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GEKID

Cancer in Germany 2003 – 2004 Incidence and Trends

Published jointly by the Robert Koch Institute and the Association of Population-based Cancer Registries in Germany

Sixth edition, 2008

Federal Health Reporting

Contributions to
Federal Health Reporting

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1 Preface

1.1 About this brochure

This sixth edition of "Cancer in Germany" has a new design and is published for the first time as part of the Health Reporting series of the Robert Koch Institute (RKI). It is published in this form jointly by the Association of Population-based Cancer Registries in Germany (GEKID) and the RKI every two years.

This 6th edition covers cancer cases that were diagnosed in Germany between 1980 and 2004. As a rule, population-based cancer registries need about three years from the end of the year of diagnosis to the publication of sufficiently complete incidence figures. All cancer cases occurring must be reported to the registry in full and all deaths in the region matched against the data collected. Only in this way can reliable assessments on incidence and survival rates be derived from the available data. Every year the Federal Cancer Surveillance Unit at the Robert Koch Institute receives the data from the registries of currently 13 of 16 federal states (Länder) and two administrative districts, examines them for consistency and completeness and pools them for further analysis (see section 2.1). The data from all population-based cancer registries in Germany with diagnoses up to 2004 were transferred to the RKI in the spring of 2007. The only data still missing are from Baden-Württemberg, whose cancer registry is currently being built up. The available data from North Rhine-Westphalia relate only to the administrative district of Münster. Hesse is represented for the first time with data for the Darmstadt administrative district and extended its cancer registry in 2007 to cover the whole state. Hence, apart from the three exceptions mentioned, complete population-based data on cancer cases are available all over the country. These data form the basis of the current edition of "Cancer in Germany", with estimates of new cancer cases up to 2004 (see section 2.2).

The brochure contains charts and tables on all selected cancer sites with information on age-specific incidence, time trends and the regional distribution of incidence and mortality. The text sections on the individual cancer sites describe the most important risk factors (the corresponding charts and tables directly follow the texts). This information is supplemented by further indicators such as the average age at onset/diagnosis of the disease (calculated as the median of the age distribution) and the relative 5-year survival rates of cancer patients. Frequently used terms are explained in the glossary at the end of the brochure.

In future editions, the range of cancer sites covered will be successively extended as the quality of the data available to the cancer registries improves.

1.2 Aims and tasks of population-based cancer registries

Population-based (epidemiological) cancer registries are institutions for the collection, storage, processing, analysis and interpretation of data on the occurrence and frequency of cancers within defined populations (e.g. the inhabitants of a German state).

Data from population-based cancer registries are needed as a basis for further research into the causes of cancer and for efforts to improve cancer care.

Examples of findings deduced from population-based cancer registries include:

- The prostate, intestines and lungs are the most common cancer sites among men.

The incidence of cancer in a given population can be measured with the data from population-based cancer registries. Cancer incidence is defined as the frequency with which newly diagnosed cancer cases occur in this population within a year. The incidence is broken down according to cancer type, the patient's age and gender, and other characteristics. Reliable information on incidence is indispensable for describing the extent and type of the burden that cancer places on a population.

- For some years now there have been just as many cases of lung cancer in Germany among women under the age of 40 as among men of the same age.

The data from population-based cancer registries make it possible to observe the development (trend) of incidence over time. The registries have a sentinal function in this field.

- Regional differences in the incidence of malignant melanoma of the skin (black skin cancer) can be observed within Europe and Germany.

Population-based cancer registries can analyse the regional distribution of cancer sites. They also have the task of examining observed cancer clusters. More detailed analytical studies are usually required to determine the causes of these clusters.

- The survival expectations of men with testicular cancer have improved decisively over the last 25 years.

Population-based cancer registries analyse the survival periods of all cancer patients without selection. Population-based survival rates are an extremely important parameter for assessing the effectiveness of the health services in their fight against cancers.

- Predicting the future number of new cancer cases is an important aspect of requirements planning for the health service.

The population-based cancer registries provide the necessary data.

The data from population-based cancer registries not only serve to describe the incidence of cancer in the population, they are also used for scientific research into the causes of cancer and for research on healthcare effectiveness. Such studies (case-control studies, cohort studies, etc.) follow up issues such as:

- What are the causes of leukaemia in childhood?
- Do people in certain occupational groups develop lung cancer more frequently than others?
- Are diagnosis, therapy and post-initial treatment being carried out according to the latest standards?

Population-based cancer registries guarantee that all cases of the disease that have occurred in a defined population can be taken into account for causal research. This largely ensures that the results of such studies apply not only to the group studied, but also to the entire population. Population-based case-control studies and cohort studies use data from population-based cancer registries for research into the causes and risks of cancer.

- Does mammographic screening lead to the discovery of tumours at more favourable stages, thus improving survival prospects?

The data from population-based cancer registries with complete coverage make it possible to assess the effectiveness of preventive and screening programmes. In this way the data from a population-based registry can be used to detect differences in stage distribution at diagnosis throughout the population. The declining trend in the incidence of invasive (fully developed) carcinomas of the cervix is a measure of the success of the corresponding screening programme.

The degree of completeness of data ascertainment that has now been reached has also led to further progress in the use of the registry data. Here are some topical examples:

- a study of oncological care for cancer patients,
- an evaluation of pilot projects on mammographic screening, quality-assured breast-cancer diagnostics and skin-cancer screening,
- a study on hormone therapy as a risk factor for breast cancer,
- cooperation with breast centres in long-term follow-up,
- a study on the effectiveness of colonoscopy screening.

(For a detailed list see: www.gekid.de).

The evaluation of screening measures will be a particular challenge for the population-based cancer registries in the coming years. Among other things the focus will be on assessing mammographic screening, which is currently being introduced nationwide in Germany. The expected increase in breast-cancer incidence in the age group of 50-to-69-year-old women and a more

favourable tumour-stage distribution have been documented in regions where mammography pilot projects have already been completed. Skin-cancer screening will probably be introduced in 2008 by statutory health insurance as a new early-detection measure; its effect can then also be reviewed using the data from the cancer registries.

A longer-term task of the population-based cancer registries is examining the effectiveness of the recently launched vaccination programme for girls aged between 12 and 17 against human papillomavirus (HPV); its aim is to achieve a marked reduction in new cases of cervical cancer.

In order to establish comprehensive health monitoring – i.e. an ongoing comparative analysis of cancer in the population – it is not enough to run population-based cancer registries only in selected regions of the Federal Republic. To achieve this objective, comprehensive cancer registries must be up and running in all states. The Federal Cancer Registry Act (1995 to 1999) initiated the development of a network of state cancer registries. It also provided a uniform framework for the transfer of data to a central institution for nationwide evaluation: the Federal Cancer Surveillance Unit at the Robert Koch Institute (RKI). Although the states used the broad scope provided by the law in organizing the regional registries, the comparability of the collected data and their general use for statistical and epidemiological purposes is assured because the state laws adopted important parts of the Federal Cancer Registry Act.

In order to be able to pool information about an individual's cancer condition from different sources, the data are collected in such a way that multiple reports on the same person are recognizable. For research purposes it should be possible to re-establish a link between the data and the person. In order to safeguard patients' privacy and their right to control what happens to their data, extensive precautions are required to protect personal data; these are provided by the legal framework governing all registries.

An appropriate evaluation of the data is only possible if at least 90% of all new cancer cases are registered. The cooperation of all doctors and dentists involved in diagnosis, treatment and aftercare is therefore crucial to the informational value of data from a population-based cancer registry. Patients are also requested to actively take part in cancer registration.

1.3 Current development of cancer registration in Germany

Population-based cancer registration has developed very positively in Germany over the last two years.

For example, a new state cancer registry law was passed in Baden-Württemberg in 2006 providing for a state-wide cancer registry. Cancer registration is being introduced there in stages. An external project-management company has been entrusted with the task. According to the project plan, cancer registration will begin in early 2009 at oncological surgeries and tumour centres. The system will be further extended in a second stage. In the state of Hesse, too, the cancer registry law has been amended; in the process, data acquisition on cancer cases was expanded to cover the whole federal state at the beginning of 2007.

An important milestone for population-based cancer registration has thus been reached in Germany – the registration of cancer cases has now been placed on a legal footing all over the country. Now the challenge is to quickly implement a complete registration system in the new regions. In a few years the estimates on the number of new cancer cases in Germany, as used for this edition, can then be supplemented with the pooled figures from all the state registries.

As a result of the considerable improvement in cancer registration in Germany, "Cancer Incidence of Five Continents", a series published by IARC (World Health Organization's International Agency for Research on Cancer, Lyon, France), is to include six further German cancer registries with incidence data from 1998 to 2002 in addition to the data from the Saarland Cancer Registry, starting with the latest edition (volume IX).

The efficiency of the cancer registries has been further increased since the publication of the 5th edition of "Cancer in Germany" in 2006. The progress that has been made with registration is partially due to the introduction of the compulsory reporting of new cancer cases in many German states. Furthermore, the exchange of data

Figure 1.3.1
Status of population-based cancer registration in Germany
(Year = beginning of registration)

[1] 1953 East-Berlin, 1995 all of Berlin
[2] 1986 Münster administrative district, 2005 all of North Rhine-Westphalia
[3] 2003 Darmstadt administrative district, 2007 all of Hesse

German Registry of Cancer in Children, covers all of Germany (1980)

between the registries has also been improved. Laws in many states now allow reports relating to patients outside the registry area to be forwarded to the cancer registry responsible for the patients' places of residence. Otherwise, information on the treatment of cancer patients outside their own state would frequently be lost.

The Association of Population-based Cancer Registries in Germany" (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V., abbreviated to GEKID), whose members include not only all the population-based cancer registries, but also scientists working in the field of cancer epidemiology, has been working intensively over the past two years on the harmonization and standardization of cancer registration in Germany. One result is that the "Manual of Population-based Cancer Registration", which sets down the coordinated methodological principles of cancer registration in Germany, is being published in 2008. Further information on the association is available on the Internet at www.gekid.de (see appendix).

The public offer for tender of a contract on "cancer epidemiology" funded by the organization German Cancer Aid in 2007 was especially important for population-based cancer registration in Germany and the scientific use of the collected data. The funding was made conditional on the inclusion of population-based cancer registries. About 40 applications were made to German Cancer Aid (Deutsche Krebshilfe e.V.); the first projects are expected to be approved and launched in 2008.

Coordination and cooperation between population-based and clinical cancer registries has also developed very positively. For example, the population-based cancer registries in Germany and the clinical registries recently defined their respective core competencies in two keynote papers; they reaffirmed their intention to cooperate on improving the quality and usefulness of the data from both forms of registry and avoiding unnecessary pressure on those reporting caused by their having to repeatedly report the same information.

In order to further improve cancer registration, the GEKID advocates reducing multiple documentations and raising efficiency by using electronic documentation systems. The association also intends to continue promoting the use of cancer registry data for quality assurance in oncology, and for helping hospitals procure data for their quality reports.

The overall future development of cancer registration in Germany thus again looks positive. If the willingness of participating physicians and patients to report goes on increasing, and the financial and political support of the cancer registries continues, we will move one more step closer to the aim of achieving a population-based system of cancer registration covering the whole of Germany that is informative and scientifically usable.

2 Methodological aspects

2.1 Completeness of cancer registration

Since the benefit of population-based data on the incidence of cancer depends primarily on how completely all new cases of cancer are registered, the Federal Cancer Surveillance Unit ("Dachdokumentation Krebs") at the Robert Koch Institute (RKI) regularly reviews the completeness and reliability of the population-based cancer registries in Germany – currently in 13 states and two administrative districts.

The following have proved to be reliable indicators of the completeness of population-based cancer registries:

(a) the DCO (death certificate only) percentage,
(b) the percentage of diagnoses that are microscopically confirmed by examinations of tissue or cell/blood smears, and
(c) the ratio of mortality to incidence. DCO cases are cancer cases that only become known to the cancer registries via death certificates.

Calculating the DCO percentage is a simple and reliable way of determining how completely data on cases are reported to – or collected by – a cancer registry. It is done by the regular, case-by-case matching of registry records on cancer patients against the records of the people who have died in the region. People who have died of cancer, but were not covered by the registry, and where no further information on the disease is available, are added as DCO cases to the incidence figures. The 'younger' a cancer registry is, the more likely it is

that DCO cases could be a result of people dying who were diagnosed with cancer before the registry was created and who, therefore, could not be covered by the registry. Therefore, a high DCO percentage among case reports in a cancer registry that has not existed for long does not necessarily mean that the current incidence figures are incomplete. Older gaps in cancer registration can also increase the current DCO percentage, which would understate the completeness of cancer registration. For this reason, the RKI's Federal Cancer Surveillance Unit also uses an additional method for assessing the completeness of cancer registration.

The procedure is based on the completeness indicator that is generally used internationally: the mortality/incidence ratio. The incidence in a cancer registry's catchment area is estimated on the basis of data from a cancer registry in which registration is known to be complete. This "reference registry" is initially the Saarland Cancer Registry, the only population-based cancer registry in Germany that has been working continuously for over 40 years. On the assumption that diagnostics and therapies – and hence the survival – of cancer patients do not vary essentially from one federal state to another, and that different cancer risks can be reflected in the official cause-of-death statistics, cancer incidence in the respective region can be estimated indirectly using the incidence and mortality quotients of the reference registry and the regional mortality figures. The development of the age-specific quotients over time is modelled in a log-linear approach with polynomial trends. Further registries are successively contributing to the data base of the reference registry, once the completeness of these registries has been confirmed in a comparison with the Saarland. The resulting virtual reference registry is ultimately composed of the records of all cancer registries in Germany in which registration is complete. Unlike the customary completeness indicators – e.g. the DCO percentage and the percentage of microscopically confirmed diagnoses – the RKI estimate makes it possible to directly express the completeness of cancer registration. The percentage indicates the degree of completeness of the regional population-based cancer registries compared to the virtual reference registry.

The degree of completeness of cancer reporting to the registries in Germany estimated in this way has further increased compared to the 5th edition of this brochure published in 2006 (RKI's estimate of incidence from 1980 to 2002). Between 2002 and 2004 more than 95% of all cancer cases among women were registered at least once in four federal states, and more than 95% of all cancer cases among men in five federal states. The degree of completeness of reporting to the population-based cancer registries in Germany is particularly high in the case of cancers of the upper respiratory and digestive tracts (oral cavity, pharynx, larynx, oesophagus) and breast cancer among women. Two thirds of German cancer registries covered more than 95% of these cancer cases at least once between 2002 and 2004. With two exceptions, all the population-based cancer registries in the 13 states with comprehensive cancer registration and two administrative districts registered more than 90% of all breast-cancer cases among the women in the respective catchment area.

Despite the progress that has been made in cancer registration in Germany, there are still deficits in data acquisition. Reporting of cancers of the stomach, intestines, cervix, ovaries, kidney, bladder and thyroid gland is not yet complete enough. On the other hand, the registration figures for leukaemias and lymphomas have improved. The more cancer cases are covered in full by the population-based cancer registries in Germany, the more the exclusive dependence on data from the Saarland in parts of the RKI estimate (for example in the case of stomach cancer) can be reduced and the more reliable the results of the estimate will be for Germany as a whole.

2.2 Estimate and results for Germany in 2004

The Federal Cancer Surveillance Unit at the Robert Koch Institute (RKI) estimates the total number of new cancer cases per year in Germany on the basis of the data from the German population-based cancer registries in which registration is complete. The current estimate covers a total period of 25 years between 1980 and 2004. The estimate for the years prior to 1990 is based exclusively on the Saarland Cancer Registry's data on incidence. Only thereafter is the basis of the estimate supplemented by data from the other population-based cancer registries in Germany that were set up later. However, the number of registries whose incidence data are fed into the estimate's data base varies according to cancer type. Whereas almost all the German cancer registries contribute data to the estimate on breast cancer in women, the estimate on stomach cancer in men relies exclusively on data from the Saarland Cancer Registry (see section 2.1).

The Robert Koch Institute's current estimate indicates a total of 436,500 new cases of cancer in Germany in 2004 (230,500 among men, 206,000 among women, see table 2.2.1). In the same year cancer caused 208,824 deaths (110,745 men, 98,079 women, see table 2.2.2). Figure 2.2.1 shows the various cancer sites as a percentage of all new cases among men and women. A corresponding breakdown of cancer-related deaths is shown in Figure 2.2.2. The individual figures correspond to between 92 and 95% of all cancer cases and to 80–82% of all cancer-related deaths. The most common cancer among men is prostate cancer, which accounts for 25% of all cases. In women, breast cancer accounts for as many as 28% of all cases.

About 10,000 of the total increase (approx. 12,000) in the number of new cancer cases among men were cases of prostate cancer. Following an estimated 48,700 cases of prostate cancer in 2002, the current estimate is approximately 58,500 cases for 2004. The significantly higher prostate cancer figures can be explained to some extent by the trend in incidence rates in the current 1980–2004 estimate. According to this, the number of cases rose by 4,500 between 2002 and 2004 alone. This development was probably primarily due to the increased use of PSA (prostate-specific antigen) in preliminary screening examinations for prostate carcinoma. Only PSA screening has made the early detection of prostate cancer possible on this scale.

The increase in prostate cancer figures can, however, also be attributed to the broadened data base used in the current estimate. For the first time, the completeness of cancer reporting exceeded 95% for at least three consecutive years in another German population-based cancer registry apart from the Saarland Cancer Registry. This met the conditions for inclusion in the data pool of the current estimate and led to a shift in the ratio between incidence and mortality in the case of prostate cancer. Although the number of deaths caused by prostate cancer is falling or remains unchanged, the number of cases diagnosed is still rising – for the reasons stated above, among others.

Rising incidence figures for colorectal cancer (an increase of approx. 1,700 cases among men and of 200 among women compared to 2002) and malignant melanoma of the skin (an increase of approx. 500 cases among men and of 700 among women) should be seen in the context of more extensive screening. The screening strategies for both cancer sites have been improved and are currently being optimized. Unlike malignant melanoma of the skin, which is fully covered in many regional registries, up to now the RKI estimate on colorectal cancer has been essentially based on data from the Saarland Cancer Registry.

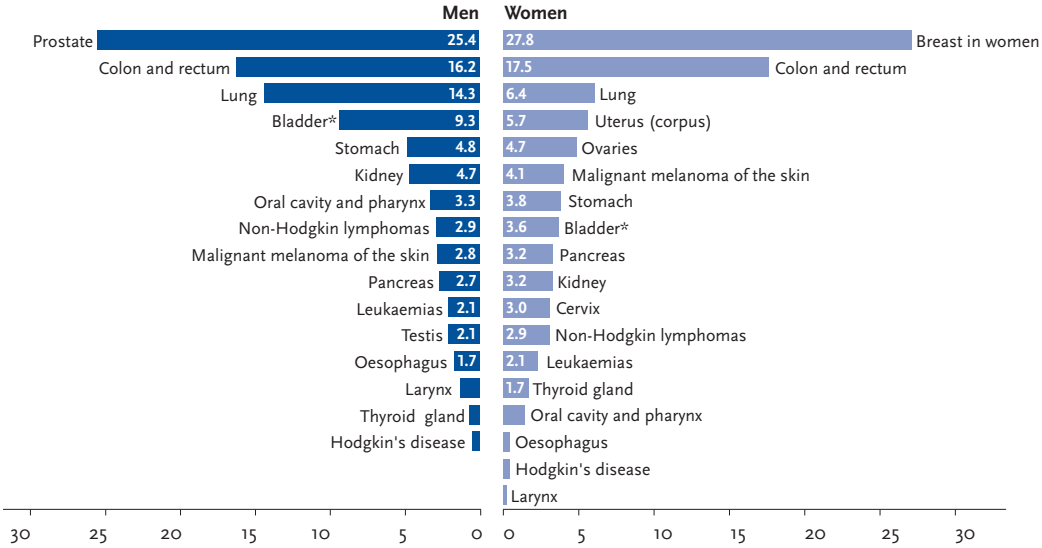
Despite an unchanged overall number of new cancer cases among women, the current estimate on individual sites reveals more cases of breast, thyroid and lung cancer in women. In terms of absolute figures, the increase was highest in the case of breast cancer at around 2,000 cases, although the rise between 2002 and 2004 was less steep than in the previous years' estimates. The increase in thyroid cancer incidence among women in the same period (about 700 more cases in 2004) was higher than that of breast cancer. The larger number of thyroid cancer cases was primarily the result of the first inclusion of incidence data from Bavaria in the national estimate. 2004 also saw an increase in lung cancer among women (approx. 800 more cases), continuing the trend of the previous estimates. By contrast, incidence figures fell, for example, in the case of stomach cancer (by approx. 500 cases), ovarian and cervical

Table 2.2.1
Estimated number of new cancer cases in Germany in 2004
Source: RKI estimate for Germany in 2004

Site	ICD-10	Men	Women
Oral cavity and pharynx	C00–C14	7,620	2,780
Oesophagus	C15	3,880	1,050
Stomach	C16	11,000	7,780
Colon and rectum	C18–C21	37,250	36,000
Pancreas	C25	6,320	6,620
Larynx	C32	2,990	390
Lung	C33, C34	32,850	13,190
Malignant melanoma of the skin	C43	6,520	8,380
Breast in women	C50		57,230
Cervix	C53		6,190
Uterus (corpus)	C54, C55		11,700
Ovaries	C56		9,660
Prostate	C61	58,570	
Testis	C62	4,750	
Kidney and efferent urinary tract	C64–C66, C68	10,750	6,500
Bladder*	C67, D09.0, D41.4	21,410	7,340
Thyroid gland	C73	1,520	3,540
Hodgkin's disease	C81	1,040	940
Non-Hodgkin lymphoma	C82–C85	6,780	6,070
Leukaemias	C91–C95	4,810	4,300
All malignant neoplasms, not incl. non-melanoma skin cancer	C00–C97 except C44	230,500	206,000

* including malignant neoplasms in situ and neoplasms of uncertain behaviour

Figure 2.2.1
Selected tumour sites as a percentage of all new cancer cases excluding non-melanoma skin cancer in Germany in 2004
Source: estimate by Federal Cancer Surveillance Unit at the Robert Koch Institute

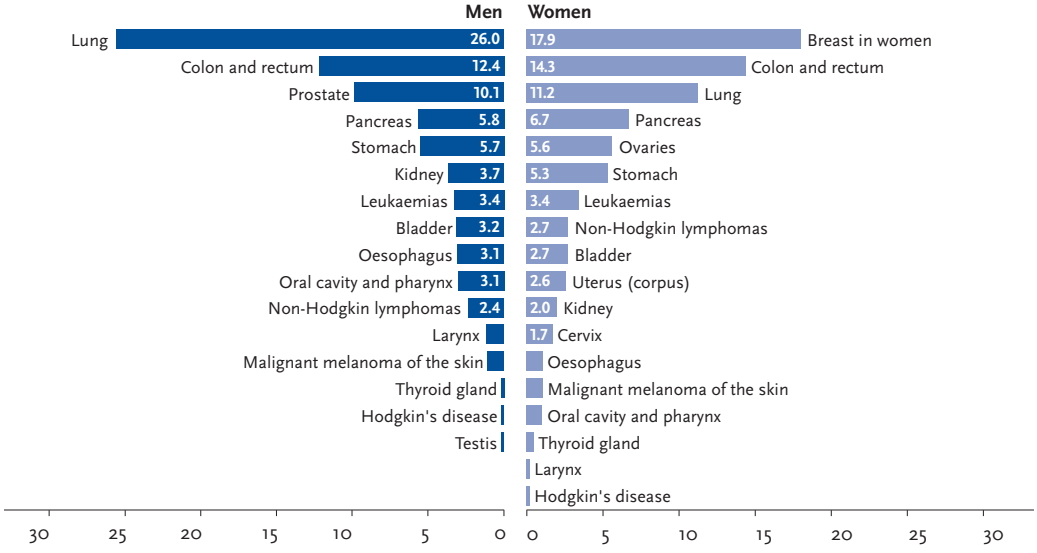


*includes malignant neoplasms in situ and neoplasms of uncertain behaviour

Table 2.2.2
Number of cancer-related deaths in Germany in 2004
Source: official cause-of-death statistics, Federal Statistical Office, Wiesbaden

Site	ICD-10	Men	Women
Oral cavity and pharynx	C00–C14	3,450	994
Oesophagus	C15	3,476	1,071
Stomach	C16	6,276	5,197
Colon and rectum	C18–C21	13,748	14,034
Pancreas	C25	6,412	6,596
Larynx	C32	1,327	169
Lung	C33, C34	28,820	11,026
Malignant melanoma of the skin	C43	1,256	1,037
Breast in women	C50		17,592
Cervix	C53		1,660
Uterus (corpus)	C54, C55		2,553
Ovaries	C56		5,479
Prostate	C61	11,135	
Testis	C62	190	
Kidney and efferent urinary tract	C64–C66, C68	4,140	1,987
Bladder	C67	3,565	2,629
Thyroid gland	C73	231	445
Hodgkin's disease	C81	201	158
Non-Hodgkin lymphoma	C82–C85	2,658	2,697
Leukaemias	C91–C95	3,738	3,327
All malignant neoplasms, not incl. non-melanoma skin cancer	C00–C97 except C44	110,745	98,079

Figure 2.2.2
Selected tumour sites as a percentage of all cancer-related deaths in Germany in 2004
Source: official cause-of-death statistics, Federal Statistical Office, Wiesbaden



cancer (by 300 cases respectively) and leukaemias (by approx. 500 cases).

Conclusion: a comparison of the 2002 incidence figures (RKI estimate 1980-2002) with those for 2004 in the current estimate (1980-2004) shows that there has been no change in the total number of new cancer cases in women, despite the higher figures for the individual sites described above. This was caused by the markedly slower rise in the incidence figures for breast cancer in women. By contrast, there were bigger changes among men. According to the current RKI estimate, there were approx. 12,000 more new cases of cancer among men in 2004 than were recorded in the old estimate for 2002. One cause can be found in the change in the population's age structure, especially among men. This higher estimate of current cancer cases is primarily a result of the increase of approximately 10,000 in prostate cancer cases, which was most likely caused by the increased use of blood PSA tests as a preliminary examination in prostate cancer screening. The RKI's current estimate reflects this dynamic development in prostate cancer, because the number of population-based cancer registries in Germany in which registration is complete has increased, thus broadening the data base of the RKI estimate.

Further improvements are to be expected, so that each new RKI estimate will be more reliable and representative than its predecessors.

2.3 Indicators and presentation

This section explains frequently used terms and provides further methodological information.

Incidence

Annual cancer incidence is defined as the total number of primary cases of cancer that occur in a defined population in the course of a year. A primary cancer originates in an organ or tissue and is neither an extension, nor a recurrence, nor a metastasis of a pre-existing cancer. The figure comprises all cancer cases, including second or third primary cancers affecting the same person. The incidence rate is calculated as an annual figure relative to population size. It is usually stated as a number per 100,000 residents per year.

DCO percentage

Cancer cases which are not reported to a population-based cancer registry during the patients' lifetimes and only find their way into statistics via a death certificate are referred to as DCO (death certificate only) cases; the data on these cases are added to the cancer figures of the year of death. The DCO percentage is a useful completeness indicator for established cancer registries. However, in recently established cancer registries the degree of completeness of data as calculated using the DCO percentage is understated. The DCO percentage can be expected to be higher in 'young' cancer registries, since it is possible that some of the people who have died of cancer were diagnosed before the registry was established, so that they could not be registered. The Federal Cancer Surveillance Unit, therefore, also assesses the completeness of cancer reporting in a different way (see section 2.1).

Mortality

Cancer mortality is based on the number of cancer-related deaths in a year according to the official cause-of-death statistics. The deaths are assigned to the underlying cause of death according to age and gender. The mortality rate is the number of deaths relative to the size of the population. The rates are usually expressed per 100,000 people.

ICD

The ICD (International Classification of Diseases), which is occasionally revised, is used for coding diseases and causes of death. The 9th and 10th revisions of the ICD were used in the period from 1980 to 2004. Whereas recently established cancer registries in Germany were able to use the 10th revision for coding cancer sites from the outset, there was some delay in implementing it in the German cause-of-death statistics. In most of the cancer sites dealt with here, the continuity of mortality trends was hardly affected by the introduction (in 1998) of the 10th revision of the ICD for coding the German cause-of-death statistics. Compared to coding according to the 9th revision (ICD-9: 140–208), ICD-10 led to 0.1%-0.3% higher death figures for all cancer sites (ICD-10: C00–C97) and up to 2% lower death figures for ovarian cancer and non-Hodgkin lymphomas. Otherwise, the deviations were minimal. The 10th revision of the ICD was used in the present brochure to designate cancer sites.

Crude rates

A crude rate (of incidence or mortality) for a certain cancer site and population is calculated by dividing the total number of all new cancer cases in a given period (incidence), or the total number of deaths caused by a certain form of a cancer (mortality), by the total number of people making up the respective population (in this case the resident population of Germany). The result is usually given as a rate per 100,000 residents per year.

Age-specific rates

The age-specific rate is determined by dividing the number of cancer cases and/or deaths in a certain age group by the corresponding number of men or women in this age group in the population. The age-specific incidence and mortality rates are usually given as annual rates per 100,000 resident members of the respective age group.

Age-standardized rates

Descriptive epidemiology compares the frequency (incidence or mortality) of a certain cancer site either in different populations or within the same region during different time periods. As shown by the information provided in this brochure on the age-specific incidence of cancer in men and women, the incidence rate usually increases considerably with age. If, therefore, incidence or mortality is to be compared in different states and regions, or within the same population at different times, the possibility that these differences might be caused exclusively by different age structures of the populations being compared must first be excluded by means of age standardization. As a rule, age standardization is carried out by weighting the age-specific rates and subsequently adding them together. Since the sum of the weights used is 1, the age-standardized rate can be regarded as a weighted average of age-specific rates. It indicates how frequently a disease is contracted, or causes death, in a population of 100,000 people of a defined age structure. The European Standard and the World Standard are commonly used as standard populations in cancer epidemiology. The European Standard includes a higher percentage of older people than the World Standard – in line with higher life expectancy in Europe. In this brochure, the World Standard is only used for international comparisons. In all other cases, the European Standard (old European standard population) is used for age standardization.

Globocan 2002

Age-standardized incidence rates from neighbouring European countries, North America, Australia and Japan from the Globocan 2002 software package are used to classify the level of estimated cancer incidence in Germany by international comparison. The cancer incidence rates, which were age-standardized according to the World Standard, relate to 2002. For comparison, two incidence rates in Germany that have been standardized in the same way are shown for 2002 (from the last 1980–2002 estimate) and for 2004 (from the current 1980–crdc-2004 estimate). Age standardization using the World Standard leads to lower incidence rates than when the European Standard is used because it is based on a smaller proportion of older people.

Average age at onset, average age of death

The average age at the onset of cancer and the average age of death are determined as a median of the age distribution of all cancer patients and all deceased respectively. The figures are therefore less influenced by the extremes of this distribution – i.e.

the youngest and oldest – than if the arithmetic mean were chosen. The median age divides the patients and deceased into two equal halves, one younger and one older, each of the same size.

Relative survival rates

Population-based relative survival rates are calculated to assess survival after a cancer is diagnosed. To do this, the patients' survival period is related to the life expectancy of the general population. A relative survival rate of 100% means that the mortality of the cancer patients is just as high as that of the general population of the same age.

Although data on cancer survival are available in various population-based cancer registries in the meantime, this edition of "Cancer in Germany" is again focusing on data from the Saarland Cancer Registry to calculate the survival rates. This is because the methodological comparability of the cancer survival data between the registries is currently not yet sufficiently assured. Only the date of diagnosis and (in the event of the patient's death) the date of death were used for the calculation, irrespective of the certified causes of death. The registry collects information on the date of death by means of the annual "mortality match" – by comparing the data on all the people who have died in the Saarland in the respective year with the registry's data. The calculations cover the survival of more than 95% of all cancer patients in the Saarland. Only DCO cases with no date of diagnosis, and cancer patients who were diagnosed by autopsy only, had to be excluded.

Unlike earlier editions of this brochure, the calculation of survival excludes people under the age of 15, since the German Childhood Cancer Registry in Mainz already calculates the survival rates of all children and young people with cancer in Germany (see section 4). By restricting the calculation to cancer patients over 15, the relative survival rates – of leukaemia patients, for example – could turn out worse than the figures published in the 5th edition of this brochure. Another change is that we used national life tables instead of the Saarland tables for the years 1999 to 2005 and based our calculations on the period approach instead of the traditional cohort approach. The survival rates now relate to diagnosis and survival in the more recent period from 2000 to 2004 as opposed to 1994–1998 as the years of diagnosis followed by a five-year observation period. This new approach makes it possible to calculate more recent 5-year survival rates.

The survival prospects of individual cancer patients depend not only on the cancer site, but also on the stage of the disease when diagnosed and the age of the patient. An individual prognosis cannot be drawn up on the basis of these data. They can only serve as an orientation for patients, family members and the interested public.

Graphic presentation

The age-specific incidence rates show the relation between age and cancer risk and enable a comparison of cancer incidence in the two sexes.

Only the relation between the rates should be taken into account when making an international comparison between the age-standardized incidence rates of different countries with the end points of the RKI's previous estimate (1980–2002) and current estimate (1980–2004). The absolute level of the incidence rates turns out lower when the World Standard for age standardization is applied rather than the European Standard, which is used otherwise.

The trend in age-standardized cancer mortality rates during the period 1980-2004 is based on data from the official cause-of-death statistics, which were calculated retrospectively for a united Germany as far back as 1980. The figures on new cancer cases in Germany estimated by the RKI are presented as age-standardized rates for the same period from 1980 up to and including 2004.

The currently (2003–2004) measured age-standardized incidence rates (European standard population) in 13 German states and the two administrative districts (Münster for North Rhine-Westphalia and Darmstadt for Hesse) are shown in comparison to the RKI estimate for Germany (2003–2004). Regional incidence rates for the administrative district of Darmstadt in Hesse are shown for the first time. The only state where population-based data on cancer cases are still not available is Baden-Württemberg, whose cancer registry is under development (see section 1.3).

The completeness of cancer registration by the population-based cancer registries is shown by different colours in the charts and tables. Registration of at least 90% of cancer cases between 2003 and 2004 is indicated by a darker colour on

the incidence bars. The incidence bar is lighter in colour if the completeness of coverage is below 90%. The DCO percentage of age-standardized and crude incidence, which is shown in the charts and tables, is also a good indicator of completeness. In the chart, the DCO percentage at the end of each bar is shown in a lighter colour to distinguish it from the completely or less completely registered reports on incident cancer cases. In the alphabetically listed table following the bar charts, the crude and age-standardized incidence rates based on sufficiently complete data between 2003 and 2004 are shown in black characters; otherwise they are grey. The DCO percentage in the table relates to the crude incidence rate.

3 Results according to ICD-10

3.1 All cancer sites

Prevalence

The category 'all cancer sites' is defined as all malignant neoplasms, including primary systemic lymphomas and leukaemias. In line with international practice, non-melanoma skin cancer is not included. The annual number of new cases of cancer in Germany is estimated at approx. 230,500 among men and 206,000 among women. The average age at onset is about 69 in both men and women. The average age of death from cancer is about 71 for men and 75 for women. Compared to the last estimate for 2002, this represents an increase in the incidence rate among men of just over 5%, essentially due to a higher incidence of prostate cancer. The total number of new cases among women has not changed since the last estimate.

Risk factors

As a rule, cancer develops as a result of not one single cause but a combination of many different factors. On the basis of present knowledge, prevention or early detection is only feasible in a few of the more common types of tumour. The vaccination of 12-to 17-year-old girls against the human papillomavirus (HPV), which was approved for the first time in 2007, is currently of major importance. In the long term, it is hoped that this will reduce the incidence of cervical cancer. Of the avoidable risk factors, (cigarette) smoking is of outstanding significance since it causes between a quarter and a third of all cancer-related deaths. A less precisely quantifiable, but perhaps even higher percentage of all cancer-related deaths can probably be attributed to poor diet, such as general supernutrition and consuming too much (animal) fat and not enough fruit and vegetables. Further risk factors contributing to the development of certain cancers include chronic infections, heavy alcohol consumption, exposure to carcinogens at the workplace, and environmental effects. Workplace and environmental influences include the ultraviolet components of sunlight, fine particulate matter, polycyclic aromatic hydro-

carbons (PAHs) (e.g. from car exhausts and industrial emissions), radon and passive smoking inside buildings. The effects of these harmful substances combine in a wide variety of ways in the course of a person's lifetime, so that it is rarely possible to confirm a suspected cause in individual cases.

Trends

In the Saarland, the age-standardized incidence rate rose during the 1970s and 1980s among both men (whose rate of new cancer cases was higher) and women (whose rate was lower).

Since 1980 the estimated incidence rates for Germany have indicated similar, rising trends for the two sexes, albeit at different levels. The rise in incidence among men since the 1990s was most likely caused by prostate cancer (see C61: prostate carcinoma) being diagnosed more often and at a younger age. A comparison of consecutive RKI estimates shows that there was a rise in overall cancer incidence among men in the 60–79 age group, and a decline among men over 80 (earlier diagnosis).

A comparison of the estimates for 2002 and 2004 among women shows no rise in cancer incidence in specific age groups, only a decrease among women over 80.

The age-standardized cancer mortality rate has been falling continuously among women since 1970, and among men since the mid-1980s.

Survival

The relative 5-year cancer survival rates cover a broad range – from very favourable rates for lip cancer, malignant melanoma of the skin and testicular cancer, to very unfavourable rates for pancreatic, lung and oesophageal cancer. The survival rates of cancer patients have been improving overall since the 1970s. The lower incidence of stomach cancer, which has a poor survival rate, and the higher incidence of colorectal cancer with a better rate, have also contributed to this improvement. Comparing the 4th edition of this brochure (2004) – with the survival rates of patients diagnosed between 1990 and 1994 – with the 5th edition (2006) – with survival rates for the period 1994–1998 – the relative survival rates for all cancer sites improved by two percentage points in each case. Recent survival data for the years 2000 to 2004, now examined by means of period analysis, reveal relative 5-year survival rates of 60% for women and 53% for men. In the case of men, this means an improvement of five percentage points, in women of seven.

The more marked improvement in the survival prospects of men was essentially due to the considerable rise in the number of new cases of prostate cancer, which is now being detected earlier, thanks to PSA screening becoming more common. It should be noted here that an earlier diagnosis does not necessarily prolong life.

The markedly higher survival rates of women with cancer can be attributed to differences in cancer patterns. Lung and oesophageal cancer (with poor chances of survival) are more common among men, while breast cancer (which has a favourable prognosis) occurs much more frequently among women. There is little difference between women and men when it comes to the average survival prospects of patients with cancers of the same site.

