

3 Results

3.0 Overview of incident cancer cases and cancer deaths

Table 3.o.1
Estimated numbers of incident cancer cases in Germany 2012

Cancer site	ICD-10	No. of incident cases		Incidence rate ¹	
		Men	Women	Men	Women
Oral cavity and pharynx	C00–C14	9,290	3,650	17.9	6.0
Oesophagus	C15	5,030	1,510	9.0	2.2
Stomach	C16	9,180	6,460	15.6	8.2
Colon and rectum	C18–C21	33,740	28,490	57.1	36.8
Liver	C22	6,020	2,560	10.2	3.4
Gallbladder and biliary tract	C23, C24	2,170	2,780	3.6	3.4
Pancreas	C25	8,250	8,480	14.0	10.6
Larynx	C32	3,110	490	5.7	0.9
Lung	C33, C34	34,490	18,030	59.1	27.7
Malignant melanoma of the skin	C43	10,400	10,420	19.2	19.2
Mesothelioma	C45	1,260	300	2.0	0.4
Soft tissue not incl. Mesothelioma	C46–C49	1,800	1,710	3.5	2.9
Breast	C50	620	69,550	1.1	117.4
Vulva	C51		3,190		4.5
Cervix	C53		4,640		9.3
Uterus	C54, C55		10,930		16.6
Ovaries	C56		7,380		11.4
Prostate	C61	63,710		106.7	
Testis	C62	4,020		10.2	
Kidney	C64	9,500	5,530	16.9	8.0
Bladder	C67	11,270	4,140	18.4	5.0
Central nervous system	C70–C72	3,960	3,220	7.9	5.6
Thyroid gland	C73	1,820	4,390	3.8	9.3
Hodgkin's lymphoma	C81	1,240	990	2.9	2.3
Non-Hodgkin lymphomas	C82–C88	8,580	7,570	15.4	11.0
Multiple myeloma	C90	3,490	2,850	5.8	3.7
Leukaemias	C91–C95	7,180	5,460	13.3	8.2
Other cancer sites		11,960	11,190	21.0	15.1
Total cancer²	C00–C97 w/o C44	252,060	225,890	440.2	348.9

¹ age-standardised (European standard) ² not including non-melanoma skin cancer (C44)

Figure 3.o.1
Most frequent tumour sites as a percentage of all new cancer cases in Germany 2012
(not including non-melanoma skin cancer)

