

Munich Cancer Registry



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

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

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	7,573
Diseases	7,743
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/bC0032E-ICD-10-C00-C14-C30-C32-HN-cancer-incidence-and-mortality.pdf>

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**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, January 2021

[#] 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	267	13	4.9	10.1	16.9	83.9	96.6
1999	289	23	8.0	13.5	16.7	84.4	97.2
2000	263	17	6.5	12.7	16.6	85.2	97.0
2001	250	20	8.0	13.0	16.3	80.8	98.0
2002	398	36	9.0	13.4	16.1	84.9	98.2 #
2003	382	16	4.2	14.0	15.6	81.4	97.9
2004	342	23	6.7	14.2	15.3	81.6	98.0
2005	409	17	4.2	14.5	14.8	78.2	97.3
2006	373	16	4.3	14.6	14.2	78.3	97.3
2007	445	30	6.7	14.7	13.9	76.4	95.7 #
2008	473	27	5.7	15.1	13.3	72.7	98.9
2009	472	20	4.2	15.3	12.6	73.5	97.9
2010	453	21	4.6	15.6	12.0	67.1	98.2
2011	442	30	6.8	16.0	10.8	69.9	98.2
2012	425	30	7.1	16.3	10.3	63.8	97.9
2013	433	20	4.6	16.4	10.1	60.0	97.2
2014	420	18	4.3	16.7	9.5	57.4	96.0
2015	385	19	4.9	16.9	9.3	53.2	98.7
2016	311	24	7.7	17.3	9.8	55.6	99.0
2017	227	12	5.3	17.8	9.5	49.3	100.0
2018	174	4	2.3	18.0	8.5	25.9	98.9
2019	110			18.2	5.7	17.3	76.4 ##
1998-2019	7743	436	5.6	18.2	16.9	69.8	97.5

7,743 cases diagnosed 1998-2019 are related to a total of 7,573 patients. Currently, in 2,535 (33.5 %) of these 7,573 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,903 / 474 / 158 (25.1 % / 6.3 % / 2.1 %) 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 227 cases has been diagnosed, of which 17.8 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 9.5 % 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 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	231	86.5	10	4.3	9.1	17.3	84.0	96.5
1999	239	82.7	18	7.5	11.9	17.1	85.4	97.9
2000	216	82.1	13	6.0	11.5	16.9	86.1	97.2
2001	207	82.8	15	7.2	12.0	16.6	80.7	98.1
2002	330	82.9	28	8.5	12.3	16.5	83.9	97.9 #
2003	318	83.2	10	3.1	13.1	16.0	83.3	99.1
2004	290	84.8	20	6.9	13.8	15.7	82.4	97.9
2005	347	84.8	12	3.5	14.0	15.2	78.7	97.1
2006	288	77.2	13	4.5	14.1	14.6	81.9	97.2
2007	364	81.8	22	6.0	14.1	14.2	78.3	96.4 #
2008	392	82.9	21	5.4	14.5	13.6	73.2	98.7
2009	386	81.8	14	3.6	14.6	12.8	73.8	97.9
2010	373	82.3	13	3.5	14.8	12.0	68.9	98.7
2011	344	77.8	22	6.4	15.3	10.7	71.2	98.3
2012	331	77.9	19	5.7	15.5	10.1	64.0	97.6
2013	340	78.5	12	3.5	15.6	9.7	58.8	97.1
2014	341	81.2	15	4.4	16.0	9.2	59.5	96.8
2015	298	77.4	13	4.4	16.3	8.7	53.7	99.0
2016	237	76.2	16	6.8	16.6	9.1	54.4	99.2
2017	177	78.0	10	5.6	17.1	8.9	49.2	100.0
2018	123	70.7	2	1.6	17.3	6.8	27.6	98.4
2019	78	70.9			17.5	6.8	20.5	76.9 ##
1998-2019	6250	80.7	318	5.1	17.5	17.3	71.1	97.6

6,250 cases diagnosed 1998-2019 are related to a total of 6,118 patients. Currently, in 2,044 (33.4 %) of these 6,118 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,522 / 393 / 129 (24.9 % / 6.4 % / 2.1 %) 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 177 cases has been diagnosed, of which 17.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 8.9 % 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	36	13.5	3	8.3	16.7	15.2	83.3	97.2
1999	50	17.3	5	10.0	22.1	15.1	80.0	94.0
2000	47	17.9	4	8.5	18.8	15.1	80.9	95.7
2001	43	17.2	5	11.6	18.2	14.9	81.4	97.7
2002	68	17.1	8	11.8	18.9	14.6	89.7	100.0 #
2003	64	16.8	6	9.4	18.2	13.9	71.9	92.2
2004	52	15.2	3	5.8	16.7	13.6	76.9	98.1
2005	62	15.2	5	8.1	17.1	13.5	75.8	98.4
2006	85	22.8	3	3.5	17.2	12.8	65.9	97.6
2007	81	18.2	8	9.9	17.7	12.6	67.9	92.6 #
2008	81	17.1	6	7.4	18.4	12.3	70.4	100.0
2009	86	18.2	6	7.0	18.5	11.9	72.1	97.7
2010	80	17.7	8	10.0	19.3	11.7	58.8	96.3
2011	98	22.2	8	8.2	19.3	11.5	65.3	98.0
2012	94	22.1	11	11.7	19.7	11.1	62.8	98.9
2013	93	21.5	8	8.6	19.8	11.7	64.5	97.8
2014	79	18.8	3	3.8	20.0	10.5	48.1	92.4
2015	87	22.6	6	6.9	19.8	11.3	51.7	97.7
2016	74	23.8	8	10.8	20.2	12.0	59.5	98.6
2017	50	22.0	2	4.0	20.6	11.0	50.0	100.0
2018	51	29.3	2	3.9	20.9	12.5	21.6	100.0
2019	32	29.1			21.0	3.2	9.4	75.0 ##
1998-2019	1493	19.3	118	7.9	21.0	15.2	64.5	96.7

