

# Munich Cancer Registry



- ▶ Survival
- ▶ Selection Matrix
- ▶ Homepage
- ▶ *Deutsch*

## ICD-10 C00-C14: HN cancer

### Incidence and Mortality

Year of diagnosis	1998-2019
Patients	11,106
Diseases	11,528
Creation date	01/25/2021
Database export	01/07/2021
Population	4.92 m





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<https://www.tumorregister-muenchen.de/en>

<https://www.tumorregister-muenchen.de/en/facts/base/bC0014E-ICD-10-C00-C14-HN-cancer-incidence-and-mortality.pdf>

### Index of figures and tables

Fig./Tbl.		Page
1	Annual cases, DCO, mult. malignancies, follow-up / yr	5
2	Incidence by year of diagnosis	8
3	Age distribution parameters by year of diagnosis	9
4	Age distribution by 5-year age group and sex	12
5	Age-specific incidence, DCO rate, proportion malignancies	13
6	Age distribution and age-specific incidence (chart)	14
6a	Age-specific incidence internationally (chart)	15
7	Standardized incidence ratio of further malignancies	16
8a	Map of cancer incidence (BRD-S) by county (chart)	18
8b	Standardized incidence ratio (SIR) by county (chart)	19
9a	Pts incident cohorts and mortality / yr	20
9b	Incidence and mortality by year of diagnosis	21
9c	Cancer-related deaths, death certification available / yr	22
10	Medians of age at death / yr	23
11	Mortality by year of death	25
12	Distribution of age at death	27
13	Age-specific mortality	28
14	Further malignancies in deaths	29
15	Age-specific mortality (first primaries)	32
16	Age-specific mortality (single primaries)	33
17	Age distribution and age-specific mortality (chart)	34
18a	Map of cancer mortality (BRD-S) by county (chart)	35
18b	Standardized mortality ratio (SMR) by county (chart)	36

**Global Statements about the statistics on the Internet –  
Baseline Statistics** (grey button ) , **Survival** (red button )

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut<sup>#</sup>, with a total of 4.69 million inhabitants, account for the frequency of cancer diseases<sup>##</sup> and the achieved long term results. Additionally, the long term survival evaluated by the Munich Cancer Registry (MCR) is compared with the results of the population-based registry in the USA (SEER), which is useful for checking the consistency of the data on an international level.

In comparing several tables, inconsistent figures may be detected. This is based on the fact that different patient cohorts are included in the base calculation, for example when proportions of multiple tumors or DCO-cases<sup>###</sup> are concerned. In other cases the individual tumor diagnosis is the basis for calculation, for example with incidence.

The foot notes describe the currentness of the data. The baseline statistics and survival data are updated annually. This yearly analysis comprises the Annual Report of the MCR.

Clinics and physicians have access to essentially more detailed data, with which they can check, compare and in the best case optimize their own data and results.

We would be pleased to receive corrections, critique and useful suggestions. Just send an e-mail to [tumor@ibe.med.uni-muenchen.de](mailto:tumor@ibe.med.uni-muenchen.de).

Munich Cancer Registry, January 2021

<sup>#</sup> Base data has been collected since 1998. An increase in new diseases is apparent, which is an effect of two extensions in the MCR catchment area (from a base population of 2.65 million to 4.10 in 2002, and to 4.69 million in 2007).

<sup>##</sup> Due to the high frequency and good prognosis of non-malignant skin cancer (C44), no systematic ascertainment is performed for this diagnosis. C44 is not designated as a primary, but rather as a secondary tumor.

<sup>###</sup> DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate.

### **Some remarks regarding this cancer type**

As a general rule, these few results from the TRM form the basis of sophisticated analyses. For head and neck tumors this is not the case. Therefore the results for head and neck tumors should be interpreted with caution. In part this is due to problems of classification because of limited specific details of locality. Additionally, with advanced tumors in a close topographic location it is often not possible to determine the exact ICD localization of a tumor.

**ICD-10 codes (ICD-10 2016) used for specifying cancer site**

Code	Description
C00.-	Malignant neoplasm of lip
C01	Malignant neoplasm of base of tongue
C02.-	Malignant neoplasm of other and unspecified parts of tongue
C03.-	Malignant neoplasm of gum
C04.-	Malignant neoplasm of floor of mouth
C05.-	Malignant neoplasm of palate
C06.-	Malignant neoplasm of other and unspecified parts of mouth
C07	Malignant neoplasm of parotid gland
C08.-	Malignant neoplasm of other and unspecified major salivary glands
C09.-	Malignant neoplasm of tonsil
C10.-	Malignant neoplasm of oropharynx
C11.-	Malignant neoplasm of nasopharynx
C12	Malignant neoplasm of piriform sinus
C13.-	Malignant neoplasm of hypopharynx
C14.-	Malignant neoplasm of other and ill-defined sites in the lip, oral cavity and pharynx

## INCIDENCE

Table 1

Cases with invasive cancer by year of diagnosis, proportions of DCO, further malignancies, deaths, and active follow-up (ALL PATIENTS) (incl. DCO)

Year of diagnosis	All cases n	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	355	20	5.6	10.7	16.5	84.8	99.2
1999	385	18	4.7	12.3	16.4	83.1	96.9
2000	346	18	5.2	11.9	16.2	83.8	97.7
2001	360	26	7.2	12.4	16.1	81.9	96.9
2002	558	39	7.0	13.4	15.8	81.2	97.8 #
2003	570	25	4.4	14.1	15.5	80.5	98.6
2004	545	26	4.8	14.1	14.9	78.5	98.5
2005	572	27	4.7	14.6	14.6	75.0	96.9
2006	554	13	2.3	14.7	14.1	75.8	95.5
2007	674	41	6.1	14.7	13.7	72.7	95.0 #
2008	705	24	3.4	15.0	13.2	71.2	98.6
2009	697	14	2.0	15.6	12.6	71.0	97.6
2010	740	34	4.6	15.8	11.9	64.6	97.8
2011	658	29	4.4	16.3	10.9	61.4	97.9
2012	663	31	4.7	16.6	10.2	59.6	98.2
2013	704	23	3.3	16.8	9.7	57.7	98.0
2014	613	26	4.2	17.2	9.1	58.4	96.1
2015	607	21	3.5	17.4	8.7	51.2	97.2
2016	485	19	3.9	17.8	8.9	49.9	99.6
2017	360	18	5.0	18.3	8.0	40.0	99.7
2018	220	10	4.5	18.5	5.9	32.7	98.6
2019	157	1	0.6	18.6	4.0	22.9	77.7 ##
1998-2019	11528	503	4.4	18.6	16.5	67.0	97.4

11,528 cases diagnosed 1998-2019 are related to a total of 11,106 patients. Currently, in 3,582 (32.3 %) of these 11,106 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 2,704 / 627 / 251 (24.3 % / 5.6 % / 2.3 %) patients exist having 2 / 3 / 4+ malignancies.

# The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

## Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 360 cases has been diagnosed, of which 18.3 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 8.0 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

Cases with invasive cancer by year of diagnosis, proportions of DCO, further malignancies, deaths, and active follow-up (MALES) (incl. DCO)

Year of diagnosis	Males n	Males %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	268	75.5	13	4.9	10.4	16.7	86.9	98.9
1999	277	71.9	10	3.6	11.9	16.6	85.9	97.5
2000	263	76.0	12	4.6	11.6	16.4	85.2	98.5
2001	267	74.2	17	6.4	12.3	16.3	83.9	97.4
2002	409	73.3	29	7.1	13.2	16.0	82.4	98.0 #
2003	421	73.9	17	4.0	14.3	15.6	82.9	99.3
2004	415	76.1	17	4.1	14.5	15.0	78.6	98.3
2005	423	74.0	18	4.3	14.8	14.7	75.9	97.2
2006	394	71.1	10	2.5	14.8	14.2	81.7	95.9
2007	498	73.9	27	5.4	14.9	13.9	76.3	96.0 #
2008	512	72.6	17	3.3	15.3	13.3	71.3	99.0
2009	500	71.7	9	1.8	15.7	12.7	74.0	97.4
2010	544	73.5	23	4.2	16.1	11.8	66.4	98.3
2011	468	71.1	19	4.1	16.6	10.9	65.2	97.9
2012	464	70.0	19	4.1	16.8	9.9	62.5	98.7
2013	493	70.0	14	2.8	16.9	9.2	60.4	98.4
2014	455	74.2	19	4.2	17.3	8.4	62.0	97.1
2015	411	67.7	14	3.4	17.6	7.9	52.8	97.3
2016	353	72.8	14	4.0	18.0	8.2	51.0	99.7
2017	263	73.1	12	4.6	18.4	7.4	41.8	99.6
2018	147	66.8	6	4.1	18.6	4.6	36.7	98.6
2019	103	65.6			18.8	4.1	27.2	76.7 ##
1998-2019	8348	72.4	336	4.0	18.8	16.7	69.6	97.7

8,348 cases diagnosed 1998-2019 are related to a total of 8,027 patients. Currently, in 2,616 (32.6 %) of these 8,027 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,955 / 466 / 195 (24.4 % / 5.8 % / 2.4 %) patients exist having 2 / 3 / 4+ malignancies.