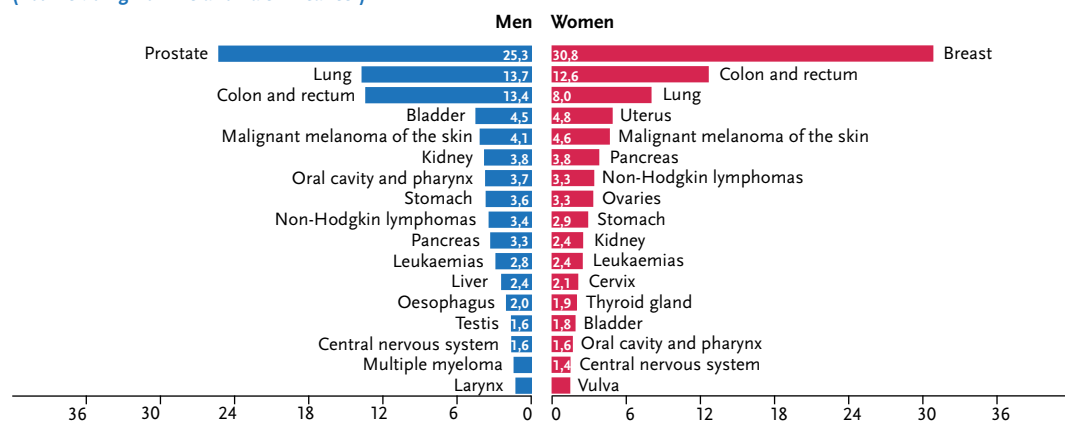


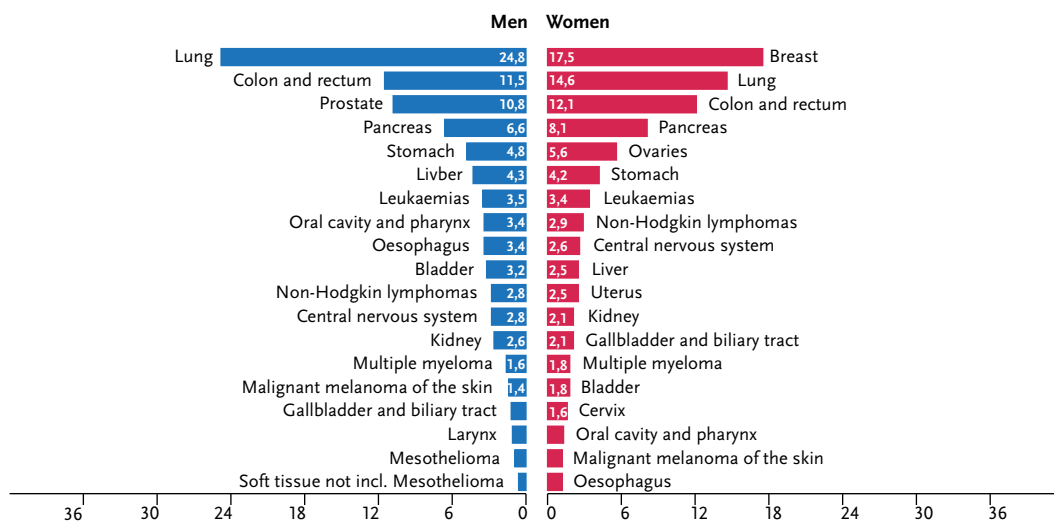
Table 3.o.2
Number of deaths from cancer in Germany 2012

Source: Official cause of death statistics, Federal Statistical Office, Wiesbaden

Cancer site	ICD-10	No. of deaths		Mortality rate ¹	
		Men	Women	Men	Women
Oral cavity and pharynx	C00–C14	4,090	1,303	7.7	1.9
Oesophagus	C15	4,072	1,188	7.2	1.6
Stomach	C16	5,770	4,208	9.5	4.9
Colon and rectum	C18–C21	13,772	12,200	22.4	13.3
Liver	C22	5,117	2,553	8.4	3.0
Gallbladder and biliary tract	C23, C24	1,415	2,122	2.3	2.4
Pancreas	C25	7,936	8,184	13.1	9.6
Larynx	C32	1,265	178	2.2	0.3
Lung	C33, C34	29,713	14,752	49.8	21.3
Malignant melanoma of the skin	C43	1,627	1,248	2.8	1.7
Mesothelioma	C45	1,085	275	1.7	0.3
Soft tissue not incl. Mesothelioma	C46–C49	747	794	1.3	1.1
Breast	C50	150	17,748	0.3	23.9
Vulva	C51		827		0.9
Cervix	C53		1,617		2.6
Uterus	C54, C55		2,515		3.0
Ovaries	C56		5,646		7.5
Prostate	C61	12,957		20.1	
Testis	C62	179		0.4	
Kidney	C64	3,125	2,131	5.1	2.4
Bladder	C67	3,791	1,826	6.0	1.9
Central nervous system	C70–C72	3,293	2,591	6.1	4.0
Thyroid gland	C73	330	419	0.6	0.5
Hodgkin's lymphoma	C81	219	158	0.4	0.2
Non-Hodgkin lymphomas	C82–C88	3,407	2,955	5.5	3.3
Multiple myeloma	C90	1,956	1,870	3.1	2.1
Leukaemias	C91–C95	4,155	3,445	6.8	4.0
Other cancer sites		9,546	8,453	15.9	9.7
Total cancer²	C00–C97 w/o C44	119,717	101,206	198.6	127.4

¹ age-standardised (European standard) ² not including non-melanoma skin cancer (C44)

Figure 3.o.2
Most frequent tumour sites when cancer was the cause of death in Germany 2012



3.1 All cancer sites

Table 3.1.1

Overview of key epidemiological parameters for Germany, ICD-10 C00–C97 without C44