1,493 cases diagnosed 1998-2019 are related to a total of 1,455 patients. Currently, in 491 (33.7 %) of these 1,455 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 381 / 81 / 29 (26.2 % / 5.6 % / 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 2017, a subgroup of 50 cases has been diagnosed, of which 20.6 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 11.0 % 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 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	231	36	20.8	3.1	13.5	1.6	18.7	2.3	21.1	2.7
1999	239	50	21.4	4.2	13.7	2.3	19.2	3.2	21.4	3.9
2000	216	47	19.0	3.9	12.5	2.5	17.3	3.3	19.6	3.6
2001	207	43	17.9	3.5	11.7	1.9	16.0	2.7	17.9	3.0
2002	330	68	17.7	3.5	11.3	1.9	15.7	2.6	17.3	3.1
2003	318	64	17.0	3.2	10.8	1.9	15.0	2.5	16.7	2.9
2004	290	52	15.4	2.6	9.6	1.5	13.3	2.0	15.2	2.4
2005	347	62	18.3	3.1	11.4	1.7	15.6	2.3	17.5	2.8
2006	288	85	15.0	4.2	9.5	2.5	13.0	3.4	14.6	3.8
2007	364	81	16.4	3.5	9.8	2.0	13.7	2.8	15.7	3.1
2008	392	81	17.6	3.5	10.5	2.0	14.7	2.7	16.8	2.9
2009	386	86	17.3	3.7	10.1	1.9	14.1	2.7	16.3	3.1
2010	373	80	16.5	3.4	9.8	1.8	13.5	2.5	15.3	2.9
2011	344	98	15.4	4.2	8.5	2.2	12.0	3.1	14.0	3.5
2012	331	94	14.6	4.0	8.3	2.1	11.5	2.9	13.4	3.4
2013	340	93	14.8	3.9	8.1	2.1	11.4	2.9	13.4	3.2
2014	341	79	14.6	3.3	8.1	1.7	11.3	2.4	13.4	2.7
2015	298	87	12.5	3.6	6.8	1.8	9.6	2.5	11.4	3.0
2016	237	74	9.9	3.0	5.7	1.5	7.9	2.1	9.1	2.5
2017	177	50	7.3	2.0	3.6	1.0	5.3	1.4	6.5	1.7
2018	123	51	5.1	2.1	2.7	1.1	3.8	1.5	4.5	1.7
2019	78	32	3.2	1.3	1.7	0.6	2.4	0.9	2.9	1.1
1998-2019	6250	1493	14.2	3.3	8.3	1.7	11.6	2.4	13.3	2.8

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	267	60.8	10.3	32.9	87.6	49.5	54.1	59.0	67.5	75.3
1999	289	60.7	11.6	26.1	87.7	48.5	51.8	59.2	69.2	76.8
2000	263	59.5	12.3	19.7	90.8	45.7	51.5	58.6	67.1	75.3
2001	250	61.2	11.5	28.7	96.4	47.7	54.2	60.1	67.7	75.8
2002	398	61.4	10.3	36.7	92.7	48.3	54.7	61.1	67.2	75.6
2003	382	61.4	11.4	10.7	94.4	47.7	53.6	60.9	68.8	76.7
2004	342	61.8	11.4	25.9	90.9	47.3	54.4	61.4	69.1	77.8
2005	409	61.9	11.4	12.8	99.0	47.3	54.6	62.7	68.4	76.6
2006	373	61.8	11.1	17.6	101	48.5	54.6	61.8	68.4	75.9
2007	445	62.8	11.0	20.2	87.7	49.1	55.4	63.3	69.6	77.3
2008	473	63.7	11.7	14.1	97.5	48.6	56.2	63.9	70.0	79.4
2009	472	63.8	11.9	2.4	95.8	49.3	55.7	63.3	71.7	79.1
2010	453	62.9	11.9	16.6	103	48.1	55.1	64.0	70.6	76.7
2011	442	64.6	11.5	24.5	92.0	49.3	56.5	65.1	72.6	78.8
2012	425	64.5	11.5	18.6	98.2	50.0	55.9	63.8	72.6	78.7
2013	433	65.3	11.0	24.5	91.6	51.4	57.6	65.7	73.3	78.7
2014	420	65.7	11.8	25.6	96.6	50.5	58.1	66.2	74.0	80.1
2015	385	66.3	11.4	20.2	95.0	52.1	57.9	66.3	74.6	81.3
2016	311	66.0	12.5	15.0	102	52.4	58.8	65.1	73.3	81.4
2017	227	67.6	10.9	32.9	92.7	54.1	59.3	67.7	76.4	80.8
2018	174	66.1	10.2	41.7	94.4	52.9	58.9	66.5	73.0	79.0
2019	110	66.3	11.8	32.9	87.0	52.4	58.3	66.3	75.4	80.7
1998-2019	7743	63.4	11.6	2.4	103	49.0	55.5	63.2	71.1	78.5

Table 3a

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

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	231	60.2	10.1	32.9	87.6	48.6	53.8	58.6	66.7	73.0
1999	239	60.3	10.9	33.5	87.7	48.6	51.9	59.0	68.2	74.6
2000	216	59.7	11.1	20.4	89.6	47.8	52.5	58.3	66.9	75.1
2001	207	60.2	10.7	28.7	93.7	48.0	53.8	59.8	66.2	74.0
2002	330	60.6	10.1	36.7	92.7	48.1	54.1	60.8	66.0	73.7
2003	318	61.0	10.2	38.2	88.4	47.5	53.6	60.4	68.1	74.4
2004	290	61.5	10.9	25.9	90.9	47.3	54.0	61.2	68.3	76.6
2005	347	61.4	10.9	12.8	99.0	47.3	54.3	62.0	68.1	75.3
2006	288	61.3	10.4	17.6	90.0	48.4	54.6	61.3	67.7	75.4
2007	364	62.9	10.6	20.2	87.7	49.4	55.8	63.9	69.9	76.8
2008	392	63.5	11.0	28.3	97.5	48.6	56.3	63.7	70.0	78.3
2009	386	63.3	11.3	2.4	88.9	49.3	56.2	63.1	70.8	77.9
2010	373	62.4	11.4	16.6	92.3	48.1	54.9	63.8	70.3	76.1
2011	344	64.5	10.9	32.1	88.2	49.9	56.1	65.1	72.4	78.2
2012	331	64.2	11.1	18.6	94.9	50.0	55.8	63.6	72.6	78.4
2013	340	65.2	10.3	37.1	89.9	51.6	57.7	65.7	73.4	78.5
2014	341	65.8	11.3	25.6	96.6	51.7	58.2	66.4	73.7	79.5
2015	298	66.4	10.9	32.7	94.6	52.1	58.7	66.3	74.3	80.9
2016	237	65.3	12.1	15.0	102	52.2	58.5	64.6	72.4	80.3
2017	177	68.1	10.6	32.9	92.7	54.8	59.8	68.1	76.3	81.0
2018	123	66.2	9.6	41.7	82.6	53.4	58.6	66.7	74.0	79.0
2019	78	66.6	12.1	32.9	87.0	51.6	58.7	66.7	77.0	80.9
1998-2019	6250	63.0	11.0	2.4	102	49.1	55.4	62.9	70.5	77.5

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	36	65.2	11.0	47.2	86.7	53.6	56.0	62.5	75.1	81.8
1999	50	62.4	14.6	26.1	86.4	44.9	51.2	60.6	75.6	79.8
2000	47	58.6	16.8	19.7	90.8	36.3	46.0	58.9	70.1	81.3
2001	43	66.0	14.2	37.4	96.4	47.3	56.2	63.7	74.6	84.8
2002	68	64.9	11.0	42.8	91.2	50.4	57.0	63.2	73.8	81.2
2003	64	63.3	16.1	10.7	94.4	48.0	53.3	63.3	77.4	82.1
2004	52	63.6	13.9	25.9	88.6	47.3	55.8	63.3	74.2	81.9
2005	62	64.5	13.7	22.8	96.1	47.8	56.7	64.7	75.6	81.0
2006	85	63.4	13.1	24.1	101	48.7	55.0	63.0	70.9	82.2
2007	81	62.3	12.5	30.1	87.4	47.7	54.0	62.6	68.1	79.1
2008	81	64.8	14.4	14.1	97.0	51.5	56.2	64.5	70.8	85.6
2009	86	65.9	14.3	30.0	95.8	49.3	55.2	64.4	77.2	85.8
2010	80	64.9	13.6	33.3	103	49.5	55.2	65.4	73.1	84.2
2011	98	64.9	13.4	24.5	92.0	47.4	57.3	65.0	73.2	81.1
2012	94	65.8	12.8	21.5	98.2	51.7	59.7	64.2	74.3	83.5
2013	93	65.5	13.1	24.5	91.6	50.6	56.1	65.2	73.1	85.4
2014	79	65.5	14.0	31.6	92.7	44.2	58.0	66.0	75.1	84.1
2015	87	65.8	12.9	20.2	95.0	51.6	56.8	65.3	75.8	82.7
2016	74	68.4	13.7	22.6	96.2	53.7	61.2	67.5	78.3	86.2
2017	50	66.0	11.7	41.1	85.8	50.3	56.0	67.0	77.0	79.0
2018	51	65.9	11.5	42.2	94.4	50.8	59.4	66.4	71.2	77.7
2019	32	65.6	11.0	35.1	84.3	55.2	58.3	66.3	74.4	79.0
1998-2019	1493	64.8	13.5	10.7	103	48.7	56.0	64.5	74.1	82.4