# The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

## Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 263 cases has been diagnosed, of which 18.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 7.4 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1b

Cases with invasive cancer by year of diagnosis, proportions of DCO, further malignancies, deaths, and active follow-up (FEMALES) (incl. DCO)

Year of diagnosis	Females n	Females %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	87	24.5	7	8.0	11.5	16.1	78.2	100.0
1999	108	28.1	8	7.4	13.3	16.0	75.9	95.4
2000	83	24.0	6	7.2	12.6	15.9	79.5	95.2
2001	93	25.8	9	9.7	12.9	15.6	76.3	95.7
2002	149	26.7	10	6.7	14.0	15.3	77.9	97.3 #
2003	149	26.1	8	5.4	13.5	15.1	73.8	96.6
2004	130	23.9	9	6.9	13.0	14.5	78.5	99.2
2005	149	26.0	9	6.0	13.9	14.2	72.5	96.0
2006	160	28.9	3	1.9	14.3	13.7	61.3	94.4
2007	176	26.1	14	8.0	14.0	13.3	62.5	92.0 #
2008	193	27.4	7	3.6	14.2	13.0	71.0	97.4
2009	197	28.3	5	2.5	15.2	12.4	63.5	98.0
2010	196	26.5	11	5.6	15.0	12.0	59.7	96.4
2011	190	28.9	10	5.3	15.7	11.1	52.1	97.9
2012	199	30.0	12	6.0	16.1	11.0	52.8	97.0
2013	211	30.0	9	4.3	16.4	10.9	51.2	97.2
2014	158	25.8	7	4.4	16.7	10.8	48.1	93.0
2015	196	32.3	7	3.6	16.9	10.4	48.0	96.9
2016	132	27.2	5	3.8	17.3	10.5	47.0	99.2
2017	97	26.9	6	6.2	18.0	9.3	35.1	100.0
2018	73	33.2	4	5.5	18.3	8.3	24.7	98.6
2019	54	34.4	1	1.9	18.3	3.8	14.8	79.6 ##
1998–2019	3180	27.6	167	5.3	18.3	16.1	60.2	96.4

3,180 cases diagnosed 1998-2019 are related to a total of 3,079 patients. Currently, in 966 (31.4 %) of these 3,079 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 749 / 161 / 56 (24.3 % / 5.2 % / 1.8 %) patients exist having 2 / 3 / 4+ malignancies.

# The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

## Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 97 cases has been diagnosed, of which 18.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 9.3 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis including DCO cases  
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,  
and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	268	87	24.2	7.4	16.3	4.0	21.9	5.6	24.2	6.6
1999	277	108	24.7	9.1	16.1	5.2	22.4	7.1	24.8	8.0
2000	263	83	23.1	6.9	15.3	4.0	21.1	5.5	23.5	6.3
2001	267	93	23.0	7.6	15.1	4.3	20.7	6.0	23.2	6.7
2002	409	149	22.0	7.6	14.2	4.0	19.4	5.7	21.3	6.6
2003	421	149	22.5	7.6	14.7	4.2	20.3	5.8	22.0	6.7
2004	415	130	22.1	6.6	14.1	3.3	19.3	4.7	21.7	5.7
2005	423	149	22.3	7.5	14.2	4.2	19.2	5.8	21.4	6.6
2006	394	160	20.6	8.0	12.9	4.7	18.0	6.4	20.4	7.2
2007	498	176	22.5	7.6	13.8	4.2	19.1	5.8	21.5	6.6
2008	512	193	23.0	8.3	14.2	4.4	19.5	6.1	22.0	7.0
2009	500	197	22.4	8.5	13.4	4.6	18.6	6.3	21.0	7.3
2010	544	196	24.1	8.4	14.5	4.5	20.0	6.1	22.5	7.0
2011	468	190	20.9	8.1	12.0	4.4	16.8	6.1	19.2	6.9
2012	464	199	20.4	8.4	11.9	4.4	16.4	6.1	18.7	7.1
2013	493	211	21.4	8.9	12.5	4.5	17.3	6.2	19.6	7.1
2014	455	158	19.5	6.6	11.3	3.4	15.6	4.7	17.8	5.4
2015	411	196	17.3	8.1	9.7	4.3	13.6	5.9	15.7	6.8
2016	353	132	14.7	5.4	8.3	2.6	11.6	3.6	13.4	4.3
2017	263	97	10.9	3.9	5.6	1.9	8.1	2.7	9.7	3.2
2018	147	73	6.0	2.9	3.2	1.7	4.6	2.3	5.4	2.5
2019	103	54	4.2	2.2	2.2	1.1	3.2	1.5	3.8	1.8
1998-2019	8348	3180	18.9	6.9	11.4	3.7	15.7	5.1	17.7	5.9

The computation of the incidence measures includes all cancers, irrespective of first or subsequent malignancy.



Table 3

Age distribution parameters by year of diagnosis (ALL PATIENTS)  
(incl. DCO)

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	355	59.1	12.6	0.9	97.4	46.2	51.8	58.1	66.0	76.0
1999	385	60.4	12.5	13.9	95.7	47.9	52.0	58.8	66.8	78.6
2000	346	59.9	11.6	31.0	91.9	46.0	51.6	58.6	67.5	76.4
2001	360	61.1	12.4	16.4	96.4	47.4	53.0	60.1	68.0	77.2
2002	558	61.4	11.9	26.4	99.0	47.0	53.6	60.8	68.2	78.6
2003	570	60.6	11.8	10.7	98.2	46.6	53.1	59.5	67.9	76.8
2004	545	61.7	12.4	24.7	97.9	45.8	53.8	61.3	69.4	78.9
2005	572	61.3	12.1	4.1	103	46.7	53.5	61.1	67.6	77.7
2006	554	61.4	12.5	17.6	101	46.8	53.4	60.1	69.2	77.8
2007	674	62.3	12.3	7.7	101	47.2	53.7	62.4	70.4	77.6
2008	705	63.4	11.6	19.8	100	49.4	55.4	62.7	69.6	79.3
2009	697	63.1	12.2	16.6	98.4	48.1	55.0	62.8	70.8	79.9
2010	740	62.5	12.9	18.2	95.3	47.0	53.6	62.7	70.7	78.7
2011	658	63.7	12.7	14.4	96.9	48.6	55.1	63.9	72.0	79.7
2012	663	63.7	11.9	21.5	100	49.0	55.3	63.8	72.3	78.5
2013	704	64.4	12.5	10.0	95.5	50.1	56.0	64.2	72.5	80.0
2014	613	63.9	12.0	16.8	93.7	48.6	56.3	63.8	72.0	79.1
2015	607	64.4	11.7	19.0	96.0	50.3	55.9	64.0	72.9	80.4
2016	485	65.7	12.5	15.0	93.0	51.3	57.8	66.0	74.6	80.9
2017	360	67.1	12.3	17.1	96.5	52.5	58.4	67.2	76.0	81.9
2018	220	65.1	11.9	17.7	92.6	50.4	58.0	65.0	74.1	80.1
2019	157	66.3	11.8	19.5	99.0	53.2	59.1	66.3	74.2	81.5
1998-2019	11528	62.8	12.3	0.9	103	48.0	54.5	62.3	70.8	79.1

Table 3a

Age distribution parameters by year of diagnosis (MALES)  
(incl. DCO)

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	268	57.6	11.2	0.9	87.6	46.0	51.3	57.3	63.8	71.0
1999	277	59.1	11.3	32.0	90.8	47.9	51.4	57.6	64.3	75.2
2000	263	59.4	10.5	35.6	89.7	47.5	51.7	58.4	66.5	73.6
2001	267	59.6	11.3	28.7	94.9	46.4	51.9	59.5	65.4	74.5
2002	409	59.8	10.4	26.4	96.8	46.6	53.0	59.9	65.3	73.0
2003	421	59.5	10.0	28.1	94.5	47.3	53.1	58.9	65.6	72.7
2004	415	60.3	11.4	26.7	92.4	45.5	53.1	60.2	66.3	75.5
2005	423	60.4	11.4	4.1	99.0	46.6	53.4	61.0	67.0	74.3
2006	394	61.1	11.3	17.6	92.0	47.2	53.8	59.8	67.7	76.9
2007	498	61.5	11.3	15.7	101	47.2	53.2	61.5	69.5	75.7
2008	512	62.4	10.8	19.8	100	49.3	54.8	62.1	68.9	76.8
2009	500	62.6	11.0	16.6	90.7	48.4	55.1	62.8	70.1	76.5
2010	544	61.8	12.4	18.2	95.3	46.9	53.4	61.4	70.0	76.6
2011	468	63.3	12.1	14.4	95.5	48.4	54.2	63.2	71.3	78.4
2012	464	62.9	11.0	21.6	94.3	49.2	54.8	62.5	70.8	77.3
2013	493	63.3	11.4	10.0	93.9	50.3	55.9	63.4	70.9	77.7
2014	455	63.5	11.1	25.6	93.5	48.7	56.2	63.0	71.0	77.5
2015	411	64.0	11.1	28.5	94.6	50.3	55.8	63.5	71.9	78.9
2016	353	64.8	11.7	15.0	91.6	51.5	57.4	64.9	72.9	77.9
2017	263	67.2	11.7	17.1	96.1	53.2	59.0	67.3	76.0	81.1
2018	147	65.9	11.7	27.8	92.6	51.4	58.3	65.6	75.1	80.4
2019	103	66.2	11.4	32.9	87.0	52.8	59.1	66.1	74.4	80.9
1998-2019	8348	62.0	11.4	0.9	101	48.0	54.1	61.6	69.6	77.1

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)  
(incl. DCO)

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	87	63.9	15.2	9.5	97.4	49.6	54.5	61.8	75.9	83.1
1999	108	63.7	14.7	13.9	95.7	47.8	54.7	64.2	74.1	82.4
2000	83	61.5	14.5	31.0	91.9	44.4	51.1	59.6	74.0	80.7
2001	93	65.3	14.5	16.4	96.4	50.2	56.4	63.3	72.9	87.8
2002	149	65.8	14.2	31.4	99.0	48.1	55.5	63.5	77.3	84.2
2003	149	63.7	15.3	10.7	98.2	44.8	53.7	63.1	76.1	83.8
2004	130	66.4	14.1	24.7	97.9	48.9	57.0	67.2	76.8	83.3
2005	149	63.9	13.6	22.8	103	49.0	54.5	62.3	72.1	81.5
2006	160	62.1	15.0	19.0	101	45.7	52.3	61.7	71.4	83.6
2007	176	64.3	14.6	7.7	98.2	46.5	55.2	63.6	74.6	84.3
2008	193	66.0	13.4	25.6	98.4	50.7	57.5	65.7	74.1	83.6
2009	197	64.4	14.8	16.8	98.4	47.4	54.8	63.6	75.1	83.6
2010	196	64.5	14.1	21.9	91.8	47.4	54.0	65.9	72.7	85.0
2011	190	64.7	14.0	17.2	96.9	48.9	56.5	64.7	73.1	84.0
2012	199	65.6	13.7	21.5	100	48.4	57.4	65.1	73.8	82.9
2013	211	66.9	14.6	12.1	95.5	47.8	56.5	67.4	77.1	87.7
2014	158	65.1	14.4	16.8	93.7	47.8	56.8	66.1	74.7	84.0
2015	196	65.1	12.9	19.0	96.0	50.1	55.9	64.9	74.3	82.9
2016	132	68.1	14.3	22.6	93.0	48.1	59.3	69.1	78.1	86.7
2017	97	67.0	13.9	34.7	96.5	49.7	57.5	66.2	76.6	85.4
2018	73	63.5	12.3	17.7	92.0	48.2	57.7	64.8	69.9	76.6
2019	54	66.5	12.6	19.5	99.0	54.6	59.1	66.3	73.3	82.3
1998-2019	3180	65.0	14.2	7.7	103	47.9	55.7	64.8	74.9	83.7

