuccio P, Levi F, La Vecchia C, Negri E. European cancer mortality predictions for the year 2011. *Ann Oncol*. 2011;22(4):947-956.
- Bray F, Laversanne M, Sung H, et al. Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin*. 2024;74(3):229-263.
- Siegel RL, Kratzer TB, Giaquinto AN, Sung H, Jemal A. Cancer statistics, 2025. *CA Cancer J Clin*. 2025;75(1):10-45.
- Santucci C, Bertuccio P, Mignozzi S, et al. Cancer mortality in Europe in 2020, and an overview of trends since 1990. *Eur J Cancer Prev*. 2025. <https://doi.org/10.1097/CEJ.0000000000000981>.
- World Health Organization Statistical Information System. WHO mortality database. Geneva: World Health Organization. Available at <https://www.who.int/data/data-collection-tools/who-mortality-database>. Accessed August 17, 2025.
- United Nations, Department of Economic and Social Affairs, Population Division (2024). World Population Prospects 2024, Online Edition. Available at <http://esa.un.org/unpd/wpp/Excel-Data/mortality.htm>. Accessed August 17, 2025.
- World Health Organization. WHO assessment as of November 2020 based on most recent years of available country data. Information on the assessment method is published in WHO methods and data sources for country-level causes of death 2000-2019. WHO; Dec 2020. p. 7-15.
- Kim HJ, Fay MP, Feuer EJ, Midthune DN. Permutation tests for joinpoint regression with applications to cancer rates. *Stat Med*. 2000;19(3):335-351.
- Bosetti C, Malvezzi M, Rosso T, et al. Lung cancer mortality in European women: trends and predictions. *Lung Cancer*. 2012;78(3):171-178.
- Bosetti C, Levi F, Lucchini F, Negri E, La Vecchia C. Lung cancer mortality in European women: recent trends and perspectives. *Ann Oncol*. 2005;16(10):1597-1604.
- Jeon H, Wang S, Song J, Gill H, Cheng H. Update 2025: management of non-small-cell lung cancer. *Lung*. 2025;203(1):53.
- Field JK, Vulkan D, Davies MPA, et al. Lung cancer mortality reduction by LDCT screening: UKLS randomised trial results and international meta-analysis. *Lancet Reg Health Eur*. 2021;10:100179.
- Duer E, Yang H, Robinson S, et al. Do we know enough about the effect of low-dose computed tomography screening for lung cancer on mortality to act? An updated systematic review, meta-analysis and

- network meta-analysis of randomised controlled trials 2017 to 2021. *Diagn Progn Res*. 2023;7(1):26.
14. Lyle G, Hendrie D. Global smoking-related deaths averted due to MPOWER policies implemented at the highest level between 2007 and 2020. *Global Health*. 2024;20(1):40.
 15. Linnansaari A, Ollila H, Pisinger C, Scheffels J, Kinnunen JM, Rimpelä A. Towards Tobacco-Free Generation: implementation of preventive tobacco policies in the Nordic countries. *Scand J Public Health*. 2023;51(8):1108-1121.
 16. Feliu A, Filippidis FT, Joossens L, et al. The association between tobacco control policy implementation and country-level socioeconomic factors in 31 European countries. *Sci Rep*. 2021;11(1):8912.
 17. Vaccarella S, Georges D, Bray F, et al. Socioeconomic inequalities in cancer mortality between and within countries in Europe: a population-based study. *Lancet Reg Health Eur*. 2023;25:100551.
 18. Córdoba-Doña JA, Benítez-Rodríguez E, Escolar-Pujolar A, Santos-Sánchez V. Age-period-cohort analysis of lung cancer mortality inequalities in Southern Spain: missed opportunities for implementing equitable tobacco control policies. *Int J Equity Health*. 2023;22(1):132.
 19. Solomon A. Gender, women, and the future of tobacco control. *Drugs Alcohol Today*. 2020;20(3):249-262.
 20. Liu KS, Raza SA, El-Serag HB, Thrift AP. Recent trends in the incidence of gastric cancer in the United States. *J Clin Gastroenterol*. 2024;58(1):39-45.