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	1	0.0	0.0	1	0.0	0.0			0.0
5-9	0	0.0	0.0			0.0			0.0
10-14	2	0.0	0.1	1	0.0	0.1	1	0.1	0.1
15-19	3	0.1	0.1	3	0.1	0.1			0.1
20-24	10	0.2	0.3	5	0.1	0.3	5	0.5	0.6
25-29	6	0.1	0.5	4	0.1	0.4	2	0.2	0.8
30-34	20	0.4	0.9	12	0.3	0.7	8	0.8	1.6
35-39	35	0.7	1.6	22	0.6	1.3	13	1.3	2.9
40-44	116	2.4	4.0	88	2.3	3.6	28	2.8	5.8
45-49	265	5.6	9.6	215	5.7	9.3	50	5.1	10.9
50-54	474	9.9	19.5	385	10.2	19.5	89	9.0	19.9
55-59	683	14.3	33.9	545	14.4	33.9	138	14.0	33.9
60-64	783	16.4	50.3	629	16.6	50.5	154	15.6	49.5
65-69	807	16.9	67.2	662	17.5	68.0	145	14.7	64.2
70-74	677	14.2	81.4	552	14.6	82.6	125	12.7	76.9
75-79	466	9.8	91.2	369	9.8	92.3	97	9.8	86.7
80-84	251	5.3	96.4	195	5.2	97.5	56	5.7	92.4
85+	171	3.6	100.0	96	2.5	100.0	75	7.6	100.0
All ages	4770	100.0		3784	100.0		986	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=173 %	Females DCO rate n=73 %	Males Prop.all cancers n=143063 %	Females Prop.all cancers n=144724 %
0- 4	1		0.1				0.5	
5- 9								
10-14	1	1	0.1	0.1			0.8	0.9
15-19	3		0.2				1.0	
20-24	5	5	0.3	0.3			0.9	1.1
25-29	4	2	0.2	0.1			0.5	0.2
30-34	12	8	0.6	0.4			1.0	0.4
35-39	22	13	1.0	0.6		7.7	1.3	0.4
40-44	88	28	3.8	1.2	2.3		3.4	0.5
45-49	208	50	8.3	2.1	1.9		4.3	0.6
50-54	383	88	16.3	3.8	3.4	4.5	4.9	0.8
55-59	540	136	27.8	6.8	3.0	2.9	4.6	1.1
60-64	627	153	38.4	8.7	2.2	3.3	3.8	1.1
65-69	658	143	43.3	8.5	2.9	4.2	2.9	0.8
70-74	549	122	39.2	7.6	6.9	6.6	2.1	0.7
75-79	367	96	33.1	7.0	4.6	5.2	1.7	0.5
80-84	195	54	29.7	5.5	9.2	20.4	1.4	0.4
85+	94	74	22.0	7.7	34.0	39.2	1.0	0.5
All ages	3757	973			4.6	7.5	2.6	0.7
Incidence								
Raw			12.5	3.1				
WS			7.0	1.6				
ES			9.8	2.3				
BRD-S			11.4	2.6				

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).

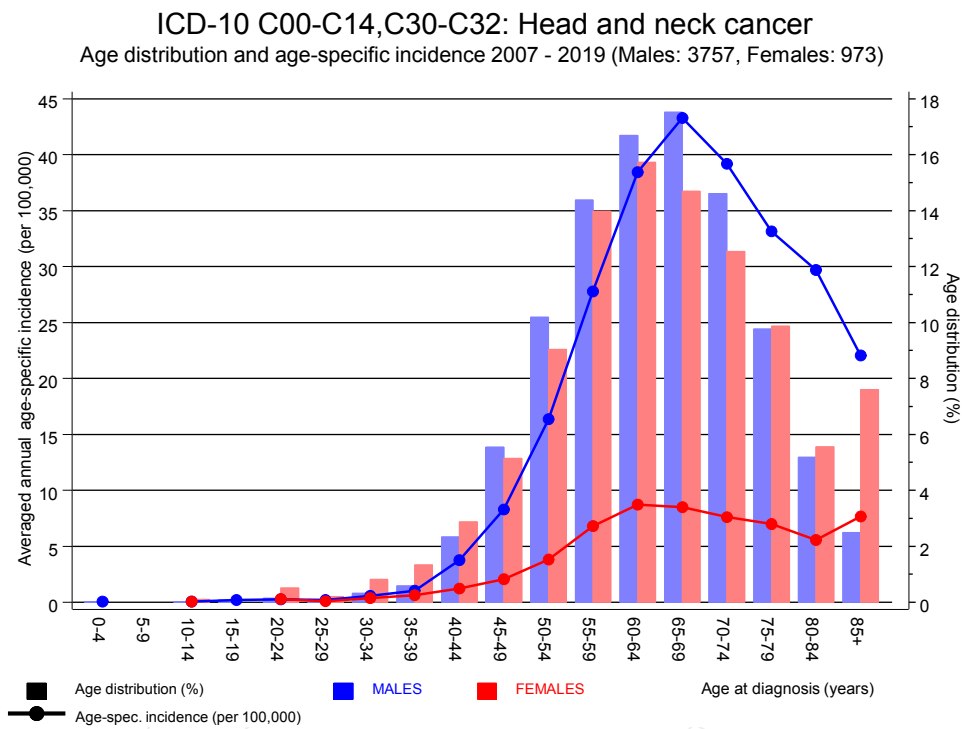


Figure 6. Age distribution (males: mean=64.6 yrs, median=64.9 yrs; females: mean=65.4 yrs, median=65.1 yrs) and age-specific incidence.