Figure 3.1.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C00–97 except C44
New cases per 100,000 by age groups

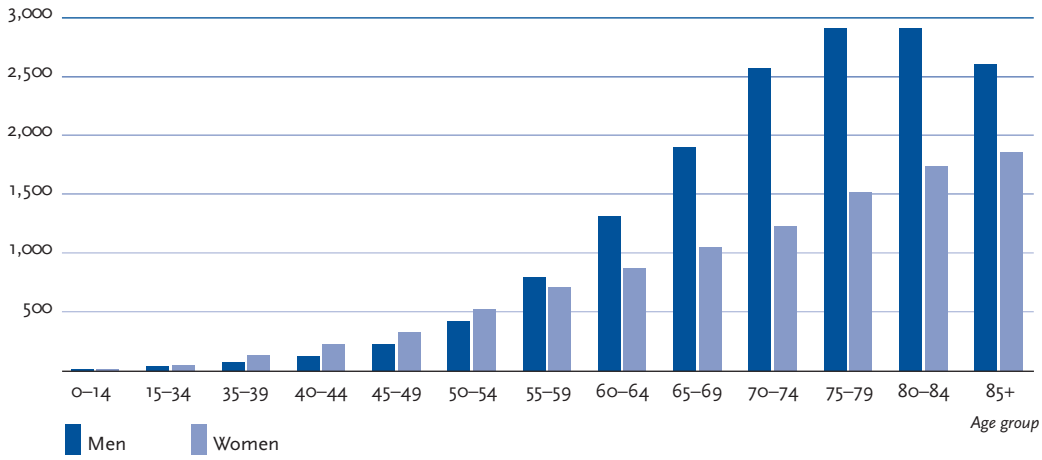


Figure 3.1.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C00–97 except C44
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

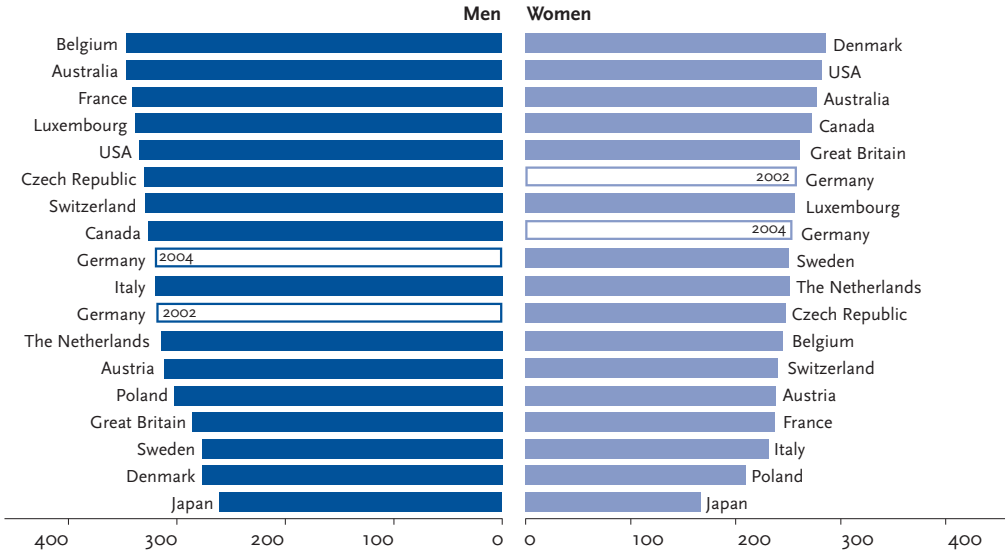


Figure 3.1.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C00–97 except C44
Cases/deaths per 100,000 (European Standard)

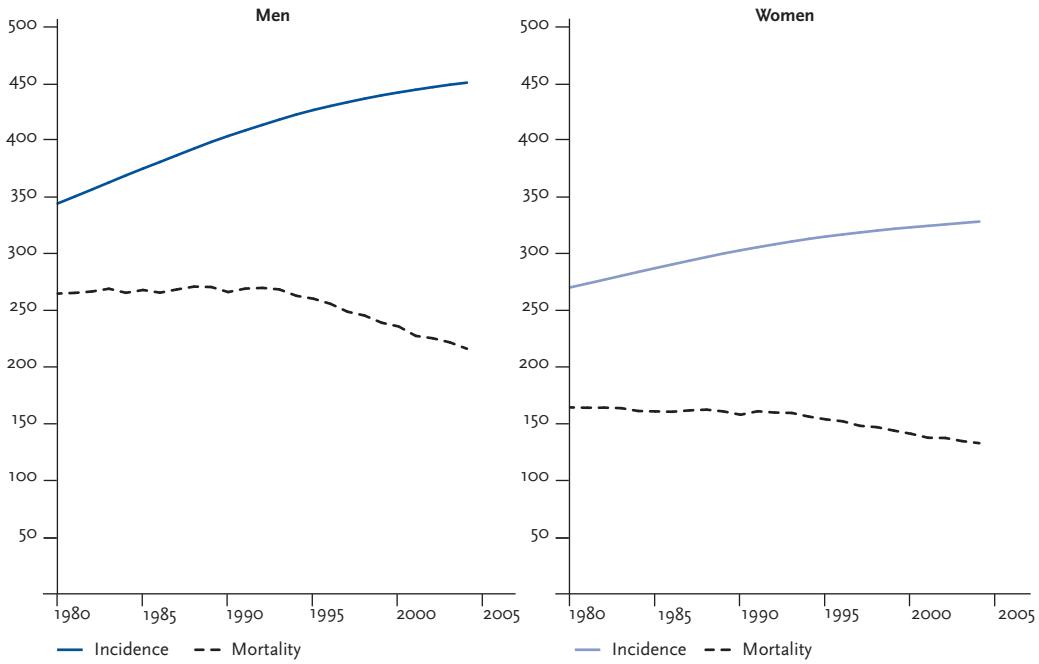


Table 3.1.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C00–97 except C44
Cases/deaths per 100,000 by age groups

Age in years	Men		Women	
	Incidence	Mortality	Incidence	Mortality
under 15	11.5	2.6	8.6	2.2
15 to under 35	42.7	6.1	49.1	6.2
35 to under 40	75.8	17.5	127.1	22.5
40 to under 45	121.8	40.2	222.7	45.9
45 to under 50	228.0	92.5	330.6	91.8
50 to under 55	421.4	188.7	524.7	148.3
55 to under 60	794.5	326.6	708.2	232.5
60 to under 65	1,315.2	532.3	871.2	317.1
65 to under 70	1,899.6	784.3	1,045.3	434.5
70 to under 75	2,567.9	1,162.9	1,224.1	619.6
75 to under 80	2,909.0	1,611.9	1,518.2	871.7
80 to under 85	2,912.8	2,156.9	1,738.9	1,186.7
85 and older	2,607.8	2,622.7	1,852.0	1,616.1
Crude rate	571.2	274.1	488.7	232.4
Stand. rate (*European standard*)	453.6	218.5	330.8	135.0

Figure 3.1.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C00–97 except C44
New cases per 100,000 (European Standard)

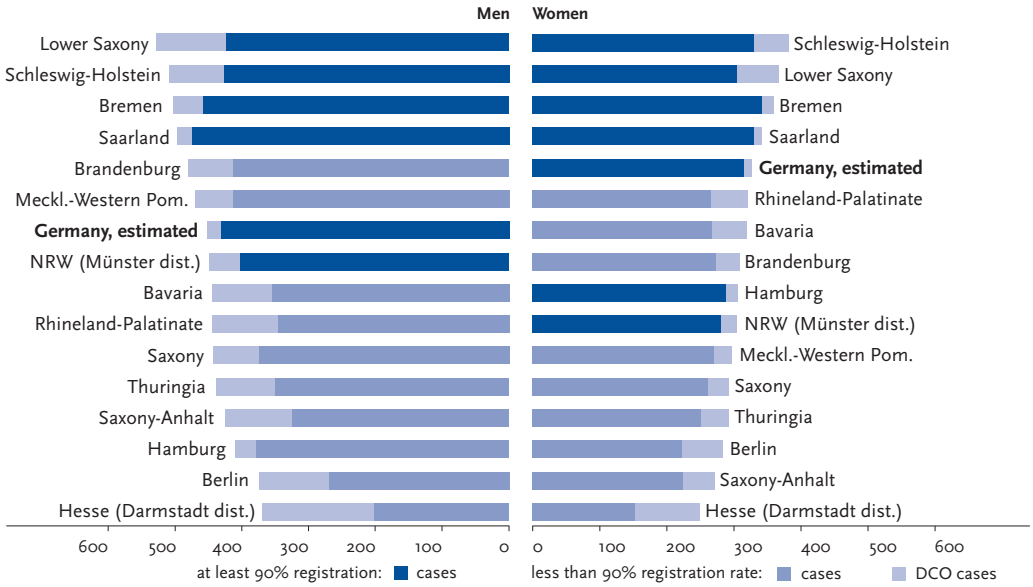


Table 3.1.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C00–97 except C44
*New cases per 100,000 (*European Standard)*

Region	Men			Women		
	Crude rate	% DCO	Stand. rate*	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed					
Bavaria	535.6	20	445.1	465.3	22	322.8
Berlin	420.4	26	374.0	420.9	28	287.5
Brandenburg	590.3	12	481.9	472.4	15	312.3
Bremen	662.0	9	504.5	571.4	7	363.4
Hamburg	491.9	8	410.8	448.6	8	309.2
Hesse (Darmstadt admin. dist.)	460.2	45	370.0	384.0	45	252.1
Mecklenburg-Western Pomerania	562.3	11	470.6	448.0	11	299.7
Lower Saxony	666.2	20	529.5	561.8	23	371.3
North Rhine-Westphalia (Münster admin. dist.)	532.9	10	449.3	440.9	10	308.2
Rhineland-Palatinate	568.2	22	445.1	496.5	24	325.0
Saarland	661.2	4	497.4	534.0	5	346.4
Saxony	593.6	15	443.5	501.2	15	296.2
Saxony-Anhalt	555.3	23	426.4	449.7	23	275.4
Schleswig-Holstein	657.1	16	510.0	572.5	19	386.3
Thuringia	551.5	19	438.8	468.6	18	295.2
Germany, estimated	**563.1**	4	**452.7**	**485.9**	5	**330.2**

— at least 90% registration — less than 90% registration rate

3.2 Oral cavity and pharynx

Prevalence

Cancers of the oral cavity and the pharynx include malignant neoplasms of the lip, the tongue, the floor and roof of the mouth, the salivary glands and the pharynx. Men are diagnosed with cancer of the oral cavity and pharynx much more frequently than women. In Germany, the estimated annual number of new cases among men (7,600) is almost three times as high as among women (2,800). These cancer sites account for 3.3% of all new cancer cases among men and are the seventh most common in terms of incidence (among women: 1.4%, 15th). Annual deaths caused by cancer of the oral cavity and the pharynx total 3,450 among men, which corresponds to 3.1% of all cancer-related deaths (women: 994, 1.0%). The average age at onset of the disease is low compared to other cancer sites; it is 61 among men and 63 among women. The highest incidence rates among men are in the 55–65 age group.

Risk factors

The main risk factors include tobacco and alcohol consumption. Smokers develop malignant neoplasms of the oral cavity and the pharynx up to six times more frequently than non-smokers, and the combination of alcohol consumption and smoking increases the risk. Oral tobacco use (e.g. chewing tobacco) also represents a risk. Other risk factors are poor oral hygiene and insufficient consumption of fruit and vegetables. Viruses are also under discussion as contributory factors to the development of some subtypes of these cancers.

Trends

The incidence of cancers of the mouth and pharynx increased considerably among men up to the early 1990s in Germany. Since then the trend has been falling just as markedly. Among women, incidence rose up to the late 1990s; since then it has been steady, recently moving towards a decline. Mortality due to these tumours shows a similar curve shape with lower rates respectively. Among men, mortality first rose and then fell in the early 1990s, whereas among women this decline began in the late 1990s.

Survival

The relative 5-year survival rates for all sites of the oral cavity and the pharynx are 47% in men and 55% in women. Factors affecting women which contribute to this difference include a more favourable composition of this group of cancers and the stages at which they are diagnosed.

Of this group, cancer of the lip has the most favourable 5-year survival rates at over 90%; cancer of the pharynx has the most unfavourable at 30–40%.

Figure 3.2.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C00–14
New cases per 100,000 by age groups

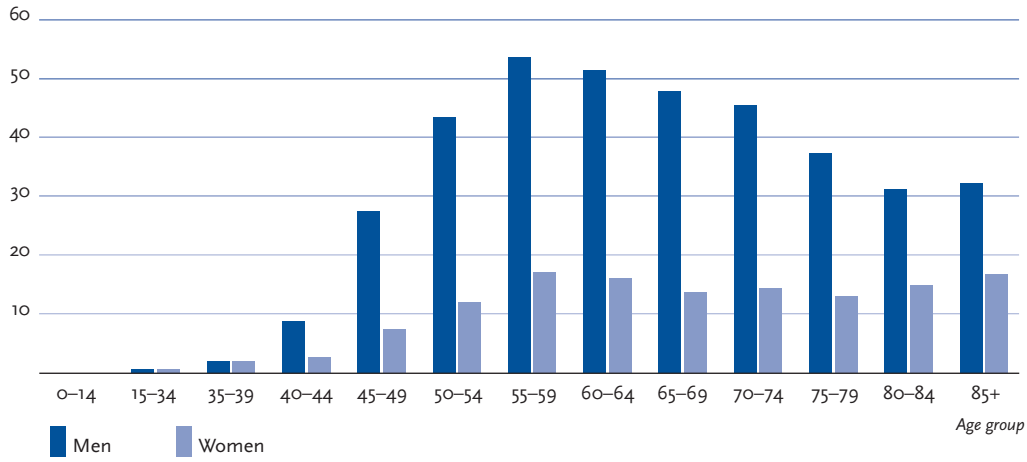


Figure 3.2.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C00–14
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

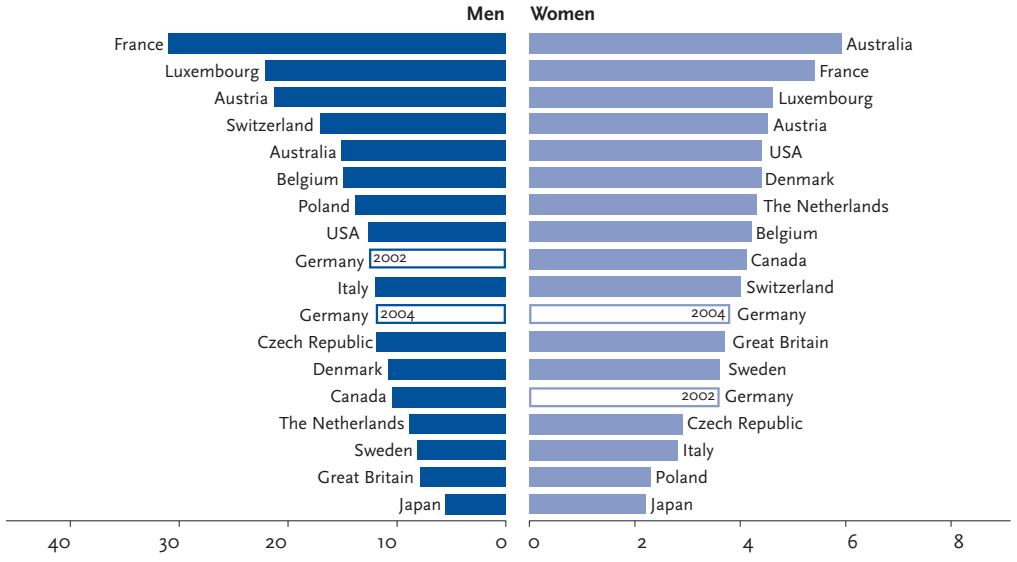


Figure 3.2.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C00–14
Cases/deaths per 100,000 (European Standard)

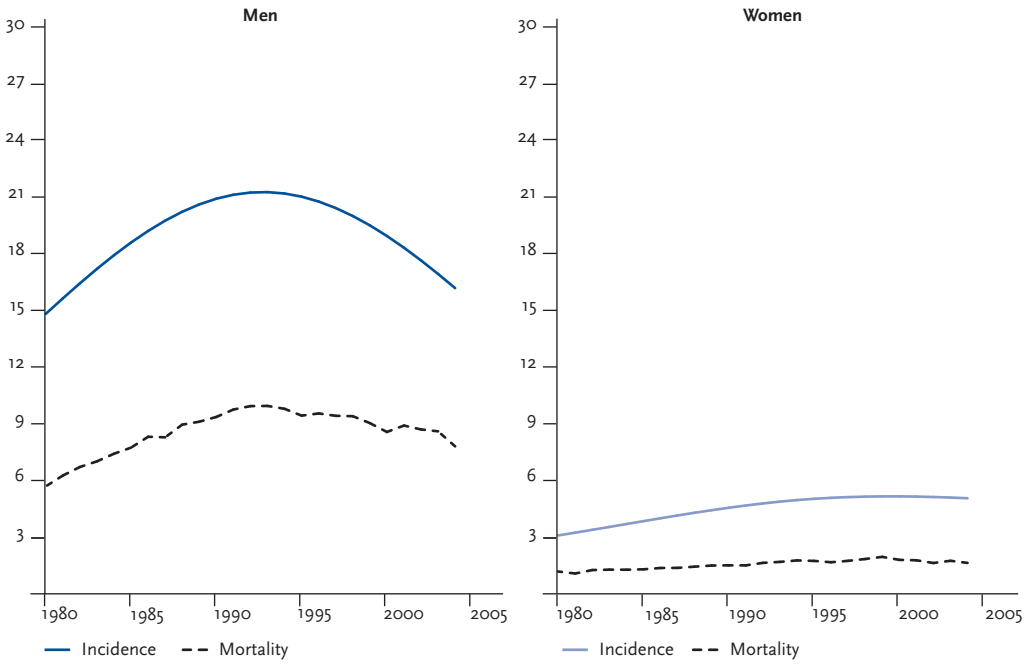


Table 3.2.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C00–14
Cases/deaths per 100,000 by age groups

Age in years	Men		Women	
	Incidence	Mortality	Incidence	Mortality
under 15	0.0	0.0	0.0	0.0
15 to under 35	0.5	0.1	0.5	0.0
35 to under 40	1.7	0.9	1.6	0.3
40 to under 45	8.6	2.9	2.8	0.7
45 to under 50	27.4	9.6	7.2	1.9
50 to under 55	43.5	16.7	11.8	3.1
55 to under 60	53.7	21.0	16.8	5.2
60 to under 65	51.4	25.7	15.7	5.2
65 to under 70	47.7	23.4	13.2	4.5
70 to under 75	45.4	22.6	14.1	4.2
75 to under 80	37.2	22.6	12.5	4.8
80 to under 85	31.1	20.9	14.6	8.2
85 and older	32.0	25.4	16.6	13.9
Crude rate	18.9	8.5	6.6	2.4
Stand. rate (*European standard*)	16.3	7.2	5.1	1.6

Figure 3.2.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C00–14
New cases per 100,000 (European Standard)

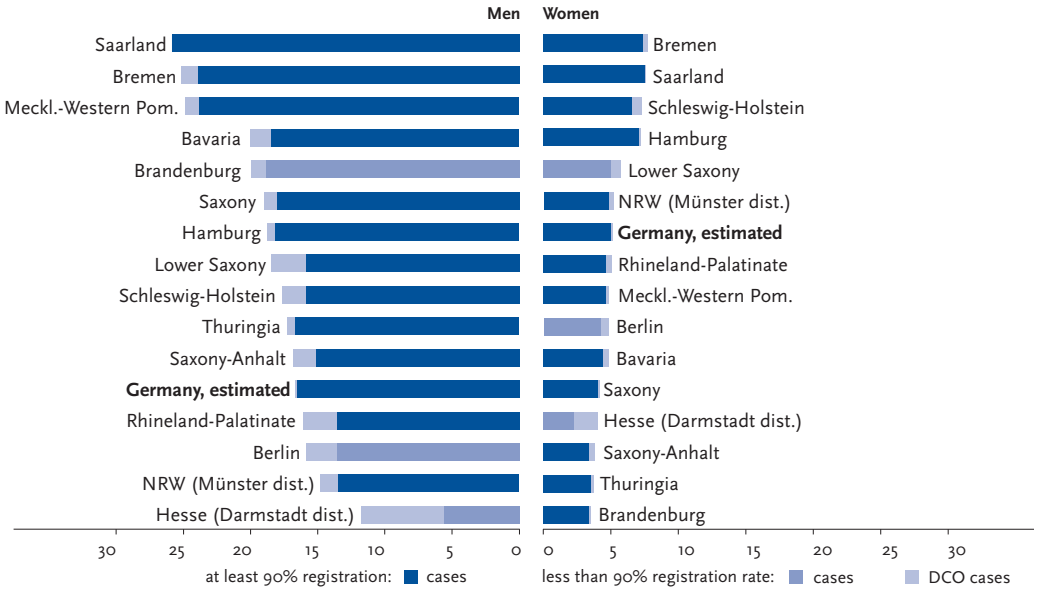


Table 3.2.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C00–14
*New cases per 100,000 (*European Standard)*

Region	Men			Women		
	Crude rate	% DCO	Stand. rate*	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed					
Bavaria	22.5	8	20.1	6.0	10	4.7
Berlin	18.3	14	15.9	6.4	14	4.8
Brandenburg	24.4	5	19.9	5.0	8	3.6
Bremen	29.8	5	25.2	10.2	4	7.6
Hamburg	20.7	3	18.8	9.3	2	7.1
Hesse (Darmstadt admin. dist.)	13.9	54	11.7	5.2	48	4.0
Mecklenburg-Western Pomerania	29.2	3	24.9	6.4	5	4.8
Lower Saxony	21.7	15	18.5	7.4	16	5.6
North Rhine-Westphalia (Münster admin. dist.)	16.4	10	14.8	6.5	9	5.2
Rhineland-Palatinate	18.9	16	16.1	6.5	11	5.0
Saarland	31.3	0	25.9	9.7	1	7.5
Saxony	23.1	5	19.0	6.2	5	4.1
Saxony-Anhalt	21.2	11	16.9	5.5	14	3.8
Schleswig-Holstein	21.3	11	17.8	10.0	12	7.2
Thuringia	21.0	3	17.3	5.6	7	3.7
Germany, estimated	**19.2**	0	**16.6**	**6.6**	1	**5.1**

— at least 90% registration — less than 90% registration rate

3.3 Oesophagus

Prevalence

Approx. 3,900 men and 1,050 women are diagnosed with oesophageal cancer each year in Germany. This corresponds to 1.7% of all malignant neoplasms in men and 0.5% in women. Oesophageal cancer is responsible for a higher percentage of cancer-related deaths: 3.1% among men and 1.1% among women. Men in Germany currently develop oesophageal cancer about three times more frequently and on average 4.5 years earlier than women. At 65, the average age at onset in men is four years below the figure for all cancer sites; in women (almost 70) it is one year above the overall figure. Most of the common squamous-cell carcinomas of the oesophagus are located in the middle and lower third of the oesophagus, only ten to fifteen percent in the upper third. Adenocarcinomas, which originate at the entrance to the stomach (cardia), are also located in the lower third.

Risk factors

Alcohol and tobacco consumption are among the most important risk factors in the development of squamous-cell carcinomas in the oesophagus, and a combination of both factors further aggravates the effect. Adenocarcinomas tend to develop from a reflux disease. Barrett's oesophagus and Barrett's ulcer, a lesion of the mucous membrane caused by frequent reflux with heartburn (due to the backing up of stomach contents into the oesophagus), are regarded as precancerous lesions. Diet-related risk factors and overweight, therefore, also play a role, at least indirectly. Familial clustering of oesophageal cancer has been observed.

Trends

Oesophageal cancer incidence and mortality rates are almost identical due to the unfavourable prognosis for oesophageal carcinomas. Incidence rates in men rose slightly up to the mid-1990s; estimated incidence shows a slightly decreasing trend over the last few years. Both the incidence and mortality rates among women increased slightly in the period up to 2004.

Survival

For a long time the survival rates of patients with an oesophageal carcinoma were among the most unfavourable of all cancers. The relative 5-year survival rate is currently around 22% in men and 20% in women. This means that the overall prospects of survival after being diagnosed with oesophageal cancer have improved in recent years, especially for men.

Figure 3.3.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C15
New cases per 100,000 by age groups

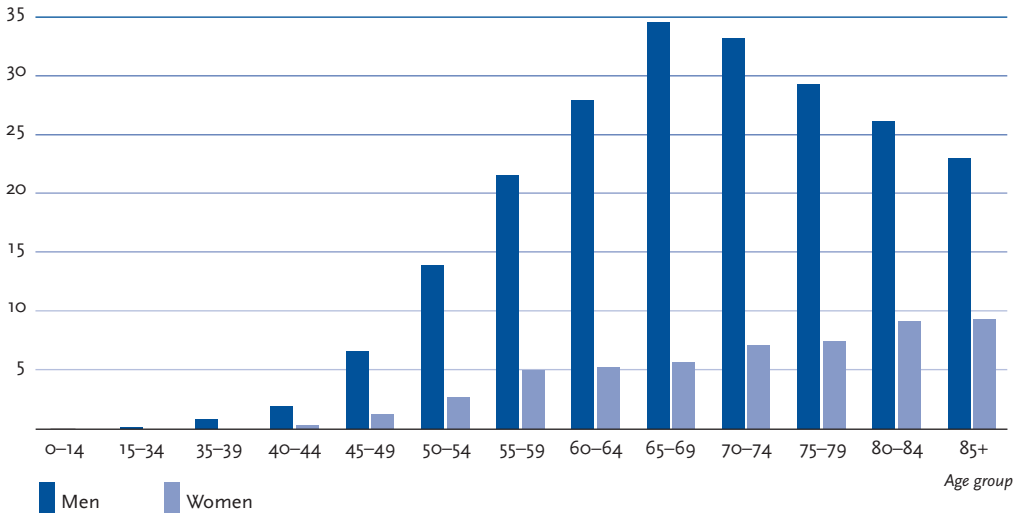


Figure 3.3.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C15
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

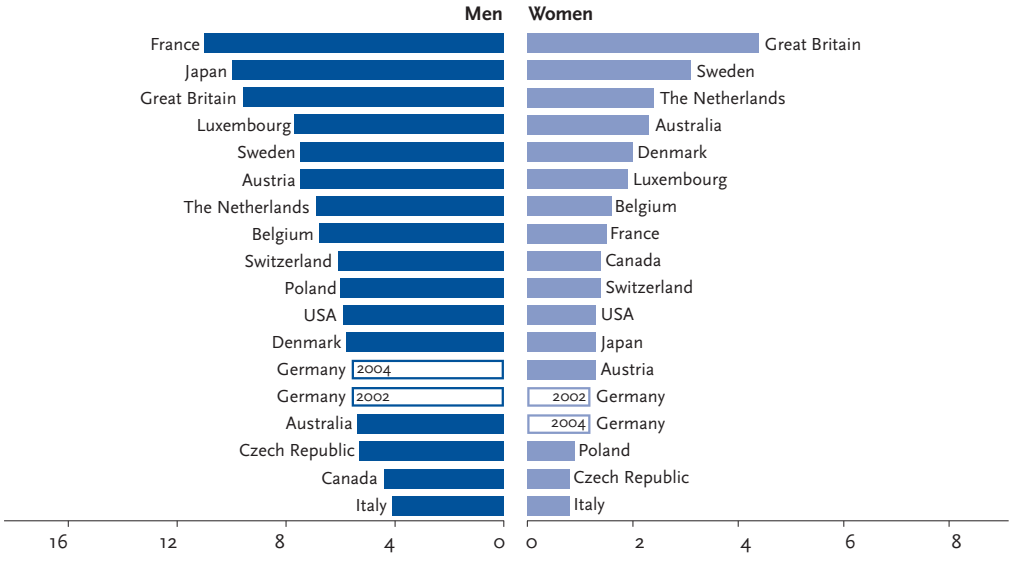


Figure 3.3.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C15
Cases/deaths per 100,000 (European Standard)

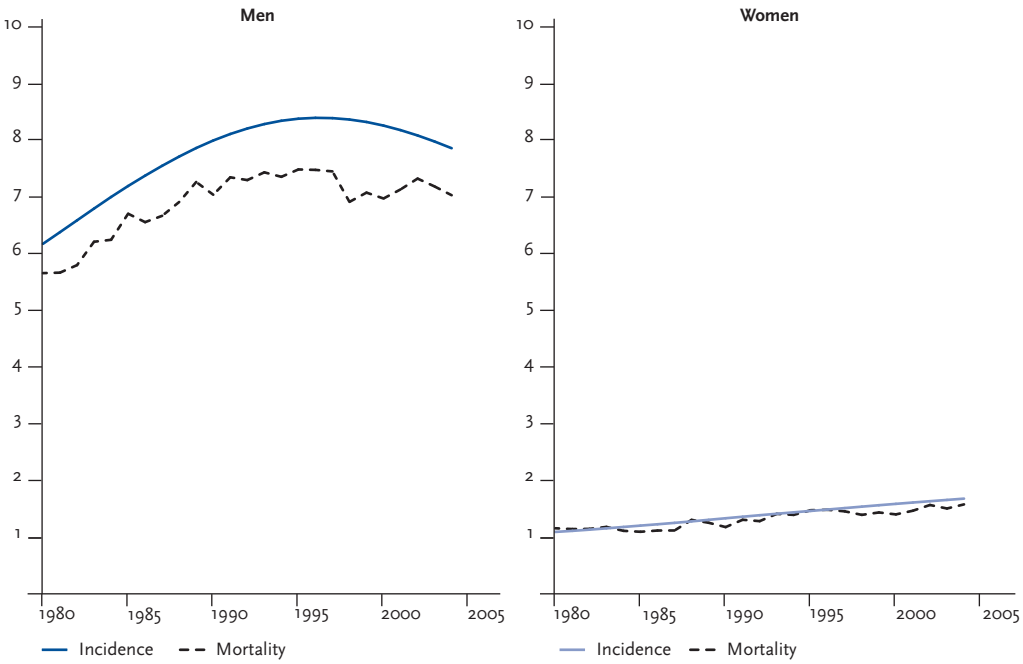


Table 3.3.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C15
Cases/deaths per 100,000 by age groups

Age in years	Men		Women	
	Incidence	Mortality	Incidence	Mortality
under 15	0.0	0.0	0.0	0.0
15 to under 35	0.1	0.1	0.0	0.0
35 to under 40	0.8	0.6	0.0	0.0
40 to under 45	2.0	1.6	0.3	0.1
45 to under 50	6.7	4.7	1.3	1.1
50 to under 55	14.0	11.3	2.7	2.3
55 to under 60	21.7	19.1	5.0	3.8
60 to under 65	28.1	24.0	5.3	4.6
65 to under 70	34.8	29.0	5.7	5.6
70 to under 75	33.5	30.3	7.2	5.6
75 to under 80	29.5	32.4	7.5	8.8
80 to under 85	26.3	33.3	9.2	11.1
85 and older	23.2	33.7	9.3	16.2
Crude rate	9.6	8.6	2.5	2.5
Stand. rate (*European standard*)	7.9	7.0	1.7	1.6

Figure 3.3.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C15
New cases per 100,000 (European Standard)

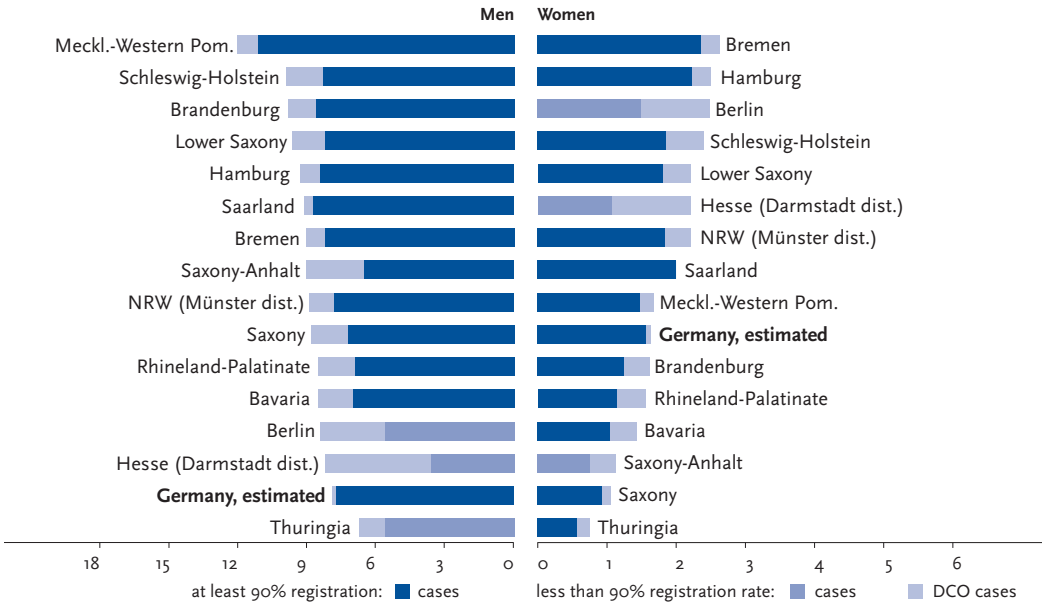


Table 3.3.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C15
*New cases per 100,000 (*European Standard)*

Region	Men			Women		
	Crude rate	% DCO	Stand. rate*	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed					
Bavaria	10.0	18	8.6	2.1	34	1.4
Berlin	9.8	33	8.4	3.7	41	2.5
Brandenburg	12.0	11	9.7	2.7	25	1.6
Bremen	11.2	8	9.0	4.8	12	2.6
Hamburg	11.0	10	9.3	3.7	14	2.5
Hesse (Darmstadt admin. dist.)	10.1	56	8.2	3.4	57	2.2
Mecklenburg-Western Pomerania	14.9	7	12.0	2.6	11	1.7
Lower Saxony	11.8	15	9.6	3.4	23	2.2
North Rhine-Westphalia (Münster admin. dist.)	10.2	12	8.9	3.4	18	2.2
Rhineland-Palatinate	10.6	20	8.6	2.3	33	1.6
Saarland	12.1	5	9.1	3.3	0	2.0
Saxony	11.5	18	8.8	2.1	18	1.1
Saxony-Anhalt	11.5	27	9.0	2.1	38	1.1
Schleswig-Holstein	12.5	16	9.9	3.6	25	2.4
Thuringia	8.6	17	6.7	1.4	29	0.8
Germany, estimated	**9.6**	3	**7.9**	**2.5**	4	**1.6**

— at least 90% registration — less than 90% registration rate

3.4 Stomach

Prevalence

The number of incident cases in Germany is estimated at approx. 18,800 per annum; almost 11,000 of these are among men. Stomach cancer is the fifth most common cancer among men and the seventh among women. Despite falling incidence rates, stomach cancer is still a common tumour-related cause of death. The average age at onset is approx. 70 in men and 75 in women; it is thus almost one year higher among men and six years higher among women than for all cancer sites. Histologically, adenocarcinomas are the most common carcinomas in the stomach. MALT lymphomas, which originate in the gastric mucosa (stomach lining), are not classified as stomach cancer, but as non-Hodgkin lymphomas.

Risk factors

Eating habits play a major role. In particular a lack of fresh fruit and vegetables reduces risk, whereas the frequent consumption of highly salted meals increases risk. Consumption of grilled, pickled or smoked foods also seems to promote the development of stomach cancer. Excessive consumption of alcohol also increases the risk of developing the disease, because this promotes long-term inflammations involving lesions of the gastric mucosa, such as chronic atrophic gastritis (especially type B) and stomach ulcers. Smoking is also considered a risk factor. It has been shown in recent years that a bacterial infection of the stomach with *Helicobacter pylor*i is of major importance in the initiation and promotion of stomach cancer. Among stomach polyps, which are virtually always benign, only the rare adenomas are regarded as precancerous. Pernicious anaemia, Ménétrier's disease and other rare pre-existing diseases only lead to a small proportionate increase in the risk.

Trends

As in other industrialized nations, the number of new stomach cancer cases in Germany has been falling continuously for over 30 years. The estimated incidence in Germany in 2004 was markedly lower than in 1980 among both men and women; among women the figure was halved. Mortality due to stomach cancer is also decreasing continuously, especially in women.

Survival

Among both men and women, the cumulated relative 5-year survival rates for stomach cancer are still rather poor compared to other cancers; the figures are 35% and 31% respectively.