 21. Collatuzzo G, Santucci C, Malvezzi M, La Vecchia C, Boffetta P, Negri E. Trends in gastric cancer mortality 1990-2019 in 36 countries worldwide, with predictions to 2025, and incidence, overall and by subtype. *Cancer Med*. 2023;12(8):9912-9925.
 22. Hooi JKY, Lai WY, Ng WK, et al. Global prevalence of helicobacter pylori infection: systematic review and meta-analysis. *Gastroenterology*. 2017;153(2):420-429.
 23. Ferro A, Rosato V, Rota M, et al. Meat intake and risk of gastric cancer in the Stomach cancer Pooling (StoP) project. *Int J Cancer*. 2020;147(1):45-55.
 24. Bertuccio P, Alicandro G, Rota M, et al. Citrus fruit intake and gastric cancer: the stomach cancer pooling (StoP) project consortium. *Int J Cancer*. 2019;144(12):2936-2944.
 25. Fadlallah H, El Masri J, Fakhereddine H, et al. Colorectal cancer: recent advances in management and treatment. *World J Clin Oncol*. 2024;15(9):1136-1156.
 26. Nagai M, Suzuki S, Minato Y, et al. Detecting colorectal lesions with image-enhanced endoscopy: an updated review from clinical trials. *Clin Endosc*. 2023;56(5):553-562.
 27. Chen Y, Zhang Y, Yan Y, et al. Global colorectal cancer screening programs and coverage rate estimation: an evidence synthesis. *J Transl Med*. 2025;23(1):811.
 28. Santucci C, Mignozzi S, Alicandro G, et al. Trends in cancer mortality under age 50 in 15 upper-middle and high-income countries. *J Natl Cancer Inst*. 2025;117(4):747-760.
 29. Liu PH, Wu K, Ng K, et al. Association of obesity with risk of early-onset colorectal cancer among women. *JAMA Oncol*. 2019;5(1):37-44.
 30. Klein AP. Pancreatic cancer epidemiology: understanding the role of lifestyle and inherited risk factors. *Nat Rev Gastroenterol Hepatol*. 2021;18(7):493-502.
 31. Lugo A, Peveri G, Bosetti C, et al. Strong excess risk of pancreatic cancer for low frequency and duration of cigarette smoking: a comprehensive review and meta-analysis. *Eur J Cancer*. 2018;104:117-126.
 32. Yu W, Zhou D, Meng F, et al. The global, regional burden of pancreatic cancer and its attributable risk factors from 1990 to 2021. *BMC Cancer*. 2025;25(1):186.
 33. Hu ZI, O'Reilly EM. Therapeutic developments in pancreatic cancer. *Nat Rev Gastroenterol Hepatol*. 2024;21(1):7-24.
 34. He R, Jiang W, Wang C, Li X, Zhou W. Global burden of pancreatic cancer attributable to metabolic risks from 1990 to 2019, with projections of mortality to 2030. *BMC Public Health*. 2024;24(1):456.
 35. Ruze R, Song J, Yin X, et al. Mechanisms of obesity- and diabetes mellitus-related pancreatic carcinogenesis: a comprehensive and systematic review. *Signal Transduct Target Ther*. 2023;8(1):139.
 36. Coleman MP, Matz M, Minicozzi P, et al. Trends over 48 years in a one-number index of survival for all cancers combined, England and Wales (1971-2018): a population-based registry study. *Lancet Reg Health Eur*. 2025;56:101385.
 37. Early Breast Cancer Trialists' Collaborative Group. Reductions in recurrence in women with early breast cancer entering clinical trials between 1990 and 2009: a pooled analysis of 155 746 women in 151 trials. *Lancet*. 2024;404(10461):1407-1418.
 38. Santucci C, Mignozzi S, Levi F, et al. European cancer mortality predictions for the year 2025 with focus on breast cancer. *Ann Oncol*. 2025;36(4):460-468.
