

Munich Cancer Registry



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

ICD-10 C00-C14,C30-C32: HN cancer

Incidence and Mortality

Year of diagnosis	1998-2016
Patients	12,889
Diseases	13,445
Creation date	08/21/2018
Export date	08/09/2018
Population	4.81 m





Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
at Klinikum Grosshadern/IBE
Marchioninstr. 15
Munich, 81377
Germany

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

<https://www.tumorregister-muenchen.de/en/facts/base/bC0032E-ICD-10-C00-C14-C30-C32-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	10
5	Age-specific incidence, DCO rate, proportion malignancies	11
6	Age distribution and age-specific incidence (chart)	12
6a	Age-specific incidence internationally (chart)	13
7	Standardized incidence ratio of further malignancies	14
8a	Map of cancer incidence (WS) by county (chart)	16
8b	Standardized incidence ratio (SIR) by county (chart)	17
9a	Pts incident cohorts and mortality / yr	18
9b	Incidence and mortality by year of diagnosis	19
9c	Cancer-related deaths, death certification available / yr	20
10	Medians of age at death / yr	21
11	Mortality by year of death	23
12	Distribution of age at death	24
13	Age-specific mortality	25
14	Further malignancies in deaths	26
15	Age-specific mortality (first primaries)	28
16	Age-specific mortality (single primaries)	29
17	Age distribution and age-specific mortality (chart)	30
18a	Map of cancer mortality (WS) by county (chart)	31
18b	Standardized mortality ratio (SMR) by county (chart)	32

**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[#], with a total of 4.69 million inhabitants, account for the frequency of cancer diseases^{##} 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^{###} 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.

Munich Cancer Registry, August 2018

- [#] 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).
- ^{##} 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.
- ^{###} 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 2015) used for specifying cancer site

Code	Description
C00	Lip
C01	Base of tongue
C02	Other and unspecified parts of tongue
C03	Gum
C04	Floor of mouth
C05	Palate
C06	Other and unspecified parts of mouth
C07	Parotid gland
C08	Other and unspecified major salivary glands
C09	Tonsil
C10	Oropharynx
C11	Nasopharynx
C12	Piriform sinus
C13	Hypopharynx
C14	Other and ill-defined sites in the lip, oral cavity and pharynx
C30	Nasal cavity and middle ear
C31	Accessory sinuses
C32	Larynx

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	484	25	5.2	11.4	16.0	81.0	97.9
1999	515	30	5.8	13.3	15.8	80.0	96.5
2000	464	24	5.2	12.5	15.5	80.0	97.8
2001	464	31	6.7	12.8	15.2	78.0	96.8
2002	764	53	6.9	13.4	14.9	75.9	97.0 #
2003	755	36	4.8	13.9	14.3	75.2	97.5
2004	711	38	5.3	14.1	13.8	72.9	97.3
2005	752	30	4.0	14.6	13.3	69.8	95.7
2006	728	21	2.9	14.8	12.8	68.3	94.8
2007	878	51	5.8	14.8	12.4	64.9	82.9 #
2008	932	35	3.8	15.2	11.7	62.9	80.0
2009	913	23	2.5	15.6	11.0	62.1	81.3
2010	950	39	4.1	15.9	10.1	54.7	77.4
2011	867	37	4.3	16.3	8.8	54.0	77.6
2012	882	39	4.4	16.6	8.1	47.5	76.6
2013	896	33	3.7	16.8	7.6	45.4	77.8
2014	778	33	4.2	17.1	7.4	44.0	83.5
2015	453	33	7.3	17.4	7.0	40.0	96.9
2016	259	24	9.3	17.7	6.5	25.9	65.3 ##
1998-2016	13445	635	4.7	17.7	16.0	62.1	87.1

13,445 cases diagnosed 1998-2016 are related to a total of 12,889 patients. Currently, in 3,967 (30.8 %) of these 12,889 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 3,059 / 670 / 238 (23.7 % / 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 2014, a subgroup of 778 cases has been diagnosed, of which 17.1 % 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 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	379	78.3	16	4.2	10.8	16.5	82.6	97.6
1999	382	74.2	20	5.2	12.6	16.2	81.9	96.9
2000	360	77.6	18	5.0	12.0	15.9	81.4	98.3
2001	355	76.5	21	5.9	12.3	15.7	79.7	96.9
2002	581	76.0	37	6.4	12.9	15.4	76.2	96.7 #
2003	570	75.5	22	3.9	13.6	14.8	77.0	98.2
2004	557	78.3	29	5.2	14.2	14.3	72.9	97.3
2005	579	77.0	20	3.5	14.6	13.8	71.0	95.5
2006	529	72.7	17	3.2	14.7	13.3	72.4	95.5
2007	665	75.7	36	5.4	14.8	12.9	67.5	82.9 #
2008	703	75.4	24	3.4	15.3	12.2	63.0	79.4
2009	678	74.3	16	2.4	15.6	11.5	64.2	81.0
2010	719	75.7	26	3.6	15.9	10.5	56.7	78.6
2011	630	72.7	27	4.3	16.3	9.3	56.0	78.6
2012	639	72.4	25	3.9	16.6	8.4	49.3	77.2
2013	650	72.5	22	3.4	16.8	7.8	46.2	77.8
2014	586	75.3	24	4.1	17.1	7.7	46.2	84.5
2015	325	71.7	23	7.1	17.5	7.2	40.6	97.2
2016	196	75.7	17	8.7	17.8	6.9	26.0	67.9 ##
1998-2016	10083	75.0	440	4.4	17.8	16.5	63.9	87.5

10,083 cases diagnosed 1998-2016 are related to a total of 9,651 patients. Currently, in 3,021 (31.3 %) of these 9,651 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 2,303 / 526 / 192 (23.9 % / 5.5 % / 2.0 %) 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 2014, a subgroup of 586 cases has been diagnosed, of which 17.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 7.7 % 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	105	21.7	9	8.6	13.3	14.4	75.2	99.0
1999	133	25.8	10	7.5	15.5	14.3	74.4	95.5
2000	104	22.4	6	5.8	14.3	14.2	75.0	96.2
2001	109	23.5	10	9.2	14.4	13.8	72.5	96.3
2002	183	24.0	16	8.7	15.1	13.4	74.9	97.8 #
2003	185	24.5	14	7.6	14.7	12.9	69.7	95.1
2004	154	21.7	9	5.8	14.0	12.3	72.7	97.4
2005	173	23.0	10	5.8	14.5	11.9	65.9	96.5
2006	199	27.3	4	2.0	14.9	11.2	57.3	93.0
2007	213	24.3	15	7.0	14.6	10.9	56.8	83.1 #
2008	229	24.6	11	4.8	15.0	10.2	62.4	82.1
2009	235	25.7	7	3.0	15.7	9.8	56.2	82.1
2010	231	24.3	13	5.6	15.7	8.8	48.5	73.6
2011	237	27.3	10	4.2	16.2	7.7	48.5	75.1
2012	243	27.6	14	5.8	16.5	7.1	42.8	75.3
2013	246	27.5	11	4.5	16.8	7.1	43.5	77.6
2014	192	24.7	9	4.7	17.1	6.5	37.0	80.7
2015	128	28.3	10	7.8	17.3	6.2	38.3	96.1
2016	63	24.3	7	11.1	17.4	5.2	25.4	57.1 ##
1998-2016	3362	25.0	195	5.8	17.4	14.4	56.8	85.9