Table 4

Age distribution by 5-year age group and sex for period 2007-2019  
(incl. DCO)

Age at diagnosis Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9	2	0.0	0.0	1	0.0	0.0	1	0.0	0.0
10-14	3	0.0	0.1	2	0.0	0.1	1	0.0	0.1
15-19	13	0.2	0.2	6	0.1	0.2	7	0.3	0.4
20-24	13	0.2	0.4	8	0.2	0.3	5	0.2	0.7
25-29	32	0.4	0.9	17	0.3	0.7	15	0.7	1.4
30-34	46	0.6	1.5	24	0.5	1.1	22	1.1	2.5
35-39	65	0.9	2.4	37	0.7	1.8	28	1.4	3.8
40-44	190	2.6	5.0	130	2.5	4.3	60	2.9	6.7
45-49	482	6.6	11.6	369	7.1	11.4	113	5.5	12.2
50-54	841	11.5	23.2	647	12.4	23.8	194	9.4	21.5
55-59	1067	14.7	37.8	804	15.4	39.2	263	12.7	34.2
60-64	1159	15.9	53.7	868	16.7	55.9	291	14.0	48.3
65-69	1145	15.7	69.4	833	16.0	71.9	312	15.1	63.3
70-74	904	12.4	81.9	647	12.4	84.3	257	12.4	75.7
75-79	632	8.7	90.5	450	8.6	92.9	182	8.8	84.5
80-84	368	5.1	95.6	225	4.3	97.3	143	6.9	91.4
85+	321	4.4	100.0	143	2.7	100.0	178	8.6	100.0
All ages	7283	100.0		5211	100.0		2072	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers  
for period 2007–2019

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males DCO rate n=190 %	Females DCO rate n=96 %	Males	Females
							Prop.all cancers n=143063 %	Prop.all cancers n=144724 %
0- 4								
5- 9	1	1	0.1	0.1			0.9	1.1
10-14	2	1	0.1	0.1			1.5	0.9
15-19	6	7	0.4	0.5			2.0	2.8
20-24	8	5	0.4	0.3			1.4	1.1
25-29	17	15	0.8	0.7			1.9	1.4
30-34	24	22	1.1	1.0			2.0	1.1
35-39	36	28	1.7	1.3		3.6	2.1	0.9
40-44	127	60	5.4	2.7	1.6	1.7	4.9	1.0
45-49	358	111	14.3	4.6	1.1		7.5	1.3
50-54	636	189	27.1	8.2	1.6	1.6	8.1	1.6
55-59	788	258	40.5	12.9	2.4	2.7	6.7	2.1
60-64	853	285	52.3	16.2	2.7	2.5	5.2	2.0
65-69	818	305	53.8	18.1	3.4	1.6	3.6	1.7
70-74	639	255	45.6	15.9	5.3	3.1	2.5	1.4
75-79	448	180	40.5	13.1	4.9	3.3	2.0	1.0
80-84	222	141	33.8	14.5	7.2	9.2	1.6	1.0
85+	143	177	33.5	18.3	22.4	25.4	1.5	1.1
All ages	5126	2040			3.7	4.7	3.6	1.4
Incidence								
Raw			17.0	6.6				
WS			9.8	3.4				
ES			13.7	4.7				
BRD-S			15.6	5.4				

The age-specific incidence characterizes the disease risk in a particular age group. The age distribution depends on the patient population frequency in each age group and reflects the tangible clinical picture of everyday patients care (see following chart).

ICD-10 C00-C14: Malignant neoplasms of lip, oral cavity and pharynx

Age distribution and age-specific incidence 2007 - 2019 (Males: 5126, Females: 2040)

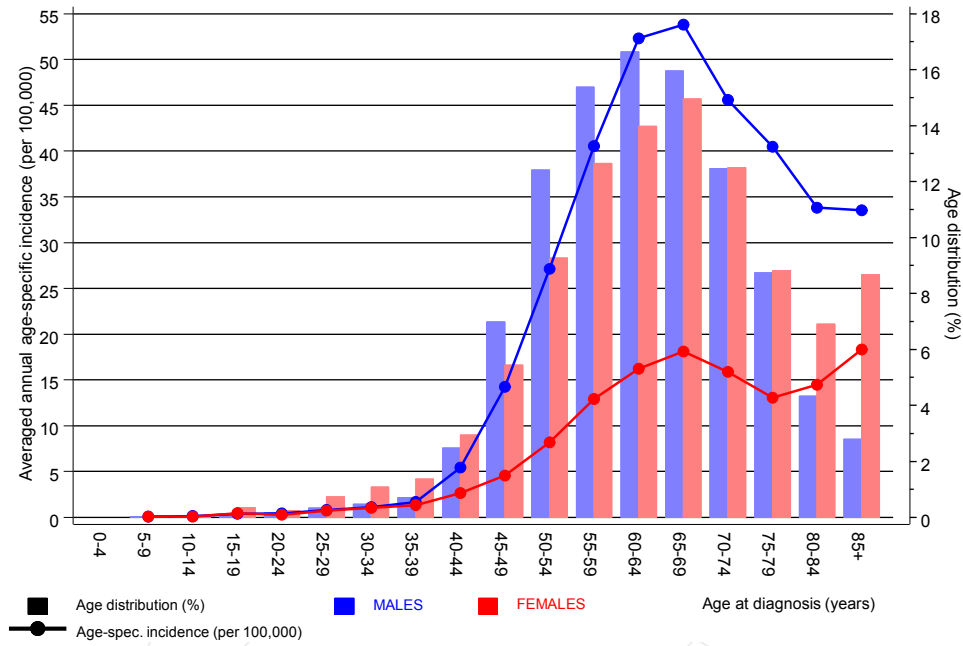
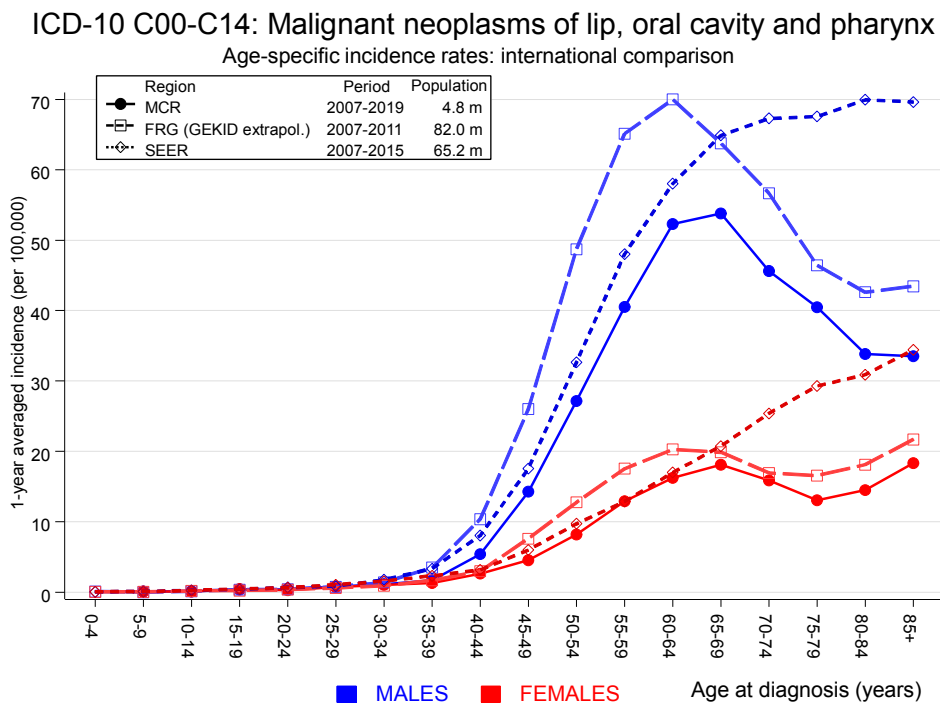


Figure 6. Age distribution (males: mean=63.3 yrs, median=63.3 yrs; females: mean=65.5 yrs, median=65.8 yrs) and age-specific incidence.



**Figure 6a.** Age-specific incidence in MCR registry areas compared to Germany (FRG, GEKID extrapolation) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Extrapolated age-specific patient population of Germany, data status middle of 2010. Association of Population-based Cancer Registries in Germany (GEKID e.V.). Berlin, 2014. <http://www.gekid.de>. Last access: 02/11/2015  
 Surveillance, Epidemiology, and End Results (SEER) Program SEER\*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2019, based on the November 2018 submission. <http://www.seer.cancer.gov>.