Figure 3.4.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C16
New cases per 100,000 by age groups

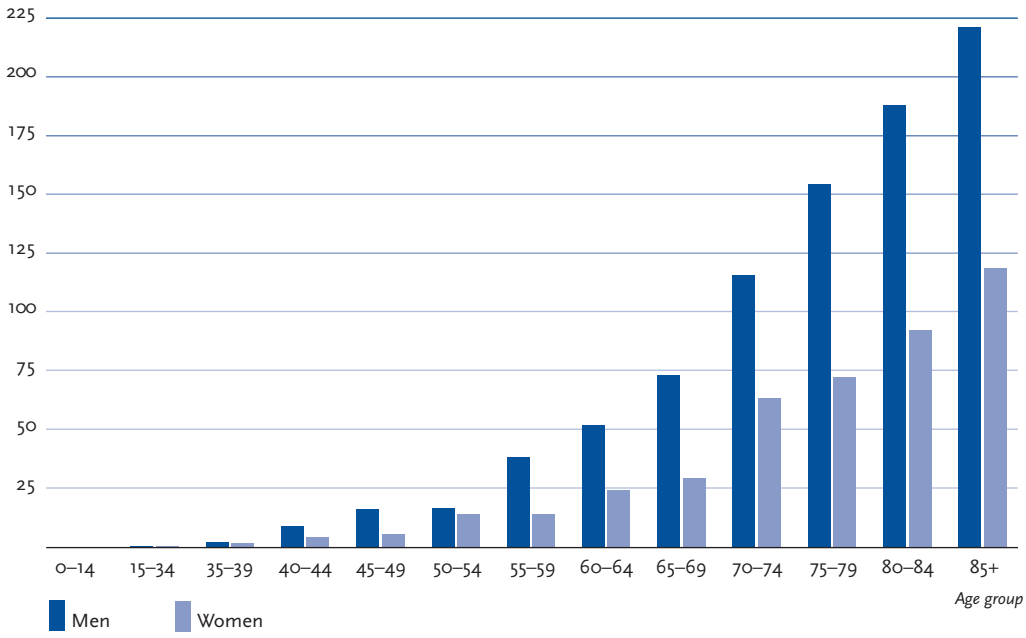


Figure 3.4.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C16
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

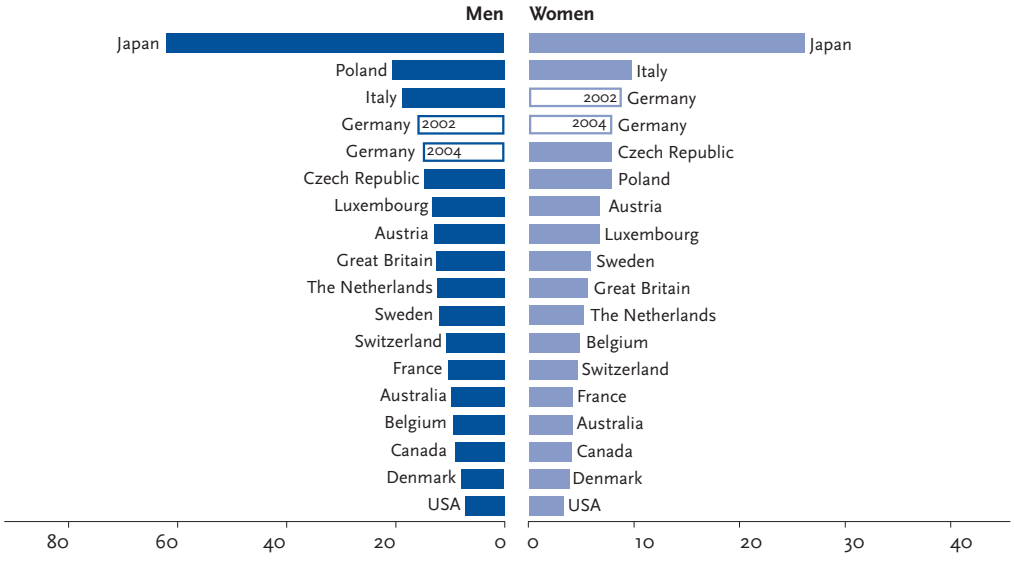


Figure 3.4.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C16
Cases/deaths per 100,000 (European Standard)

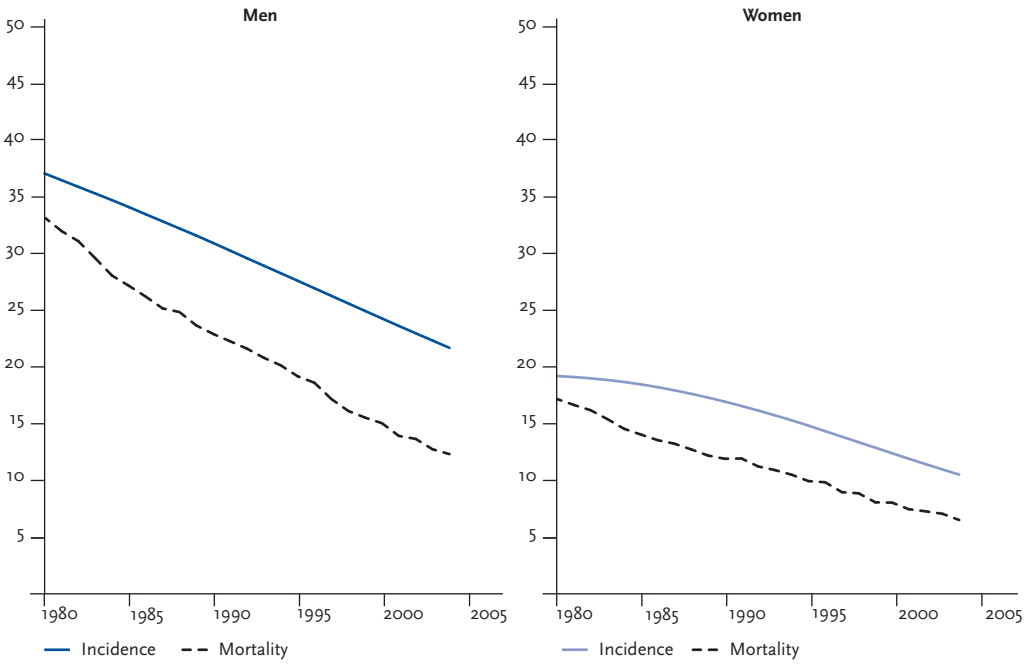


Table 3.4.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C16
Cases/deaths per 100,000 by age groups

Age in years	Men		Women	
	Incidence	Mortality	Incidence	Mortality
under 15	0.0	0.0	0.0	0.0
15 to under 35	0.4	0.2	0.2	0.3
35 to under 40	2.2	1.0	1.9	1.4
40 to under 45	8.8	3.2	4.1	2.3
45 to under 50	16.4	5.3	5.7	4.0
50 to under 55	16.8	11.3	14.1	6.2
55 to under 60	38.5	16.6	14.4	8.5
60 to under 65	52.2	26.4	24.3	12.4
65 to under 70	73.4	39.7	29.6	17.5
70 to under 75	116.3	67.0	64.3	29.8
75 to under 80	155.4	96.4	72.6	46.1
80 to under 85	189.2	133.4	92.9	68.7
85 and older	222.9	175.4	119.5	124.1
Crude rate	27.3	15.6	18.5	12.3
Stand. rate (*European standard*)	21.8	12.4	10.6	6.6

Figure 3.4.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C16
New cases per 100,000 (European Standard)

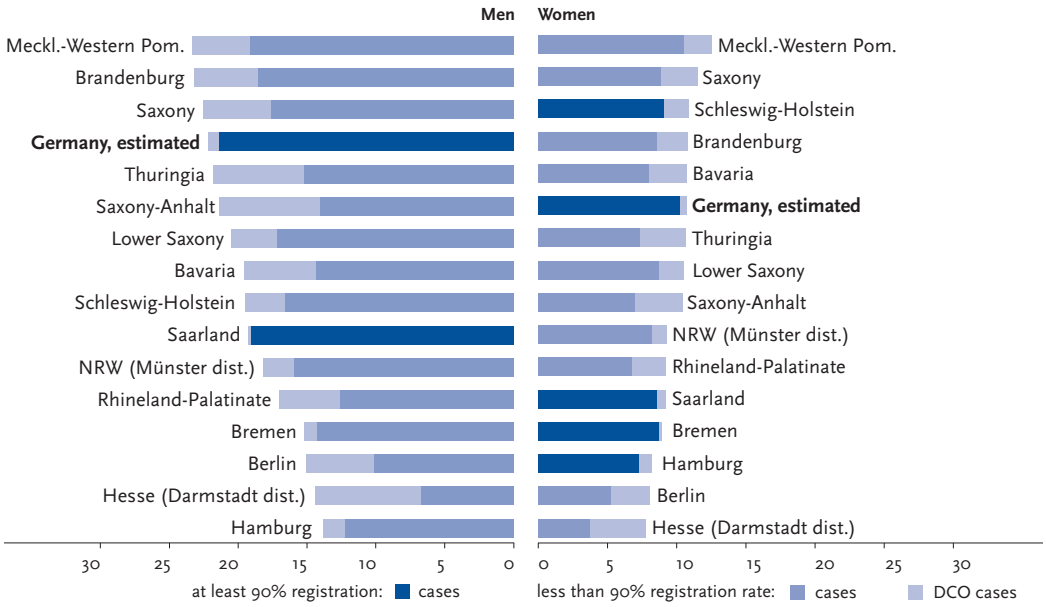


Table 3.4.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C16
*New cases per 100,000 (*European Standard)*

Region	Men			Women		
	Crude rate	% DCO	Stand. rate*	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed					
Bavaria	23.8	26	19.5	18.8	31	10.9
Berlin	16.7	32	15.1	14.2	42	8.2
Brandenburg	27.0	17	23.2	18.9	25	10.9
Bremen	20.0	7	15.2	17.2	5	9.1
Hamburg	16.7	11	13.8	14.1	14	8.3
Hesse (Darmstadt admin. dist.)	18.1	53	14.4	14.1	55	7.9
Mecklenburg-Western Pomerania	26.9	17	23.3	21.5	19	12.7
Lower Saxony	26.0	16	20.5	19.0	21	10.7
North Rhine-Westphalia (Münster admin. dist.)	20.8	12	18.1	16.0	14	9.4
Rhineland-Palatinate	21.3	26	17.0	16.7	33	9.4
Saarland	25.1	1	19.3	18.3	9	9.4
Saxony	30.0	21	22.5	24.0	27	11.7
Saxony-Anhalt	27.5	33	21.3	19.2	39	10.6
Schleswig-Holstein	25.4	15	19.5	19.3	21	11.0
Thuringia	26.8	28	21.8	20.2	36	10.8
Germany, estimated	**27.3**	3	**22.1**	**18.8**	6	**10.9**

— at least 90% registration — less than 90% registration rate

3.5 Colon and rectum

Prevalence

Colorectal cancer is used here as a collective term to cover cancers of the colon, the rectum and the anus. Virtually all colorectal carcinomas are adenocarcinomas, except anal carcinomas, which are predominantly squamous-cell carcinomas. However, since anal carcinomas only make up a around one percent of colorectal tumours, the following statements also apply to colorectal carcinomas alone.

Colorectal cancer is the second most common cancer site in both sexes. The annual number of new cases of cancer in Germany is estimated at over 37,000 among men and about 36,000 among women. The average age at diagnosis is 69 in men and 75 among women. Colorectal cancer is furthermore the second most common cause of death due to cancer among both women and men.

Risk factors

Diet-related factors – especially a low-fibre, high-fat diet, a high proportion of red (iron-containing) meat (e.g. beef or pork as opposed to poultry) and a small proportion of vegetables, as well as regular alcohol consumption – increase the risk of developing colorectal cancer, as do overweight and lack of exercise. First-degree relatives of patients with colorectal cancer are themselves affected more frequently than the average; it has not yet been finally clarified whether this is due to genetic modifications or a similar life-style. In the case of familial adenomatous polyposis (FAP), a very rare inherited disease, and hereditary non-polyposis colorectal cancer syndrome (HNPCC), cases of colorectal cancer are more likely to occur in members of the affected families at a young age. To a lesser extent, chronic-inflammatory intestinal diseases, e.g. colitis ulcerosa, also increase the cancer risk.

Cancer-screening procedures for colorectal cancer have recently been changed. People aged between 50 and 54 who are covered by statutory health insurance are now offered an annual test for hidden blood in the faeces (haemoccult test) as part of nationwide cancer screening. Everyone aged 55 or above is entitled to a colonoscopy, including a repeat examination after ten years. Alternatively, insured people who do not participate in colonoscopy screening can have a regular haemoccult test every two years from the age of 55. At present it is still too early to judge the influence of the newly regulated colorectal cancer screening by colonoscopy on the incidence of colorectal cancer.

Trends

The estimated incidence rates in both men and women have remained almost unchanged (at different levels) over the last ten years, following an upward trend during the 1980s. Unlike the incidence trend, the mortality rates from colorectal cancer are falling continuously for both sexes.

Survival

The cumulated, relative 5-year survival rates for colorectal cancer are about 60% among both men and women in the meantime.

Figure 3.5.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C18–21
New cases per 100,000 by age groups

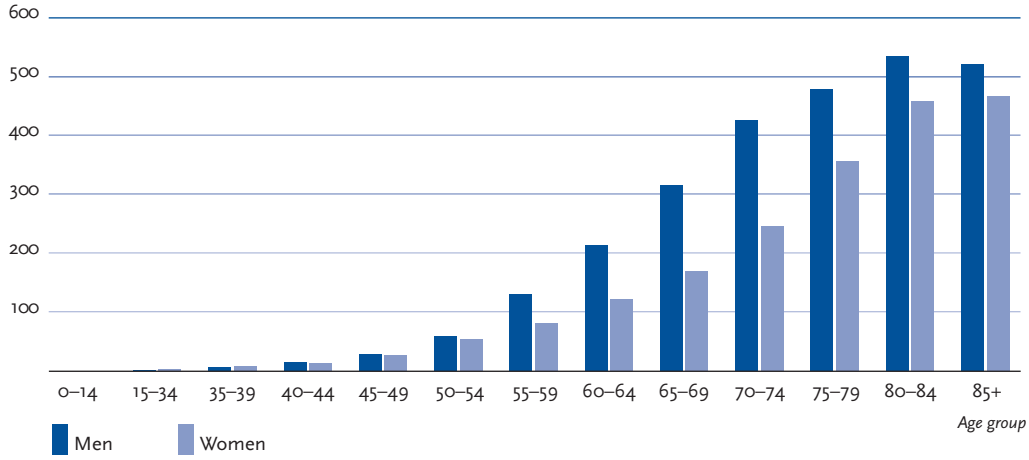


Figure 3.5.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C18–21
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

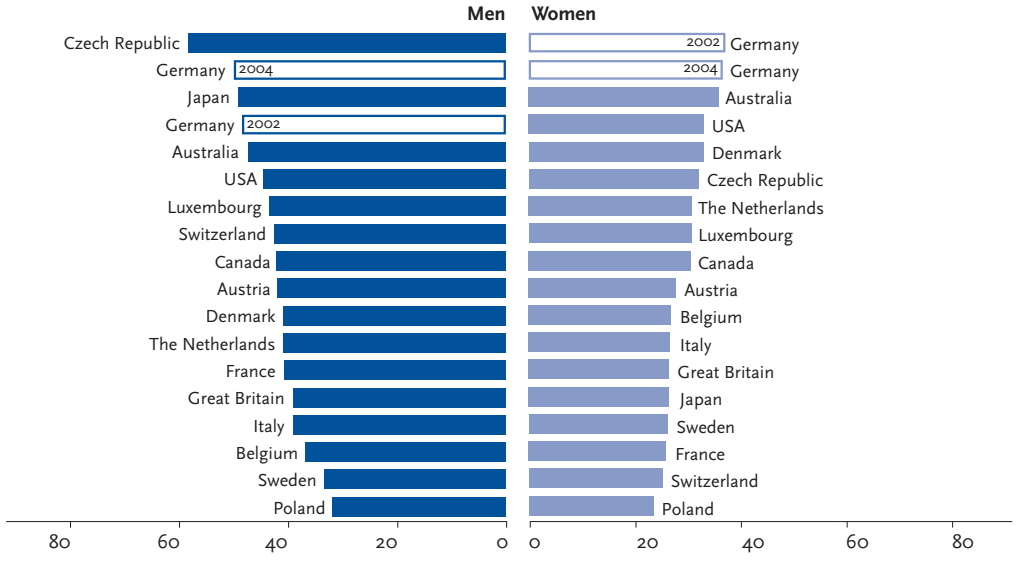


Figure 3.5.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C18–21
Cases/deaths per 100,000 (European Standard)

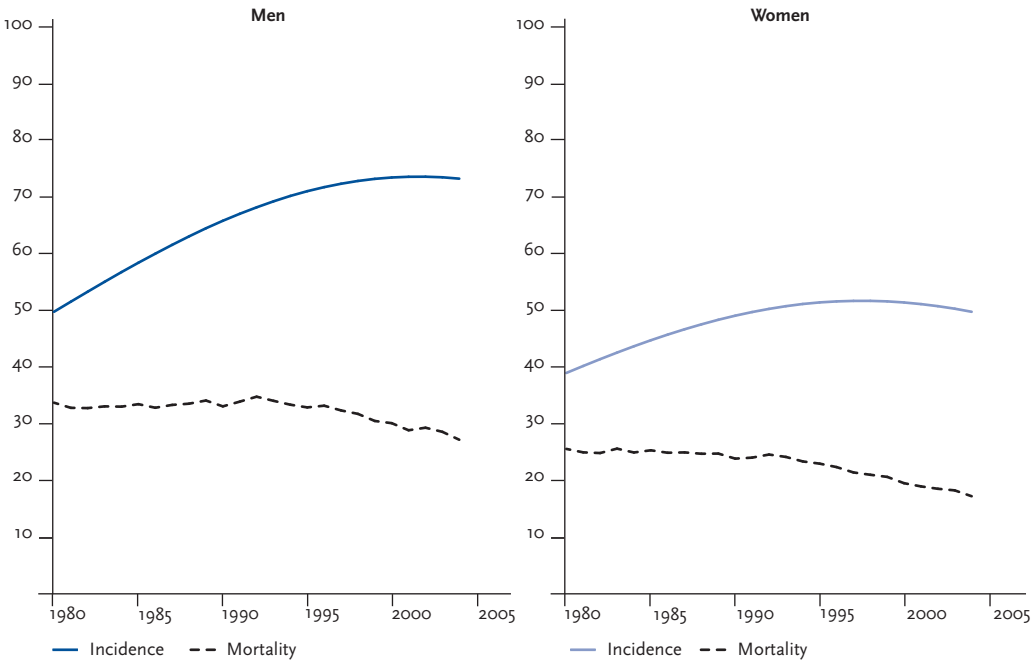


Table 3.1.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C18–21
Cases/deaths per 100,000 by age groups

Age in years	Men		Women	
	Incidence	Mortality	Incidence	Mortality
under 15	0.0	0.0	0.0	0.0
15 to under 35	1.5	0.4	1.9	0.4
35 to under 40	6.9	1.4	7.6	1.6
40 to under 45	15.5	3.7	13.3	2.4
45 to under 50	28.5	7.3	26.3	6.2
50 to under 55	60.1	17.7	54.8	12.0
55 to under 60	130.5	34.9	80.7	21.0
60 to under 65	215.5	62.4	122.7	30.9
65 to under 70	317.7	98.5	169.3	48.6
70 to under 75	427.7	150.4	246.2	82.3
75 to under 80	481.8	207.8	358.8	134.8
80 to under 85	539.1	310.9	460.9	214.4
85 and older	524.3	378.3	469.3	330.6
Crude rate	92.3	34.1	85.4	33.3
Stand. rate (*European standard*)	72.6	26.9	49.3	17.0

Figure 3.5.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C18–21
New cases per 100,000 (European Standard)

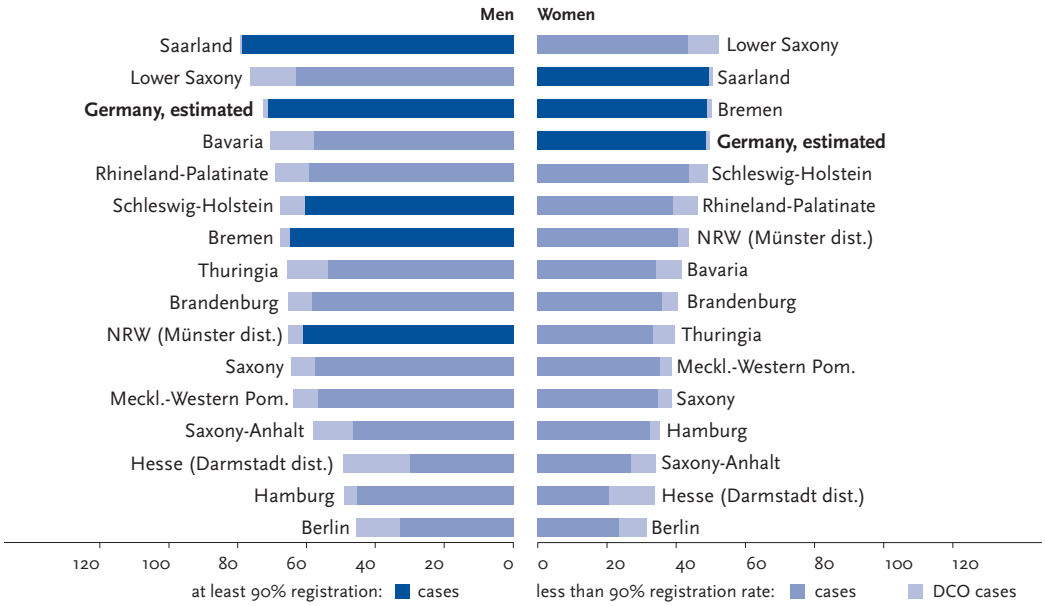


Table 3.5.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C18–21
*New cases per 100,000 (*European Standard)*

Region	Men			Women		
	Crude rate	% DCO	Stand. rate*	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed					
Bavaria	85.8	18	70.5	68.9	23	41.7
Berlin	51.2	26	45.7	54.3	32	31.6
Brandenburg	81.4	9	65.3	69.5	14	40.5
Bremen	90.6	4	67.6	95.1	5	50.3
Hamburg	60.0	7	49.0	62.0	10	35.1
Hesse (Darmstadt admin. dist.)	62.1	39	49.4	58.1	44	33.7
Mecklenburg-Western Pomerania	75.2	10	63.8	65.5	11	38.7
Lower Saxony	96.7	17	76.2	93.1	22	52.3
North Rhine-Westphalia (Münster admin. dist.)	78.4	6	65.2	73.1	10	43.6
Rhineland-Palatinate	89.5	14	69.0	82.7	21	46.2
Saarland	107.7	1	79.3	89.7	3	50.5
Saxony	87.4	10	64.3	75.3	13	38.6
Saxony-Anhalt	76.8	18	58.0	64.5	25	34.0
Schleswig-Holstein	89.0	11	67.6	85.6	14	49.1
Thuringia	83.5	17	65.6	70.7	20	39.6
Germany, estimated	**91.3**	2	**72.7**	**85.3**	3	**49.6**

— at least 90% registration — less than 90% registration rate

3.6 Pancreas

Prevalence

In Germany, the annual number of new cases of pancreatic cancer is estimated at approx. 6,300 among men and 6,600 among women. Pancreatic carcinomas account for about 3% of all cancers. However, they are responsible for 5.8% of all cancer-related deaths among men and 6.7% of deaths among women, and are the fourth most common cause of death by cancer in both men and women. The average age at onset is about 69 in men and 76 in women.

Risk factors

Tobacco and alcohol are under discussion as risk factors, as is a diet that is rich in animal fats. Overweight also has a disadvantageous effect. Risk can be reduced by a diet that is rich in vegetables and fruit. Inflammations of the pancreas and diabetes mellitus are also discussed as risk factors, albeit controversially. A small proportion of patients seem to be affected by a family-related increase in risk. Pancreatic cancer and other tumours are observed in families affected by genetically determined, so-called cancer syndromes.

Trends

Both the estimated incidence rates and mortality due to pancreatic cancer have remained constant among men since the late 1980s in Germany. In women, both incidence and mortality are rising slightly.

Survival

Malignant neoplasm of the pancreas is a cancer site with rare and uncharacteristic early symptoms. Pancreatic carcinomas are therefore frequently not diagnosed until they are at an advanced stage. The chances of a cure are still very poor for the overwhelming majority of patients. The relative 5-year survival rate for people with pancreatic cancer is decidedly unfavourable. It is about 6.4% in men and 7.6%. for women

Figure 3.6.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C25
New cases per 100,000 by age groups

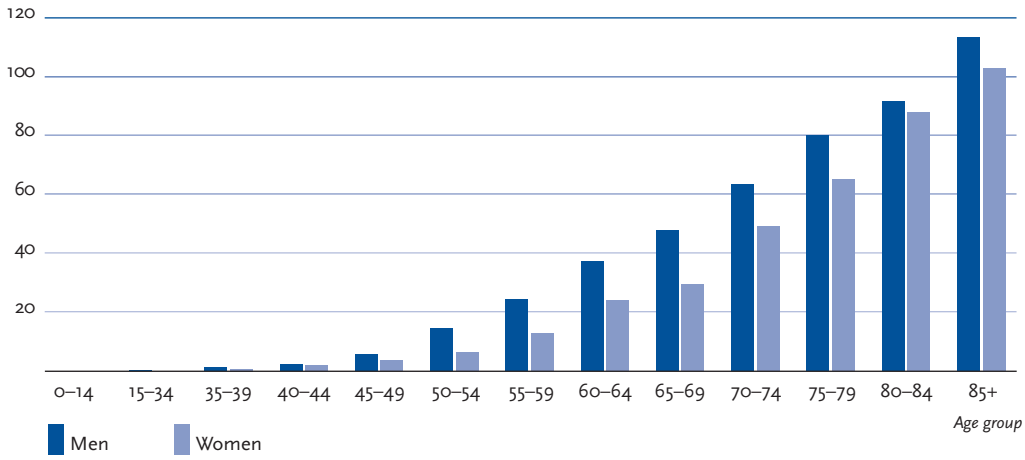


Figure 3.6.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C25
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

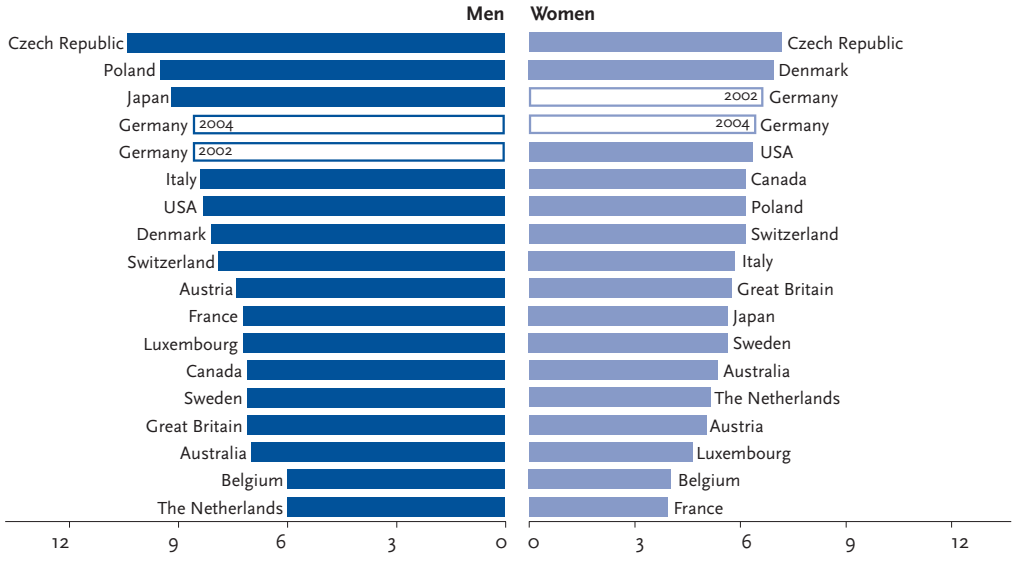


Figure 3.6.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C25
Cases/deaths per 100,000 (European Standard)

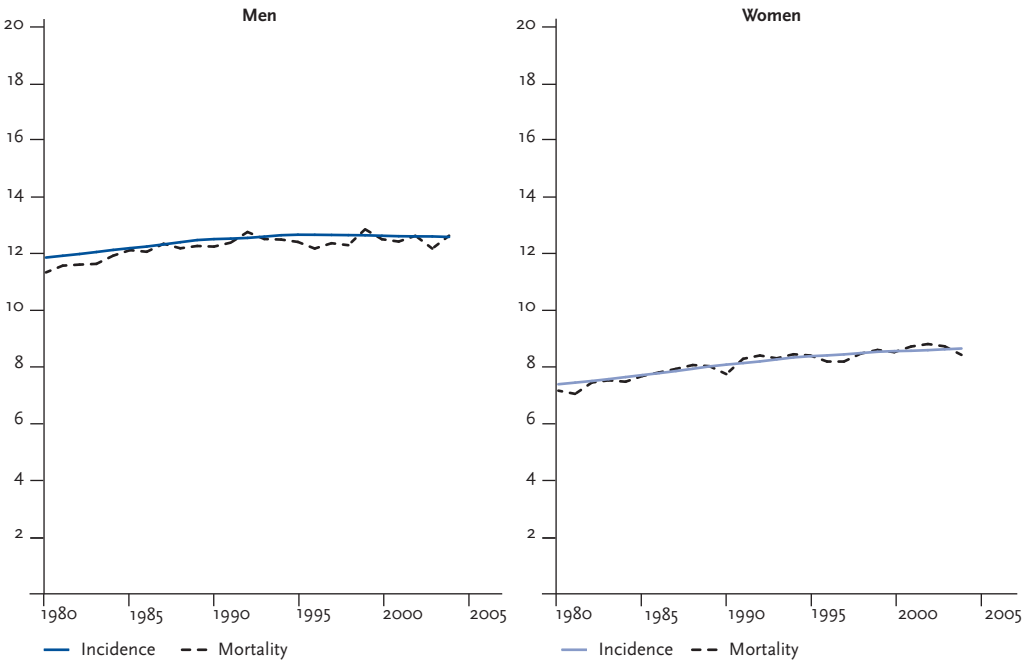


Table 3.6.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C25
Cases/deaths per 100,000 by age groups

Age in years	Men		Women	
	Incidence	Mortality	Incidence	Mortality
under 15	0.0	0.0	0.0	0.0
15 to under 35	0.1	0.1	0.0	0.0
35 to under 40	1.1	0.8	0.5	0.5
40 to under 45	2.4	2.0	1.8	1.3
45 to under 50	5.7	5.8	3.6	2.6
50 to under 55	14.5	12.6	6.1	6.5
55 to under 60	24.6	22.0	12.9	11.2
60 to under 65	37.7	35.3	24.0	20.2
65 to under 70	48.0	51.2	29.4	32.1
70 to under 75	63.7	65.5	48.9	45.9
75 to under 80	80.6	89.8	65.3	66.7
80 to under 85	91.9	102.7	88.4	89.3
85 and older	114.0	117.4	103.5	111.2
Crude rate	15.7	15.9	15.7	15.6
Stand. rate (*European standard*)	12.6	12.6	8.7	8.4

Figure 3.6.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C25
New cases per 100,000 (European Standard)

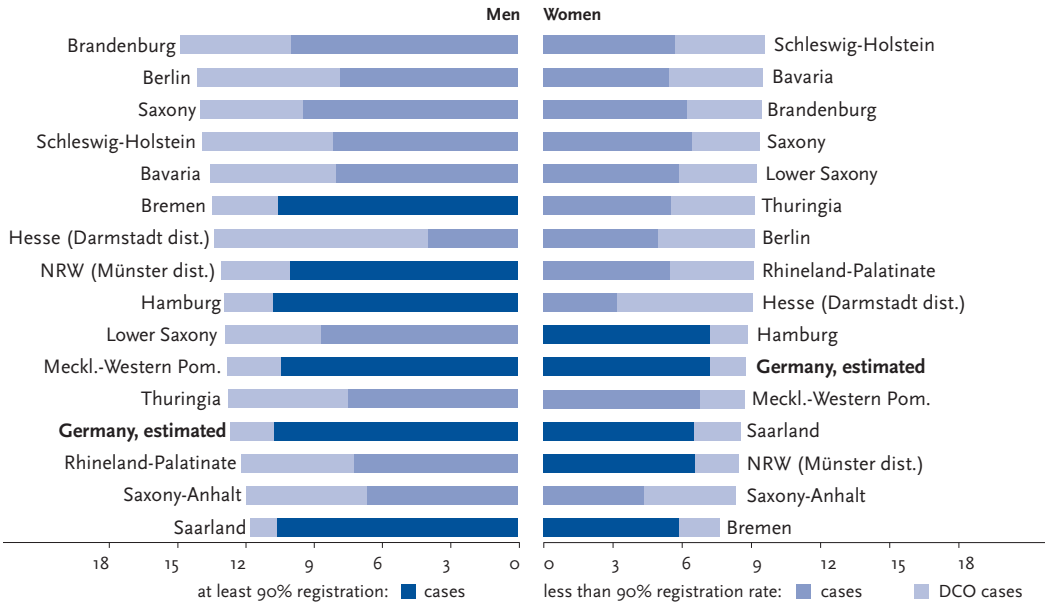


Table 3.6.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C25
*New cases per 100,000 (*European Standard)*

Region	Men			Women		
	Crude rate	% DCO	Stand. rate*	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed					
Bavaria	16.4	41	13.5	16.0	50	9.4
Berlin	16.0	43	14.0	15.1	54	9.0
Brandenburg	18.1	31	14.8	16.2	39	9.3
Bremen	17.5	22	13.4	15.8	31	7.6
Hamburg	15.4	17	12.9	15.5	21	8.7
Hesse (Darmstadt admin. dist.)	16.6	71	13.3	15.6	70	9.0
Mecklenburg-Western Pomerania	15.5	17	12.7	14.5	26	8.6
Lower Saxony	16.2	32	12.8	16.4	42	9.1
North Rhine-Westphalia (Münster admin. dist.)	15.1	23	13.0	14.7	24	8.4
Rhineland-Palatinate	15.6	41	12.1	16.6	49	9.0
Saarland	15.6	10	11.7	17.0	26	8.4
Saxony	18.5	32	13.9	18.1	37	9.2
Saxony-Anhalt	15.8	44	11.9	15.8	54	8.3
Schleswig-Holstein	18.1	42	13.8	16.6	48	9.5
Thuringia	16.0	40	12.7	16.3	44	9.0
Germany, estimated	**15.5**	15	**12.6**	**15.6**	21	**8.7**

— at least 90% registration — less than 90% registration rate

3.7 Larynx

Prevalence

Laryngeal cancer is the most common malignant tumour in the head/neck region; men are affected much more frequently than women. In men, laryngeal cancer accounts for 1.3% of all cancers; in women, the figure is only 0.2%. About 3,000 men and 400 women a year are diagnosed with laryngeal cancer in Germany. On average, men and women tend to develop the disease at the age of 64, about five years earlier than in the case of all cancer sites. The average age of death is about 66 in men and 69 in women.

Risk factors

Smoking is the most important risk factor in the development of laryngeal cancer. The risk increases with the number of cigarettes smoked, and the combination with alcohol consumption is particularly harmful. This applies especially if the person concerned does not eat enough fruit and, perhaps, vegetables. There is also a known association between tumours of the larynx and work-related exposure to a number of substances, for example asbestos, nickel or polycyclic aromatic hydrocarbons. These days, contact with these harmful substances should be excluded by preventive measures wherever possible. In Germany, laryngeal carcinoma can be recognized as an occupational disease if the person concerned had to work with asbestos in the past.

Trends

Incidence in men has been decreasing since the 1980s, while mortality has only been falling significantly since about 1990. Both incidence and mortality due to laryngeal cancer in women has remained largely unchanged since the early 1990s, after increasing during the 1980s.

Survival

The relative 5-year survival rates for laryngeal cancer are about 61% among men and 62% in women.

Figure 3.7.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C32
New cases per 100,000 by age groups

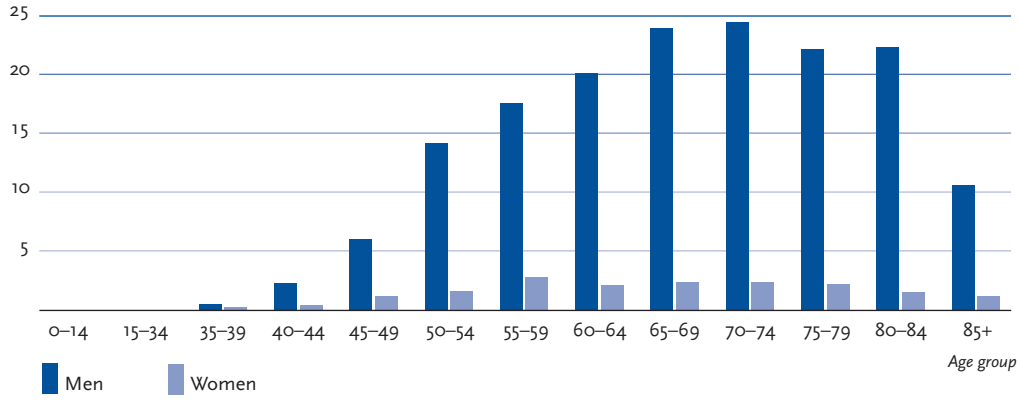


Figure 3.7.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C32
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

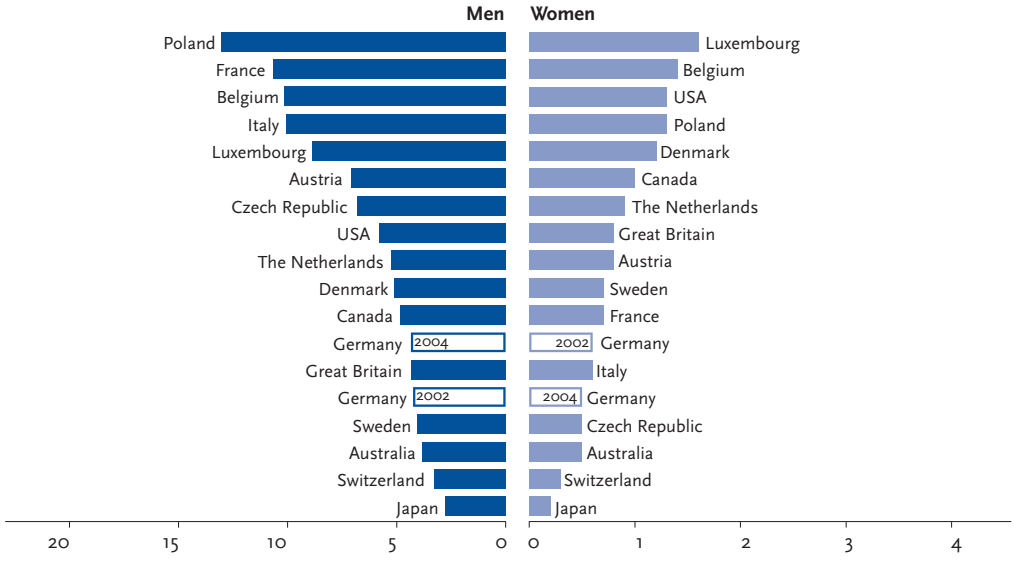


Figure 3.7.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C32
Cases/deaths per 100,000 (European Standard)

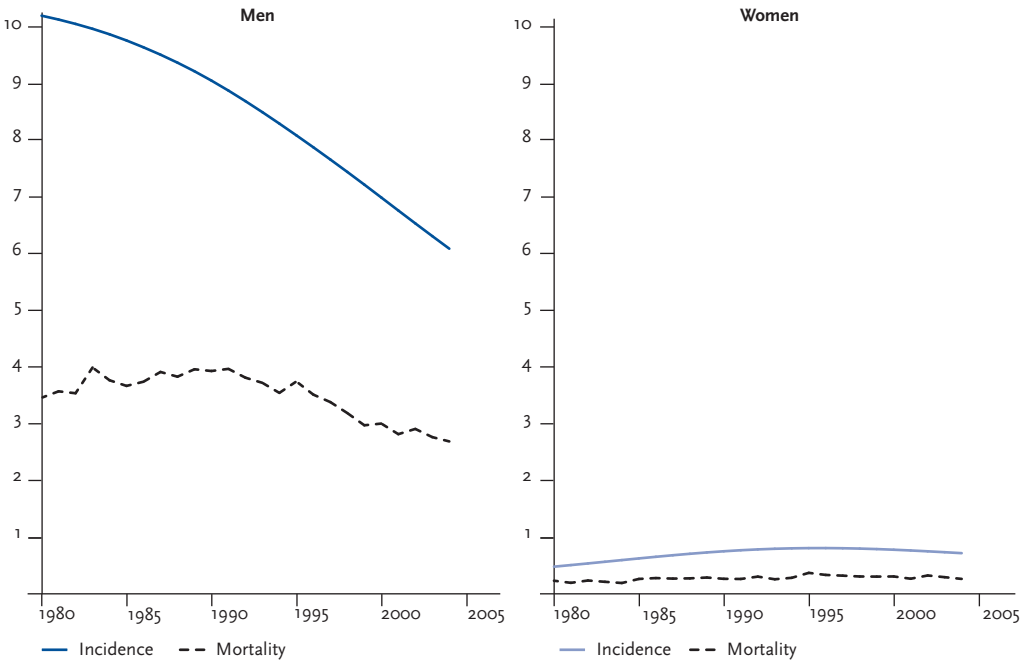


Table 3.7.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C32
Cases/deaths per 100,000 by age groups

Age in years	Men		Women	
	Incidence	Mortality	Incidence	Mortality
under 15	0.0	0.0	0.0	0.0
15 to under 35	0.0	0.0	0.0	0.0
35 to under 40	0.5	0.1	0.2	0.0
40 to under 45	2.3	0.7	0.3	0.0
45 to under 50	6.0	2.4	1.1	0.2
50 to under 55	14.2	5.1	1.6	0.4
55 to under 60	17.4	6.2	2.8	1.0
60 to under 65	20.1	9.3	2.0	0.8
65 to under 70	23.9	9.6	2.3	0.9
70 to under 75	24.5	12.4	2.3	0.9
75 to under 80	22.2	11.3	2.1	1.3
80 to under 85	22.3	12.7	1.5	1.1
85 and older	10.6	17.7	1.2	2.1
Crude rate	7.4	3.3	0.9	0.4
Stand. rate (*European standard*)	6.1	2.7	0.7	0.3

Figure 3.7.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C32
New cases per 100,000 (European Standard)

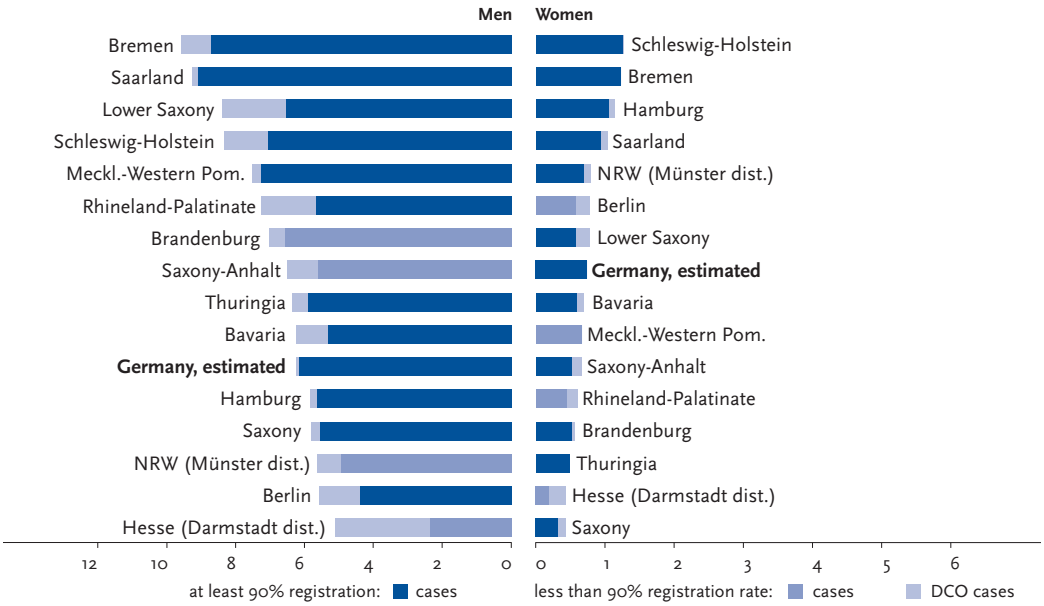


Table 3.7.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C32
*New cases per 100,000 (*European Standard)*

Region	Men			Women		
	Crude rate	% DCO	Stand. rate*	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed					
Bavaria	7.2	15	6.2	0.9	22	0.7
Berlin	6.4	21	5.6	1.1	32	0.8
Brandenburg	9.0	7	7.0	0.8	14	0.6
Bremen	11.4	10	9.5	1.6	0	1.2
Hamburg	6.6	4	5.8	1.5	7	1.1
Hesse (Darmstadt admin. dist.)	6.1	55	5.1	0.7	60	0.4
Mecklenburg-Western Pomerania	9.1	3	7.5	0.8	0	0.7
Lower Saxony	10.3	22	8.3	1.1	30	0.8
North Rhine-Westphalia (Münster admin. dist.)	6.3	12	5.6	1.1	17	0.8
Rhineland-Palatinate	8.9	23	7.2	0.9	34	0.6
Saarland	11.6	2	9.2	1.3	7	1.0
Saxony	7.4	4	5.8	0.6	15	0.4
Saxony-Anhalt	8.3	14	6.5	0.9	23	0.7
Schleswig-Holstein	10.3	16	8.3	1.7	4	1.3
Thuringia	8.0	6	6.3	0.7	6	0.5
Germany, estimated	**7.5**	2	**6.2**	**0.9**	0	**0.7**

— at least 90% registration — less than 90% registration rate

3.8 Lung

Prevalence

Lung cancer is the third most common cancer site among both men and women in Germany. The approx. 33,000 new cases of lung cancer every year correspond to 14.3% of all new cancer cases in men. Among women, lung cancer now accounts for 6.4% of all malignant neoplasms with about 13,200 new cases a year. Because the prognosis remains poor (see Survival), the proportion of all cancer-related deaths that are caused by lung cancer is especially marked at 26.0% in men (highest percentage) and 11.2% in women (third highest percentage). The average age at onset is about 68 among both men and women and corresponds approximately to the age at diagnosis for all cancer sites.