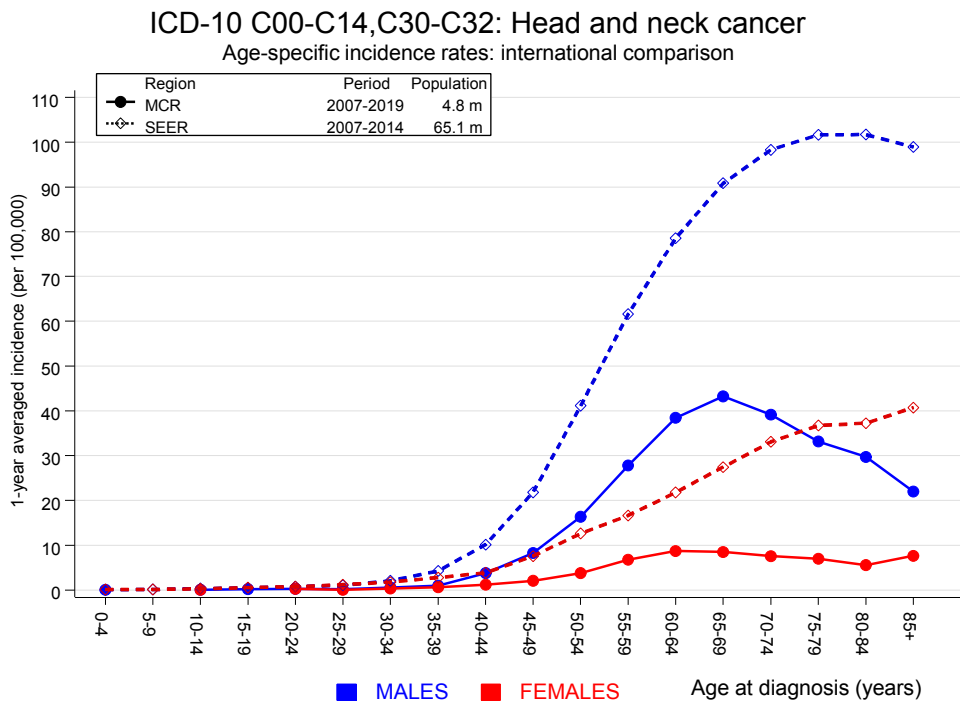


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 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	2	0.3	6.5	0.8	23.6	0.8	
C03–C06 Oral cavity	83	3.1	26.9	21.5	33.4 #	37.3	8.4
C07–C08 Salivary gland	2	0.6	3.2	0.4	11.6	0.6	
C09–C10 Oropharynx	95	3.9	24.1	19.5	29.5 #	42.4	5.3
C11 Nasopharynx	6	0.3	23.4	8.6	51.0 #	2.7	16.7
C12–C13 Hypopharynx	48	2.1	22.6	16.7	30.0 #	21.4	10.4
C14 ENT cancer	3	0.1	39.9	8.2	116.5 #	1.4	100.0
C15 Oesophagus	130	6.4	20.4	17.0	24.2 #	57.6	12.3
C16 Stomach	26	11.0	2.4	1.5	3.5 #	7.0	3.8
C17 Small intestine	8	1.8	4.4	1.9	8.8 #	2.9	12.5
C18 Colon	70	26.8	2.6	2.0	3.3 #	20.1	5.7
C19–C20 Rectum	46	16.4	2.8	2.1	3.8 #	13.8	6.5
C21 Anus/canal	5	0.8	6.6	2.2	15.5 #	2.0	
C22 Liver	44	8.7	5.0	3.7	6.8 #	16.4	4.5
C23–C24 Bile	8	2.9	2.7	1.2	5.4 #	2.4	12.5
C25 Pancreas	31	11.0	2.8	1.9	4.0 #	9.3	19.4
C26 GI cancer	2	0.3	7.6	0.9	27.3	0.8	
C30–C31 Sinuses	8	0.6	14.0	6.0	27.5 #	3.5	12.5
C32 Larynx	40	3.4	11.8	8.4	16.1 #	17.1	32.5
C33–C34 Lung	345	36.0	9.6	8.6	10.7 #	144.0	9.3
C38,C45 Mesothelioma	3	2.0	1.5	0.3	4.5	0.5	
C43 Malign. melanoma	20	13.6	1.5	0.9	2.3	3.0	25.0
C46,C49 Soft tissue	3	1.6	1.8	0.4	5.3	0.6	
C60 Penis	3	0.7	4.1	0.8	11.9	1.1	
C61 Prostate	93	84.6	1.1	0.9	1.3	3.9	4.3
C64 Kidney	34	10.7	3.2	2.2	4.4 #	10.8	14.7
C65 Renal pelvis	6	1.2	4.9	1.8	10.7 #	2.2	
C66 Ureter	2	0.7	2.8	0.3	10.3	0.6	
C67 Bladder	31	12.4	2.5	1.7	3.6 #	8.7	6.5
C70–C72 CNS cancer	2	4.0	0.5	0.1	1.8	-0.9	50.0
C73 Thyroid	8	2.3	3.4	1.5	6.8 #	2.6	12.5
C76–C79 CUP	21	4.8	4.3	2.7	6.6 #	7.5	
C81 Hodgkin lymphoma	4	0.7	5.4	1.5	13.8 #	1.5	
C82–C85 NHL	20	12.2	1.6	1.0	2.5 #	3.7	
C90 Mult. myeloma	5	3.7	1.3	0.4	3.1	0.6	
C91–C96 Leukaemia	9	4.1	2.2	1.0	4.1	2.3	33.3
Others, specified	5	1.7	3.0	1.0	7.0	1.6	
Not observed	0	2.6	0.0	0.0	1.4	-1.2	
All further malignancies	1271	300.1	4.2	4.0	4.5 #	452.6	9.6

Patients 5891
 Median age at next malignancy (years) 67.3
 Person-years 21453
 Mean observation time (years) 3.6
 Median observation time (years) 2.0

The occurrence of further specified malignancy is statistically significant.

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

Table 7b

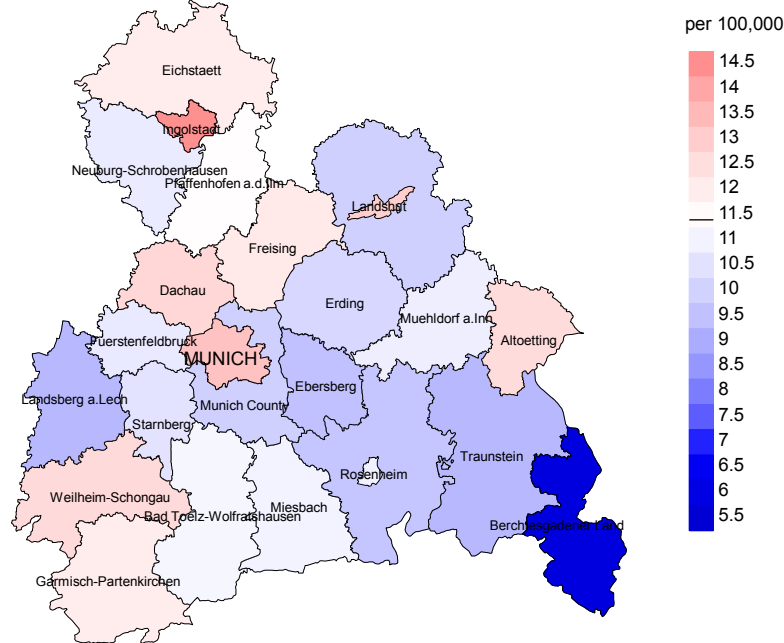
Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998-2019

FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	11	0.3	36.3	18.1	65.0 #	22.0	
C07-C08 Salivary gland	1	0.1	13.8	0.3	76.8	1.9	
C09-C10 Oropharynx	29	0.2	119.9	80.3	172.2 #	59.2	3.4
C11 Nasopharynx	3	0.0	177.3	36.6	518.2 #	6.1	33.3
C12-C13 Hypopharynx	8	0.1	127.7	55.1	251.6 #	16.3	
C14 ENT cancer	2	0.0	293.5	35.5	1060 #	4.1	50.0
C15 Oesophagus	24	0.3	73.3	47.0	109.1 #	48.7	
C16 Stomach	6	1.5	4.0	1.5	8.8 #	9.3	
C18 Colon	12	4.2	2.8	1.5	4.9 #	16.0	
C19-C20 Rectum	5	1.8	2.7	0.9	6.3	6.5	
C22 Liver	6	0.6	10.7	3.9	23.3 #	11.2	16.7
C25 Pancreas	10	2.0	4.9	2.4	9.1 #	16.4	20.0
C30 Middle/inner ear	1	0.0	532.7	13.5	2968 #	2.1	
C30-C31 Sinuses	5	0.1	73.7	23.9	171.9 #	10.2	20.0
C32 Larynx	6	0.1	61.5	22.6	133.9 #	12.2	16.7
C33-C34 Lung	50	3.8	13.0	9.7	17.2 #	95.0	10.0
C43 Malign. melanoma	9	1.9	4.7	2.2	9.0 #	14.6	33.3
C50 Breast	20	15.7	1.3	0.8	2.0	8.8	
C51 Vulva	5	0.5	10.6	3.4	24.8 #	9.3	
C53 Cervix uteri	4	0.7	5.7	1.6	14.6 #	6.8	25.0
C54 Corpus uteri	3	2.8	1.1	0.2	3.2	0.5	
C56 Ovary	2	1.9	1.0	0.1	3.7	0.1	
C64 Kidney	2	1.1	1.9	0.2	6.7	1.9	
C67 Bladder	1	0.8	1.2	0.0	6.6	0.3	
C70-C72 CNS cancer	3	0.6	4.8	1.0	13.9	4.9	66.7
C73 Thyroid	5	0.9	5.4	1.7	12.5 #	8.4	40.0
C76-C79 CUP	3	0.8	3.7	0.8	10.9	4.5	
C82-C85 NHL	4	1.8	2.2	0.6	5.7	4.5	25.0
C90 Mult. myeloma	1	0.6	1.8	0.0	10.0	0.9	100.0
C91-C96 Leukaemia	3	0.7	4.5	0.9	13.3	4.8	66.7
Not observed	0	2.6	0.0	0.0	1.4	-5.4	
All further malignancies	244	48.6	5.0	4.4	5.7 #	402.2	10.2
Patients		1370					
Median age at next malignancy (years)		67.4					
Person-years		4858					
Mean observation time (years)		3.5					
Median observation time (years)		2.0					

The occurrence of further specified malignancy is statistically significant.

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



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

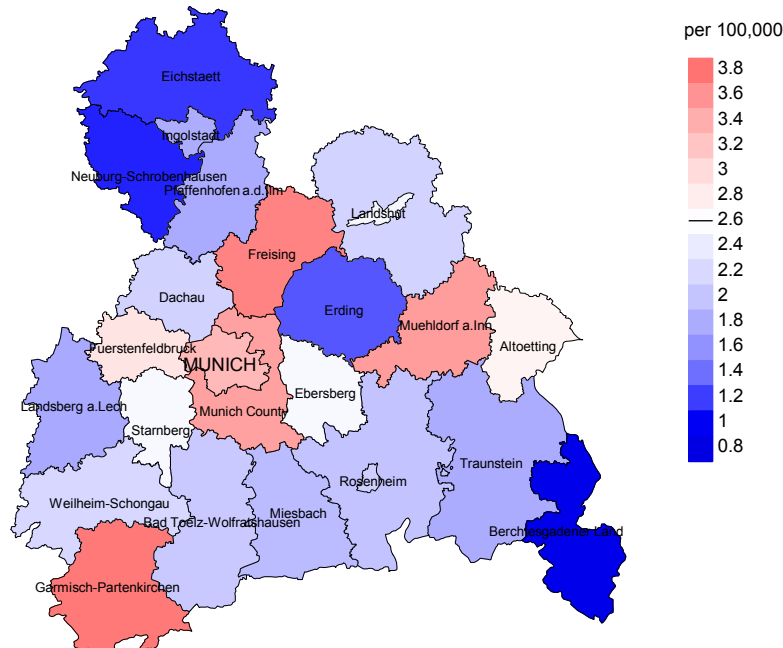
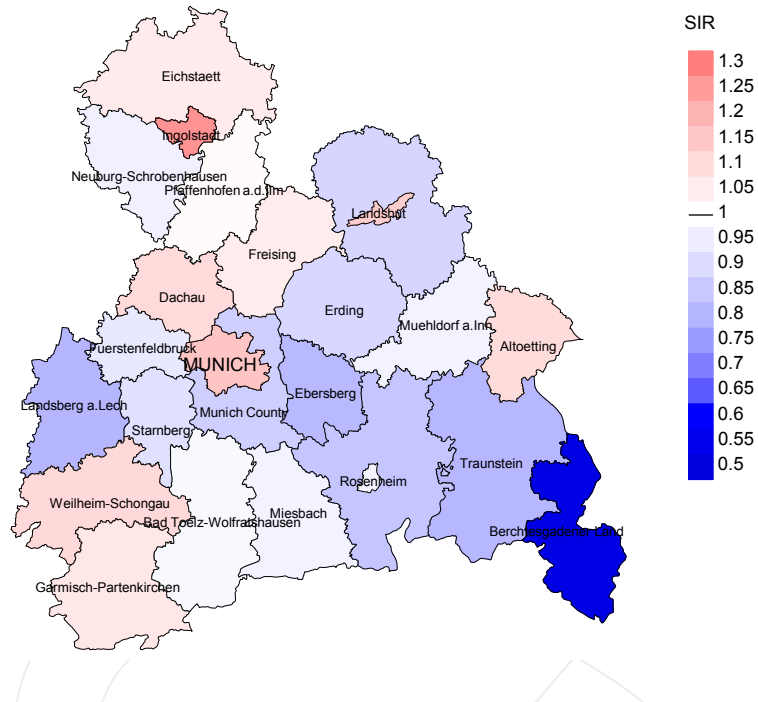


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 11.4/100,000 WS N=3,757, females 2.6/100,000 WS N=973).