Table 7a

Standardized incidence ratio (SIR, with 95% confidence limits),  
excess absolute risk (EAR) and DCO rate of further malignancies  
for period 1998–2019

## MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C00 Lip	6	0.3	17.7	6.5	38.6 #	2.1	
C03–C06 Oral cavity	102	3.8	27.1	22.1	32.9 #	37.0	5.9
C07–C08 Salivary gland	4	0.7	5.6	1.5	14.4 #	1.2	
C09–C10 Oropharynx	105	4.8	21.7	17.7	26.3 #	37.7	1.0
C11 Nasopharynx	8	0.3	25.6	11.1	50.5 #	2.9	12.5
C12–C13 Hypopharynx	87	2.6	33.6	26.9	41.4 #	31.8	10.3
C14 ENT cancer	4	0.1	46.5	12.7	119.0 #	1.5	100.0
C15 Oesophagus	175	7.5	23.4	20.1	27.2 #	63.1	12.0
C16 Stomach	35	12.3	2.8	2.0	4.0 #	8.6	11.4
C17 Small intestine	4	2.1	1.9	0.5	4.9	0.7	50.0
C18 Colon	78	29.8	2.6	2.1	3.3 #	18.1	5.1
C19–C20 Rectum	39	18.7	2.1	1.5	2.8 #	7.6	
C21 Anus/canal	7	0.9	7.8	3.1	16.1 #	2.3	
C22 Liver	48	9.9	4.9	3.6	6.4 #	14.4	12.5
C23–C24 Bile	5	3.3	1.5	0.5	3.6	0.7	40.0
C25 Pancreas	37	12.4	3.0	2.1	4.1 #	9.3	18.9
C30–C31 Sinuses	7	0.7	10.5	4.2	21.7 #	2.4	14.3
C32 Larynx	92	4.0	23.1	18.7	28.4 #	33.2	25.0
C33–C34 Lung	391	40.9	9.6	8.6	10.6 #	131.9	11.0
C43 Malign. melanoma	34	15.7	2.2	1.5	3.0 #	6.9	8.8
C46,C49 Soft tissue	9	1.9	4.7	2.2	9.0 #	2.7	11.1
C61 Prostate	120	94.9	1.3	1.0	1.5 #	9.5	6.7
C64 Kidney	36	12.3	2.9	2.0	4.0 #	8.9	5.6
C65 Renal pelvis	3	1.3	2.2	0.5	6.5	0.6	
C67 Bladder	41	13.6	3.0	2.2	4.1 #	10.3	7.3
C70–C72 CNS cancer	5	4.7	1.1	0.3	2.5	0.1	
C73 Thyroid	13	2.9	4.5	2.4	7.8 #	3.8	7.7
C76–C79 CUP	24	5.5	4.4	2.8	6.5 #	7.0	
C81 Hodgkin lymphoma	5	0.9	5.7	1.8	13.2 #	1.6	40.0
C82–C85 NHL	34	13.7	2.5	1.7	3.5 #	7.6	8.8
C90 Mult. myeloma	3	4.2	0.7	0.1	2.1	-0.4	
C91–C96 Leukaemia	11	4.6	2.4	1.2	4.3 #	2.4	36.4
Others, specified	16	7.3	2.2	1.3	3.6 #	3.3	
Not observed	0	1.8	0.0	0.0	2.1	-0.7	
All further malignancies	1588	340.3	4.7	4.4	4.9 #	470.1	10.1
Patients		7739					
Median age at next malignancy (years)		65.7					
Person-years		26542					
Mean observation time (years)		3.4					
Median observation time (years)		1.8					

# The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 to 2 are pooled in category "Others, specified".



Table 7b

Standardized incidence ratio (SIR, with 95% confidence limits),  
excess absolute risk (EAR) and DCO rate of further malignancies  
for period 1998-2019

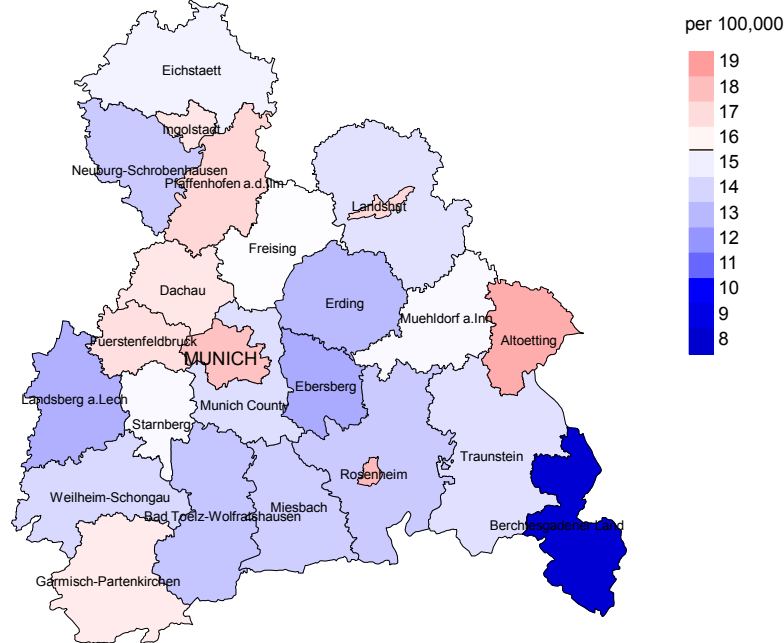
## FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	27	0.7	37.1	24.5	54.0 #	23.1	
C07-C08 Salivary gland	2	0.2	10.9	1.3	39.2 #	1.6	
C09-C10 Oropharynx	41	0.6	74.1	53.2	100.5 #	35.5	
C11 Nasopharynx	3	0.0	73.2	15.1	213.8 #	2.6	
C12-C13 Hypopharynx	21	0.1	143.9	89.1	219.9 #	18.3	19.0
C14 ENT cancer	4	0.0	223.5	60.9	572.2 #	3.5	75.0
C15 Oesophagus	42	0.8	53.1	38.3	71.8 #	36.2	7.1
C16 Stomach	9	3.8	2.4	1.1	4.5 #	4.5	11.1
C18 Colon	21	10.9	1.9	1.2	3.0 #	8.9	
C19-C20 Rectum	10	4.6	2.2	1.0	4.0 #	4.7	
C21 Anus/canal	2	0.7	3.0	0.4	10.8	1.2	
C22 Liver	13	1.4	9.2	4.9	15.8 #	10.2	7.7
C23-C24 Bile	4	1.6	2.6	0.7	6.5	2.1	
C25 Pancreas	12	5.2	2.3	1.2	4.0 #	6.0	25.0
C30-C31 Sinuses	6	0.2	36.4	13.3	79.1 #	5.1	33.3
C32 Larynx	20	0.2	87.2	53.3	134.7 #	17.4	15.0
C33-C34 Lung	109	9.2	11.9	9.7	14.3 #	87.7	17.4
C43 Malign. melanoma	9	4.6	2.0	0.9	3.8	3.9	11.1
C50 Breast	67	37.4	1.8	1.4	2.3 #	26.0	4.5
C51 Vulva	8	1.2	6.7	2.9	13.3 #	6.0	
C53 Cervix uteri	11	1.6	6.7	3.4	12.0 #	8.2	18.2
C54 Corpus uteri	8	6.6	1.2	0.5	2.4	1.2	
C56 Ovary	11	4.7	2.3	1.2	4.1 #	5.5	9.1
C64 Kidney	5	2.7	1.9	0.6	4.3	2.0	20.0
C65 Renal pelvis	2	0.4	5.7	0.7	20.6	1.4	
C67 Bladder	5	2.2	2.3	0.7	5.3	2.5	40.0
C70-C72 CNS cancer	5	1.5	3.2	1.1	7.6 #	3.0	40.0
C73 Thyroid	9	2.1	4.2	1.9	8.0 #	6.0	22.2
C76-C79 CUP	8	2.1	3.9	1.7	7.6 #	5.2	
C82-C85 NHL	17	4.5	3.8	2.2	6.1 #	11.0	
C90 Mult. myeloma	3	1.4	2.1	0.4	6.3	1.4	33.3
C91-C96 Leukaemia	7	1.7	4.2	1.7	8.7 #	4.7	14.3
Others, specified	9	2.0	4.6	2.1	8.7 #	6.2	
Not observed	0	2.1	0.0	0.0	1.8	-1.8	
All further malignancies	530	118.9	4.5	4.1	4.9 #	361.2	10.4
Patients		2917					
Median age at next malignancy (years)		67.7					
Person-years		11380					
Mean observation time (years)		3.9					
Median observation time (years)		2.4					

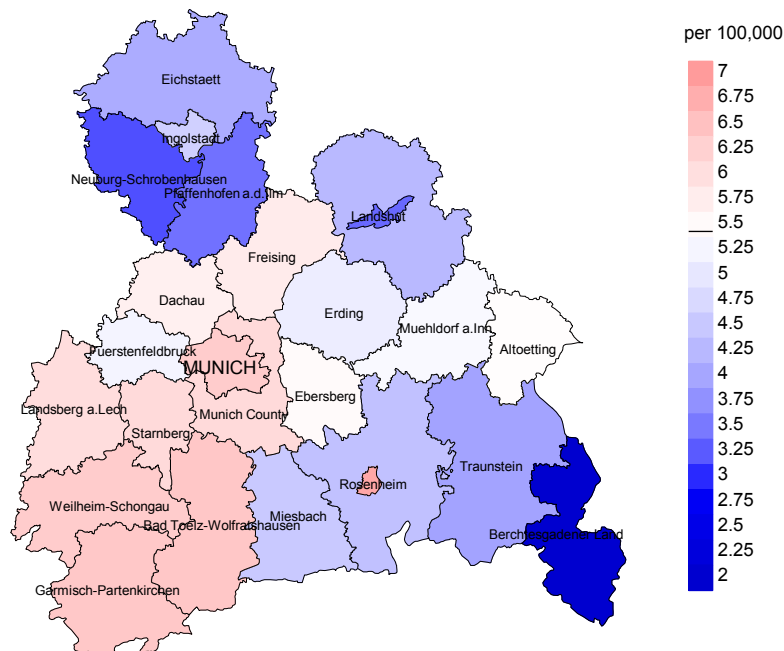
# The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 are pooled in category "Others, specified".