	2011		2012		Prediction for 2016	
	Men	Women	Men	Women	Men	Women
Incident cases	259,090	229,720	252,060	225,890	266,800	231,900
Crude incidence rate ¹	661.3	559.0	641.3	549.3	666.2	559.8
Standardised incidence rate ^{1,2}	460.0	356.2	440.2	348.9	437.8	345.2
Median age at diagnosis	70	69	70	69		
Deaths	119,368	101,546	119,717	101,206		
Crude mortality rate ¹	304.6	247.1	304.6	246.1		
Standardised mortality rate ^{1,2}	202.7	129.7	198.6	127.4		
5-year prevalence	813,100	789,100	810,300	790,500		
	<i>after 5 years</i>		<i>after 10 years</i>			
Absolute survival rate (2011–2012) ³	52 (47–55)	59 (55–63)	40 (34–42)	48 (44–50)		
Relative survival rate (2011–2012) ³	62 (56–65)	67 (62–70)	57 (51–61)	62 (58–65)		

¹ per 100,000 persons ² age-standardised (European standard) ³ in percentages (lowest and highest value of the included German federal states)

Epidemiology

›All cancer sites‹ refers here to all malignant neoplasms including lymphomas and leukaemias.

A ›Malignant Neoplasm‹ is defined by the ›International Statistical Classification of Disease and Related Health Problems‹ (ICD-10, Chapter C). This classification is prone to temporal trends and does not always reflect the clinical course of the disease: there are non-invasive papillary tumours of the urinary bladder and certain neoplasms of the hematopoietic system (for example myelodysplastic syndrome) that constitute more harms and complaints to the concerned than some malignant neoplasms of the thyroid gland. In line with normal international practice, non-melanoma skin cancers (white skin cancer) are not included in the above. Estimates regarding the frequency of this widespread yet seldom life-threatening disease can be found in chapter 3.29.

Cancer can occur in all kinds of organs in the body and can originate from different types of cell. The origin of most types of cancers are the internal or external body surfaces. Approximately 70 % are adenocarcinomas originating in glandular tissue. Around a further 15 % are squamous-cell carcinomas, malignant tumours of the transitional epithelium (urothelium carcinoma) and small-cell carcinoma, which occur for example in the lung. Alongside leukaemias and lymphomas, malignant tumours also have their origins, for example, in the support cells of the nervous system (glia cells) or under pigment-producing

cells (melanomas). Rarer forms of cancer include those originating in connective tissue, such as mesothelioma and various sarcomas.

According to our estimates a total of approximately 478,000 new cases of cancer were diagnosed in Germany in 2012. Of these, approximately 252,100 were in men and 225,900 in women.

Just over half of all cases relate to the mammary gland (70,200), the prostate (63,700), the bowel (62,200) or the lungs (52,500) (Tab. 3.0.1).

Between 2002 and 2012 the number of new cancer cases increased among men by around 13 % and in women by 10 %. The decisive factor influencing this was the changing demographic structure of the population (increase in the proportion of older people), which was more pronounced among men than women. The development in age-standardised incidence rates indicates that without these changes there would have been decreasing incidence figures among men (by 4 %) and an increase of around 5 % in women. The latter can be explained to a significant extent by a decreasing trend of lung cancer in men versus an increase in women (cf. Chapter 3.10).

The age-standardised mortality rates have decreased by 13 % in men and by 9 % in women. Because of the demographic change, the absolute number of cancer deaths increases instead by 10 % in males and 2 % in females. The proportion of deaths attributed to cancer as underlying cause of death remained constant since the end of the 1990s (22 % in women and

28 % in men) indicating that the achievements of the war against cancer contributed to the increase of life expectancy of about two or three years.

Currently every second man (51 %) and 43 % of all women can be expected to develop cancer in the course of their life. Every fourth man and every fifth woman dies of cancer. The relationship between cancer incidence and age varies between men and women. Women under the age of 55 years reveal higher incidence rates than men of the same age. In the higher age groups this relationship reverses. In the over 65 year age group the incidence rates among men are almost twice as high as those among women.

The relative 5-year survival rates compare the higher mortality of cancer patients to that of the general population of the same age (100 % indicating similarity). They range from favourable values above 90 % for malignant melanoma of the skin, testicular cancer, and prostate cancer, through to survival rates of less than 20 % for lung, liver and pancreatic cancer and mesothelioma (Figure 3.1.0). During the last thirty years the prognosis for cancer patients in Germany overall has improved considerably. Current estimations using the period method show 5-year relative survival rates of 62 % for men and 67 % for women in patients diagnosed in 2011 and 2012. The improved overall cancer survival rates are due in part to shifts in the localisation spectrum, for example the decline in cases of stomach cancer and lung cancer among men (for which the prognoses are poor) and a larger proportion of colorectal, breast, and prostate cancer with relatively better prognoses. The most obvious improvements in the survival rates of adult cancer patients over the last 25 years have been achieved in malignant tumours of the mammary gland, the bowel and the prostate.