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 27 women were identified with newly diagnosed HN cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 2.5/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.4 and 4.1/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

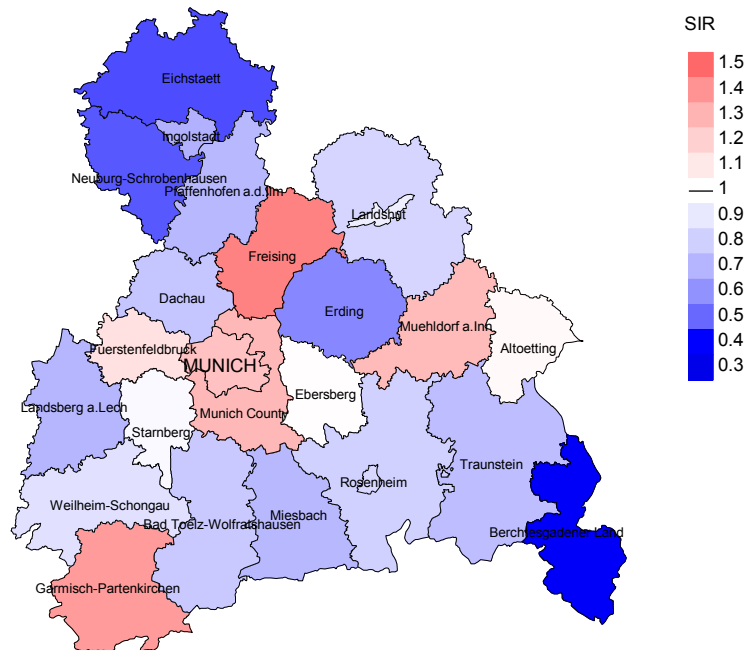


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=3,757, females N=973).

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 27 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 1.00. Though, the value of this parameter may vary with an underlying probability of 99% between 0.58 and 1.62, 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	267	96.6	4.9	224	83.9	93.8
1999	289	97.2	8.0	244	84.4	94.3
2000	263	97.0	6.5	224	85.2	92.4
2001	250	98.0	8.0	202	80.8	94.6
2002	398	98.2	9.0	338	84.9	96.4
2003	382	97.9	4.2	311	81.4	95.8
2004	342	98.0	6.7	279	81.6	93.2
2005	409	97.3	4.2	320	78.2	96.9
2006	373	97.3	4.3	292	78.3	93.5
2007	445	95.7	6.7	340	76.4	94.7
2008	473	98.9	5.7	344	72.7	94.8
2009	472	97.9	4.2	347	73.5	94.8
2010	453	98.2	4.6	304	67.1	93.1
2011	442	98.2	6.8	309	69.9	91.9
2012	425	97.9	7.1	271	63.8	91.5
2013	433	97.2	4.6	260	60.0	91.9
2014	420	96.0	4.3	241	57.4	92.9
2015	385	98.7	4.9	205	53.2	91.2
2016	311	99.0	7.7	173	55.6	83.2
2017	227	100.0	5.3	112	49.3	70.5
2018	174	98.9	2.3	45	25.9	60.0
2019	110	76.4		19	17.3	63.2
1998-2019	7743	97.5	5.6	5404	69.8	92.7

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	267	181	91.2	35	13.1
1999	289	213	88.3	55	19.0
2000	263	206	95.6	36	13.7
2001	250	198	89.4	39	15.6
2002	398	291	96.9	72	18.1
2003	382	286	97.6	55	14.4
2004	342	281	96.8	55	16.1
2005	409	266	95.5	62	15.2
2006	373	316	97.5	57	15.3
2007	445	375	97.6	76	17.1
2008	473	359	98.6	77	16.3
2009	472	329	98.5	60	12.7
2010	453	352	98.3	68	15.0
2011	442	318	97.5	78	17.6
2012	425	373	96.8	73	17.2
2013	433	370	98.4	63	14.5
2014	420	340	98.2	77	18.3
2015	385	361	98.9	66	17.1
2016	311	363	98.1	71	22.8
2017	227	320	95.3	46	20.3
2018	174	225	32.0	16	9.2
2019	110	192	50.5	13	11.8
1998–2019	7743	6515	93.1	1250	16.1

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 4.92 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	181	72.4	27.6	89.7
1999	213	70.0	30.0	88.8
2000	206	76.2	23.8	88.8
2001	198	72.7	27.3	88.7
2002	291	74.2	25.8	87.9
2003	286	75.9	24.1	88.2
2004	281	75.1	24.9	86.4
2005	266	78.2	21.8	91.3
2006	316	78.2	21.8	87.0
2007	375	77.6	22.4	89.9
2008	359	80.2	19.8	90.1
2009	329	77.2	22.8	89.8
2010	352	80.1	19.9	90.5
2011	318	73.9	26.1	87.7
2012	373	73.5	26.5	85.9
2013	370	73.8	26.2	86.3
2014	340	71.8	28.2	85.9
2015	361	72.0	28.0	85.4
2016	363	69.7	30.3	83.4
2017	320	65.9	34.1	81.0
2018	225	38.7	61.3	81.9
2019	192	31.8	68.2	74.2
1998–2019	6515	72.0	28.0	87.2

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	144	62.3	59.9	63.8	63.1
1999	181	61.0	60.1	65.4	60.1
2000	171	63.8	61.2	69.7	64.2
2001	165	60.8	60.3	65.7	60.4
2002	243	62.8	62.2	68.7	62.5
2003	229	64.3	62.5	72.2	63.2
2004	237	63.1	61.8	72.5	62.1
2005	219	65.9	64.5	72.8	65.0
2006	267	65.8	64.6	71.8	65.0
2007	311	65.9	65.0	68.9	65.5
2008	306	67.8	67.0	73.6	67.6
2009	275	68.5	66.7	73.8	67.2
2010	302	67.4	66.4	73.1	66.4
2011	262	69.0	67.8	70.2	69.1
2012	313	71.0	69.6	75.2	70.0
2013	297	70.7	68.4	75.2	69.0
2014	276	70.3	68.5	74.4	69.2
2015	289	69.6	69.4	71.3	69.4
2016	292	72.1	70.9	74.6	71.4
2017	262	74.2	71.8	77.1	72.6
2018	185	72.6	70.9	73.5	74.2
2019	159	73.9	71.7	75.2	71.9
1998-2019	5385	67.6	65.9	73.0	66.5

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	37	70.1	68.1	83.8	68.1
1999	32	72.1	70.4	72.5	72.1
2000	35	57.4	56.8	79.9	57.0
2001	33	73.0	73.0	72.6	73.8
2002	48	70.9	65.6	77.3	66.8
2003	57	71.5	65.0	77.7	68.7
2004	44	70.3	68.8	74.9	67.5
2005	47	66.5	65.9	69.6	65.9
2006	49	70.9	70.3	79.6	70.9
2007	64	67.9	66.9	77.9	67.2
2008	53	67.8	67.4	70.1	67.8
2009	54	68.0	67.5	72.3	68.2
2010	50	68.4	68.1	80.2	68.1
2011	56	70.0	68.3	71.3	68.4
2012	60	74.2	72.6	87.9	72.5
2013	73	69.9	69.0	79.0	69.2
2014	64	73.0	71.4	77.0	71.8
2015	72	72.7	72.7	72.9	72.7
2016	71	75.4	73.5	85.5	74.3
2017	58	72.0	68.3	82.6	70.8
2018	40	71.9	66.7	72.3	72.6
2019	33	68.7	64.0	71.1	67.4
1998-2019	1130	70.5	68.3	75.8	69.4