3,362 cases diagnosed 1998-2016 are related to a total of 3,238 patients. Currently, in 946 (29.2 %) of these 3,238 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 756 / 144 / 46 (23.3 % / 4.4 % / 1.4 %) 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 2014, a subgroup of 192 cases has been diagnosed, of which 17.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.5 % 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 4.81 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	379	105	34.2	8.9	22.6	4.9	30.9	6.8	34.9	8.0
1999	382	133	34.1	11.2	22.0	6.1	30.6	8.5	34.2	10.0
2000	360	104	31.6	8.7	20.8	5.2	28.8	7.0	32.7	7.8
2001	355	109	30.6	9.0	19.9	5.0	27.5	6.9	31.0	7.8
2002	581	183	31.2	9.3	19.9	4.9	27.5	6.9	30.4	8.1
2003	570	185	30.4	9.4	19.6	5.1	27.1	7.1	29.9	8.4
2004	557	154	29.6	7.8	18.6	4.0	25.6	5.6	29.2	6.8
2005	579	173	30.6	8.7	19.0	4.8	26.0	6.6	29.3	7.6
2006	529	199	27.6	9.9	17.2	5.8	24.0	7.8	27.2	8.9
2007	665	213	30.0	9.2	18.1	5.1	25.3	7.0	28.9	8.0
2008	703	229	31.6	9.9	19.0	5.3	26.5	7.3	30.3	8.3
2009	678	235	30.4	10.1	17.9	5.4	24.9	7.5	28.7	8.6
2010	719	231	31.9	9.9	19.0	5.2	26.3	7.1	29.8	8.2
2011	630	237	28.2	10.1	15.8	5.4	22.2	7.5	25.8	8.6
2012	639	243	28.2	10.3	16.2	5.4	22.5	7.4	25.8	8.6
2013	650	246	28.2	10.3	16.0	5.3	22.3	7.3	25.8	8.3
2014	586	192	25.1	8.0	14.2	4.1	19.8	5.6	22.9	6.6
2015	325	128	13.7	5.3	7.3	2.6	10.4	3.7	12.5	4.3
2016	196	63	8.2	2.6	4.4	1.3	6.2	1.8	7.4	2.0
1998-2016	10083	3362	27.4	8.8	16.4	4.7	22.8	6.4	25.9	7.4

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.				Median				
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	484	60.1	12.3	0.9	97.4	47.2	52.6	58.8	67.5	76.3
1999	515	61.3	12.4	13.9	95.7	48.3	52.5	59.8	69.7	78.2
2000	464	60.5	12.3	19.7	91.9	46.0	51.8	59.1	68.4	78.2
2001	464	61.7	12.2	16.4	96.4	48.0	53.8	60.5	68.8	78.5
2002	764	62.0	11.6	26.4	99.0	47.9	54.7	61.2	68.5	78.5
2003	755	61.4	11.9	10.7	98.2	47.3	53.6	60.4	69.2	77.9
2004	711	62.2	12.2	24.7	97.9	46.5	54.5	62.1	70.2	78.9
2005	752	62.2	12.0	4.1	103	47.5	54.4	62.0	68.8	78.1
2006	728	62.0	12.1	17.6	101	47.5	54.1	61.8	69.7	77.8
2007	878	62.7	12.2	7.7	101	47.7	54.6	63.1	70.7	78.4
2008	932	63.8	12.0	14.1	100	49.3	55.7	63.7	70.4	79.5
2009	913	63.8	12.5	2.4	98.4	48.4	55.4	63.4	72.1	80.1
2010	950	63.1	12.8	16.6	103	47.6	54.3	63.9	71.4	78.7
2011	867	64.1	12.5	14.4	96.9	48.9	55.4	64.6	72.7	79.8
2012	882	64.1	11.9	18.6	100	49.3	55.9	63.9	72.5	78.8
2013	896	64.9	12.2	12.1	95.5	50.5	56.6	65.1	73.2	80.0
2014	778	65.0	12.2	16.8	96.6	49.0	57.3	64.7	73.6	80.1
2015	453	66.8	11.6	20.2	95.0	52.0	58.4	66.7	75.4	82.5
2016	259	67.1	12.3	20.1	102	53.3	58.4	66.2	75.5	82.0
1998-2016	13445	63.1	12.3	0.9	103	48.3	54.8	62.7	71.2	79.2

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	379	59.0	11.4	0.9	87.6	46.4	52.1	58.1	66.1	74.1
1999	382	60.2	11.3	32.0	90.8	48.1	52.3	58.9	66.6	75.2
2000	360	60.2	11.1	20.4	89.7	47.7	52.3	59.0	67.5	75.1
2001	355	60.6	11.0	28.7	94.9	48.0	53.5	60.0	66.2	75.4
2002	581	60.6	10.5	26.4	96.8	47.5	53.9	60.8	66.4	74.5
2003	570	60.4	10.3	28.1	94.5	47.6	53.5	60.0	67.3	74.1
2004	557	61.1	11.5	25.9	92.4	46.1	53.7	61.2	68.1	76.2
2005	579	61.4	11.3	4.1	99.0	47.1	54.0	61.8	68.2	76.5
2006	529	61.6	11.1	17.6	92.0	47.6	54.2	61.3	68.3	76.9
2007	665	62.3	11.4	15.7	101	48.0	54.6	62.8	70.1	76.8
2008	703	63.2	11.1	19.8	100	49.3	55.4	63.1	69.6	78.1
2009	678	63.3	11.4	2.4	90.7	48.9	55.7	63.3	70.8	78.4
2010	719	62.4	12.2	16.6	95.3	47.6	54.1	63.0	70.4	77.2
2011	630	63.9	11.9	14.4	95.5	49.1	55.3	64.1	72.3	79.1
2012	639	63.4	11.2	18.6	94.9	49.3	55.3	63.0	71.4	77.8
2013	650	64.4	11.0	19.0	93.9	51.0	56.9	64.5	72.3	78.5
2014	586	64.6	11.4	25.6	96.6	49.8	57.1	64.2	72.5	78.9
2015	325	66.9	11.1	28.5	94.6	52.3	58.7	66.5	75.1	81.3
2016	196	66.6	12.0	20.1	102	52.8	58.2	66.0	75.4	80.4
1998-2016	10083	62.4	11.4	0.9	102	48.4	54.6	62.1	70.1	77.3

Table 3b

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

Year of diagnosis	Cases n	Std. dev.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	105	64.1	14.5	9.5	97.4	49.9	55.2	62.5	75.8	82.2
1999	133	64.7	14.7	13.9	95.7	48.5	55.6	65.9	75.6	81.6
2000	104	61.4	15.6	19.7	91.9	42.8	51.0	59.7	73.3	82.1
2001	109	65.5	14.9	16.4	96.4	49.3	56.2	63.5	74.5	88.1
2002	183	66.3	13.7	31.4	99.0	48.7	55.8	64.5	77.7	82.9
2003	185	64.6	15.4	10.7	98.2	46.2	53.9	63.8	77.4	83.7
2004	154	66.0	14.0	24.7	97.9	48.9	57.0	66.7	76.2	83.1
2005	173	64.6	13.8	22.8	103	49.6	55.8	63.3	73.9	83.4
2006	199	63.0	14.6	19.0	101	46.0	53.8	62.6	71.7	83.2
2007	213	64.2	14.3	7.7	98.2	47.5	54.6	63.5	74.1	83.6
2008	229	65.4	14.2	14.1	98.4	49.7	55.9	65.3	74.0	84.9
2009	235	65.1	15.1	16.8	98.4	47.5	55.1	64.2	76.2	85.3
2010	231	65.3	14.2	21.9	103	48.1	55.1	66.2	74.4	85.1
2011	237	64.6	14.0	17.2	96.9	47.7	56.5	64.9	73.8	83.2
2012	243	65.9	13.3	21.5	100	49.1	58.1	65.4	74.3	82.9
2013	246	66.2	14.8	12.1	95.5	47.4	55.4	66.9	76.0	86.9
2014	192	66.0	14.4	16.8	93.7	47.8	57.9	66.6	75.4	84.1
2015	128	66.7	12.9	20.2	95.0	51.3	57.2	66.8	76.9	84.4
2016	63	68.8	13.2	38.8	96.2	54.0	61.1	67.3	77.6	88.5
1998-2016	3362	65.1	14.3	7.7	103	47.8	55.7	64.9	75.3	84.0

Table 4

Age distribution by 5-year age group and sex for period 2007-2016
(incl. DCO)

Age at diagnosis Years	Cases n	Males			Females				
		%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4	1	0.0	0.0	1	0.0	0.0			0.0
5-9	1	0.0	0.0			0.0	1	0.0	0.0
10-14	3	0.0	0.1	1	0.0	0.0	2	0.1	0.1
15-19	12	0.2	0.2	8	0.1	0.2	4	0.2	0.3
20-24	13	0.2	0.4	8	0.1	0.3	5	0.2	0.6
25-29	32	0.4	0.8	17	0.3	0.6	15	0.7	1.3
30-34	46	0.6	1.4	21	0.4	1.0	25	1.2	2.6
35-39	74	0.9	2.3	46	0.8	1.8	28	1.4	4.0
40-44	203	2.6	4.9	145	2.5	4.3	58	2.9	6.8
45-49	512	6.6	11.5	394	6.8	11.1	118	5.9	12.7
50-54	866	11.1	22.6	678	11.7	22.8	188	9.3	22.0
55-59	1082	13.9	36.4	838	14.5	37.2	244	12.1	34.1
60-64	1245	15.9	52.4	962	16.6	53.9	283	14.0	48.1
65-69	1235	15.8	68.2	943	16.3	70.1	292	14.5	62.6
70-74	1030	13.2	81.4	782	13.5	83.6	248	12.3	74.9
75-79	692	8.9	90.3	513	8.9	92.5	179	8.9	83.8
80-84	402	5.1	95.4	266	4.6	97.1	136	6.7	90.5
85+	359	4.6	100.0	168	2.9	100.0	191	9.5	100.0
All ages	7808	100.0		5791	100.0		2017	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007-2016