Risk factors and early detection

The aetiology of many cancers is not known, and in other cases, known risk factors cannot be influenced. Prevention strategies are therefore only available for a few tumour types. However, these include types of cancer which affect large numbers of people. The World Health Organization estimates that more than 30 % of all cancer cases could be avoided with preventive measures.

Among avoidable risk factors, tobacco consumption is the most important. According to estimates by the Centre for Cancer Registry Data, a total of around 15 % of all cancer cases in Germany in 2008 were to be attributed to smoking. Also the roles of excess weight and lack of exercise have long been known from observational epidemiological investigations. Possible underlying biological mechanisms are becoming clearer due to the most recent research into the metabolic syndrome. This chronic »metabolic

imbalance« is linked with hypertension, high blood cholesterol and hyperglycaemia. Inflammatory processes in adipose tissue are also suspected of being involved in the development of cancer.

Among individual nutrition-related factors, alcohol consumption plays an important role. Low quantities of fruit, vegetables, and dietary fiber, often combined with a high intake of red meat, have been identified as risk factors for a number of frequently occurring types of cancer. However it has not always been possible in observational studies to separate the influence of specific foodstuffs and their constituents from that of the energy balance.

Also among the avoidable risk factors for developing cancer is the ultraviolet fraction of sunlight (UV radiation). Many people, particularly in Germany, overestimate the influence of hazardous substances and impurities in foodstuffs, as well as environmental factors or toxic exposure at the workplace. However, in certain individual cases these factors can also play a substantial role in the development of cancer, even here. Examples here are radon, the regionally occurring noble gas, which is thought to be responsible for up to ten percent of lung cancer cases in Germany, or earlier occupational exposure to asbestos, which because of the long latency period is still causing mesothelioma of the pleura or peritoneum even today. Even medical procedures may impact on the cancer risk in individual cases. Potential risks include diagnostic procedures and therapies involving exposure to radiation, cytostatic agents used in chemotherapy, and hormone replacement therapy for menopausal women, which has been identified as a risk factor for breast cancer.

Chronic infections are now known to be risk factors for some widespread forms of cancer. Vaccinations or the treatment of causal factors can contribute to the reduction of cancer risk. This has been established for vaccinations against hepatitis viruses as a risk factor for liver cancer, and it is hoped that vaccination against human papilloma viruses will have a similar effect reducing the incidence rate for cervical carcinoma.

In addition to avoidable risk factors, genetic causes may also increase the risk of developing cancer. To date, however, only very few of these genetic mutations have been clearly identified. The respective relevant risk factors for specific types of cancer are presented in more detail in the individual sections.

The early detection programmes supported by the statutory health insurance companies in Germany screen for cancer of the skin and bowel, as well as breast and cervical cancer in women, and prostate cancer for men. These early detection measures are presented in the individual sections.

Figure 3.1.0
Relative 5-/10-year survival rates, by tumour sites and sex, Germany 2011–2012 (period analysis)