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	103	9.3	0.45	5.9	0.44	8.3	0.45	9.8	0.47
1999	129	11.5	0.55	7.3	0.54	10.4	0.55	11.9	0.56
2000	129	11.3	0.60	7.2	0.57	10.2	0.59	11.9	0.61
2001	123	10.6	0.61	6.8	0.59	9.5	0.61	10.7	0.61
2002	185	9.9	0.57	6.1	0.54	8.7	0.56	10.1	0.59
2003	173	9.2	0.55	5.7	0.54	8.0	0.55	9.2	0.56
2004	181	9.6	0.63	5.8	0.61	8.2	0.62	9.5	0.63
2005	171	9.0	0.50	5.1	0.45	7.4	0.48	9.0	0.52
2006	206	10.8	0.73	6.2	0.66	8.9	0.69	10.7	0.74
2007	239	10.8	0.66	6.2	0.64	8.9	0.65	10.5	0.67
2008	246	11.1	0.63	6.1	0.58	8.8	0.61	10.7	0.64
2009	210	9.4	0.55	5.1	0.50	7.4	0.53	9.1	0.56
2010	243	10.8	0.66	6.0	0.62	8.6	0.64	10.1	0.67
2011	191	8.5	0.56	4.5	0.54	6.5	0.55	7.7	0.56
2012	224	9.9	0.68	5.0	0.61	7.3	0.64	9.1	0.68
2013	214	9.3	0.64	4.7	0.59	6.9	0.61	8.5	0.64
2014	203	8.7	0.60	4.5	0.55	6.4	0.57	8.0	0.60
2015	206	8.7	0.69	4.3	0.63	6.3	0.66	7.9	0.69
2016	197	8.2	0.83	4.1	0.72	5.9	0.75	7.5	0.83
2017	175	7.3	1.00	3.4	0.94	5.0	0.96	6.4	0.99
2018	72	3.0	0.59	1.4	0.52	2.1	0.54	2.6	0.58
2019	51	2.1	0.66	0.9	0.58	1.4	0.61	1.8	0.65
1998-2019	3871	8.8	0.62	4.8	0.58	6.9	0.60	8.3	0.63

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	28	2.4	0.78	1.2	0.76	1.7	0.75	2.1	0.79
1999	20	1.7	0.42	0.8	0.37	1.2	0.39	1.6	0.42
2000	28	2.3	0.61	1.4	0.57	1.9	0.61	2.2	0.62
2001	21	1.7	0.50	0.7	0.39	1.1	0.42	1.4	0.48
2002	32	1.6	0.47	0.8	0.44	1.2	0.46	1.4	0.46
2003	44	2.2	0.69	1.1	0.61	1.6	0.65	2.0	0.67
2004	30	1.5	0.58	0.7	0.47	1.0	0.49	1.2	0.52
2005	37	1.9	0.60	1.0	0.56	1.3	0.57	1.6	0.57
2006	41	2.0	0.48	0.9	0.36	1.3	0.39	1.7	0.44
2007	52	2.3	0.66	1.2	0.58	1.6	0.61	1.9	0.63
2008	42	1.8	0.53	0.9	0.48	1.3	0.49	1.5	0.52
2009	44	1.9	0.53	1.0	0.51	1.4	0.52	1.5	0.51
2010	39	1.7	0.49	0.8	0.43	1.1	0.43	1.3	0.47
2011	45	1.9	0.46	1.0	0.44	1.3	0.43	1.6	0.44
2012	50	2.1	0.53	0.9	0.40	1.3	0.43	1.6	0.47
2013	59	2.5	0.65	1.2	0.58	1.7	0.60	2.0	0.64
2014	42	1.7	0.53	0.8	0.45	1.1	0.47	1.3	0.49
2015	54	2.2	0.63	0.9	0.51	1.3	0.54	1.7	0.57
2016	56	2.3	0.76	0.9	0.60	1.4	0.66	1.7	0.71
2017	36	1.5	0.75	0.7	0.74	1.0	0.73	1.2	0.75
2018	15	0.6	0.30	0.3	0.28	0.4	0.28	0.5	0.30
2019	10	0.4	0.32	0.2	0.34	0.3	0.34	0.3	0.32
1998-2019	825	1.8	0.56	0.8	0.49	1.2	0.51	1.5	0.53

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	1	0.0	0.0			0.0	1	0.2	0.2
20-24	4	0.1	0.2	3	0.1	0.1	1	0.2	0.4
25-29	1	0.0	0.2			0.1	1	0.2	0.6
30-34	2	0.1	0.3	1	0.0	0.2	1	0.2	0.7
35-39	8	0.3	0.5	3	0.1	0.3	5	0.9	1.7
40-44	23	0.8	1.3	20	0.8	1.1	3	0.6	2.2
45-49	102	3.4	4.7	85	3.4	4.5	17	3.1	5.3
50-54	221	7.3	12.0	188	7.6	12.1	33	6.1	11.4
55-59	370	12.3	24.3	313	12.7	24.8	57	10.5	21.9
60-64	439	14.6	38.8	365	14.8	39.6	74	13.6	35.5
65-69	529	17.5	56.4	432	17.5	57.1	97	17.8	53.3
70-74	476	15.8	72.2	406	16.4	73.5	70	12.9	66.2
75-79	395	13.1	85.3	322	13.0	86.5	73	13.4	79.6
80-84	245	8.1	93.4	204	8.3	94.8	41	7.5	87.1
85+	199	6.6	100.0	129	5.2	100.0	70	12.9	100.0
All ages	3015	100.0		2471	100.0		544	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		1			0.1	1.00		4.0
20-24	3	1	0.2	0.60	0.1	0.20	4.5	2.6
25-29		1			0.0	0.50		1.1
30-34	1	1	0.0	0.08	0.0	0.13	0.8	0.6
35-39	3	5	0.1	0.14	0.2	0.38	1.2	1.4
40-44	20	3	0.9	0.23	0.1	0.11	3.5	0.4
45-49	85	17	3.4	0.41	0.7	0.34	6.3	1.1
50-54	188	33	8.0	0.49	1.4	0.38	7.5	1.3
55-59	313	57	16.1	0.58	2.9	0.42	7.6	1.6
60-64	365	74	22.4	0.58	4.2	0.48	6.1	1.6
65-69	432	97	28.4	0.66	5.8	0.68	5.0	1.5
70-74	406	70	29.0	0.74	4.4	0.57	3.7	0.9
75-79	322	73	29.1	0.88	5.3	0.76	2.8	0.8
80-84	204	41	31.1	1.05	4.2	0.76	2.2	0.5
85+	129	70	30.3	1.37	7.3	0.95	1.6	0.6
All ages	2471	544					3.9	1.0
Mortality								
Raw			8.2	0.66	1.7	0.56		
WS			4.2	0.60	0.8	0.49		
ES			6.2	0.63	1.2	0.51		
BRD-S			7.5	0.66	1.4	0.53		
PYLL-70								
per 100,000			51.8		11.1			
ES			44.2		9.3			
AYLL-70			9.8		10.0			