Risk factors

Lung cancer is one of the malignant tumours whose main risk factor has been known for a long time. Up to 90% of lung cancer cases in men and currently up to 60% of cases in women can be attributed to active smoking. The risk of lung cancer rises with the number of "pack years", i.e. the number of cigarette packs (à 20 cigarettes) a person smokes per day, multiplied by the number of years s/he smoked. The depth of inhalation and the concentration of tar and nicotine per cigarette are also relevant. Risk declines among former smokers, the longer ago the person gave up smoking. Passive smoking also involves an increased risk. A regionally high level of radon radiation in residential houses also affects lung cancer risk. A comparatively small proportion of all lung cancer cases are attributed to occupational exposure to various carcinogenic materials (e.g. asbestos, ionizing radiation/radon, types of quartz dust and the silicosis it causes). Synergistic effects involving harmful substances (e.g. asbestos) and smoking have been proven. Eating a lot of fruit has a protective effect. The frequent consumption of vegetables also has a favourable effect on risk among smokers, although this does not by any means offset their increased risk.

Trends

There has been a marked decline in incidence and mortality due to lung cancer in men since the 1990s. Among women, however, both incidence and mortality continue to rise. These developments in Germany reflect the same trends as in other European industrialized nations. The differences in incidence and mortality trends between men and women are attributed to smoking habits.

Survival

The relative 5-year survival rates for patients with lung cancer are about 15% among men and 18% among women. As in the case of cancer in general, the survival rates differ markedly according to the stage of the disease. During the local stage, the 5-year survival rates are above 50%; however, this falls to only 5% once remote metastases have formed. The histological type of tumour also has an influence on survival. For example, the survival rate is lower in the case of small-cell carcinomas compared to non-small-cell carcinomas. Overall, lung cancer still is one of the types with the most unfavourable prognoses.

Figure 3.8.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C33, C34
New cases per 100,000 by age groups

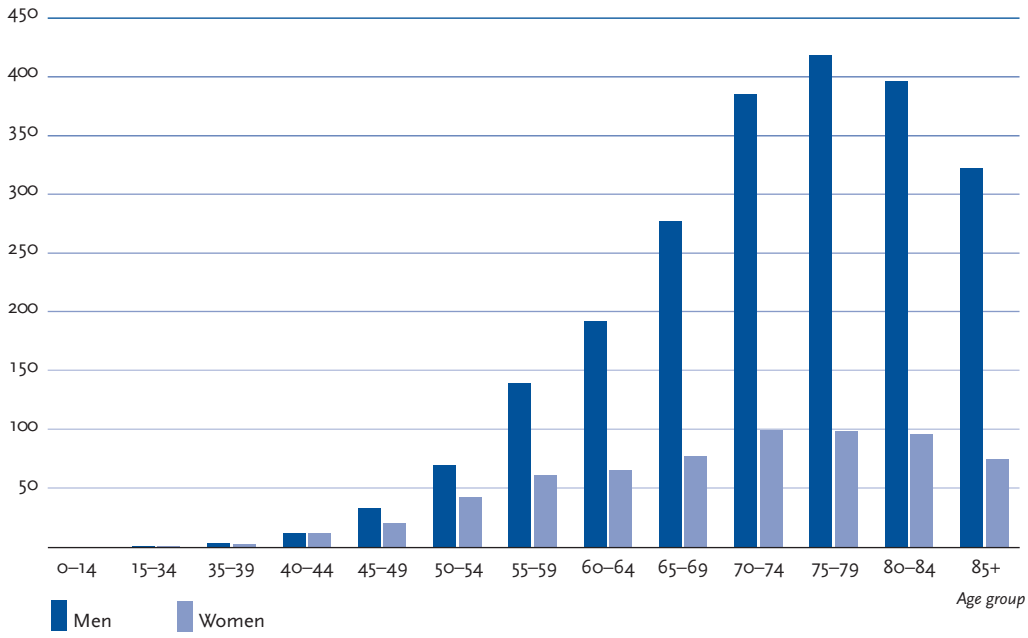


Figure 3.8.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C33, C34
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

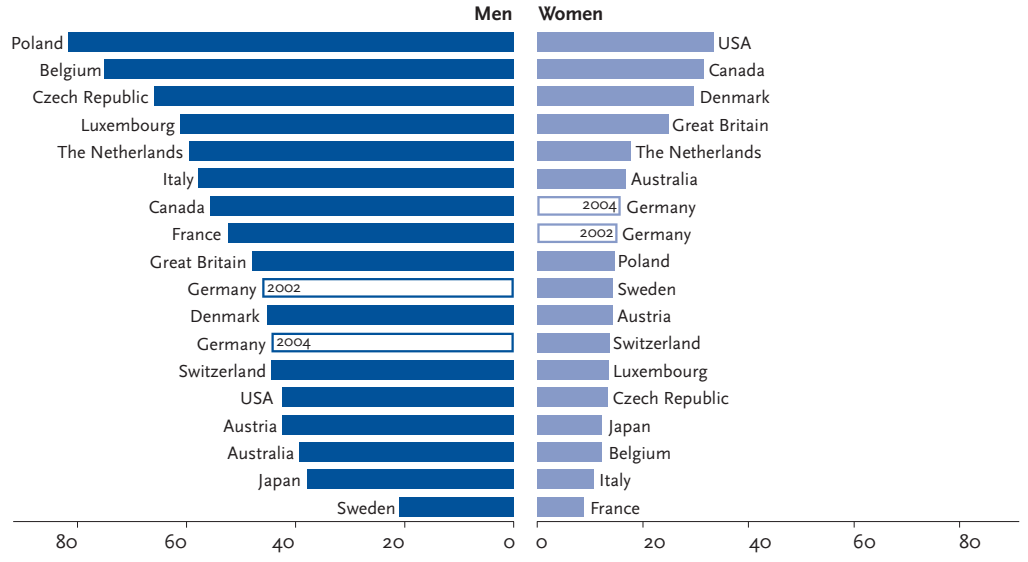


Figure 3.8.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C33, C34
Cases/deaths per 100,000 (European Standard)

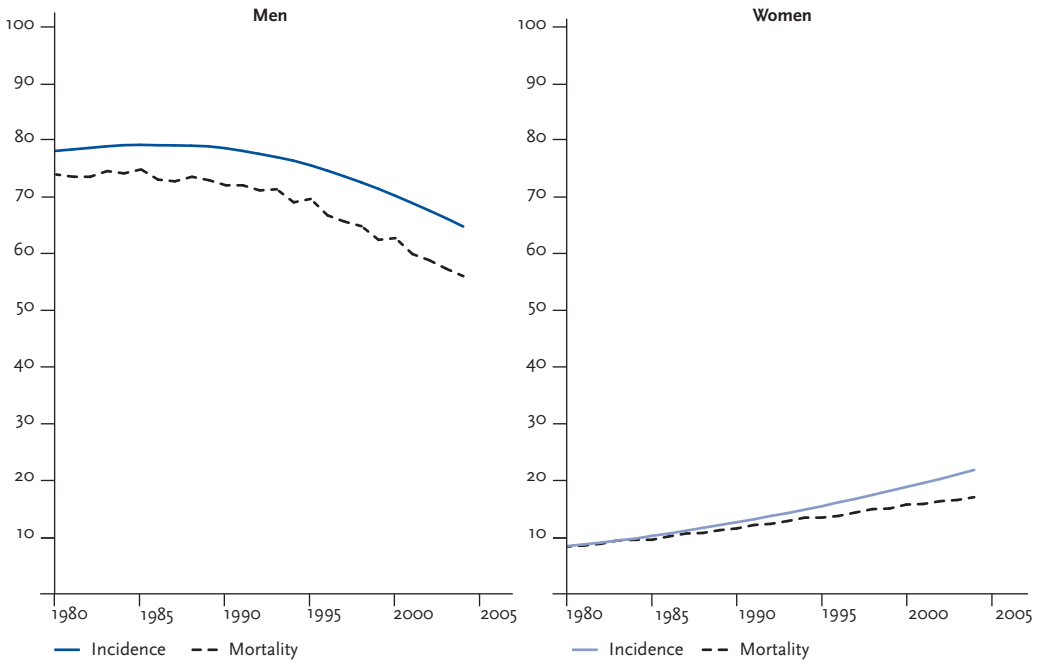


Table 3.8.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C33, C34
Cases/deaths per 100,000 by age groups

Age in years	Men		Women	
	Incidence	Mortality	Incidence	Mortality
under 15	0.0	0.0	0.0	0.0
15 to under 35	0.3	0.3	0.4	0.3
35 to under 40	3.4	2.5	3.0	1.6
40 to under 45	12.4	8.9	11.7	5.6
45 to under 50	32.9	24.7	20.3	15.9
50 to under 55	69.4	54.7	41.4	25.9
55 to under 60	139.3	100.6	60.2	42.4
60 to under 65	192.2	163.8	63.9	50.4
65 to under 70	277.0	233.2	73.8	57.2
70 to under 75	384.0	339.5	99.0	78.3
75 to under 80	415.9	412.5	96.2	94.4
80 to under 85	396.1	427.4	93.4	99.7
85 and older	321.6	321.5	73.0	92.6
Crude rate	81.4	71.4	31.3	26.2
Stand. rate (*European standard*)	64.4	55.9	21.8	17.0

Figure 3.8.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C33, C34
New cases per 100,000 (European Standard)

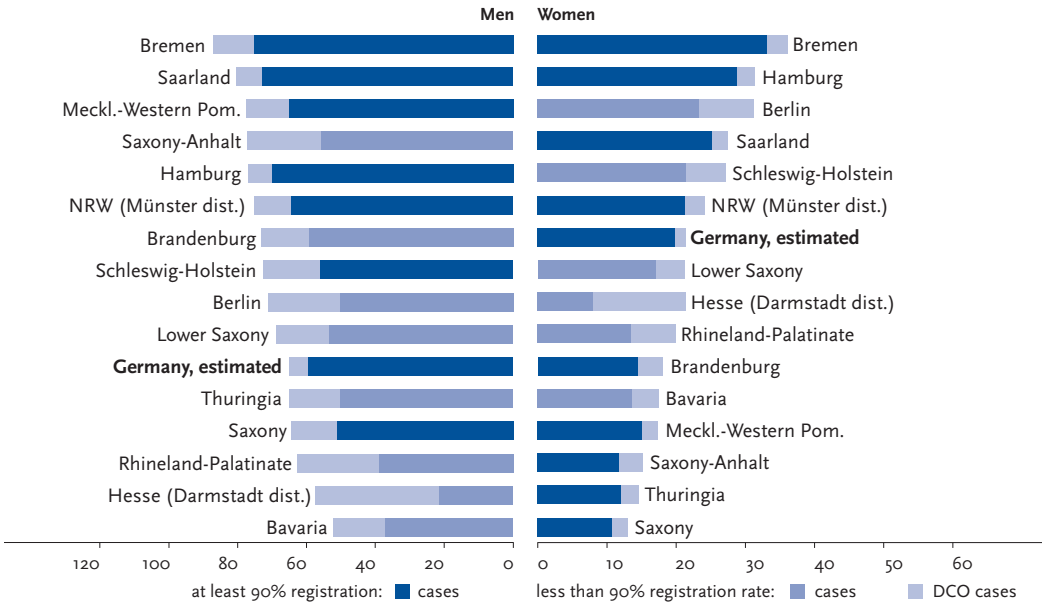


Table 3.8.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C033, C34
*New cases per 100,000 (*European Standard)*

Region	Men			Women		
	Crude rate	% DCO	Stand. rate*	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed					
Bavaria	63.7	29	52.1	24.6	28	17.5
Berlin	81.2	28	71.2	44.1	30	31.2
Brandenburg	91.6	17	73.3	28.8	24	18.2
Bremen	114.0	14	86.9	52.9	10	36.0
Hamburg	91.7	9	76.8	45.1	11	31.3
Hesse (Darmstadt admin. dist.)	72.0	63	57.5	30.6	65	21.3
Mecklenburg-Western Pomerania	94.5	15	77.6	27.1	16	17.5
Lower Saxony	87.3	23	68.7	30.5	25	21.3
North Rhine-Westphalia (Münster admin. dist.)	90.3	14	75.3	32.7	15	24.1
Rhineland-Palatinate	81.3	39	62.8	29.0	40	19.9
Saarland	108.3	9	80.4	39.6	10	27.5
Saxony	88.8	20	64.5	22.7	22	12.9
Saxony-Anhalt	103.7	27	77.5	26.2	27	15.2
Schleswig-Holstein	94.1	23	72.6	38.5	27	27.2
Thuringia	84.2	21	65.0	23.4	22	14.3
Germany, estimated	**81.4**	8	**65.1**	**30.6**	9	**21.4**

— at least 90% registration — less than 90% registration rate

3.9 Malignant melanoma of the skin

Prevalence

About 14,900 people are diagnosed with malignant melanoma of the skin in Germany every year. Approx. 8,400 of these are women, 6,500 men. Malignant melanoma thus accounts for 4.1% of all malignant neoplasms among women, but only 2.8% among men in Germany. It causes about 1% of all cancer-related deaths in both sexes. Most malignant melanomas develop from pigment cells of the skin (black skin cancer). Other melanoma manifestations – e.g. of the mucous membranes, the choroid of the eye or the meninges – are categorized by the ICD as malignant neoplasms of the affected organ, for example the eye. Other malignant neoplasms of the skin (e.g. basal cell carcinomas, which generally do not metastasize, and spinaliomas) are much more common overall, but cause few cancer-related deaths. Since it is difficult to ensure their complete registration, they are not discussed in this brochure. Relevant incidence rates of malignant melanoma can be observed as early as the age of 20. The average age at onset is comparatively low: 63 in men and approx. 57 in women. The average age of death is about 68 among men and 72 among women.

Risk factors

Risk factors include a large number of pigmentation marks (acquired and congenital naevi, especially dysplastic forms), a light skin type and a genetic disposition (when there is familial clustering). Although no dosage/effect relationship has been defined up to now, intense exposure to the sun resulting in sunburn, especially in childhood, and exposure to artificial UV radiation are regarded as potential triggers. Other factors, e.g. certain chemicals, drugs or the influence of pregnancy, are the subject of very controversial discussion.

Trends

The number of people diagnosed with malignant melanoma of the skin has increased considerably over the last three decades. The incidence rates have more than tripled since 1980. By contrast, no substantial changes have been observed in mortality since the 1970s. The increase in melanoma frequency has been steeper, mortality lower, and incidence rates higher among women, especially younger women, than among men. Malignant melanomas have also been diagnosed more often at earlier stages. Possible explanations could be the improved health education of the population, and health professionals paying more attention to melanoma-like lesions. Malignant melanoma of the skin is particularly suitable for early diagnosis because of its location on the body's surface.

Survival

For women with malignant melanoma of the skin, the relative 5-year survival rate is 88%, for men 84%. As in the case of other cancers, the survival prospects are much worse after metastasization has occurred.

Figure 3.9.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C43
New cases per 100,000 by age groups

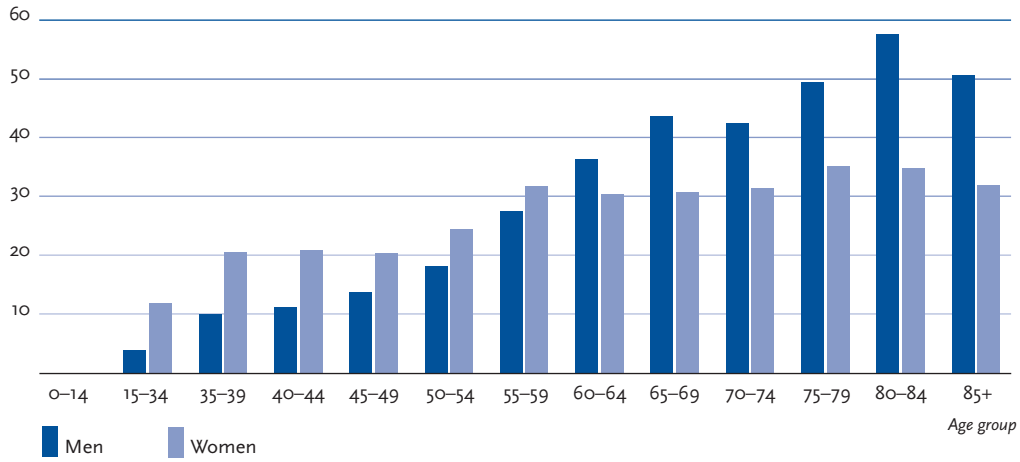


Figure 3.9.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C43
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

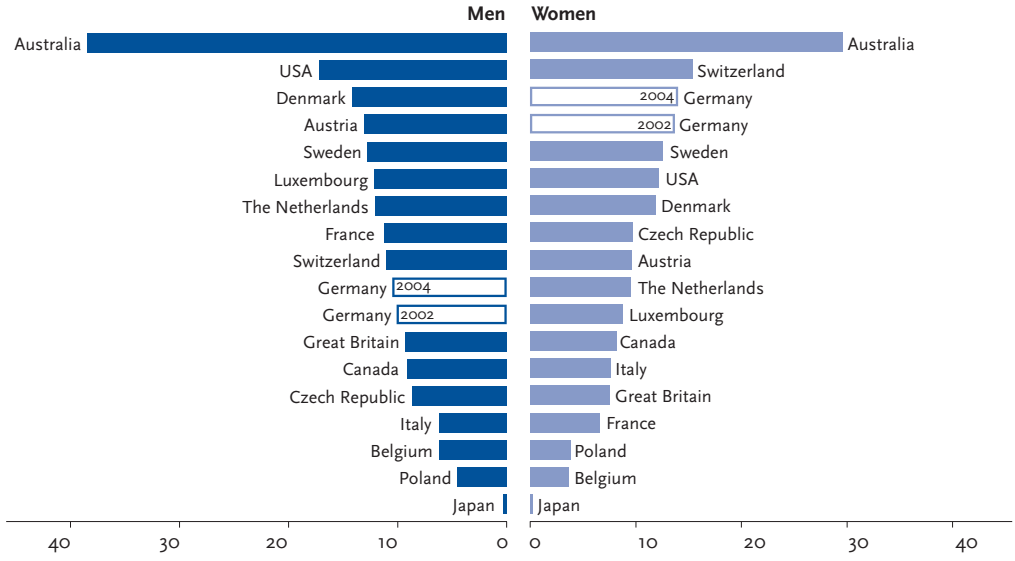


Figure 3.9.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C43
Cases/deaths per 100,000 (European Standard)

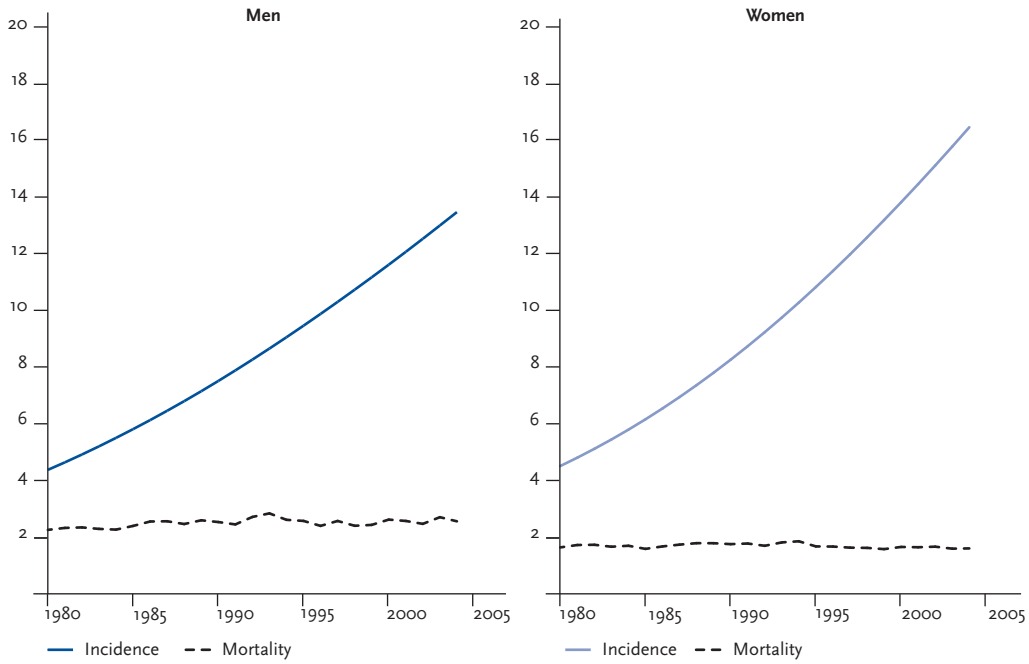


Table 3.9.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C43
Cases/deaths per 100,000 by age groups

Age in years	Men		Women	
	Incidence	Mortality	Incidence	Mortality
under 15	0.0	0.0	0.0	0.0
15 to under 35	4.1	0.3	12.1	0.2
35 to under 40	10.0	0.9	20.6	0.7
40 to under 45	11.3	1.4	21.0	1.2
45 to under 50	13.9	2.0	20.5	2.1
50 to under 55	18.2	2.7	24.7	1.8
55 to under 60	27.6	4.5	31.8	2.6
60 to under 65	36.3	6.1	30.5	3.6
65 to under 70	43.7	8.8	30.7	3.9
70 to under 75	42.5	10.9	31.5	6.6
75 to under 80	49.4	15.5	35.2	7.2
80 to under 85	57.6	18.6	34.9	10.2
85 and older	50.6	18.9	31.9	16.0
Crude rate	16.2	3.1	19.9	2.5
Stand. rate (*European standard*)	13.5	2.5	16.5	1.6

Figure 3.9.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C43
New cases per 100,000 (European Standard)

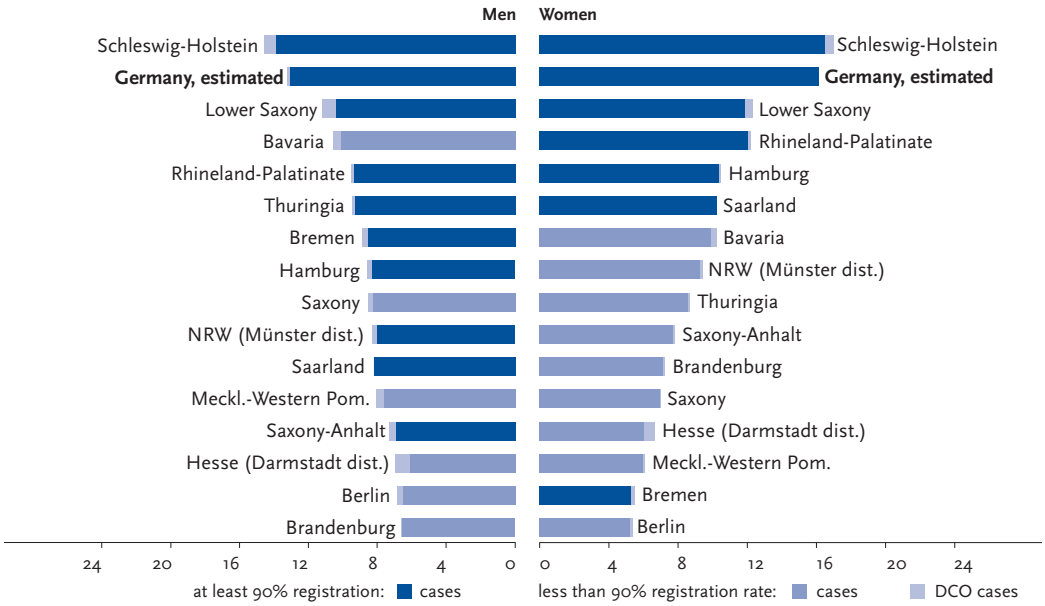


Table 3.9.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C43
*New cases per 100,000 (*European Standard)*

Region	Men			Women		
	Crude rate	% DCO	Stand. rate*	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed					
Bavaria	17.1	5	10.6	16.9	5	10.2
Berlin	11.3	5	6.8	9.4	6	5.4
Brandenburg	11.3	1	6.6	12.2	3	7.2
Bremen	16.8	4	8.9	10.2	3	5.5
Hamburg	14.5	4	8.6	17.3	2	10.4
Hesse (Darmstadt admin. dist.)	11.4	13	7.0	10.8	13	6.6
Mecklenburg-Western Pomerania	12.5	6	8.1	11.0	3	6.1
Lower Saxony	18.2	7	11.2	19.4	7	12.3
North Rhine-Westphalia (Münster admin. dist.)	13.1	5	8.3	12.7	4	9.4
Rhineland-Palatinate	16.2	2	9.5	19.3	2	12.2
Saarland	14.2	0	8.2	16.7	1	10.2
Saxony	14.6	4	8.5	12.9	2	7.0
Saxony-Anhalt	12.5	5	7.3	13.8	2	7.8
Schleswig-Holstein	24.0	5	14.6	26.1	4	16.9
Thuringia	16.3	2	9.4	14.1	4	8.7
Germany, estimated	**15.7**	1	**13.2**	**19.4**	0	**16.1**

— at least 90% registration — less than 90% registration rate

3.10 Breast in women

Prevalence

Over 57,000 women in Germany are currently diagnosed with breast cancer every year. Breast cancer is the most common form of cancer in women and accounts for well over a quarter (27.8%) of all cancers among women. The average age at onset is 63, six years below the average for all cancer sites.

Risk factors

An early first menstruation (menarche), childlessness, a late first birth and a late menopause (climacteric) are associated with an increased risk of breast cancer. On the other hand, giving birth at a young age, several births and longer lactation periods seem to reduce breast-cancer risk. Ovulation inhibitors containing oestrogen and progesterone (the "Pill") slightly increase the risk of breast cancer, an effect that disappears ten years after the woman stops using the Pill. However, they have a favourable effect on the risk of ovarian cancer and cancer originating in the lining of the uterus (endometrial carcinoma). Scientific studies show that hormone therapy with oestrogens – especially with a combination of oestrogens and gestagens – increases the risk of developing breast cancer during and after the menopause. Many studies have observed an increase in risk due to overweight, lack of exercise, and to some extent regular consumption of alcohol, whereas regular physical activity and sport have a favourable influence. Breast cancer in close relatives increases the risk of developing the disease. It seems likely that only a small proportion of breast-cancer patients have inheritable genetic modifications associated with an increased risk. Some (but by no means all) of the genetic modifications involved, and their effects, are known. Connections have also been observed with family clusters of ovarian cancer.

The joint self-governing body of physicians and health-insurance funds – in cooperation with the federal states – is currently building up a structured and quality-assured mammographic screening programme by individual invitation for all women between the ages of 50 and 69 for the early detection of breast cancer. The plan is to use the population-based cancer registries to provide information both on the number of breast-cancer cases that have occurred between two screening examinations (interval cancers) and on changes in the stage distribution of breast cancer at diagnosis and in mortality trends associated with mammographic screening. In this way it will be possible to observe the expected and hoped-for changes in the incidence of breast cancer in the female population, and to optimize the quality of the screening programme offered to the women participating.

Trends

Breast cancer has been more thoroughly registered by the population-based cancer registries than any other cancer site and thus offers a good data base for estimating incidence Germany-wide. Overall, breast-cancer incidence in Germany has been rising continuously since 1980, while the mortality rate has been falling slightly since the mid-1990s.

Survival

The mean relative 5-year survival rate for breast-cancer patients is currently approx. 81%.

Figure 3.10.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C43
New cases per 100,000 by age groups

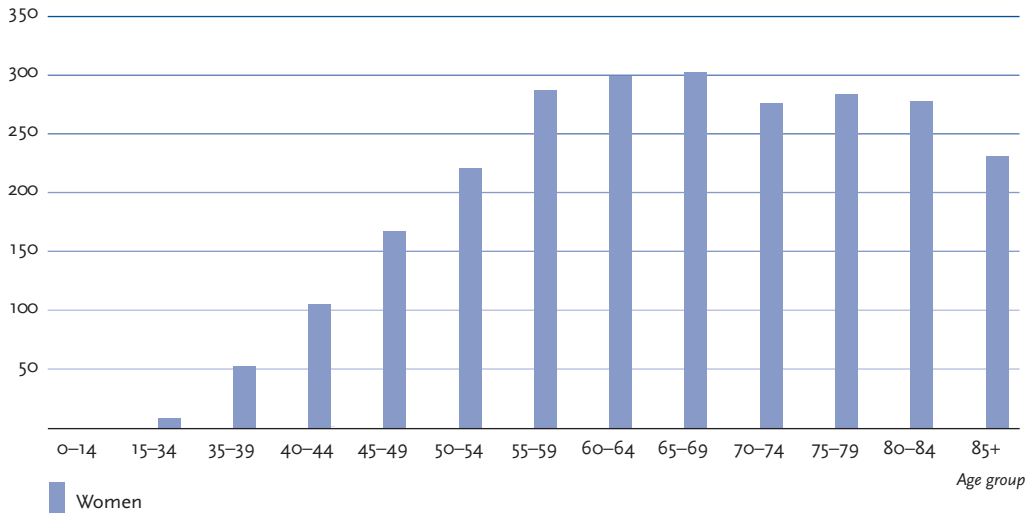


Figure 3.10.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C43
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

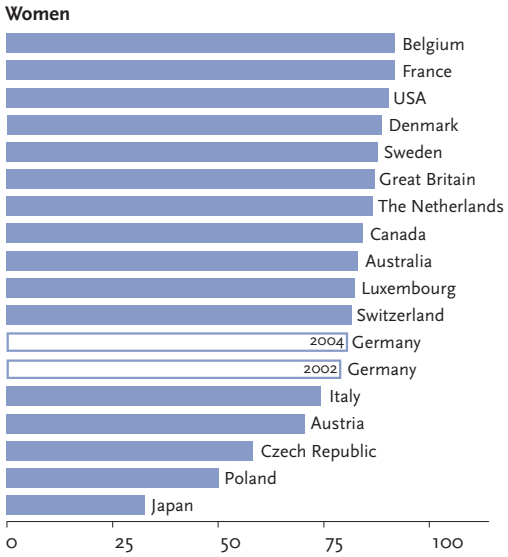


Figure 3.10.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C50
Cases/deaths per 100,000 (European Standard)

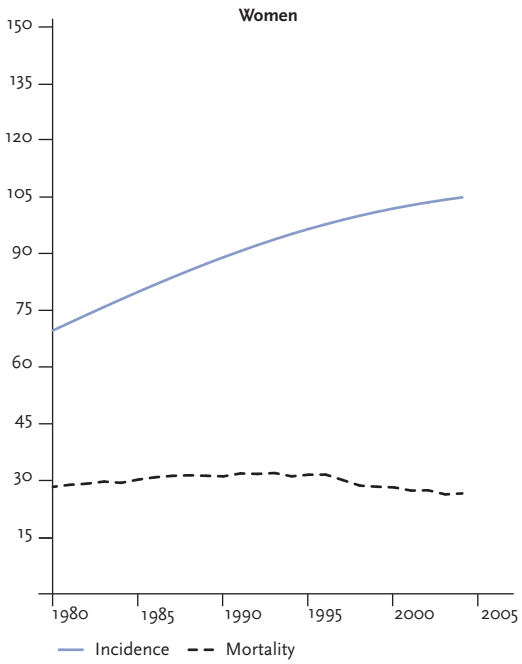


Table 3.10.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C50
Cases/deaths per 100,000 by age groups

Age in years	Women	
	Incidence	Mortality
under 15	0.0	0.0
15 to under 35	9.0	1.0
35 to under 40	53.0	7.0
40 to under 45	105.4	15.4
45 to under 50	167.9	25.5
50 to under 55	221.1	39.7
55 to under 60	286.9	58.3
60 to under 65	299.1	75.8
65 to under 70	303.2	89.7
70 to under 75	275.9	101.7
75 to under 80	283.7	129.2
80 to under 85	278.2	162.2
85 and older	231.8	223.5
Crude rate	135.8	41.7
Stand. rate (*European standard*)	104.2	26.8

Figure 3.10.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C50
New cases per 100,000 (European Standard)

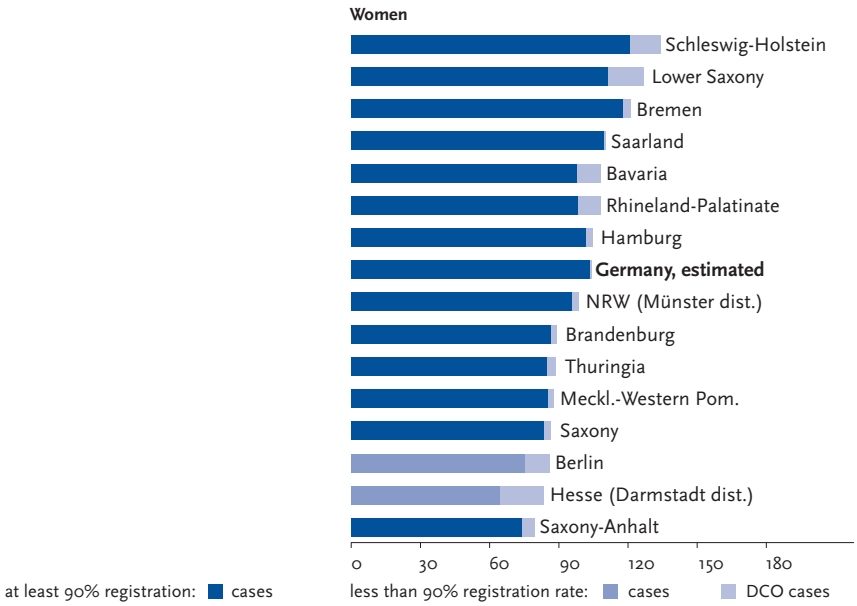


Table 3.10.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C50
*New cases per 100,000 (*European Standard)*

Region	Women		
	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed		
Bavaria	143.2	14	108.1
Berlin	116.8	18	85.8
Brandenburg	123.9	5	89.2
Bremen	169.1	5	120.7
Hamburg	135.2	5	104.5
Hesse (Darmstadt admin. dist.)	115.3	29	83.4
Mecklenburg-Western Pomerania	118.7	4	87.5
Lower Saxony	173.7	17	126.3
North Rhine-Westphalia (Münster admin. dist.)	127.0	5	98.5
Rhineland-Palatinate	148.9	14	107.9
Saarland	153.3	2	110.0
Saxony	129.1	5	86.1
Saxony-Anhalt	117.9	11	79.4
Schleswig-Holstein	182.5	14	133.6
Thuringia	127.7	7	88.4
Germany, estimated	**135.0**	1	**103.9**

— at least 90% registration — less than 90% registration rate

3.11 Cervix

Prevalence

About 6,200 cases of cervical cancer currently occur in Germany every year. This corresponds to 3% of all cancer cases and accounts for 1.7% of all cancer-related deaths in women. The age-specific incidence rates show two separate age peaks. The first occurs in the 35–54 age group, followed by another increase that starts around the age of 65. The mean age at diagnosis is approx. 51 years, 18 years younger than for all cancer sites. In the 1970s cervical carcinoma was the most common type of cancer of the female genital organs. It is currently the eleventh most frequent cancer among women.