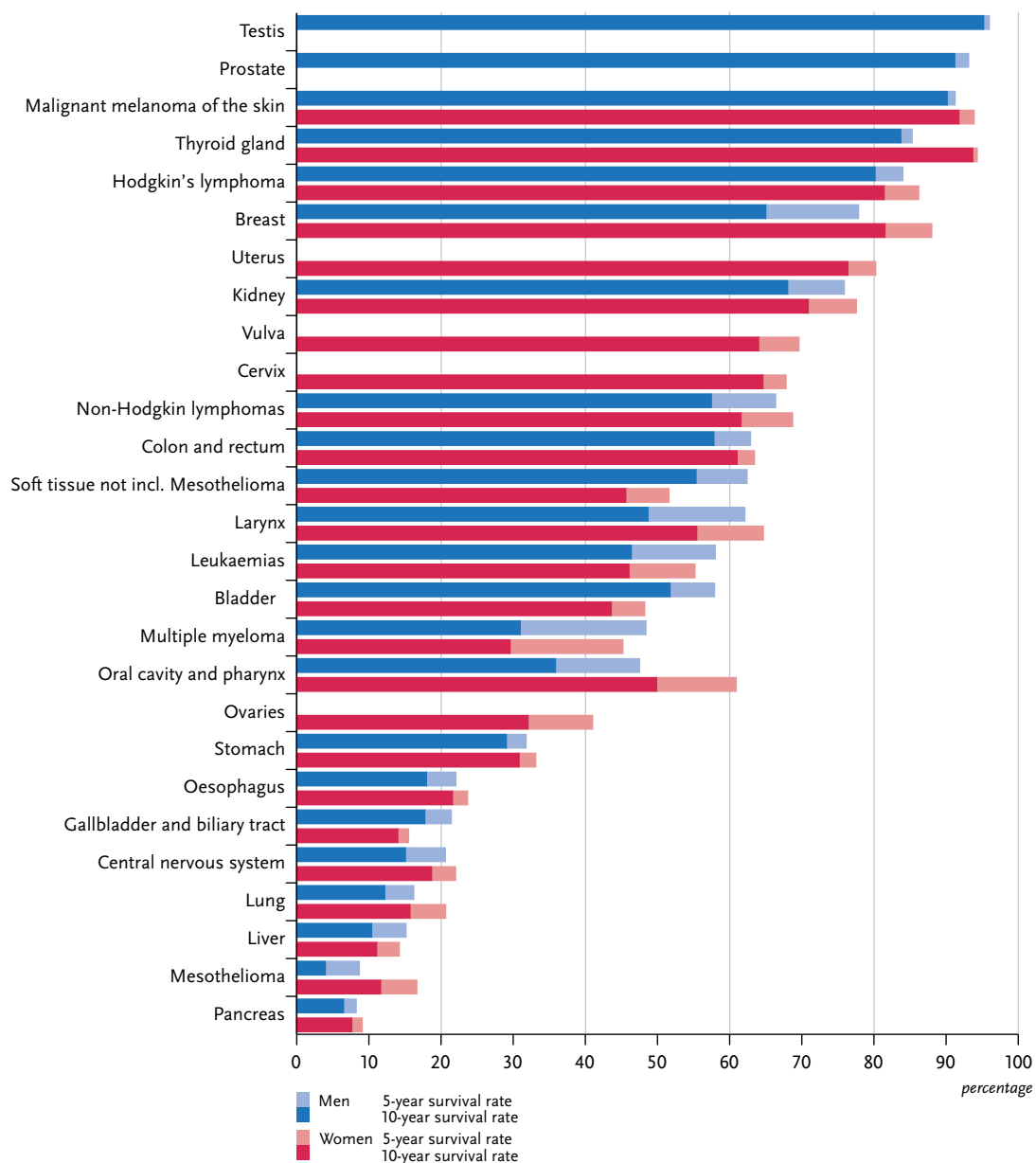


Figure 3.1.1a
Age-standardised incidence and mortality rates,
by sex, ICD-10 C00–C97 without C44,
Germany 1999–2012
per 100,000 (European standard)

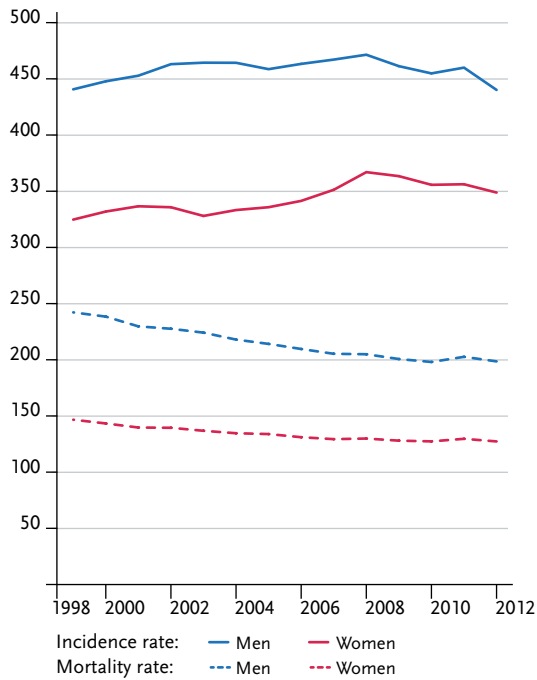


Figure 3.1.1b
Absolute numbers of incident cases and deaths,
by sex, ICD-10 C00–C97 without C44,
Germany 1999–2012