Average incidence (Germany 1987 standard population) 2007 - 2019: Males



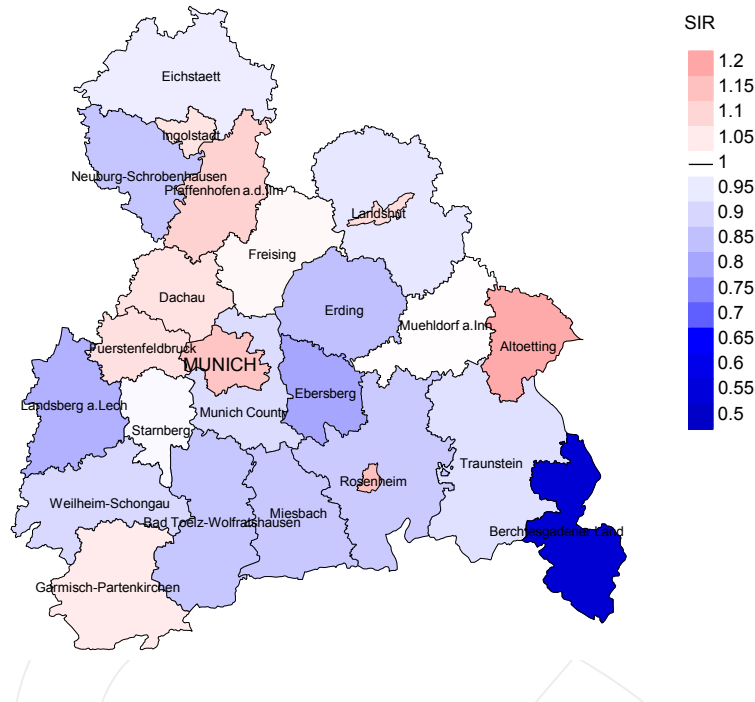
Average incidence (Germany 1987 standard population) 2007 - 2019: Females



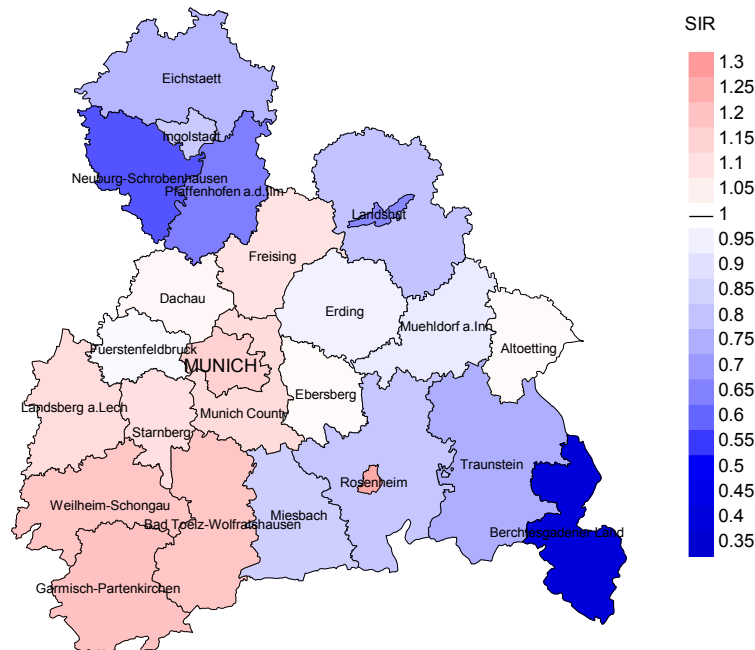
**Figure 8a.** Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 15.6/100,000 WS N=5,126, females 5.4/100,000 WS N=2,040).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 57 women were identified with newly diagnosed HN cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 5.5/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 3.8 and 7.7/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females



**Figure 8b.** Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=5,126, females N=2,040).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 57 women were identified with newly diagnosed HN cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.01. Though, the value of this parameter may vary with an underlying probability of 99% between 0.70 and 1.41, and is therefore not statistically striking.

## MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	355	99.2	5.6	301	84.8	95.3
1999	385	96.9	4.7	320	83.1	89.7
2000	346	97.7	5.2	290	83.8	95.5
2001	360	96.9	7.2	295	81.9	94.9
2002	558	97.8	7.0	453	81.2	95.4
2003	570	98.6	4.4	459	80.5	96.3
2004	545	98.5	4.8	428	78.5	94.4
2005	572	96.9	4.7	429	75.0	96.7
2006	554	95.5	2.3	420	75.8	94.0
2007	674	95.0	6.1	490	72.7	95.1
2008	705	98.6	3.4	502	71.2	94.8
2009	697	97.6	2.0	495	71.0	94.7
2010	740	97.8	4.6	478	64.6	95.0
2011	658	97.9	4.4	404	61.4	92.8
2012	663	98.2	4.7	395	59.6	91.4
2013	704	98.0	3.3	406	57.7	93.3
2014	613	96.1	4.2	358	58.4	93.3
2015	607	97.2	3.5	311	51.2	90.4
2016	485	99.6	3.9	242	49.9	83.5
2017	360	99.7	5.0	144	40.0	61.1
2018	220	98.6	4.5	72	32.7	61.1
2019	157	77.7	0.6	36	22.9	80.6
1998-2019	11528	97.4	4.4	7728	67.0	92.9

Table 9b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased within the same year of being diagnosed with cancer (incl. DCO)

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	355	236	91.5	56	15.8
1999	385	243	89.3	58	15.1
2000	346	252	93.7	50	14.5
2001	360	277	91.0	64	17.8
2002	558	376	97.6	87	15.6
2003	570	396	96.2	86	15.1
2004	545	408	96.6	95	17.4
2005	572	377	97.3	84	14.7
2006	554	426	96.7	85	15.3
2007	674	468	97.4	103	15.3
2008	705	438	98.6	97	13.8
2009	697	483	98.6	88	12.6
2010	740	486	99.0	103	13.9
2011	658	479	97.7	93	14.1
2012	663	509	97.2	94	14.2
2013	704	501	98.4	108	15.3
2014	613	485	97.7	105	17.1
2015	607	501	98.8	90	14.8
2016	485	471	99.2	98	20.2
2017	360	431	95.6	56	15.6
2018	220	294	33.3	29	13.2
2019	157	271	49.1	23	14.6
1998–2019	11528	8808	93.3	1752	15.2

Table 9c

Annual cohorts of deaths, proportion of cancer-related and non-cancer-related deaths, and cancer recorded on death certificates  
(incl. DCO)

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,  
and from 4.10 to 4.92 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	236	73.3	26.7	90.3
1999	243	67.9	32.1	86.2
2000	252	77.0	23.0	89.4
2001	277	75.8	24.2	89.3
2002	376	77.9	22.1	90.5
2003	396	77.0	23.0	87.1
2004	408	80.4	19.6	91.9
2005	377	82.2	17.8	91.0
2006	426	77.7	22.3	87.1
2007	468	78.8	21.2	88.8
2008	438	79.0	21.0	87.3
2009	483	79.3	20.7	89.7
2010	486	79.8	20.2	89.8
2011	479	74.3	25.7	84.8
2012	509	77.6	22.4	87.7
2013	501	76.8	23.2	87.6
2014	485	75.9	24.1	87.1
2015	501	73.7	26.3	85.7
2016	471	73.0	27.0	81.8
2017	431	70.5	29.5	80.8
2018	294	40.8	59.2	73.5
2019	271	37.6	62.4	85.0
1998–2019	8808	74.2	25.8	87.3

Table 10a

Medians of age at death according to the grouping in Table 9  
MALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	172	60.5	59.0	63.7	60.6
1999	186	58.9	58.1	62.6	57.9
2000	193	61.6	61.2	65.7	61.7
2001	216	60.5	60.2	63.8	60.5
2002	293	61.7	61.3	66.5	61.4
2003	306	63.2	62.6	67.8	62.9
2004	314	62.4	61.2	66.0	62.0
2005	269	64.2	63.7	71.8	64.0
2006	324	64.0	62.9	67.1	63.8
2007	370	64.8	63.4	69.9	63.9
2008	327	66.1	65.0	68.8	65.7
2009	355	66.2	65.2	70.8	65.3
2010	374	66.0	64.3	70.8	64.7
2011	371	68.4	66.2	71.6	66.7
2012	376	68.9	68.8	71.1	68.6
2013	353	67.8	66.1	71.6	66.6
2014	367	69.7	68.2	74.9	69.1
2015	362	68.4	67.4	72.1	67.7
2016	330	69.8	67.2	75.0	67.9
2017	318	71.2	69.8	73.8	70.4
2018	218	71.7	68.5	72.5	73.1
2019	194	72.6	70.4	73.4	70.1
1998-2019	6588	65.9	64.5	70.8	65.0

Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.

Table 10b

Medians of age at death according to the grouping in Table 9  
FEMALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	64	72.2	68.3	77.7	71.7
1999	57	72.7	63.9	79.2	64.9
2000	59	64.0	61.0	77.4	65.8
2001	61	70.4	68.0	72.5	68.0
2002	83	71.9	71.0	77.5	71.9
2003	90	69.7	64.7	77.2	66.2
2004	94	73.7	73.7	74.5	73.7
2005	108	68.8	64.6	84.6	66.4
2006	102	72.0	68.4	81.7	68.9
2007	98	72.8	69.3	84.4	69.4
2008	111	69.2	67.8	78.1	68.0
2009	128	70.3	68.5	81.7	69.6
2010	112	70.8	67.5	82.0	68.2
2011	108	72.3	69.8	82.3	70.1
2012	133	72.5	69.7	82.9	71.4
2013	148	74.0	70.8	83.2	71.8
2014	118	75.8	71.7	79.5	73.0
2015	139	71.7	71.0	73.5	71.1
2016	141	75.3	72.8	84.2	72.8
2017	113	76.6	72.9	82.4	73.1
2018	76	73.3	71.7	74.4	73.0
2019	77	74.7	74.1	74.8	74.7
1998-2019	2220	72.6	69.5	79.4	70.5

By 2018, Bavarians' life expectancy at birth is estimated at 79.3 years for boys and 83.8 years for girls.

Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.