Risk factors

Today there is no doubt that cervical cancer regularly develops from a persistent infection with certain strains of human papillomaviruses (HPVs), often acquired decades earlier. The HPV infection, not the cancer, can be sexually transmitted. Most women are infected with HPV in the course of their lives; however, the infection only persists in a small percentage of them. Sexual intercourse at an early age, unprotected sexual intercourse with alternating partners, and a high number of births are associated with a higher risk of developing the disease. Other pathogens of sexually transmitted diseases – e.g. herpes simplex viruses or chlamydia – are regarded as potential co-factors in carcinogenesis. Further studies will be required to determine whether the slight increase in risk observed in women currently using oral contraceptives containing oestrogens and gestagens (the "Pill") is real, or rather an indication of heightened sexual activity. Smoking and passive smoking and a poor diet are regarded as co-factors.

Since the 1970s women above the age of 20 have been offered a colposcopic examination and a Pap smear (cervical smear examination introduced by Papanicolaou). Since then a decrease has been observed in cervical carcinoma incidence and mortality. Since mid-2007 statutory health insurance has been offering all girls between the ages of 12 and 17 a three-dose vaccination against high-risk human papillomavirus strains (HPV).

Trends

Since the 1970s the incidence of cervical cancer had been declining markedly in Germany. In the last few years the incidence of invasive cervical cancer has been virtually constant. The mortality rates from cervical cancer have continued to decrease, also over the last few years. Much of this decline has been due to the statutory cancer screening programme, which makes it possible to diagnose cervical cancer during its preliminary stages. Timely treatment can then prevent the development of the complete (invasive) carcinoma.

Survival

The relative 5-year survival rate in the case of fully developed cancer of the cervix (invasive carcinoma) is about 61%.

Figure 3.11.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C53
New cases per 100,000 by age groups

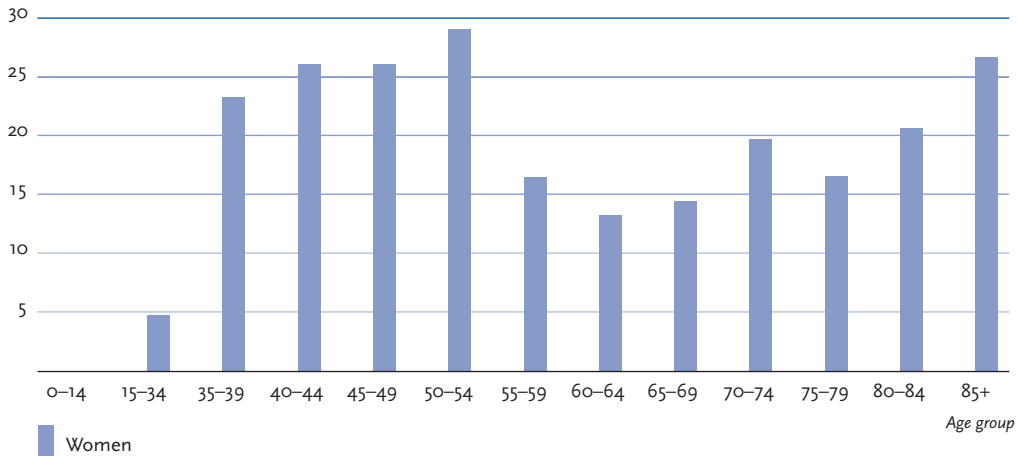


Figure 3.11.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C53
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

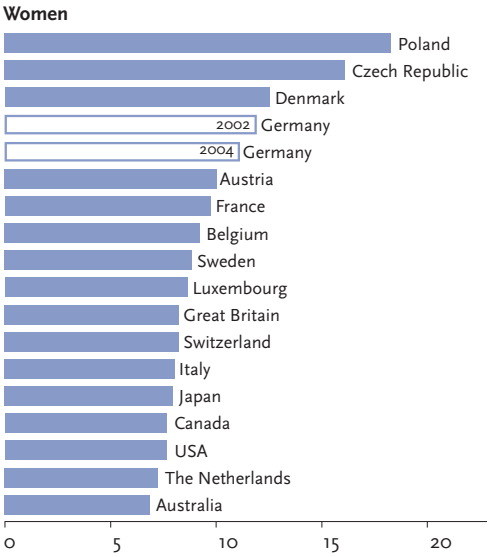


Figure 3.11.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C53
Cases/deaths per 100,000 (European Standard)

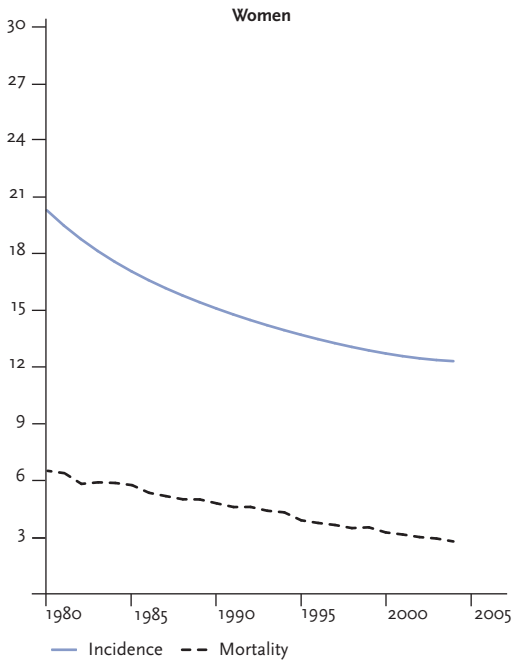


Table 3.11.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C53
Cases/deaths per 100,000 by age groups

Age in years	Women	
	Incidence	Mortality
under 15	0.0	0.0
15 to under 35	4.9	0.2
35 to under 40	23.5	1.8
40 to under 45	26.3	3.2
45 to under 50	26.3	4.6
50 to under 55	29.1	5.9
55 to under 60	16.6	6.5
60 to under 65	13.4	6.1
65 to under 70	14.6	6.8
70 to under 75	19.9	8.0
75 to under 80	16.7	9.6
80 to under 85	20.8	12.4
85 and older	26.9	14.8
Crude rate	14.7	3.9
Stand. rate (*European standard*)	12.4	2.8

Figure 3.11.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C53
New cases per 100,000 (European Standard)

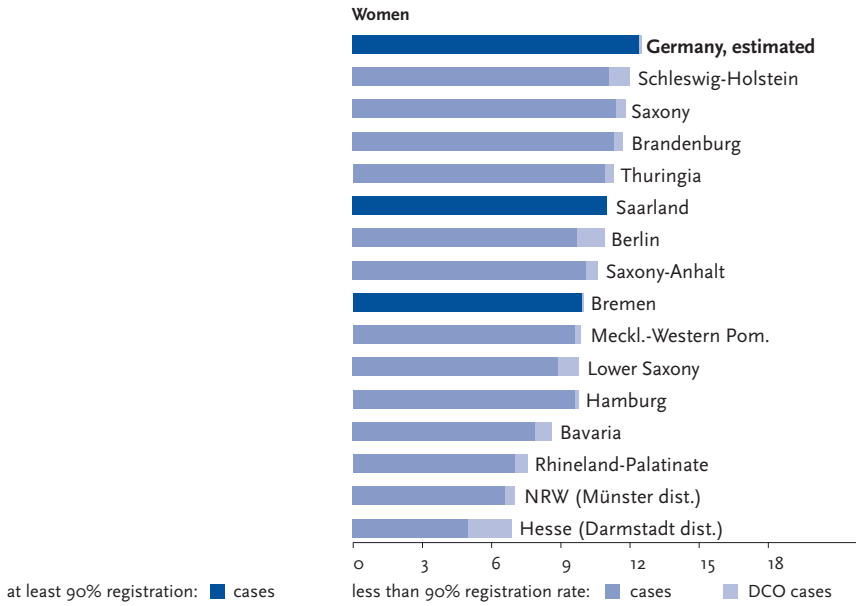


Table 3.11.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C53
*New cases per 100,000 (*European Standard)*

Region	Women		
	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed		
Bavaria	10.5	12	8.6
Berlin	13.6	15	11.0
Brandenburg	14.2	5	11.7
Bremen	13.2	2	10.0
Hamburg	11.7	2	9.8
Hesse (Darmstadt admin. dist.)	8.6	31	6.9
Mecklenburg-Western Pomerania	12.2	5	9.9
Lower Saxony	12.3	14	9.9
North Rhine-Westphalia (Münster admin. dist.)	8.6	7	7.0
Rhineland-Palatinate	9.5	11	7.7
Saarland	13.5	0	11.0
Saxony	14.7	4	11.8
Saxony-Anhalt	13.9	7	10.7
Schleswig-Holstein	14.7	11	12.0
Thuringia	13.9	4	11.3
Germany, estimated	**14.7**	1	**12.4**

— at least 90% registration — less than 90% registration rate

3.12 Uterus (corpus)

Prevalence

Most cancers of the uterus corpus (corpus carcinomas) are endometrial carcinomas, i.e. they develop in the lining of the uterus (endometrium). With about 11,700 new cases a year, uterine cancer represents the fourth most common cancer site overall among women and the most common site of the female genital organs. It accounts for 5.7% of all malignant neoplasms. Thanks to the good prognosis, it causes a much lower percentage of all cancer-related deaths: 2.6%. The average age at onset is approx. 68 years, about the same as with cancer sites in general.

Risk factors

Hormonal influences over many years are regarded as the primary risk factor for endometrial corpus carcinomas. This applies on the one hand to heightened exposure to the body's own (internal) oestrogen, which can be directly related to overweight (obesity), or childlessness, or be a result of early menarche, late menopause or long cycles without ovulation (for example in the case of polycystic ovaries). On the other hand, the "Pill", i.e. an oral contraceptive, provides protection against the development of corpus carcinomas, especially when oestrogen/gestagen combinations are used. However, this slightly increases the risk of breast cancer, as described in section 3.10. It is possible that the administration of oestrogens as a monotherapy for climacteric complaints increases the risk not only of breast cancer, but also of endometrial carcinoma, which can be prevented by the additional administration of progesterone.

Trends

The incidence rates have been decreasing slightly since the mid-1990s, following a slight increase during the 1980s. As in the case of cervical cancer, mortality due to cancer of the uterus corpus is decreasing.

Survival

With a relative 5-year survival rate of approx. 82%, corpus carcinomas can be ranked among the cancer sites with a favourable prognosis.

Figure 3.12.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C54, C55
New cases per 100,000 by age groups

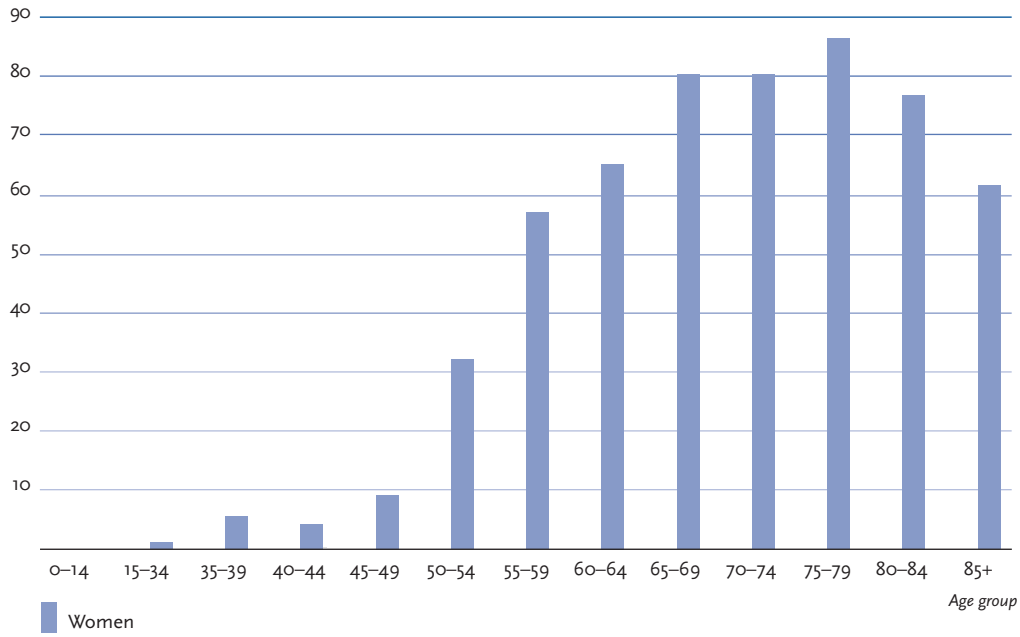


Figure 3.12.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C54, C55
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

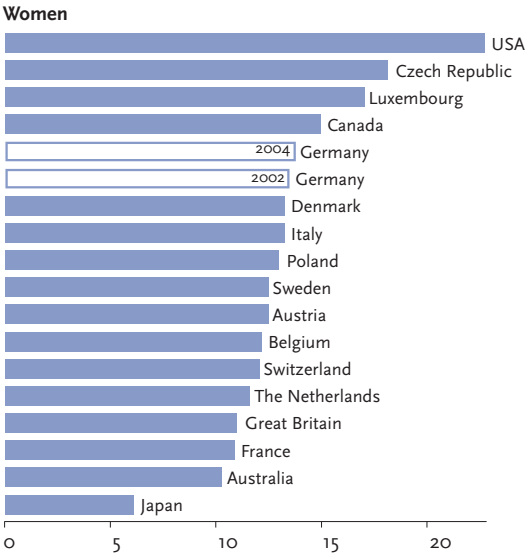


Figure 3.12.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C54, C55
Cases/deaths per 100,000 (European Standard)

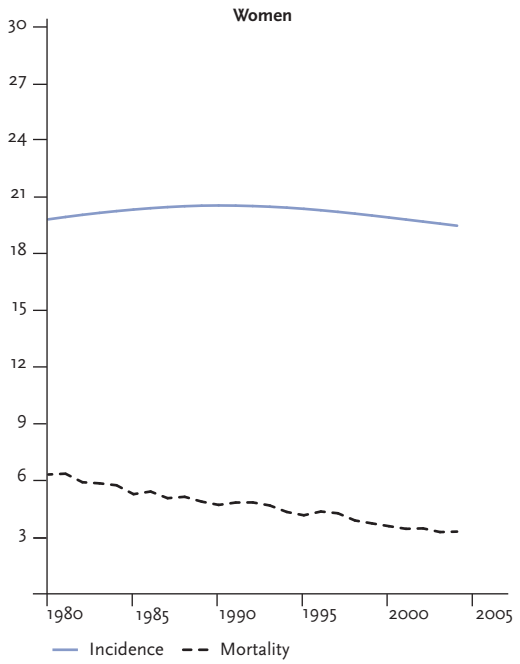


Table 3.12.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C54, C55
Cases/deaths per 100,000 by age groups

Age in years	Women	
	Incidence	Mortality
under 15	0.0	0.0
15 to under 35	1.1	0.0
35 to under 40	5.6	0.5
40 to under 45	4.3	0.5
45 to under 50	9.2	1.3
50 to under 55	31.9	3.2
55 to under 60	56.8	5.2
60 to under 65	65.1	8.6
65 to under 70	80.1	12.2
70 to under 75	80.1	17.1
75 to under 80	86.3	23.4
80 to under 85	76.6	32.3
85 and older	61.4	45.0
Crude rate	27.8	6.1
Stand. rate (*European standard*)	19.3	3.4

Figure 3.12.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C54, C55
New cases per 100,000 (European Standard)

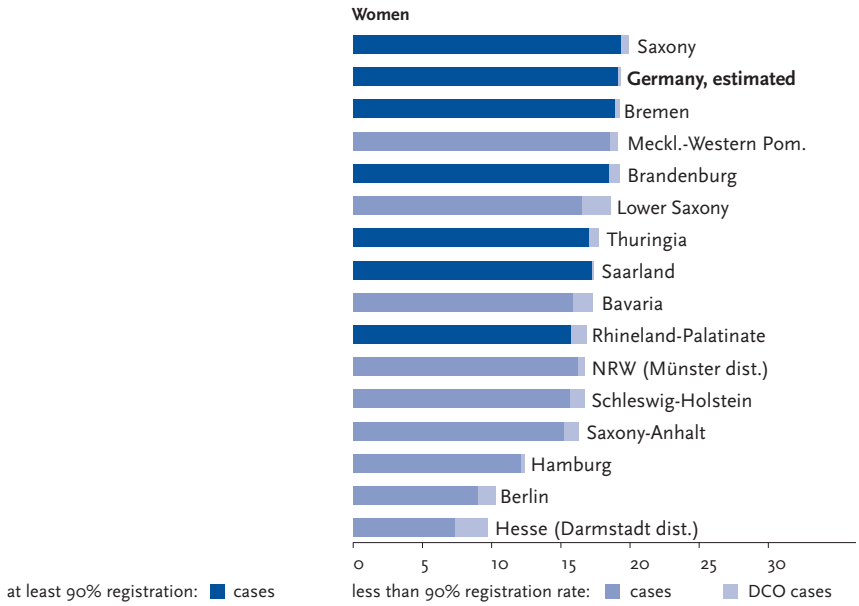


Table 3.12.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C54, C55
*New cases per 100,000 (*European Standard)*

Region	Women		
	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed		
Bavaria	25.1	13	17.3
Berlin	15.3	16	10.4
Brandenburg	29.6	5	19.1
Bremen	29.5	3	19.2
Hamburg	18.3	4	12.4
Hesse (Darmstadt admin. dist.)	14.7	31	9.6
Mecklenburg-Western Pomerania	29.4	4	19.1
Lower Saxony	28.4	16	18.6
North Rhine-Westphalia (Münster admin. dist.)	23.1	5	16.7
Rhineland-Palatinate	25.8	11	16.9
Saarland	28.4	1	17.4
Saxony	33.8	4	20.0
Saxony-Anhalt	27.4	9	16.3
Schleswig-Holstein	25.8	10	16.7
Thuringia	28.2	5	17.7
Germany, estimated	**27.7**	1	**19.3**

— at least 90% registration — less than 90% registration rate

3.13 Ovaries

Prevalence

According to the latest results of the RKI estimate based on the cancer registration data up to 2004, approx. 9,660 women develop cancer of the ovaries every year in Germany. This disease thus accounts for 4.7% of all malignant neoplasms in women. Nevertheless, due to a worse prognosis mortality, at almost 5,500 cases per annum (5.6% of all cancer-related deaths) is higher than the figure for all uterine cancers. The age distribution is similar to that of uterine corpus cancer, although approx. 10% of all ovarian cancer cases affect women under the age of 45. These are mostly germ-cell tumours. The average age at diagnosis of the disease is between 67 and 68.

Risk factors

The risk of developing epithelial ovarian cancer seems to be associated with hormonal influences over many years. An early first menstruation, a late onset of the menopause, childlessness and short or even no lactation periods have an unfavourable effect. Hormonal ovulation inhibitors (the "Pill") provide protection against ovarian cancer; combination preparations with oestrogens and gestagens, however, increase the risk of breast cancer slightly. Genetic predispositions have been proven in several studies. Women whose first-degree relatives have developed breast or ovarian cancer, or who have themselves already had breast, uterine corpus or colorectal cancer, are at greater risk of developing ovarian cancer.

Trends

The incidence rates of ovarian cancer have remained virtually constant in Germany over the last 20 to 30 years. By contrast, mortality rates have fallen more markedly over time since the late 1980s. Hence, the epidemiological similarity between this cancer and uterine corpus cancer is also shown in the trend.

Survival

The survival prospects of patients with ovarian cancer are rather poor compared to other cancers of the female genital organs, although they have improved slightly over time. The relative 5-year survival rate is currently about 47%.

Figure 3.13.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C56
New cases per 100,000 by age groups

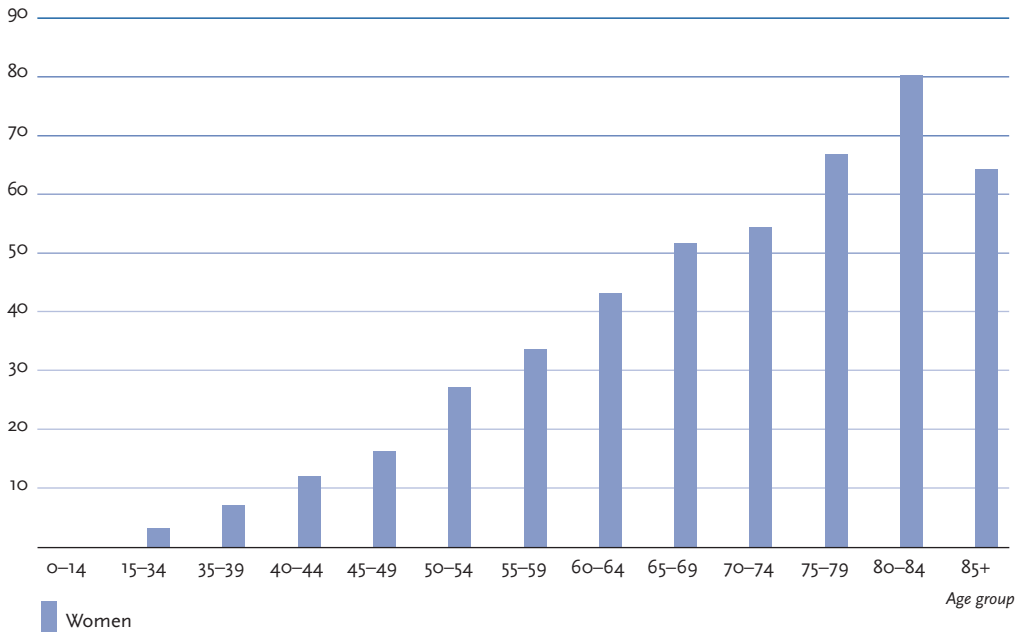


Figure 3.13.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C56
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

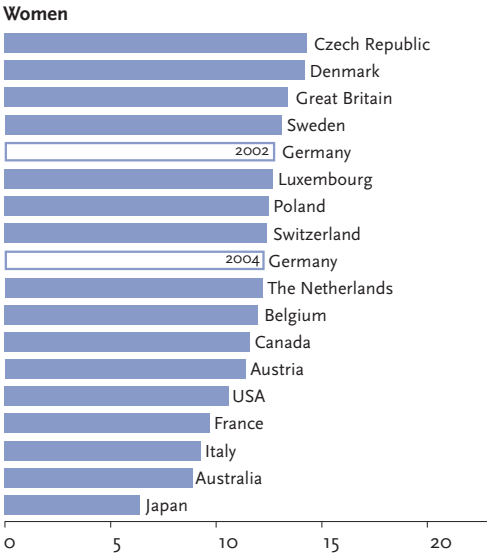


Figure 3.13.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C56
Cases/deaths per 100,000 (European Standard)

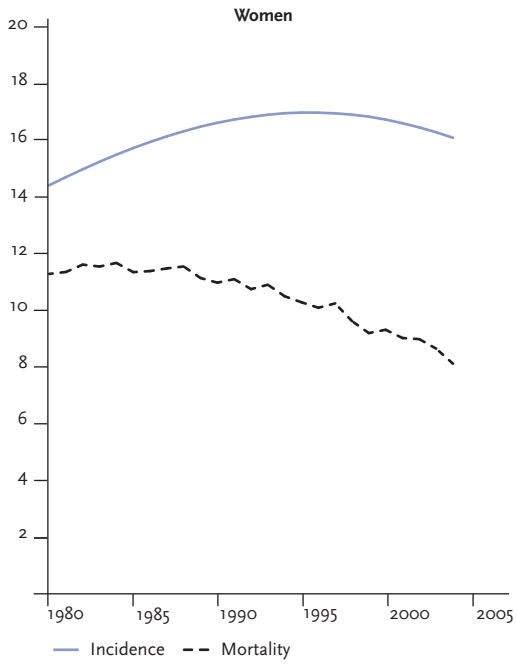


Table 3.13.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C56
Cases/deaths per 100,000 by age groups

Age in years	Women	
	Incidence	Mortality
under 15	0.0	0.0
15 to under 35	3.1	0.3
35 to under 40	7.2	1.0
40 to under 45	12.0	2.6
45 to under 50	16.3	5.3
50 to under 55	27.3	9.1
55 to under 60	33.7	14.5
60 to under 65	43.2	23.6
65 to under 70	51.7	29.9
70 to under 75	54.5	40.5
75 to under 80	66.9	50.5
80 to under 85	80.3	59.4
85 and older	64.4	62.6
Crude rate	22.9	13.2
Stand. rate (*European standard*)	15.9	8.0

Figure 3.13.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C56
New cases per 100,000 (European Standard)

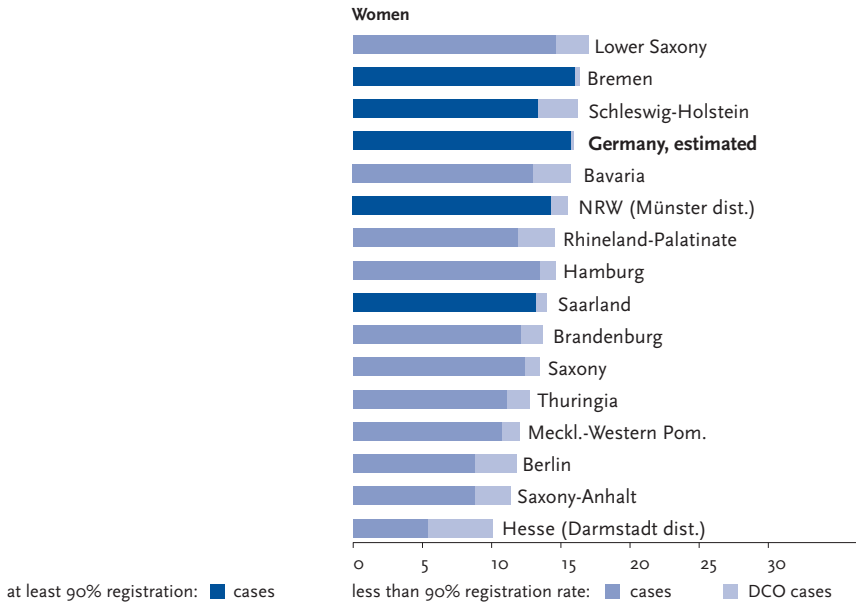


Table 3.13.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C56
*New cases per 100,000 (*European Standard)*

Region	Women		
	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed		
Bavaria	21.9	25	15.6
Berlin	16.6	32	11.9
Brandenburg	20.8	16	13.7
Bremen	24.3	4	16.4
Hamburg	20.6	10	14.6
Hesse (Darmstadt admin. dist.)	14.8	52	10.1
Mecklenburg-Western Pomerania	18.1	13	11.9
Lower Saxony	24.3	19	17.0
North Rhine-Westphalia (Münster admin. dist.)	21.9	10	15.5
Rhineland-Palatinate	21.2	26	14.6
Saarland	21.4	9	14.0
Saxony	22.1	13	13.5
Saxony-Anhalt	18.0	28	11.4
Schleswig-Holstein	24.4	23	16.2
Thuringia	19.1	18	12.9
Germany, estimated	**22.9**	4	**16.0**

— at least 90% registration — less than 90% registration rate

3.14 Prostate

Prevalence

In Germany, over 58,000 prostate carcinomas are currently diagnosed every year. At 25.4% this makes the prostate gland the most common site of malignant neoplasms in men. Prostate carcinoma is the third most common cause of death among the fatal cancer sites, accounting for 10.1% of deaths. The average age at onset is approx. 69 years, which corresponds roughly to the average age for all cancer sites. Even now only very few people are diagnosed before the age of 50.

Risk factors

Up to now the causes of prostate carcinoma and the factors affecting the progression of the disease are essentially unknown. A genetic predisposition is under discussion in the case of men who develop the disease at a young age; the differences in the frequency of prostate carcinoma in different ethnic groups also points in this direction. Overweight, a high-fat and high-calorie diet, lack of exercise and smoking are under discussion as possible risk factors.

Trends

Following a period characterized by slightly rising or constant incidence rates in the Saarland, a steep rise in rates has been observed since the late 1980s. The estimated incidence figures for Germany continued rising up to 2004. Indeed, the annual number of new cases of prostate carcinoma more than doubled in the course of eight years.

This increase can be largely attributed to the use of new diagnostic methods (e.g. testing for prostate-specific antigen (PSA)). The lower mean age at onset of the disease also indicates that diagnoses are being made earlier. Without the PSA test, the majority of the prostate carcinomas diagnosed today would never have been detected, and the diagnostic clarification made necessary by positive results would never have been carried out during the patient's lifetime. It is estimated that in some areas over 50% of the carcinoma diagnoses made in reaction to a positive PSA test would otherwise never have been made during the patient's lifetime. Men with an undiscovered prostate carcinoma would have died of another cause. Since it is not clear which of the carcinomas detected early in this way would ultimately have become symptomatic later on, no one can predict whether an individual diagnosis of prostate cancer represents a needless overdiagnosis, or whether treatment would have been helpful.

Autopsy studies have long since revealed a high proportion of undiscovered, asymptomatic prostate carcinomas among men over 70, and especially over 80, that had had no influence on the life expectancy or quality of life of the people concerned. The prerequisite for adding the PSA test to the statutory cancer-screening programme is scientific proof of its benefit for the population, i.e. does it reduce prostate cancer mortality? Two major, randomized studies are currently being carried out to measure this benefit; the results are expected in 2010. In Germany, the mortality rate from prostate cancer showed a slight increase from the early 1970s to the mid-1990s; the figure subsequently fell back to the 1970s level. Ultimately, therefore, the mortality rates have remained almost unchanged since 1970.

Survival

The relative 5-year survival rate of patients with prostate cancer has improved markedly over the last few years and is now approx. 87%. In the case of prostate cancer diagnosed between 1984 and 1998 it was 82%, albeit calculated according to a different method. The improvement was largely due to early diagnosis by screening. As far as the prognosis is concerned, a distinction must be made between slowly progressing forms and aggressive, metastasizing forms, which occur in greater proportions among younger men (under 60).

Figure 3.14.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C61
New cases per 100,000 by age groups

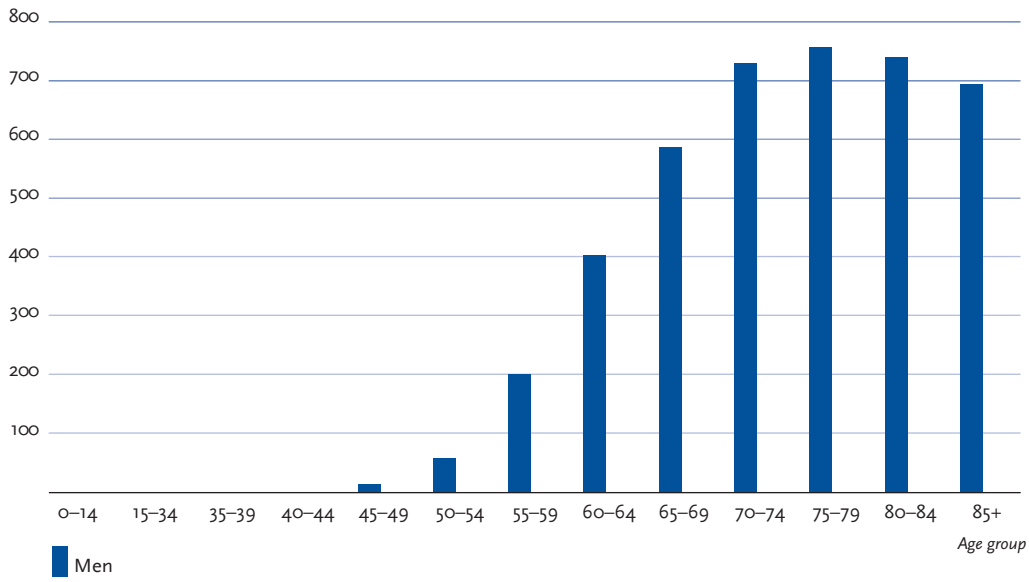


Figure 3.14.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C61
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

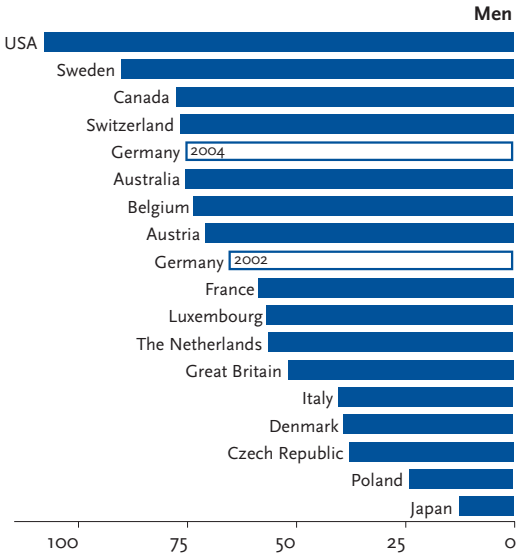


Figure 3.14.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C61
Cases/deaths per 100,000 (European Standard)

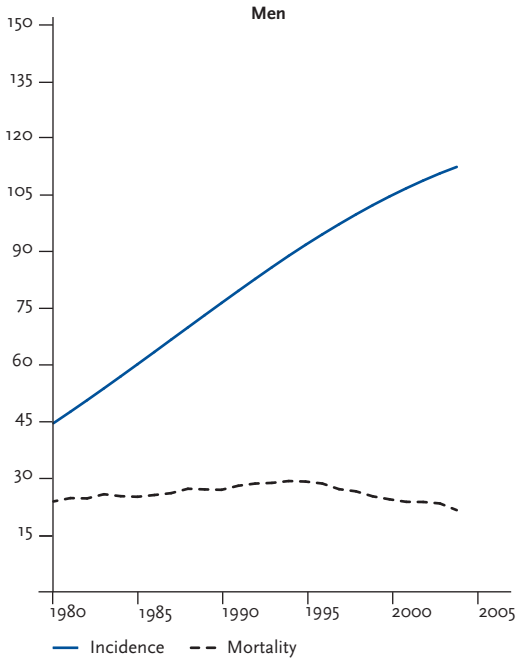


Table 3.14.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C61
Cases/deaths per 100,000 by age groups

Age in years	Men	
	Incidence	Mortality
under 15	0.0	0.0
15 to under 35	0.0	0.0
35 to under 40	0.0	0.0
40 to under 45	0.0	0.0
45 to under 50	13.6	1.2
50 to under 55	56.9	2.7
55 to under 60	200.1	11.0
60 to under 65	402.7	27.3
65 to under 70	587.1	57.8
70 to under 75	730.8	106.0
75 to under 80	758.5	207.0
80 to under 85	740.9	385.0
85 and older	694.0	640.4
Crude rate	145.2	27.6
Stand. rate (*European standard*)	112.0	22.2

Figure 3.14.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C61
New cases per 100,000 (European Standard)

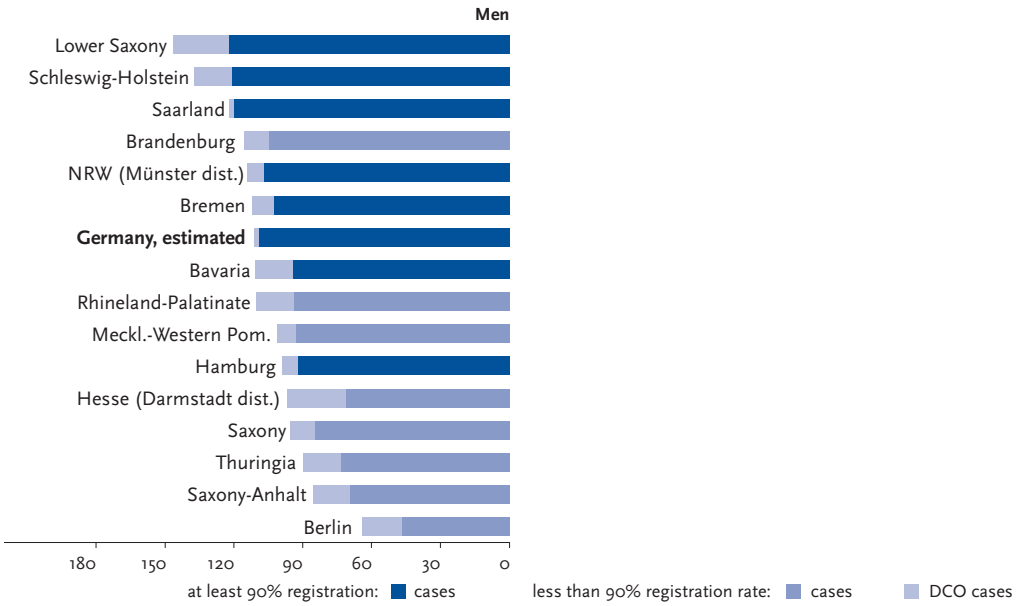


Table 3.14.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C61
*New cases per 100,000 (*European Standard)*

Region	Men		
	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed		
Bavaria	136.4	14	110.7
Berlin	72.7	24	64.3
Brandenburg	144.9	6	115.6
Bremen	152.8	8	112.1
Hamburg	121.3	7	99.0
Hesse (Darmstadt admin. dist.)	122.2	25	96.9
Mecklenburg-Western Pomerania	124.8	6	101.2
Lower Saxony	190.7	16	146.6
Nord Rhine-Westphalia (Münster admin. dist.)	140.2	6	114.2
Rhineland-Palatinate	144.7	14	110.2
Saarland	171.1	2	122.2
Saxony	133.1	9	95.4
Saxony-Anhalt	113.9	15	85.3
Schleswig-Holstein	184.2	11	137.3
Thuringia	114.5	15	89.8
Germany, estimated	**142.4**	2	**111.1**

— at least 90% registration — less than 90% registration rate

3.15 Testis

Prevalence

About 4,750 men a year are currently diagnosed with testicular cancer in Germany. Since this corresponds to 2% of all malignant cancers in men, it means that testicular cancer is one of the rarer sites of cancer, causing only 0.2% of all cancer-related deaths among men. There is an unusual age distribution in testicular cancer, with most cases occurring between the ages of 25 and 45. In this age group, testicular cancer is the most common malignant tumour among men. Less than a fifth of new cases are diagnosed in men over 45. The average age at onset is thus 37, the average age of death 45.

Risk factors

Undescended testis (cryptorchism) is regarded as a confirmed risk factor for testicular cancer. Men who have already developed testicular cancer on one side are at increased risk of also developing a tumour on the initially healthy side. A small proportion of people affected evidently have a genetic disposition (familial clustering), since the sons and brothers of patients with testicular cancer have a markedly increased risk of developing the disease.

One hypothesis suggests that a predisposition for germ-cell tumours, which are the most common form in the testes, possibly already develops during the embryonic period from scattered cells that go through a malignant development during puberty. Up to now little is known about what has been causing the observed increase in incidence in recent decades. Research is currently concentrating on prenatal risk factors, among others. Several postnatal characteristics (early onset of puberty, gigantism and subfertility) are also under discussion as possible risk factors.

Trends

A rise in the incidence of testicular cancer and falling mortality rates have been observed for decades in Germany and the rest of Europe. Both trends continue. There is a consensus that the falling mortality rates are due to the successful use of cisplatinum in the cytostatic treatment of testicular cancer.

Survival

With a relative 5-year survival rate of almost 100%, testicular cancer is one of the malignant neoplasms with the most favourable prognoses.