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males DCO rate n=235 %	Females DCO rate n=106 %	Males	Females
							Prop.all cancers n=113978 %	Prop.all cancers n=112253 %
0- 4	1		0.1				0.5	
5- 9		1		0.1				1.2
10-14	1	2	0.1	0.2			0.9	2.0
15-19	8	4	0.7	0.3			3.2	1.9
20-24	8	5	0.6	0.4			1.7	1.3
25-29	17	15	1.1	1.0			2.5	1.8
30-34	21	25	1.3	1.6			2.2	1.7
35-39	45	28	2.8	1.8		3.6	3.3	1.1
40-44	142	58	7.6	3.2	0.7	1.7	6.6	1.3
45-49	382	115	19.3	6.0	0.8		9.7	1.7
50-54	663	182	38.4	10.6	1.8	2.2	10.8	2.1
55-59	821	238	58.0	16.2	2.3	2.9	8.9	2.5
60-64	940	277	76.7	20.8	2.7	2.9	7.1	2.5
65-69	928	285	78.3	21.9	3.7	2.1	5.0	2.0
70-74	773	245	69.9	19.4	6.1	3.3	3.7	1.7
75-79	510	177	64.0	17.7	5.1	2.8	3.1	1.3
80-84	264	133	57.4	18.8	9.1	11.3	2.4	1.2
85+	166	189	54.2	25.8	26.5	27.0	2.1	1.5
All ages	5690	1979			4.1	5.4	5.0	1.8
Incidence								
Raw			24.9	8.4				
WS			14.3	4.4				
ES			20.0	6.0				
BRD-S			23.0	6.9				

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).

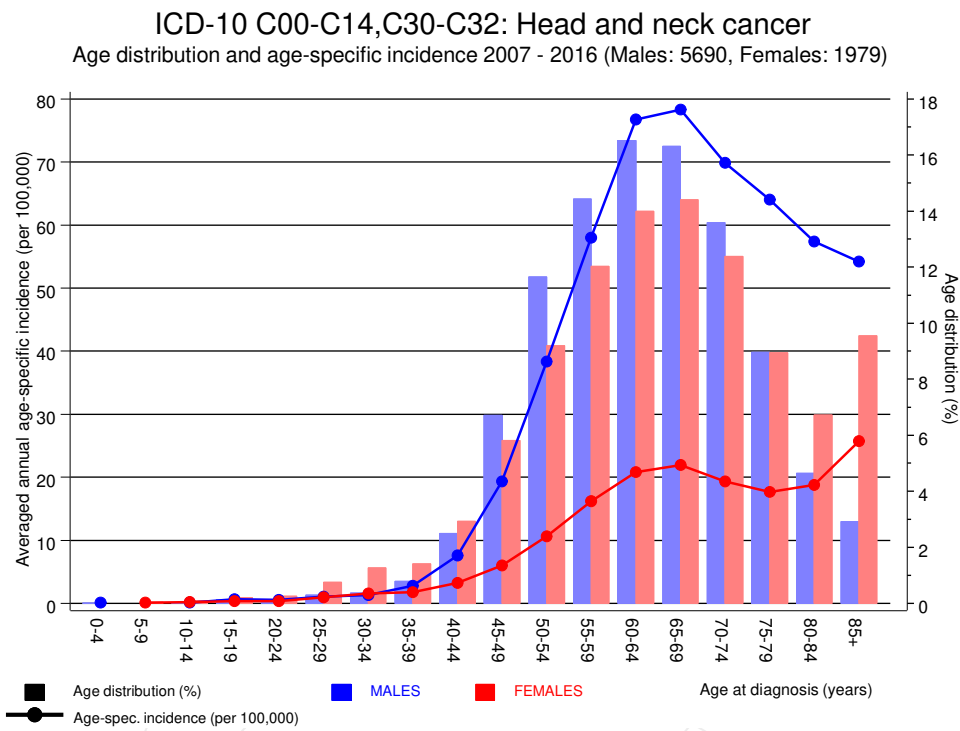


Figure 6. Age distribution (males: mean=63.8 yrs, median=63.9 yrs; females: mean=65.6 yrs, median=65.8 yrs) and age-specific incidence.

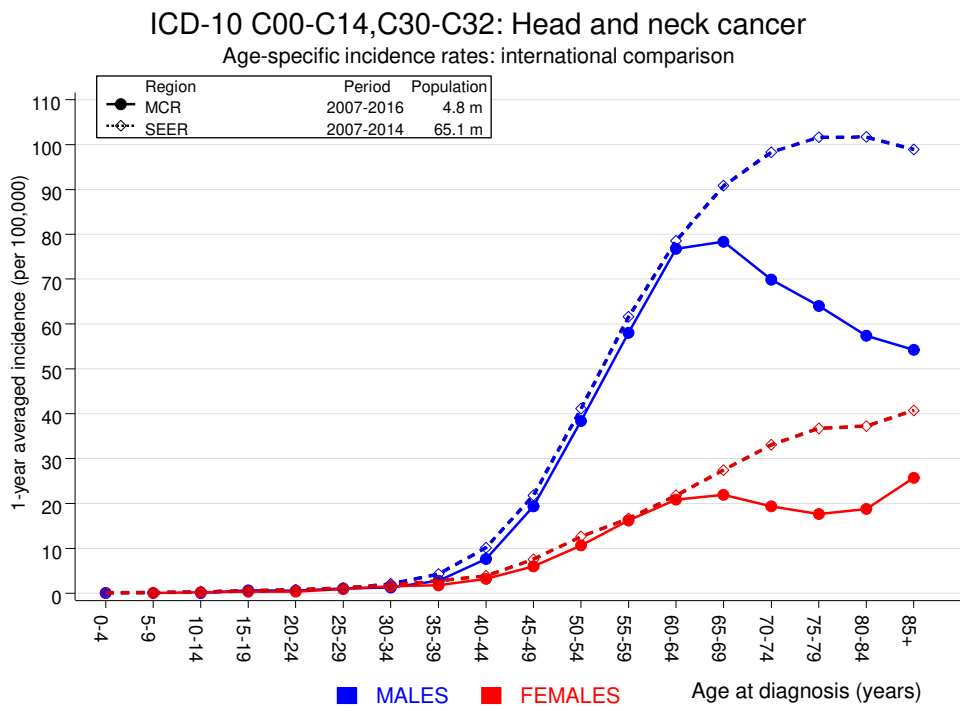


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:
 Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2014, based on the November 2013 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 1998–2016

MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
	2	0.1	20.1	2.4	72.5 #	0.6	
C00 Lip	6	0.5	13.2	4.9	28.8 #	1.8	
C03-C06 Oral cavity	104	4.5	23.1	18.8	28.0 #	32.2	7.7
C07-C08 Salivary gland	5	0.9	5.6	1.8	13.0 #	1.3	
C09-C10 Oropharynx	124	5.8	21.5	17.8	25.6 #	38.2	3.2
C11 Nasopharynx	8	0.4	21.7	9.4	42.8 #	2.5	25.0
C12-C13 Hypopharynx	94	3.1	30.1	24.3	36.8 #	29.4	8.5
C14 ENT cancer	4	0.1	35.6	9.7	91.2 #	1.3	100.0
C15 Oesophagus	171	8.8	19.4	16.6	22.6 #	52.5	13.5
C16 Stomach	39	15.8	2.5	1.8	3.4 #	7.5	7.7
C17 Small intestine	10	2.4	4.2	2.0	7.7 #	2.5	20.0
C18 Colon	92	37.9	2.4	2.0	3.0 #	17.5	4.3
C19-C20 Rectum	52	23.5	2.2	1.7	2.9 #	9.2	5.8
C21 Anus/canal	6	1.0	5.9	2.1	12.7 #	1.6	
C22 Liver	59	12.2	4.8	3.7	6.2 #	15.1	10.2
C23-C24 Bile	6	3.9	1.5	0.6	3.3	0.7	33.3
C25 Pancreas	38	15.2	2.5	1.8	3.4 #	7.4	18.4
C26 GI cancer	2	0.4	4.9	0.6	17.6	0.5	
C30-C31 Sinuses	12	0.8	14.9	7.7	26.1 #	3.6	16.7
C32 Larynx	69	5.0	13.8	10.8	17.5 #	20.7	31.9
C33-C34 Lung	465	50.9	9.1	8.3	10.0 #	133.9	11.4
C38,C45 Mesothelioma	4	2.7	1.5	0.4	3.8	0.4	
C43 Malign. melanoma	39	19.2	2.0	1.4	2.8 #	6.4	15.4
C46,C49 Soft tissue	10	2.4	4.2	2.0	7.8 #	2.5	10.0
C60 Penis	2	1.0	2.0	0.2	7.3	0.3	
C61 Prostate	141	120.4	1.2	1.0	1.4	6.6	6.4
C64 Kidney	49	15.4	3.2	2.4	4.2 #	10.9	10.2
C65 Renal pelvis	6	1.7	3.6	1.3	7.9 #	1.4	
C67 Bladder	40	17.0	2.4	1.7	3.2 #	7.4	5.0
C70-C72 CNS cancer	4	5.8	0.7	0.2	1.8	-0.6	25.0
C73 Thyroid	18	3.4	5.2	3.1	8.3 #	4.7	5.6
C76-C79 CUP	30	6.9	4.3	2.9	6.2 #	7.5	
C81 Hodgkin lymphoma	6	1.1	5.7	2.1	12.3 #	1.6	33.3
C82-C85 NHL	39	16.6	2.3	1.7	3.2 #	7.2	7.7
C90 Mult. myeloma	6	5.2	1.2	0.4	2.5	0.3	
C91-C96 Leukaemia	20	6.3	3.2	1.9	4.9 #	4.4	35.0
Others, specified	7	4.5	1.6	0.6	3.2	0.8	
Not observed	0	2.2	0.0	0.0	1.7	-0.7	
All further malignancies	1789	425.0	4.2	4.0	4.4 #	441.1	10.6

Patients	9196
Median age at next malignancy (years)	66.0
Person-years	30922
Mean observation time (years)	3.4
Median observation time (years)	1.9

The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 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 1998–2016

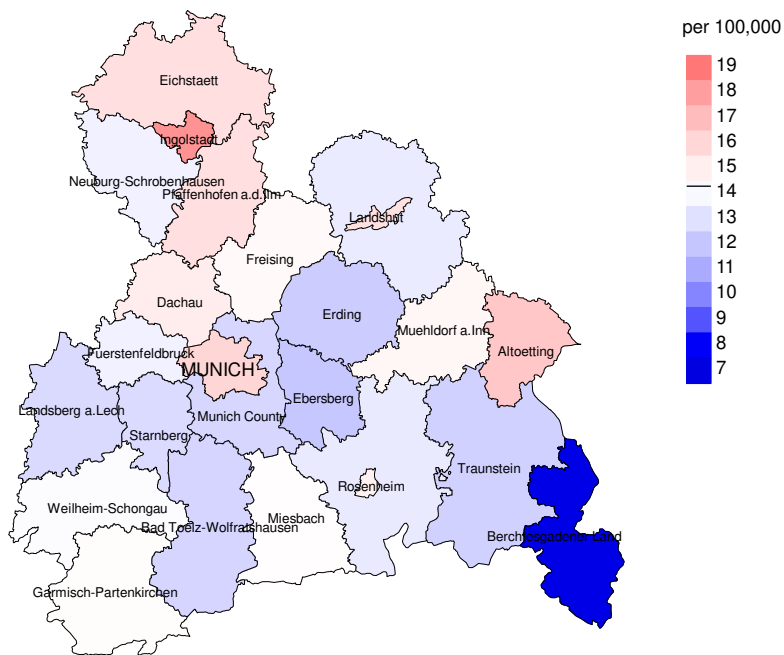
FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	25	0.7	34.6	22.4	51.1 #	21.6	
C07-C08 Salivary gland	4	0.2	21.6	5.9	55.2 #	3.4	
C09-C10 Oropharynx	43	0.5	81.0	58.6	109.1 #	37.7	
C11 Nasopharynx	4	0.0	91.7	25.0	234.9 #	3.5	25.0
C12-C13 Hypopharynx	18	0.1	124.8	74.0	197.2 #	15.9	22.2
C14 ENT cancer	4	0.0	200.0	54.5	512.1 #	3.5	75.0
C15 Oesophagus	34	0.8	44.7	30.9	62.4 #	29.5	5.9
C16 Stomach	10	3.9	2.5	1.2	4.7 #	5.4	10.0
C18 Colon	24	11.0	2.2	1.4	3.2 #	11.6	
C19-C20 Rectum	7	4.7	1.5	0.6	3.1	2.0	
C22 Liver	11	1.4	8.0	4.0	14.2 #	8.5	18.2
C23-C24 Bile	3	1.6	1.9	0.4	5.6	1.3	
C25 Pancreas	16	5.1	3.1	1.8	5.1 #	9.7	31.3
C30-C31 Sinuses	9	0.2	55.9	25.5	106.1 #	7.9	33.3
C32 Larynx	14	0.2	60.6	33.1	101.6 #	12.2	21.4
C33-C34 Lung	110	8.9	12.3	10.2	14.9 #	89.8	16.4
C43 Malign. melanoma	10	4.5	2.2	1.1	4.1 #	4.9	20.0
C50 Breast	53	36.7	1.4	1.1	1.9 #	14.5	5.7
C51 Vulva	5	1.2	4.3	1.4	10.1 #	3.4	
C53 Cervix uteri	8	1.6	4.9	2.1	9.7 #	5.7	12.5
C54 Corpus uteri	9	6.5	1.4	0.6	2.6	2.2	
C56 Ovary	10	4.8	2.1	1.0	3.9 #	4.7	10.0
C64 Kidney	4	2.8	1.4	0.4	3.7	1.1	25.0
C65 Renal pelvis	2	0.3	5.8	0.7	20.8	1.5	
C67 Bladder	5	2.1	2.3	0.8	5.4	2.5	40.0
C70-C72 CNS cancer	4	1.6	2.5	0.7	6.5	2.1	50.0
C73 Thyroid	9	2.2	4.1	1.9	7.8 #	6.0	33.3
C76-C79 CUP	8	2.1	3.9	1.7	7.6 #	5.3	
C82-C85 NHL	14	4.4	3.2	1.7	5.3 #	8.5	7.1
C90 Mult. myeloma	2	1.4	1.4	0.2	5.2	0.5	50.0
C91-C96 Leukaemia	7	1.8	3.8	1.5	7.9 #	4.6	28.6
Others, specified	8	2.3	3.4	1.5	6.7 #	5.0	
Not observed	0	2.2	0.0	0.0	1.6	-2.0	
All further malignancies	494	118.0	4.2	3.8	4.6 #	334.1	12.3
Patients		3036					
Median age at next malignancy (years)		68.0					
Person-years		11252					
Mean observation time (years)		3.7					
Median observation time (years)		2.3					

The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 are pooled in category "Others, specified".