Table 11a

Mortality measures (cancer-related death) and mortality-incidence-index by year of death  
 MALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	129	11.6	0.48	7.6	0.48	10.5	0.48	12.0	0.50
1999	135	12.1	0.50	7.7	0.49	10.8	0.49	12.3	0.50
2000	147	12.9	0.56	8.0	0.52	11.6	0.55	14.0	0.59
2001	166	14.3	0.64	9.3	0.63	13.0	0.64	14.7	0.65
2002	235	12.6	0.58	7.9	0.56	11.1	0.58	12.8	0.61
2003	243	13.0	0.59	7.9	0.55	11.2	0.57	12.9	0.60
2004	254	13.5	0.62	8.4	0.61	11.8	0.62	13.4	0.63
2005	226	11.9	0.54	7.0	0.50	9.9	0.52	11.6	0.55
2006	260	13.6	0.67	8.2	0.65	11.5	0.65	13.2	0.65
2007	296	13.4	0.60	7.9	0.58	11.2	0.60	13.0	0.61
2008	269	12.1	0.53	7.0	0.50	9.9	0.52	11.6	0.53
2009	291	13.0	0.59	7.4	0.56	10.5	0.58	12.3	0.60
2010	303	13.4	0.57	7.6	0.54	11.0	0.56	12.7	0.58
2011	283	12.6	0.62	6.9	0.59	10.0	0.61	11.7	0.62
2012	292	12.9	0.64	6.7	0.57	9.7	0.60	11.8	0.64
2013	275	11.9	0.56	6.4	0.52	9.2	0.54	10.9	0.56
2014	292	12.5	0.65	6.5	0.59	9.3	0.61	11.2	0.64
2015	268	11.3	0.66	5.9	0.61	8.5	0.63	10.2	0.66
2016	242	10.1	0.69	5.3	0.65	7.6	0.67	9.2	0.69
2017	228	9.4	0.88	4.6	0.83	6.8	0.85	8.4	0.87
2018	97	4.0	0.66	2.0	0.63	2.9	0.64	3.6	0.66
2019	72	3.0	0.71	1.4	0.63	2.1	0.66	2.6	0.70
1998-2019	5003	11.3	0.61	6.4	0.57	9.1	0.59	10.7	0.61

Table 11b

Mortality measures (cancer-related death) and mortality-incidence-index  
by year of death  
FEMALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	44	3.7	0.51	1.7	0.44	2.6	0.46	3.3	0.50
1999	30	2.5	0.28	1.3	0.25	1.9	0.26	2.2	0.28
2000	47	3.9	0.57	2.1	0.53	3.0	0.55	3.4	0.55
2001	44	3.6	0.47	1.7	0.40	2.5	0.41	3.0	0.45
2002	59	3.0	0.40	1.5	0.37	2.1	0.38	2.6	0.39
2003	64	3.2	0.43	1.7	0.40	2.4	0.42	2.9	0.43
2004	74	3.7	0.57	1.6	0.49	2.4	0.51	3.0	0.54
2005	84	4.2	0.57	2.1	0.52	3.1	0.55	3.6	0.56
2006	72	3.6	0.46	1.6	0.34	2.3	0.37	2.8	0.40
2007	73	3.2	0.42	1.4	0.35	2.1	0.37	2.5	0.40
2008	77	3.3	0.40	1.6	0.38	2.3	0.39	2.7	0.39
2009	93	4.0	0.48	1.9	0.42	2.8	0.44	3.2	0.45
2010	85	3.6	0.45	1.8	0.41	2.6	0.43	3.0	0.45
2011	75	3.2	0.40	1.4	0.33	2.1	0.34	2.4	0.35
2012	103	4.4	0.53	2.0	0.45	2.8	0.47	3.4	0.49
2013	110	4.6	0.53	2.0	0.45	2.9	0.47	3.5	0.50
2014	78	3.2	0.49	1.4	0.40	2.0	0.42	2.4	0.45
2015	101	4.2	0.53	1.8	0.43	2.6	0.45	3.2	0.48
2016	102	4.2	0.77	1.6	0.63	2.4	0.67	3.1	0.72
2017	77	3.1	0.82	1.2	0.66	1.8	0.69	2.3	0.74
2018	23	0.9	0.32	0.4	0.25	0.6	0.27	0.7	0.30
2019	32	1.3	0.60	0.5	0.45	0.7	0.49	0.9	0.53
1998-2019	1547	3.4	0.49	1.5	0.42	2.2	0.44	2.7	0.46

Table 12

Age distribution of age at death (cancer-related) for period 2007-2019  
(incl. multiple malignancies)

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24	4	0.1	0.1	3	0.1	0.1	1	0.1	0.1
25-29	3	0.1	0.2	1	0.0	0.1	2	0.2	0.3
30-34	5	0.1	0.3	2	0.1	0.2	3	0.3	0.6
35-39	10	0.2	0.5	5	0.2	0.3	5	0.5	1.1
40-44	51	1.2	1.7	41	1.3	1.6	10	1.0	2.0
45-49	158	3.7	5.5	128	4.0	5.6	30	2.9	5.0
50-54	358	8.4	13.9	304	9.5	15.1	54	5.2	10.2
55-59	571	13.5	27.4	469	14.6	29.7	102	9.9	20.1
60-64	618	14.6	42.0	488	15.2	44.9	130	12.6	32.8
65-69	725	17.1	59.1	555	17.3	62.2	170	16.5	49.3
70-74	643	15.2	74.3	497	15.5	77.7	146	14.2	63.5
75-79	494	11.7	85.9	381	11.9	89.6	113	11.0	74.4
80-84	295	7.0	92.9	201	6.3	95.9	94	9.1	83.6
85+	302	7.1	100.0	133	4.1	100.0	169	16.4	100.0
All ages	4237	100.0		3208	100.0		1029	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers  
for period 2007-2019  
(incl. multiple malignancies)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24	3	1	0.2	0.38	0.1	0.20	4.5	2.6
25-29	1	2	0.0	0.06	0.1	0.13	1.2	2.2
30-34	2	3	0.1	0.08	0.1	0.14	1.6	1.9
35-39	5	5	0.2	0.14	0.2	0.18	2.1	1.4
40-44	41	10	1.8	0.32	0.4	0.17	7.2	1.2
45-49	128	30	5.1	0.36	1.2	0.27	9.5	1.9
50-54	304	54	13.0	0.48	2.3	0.29	12.1	2.2
55-59	469	102	24.1	0.60	5.1	0.40	11.4	2.9
60-64	488	130	29.9	0.57	7.4	0.46	8.2	2.8
65-69	555	170	36.5	0.68	10.1	0.56	6.5	2.6
70-74	497	146	35.5	0.78	9.1	0.57	4.5	1.8
75-79	381	113	34.4	0.85	8.2	0.63	3.3	1.3
80-84	201	94	30.6	0.91	9.7	0.67	2.1	1.1
85+	133	169	31.2	0.93	17.5	0.95	1.6	1.5
All ages	3208	1029					5.0	1.8
Mortality								
Raw			10.6	0.63	3.3	0.50		
WS			5.7	0.58	1.5	0.42		
ES			8.2	0.60	2.1	0.45		
BRD-S			9.7	0.63	2.5	0.47		
PYLL-70								
per 100,000			77.8		19.0			
ES			66.4		15.8			
AYLL-70			10.4		9.8			

Table 14a

Further malignancies in deaths in period 1998–2019  
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C00 Lip	7	0.3	5	71.4	1	14.3	1	14.3
C03–C06 Oral cavity	134	5.2	87	64.9	24	17.9	23	17.2
C09–C10 Oropharynx	139	5.4	76	54.7	36	25.9	27	19.4
C11 Nasopharynx	6	0.2	5	83.3			1	16.7
C12–C13 Hypopharynx	70	2.7	49	70.0	14	20.0	7	10.0
C15 Oesophagus	247	9.6	48	19.4	44	17.8	155	62.8
C16 Stomach	50	2.0	13	26.0	3	6.0	34	68.0
C17 Small intestine	9	0.4	7	77.8			2	22.2
C18 Colon	86	3.4	34	39.5	4	4.7	48	55.8
C19–C20 Rectum	70	2.7	21	30.0	5	7.1	44	62.9
C21 Anus/canal	8	0.3	5	62.5	1	12.5	2	25.0
C22 Liver	69	2.7	9	13.0	8	11.6	52	75.4
C23–C24 Bile	6	0.2	2	33.3			4	66.7
C25 Pancreas	51	2.0	6	11.8	1	2.0	44	86.3
C30–C31 Sinuses	18	0.7	7	38.9	2	11.1	9	50.0
C32 Larynx	172	6.7	85	49.4	34	19.8	53	30.8
C33–C34 Lung	550	21.5	77	14.0	65	11.8	408	74.2
C38,C45 Mesothelioma	6	0.2	1	16.7			5	83.3
C43 Malign. melanoma	41	1.6	18	43.9	4	9.8	19	46.3
C44 Skin others	265	10.3	103	38.9	35	13.2	127	47.9
C46,C49 Soft tissue	14	0.5	7	50.0			7	50.0
C50 Breast	4	0.2	3	75.0			1	25.0
C61 Prostate	185	7.2	110	59.5	10	5.4	65	35.1
C62 Testis	13	0.5	12	92.3			1	7.7
C64 Kidney	52	2.0	24	46.2	5	9.6	23	44.2
C65 Renal pelvis	10	0.4	3	30.0			7	70.0
C67 Bladder	69	2.7	30	43.5	1	1.4	38	55.1
C70–C72 CNS cancer	10	0.4	1	10.0			9	90.0
C73 Thyroid	16	0.6	7	43.8	3	18.8	6	37.5
C76–C79 CUP	69	2.7	38	55.1	8	11.6	23	33.3
C81 Hodgkin lymphoma	12	0.5	6	50.0			6	50.0
C82–C85 NHL	60	2.3	32	53.3	10	16.7	18	30.0
C90 Mult. myeloma	5	0.2	4	80.0			1	20.0
C91–C96 Leukaemia	19	0.7	7	36.8	1	5.3	11	57.9
Others, specified	20	0.8	12	60.0	1	5.0	7	35.0
All further malignancies	2562	100.0	954	37.2	320	12.5	1288	50.3

Further malignancies with number of cases 1 to 3 are pooled in category “Others, specified”.

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a further malignancy.