Figure 3.15.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C62
New cases per 100,000 by age groups

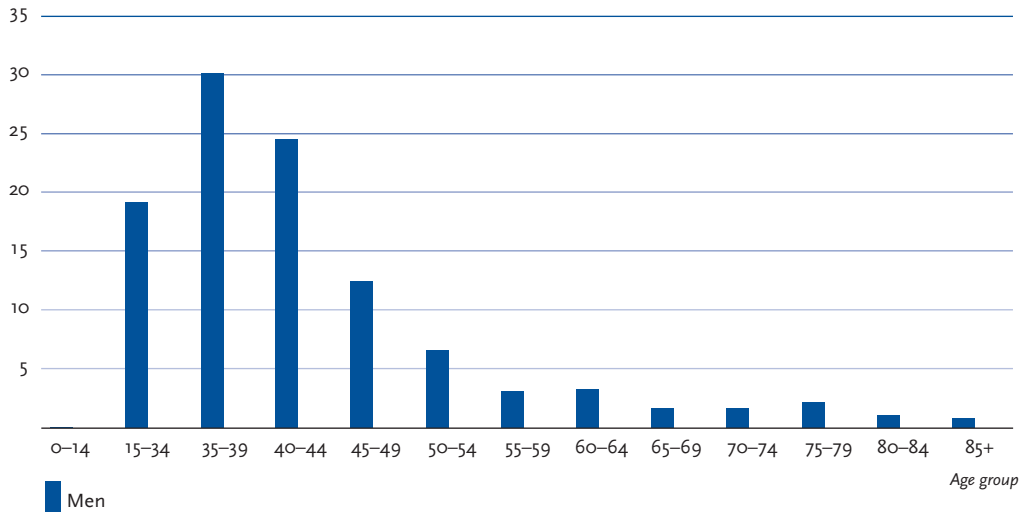


Figure 3.15.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C62
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

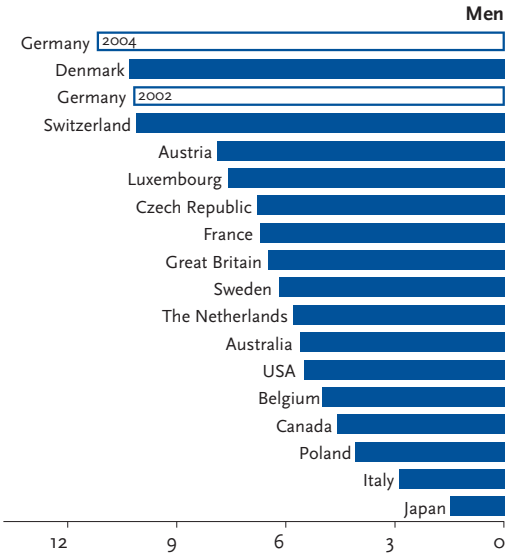


Figure 3.15.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C62
Cases/deaths per 100,000 (European Standard)

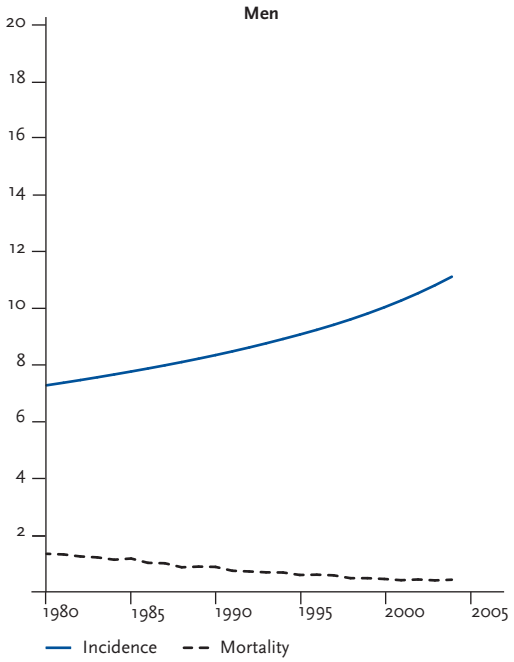


Table 3.15.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C62
Cases/deaths per 100,000 by age groups

Age in years	Men	
	Incidence	Mortality
under 15	0.1	0.0
15 to under 35	19.2	0.4
35 to under 40	30.1	0.8
40 to under 45	24.5	0.7
45 to under 50	12.5	0.6
50 to under 55	6.6	0.6
55 to under 60	3.1	0.2
60 to under 65	3.3	0.4
65 to under 70	1.7	0.3
70 to under 75	1.7	0.7
75 to under 80	2.2	0.5
80 to under 85	1.1	1.8
85 and older	0.8	3.0
Crude rate	11.8	0.5
Stand. rate (*European standard*)	11.1	0.4

Figure 3.15.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C62
New cases per 100,000 (European Standard)

Table 3.15.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C62
*New cases per 100,000 (*European Standard)*

Region	Men		
	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed		
Bavaria	9.3	2	8.7
Berlin	6.0	4	5.1
Brandenburg	9.1	3	8.2
Bremen	8.1	2	7.4
Hamburg	9.7	1	8.4
Hesse (Darmstadt admin. dist.)	4.6	9	4.3
Mecklenburg-Western Pomerania	10.3	1	9.4
Lower Saxony	10.7	5	10.2
North Rhine-Westphalia (Münster admin. dist.)	9.3	1	8.7
Rhineland-Palatinate	9.0	5	8.7
Saarland	8.6	0	8.2
Saxony	9.8	1	9.1
Saxony-Anhalt	8.0	4	7.3
Schleswig-Holstein	11.5	3	11.0
Thuringia	10.3	2	9.4
Germany, estimated	**11.6**	0	**10.9**

— at least 90% registration — less than 90% registration rate

3.16 Kidney and efferent urinary tract

Prevalence

The annual number of new cases of renal cancer in Germany is estimated at approx. 6,500 among women and 10,750 among men. 10% of these relate to carcinomas of the renal pelvis, the ureters and urethra. This brochure continues to categorize kidney cancers together with those of the efferent urinary tract to describe the trend over time. Kidney cancer accounts for 4.7% of all cancers in men and 3.2% in women. It is one of the most frequent causes of death from cancer (eleventh most common cause in women, sixth among men). The average age at onset is approx. 67 among men and almost 71 among women. 85% of malignant neoplasms of the kidney in adults are kidney-cell carcinomas (hypernephromas). By contrast, nephroblastomas (Wilms' tumours), sarcomas and lymphomas of the kidney are rare in adults.

Risk factors

There seems to be an association between overweight and kidney cancer, especially in women; in men, the decisive factor seems to be the type of fat distribution. A connection is made between an increased risk of kidney cancer on the one hand and smoking, passive smoking and the uncontrolled intake of painkillers containing phenacetin in particular – which are no longer used today – and the resultant damage to the kidneys on the other. Chronic renal insufficiency favours carcinogenesis in general. Occupational risks related to exposure to kidney-damaging substances (e.g. halogen hydrocarbons, cadmium, etc.) are seen, although there is only an indirect association. Family disposition is also among the known risk factors. Clear-cell renal-cell carcinomas, which occur in the context of the rare, hereditary Hippel-Lindau syndrome, are often multifocal (i.e. are seen in different places in the same organ at the same time) and occur more frequently at younger ages than kidney cancers not associated with genetic disposition.

Trends

The incidence rates for both sexes increased between 1980 and 2004 and almost doubled in men. The rates for men have always been higher than those for women, and the difference between the sexes has grown over the last few years. Mortality has declined slightly in both sexes since the mid-1990s. A parallel development has been observed for years, again with higher rates for men.

Survival

The average relative 5-year survival rate for men with kidney cancer is 66%; among women it is about 67%. It is known from clinical studies that, in the tumour stages T1 and T2, 80 to 90% of the patients survive the first five years after diagnosis. However, the survival rate falls below 10% once metastasis has occurred.

Figure 3.16.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C64–66, C68
New cases per 100,000 by age groups

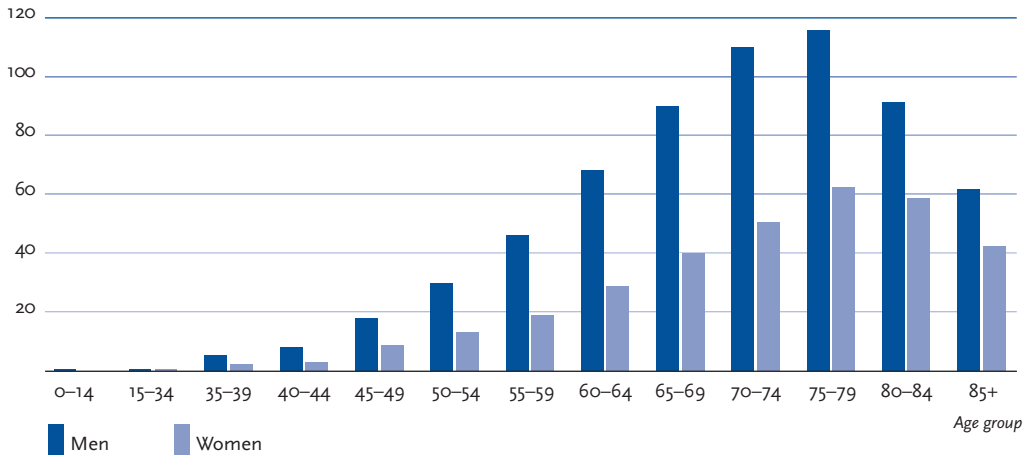


Figure 3.16.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C64–66, C68
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

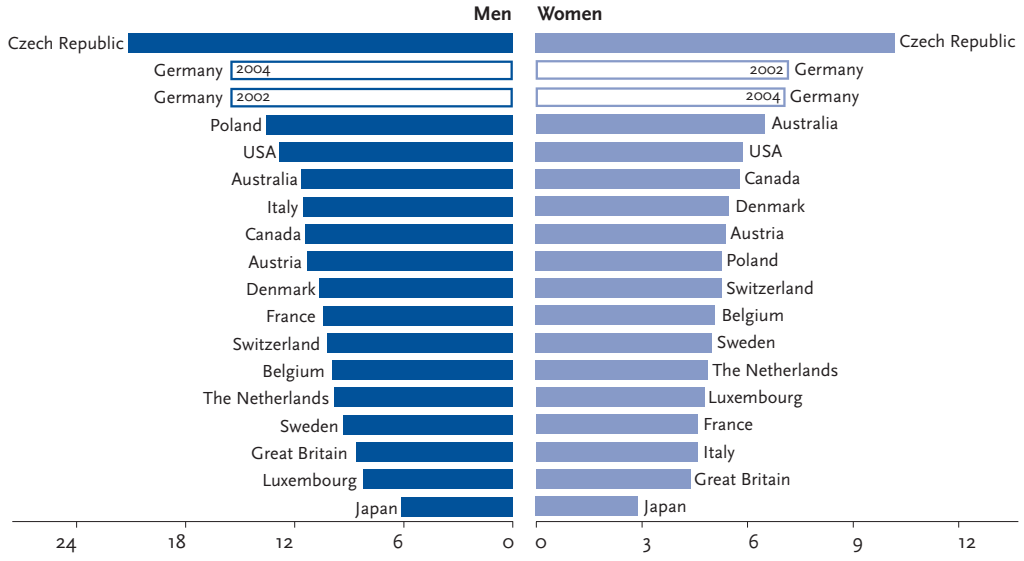


Figure 3.16.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C64–66, C68
Cases/deaths per 100,000 (European Standard)

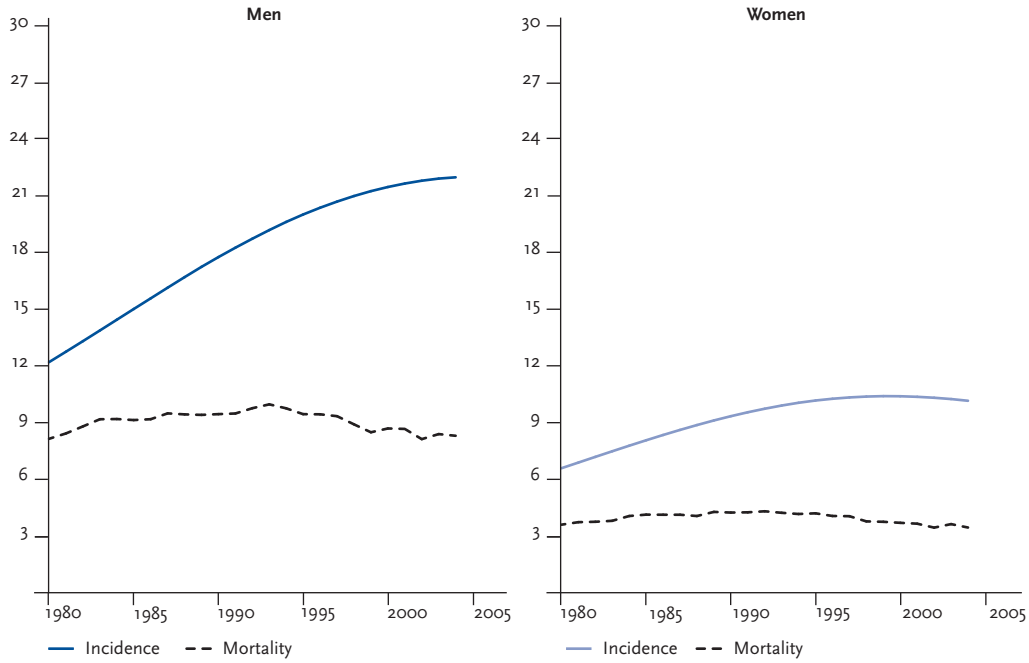


Table 3.16.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C64–66, C68
Cases/deaths per 100,000 by age groups

Age in years	Men		Women	
	Incidence	Mortality	Incidence	Mortality
under 15	0.6	0.1	0.0	0.0
15 to under 35	0.6	0.1	0.6	0.1
35 to under 40	4.9	0.4	2.1	0.2
40 to under 45	7.6	1.2	2.7	0.7
45 to under 50	17.6	3.6	8.6	1.4
50 to under 55	29.8	5.9	12.7	2.0
55 to under 60	45.8	10.8	18.6	3.9
60 to under 65	67.9	19.3	28.5	6.7
65 to under 70	89.8	32.3	39.6	12.6
70 to under 75	110.0	46.5	50.4	20.4
75 to under 80	115.8	62.3	62.3	27.6
80 to under 85	91.3	80.9	58.4	36.3
85 and older	61.4	87.6	41.8	41.7
Crude rate	26.6	10.3	15.4	6.2
Stand. rate (*European standard*)	21.4	8.1	9.9	3.3

Figure 3.16.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C64–66, C68
New cases per 100,000 (European Standard)

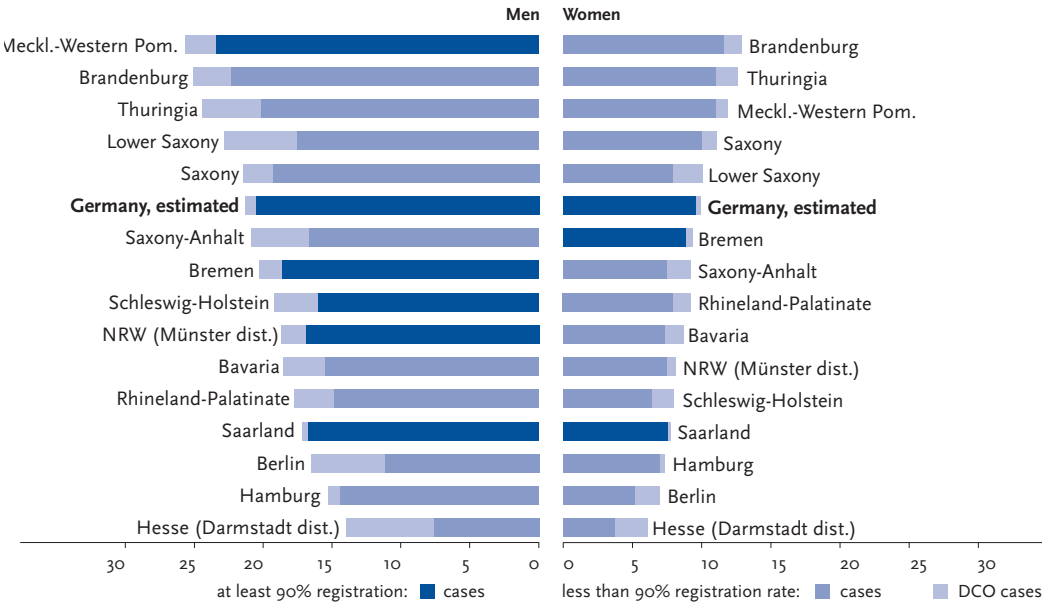


Table 3.16.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C64–66, C68
*New cases per 100,000 (*European Standard)*

Region	Men			Women		
	Crude rate	% DCO	Stand. rate*	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed					
Bavaria	22.5	17	18.6	13.6	22	8.7
Berlin	18.5	31	16.5	10.5	33	7.0
Brandenburg	30.9	10	25.1	20.1	13	12.9
Bremen	27.0	9	20.4	14.9	9	9.3
Hamburg	17.8	6	15.3	11.4	5	7.3
Hesse (Darmstadt admin. dist.)	17.4	46	14.0	9.7	45	6.1
Mecklenburg-Western Pomerania	31.3	8	25.7	18.7	10	11.9
Lower Saxony	28.5	24	22.9	16.3	28	10.0
North Rhine-Westphalia (Münster admin. dist.)	22.2	9	18.7	12.5	11	8.1
Rhineland-Palatinate	22.5	17	17.8	14.6	19	9.2
Saarland	22.8	3	17.2	13.3	4	7.8
Saxony	28.8	10	21.5	19.6	14	11.1
Saxony-Anhalt	27.5	20	20.9	15.6	25	9.3
Schleswig-Holstein	24.7	17	19.3	12.9	25	8.0
Thuringia	30.9	16	24.5	20.6	16	12.6
Germany, estimated	**26.3**	3	**21.3**	**15.4**	4	**9.9**

— at least 90% registration — less than 90% registration rate

3.17 Bladder

Prevalence

According to the latest estimates, about 28,750 people in Germany develop a tumour of the bladder every year. Men are almost three times as frequently affected as women. The bladder is one of the most common cancer sites in men, not least because our definition covers not only invasive (complete) and superficial (in situ) carcinomas, but also neoplasms of uncertain or unknown behaviour. The average age at diagnosis of bladder tumours is relatively high: 71 among men and 74 among women. Virtually all malignant neoplasms of the bladder are carcinomas of the urothelium, which are also called transitional cell carcinomas and are frequently multi-focal (occurring in different places in the same organ at the same time). Squamous-cell carcinomas and adenocarcinomas of the bladder are much rarer. A distinction is made between flat and papillary (wart-shaped) growth forms.

Risk factors

Cigarette consumption is the main risk factor in the development of bladder cancer. Environmental tobacco smoke also increases the risk. Apart from tobacco consumption, exposure to certain chemicals (e.g. aromatic amines) is regarded as a risk. Even though either the known, most hazardous working materials have been largely removed from the working processes of rubber, leather and textile processing and the chemical industry, or protective measures have meanwhile been introduced in Europe, occupational bladder carcinomas still occur today because of the long latencies.

Trends

The marked increase in the incidence of bladder cancer in the 1970s and 1980s was probably based on changes in the histopathological criteria for malignancy, according to which superficial papillary tumours of the urothelium were counted among invasive bladder cancer. Another change in these criteria in the early 1990s (in the opposite direction) therefore led to steeply declining incidence rates of cancer. The incidence rates of bladder tumours according to our definition increased up to the early 1990s in both sexes, after which the trend reversed, most markedly in men. Altogether, the incidence rate is much higher in men. The mortality rate, too, has been falling for almost ten years, particularly in men.

Survival

The prognosis in the case of bladder cancer varies considerably depending on the stage of the disease at the time of diagnosis. Since most cases are discovered at the locally limited stage, because of the above-mentioned categorization, the average relative 5-year survival rate is about 70% among women and 76% among men. Of course, the relative 5-year survival rates fall considerably if only invasive carcinomas of the bladder are counted. The prospects of survival are slim if the cancer has already metastasized to the lymph nodes.

Figure 3.17.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C67, D09.0, D41.4
New cases per 100,000 by age groups

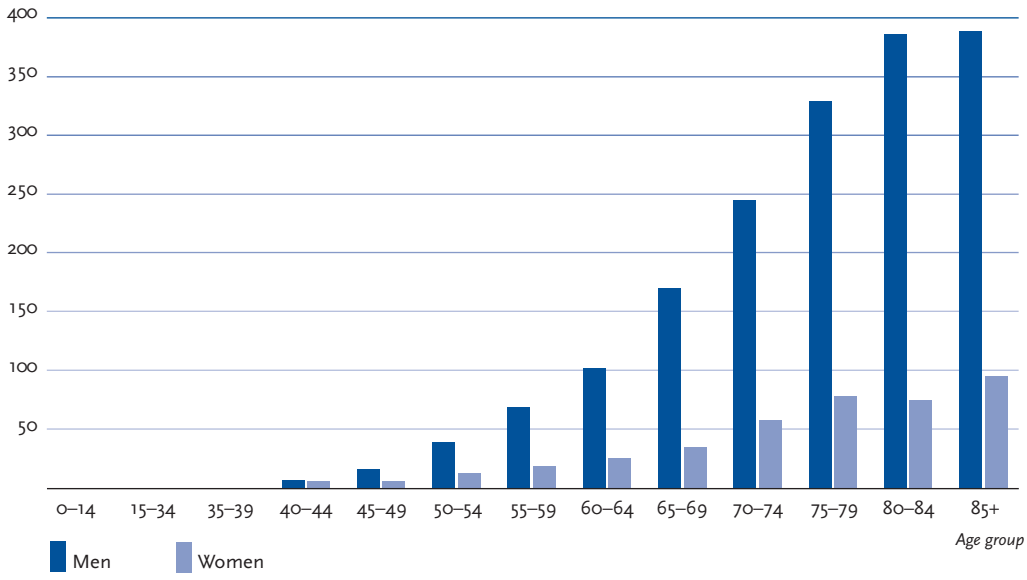


Figure 3.17.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C67, D09.0, D41.4
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

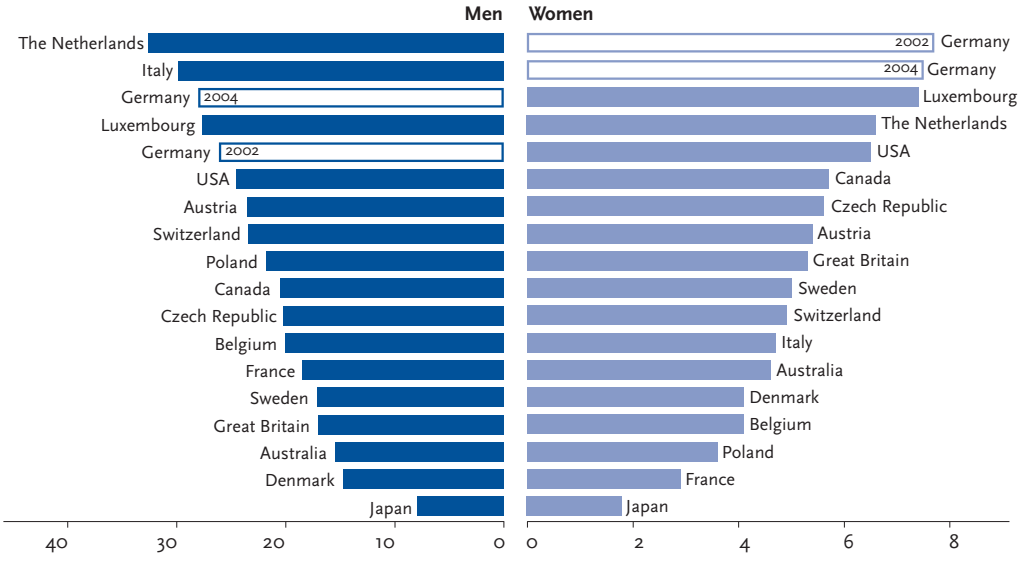


Figure 3.17.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C67, D09.0, D41.4
Cases/deaths per 100,000 (European Standard)

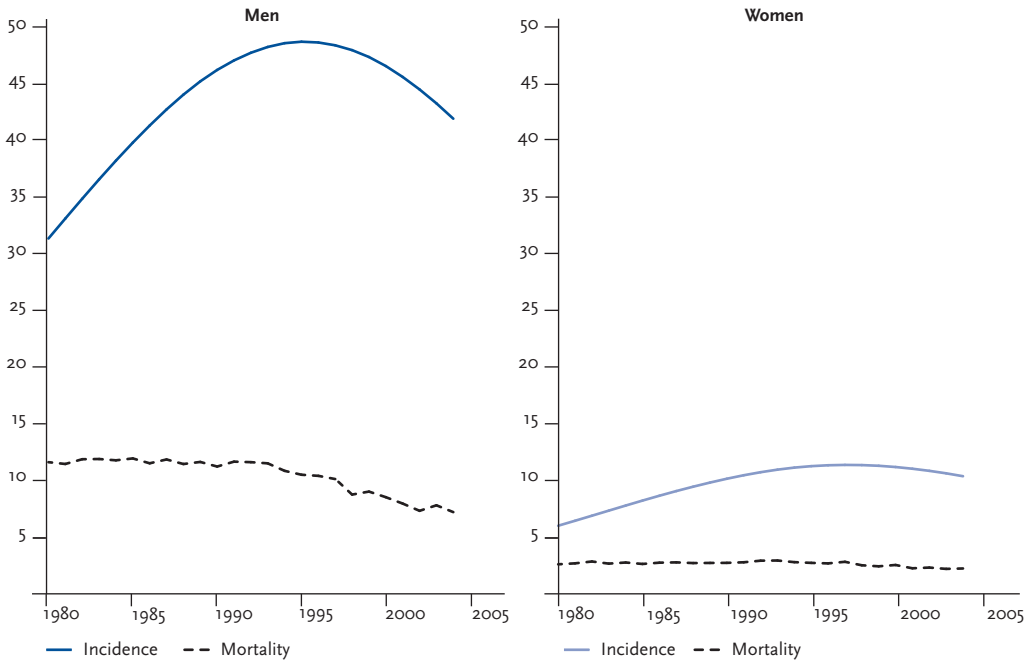


Table 3.17.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C67, D09.0, D41.4
Cases/deaths per 100,000 by age groups

Age in years	Men		Women	
	Incidence	Mortality	Incidence	Mortality
under 15	0.0	0.0	0.0	0.0
15 to under 35	0.0	0.0	0.0	0.0
35 to under 40	0.0	0.0	0.0	0.0
40 to under 45	6.0	0.4	5.6	0.3
45 to under 50	15.5	1.7	5.7	0.5
50 to under 55	38.2	2.8	11.9	0.8
55 to under 60	67.9	5.5	18.0	1.6
60 to under 65	101.1	9.4	24.8	2.4
65 to under 70	168.9	17.8	34.7	6.0
70 to under 75	244.6	35.0	56.9	9.8
75 to under 80	329.3	62.8	78.3	19.5
80 to under 85	385.5	113.2	74.1	32.6
85 and older	388.1	185.2	95.2	61.4
Crude rate	53.1	8.8	17.4	4.7
Stand. rate (*European standard*)	41.7	7.1	10.3	2.2

Figure 3.17.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C67, D09.0, D41.4
New cases per 100,000 (European Standard)

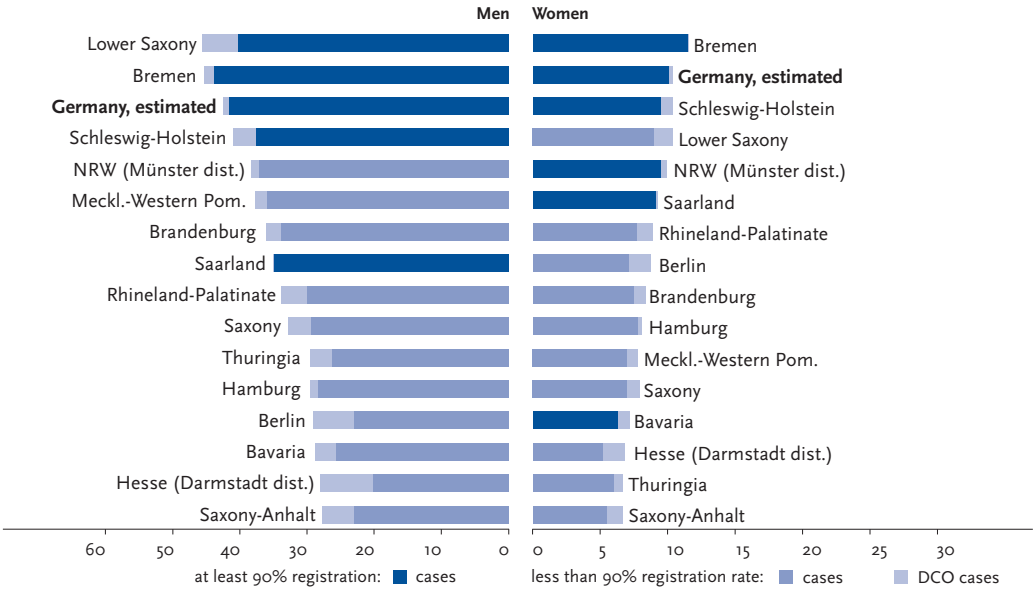


Table 3.17.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C67, D09.0, D41.4
*New cases per 100,000 (*European Standard)*

Region	Men			Women		
	Crude rate	% DCO	Stand. rate*	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed					
Bavaria	35.3	11	28.8	12.3	16	7.2
Berlin	31.7	19	29.0	15.0	25	8.8
Brandenburg	44.1	5	36.1	15.0	13	8.4
Bremen	60.7	3	45.3	23.5	1	11.5
Hamburg	35.8	3	29.5	14.2	6	8.2
Hesse (Darmstadt admin. dist.)	35.1	28	28.2	11.6	29	6.8
Mecklenburg-Western Pomerania	43.2	5	37.9	14.4	11	8.1
Lower Saxony	58.2	11	45.6	18.3	18	10.4
North Rhine-Westphalia (Münster admin. dist.)	45.7	3	38.3	16.7	6	10.0
Rhineland-Palatinate	44.0	11	33.7	15.5	19	8.9
Saarland	48.0	1	35.1	16.6	3	9.3
Saxony	44.6	9	32.8	16.4	14	7.9
Saxony-Anhalt	35.6	15	27.4	13.1	21	6.6
Schleswig-Holstein	53.1	8	41.0	18.2	12	10.4
Thuringia	37.3	9	29.5	12.2	14	6.7
Germany, estimated	**53.2**	2	**42.4**	**17.6**	4	**10.4**

— at least 90% registration — less than 90% registration rate

3.18 Thyroid gland

Prevalence

There are four types of thyroid cancer with different clinical progressions and prognoses:

(a) papillary carcinomas (approx. 50%, typically affecting young adults),
(b) follicular carcinomas (20-30%, in which frequency peaks in the 50-60 age group),
(c) anaplastic carcinomas (10%, predominantly affecting the elderly) and
(d) medullary or C-cell carcinomas.

The latter develop from special cells in the thyroid gland which regulate calcium metabolism.

Over 5,000 people in the Federal Republic develop thyroid cancer every year. With over 3,500 new cases a year, women are much more frequently affected than men. The average age at onset is 54 among women and 57 among men, i.e. much younger in both cases than for most other cancers. In 2004 a total of 676 people, 445 of them women, died of this disease in Germany.

Risk factors

One confirmed risk factor is exposure to ionizing radiation, above all in childhood. Benign adenomas of the thyroid gland and goitre diseases (the latter especially among people under the age of 50) are regarded as pre-existing diseases and increase cancer risk. Approximately a quarter of the rare medullary thyroid carcinomas occur as a family variant (multiple endocrine neoplasia type 2, or MEN 2) with an autosomal dominant inheritance pattern. In the meantime, a genetic component is also regarded as a probable risk factor in the case of non-medullary forms of the disease; hormonal and dietetic factors are also under discussion. The proportion of papillary and anaplastic carcinomas is regularly higher in regions of iodine deficiency.

Trends

The mortality rates for both sexes have been falling continuously over the last 25 years. The incidence rates among men rose until the mid-1990s and have remained at this level since then. By contrast, incidence rates among women are still rising continuously.

Survival

The relative 5-year survival rate is slightly better among women (90%) than among men (87%) and much higher than ten years ago (77% and 67% respectively). The best survival prospects are associated with papillary carcinoma, the typical thyroid carcinoma in young people. By contrast, survival prospects are quite bleak in the case of anaplastic thyroid carcinomas.

Figure 3.18.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C73
New cases per 100,000 by age groups

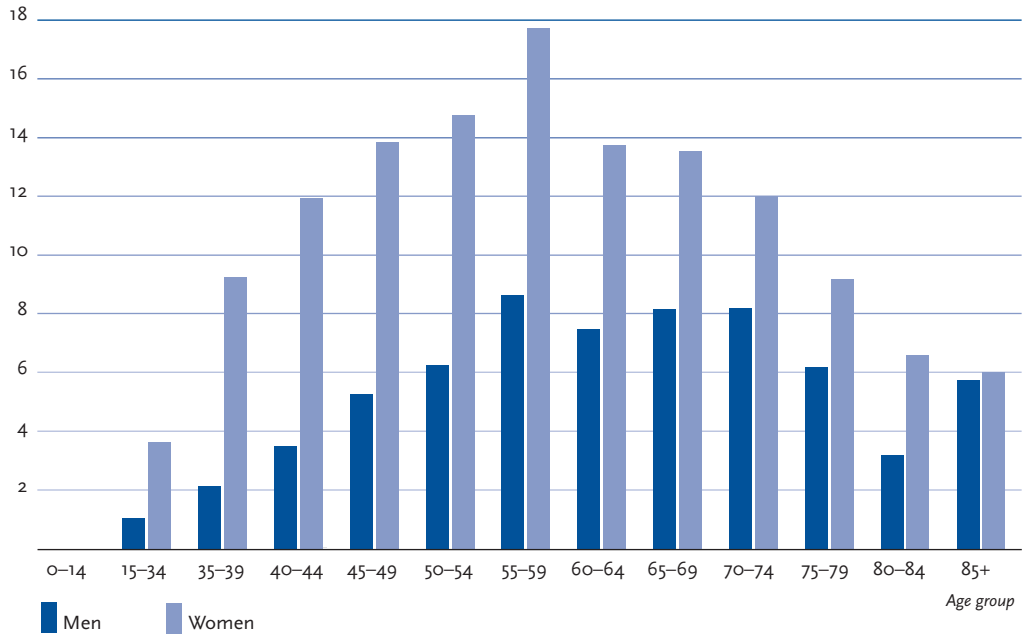


Figure 3.18.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C73
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

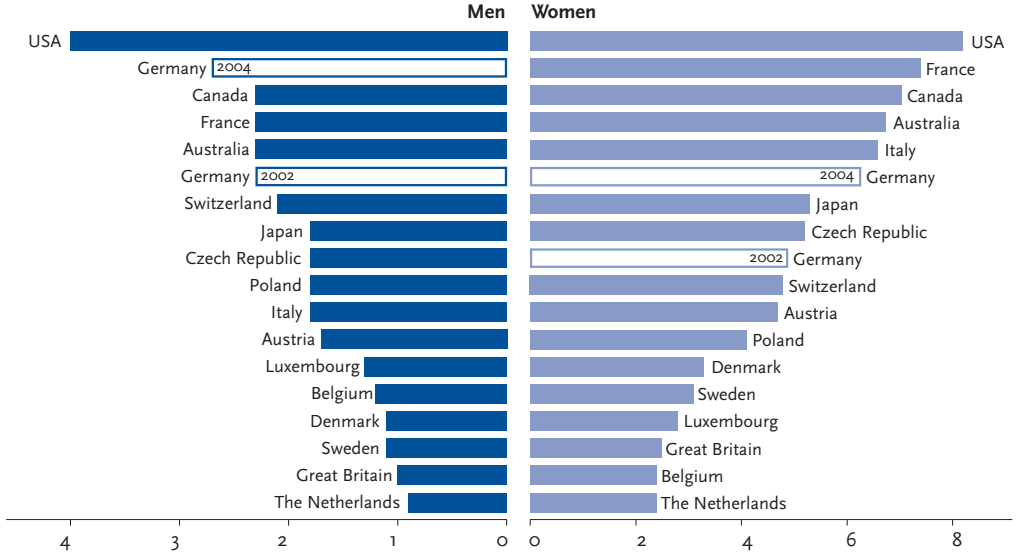


Figure 3.18.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C73
Cases/deaths per 100,000 (European Standard)

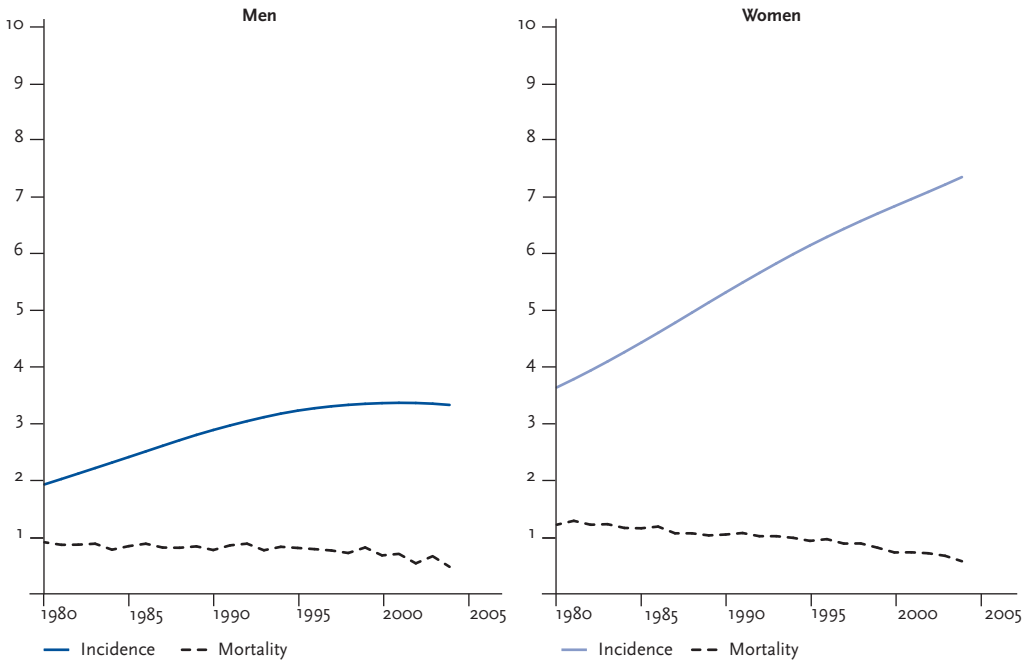


Table 3.18.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C73
Cases/deaths per 100,000 by age groups

Age in years	Men		Women	
	Incidence	Mortality	Incidence	Mortality
under 15	0.0	0.0	0.0	0.0
15 to under 35	1.5	0.0	3.5	0.0
35 to under 40	2.2	0.0	9.0	0.1
40 to under 45	3.5	0.2	11.9	0.2
45 to under 50	5.3	0.3	13.8	0.3
50 to under 55	6.3	0.4	14.4	0.3
55 to under 60	8.6	0.8	17.5	0.5
60 to under 65	7.5	0.9	13.5	1.0
65 to under 70	8.1	1.4	13.2	1.7
70 to under 75	8.2	2.3	12.0	3.3
75 to under 80	6.2	4.1	9.0	4.8
80 to under 85	3.2	5.1	6.5	7.2
85 and older	5.8	4.1	6.0	7.0
Crude rate	3.8	0.6	8.4	1.1
Stand. rate (*European standard*)	3.3	0.5	7.3	0.6

Figure 3.18.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C73
New cases per 100,000 (European Standard)

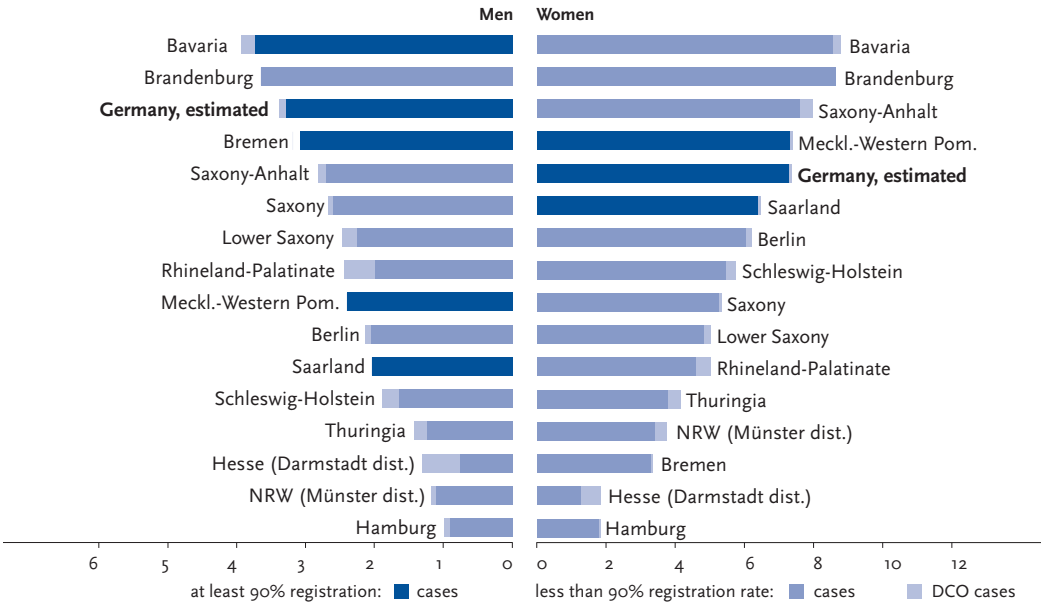


Table 3.18.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C73
*New cases per 100,000 (*European Standard)*

Region	Men			Women		
	Crude rate	% DCO	Stand. rate*	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed					
Bavaria	4.5	8	3.9	9.8	5	8.8
Berlin	2.5	5	2.1	7.7	5	6.2
Brandenburg	4.2	0	3.6	10.2	0	8.6
Bremen	3.4	0	3.1	4.7	6	3.4
Hamburg	1.2	10	1.0	2.4	5	1.8
Hesse (Darmstadt admin. dist.)	1.5	43	1.3	2.5	38	1.9
Mecklenburg-Western Pomerania	2.7	0	2.3	8.7	1	7.4
Lower Saxony	2.8	10	2.4	6.1	9	5.0
Nord Rhine-Westphalia (Münster admin. dist.)	1.2	6	1.1	4.5	15	3.8
Rhineland-Palatinate	2.7	20	2.4	6.4	13	5.0
Saarland	2.5	0	2.0	7.5	2	6.5
Saxony	3.1	3	2.6	6.6	4	5.3
Saxony-Anhalt	3.5	7	2.8	10.0	9	8.0
Schleswig-Holstein	2.2	13	1.8	6.7	8	5.7
Thuringia	1.7	15	1.4	5.2	15	4.1
Germany, estimated	**3.8**	3	**3.3**	**8.4**	2	**7.3**

— at least 90% registration — less than 90% registration rate

3.19 Hodgkin's disease

Prevalence

Hodgkin lymphoma, formerly known as lymphogranulomatosis, is distinguished from the non-Hodgkin lymphoma by the presence of microscopic Sternberg-Reed giant cells in the bone marrow. An estimated 2,000 people per year are diagnosed with Hodgkin lymphoma in Germany. This number is relatively small and accounts for 0.5% of all new cancer cases among men and women respectively. The average age at onset is very young, approx. 43 among men and 37 among women. A significant proportion of cases already occur in adolescence.