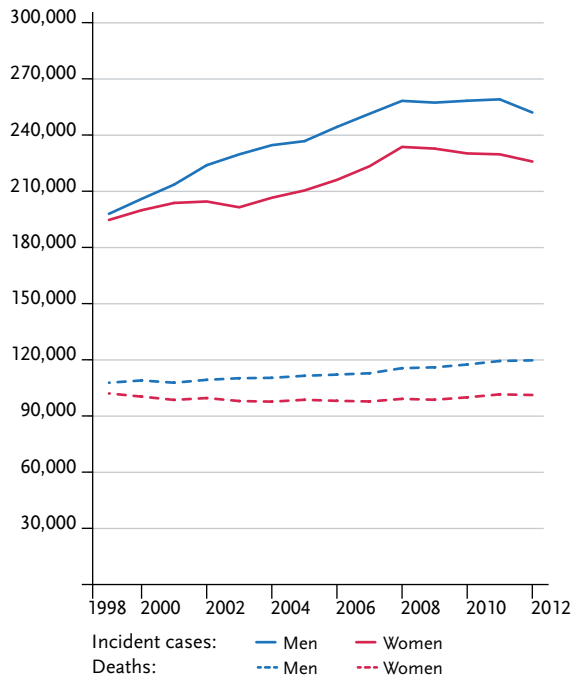


Figure 3.1.2
Age-specific incidence rates by sex, ICD-10 C00–C97 without C44, Germany 2011–2012
per 100,000

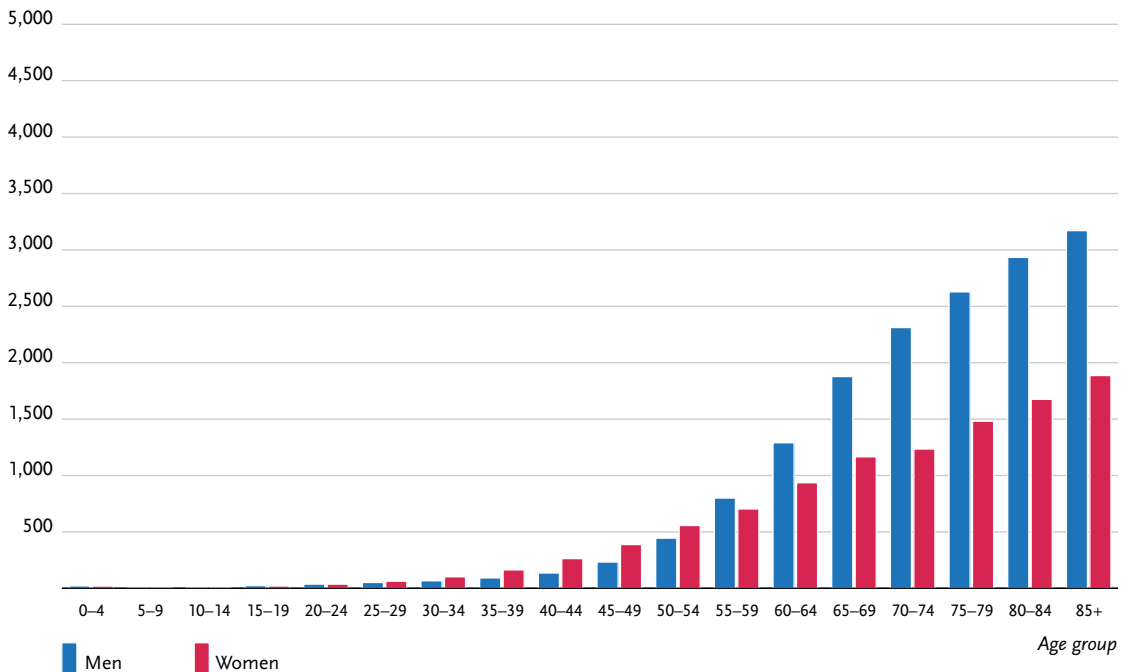


Table 3.1.2
Cancer incidence and mortality risks in Germany by age and sex, ICD-10 C00–C97 without C44, database 2012