Average incidence (world standard population) 2007 - 2016: Males



Average incidence (world standard population) 2007 - 2016: Females

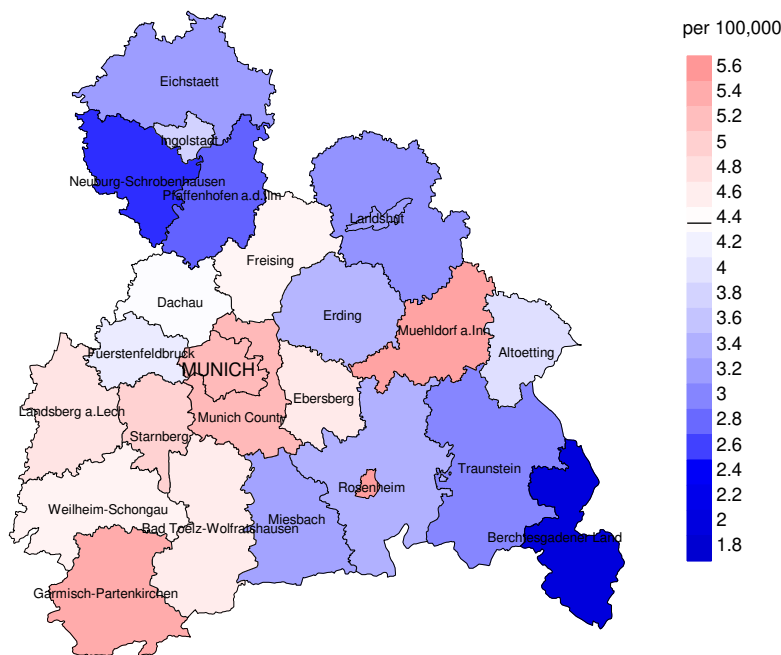
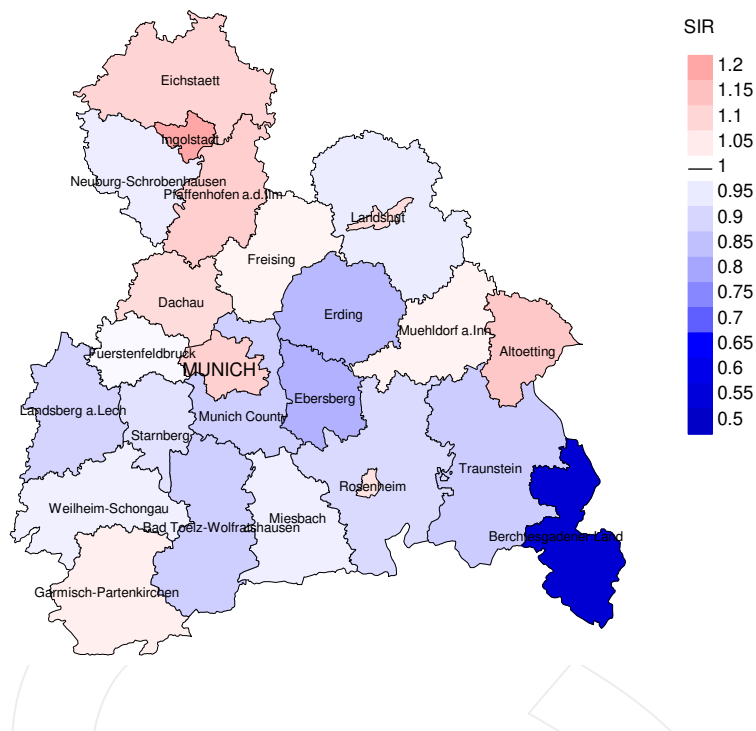


Figure 8a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 14.3/100,000 WS N=5,690, females 4.4/100,000 WS N=1,979).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 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 4.7/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 3.1 and 6.8/100,000.

Standardized incidence ratio (SIR) 2007 - 2016: Males



Standardized incidence ratio (SIR) 2007 - 2016: Females

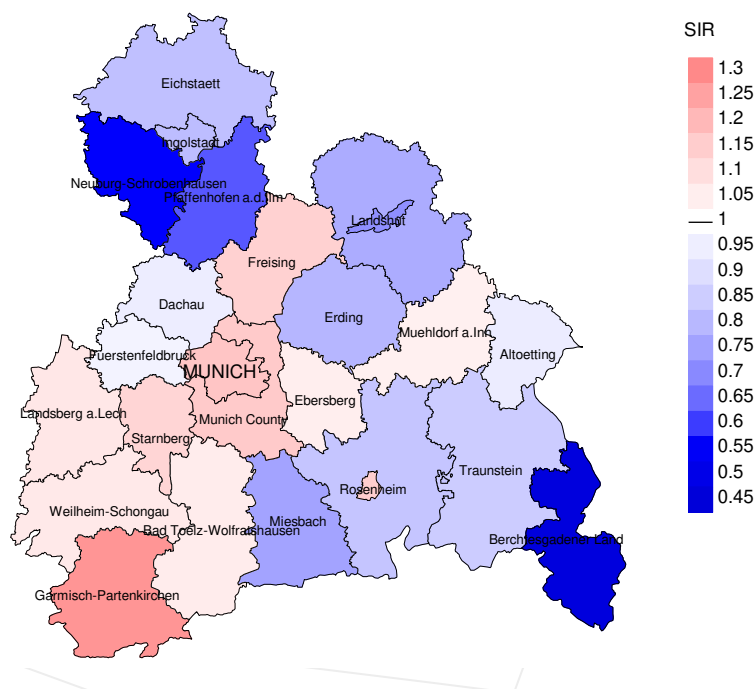


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=5,690, females N=1,979).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 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 1.05. Though, the value of this parameter may vary with an underlying probability of 99% between 0.73 and 1.47, 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 4.81 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	484	97.9	5.2	392	81.0	94.9
1999	515	96.5	5.8	412	80.0	91.7
2000	464	97.8	5.2	371	80.0	95.1
2001	464	96.8	6.7	362	78.0	94.5
2002	764	97.0	6.9	580	75.9	96.9
2003	755	97.5	4.8	568	75.2	97.2
2004	711	97.3	5.3	518	72.9	95.9
2005	752	95.7	4.0	525	69.8	98.9
2006	728	94.8	2.9	497	68.3	98.2
2007	878	82.9	5.8	570	64.9	97.4
2008	932	80.0	3.8	586	62.9	97.6
2009	913	81.3	2.5	567	62.1	98.6
2010	950	77.4	4.1	520	54.7	98.5
2011	867	77.6	4.3	468	54.0	95.1
2012	882	76.6	4.4	419	47.5	96.4
2013	896	77.8	3.7	407	45.4	97.1
2014	778	83.5	4.2	342	44.0	95.9
2015	453	96.9	7.3	181	40.0	95.0
2016	259	65.3	9.3	67	25.9	79.1
1998-2016	13445	87.1	4.7	8352	62.1	96.5

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 4.81 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	484	311	91.6	69	14.3
1999	515	334	88.3	80	15.5
2000	464	327	94.8	61	13.1
2001	464	352	90.3	80	17.2
2002	764	504	97.0	119	15.6
2003	755	516	96.9	111	14.7
2004	711	527	96.6	116	16.3
2005	752	493	96.8	108	14.4
2006	728	563	96.8	106	14.6
2007	878	611	97.5	129	14.7
2008	932	604	98.3	128	13.7
2009	913	629	98.4	113	12.4
2010	950	629	98.6	129	13.6
2011	867	611	97.5	121	14.0
2012	882	674	96.9	121	13.7
2013	896	667	98.5	134	15.0
2014	778	631	97.5	134	17.2
2015	453	651	99.1	118	26.0
2016	259	487	99.0	53	20.5
1998-2016	13445	10121	96.9	2030	15.1

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 4.81 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	311	70.7	29.3	88.8
1999	334	67.1	32.9	85.1
2000	327	74.6	25.4	87.4
2001	352	73.6	26.4	88.7
2002	504	74.4	25.6	87.3
2003	516	73.6	26.4	86.0
2004	527	76.7	23.3	88.8
2005	493	79.7	20.3	90.8
2006	563	74.8	25.2	84.8
2007	611	76.9	23.1	88.6
2008	604	77.3	22.7	87.0
2009	629	76.5	23.5	87.7
2010	629	78.2	21.8	88.5
2011	611	72.8	27.2	85.2
2012	674	74.2	25.8	85.6
2013	667	73.9	26.1	85.8
2014	631	71.2	28.8	85.2
2015	651	71.1	28.9	83.9
2016	487	64.7	35.3	78.4
1998-2016	10121	74.1	25.9	86.4

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	231	62.2	60.5	65.7	62.2
1999	263	61.7	59.8	65.1	59.6
2000	255	63.8	62.0	66.9	64.0
2001	278	61.9	60.5	67.6	61.0
2002	399	63.6	62.5	70.2	62.6
2003	402	64.1	63.1	69.1	63.3
2004	413	63.6	62.4	70.8	63.0
2005	365	65.5	64.6	74.4	65.0
2006	437	65.4	64.6	71.8	64.8
2007	492	66.1	64.9	70.9	65.5
2008	474	67.5	66.6	71.7	67.2
2009	486	68.0	66.3	73.8	66.8
2010	494	67.6	66.5	72.2	66.5
2011	478	69.1	67.4	71.3	68.3
2012	518	70.7	69.5	74.3	69.8
2013	492	69.8	67.5	74.8	68.3
2014	480	70.9	69.2	75.1	70.1
2015	493	69.6	68.5	75.0	68.9
2016	359	72.5	70.5	76.7	71.6
1998-2016	7809	66.9	65.4	72.5	66.0