Risk factors

The risk factors for Hodgkin's disease have only been partly clarified up to now. As in the case of non-Hodgkin lymphomas, congenital and acquired characteristics of the immune system as well as viral infections are under discussion. Epstein-Barr viruses, the pathogens of Pfeiffer's glandular fever (infectious mononucleosis), and retroviruses (e.g. HTLV and HIV) are under discussion as possible contributory factors. Scientific interest is increasingly focusing on hereditary factors or a genetic disposition for malignant lymphomas. Children, brothers and sisters of patients with Hodgkin's disease have a markedly higher risk of developing the disease themselves.

Trends

Because the number of cases is small, incidence rates for Hodgkin's disease in Germany vary from year to year and from one registry to another. The overall incidence rates estimated for Germany reveal a consistently decreasing trend among men; the same trend was not recorded in women until the 1990s. This estimate involves uncertainties, however. Mortality fell markedly and continuously in both sexes during the observation period.

Survival

The prognosis for patients with Hodgkin's disease is very favourable. The relative 5-year survival rates are between 87% and 97% for men and women respectively.

Figure 3.19.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C81
New cases per 100,000 by age groups

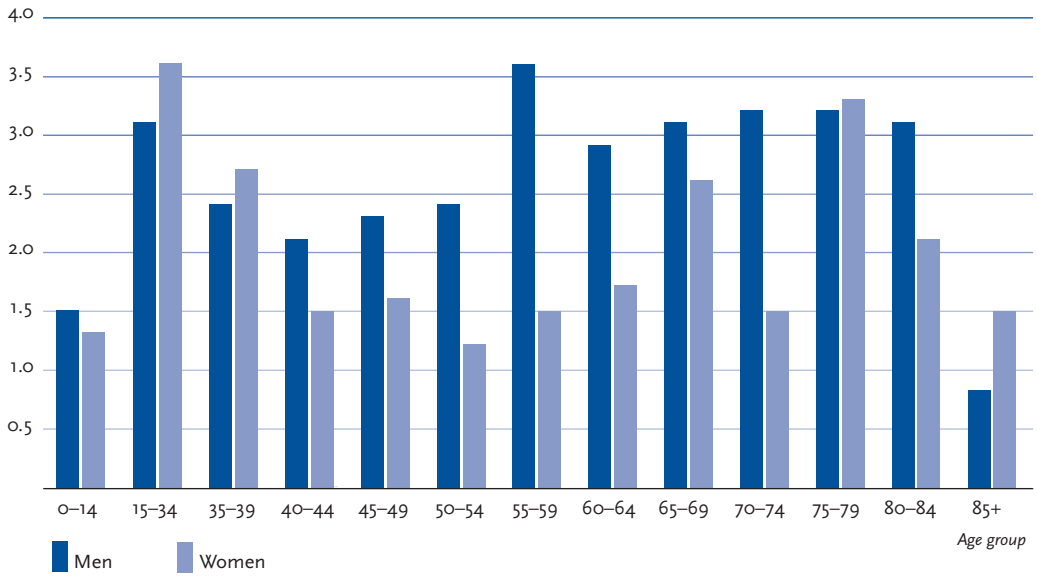


Figure 3.19.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C81
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

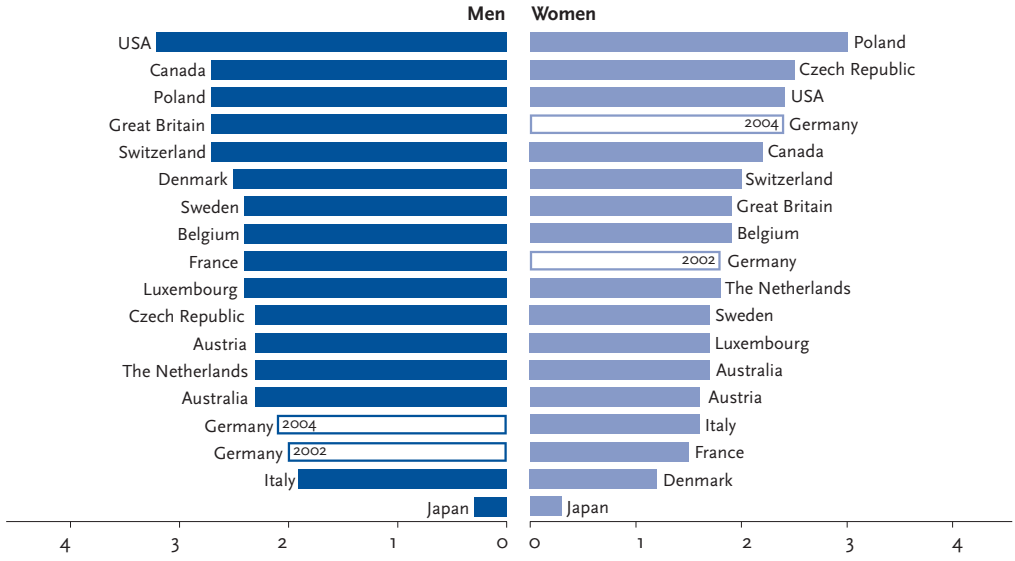


Figure 3.19.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C81
Cases/deaths per 100,000 (European Standard)

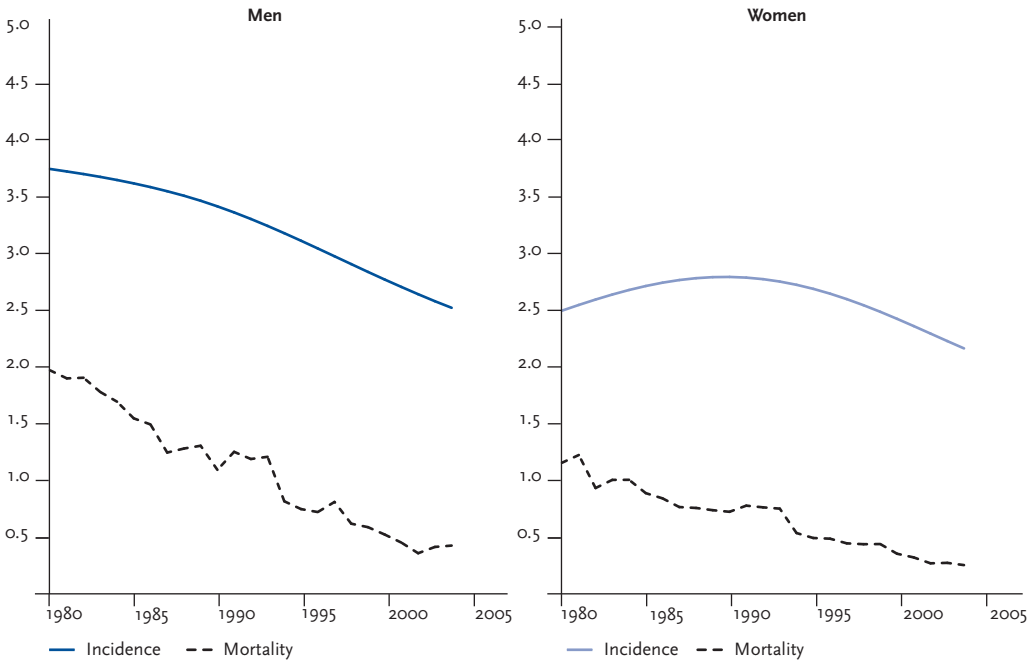


Table 3.19.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C81
Cases/deaths per 100,000 by age groups

Age in years	Men		Women	
	Incidence	Mortality	Incidence	Mortality
under 15	1.5	0.0	1.3	0.0
15 to under 35	3.1	0.2	3.6	0.1
35 to under 40	2.4	0.2	2.7	0.2
40 to under 45	2.1	0.2	1.5	0.1
45 to under 50	2.3	0.4	1.6	0.1
50 to under 55	2.4	0.4	1.2	0.3
55 to under 60	3.6	0.4	1.5	0.4
60 to under 65	2.9	0.7	1.7	0.2
65 to under 70	3.1	1.3	2.6	0.8
70 to under 75	3.2	2.0	1.5	1.0
75 to under 80	3.2	2.4	3.3	1.5
80 to under 85	3.1	2.4	2.1	1.9
85 and older	0.8	3.0	1.5	1.4
Crude rate	2.6	0.5	2.2	0.4
Stand. rate (*European standard*)	2.5	0.4	2.2	0.2

Figure 3.19.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C81
New cases per 100,000 (European Standard)

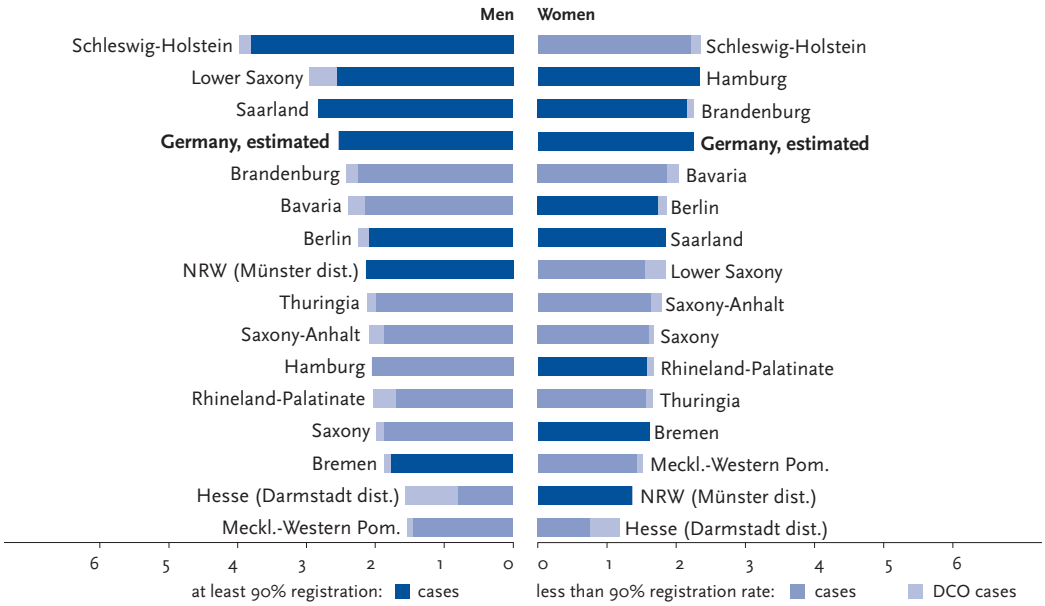


Table 3.19.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C81
*New cases per 100,000 (*European Standard)*

Region	Men			Women		
	Crude rate	% DCO	Stand. rate*	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed					
Bavaria	2.5	12	2.4	2.1	11	2.0
Berlin	2.4	6	2.2	1.9	12	1.9
Brandenburg	2.6	9	2.4	2.3	7	2.2
Bremen	2.2	7	1.9	1.5	0	1.6
Hamburg	2.1	0	2.0	2.7	0	2.3
Hesse (Darmstadt admin. dist.)	1.8	54	1.6	1.6	48	1.2
Mecklenburg-Western Pomerania	1.7	7	1.5	1.8	10	1.5
Lower Saxony	3.2	15	3.0	2.0	26	1.8
North Rhine-Westphalia (Münster admin. dist.)	2.2	0	2.1	1.5	2	1.4
Rhineland-Palatinate	2.2	20	2.0	1.8	12	1.7
Saarland	2.9	0	2.8	1.8	0	1.8
Saxony	2.1	7	2.0	1.8	9	1.7
Saxony-Anhalt	2.3	11	2.1	2.0	17	1.8
Schleswig-Holstein	4.3	5	4.0	2.5	8	2.4
Thuringia	2.4	7	2.1	1.8	9	1.7
Germany, estimated	**2.6**	1	**2.5**	**2.3**	0	**2.2**

— at least 90% registration — less than 90% registration rate

3.20 Non-Hodgkin lymphoma

Prevalence

Several different lymphoma types are subsumed under the term "non-Hodgkin lymphoma". In other words, non-Hodgkin lymphomas represent a very heterogeneous group in terms of their morphological classification. The annual number of new cases in Germany is about 6,800 among men and 6,100 among women. Overall, they account for 2.9% of new cancer cases for both sexes. The average age at onset among men is 65, i.e. four years under the average age for all cancer sites. On average, women develop the disease at 70, one year later than the figure for all sites.

Risk factors

In the group of non-Hodgkin lymphomas, little can be said about risk factors that is valid for all forms. In most cases it is not possible to establish a cause/effect relationship. Insufficient training of the immune system in childhood might possibly influence the risk. However, in view of contradictory results, the so-called "hygiene hypothesis" cannot be regarded as proven. Viral infections also contribute to the development of these diseases, although the extent of their contribution and the role of possible co-factors cannot be assessed. There is a confirmed causal association between an infection with the Epstein Barr virus (EBV, the pathogen of Pfeiffer's glandular fever or infectious mononucleosis) and Burkitt's lymphoma, which occurs predominantly in Africa. Clusters of T-cell lymphomas are observed in the context of infections with the human T-cell leukaemia virus HTLV-1. A chronic inflammation of the gastric mucosa (stomach lining) with the bacterium *Helicobacter pylori* (which also causes stomach ulcers) seems to increase the risk of developing a local lymphoma of the gastric mucosa (MALT lymphoma). Furthermore, occupational and industrial exposure to heavy metals, certain organic solvents, herbicides, insecticides (based on organic phosphoric acid esters) and fungicides are under discussion as causal factors; however, it is very rare that they can be substantiated in a patient's case history. Radioactive radiation can trigger malignant lymphomas. In addition, smoking seems to play a role in the case of highly aggressive forms.

Trends

The estimated age-standardized incidence rates in Germany rose at the same rate in both sexes between 1980 and 1995 – parallel to the development in other European countries. There are signs of a plateau or slight fall since the turn of the millennium. The mortality rates have developed in a similar way, although the rise was less steep. It should be pointed out, however, that there were different competing classification systems for lymphomas with corresponding delimitation problems during this period, so that the aggregation to non-Hodgkin lymphomas seems to make sense. There are also delimitation problems with chronic lymphatic leukaemia, which makes it more difficult to interpret the incidence rates.

Survival

The relative overall 5-year survival rate in the case of non-Hodgkin lymphomas amounts to 62% in men and 66% in women.

Figure 3.20.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C82–85
New cases per 100,000 by age groups

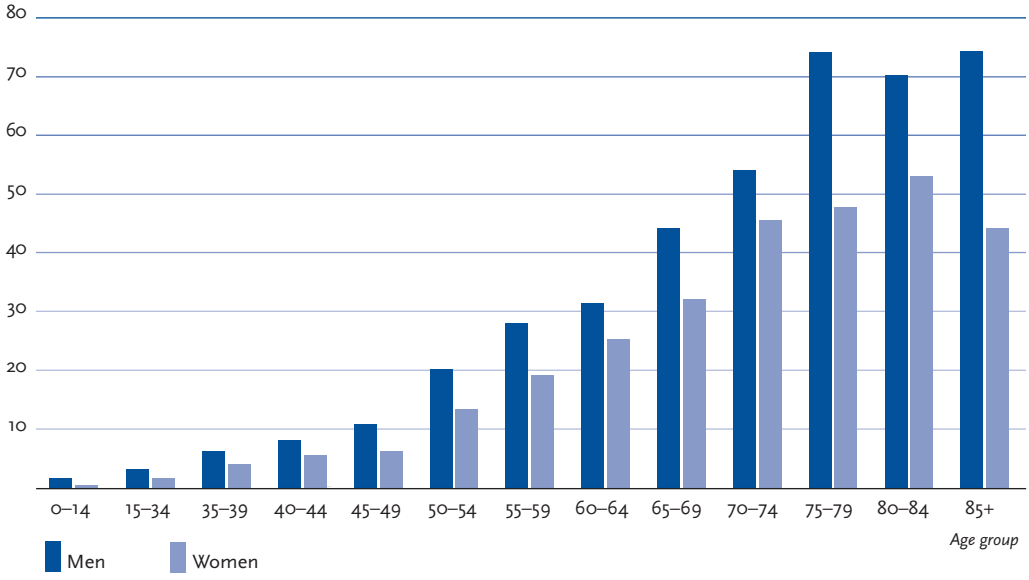


Figure 3.20.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C82–85
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

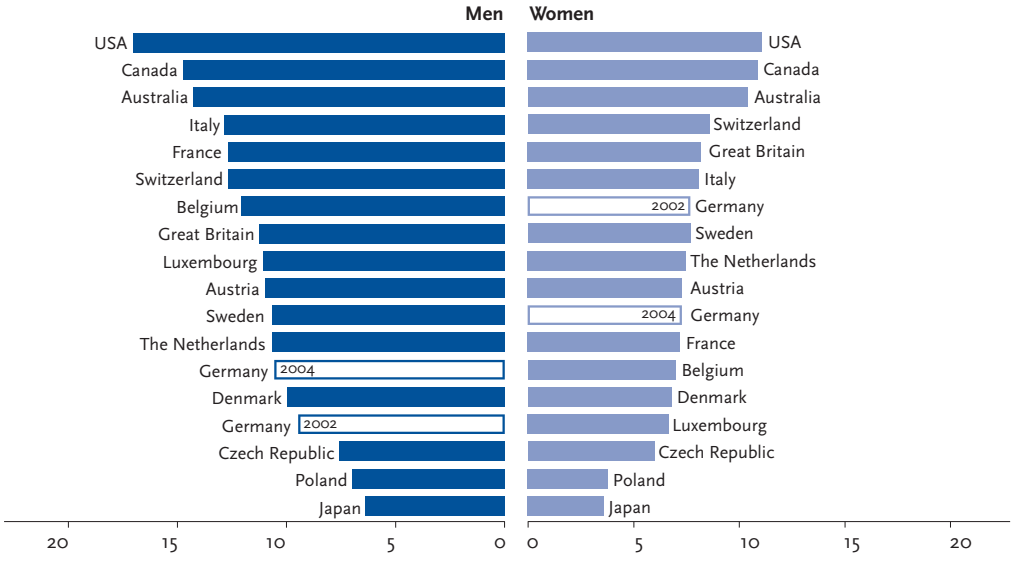


Figure 3.20.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C82–85
Cases/deaths per 100,000 (European Standard)

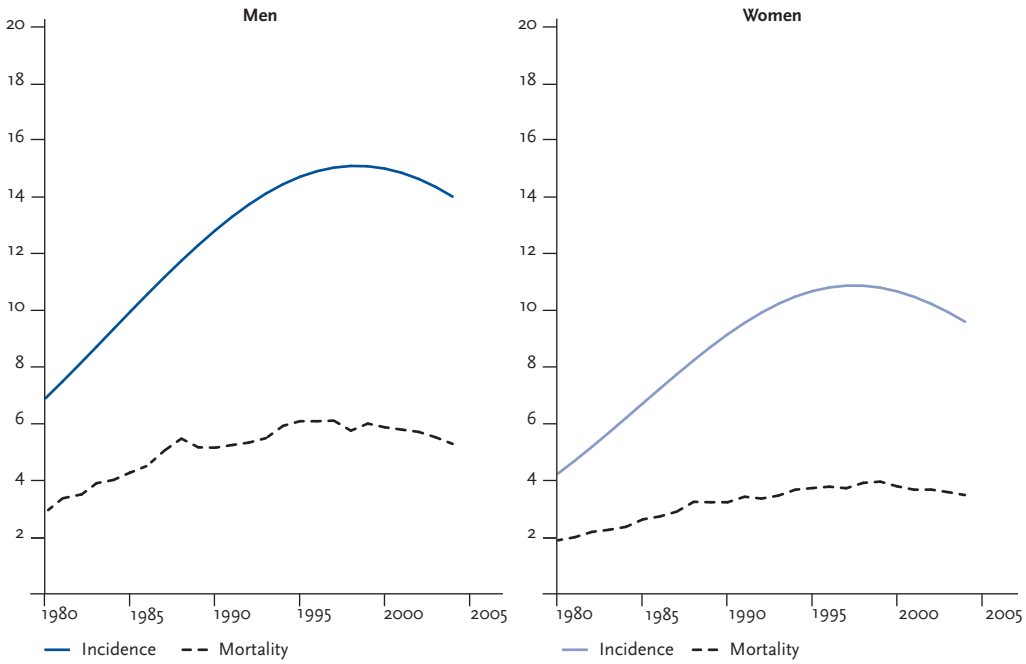


Table 3.20.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C82–85
Cases/deaths per 100,000 by age groups

Age in years	Men		Women	
	Incidence	Mortality	Incidence	Mortality
under 15	1.5	0.0	0.4	0.2
15 to under 35	3.2	0.4	1.6	0.3
35 to under 40	6.4	0.9	4.1	0.7
40 to under 45	8.2	1.3	5.7	0.5
45 to under 50	10.8	2.0	6.3	1.3
50 to under 55	20.2	4.5	13.4	2.9
55 to under 60	28.2	7.2	19.4	4.9
60 to under 65	31.5	11.1	25.3	6.7
65 to under 70	44.4	17.0	32.2	11.0
70 to under 75	54.1	27.6	45.8	19.7
75 to under 80	74.3	42.7	47.9	28.2
80 to under 85	70.4	58.6	53.2	42.1
85 and older	74.4	68.3	44.3	40.1
Crude rate	16.8	6.7	14.4	6.5
Stand. rate (*European standard*)	14.0	5.4	9.6	3.5

Figure 3.20.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C82–85
New cases per 100,000 (European Standard)

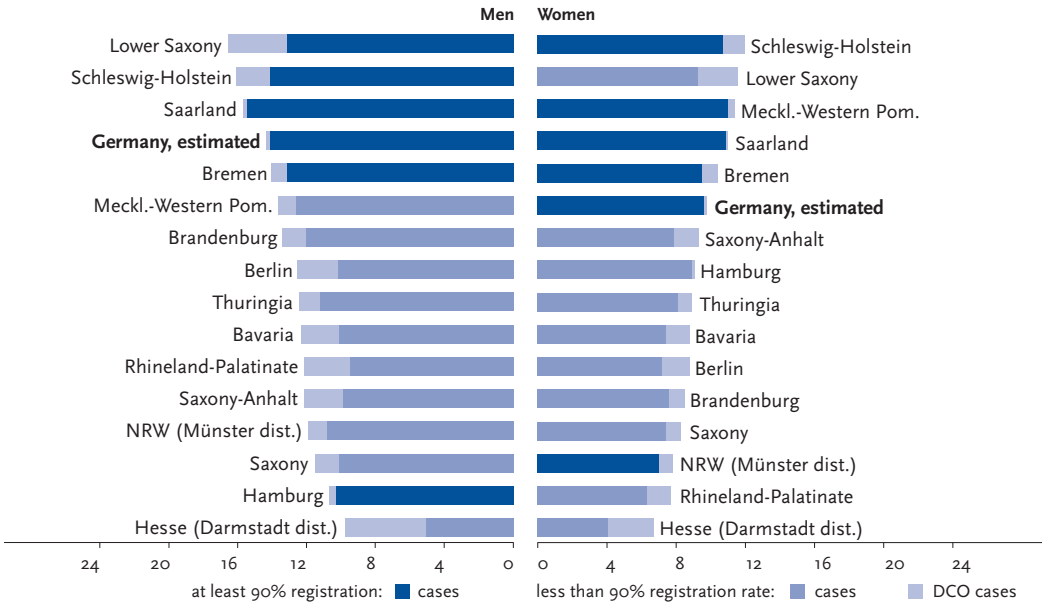


Table 3.20.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C82–85
*New cases per 100,000 (*European Standard)*

Region	Men			Women		
	Crude rate	% DCO	Stand. rate*	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed					
Bavaria	14.4	18	12.2	12.9	21	8.9
Berlin	13.9	17	12.4	12.9	25	8.8
Brandenburg	15.9	10	13.4	13.6	14	8.5
Bremen	17.5	6	13.5	17.1	11	10.4
Hamburg	12.5	4	10.6	13.0	4	9.1
Hesse (Darmstadt admin. dist.)	11.9	49	9.7	10.7	44	6.7
Mecklenburg-Western Pomerania	15.6	7	13.5	17.2	6	11.5
Lower Saxony	20.3	22	16.4	18.2	26	11.6
North Rhine-Westphalia (Münster admin. dist.)	13.7	9	11.8	11.6	10	7.8
Rhineland-Palatinate	15.0	23	12.0	12.5	25	7.7
Saarland	18.9	2	15.5	17.7	2	11.0
Saxony	14.9	13	11.5	14.4	15	8.4
Saxony-Anhalt	15.2	17	12.0	14.8	20	9.3
Schleswig-Holstein	19.7	13	16.0	18.6	15	11.9
Thuringia	15.3	10	12.3	15.0	12	8.9
Germany, estimated	**16.8**	1	**14.2**	**14.5**	2	**9.8**

— at least 90% registration — less than 90% registration rate

3.21 Leukaemias

Prevalence

Leukaemias originate in the bone marrow and are classified according to acute and chronic progression forms and the different cell types affected. The main groups – acute lymphatic leukaemia (ALL), acute myeloid leukaemia (AML), chronic myeloid leukaemia (CML) and chronic lymphatic leukaemia (CLL) – differ substantially in terms of epidemiology, disease biology and prognosis. It should be noted in particular that, based on findings of molecular biology, chronic lymphatic leukaemias can also be classified as low-risk lymphomas with a leukaemic progression. This blurs the distinction between leukaemias and non-Hodgkin lymphomas. About 9,100 people in Germany (approx. 4,800 men and 4,300 women) are diagnosed with a form of leukaemia every year. That is 2.1% of all new cancer cases in both sexes. The average age at diagnosis of the disease is 67 among men and 70 among women. While chronic forms of leukaemia only occur in adults, ALL is the most common cancer in children. AML occurs at all ages, but reaches its frequency peak among elderly people.

Risk factors

Ionizing radiation, cytostatic drugs and various chemicals such as benzene are known to be triggers of acute leukaemias, although it is comparatively rare that this can really be substantiated. There is also discussion on whether insufficient training of the immune system in childhood might contribute to an increase in the risk. Rare genetic modifications can increase the risk of leukaemia. The influence of viruses is under discussion but has not been unequivocally verified. An association with exposure to low-frequency electromagnetic fields has not been proven up to now. The causes of chronic leukaemias, the most common leukaemic diseases in adults, are largely unknown. Research is currently being carried out into (acquired or congenital) genetic modifications, which might possibly contribute to an increased risk.

Trends

The incidence rates rose in the 1980s – markedly among men, less markedly among women. However, rates have been falling significantly among men since the early 1990s and less markedly among women since the mid-1990s. The mortality rates have been declining among men and women since the early 1980s. However, the delimitation problem between chronic lymphatic leukaemia and non-Hodgkin lymphomas must be taken into account when evaluating developments over time.

Survival

The relative 5-year survival rates for leukaemias are 43% among men and 38% among women. The fact that, in this new edition, the survival rates were only calculated for over-15-year-olds certainly contributed to the decrease in survival rates compared to the 5th edition published in 2006. The survival prospects of children are much better than those of adults (see section 4).

Figure 3.21.1
Estimated age-specific incidence in Germany in 2004, ICD-10 C91–95
New cases per 100,000 by age groups

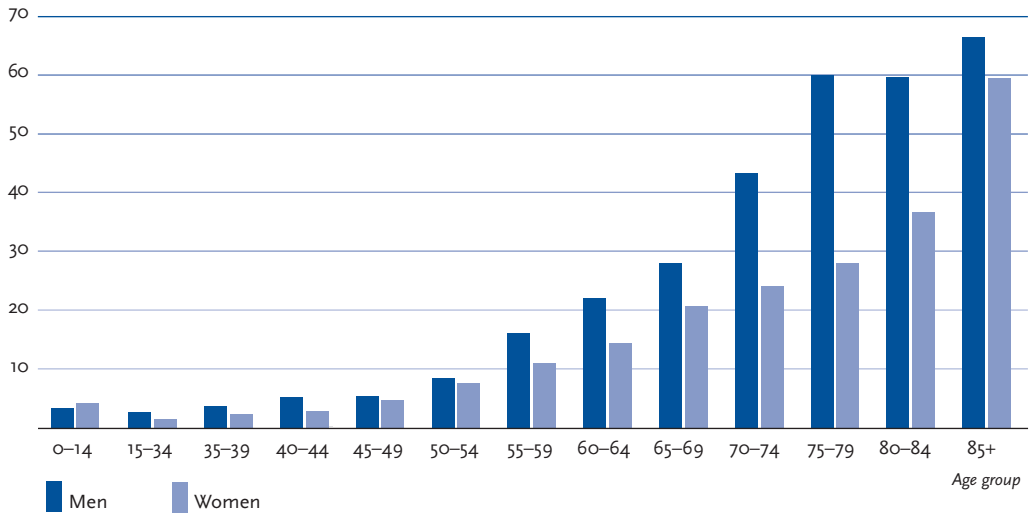


Figure 3.21.2
Age-standardized incidence rates in Germany in 2002 according to the RKI's 1980–2002 estimates, and in 2004 according to the RKI's 1980–2004 estimates, compared internationally, ICD-10 C91–95
Incidence per 100,000 (World Standard)
Source: Globocan estimate 2002, the RKI's 2002 and 2004 estimates for Germany

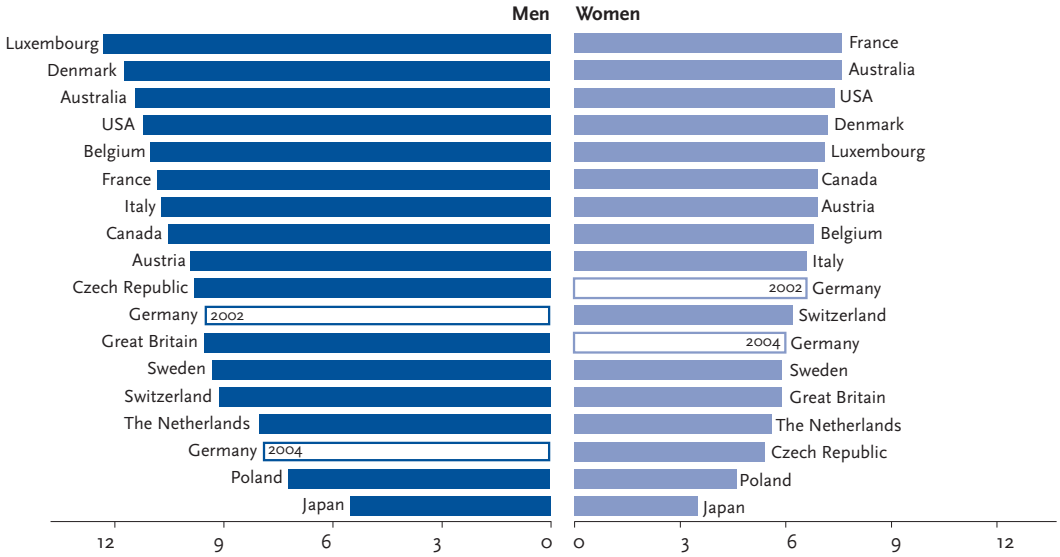


Figure 3.21.3
Age-standardized incidence and mortality in Germany, 1980–2004, ICD-10 C91–95
Cases/deaths per 100,000 (European Standard)

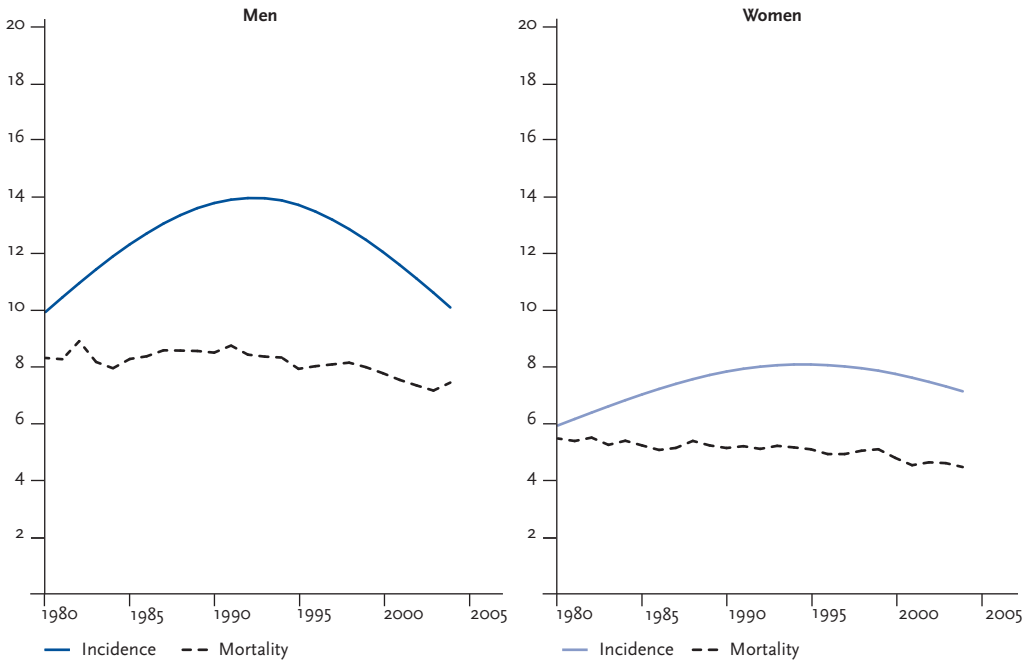


Table 3.21.1
Incidence and mortality by age group in Germany in 2004, ICD-10 C91–95
Cases/deaths per 100,000 by age groups

Age in years	Men		Women	
	Incidence	Mortality	Incidence	Mortality
under 15	3.4	0.7	4.3	0.5
15 to under 35	2.7	0.9	1.6	0.8
35 to under 40	3.8	1.0	2.5	0.9
40 to under 45	5.2	1.6	2.8	1.1
45 to under 50	5.3	2.7	4.7	2.1
50 to under 55	8.5	4.3	7.8	3.2
55 to under 60	16.1	7.4	11.1	5.5
60 to under 65	22.1	13.8	14.5	8.1
65 to under 70	28.1	23.0	20.7	13.4
70 to under 75	43.4	40.2	24.1	20.6
75 to under 80	60.1	60.2	28.2	32.5
80 to under 85	59.7	83.2	36.9	45.1
85 and older	66.6	103.5	59.7	58.8
Crude rate	11.9	9.2	10.2	7.9
Stand. rate (*European standard*)	10.1	7.4	7.1	4.4

Figure 3.21.4
Registered age-standardized incidence in the regions of Germany, 2003–2004, ICD-10 C91–95
New cases per 100,000 (European Standard)

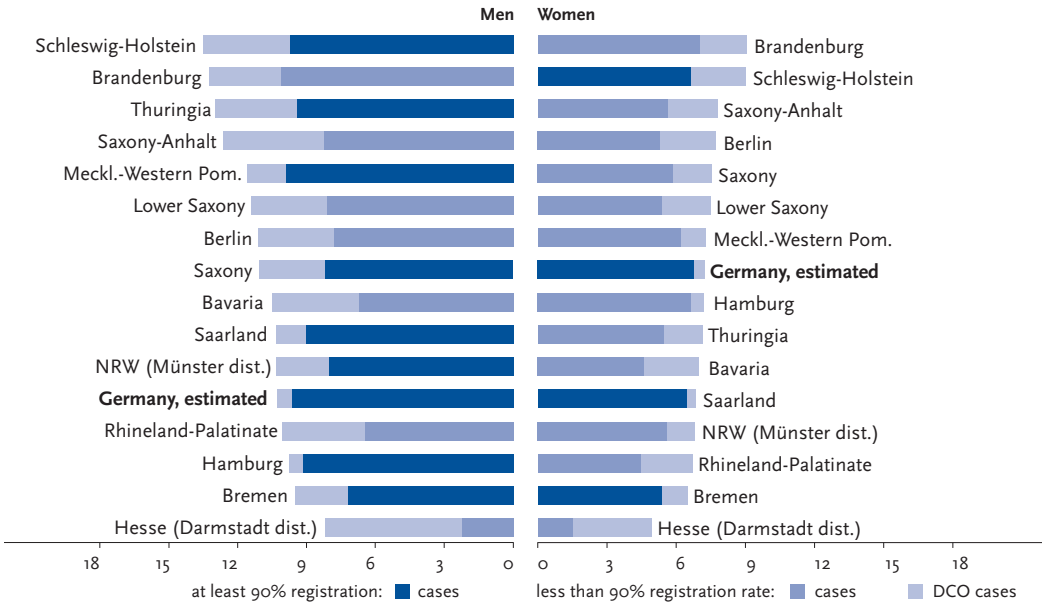


Table 3.21.2
Registered incidence in the regions of Germany, 2003–2004, ICD-10 C91–95
*New cases per 100,000 (*European Standard)*

Region	Men			Women		
	Crude rate	% DCO	Stand. rate*	Crude rate	% DCO	Stand. rate*
Baden-Württemberg	registry currently being developed					
Bavaria	12.3	38	10.5	10.4	45	6.9
Berlin	11.5	30	11.1	10.7	45	7.7
Brandenburg	14.7	22	13.3	12.7	32	9.0
Bremen	12.5	24	9.5	11.0	23	6.5
Hamburg	11.6	7	9.8	10.6	12	7.2
Hesse (Darmstadt admin. dist.)	10.2	73	8.2	8.8	74	4.9
Mecklenburg-Western Pomerania	13.4	13	11.6	10.5	16	7.2
Lower Saxony	13.9	30	11.4	11.8	38	7.5
North Rhine-Westphalia (Münster admin. dist.)	11.4	23	10.3	8.8	23	6.8
Rhineland-Palatinate	12.6	37	10.1	11.2	46	6.7
Saarland	12.7	14	10.4	10.7	10	6.8
Saxony	14.2	26	11.1	13.2	31	7.5
Saxony-Anhalt	15.5	36	12.7	12.4	38	7.8
Schleswig-Holstein	16.6	29	13.5	13.6	36	9.0
Thuringia	15.9	28	13.0	12.6	27	7.1
Germany, estimated	**12.1**	6	**10.3**	**10.3**	8	**7.2**

— at least 90% registration — less than 90% registration rate

4 Cancer in children

The German Childhood Cancer Registry (DKKR) has been based at the Institute of Medical Biostatistics, Epidemiology and Informatics at the Johannes Gutenberg University, Mainz, since beginning its work in 1980. Close cooperation with the Society for Paediatric Oncology and Haematology (GPOH) and the associated hospitals was already part of the DKKR's original conception. This is a characteristic feature of the registry which cannot be easily applied to adult oncology. A nationwide, population-based cancer registry with a high level of data quality and a degree of completeness of over 95% has been built up, covering the entire Federal Republic. The DKKR thus meets international standards for population-based cancer registries. Tumours of the central nervous system (CNS tumours) are an exception here; completeness in this field is slightly lower. A further characteristic of the DKKR is that it has implemented an active, open-end, long-term follow-up system which continues long into adulthood. In this way the registry also provides the basis for research into long-term effects, secondary tumours, and for studies with long-term survivors in general.