 39. Ferlay J, Ervik M, Lam F, et al. Global Cancer Observatory: Cancer Today. Lyon, France: International Agency for Research on Cancer. Available at: <https://gco.iarc.who.int/today>. Accessed August 17, 2025.
 40. Mao X, Omeogu C, Karanth S, et al. Association of reproductive risk factors and breast cancer molecular subtypes: a systematic review and meta-analysis. *BMC Cancer*. 2023;23(1):644.
 41. Di Maso M, Pelucchi C, Collatuzzo G, et al. Cancers attributable to overweight and obesity in Italy. *Cancer Epidemiol*. 2023;87:102468.
 42. Cubelos-Fernandez N, Davila-Batista V, Fernandez-Villa T, et al. Burden of postmenopausal breast cancer attributable to excess body weight: comparative study of body mass index and CUN-BAE in MCC-Spain study. *J Epidemiol Community Health*. 2024;79(1):64-71.
 43. NCD Risk Factor Collaboration (NCD-RisC). Worldwide trends in body-mass index, underweight, overweight, and obesity from 1975 to 2016: a pooled analysis of 2416 population-based measurement studies in 128.9 million children, adolescents, and adults. *Lancet*. 2017;390(10113):2627-2642.
 44. Esposito G, Santucci C, Parazzini F, et al. Uterine cancer deaths certified as part unspecified: an unsolved issue. *Eur J Cancer Prev*. 2024;33(1):1-4.
 45. Lian Y, Luo P. Mortality of three major gynecological cancers in the European region: an age-period-cohort analysis from 1992 to 2021 and predictions in a 25-year period. *Ann Glob Health*. 2025;91(1):30.
 46. Collaborative Group on Epidemiological Studies of Ovarian Cancer Beral V, Doll R, Hermon C, Peto R, Reeves G. Ovarian cancer and oral contraceptives: collaborative reanalysis of data from 45 epidemiological studies including 23,257 women with ovarian cancer and 87,303 controls. *Lancet*. 2008;371(9609):303-314.
 47. Ledermann JA, Matias-Guiu X, Amant F, et al. ESGO-ESMO-ESP consensus conference recommendations on ovarian cancer: pathology and molecular biology and early, advanced and recurrent disease. *Ann Oncol*. 2024;35(3):248-266.
 48. Vynckier P, Annemans L, Raes S, et al. Systematic review on the cost effectiveness of prostate cancer screening in Europe. *Eur Urol*. 2024;86(5):400-408.
 49. Jubber I, Ong S, Bukavina L, et al. Epidemiology of bladder cancer in 2023: a systematic review of risk factors. *Eur Urol*. 2023;84(2):176-190.
 50. Lobo N, Afferi L, Moschini M, et al. Epidemiology, screening, and prevention of bladder cancer. *Eur Urol Oncol*. 2022;5(6):628-639.
 51. DiNardo CD, Erba HP, Freeman SD, Wei AH. Acute myeloid leukaemia. *Lancet*. 2023;401(10393):2073-2086.
 52. Iyer P, Wang L. Emerging therapies in CLL in the era of precision medicine. *Cancers (Basel)*. 2023;15(5):1583.
 53. Chen J, Pang W, Deng M, et al. Global, regional, and national burden of leukemia, 1990-2021: a systematic analysis of the global burden of disease in 2021. *Front Med (Lausanne)*. 2025;12:1542317.
 54. Carioli G, Malvezzi M, Bertuccio P, et al. European cancer mortality predictions for the year 2021 with focus on pancreatic and female lung cancer. *Ann Oncol*. 2021;32(4):478-487.
 55. Alicandro G, La Vecchia C, Islam N, Pizzato M. A comprehensive analysis of all-cause and cause-specific excess deaths in 30 countries during 2020. *Eur J Epidemiol*. 2023;38(11):1153-1164.
 56. Schafer EJ, Islami F, Han X, et al. Changes in cancer incidence rates by stage during the COVID-19 pandemic in the US. *Int J Cancer*. 2024;154(5):786-792.