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	80	71.9	69.4	82.5	71.6
1999	71	73.4	67.4	78.0	70.3
2000	72	67.8	61.5	80.3	67.6
2001	74	72.2	69.7	75.2	71.9
2002	105	71.9	71.0	78.3	71.8
2003	114	71.0	65.0	78.3	70.7
2004	114	73.7	73.7	74.5	73.0
2005	128	68.4	65.9	82.3	66.7
2006	126	73.7	70.3	81.4	71.1
2007	119	70.9	68.1	81.9	69.2
2008	130	69.5	68.0	77.1	68.5
2009	143	70.3	68.5	81.7	69.6
2010	135	71.4	68.4	81.7	68.8
2011	133	72.7	70.5	82.4	71.1
2012	156	73.2	71.5	83.2	71.5
2013	175	74.1	71.8	83.9	72.8
2014	151	75.5	71.7	79.9	73.0
2015	158	72.6	71.8	73.7	72.2
2016	128	77.6	74.0	84.7	75.2
1998-2016	2312	72.7	70.0	80.8	70.8

By 2010, life expectancy at birth was 77.5 years for boys and 82.6 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	166	15.0	0.44	9.7	0.44	13.5	0.44	15.8	0.46
1999	186	16.6	0.50	10.5	0.49	15.0	0.50	17.4	0.52
2000	188	16.5	0.53	10.3	0.50	14.8	0.52	17.8	0.55
2001	209	18.0	0.60	11.6	0.59	16.2	0.60	18.5	0.61
2002	303	16.3	0.53	9.9	0.51	14.3	0.53	16.8	0.56
2003	302	16.1	0.54	9.8	0.51	13.9	0.53	16.2	0.55
2004	318	16.9	0.58	10.2	0.56	14.5	0.58	17.0	0.59
2005	292	15.4	0.51	8.8	0.47	12.6	0.49	15.3	0.53
2006	333	17.4	0.64	10.2	0.60	14.4	0.61	17.1	0.64
2007	381	17.2	0.58	9.9	0.56	14.2	0.57	16.8	0.59
2008	378	17.0	0.55	9.5	0.51	13.7	0.53	16.4	0.55
2009	377	16.9	0.57	9.3	0.53	13.4	0.55	16.2	0.57
2010	392	17.4	0.56	9.6	0.52	13.9	0.54	16.4	0.56
2011	351	15.7	0.57	8.3	0.54	12.1	0.56	14.5	0.58
2012	382	16.8	0.61	8.5	0.54	12.5	0.57	15.5	0.61
2013	360	15.6	0.56	8.2	0.52	11.8	0.53	14.3	0.56
2014	354	15.2	0.62	7.7	0.55	11.1	0.58	13.7	0.61
2015	350	14.7	1.09	7.4	1.03	10.9	1.06	13.3	1.08
2016	231	9.6	1.19	4.8	1.12	7.0	1.14	8.8	1.20
1998-2016	5853	15.9	0.59	8.9	0.55	12.8	0.57	15.3	0.60

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	55	4.7	0.53	2.2	0.47	3.3	0.49	4.1	0.52
1999	38	3.2	0.30	1.6	0.27	2.3	0.28	2.9	0.30
2000	56	4.7	0.55	2.5	0.49	3.5	0.52	4.2	0.54
2001	50	4.1	0.47	1.9	0.38	2.7	0.40	3.4	0.45
2002	73	3.7	0.40	1.8	0.36	2.6	0.38	3.1	0.38
2003	80	4.1	0.44	2.1	0.41	3.0	0.42	3.6	0.43
2004	86	4.4	0.56	1.8	0.46	2.7	0.49	3.5	0.52
2005	101	5.1	0.59	2.5	0.54	3.7	0.56	4.3	0.58
2006	89	4.4	0.45	1.9	0.33	2.8	0.37	3.5	0.40
2007	89	3.9	0.43	1.8	0.36	2.6	0.38	3.2	0.41
2008	89	3.8	0.39	1.8	0.35	2.6	0.36	3.1	0.37
2009	105	4.5	0.46	2.1	0.40	3.1	0.42	3.6	0.43
2010	101	4.3	0.45	2.0	0.41	2.9	0.42	3.5	0.44
2011	96	4.1	0.41	1.9	0.35	2.6	0.36	3.1	0.37
2012	118	5.0	0.49	2.2	0.41	3.1	0.43	3.9	0.45
2013	133	5.6	0.55	2.3	0.45	3.4	0.48	4.3	0.52
2014	98	4.1	0.51	1.7	0.43	2.5	0.46	3.1	0.47
2015	114	4.7	0.92	1.9	0.76	2.8	0.80	3.6	0.85
2016	84	3.4	1.33	1.3	1.03	2.0	1.11	2.5	1.23
1998-2016	1655	4.3	0.50	1.9	0.43	2.8	0.45	3.5	0.47

Table 12

Age distribution of age at death (cancer-related) for period 2007-2016
(incl. multiple malignancies)

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19	1	0.0	0.0			0.0	1	0.1	0.1
20-24	6	0.1	0.2	5	0.1	0.1	1	0.1	0.2
25-29	4	0.1	0.2	1	0.0	0.2	3	0.3	0.5
30-34	5	0.1	0.3	2	0.1	0.2	3	0.3	0.8
35-39	12	0.3	0.6	7	0.2	0.4	5	0.5	1.3
40-44	49	1.1	1.7	40	1.1	1.5	9	0.9	2.1
45-49	156	3.4	5.1	128	3.6	5.1	28	2.7	4.9
50-54	380	8.3	13.4	316	8.9	14.0	64	6.2	11.1
55-59	563	12.3	25.7	471	13.2	27.3	92	9.0	20.1
60-64	646	14.1	39.8	519	14.6	41.9	127	12.4	32.4
65-69	789	17.2	57.0	622	17.5	59.4	167	16.3	48.7
70-74	713	15.6	72.5	570	16.0	75.4	143	13.9	62.6
75-79	540	11.8	84.3	425	12.0	87.3	115	11.2	73.8
80-84	358	7.8	92.1	262	7.4	94.7	96	9.3	83.2
85+	361	7.9	100.0	188	5.3	100.0	173	16.8	100.0
All ages	4583	100.0		3556	100.0		1027	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(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		1			0.1	0.25		4.5
20-24	5	1	0.4	0.63	0.1	0.20	8.8	3.0
25-29	1	3	0.1	0.06	0.2	0.20	1.4	4.1
30-34	2	3	0.1	0.10	0.2	0.12	1.9	2.5
35-39	7	5	0.4	0.16	0.3	0.18	3.5	1.8
40-44	40	9	2.1	0.28	0.5	0.16	8.1	1.3
45-49	128	28	6.5	0.34	1.5	0.24	11.1	2.1
50-54	316	64	18.3	0.48	3.7	0.35	15.4	3.2
55-59	471	92	33.3	0.57	6.3	0.39	13.9	3.2
60-64	519	127	42.4	0.55	9.6	0.46	10.4	3.4
65-69	622	167	52.5	0.67	12.9	0.59	8.5	3.1
70-74	570	143	51.5	0.74	11.3	0.58	6.1	2.1
75-79	425	115	53.3	0.83	11.5	0.65	4.7	1.6
80-84	262	96	57.0	0.99	13.6	0.72	3.5	1.4
85+	188	173	61.4	1.13	23.6	0.92	2.9	1.9
All ages	3556	1027					6.8	2.2
Mortality								
Raw			15.6	0.62	4.3	0.52		
WS			8.3	0.58	1.9	0.44		
ES			12.0	0.60	2.8	0.46		
BRD-S			14.5	0.63	3.4	0.48		
PYLL-70								
per 100,000			106.2		25.1			
ES			91.9		21.2			
AYLL-70			10.2		10.0			