Men aged	Risk of developing cancer				Mortality risk			
	in the next ten years		ever		in the next ten years		ever	
35 years	1.2 %	(1 in 86)	50.7 %	(1 in 2)	0.3 %	(1 in 390)	26.2 %	(1 in 4)
45 years	3.4 %	(1 in 29)	50.6 %	(1 in 2)	1.2 %	(1 in 85)	26.3 %	(1 in 4)
55 years	10.3 %	(1 in 10)	50.2 %	(1 in 2)	3.8 %	(1 in 26)	26.1 %	(1 in 4)
65 years	20.6 %	(1 in 5)	47.5 %	(1 in 2)	7.9 %	(1 in 13)	24.7 %	(1 in 4)
75 years	27.4 %	(1 in 4)	39.9 %	(1 in 3)	12.9 %	(1 in 8)	21.3 %	(1 in 5)
Lifetime risk			50.5 %	(1 in 2)			26.0 %	(1 in 4)
Women aged	in the next ten years		ever		in the next ten years		ever	
35 years	2.2 %	(1 in 46)	42.7 %	(1 in 2)	0.3 %	(1 in 310)	20.4 %	(1 in 5)
45 years	4.8 %	(1 in 21)	41.5 %	(1 in 2)	1.1 %	(1 in 93)	20.2 %	(1 in 5)
55 years	8.5 %	(1 in 12)	39.0 %	(1 in 3)	2.6 %	(1 in 38)	19.5 %	(1 in 5)
65 years	12.9 %	(1 in 8)	34.2 %	(1 in 3)	4.9 %	(1 in 20)	17.8 %	(1 in 6)
75 years	16.3 %	(1 in 6)	26.5 %	(1 in 4)	8.0 %	(1 in 13)	14.6 %	(1 in 7)
Lifetime risk			43.1 %	(1 in 2)			20.3 %	(1 in 5)

Figure 3.1.3
Distribution of T-stages at first diagnosis by sex
Not included because tumour stages are site-specific.

Figure 3.1.4a
Absolute survival rates up to 10 years after first diagnosis, by sex, ICD-10 C00–C97 without C44, Germany 2011–2012

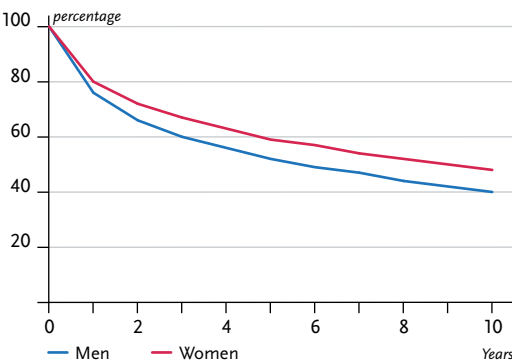


Figure 3.1.4b
Relative survival rates up to 10 years after first diagnosis, by sex, ICD-10 C00–C97 without C44, Germany 2011–2012

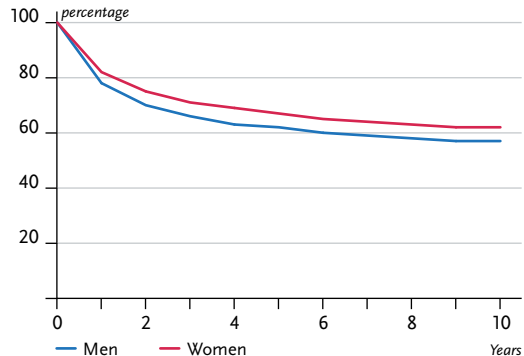


Figure 3.1.5
Registered age-standardised incidence and mortality rates in German federal states, by sex,
ICD-10 C00–C97 without C44, 2011–2012
per 100,000 (European standard)