Table 14b

Further malignancies in deaths in period 1998-2019  
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C00 Lip	1	0.1			1	100.0		
C03-C06 Oral cavity	59	7.6	35	59.3	8	13.6	16	27.1
C07-C08 Salivary gland	1	0.1	1	100.0				
C09-C10 Oropharynx	32	4.1	16	50.0	11	34.4	5	15.6
C11 Nasopharynx	1	0.1	1	100.0				
C12-C13 Hypopharynx	6	0.8	2	33.3	2	33.3	2	33.3
C15 Oesophagus	55	7.0	6	10.9	9	16.4	40	72.7
C16 Stomach	19	2.4	5	26.3	4	21.1	10	52.6
C18 Colon	36	4.6	15	41.7	2	5.6	19	52.8
C19-C20 Rectum	13	1.7	5	38.5			8	61.5
C21 Anus/canal	6	0.8	2	33.3			4	66.7
C22 Liver	11	1.4	1	9.1	3	27.3	7	63.6
C23-C24 Bile	4	0.5					4	100.0
C25 Pancreas	15	1.9	1	6.7	1	6.7	13	86.7
C26 GI cancer	3	0.4			1	33.3	2	66.7
C30 Middle/inner ear	1	0.1					1	100.0
C30-C31 Sinuses	11	1.4	4	36.4			7	63.6
C32 Larynx	30	3.8	11	36.7	7	23.3	12	40.0
C33-C34 Lung	127	16.3	7	5.5	10	7.9	110	86.6
C40-C41 Bone	1	0.1					1	100.0
C43 Malign. melanoma	10	1.3	3	30.0	1	10.0	6	60.0
C44 Skin others	50	6.4	18	36.0	4	8.0	28	56.0
C46,C49 Soft tissue	1	0.1					1	100.0
C50 Breast	129	16.5	81	62.8	10	7.8	38	29.5
C51 Vulva	6	0.8	1	16.7			5	83.3
C52 Vagina	2	0.3	1	50.0			1	50.0
C53 Cervix uteri	25	3.2	16	64.0			9	36.0
C54 Corpus uteri	17	2.2	13	76.5	1	5.9	3	17.6
C55,C57 Fem. genitals un	1	0.1	1	100.0				
C56 Ovary	14	1.8	7	50.0			7	50.0
C64 Kidney	8	1.0	2	25.0	1	12.5	5	62.5
C65 Renal pelvis	1	0.1					1	100.0
C67 Bladder	8	1.0	4	50.0			4	50.0
C68 Urethra	1	0.1	1	100.0				
C69 Eye carcinoma	1	0.1	1	100.0				
C70-C72 CNS cancer	4	0.5			1	25.0	3	75.0
C73 Thyroid	11	1.4	7	63.6	1	9.1	3	27.3
C76-C79 CUP	21	2.7	11	52.4			10	47.6
C81 Hodgkin lymphoma	1	0.1					1	100.0
C82-C85 NHL	26	3.3	11	42.3	2	7.7	13	50.0
C90 Mult. myeloma	5	0.6	2	40.0			3	60.0

Table 14b

Further malignancies in deaths in period 1998-2019  
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C91-C96 Leukaemia	7	0.9	2	28.6			5	71.4
All further malignancies	781	100.0	294	37.6	80	10.2	407	52.1

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a further malignancy.

Table 15

Age-specific mortality (cancer-related) and proportion of all cancers  
for period 2007-2019  
(**First primaries only \***)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Females Age- spec. mortal.	Males MI-index	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24	3	1	0.2	0.43	0.1	0.20	5.0	2.7
25-29	1	2	0.0	0.06	0.1	0.15	1.3	2.3
30-34	2	3	0.1	0.09	0.1	0.16	1.6	2.2
35-39	3	2	0.1	0.09	0.1	0.10	1.3	0.6
40-44	37	10	1.6	0.31	0.4	0.17	7.0	1.4
45-49	105	26	4.2	0.33	1.1	0.27	8.6	1.9
50-54	253	43	10.8	0.46	1.9	0.26	11.4	2.1
55-59	383	84	19.7	0.61	4.2	0.41	10.7	2.8
60-64	380	98	23.3	0.57	5.6	0.45	7.6	2.6
65-69	423	136	27.8	0.69	8.1	0.59	6.2	2.6
70-74	370	109	26.4	0.84	6.8	0.60	4.4	1.7
75-79	268	79	24.2	0.94	5.7	0.63	3.2	1.1
80-84	125	67	19.0	0.98	6.9	0.66	1.8	1.0
85+	85	129	19.9	1.04	13.4	0.92	1.4	1.5
All ages	2438	789					4.9	1.7
Mortality								
Raw			8.1	0.62	2.5	0.50		
WS			4.4	0.57	1.1	0.41		
ES			6.3	0.60	1.6	0.44		
BRD-S			7.4	0.62	2.0	0.46		
PYLL-70								
per 100,000			63.5		15.5			
ES			54.2		12.8			
AYLL-70			10.6		10.0			

\* See corresponding tables with multiple malignancies.



Table 16

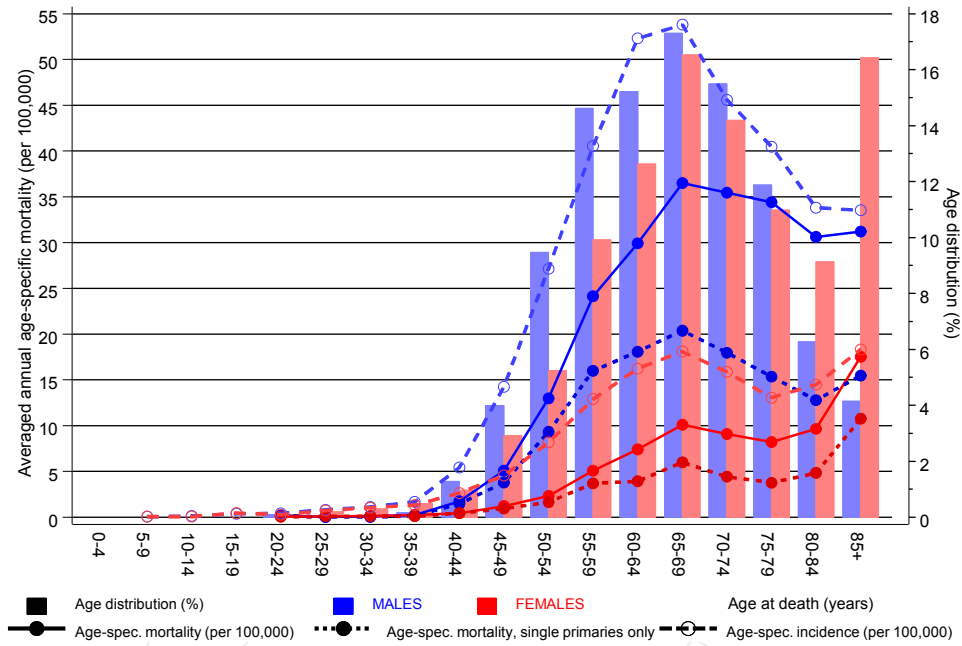
Age-specific mortality (cancer-related) and proportion of all cancers  
for period 2007-2019  
(**Single primaries only** \*)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24	3	1	0.2	0.50	0.1	0.20	5.0	2.8
25-29	1	2	0.0	0.07	0.1	0.17	1.3	2.4
30-34	1	2	0.0	0.05	0.1	0.11	0.8	1.5
35-39	3	2	0.1	0.10	0.1	0.11	1.3	0.6
40-44	34	10	1.5	0.34	0.4	0.19	6.5	1.4
45-49	95	23	3.8	0.34	0.9	0.26	7.8	1.7
50-54	219	38	9.3	0.45	1.6	0.27	10.0	1.9
55-59	311	74	16.0	0.56	3.7	0.44	8.8	2.5
60-64	295	69	18.1	0.51	3.9	0.36	6.0	1.9
65-69	310	101	20.4	0.61	6.0	0.51	4.6	2.0
70-74	252	71	18.0	0.71	4.4	0.46	3.1	1.2
75-79	170	52	15.4	0.69	3.8	0.49	2.1	0.8
80-84	84	47	12.8	0.76	4.8	0.51	1.3	0.7
85+	66	104	15.5	0.89	10.8	0.80	1.2	1.3
All ages	1844	596					3.9	1.4
Mortality								
Raw			6.1	0.55	1.9	0.43		
WS			3.4	0.51	0.9	0.36		
ES			4.9	0.53	1.3	0.38		
BRD-S			5.6	0.54	1.5	0.40		
PYLL-70								
per 100,000			53.1		13.1			
ES			45.3		10.9			
AYLL-70			11.1		10.6			

\* See corresponding tables with multiple malignancies.