Table 14a

Further malignancies in deaths in period 1998–2016
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03–C06 Oral cavity	122	4.1			6	4.9	116	95.1
C09–C10 Oropharynx	148	4.9			37	25.0	111	75.0
C12–C13 Hypopharynx	105	3.5			33	31.4	72	68.6
C15 Oesophagus	262	8.7	43	16.4	44	16.8	175	66.8
C16 Stomach	70	2.3	16	22.9	5	7.1	49	70.0
C18 Colon	135	4.5	46	34.1	5	3.7	84	62.2
C19–C20 Rectum	88	2.9	21	23.9	5	5.7	62	70.5
C22 Liver	77	2.6	6	7.8	10	13.0	61	79.2
C25 Pancreas	59	2.0	6	10.2	4	6.8	49	83.1
C32 Larynx	79	2.6			12	15.2	67	84.8
C33–C34 Lung	720	23.9	93	12.9	75	10.4	552	76.7
C43 Malign. melanoma	50	1.7	20	40.0	5	10.0	25	50.0
C44 Skin others	286	9.5	95	33.2	40	14.0	151	52.8
C61 Prostate	259	8.6	132	51.0	17	6.6	110	42.5
C64 Kidney	68	2.3	27	39.7	6	8.8	35	51.5
C67 Bladder	95	3.2	32	33.7	1	1.1	62	65.3
C76–C79 CUP	80	2.7	39	48.8	7	8.8	34	42.5
C82–C85 NHL	68	2.3	27	39.7	9	13.2	32	47.1
Others, specified	236	7.8	82	34.7	13	5.5	141	59.7
All further malignancies	3007	100.0	685	22.8	334	11.1	1988	66.1

Further malignancies with number of cases 1 to 28 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 1998–2016
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03–C06 Oral cavity	29	3.6			2	6.9	27	93.1
C09–C10 Oropharynx	40	5.0			11	27.5	29	72.5
C12–C13 Hypopharynx	23	2.8			6	26.1	17	73.9
C15 Oesophagus	52	6.4	6	11.5	7	13.5	39	75.0
C16 Stomach	22	2.7	6	27.3	4	18.2	12	54.5
C18 Colon	45	5.6	21	46.7	4	8.9	20	44.4
C19–C20 Rectum	10	1.2	3	30.0			7	70.0
C22 Liver	11	1.4	1	9.1	3	27.3	7	63.6
C25 Pancreas	18	2.2	1	5.6	1	5.6	16	88.9
C32 Larynx	14	1.7			2	14.3	12	85.7
C33–C34 Lung	143	17.7	13	9.1	12	8.4	118	82.5
C43 Malign. melanoma	14	1.7	3	21.4	2	14.3	9	64.3
C44 Skin others	52	6.4	17	32.7	6	11.5	29	55.8
C50 Breast	137	17.0	84	61.3	6	4.4	47	34.3
C53 Cervix uteri	25	3.1	18	72.0			7	28.0
C54 Corpus uteri	20	2.5	13	65.0	1	5.0	6	30.0
C56 Ovary	16	2.0	7	43.8			9	56.3
C67 Bladder	9	1.1	4	44.4			5	55.6
C73 Thyroid	11	1.4	8	72.7	1	9.1	2	18.2
C76–C79 CUP	20	2.5	11	55.0			9	45.0
C82–C85 NHL	22	2.7	10	45.5	1	4.5	11	50.0
C91–C96 Leukaemia	9	1.1	1	11.1			8	88.9
Others, specified	66	8.2	10	15.2	8	12.1	48	72.7
All further malignancies	808	100.0	237	29.3	77	9.5	494	61.1

Further malignancies with number of cases 1 to 8 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 15

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(**First primaries only ***)

Age at death Years	Males		Males		Females		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19		1			0.1	0.25		5.0
20-24	5	1	0.4	0.71	0.1	0.20	9.8	3.2
25-29	1	3	0.1	0.06	0.2	0.23	1.5	4.5
30-34	2	3	0.1	0.11	0.2	0.13	2.0	2.8
35-39	5	3	0.3	0.12	0.2	0.14	2.6	1.2
40-44	36	9	1.9	0.27	0.5	0.16	7.9	1.5
45-49	104	24	5.3	0.31	1.3	0.24	9.9	2.1
50-54	265	53	15.3	0.46	3.1	0.34	14.7	3.2
55-59	388	74	27.4	0.58	5.0	0.40	13.2	3.1
60-64	412	95	33.6	0.55	7.1	0.43	9.9	3.1
65-69	485	129	40.9	0.68	9.9	0.60	8.3	3.0
70-74	433	103	39.1	0.81	8.1	0.55	6.0	1.9
75-79	298	85	37.4	0.89	8.5	0.64	4.5	1.6
80-84	182	68	39.6	1.10	9.6	0.69	3.3	1.3
85+	132	131	43.1	1.31	17.8	0.89	2.8	1.8
All ages	2748	782					6.7	2.1
Mortality								
Raw			12.0	0.62	3.3	0.50		
WS			6.5	0.57	1.5	0.42		
ES			9.3	0.60	2.1	0.44		
BRD-S			11.1	0.63	2.6	0.46		
PYLL-70								
per 100,000			87.4		20.6			
ES			75.8		17.5			
AYLL-70			10.4		10.4			

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(**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		1			0.1	0.25		5.3
20-24	5	1	0.4	0.71	0.1	0.20	9.8	3.2
25-29	1	3	0.1	0.07	0.2	0.25	1.5	4.6
30-34	2	2	0.1	0.11	0.1	0.10	2.0	1.9
35-39	5	2	0.3	0.13	0.1	0.10	2.7	0.8
40-44	33	8	1.8	0.29	0.4	0.16	7.3	1.4
45-49	93	21	4.7	0.30	1.1	0.23	9.0	1.9
50-54	231	47	13.4	0.45	2.7	0.34	13.0	2.8
55-59	310	63	21.9	0.52	4.3	0.39	10.7	2.7
60-64	314	68	25.6	0.48	5.1	0.33	7.6	2.3
65-69	338	96	28.5	0.56	7.4	0.51	5.9	2.3
70-74	285	70	25.8	0.64	5.5	0.42	4.1	1.4
75-79	183	62	23.0	0.63	6.2	0.53	2.9	1.2
80-84	115	48	25.0	0.78	6.8	0.55	2.2	0.9
85+	90	104	29.4	1.00	14.2	0.76	2.0	1.5
All ages	2005	596					5.1	1.7
Mortality								
Raw			8.8	0.52	2.5	0.42		
WS			4.9	0.49	1.1	0.36		
ES			7.0	0.50	1.7	0.38		
BRD-S			8.1	0.52	2.0	0.40		
PYLL-70								
per 100,000			72.5		17.1			
ES			62.9		14.6			
AYLL-70			11.0		11.0			

* See corresponding tables with multiple malignancies.

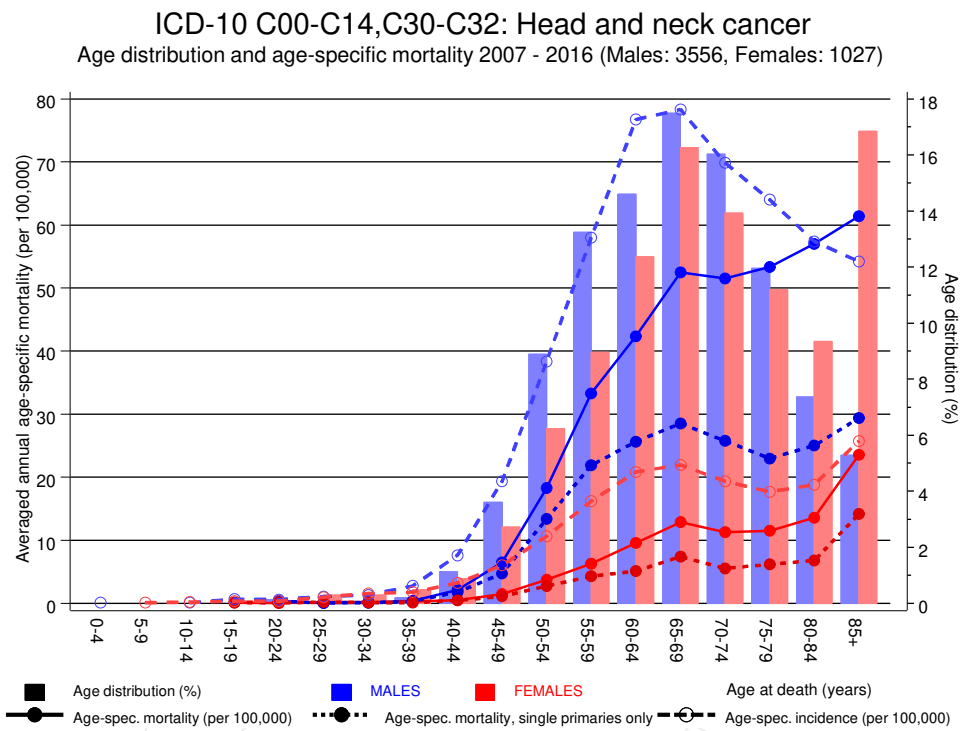
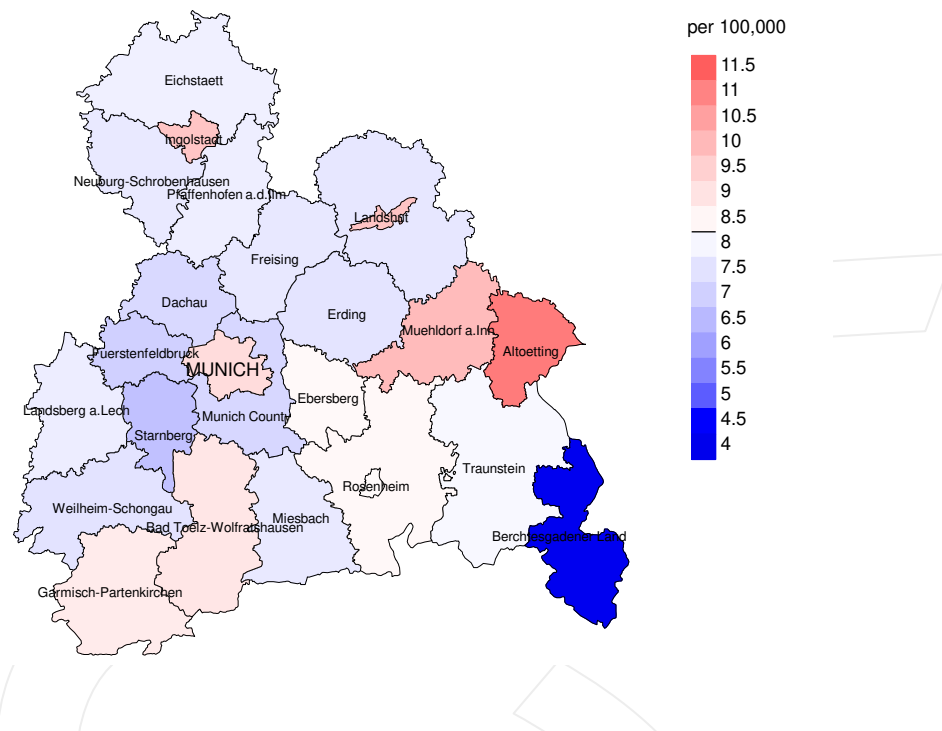