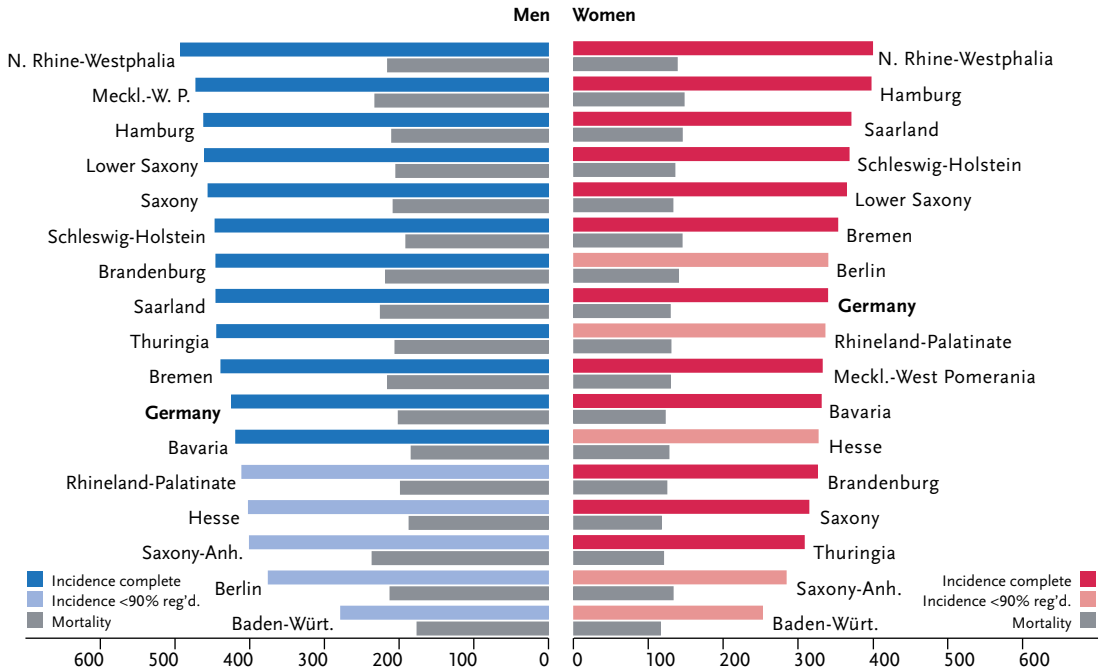
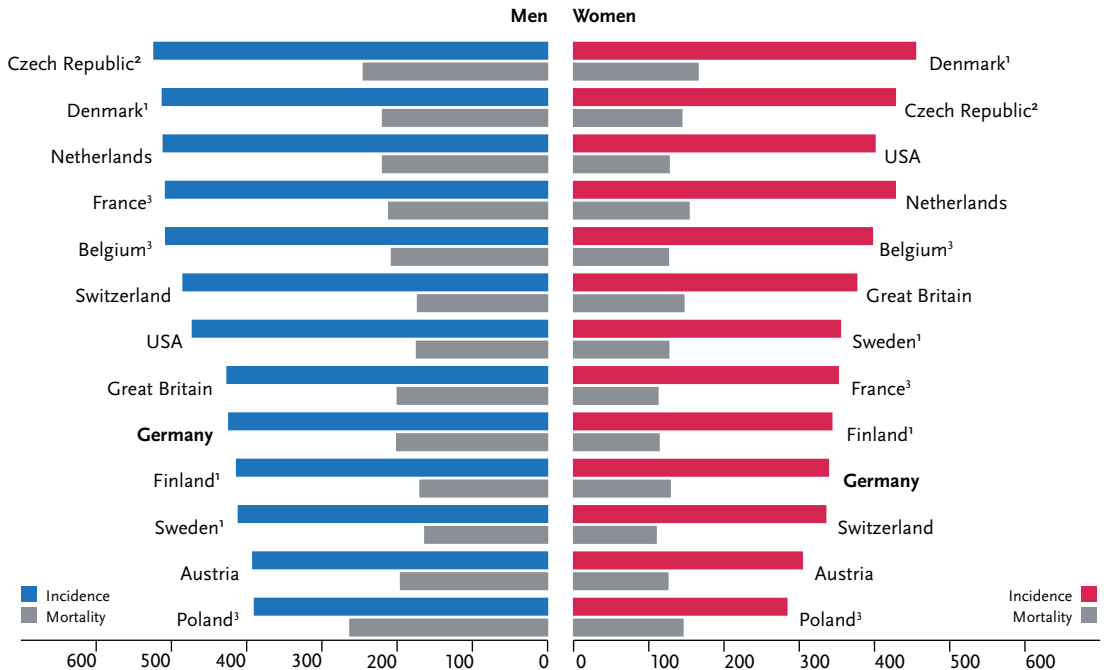


Figure 3.1.6
International comparison of age-standardised incidence and mortality rates, by sex,
ICD-10 C00–C97 without C44, 2011–2012 or latest available year (details and sources, see appendix)
per 100,000 (European standard)



¹ data incl. D09.0–1, D30.1–9, D35.2–4, D41.1–9, D32–D33, D42–D43, D44.3–5, D46–D47 but excl. C44 and C46.0

² data for incidence incl. D00–D09

³ data for mortality incl. C44