ICD-10 C00-C14: Malignant neoplasms of lip, oral cavity and pharynx

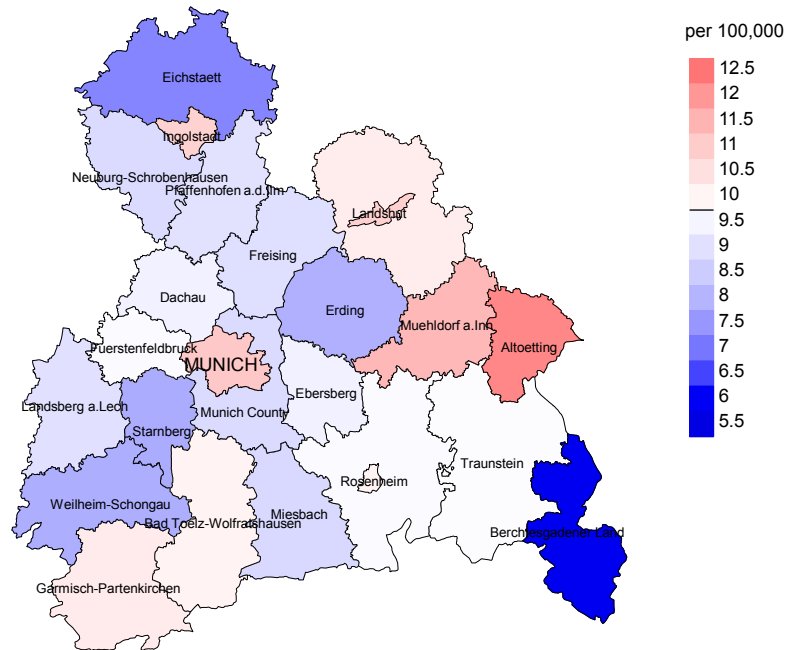
Age distribution and age-specific mortality 2007 - 2019 (Males: 3208, Females: 1029)



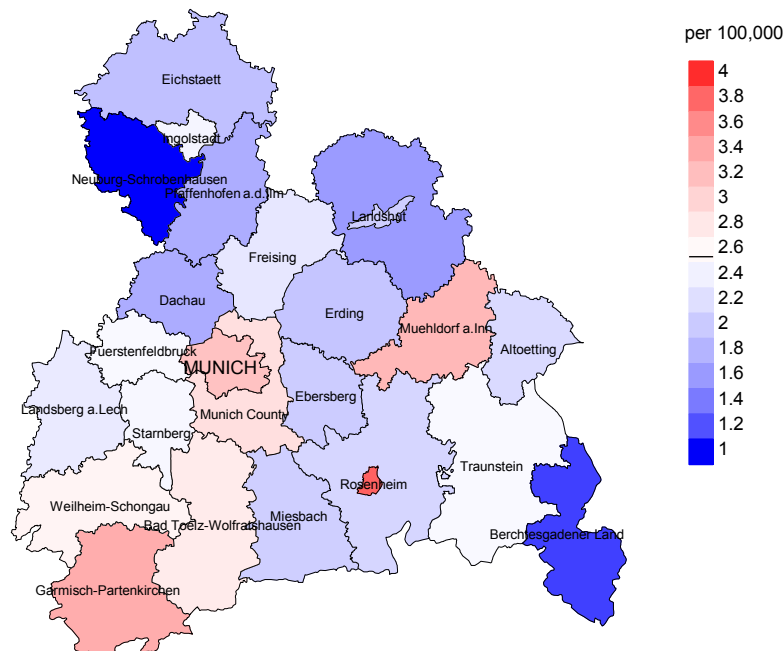
**Figure 17.** Distribution of age at death (bars; males: mean=62.7 yrs, median=62.2 yrs; females: mean=66.5 yrs, median=66.4 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at HN cancer-related death (see Table 10) should be considered.

Average mortality (Germany 1987 standard population) 2007 - 2019: Males



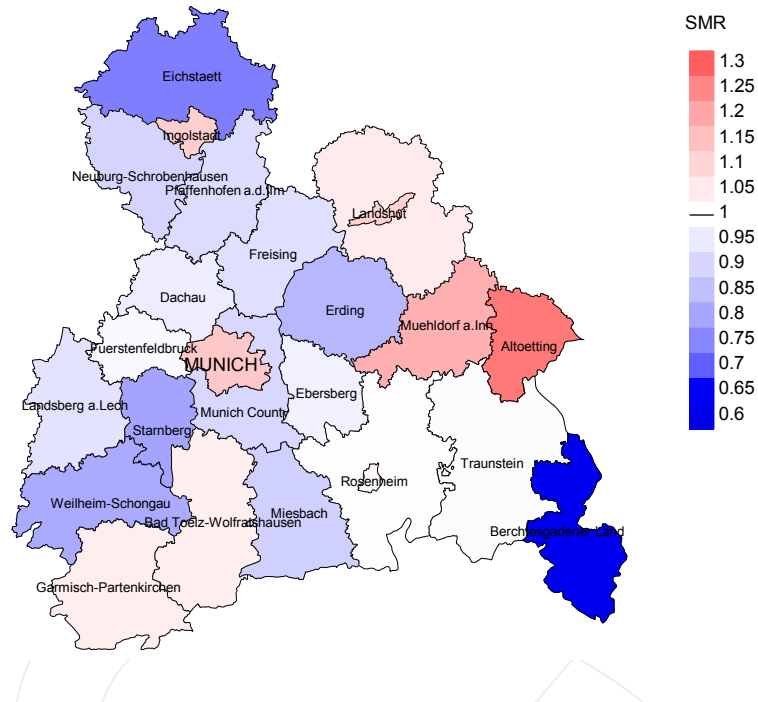
Average mortality (Germany 1987 standard population) 2007 - 2019: Females



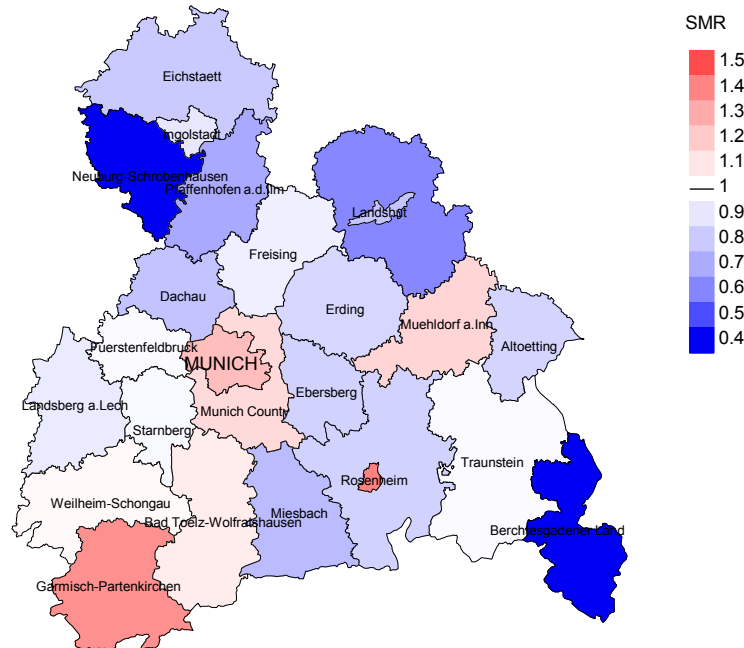
**Figure 18a.** Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 9.7/100,000 WS N=3,208, females 2.5/100,000 WS N=1,029).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 23 women died from HN cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 2.0/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.1 and 3.5/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females



**Figure 18b.** Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=3,208, females N=1,029).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 23 women died from HN cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.82. Though, the value of this parameter may vary with an underlying probability of 99% between 0.45 and 1.38, and is therefore not statistically striking.

### Statistical Notes

In all tables and figures the respective reference values should be carefully considered. The incidence rates include diagnoses (with multiple primary), and death certificate only (DCO) cases, where applicable. For mortality statistics patients, diagnoses and progressive course of disease are presented. In the calculations, all courses of disease are considered whereby progressions occurred and/or death certificate identified progressive cancers were ascertained. Additionally there are three groups of disease course to consider:

#### 1. All multiple primaries included

The mortality statistic describes the tumor-specific death, independent of any malignancy. The patient perspective, induced secondary malignancies, and the problem of multiple malignancies from the same primary tumor all have reasons for their inclusion.

#### 2. First singular primary (no information about other prior or synchronous malignancy)

The mortality statistic describes the cancer-related death for patients who have no therapeutic restrictions due to a previous or synchronous cancer. These statistics are comparable to studies that have exclusion criteria based on a second malignancy.

#### 3. Single primary (no information about other prior, syn- or metachronous malignancy)

The mortality statistic describes the tumor-specific death that occurs without any impact through secondary primaries, earlier, synchronous, later or induced. Precisely the difference between disease group 1 and 2 highlight the magnitude of the problem of secondary malignancies.

For this reason differences appear concerning official mono-causal mortality statistics. To judge the maximum deviation, 2 further tables are presented. In the first table the distribution of secondary malignancies before, at or after the described cancer are shown, that could be an alternative cause of death. In the second table, the age-specific mortality rates for all courses of disease, without designation of secondary malignancies are shown.

A previously minimally acknowledged statistic is the **age at death**, which allows for a good assessment of the quality of classification of the apparent tumor-specific death. For assumed tumor-independent deaths, the age of death should be estimated from the age of diagnosis and the normal life expectancy, whereas tumor-dependent deaths can be estimated from the age of diagnosis plus the average tumor-specific life expectancy. The comparison of different tumors demonstrates this association, if the causes of cancer and the competing cause of death are independent of each other (e.g. breast and colon versus head&neck and lung).

The ratio of mortality and incidence (mortality-to-incidence ratio, **MIR, MI-Index**) is a statistical index that allows for the evaluation of the quality of data. For diseases with poor prognoses, comparable values are obtained from all age groups, because to a large extent, the numerator and denominator contain the same cases. For tumors with a good prognosis, increasing and decreasing incidence and age-specific differences in prognosis can more strongly alter the MIR. Additionally, attention should be paid to the confidence intervals where fewer cases are reported.

The complexity of problems identified here emphasizes the importance of relative survival data for the appropriate analysis of long term results.

As a measurement of the burden of disease, the number of potential life years loss due to premature deaths in a cohort can be calculated (**PYLL**, potential years of life lost, standardized per 100,000 persons or per European standard) as well as the average loss of life years per individual (**AYLL**, average years of life lost). Depending upon the analytic aim (health economy, prevention, health care research) different methods exist for the generation of these measurements. In the results presented here, the age for a premature death is considered to be before 70 years, according to the guidelines of the OECD and the WHO (as seen in the abbreviation PYLL-70 or AYLL-70).

**Shortcuts**

MCR	Munich Cancer Registry (Tumorregister München)
GEKID	Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)
SEER	Surveillance, Epidemiology, and End Results (USA)
DCO	Death certificate only
BRD-S	German (FRG) standard population
ES	European standard population (old)
WS	World standard population
SIR	Standardized incidence ratio
CI	Confidence interval
EAR	Excess absolute risk = excess cancer cases (O - E) per 10,000 person-years
PYLL-70	Potential years of life lost prior to age 70 given a person dies before that age
AYLL-70	Average years of life lost prior to age 70 given a person dies before that age
SMR	Standardized mortality ratio
MI-index	Ratio of mortality to incidence, MIR
FRG	Federal Republic of Germany

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