The registry population comprises children who are diagnosed with a malignant disease or a histologically benign brain tumour before their 15th birthday and are part of the resident population of the Federal Republic of Germany when diagnosed. Cancer cases in eastern Germany have been included since 1991 in cooperation with the joint cancer registry (GKR) of Berlin, Brandenburg, Mecklenburg-Western Pomerania, Saxony-Anhalt, Saxony and Thuringia. The current data basis consists of over 41,000 cancer cases.

Incidence of childhood cancers in Germany

About 1,800 cases are newly diagnosed every year in Germany. With an overall population of approx. 13 million children under the age of 15, this means an annual incidence of about 14 per 100,000 children in this age group. The likelihood that a newborn child will develop a malignant disease within the first 15 years of its life is 224:100,000 (0.2%). In other words, a malignant cancer disease is diagnosed in approx. one in 500 children up to their 15th birthday.

Range of diagnoses

The pattern of cancer diagnoses in children is completely different from that of adults. For example, children are mostly affected by embryonal tumours (neuroblastomas, retinoblastomas, nephroblastomas, medulloblastomas, embryonic rhabdomyosarcomas or germ-cell tumours); carcinomas, by contrast, are very rare in childhood (less than 2% of all malignant diseases). The largest diagnostic groups are leukaemias (34.1%), CNS tumours (22.1%) and lymphomas (11.8%).

Figure 4.1
Cancer in children
Determined for the period 1997–2006

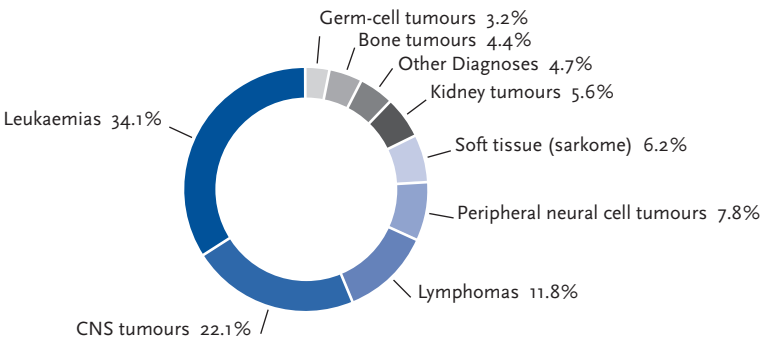
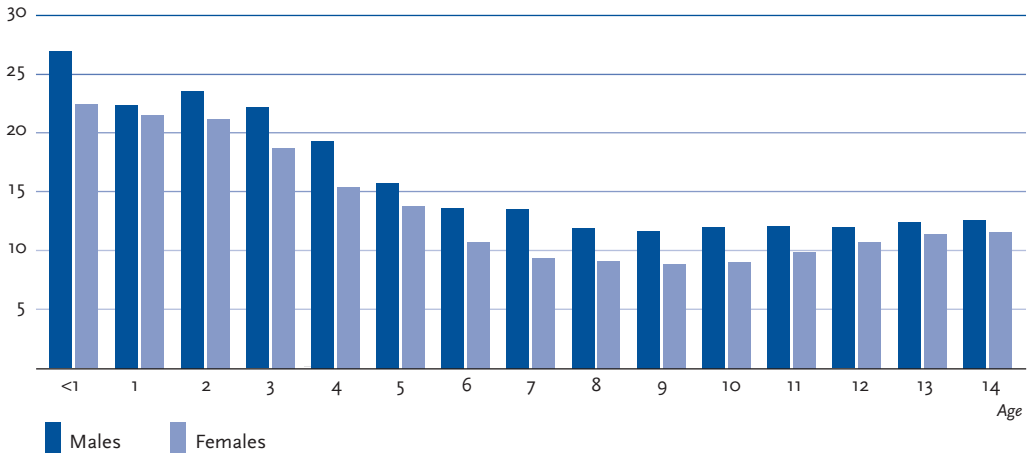


Figure 4.2
New cases by age and gender, all childhood malignancies
Number of cases per 100,000 by age group, determined for the period 1997–2006



Overall cancer incidence in children under the age of five is about twice as high as in the 5–14 age group. The median age at onset among the under-15s is at five years eight months. Boys are diagnosed with cancer 1.2 times more frequently than girls.

Leukaemias

Leukaemias make up more than a third of all cancers among the under-15s. The most common single diagnosis overall is acute lymphatic leukaemia (ALL, 27.0%). It occurs more than twice as frequently among children under the age of four as in the other age groups. 4.8% of all childhood malignancies are acute myeloid leukaemias (AML). AML is most common

Figure 4.3
New cases by age and gender, childhood acute lymphatic leukaemia (ALL)
Number of cases per 100,000 by age group, determined for the period 1997–2006

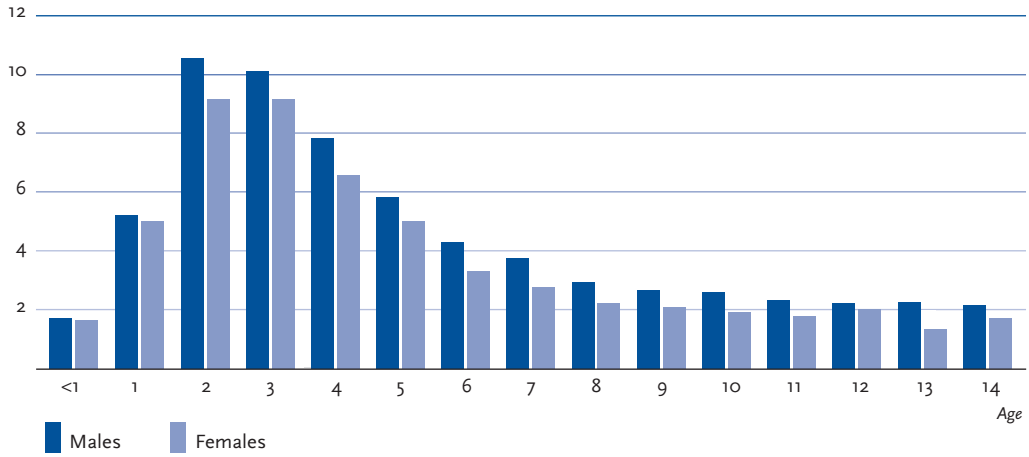


Figure 4.4
Trends in the incidence of selected diagnostic groups and for all childhood malignancies
Number of cases per 100,000 (age-standardized), including eastern Germany since 1991

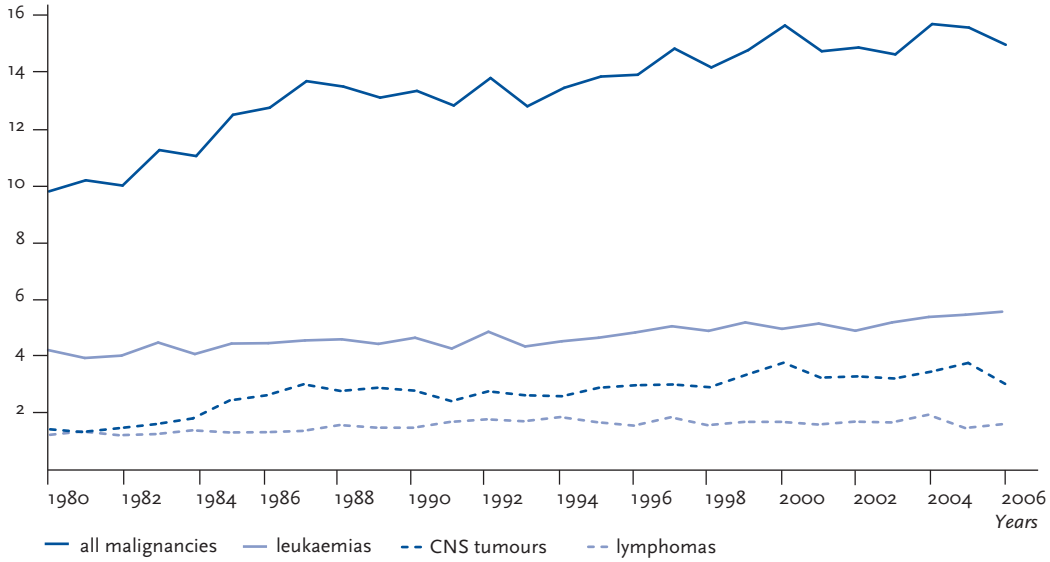
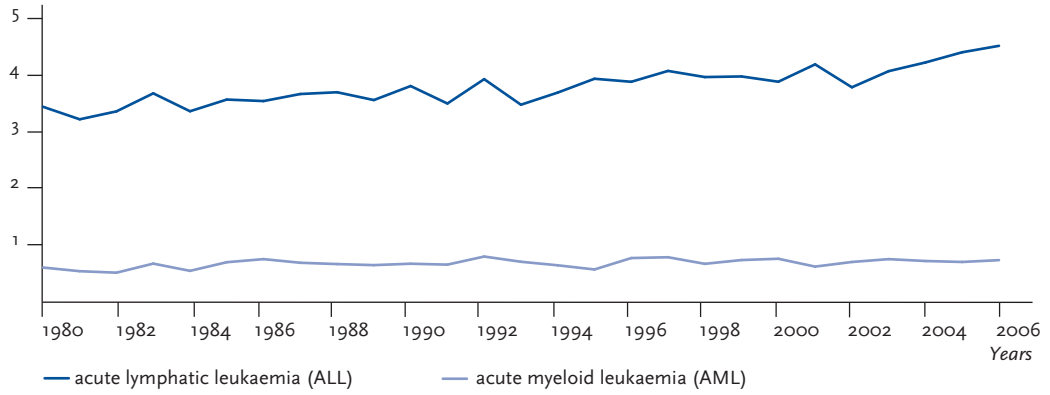


Figure 4.5
Trends in the incidence of childhood leukaemias
Number of cases per 100,000 (age-standardized), including eastern Germany since 1991



in children under the age of two. The survival rates for AML are markedly lower than for ALL. The causes of leukaemias in childhood remain largely uncertain, even today. For a long time environmental influences were suspected of causing childhood leukaemias. In the meantime it has been shown that the number of cases caused by most environmental factors (low-dose ionizing radiation, non-ionizing radiation and pesticides) is quite small after all, even if an association with leukaemias in childhood cannot be ruled out. A number of clues have in the meantime strengthened hypotheses that assign a central role to infectious pathogens in the development of leukaemias in childhood. Especially children with an insufficiently modulated immune system in babyhood can have a higher risk of developing leukaemia.

CNS tumours

The most common single diagnoses among CNS tumours are astrocytomas (total: 10.2%), intracranial and intraspinal embryonal tumours (5.0%) and ependymomas (2.2%). The increase in the incidence of CNS tumours observed in a number of western countries over the past decades may be connected with general changes in environmental factors and related exposure. For example, a number of epidemiological studies are looking into the possible influence of ionizing radiation, electromagnetic fields, pesticides, the mother's diet and genetic aspects.

Lymphomas

The most common lymphomas are non-Hodgkin lymphomas (NHL, total: 5.5%) and Hodgkin's disease (4.9%). The chances of survival with Hodgkin's disease are among the best in paediatric oncology. Children with congenital or acquired immunodeficiency and those who have had immunosuppressive therapy are at increased risk of developing NHL. An association is suspected between lymphomas and ionizing radiation; this has not, however, been substantiated.

Other common malignant diseases

Other common malignant diseases in childhood include neuroblastomas (nerve-cell tumours), Wilms' tumours or nephroblastomas (kidney tumours), germ-cell tumours, bone tumours and rhabdomyosarcomas (tumours of the skeletal musculature). Among these malignancies, the prognosis for children with nephroblastoma or a germ-cell tumour is much more favourable than for the others.

Survival

Children with cancer make up fewer than 1% of all cancer patients. However, malignant neoplasms are the second most common cause of death among children. Fortunately, the survival rates have improved dramatically over the last 30 years thanks to significantly more differentiated diagnostics and the use of multimodal therapy

Table 4.1
Number of cancer cases
Percentage incidence and survival rates, determined for the period 1997–2006

Cancer sites	Incidence*	Survival rate in percent		
		after 3 years	after 5 years	after 10 years
Hodgkin lymphomas	0.7	97	97	95
Germ-cell tumours	0.5	95	94	92
Lymphatic leukaemias	4.1	91	88	85
Nephroblastomas	0.9	91	90	89
Non-Hodgkin lymphomas	0.8	88	87	86
Neuroblastomas and ganglioneuroblastomas	1.3	83	78	75
Osteosarcomas	0.3	82	73	68
Astrocytomas	1.5	79	77	73
Rhabdomyosarcomas	0.5	78	74	71
Ewing's tumours & related bone sarcomas	0.3	74	69	65
Intracranial & intraspinal embryonal tumours	0.8	68	61	52
Acute myeloid leukaemias	0.7	65	62	60
All malignancies	15.0	84	81	77

* related to 100,000 children under the age of 15, age-standardized to the west German population in 1987

concepts. In the early 1980s the chances of children with cancer still being alive five years after diagnosis were 67%; this figure has risen to 80% in the meantime. Looking at all patients of the registry population who were diagnosed between 1997 and 2006 and followed up, the overall chance of survival is 81% after five years, 77% after ten years, and 76% after 15 years.

The encouraging increase in the number of long-term survivors is increasingly focusing attention on the long-term observation of former paediatric cancer patients. The DKKR provides an ideal data base for carrying out studies with long-term survivors. As the above figures show, it is already possible to provide information on long-term survival (after 5, 10 or 15 years) and to estimate the risk of developing a second malignancy after cancer in childhood. Examples of further research possibilities include the incidence of other long-term effects, such as the possible effects of therapy on fertility, and studies examining the health risks of the descendants of fathers and mothers who had cancer in childhood. About 12,000 of the more than 25,000 patients currently known to be alive have been under observation by the registry for at least twelve years. Over half of these patients are over 18 years old in the meantime, and are thus, in principle, available for studies with long-term survivors.

Literature on childhood cancer

Kaatsch P, Spix C (2008) German Childhood Cancer Registry – Annual Report 2006/2007 (1980-2006). Jahresbericht 2006/2007 (1980-2006) des Deutschen Kinderkrebsregisters. Institute of Medical Biostatistics, Epidemiology and Informatics, University of Mainz
www.kinderkrebsregister.de

Kaatsch P (2004) Das Deutsche Kinderkrebsregister im Umfeld günstiger Rahmenbedingungen (The German Childhood Cancer Registry against a background of favourable basic conditions). Bundesgesundheitsblatt (Federal Health Gazette) 47: 437-443

Creutzig U, Hentze G, Bielack S et al. (2003) Krebserkrankungen bei Kindern – Erfolg durch einheitliche Therapiekonzepte seit 25 Jahren (Cancers in children – 25 years of successful uniform therapy concepts). Deutsches Ärzteblatt (German Medical Journal) 100: A842–852

Spix C, Schüz J, Klein G et al. (2003) Epidemiologie solider Tumoren im Kindes- und Jugendalter (Epidemiology of solid tumours in childhood and adolescence). Kinder- und Jugendmedizin (Paediatric and Adolescent Medicine) 1: 4–12

Schüz J, Kaatsch P (2002) Epidemiology of paediatric tumors of the central nervous system. Expert Rev Neurotherapeutics 2: 469–479

Schüz J (2002) Leukämien im Kindesalter und die Rolle von Umwelteinflüssen bei deren Entstehung (Leukaemias in childhood and the role of environmental influences in their development). Umweltmed Forsch Prax 7: 309–320

Kaatsch P, Rickert C, Kühl J et al. (2001) Population-based epidemiological data of brain tumors in German children. Cancer 92: 3155–3164

Appendix

Association of Population-Based Cancer Registries in Germany

Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)

In April 2004 the "Arbeitsgemeinschaft Bevölkerungsbezogener Krebsregister in Deutschland" (Working Group of Population-based Cancer Registries in Germany) was turned into a registered, non-profit-making association: the "Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V." (Association of Population-based Cancer Registries in Germany), or GEKID.

The members of the GEKID include not only all Germany's population-based cancer registries, but also a tumour centre and interested scientists working in the field of cancer epidemiology. In the field of cancer control, the GEKID cooperates closely with the Federal Ministry of Health (BMG) and the Federal Cancer Surveillance Unit based at the Robert Koch Institute (RKI).

The newly formed association's primary task is to standardize as far as possible the content and methodology of cancer registration, despite the differences in legislation between the federal states. The comparability of results from the cancer registries can only be assured by nationwide cooperation. Furthermore, GEKID acts as a joint point of contact for all the population-based cancer registries on issues involving more than one (or all) states.

In its charter, the GEKID has set itself the following tasks:

- to be the point of contact both for national and international cooperation partners and for the interested public,
- to provide information on the status of cancer registration in Germany and to explain the aims of population-based cancer registration,
- to engage in joint information activities and thus help the individual cancer registries achieve and maintain complete registration,
- to define standards on content as a basis for the comparability of population-based cancer registries,
- to coordinate tasks involving all the registries and to foster contacts with clinical tumour documentation,
- to initiate joint research activities,
- to promote the scientific use of the population-based cancer registries, and
- to use the data for the purpose of quality assurance in oncological care.

Information on the GEKID can be obtained on the Internet at www.gekid.de, the respective regional member registries, and the Board of Directors (see address section).

Contacts for the Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V., GEKID) (see address section):

PD Dr Alexander Katalinic (Chair of GEKID, Schleswig-Holstein Cancer Registry)
Dr Stefan Hentschel (1st Vice-chair, Hamburg Cancer Registry)
Dr Bettina Eisinger (2nd Vice-chair, Joint Cancer Registry)

Addresses

Bevölkerungsbezogenes Krebsregister **Bayern** (Bavaria Population-based Cancer Registry)
Östliche Stadtmauerstrasse 30a
91054 Erlangen
Telephone: 09131/853 60 35 (R) Telefax: 09131/853 60 40 (R)
0911/378 67 38 (V) 0911/378 76 19 (V)
Email: krebsregister@ekr.med.uni-erlangen.de
Internet: www.krebsregister-bayern.de

Gemeinsames Krebsregister der Länder **Berlin, Brandenburg, Mecklenburg-Vorpommern, Sachsen-Anhalt** und der Freistaaten **Sachsen und Thüringen** (Joint Cancer Registry of Berlin, Brandenburg, Mecklenburg-Western Pomerania, Saxony-Anhalt, Saxony and Thuringia), GKR
Brodauer Strasse 16–22
12621 Berlin
Telephone: 030/56 58 14 01 (R) Telefax: 030/56 58 14 44 (R)
030/56 58 13 15 (V) 030/56 58 13 33 (V)
Email: registerstelle@gkr.berlin.de (R)
vertrauensstelle@gkr.berlin.de (V)
Internet: www.krebsregister-berlin.de

Krebsregister des Landes **Bremen** (Bremen Cancer Registry)
Bremer Institut für Präventionsforschung und Sozialmedizin
(Bremen Institute for Prevention Research and Social Medicine), BIPS
Linzer Strasse 10
28359 Bremen
Telephone: 0421/595 96 49 (R) Telefax: 0421/595 96 68 (R)
0421/595 96 44 (V)
Email: krebsregister@bips.uni-bremen.de (R)
vbkr.kvhb@t-online.de (V)
Internet: www.krebsregister.bremen.de

Hamburgisches Krebsregister (Hamburg Cancer Registry)
Behörde für Soziales, Familie, Gesundheit und Verbraucherschutz
(State Ministry of Social Affairs, Family, Health and Consumer Protection)
Billstrasse 80a
20539 Hamburg
Telephone: 040/428 37 22 11 Telefax: 040/428 37 26 55
Email: HamburgischesKrebsregister@bsg.hamburg.de
Internet: www.krebsregister.hamburg.de

Krebsregister **Hessen** (Hesse Cancer Registry)
Vertrauensstelle des Krebsregisters bei der Landesärztekammer Hessen
(Data Collection Office of the Cancer Registry at the Hesse State Medical Council)
Im Vogelsgesang 3
60488 Frankfurt/Main
Telephone: 02771/32 06 39 (R) Telefax: 02771/366 71 (R)
069/789 04 50 (V) 069/78 90 45 29 (V)
Email: vertrauensstelle@laekh.de
Internet: www.laekh.de

Epidemiologisches Krebsregister **Niedersachsen** (Lower Saxony Population-based Cancer Registry)
OFFIS CARE GmbH
Industriestrasse 9
26121 Oldenburg
Telephone: 0441/361 05 60 (R) Telefax: 0441/36 10 56 10 (R)
0511/450 53 56 (V) 0511/450 51 32 (V)
Email: registerstelle@krebsregister-niedersachsen.de (R)
vertrauensstelle.ekn@nlga.niedersachsen.de (V)
Internet: www.krebsregister-niedersachsen.de

Epidemiologisches Krebsregister **NRW** gGmbH
(North Rhine-Westphalia Population-based Cancer Registry)
Robert-Koch-Strasse 40
48149 Münster
Telephone: 0251/835 85 71 Telefax: 0251/835 85 77
Email: info@krebsregister.nrw.de
Internet: www.krebsregister.nrw.de

Krebsregister **Rheinland-Pfalz** (Rhineland-Palatinate Cancer Registry)
Institut für Medizinische Biometrie, Epidemiologie und Informatik
(Institute of Medical Biostatistics, Epidemiology and Informatics), IMBEI
55101 Mainz
Telephone: 06131/17 67 10 (R) Telefax: 06131/17 47 51 86 (R)
06131/17 30 02 (V) 06131/17 34 29 (V)
Email: krebsregister@imbei.uni-mainz.de
Internet: www.krebsregister-rheinland-pfalz.de

Epidemiologisches Krebsregister **Saarland** (Saarland Population-based Cancer Registry)
Ministerium für Justiz, Arbeit, Gesundheit und Soziales
(Ministry of Justice, Labour, Health and Social Affairs) MJAGS
Virchowstrasse 7
66119 Saarbrücken
Telephone: 0681/501 59 82 (R) Telefax: 0681/501 59 98 (R)
0681/501 58 05 (V)
Email: krebsregister@gbe-ekr.saarland.de
Internet: www.krebsregister.saarland.de

Krebsregister **Schleswig-Holstein** (Schleswig-Holstein Cancer Registry)
Institut für Krebsepidemiologie e.V. (Institute of Cancer Epidemiology)
Beckergrube 43 –47
23552 Lübeck
Telephone: 0451/799 25 50 (R) Telefax: 0451/799 25 51 (R)
04551/80 31 04 (V)
Email: info@krebsregister-sh.de
Internet: www.krebsregister-sh.de

Deutsches Kinderkrebsregister (German Childhood Cancer Registry)
Institut für Medizinische Biometrie, Epidemiologie und Informatik
(Institute of Medical Biostatistics, Epidemiology and Informatics), IMBEI
55101 Mainz
Telephone: 06131/17 31 11 Telefax: 06131/17 29 68
Email: kinderkrebsregister@imbei.uni-mainz.de
Internet: www.kinderkrebsregister.de

R = Registry Office (data analysis) V = Data Collection Office (confidentiality assured)

Further contacts:

Federal Cancer Surveillance Unit at the Robert Koch Institute
Seestrasse 10
13353 Berlin
Telephone: 030/18 754 33 10 Telefax: 030/18 754 35 13
Email: DachdokumentationKrebs@rki.de
Internet: www.rki.de

Bundesministerium für Gesundheit (Federal Ministry of Health)
53107 Bonn
Referat 311 Telephone: 0228/99 441 15 10 Telefax: 0228/99 441 49 31
Referat 315 Telephone: 0228/99 441 31 08 Telefax: 0228/99 441 49 38

Glossary

adenocarcinoma	malignant epithelial neoplasm (cancer) of the glandular epithelium (mucosa) (e.g. of the digestive tract)
adenoma	benign epithelial neoplasm of the glandular epithelium (e.g. of the digestive tract)
anaplastic	undifferentiated, so that the original tissue is no longer recognizable
asymptomatic	no symptoms and no abnormality detected
autosomal dominant inheritance pattern	sex-independent inheritance pattern in which a characteristic is expressed if one of the two existing genes is affected
Barrett's oesophagus	persistent defect after healing of a reflux disease (see below) in which the surface is transformed (from a squamous epithelium into a columnar epithelium)
carcinoma	malignant epithelial neoplasm (cancer)
case-control study	epidemiological study comparing certain characteristics in patients ("cases") and non-patients ("controls")
climacteric	concerning the menopause in women, phase of hormonal transition until menstruation stops
climacteric disorder	disorder during the menopause in women (e.g. hot flushes)
cluster	accumulation of events (e.g. of cancer cases) in a certain place or period
co-factors	factors that can increase the effect of a risk factor
cohort study	epidemiological study in which a certain group of people is observed over a longer period of time
colonoscopy	internal examination of the large intestine using an inserted endoscope
colorectal carcinoma	malignant epithelial neoplasm (cancer) of the colon and rectum
congenital naevus	mole (birthmark) present from birth
DCO	'death certificate only', i.e. based solely on information from the death certificate
diabetes mellitus	chronic disorder of carbohydrate metabolism
disposition	congenital or acquired susceptibility to diseases
dysplastic naevus	deformed, irregularly outlined and pigmented naevus with an uneven surface
embryonic period	16th to 60th day of pregnancy
endometrial	relating to the endometrium (lining of the uterus)
endometrial cancer	malignant neoplasm of the uterus lining
ependymoma	brain tumour of the glial cells which line cavities in the brain and spinal cord
epidemiological / population-based cancer registry	population-based cancer registry that collects data on all the cancer cases that occur in a certain population
epidemiology	science dealing with the description and analysis of diseases in a population
epithel(ium)	cell layers covering internal (e.g. lungs or intestines) and external (e.g. skin) body surfaces
evaluation	analysis and assessment of processes, e.g. in the field of health
exposure	being subjected to damaging influences (e.g. air pollution)
familial adenomatous polyposis (FAP)	inheritable colorectal disease in which the mucosal surface of the colon is covered with small adenomatous polyps
genetic predisposition	inherited tendency or susceptibility to certain diseases
incidence	frequency of cases, how often a disease is contracted (annual number of new cases per 100,000 of the population)
indicator	a factor that makes it possible to measure a certain condition or event (e.g. the completeness of registration)
intracranial	situated in the skull

intraspinal	situated in the spinal cord canal
invasive	proliferating into the surrounding tissue; a criterion of a malignant neoplasm
log-linear model	statistical method of analysis
long-term follow-up	long-term observation of a certain group of people
lymphocyte	blood cell of the immune system
malignant melanoma	malignant tumour of the pigment-forming cells (melanocytes) usually in the skin, the mucous membranes, the choroid of the inner eye or the meninges, which cover the brain
MALT lymphoma	mucosa associated lymphoid tissue: lymphoma that develops in lymphocyte-rich tissue (e.g. in the mucous membranes of the gastrointestinal tract)
mammography	X-ray examination of the female breast (mamma) used in screening for breast cancer (mastocarcinoma)
medullary thyroid carcinoma	carcinoma of the C-cells in the thyroid gland which produce excessive amounts of calcitonin (which regulate calcium levels in the blood)
Ménétrier's disease	disorder in which the gastric mucosal folds (gastric lining) are enlarged
metastasizing	intermittent propagation of tumours to distant tissues
mortality	death rate (annual number of deaths per 100,000 of the population)
neoplasm	tumour, new growth
obesity	corpulence, severe overweight
oncological	concerning cancer
PAP smear	microscopic examination of a smear taken from the mouth of the uterus used in cancer screening, named after Dr George PAPanicolaou
papillary	wart-shaped
pernicious anaemia	anaemia caused by a deficiency of cobalamin (vitamin B12)
polycyclic aromatic hydrocarbons	PAH, group of organic compounds consisting of at least two interconnected benzene rings
polycystic ovaries	enlarged ovaries containing several cavities filled with liquid (cysts)
polynomial	an algebraic expression consisting of one or more summed terms, each term consisting of a constant multiplier and one or more variables raised to integral powers.
postmenopause	time after the last menstruation (menopause)
postnatal	after birth
precancerous	defined potential preliminary stage of a carcinoma
PSA	prostate-specific antigen; a test for PSA in the blood is used in screening for prostate cancer
radon	radioactive inert gas formed by the radioactive decay of radium; can accumulate in badly ventilated rooms
reflux disease / refluxoesophagitis	backing up of the stomach contents into the oesophagus, leading to an inflammation of the mucous membrane
screening	mass examination of a population group to detect diseases using simple, non-stressful diagnostic methods
squamous-cell carcinoma	malignant epithelial neoplasm of superficial squamous cells (e.g. of the lung or the skin)
stomach polyps	protuberances (usually stalk-like swelling) of the stomach lining (gastric mucosa)
subfertility	reduced fertility or ability to conceive

References

Adami H-O, Hunter D, Trichopoulos D (Ed) (2002) Textbook of cancer epidemiology. Oxford, Oxford University Press

Becker, N (2004) Erfahrungen bei der wissenschaftlichen Nutzung von Krebsregisterdaten (Experience in the scientific use of cancer registry data). Bundesgesundheitsbl-Gesundheitsforsch-Gesundheitsschutz 47(5): 444–450

Berrino F, De Angelis R, Sant M et al. (2007) EURO¬CARE Working Group. Survival for eight major cancers and all cancers combined for European adults diagnosed in 1995–99: results of the EUROCARE-4 study. Lancet Oncol 8(9): 773–83

Brenner H, Stegmaier C, Ziegler H (2005) Long-term survival of cancer patients in Germany achieved by the beginning of the third millennium. Ann Oncol 16(6): 981–986

Curado MP, Edwards B, Shin HR et al. (2007) Cancer incidence in five continents. Vol. IX. IARC Scientific Publications no. 160. Lyon, IARC

Gondos A, Holleczek B, Arndt V et al. (2007) Trends in population-based cancer survival in Germany: to what extent does progress reach older patients? Annals of Oncology 18: 1253–1259

Haberland J, Schön D, Bertz J et al. (2003) Vollzähligkeitsschätzungen von Krebsregisterdaten in Deutschland (Estimates of the completeness of cancer registry data in Germany). Bundesgesundheitsbl-Gesundheitsforsch-Gesundheitsschutz 46: 770–774

Haberland J, Bertz J, Görsch B et al. (2001) Krebsinzidenzschätzungen für Deutschland mittels log-linearer Modelle (Cancer incidence estimates for Germany using log-linear models). Gesundheitswesen 63(8/9): 556–560

Katalinic A (2004) Epidemiologische Krebsregistrierung in Deutschland – Bestandsaufnahme und Perspektiven (Population-based cancer registration in Germany – appraisal and prospects. Bundesgesundheitsbl-Gesundheitsforsch-Gesundheitsschutz 47(5): 422–428

Katalinic A, Hense HW, Becker N (2006) Krebsregistrierung in Deutschland (Cancer registration in Germany). Der Onkologe 12(11): 1084–1093

Katalinic A, Rawal R (2007) Decline in breast cancer incidence after decrease in utilisation of hormone replacement therapy. Breast Cancer Res Treat, published electronically in advance

Lehnert M, Eberle A, Hentschel S et al. (2005) Das maligne Melanom der Haut in epidemiologischen Krebsregistern in Deutschland – Inzidenz, klinische Parameter, Variationen in der Erhebung (Malignant melanoma of the skin in population-based cancer registries in Germany – incidence, clinical parameters, variations in data acquisition). Gesundheitswesen 67(10): 729–735

Michaelis J (2000) Bewertung der Umsetzung des Bundeskrebsregistergesetzes und seiner langfristigen Folgen (Assessment of the implementation of the Federal Cancer Registry Act and its long-term consequences). Gesundheitswesen 62: 45–49

Parkin DM, Whelan SL, Ferlay J et al. (2002) Cancer incidence in five continents Vol. VIII., IARC Scientific Publication no. 155. Lyon

Schön D, Bertz J, Görsch B et al. (2004) Die Dachdokumentation Krebs – Eine Surveillance-Einrichtung der Krebsregistrierung in Deutschland (The Central Cancer Surveillance Programme – a surveillance institution for cancer registration in Germany). Bundesgesundheitsbl-Gesundheitsforsch-Gesundheitsschutz 47(5): 429–436

Stang A, Streller B, Katalinic A et al. (2005) Incidence of skin lymphoma in Germany. Ann Epidemiol: Epub Jul 2005

Stang A, Rusner C, Eisinger B et al. (2007) Subtype specific incidence of testicular cancer in Germany. A pooled analysis of nine population-based cancer registries. Int J Androl 30: 1–11

Urbschat I, Kieschke J, Schlanstedt-Jahn U et al. (2005) Beiträge bevölkerungsbezogener Krebsregister zur Evaluation des bundesweiten Mammographie-Screenings (Contributions of population-based cancer registries to the evaluation of nationwide mammography screening). Gesundheitswesen 67(7): 448–544

Verdecchia A, Francisci S, Brenner H et al. (2007) EURO¬CARE-4 Working Group. Recent cancer survival in Europe: a 2000-2002 period analysis of EURO¬CARE-4 data. Lancet Oncol 8(9): 784–96

Selected Internet addresses with health data on cancer

American Cancer Society	www.cancer.org
Robert Koch Institute	www.rki.de
Deutsche Krebsgesellschaft (German Cancer Society)	www.krebsgesellschaft.de
Deutsche Krebshilfe (German Cancer Aid)	www.krebshilfe.de
Deutsches Krebsforschungszentrum (German Cancer Research Centre)	www.dkfz-heidelberg.de
Gesellschaft der epidemiologischen Krebsregister in Deutschland (Association of Population-based Cancer Registries in Germany)	www.gekid.de
Gesundheitsberichterstattung des Bundes (Federal Health Reporting)	www.gbe-bund.de
International Agency for Research on Cancer	www.iarc.fr
Krebsinformationsdienst (Cancer Information Service)	www.krebsinformation.de
National Cancer Institute	www.cancer.gov
Statistisches Bundesamt (German Federal Statistical Office)	www.destatis.de

The brochure “Cancer in Germany” is published jointly every two years by the Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V., GEKID) and the Robert Koch Institute (RKI). This sixth edition has a new design and is being published for the first time as part of a series of reports within the framework of Federal Health Reporting (German abbreviation: GBE). It contains information on the total number of new cancer cases in Germany diagnosed between 1980 and 2004, and on selected individual cancer sites, each of which is succinctly described and clearly presented (with information on incidence and mortality rates, risk factors, trends and survival). The RKI’s current estimates are based on data from population-based cancer registries in Germany that provide sufficiently complete coverage. The estimate for 2004 is 436,500 new cancer cases (230,500 men, 206,000 women). This means the number of new cancer cases was approx. 12,000 higher in 2004 than in 2002, when the previous estimate ended. The total number of cases among women remained unchanged compared to 2002. Most of the additional cases in 2004 were men with prostate cancer, the most common cancer among men with approx. 58,500 cases. As in previous estimates, the most common form of cancer among women was breast cancer with approx. 57,000 new cases. A total of 208,800 people died of cancer in Germany in 2004 compared to 209,900 in 2002. The survival prospects of patients with prostate or breast cancer have improved to such an extent that the number of people dying from these cancers is now decreasing. 11,200 men died of prostate cancer and 17,600 women of breast cancer in 2004 – which is 200 fewer respectively than two years earlier. Information on cancer in children is provided by the Children’s Cancer Registry in Mainz in a separate section of this brochure.

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