Figure 17. Distribution of age at death (bars; males: mean=63.1 yrs, median=62.9 yrs; females: mean=66.6 yrs, median=66.6 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

Average mortality (world standard population) 2007 - 2016: Males



Average mortality (world standard population) 2007 - 2016: Females

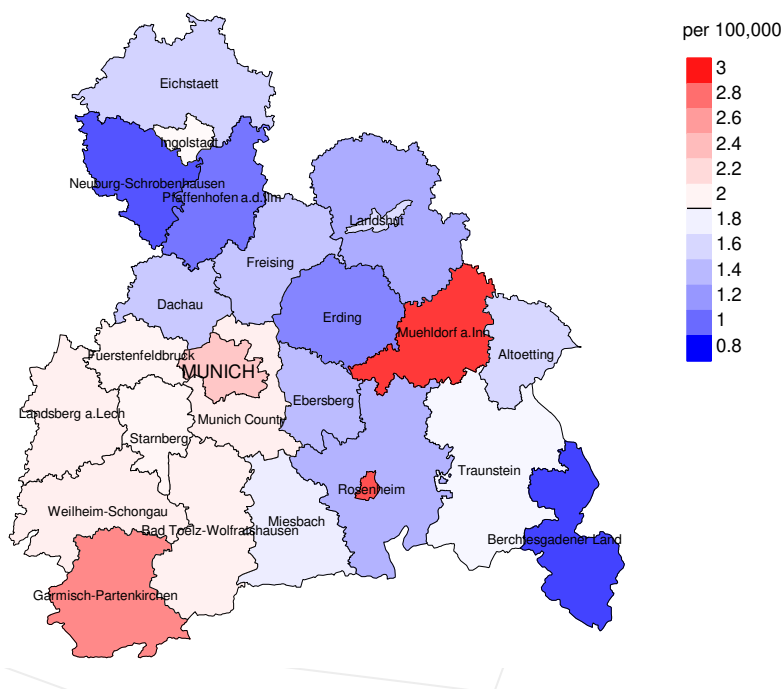
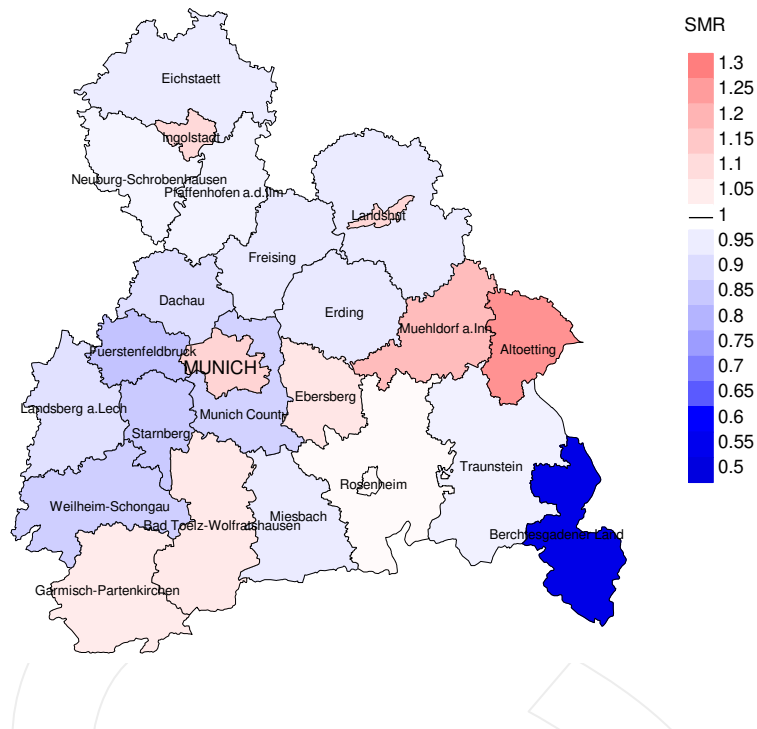


Figure 18a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2016. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 8.3/100,000 WS N=3,556, females 1.9/100,000 WS N=1,027).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 25 women died from HN cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 1.4/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.7 and 2.7/100,000.

Standardized mortality ratio (SMR) 2007 - 2016: Males



Standardized mortality ratio (SMR) 2007 - 2016: Females

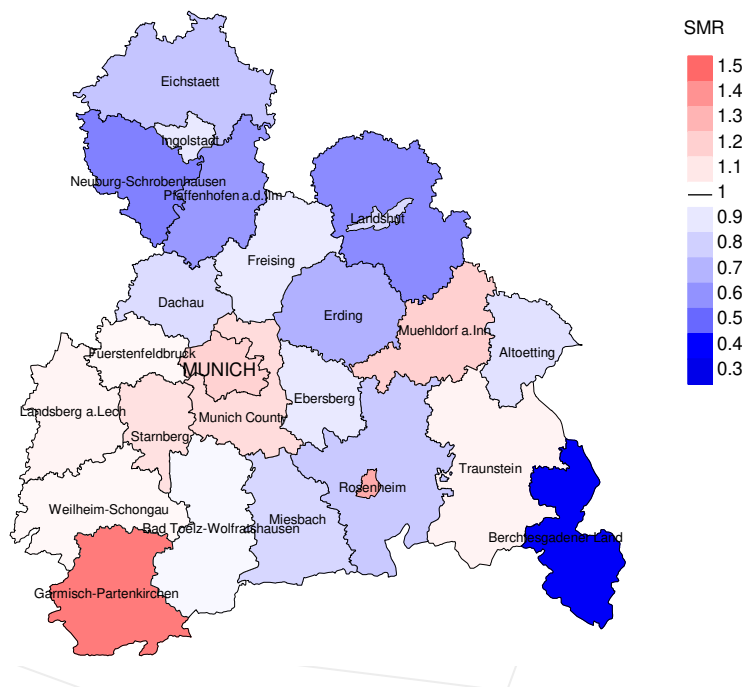


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=3,556, females N=1,027).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 25 women died from HN cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.90. Though, the value of this parameter may vary with an underlying probability of 99% between 0.51 and 1.48, 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 index from mortality and incidence (Mortality-Incidence ratio, **MI-index**) is a statistic 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 MI- index. 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 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 between mortality and incidence
FRG	Federal Republic of Germany

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