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	6	0.3	1	16.7			5	83.3
C03–C06 Oral cavity	177	8.5	74	41.8	22	12.4	81	45.8
C07–C08 Salivary gland	9	0.4	2	22.2	1	11.1	6	66.7
C09–C10 Oropharynx	157	7.6	52	33.1	49	31.2	56	35.7
C11 Nasopharynx	7	0.3	6	85.7			1	14.3
C12–C13 Hypopharynx	19	0.9	10	52.6	5	26.3	4	21.1
C15 Oesophagus	169	8.2	25	14.8	32	18.9	112	66.3
C16 Stomach	40	1.9	8	20.0	2	5.0	30	75.0
C17 Small intestine	7	0.3	3	42.9			4	57.1
C18 Colon	98	4.7	41	41.8	1	1.0	56	57.1
C19–C20 Rectum	63	3.0	18	28.6	5	7.9	40	63.5
C21 Anus/canal	5	0.2	3	60.0	1	20.0	1	20.0
C22 Liver	52	2.5	3	5.8	5	9.6	44	84.6
C23–C24 Bile	9	0.4	1	11.1			8	88.9
C25 Pancreas	42	2.0	4	9.5	4	9.5	34	81.0
C30–C31 Sinuses	6	0.3	2	33.3	2	33.3	2	33.3
C32 Larynx	71	3.4	46	64.8	8	11.3	17	23.9
C33–C34 Lung	480	23.2	70	14.6	53	11.0	357	74.4
C43 Malign. melanoma	29	1.4	11	37.9	2	6.9	16	55.2
C44 Skin others	156	7.5	47	30.1	24	15.4	85	54.5
C46,C49 Soft tissue	7	0.3	3	42.9			4	57.1
C50 Breast	5	0.2	1	20.0			4	80.0
C61 Prostate	173	8.3	88	50.9	10	5.8	75	43.4
C62 Testis	9	0.4	9	100.0				
C64 Kidney	46	2.2	23	50.0	3	6.5	20	43.5
C65 Renal pelvis	9	0.4	3	33.3			6	66.7
C67 Bladder	58	2.8	13	22.4			45	77.6
C70–C72 CNS cancer	9	0.4	2	22.2	1	11.1	6	66.7
C73 Thyroid	12	0.6	5	41.7	2	16.7	5	41.7
C76–C79 CUP	52	2.5	26	50.0	3	5.8	23	44.2
C81 Hodgkin lymphoma	7	0.3	4	57.1			3	42.9
C82–C85 NHL	40	1.9	15	37.5	7	17.5	18	45.0
C90 Mult. myeloma	9	0.4	4	44.4			5	55.6
C91–C96 Leukaemia	12	0.6	2	16.7	1	8.3	9	75.0
Others, specified	23	1.1	12	52.2	1	4.3	10	43.5
All further malignancies	2073	100.0	637	30.7	244	11.8	1192	57.5

Further malignancies with number of cases 1 to 4 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	0.2	1	100.0				
C03-C06 Oral cavity	37	8.5	28	75.7	4	10.8	5	13.5
C07-C08 Salivary gland	1	0.2	1	100.0				
C09-C10 Oropharynx	37	8.5	18	48.6	13	35.1	6	16.2
C11 Nasopharynx	4	0.9	3	75.0			1	25.0
C12-C13 Hypopharynx	5	1.1	3	60.0	1	20.0	1	20.0
C15 Oesophagus	28	6.4	3	10.7	6	21.4	19	67.9
C16 Stomach	10	2.3	2	20.0	2	20.0	6	60.0
C18 Colon	26	6.0	10	38.5	3	11.5	13	50.0
C19-C20 Rectum	6	1.4	2	33.3			4	66.7
C21 Anus/canal	1	0.2	1	100.0				
C22 Liver	5	1.1			3	60.0	2	40.0
C23-C24 Bile	1	0.2					1	100.0
C25 Pancreas	8	1.8					8	100.0
C26 GI cancer	1	0.2					1	100.0
C30-C31 Sinuses	4	0.9	2	50.0	1	25.0	1	25.0
C32 Larynx	9	2.1	7	77.8	2	22.2		
C33-C34 Lung	65	14.9	10	15.4	5	7.7	50	76.9
C43 Malign. melanoma	9	2.1	2	22.2	2	22.2	5	55.6
C44 Skin others	23	5.3	4	17.4	2	8.7	17	73.9
C50 Breast	76	17.4	52	68.4	5	6.6	19	25.0
C51 Vulva	6	1.4	1	16.7			5	83.3
C52 Vagina	1	0.2					1	100.0
C53 Cervix uteri	10	2.3	5	50.0			5	50.0
C54 Corpus uteri	13	3.0	8	61.5			5	38.5
C56 Ovary	5	1.1	2	40.0			3	60.0
C64 Kidney	3	0.7	2	66.7	1	33.3		
C65 Renal pelvis	1	0.2					1	100.0
C67 Bladder	4	0.9	3	75.0			1	25.0
C68 Urethra	1	0.2	1	100.0				
C70-C72 CNS cancer	3	0.7			1	33.3	2	66.7
C73 Thyroid	8	1.8	6	75.0	1	12.5	1	12.5
C76-C79 CUP	7	1.6	3	42.9			4	57.1
C82-C85 NHL	8	1.8	3	37.5			5	62.5
C90 Mult. myeloma	4	0.9	2	50.0			2	50.0
C91-C96 Leukaemia	5	1.1	1	20.0			4	80.0
All further malignancies	436	100.0	186	42.7	52	11.9	198	45.4

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.	MI-index	Females Age- spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19		1			0.1	1.00		4.3
20-24	3	1	0.2	0.60	0.1	0.20	5.0	2.7
25-29		1			0.0	1.00		1.2
30-34	1	1	0.0	0.10	0.0	0.13	0.8	0.7
35-39	2	3	0.1	0.09	0.1	0.33	0.9	0.9
40-44	20	3	0.9	0.24	0.1	0.12	3.8	0.4
45-49	68	13	2.7	0.39	0.5	0.31	5.5	1.0
50-54	163	28	7.0	0.48	1.2	0.37	7.4	1.3
55-59	267	48	13.7	0.59	2.4	0.46	7.4	1.6
60-64	294	47	18.0	0.59	2.7	0.42	5.9	1.2
65-69	341	74	22.4	0.69	4.4	0.69	5.0	1.4
70-74	307	45	21.9	0.81	2.8	0.52	3.6	0.7
75-79	233	50	21.0	0.92	3.6	0.75	2.8	0.7
80-84	139	28	21.2	1.18	2.9	0.68	2.1	0.4
85+	95	50	22.3	1.67	5.2	1.00	1.6	0.6
All ages	1933	393					3.9	0.9
Mortality								
Raw			6.4	0.67	1.3	0.54		
WS			3.4	0.61	0.6	0.47		
ES			4.9	0.63	0.8	0.49		
BRD-S			5.9	0.67	1.0	0.51		
PYLL-70								
per 100,000			43.6		8.7			
ES			37.2		7.4			
AYLL-70			10.0		10.4			

* 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.	MI-index	Females Age- spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19		1			0.1	1.00		4.5
20-24	3	1	0.2	0.60	0.1	0.20	5.0	2.8
25-29		1			0.0	1.00		1.2
30-34	1	1	0.0	0.10	0.0	0.13	0.8	0.7
35-39	2	2	0.1	0.10	0.1	0.29	0.9	0.6
40-44	18	2	0.8	0.26	0.1	0.09	3.4	0.3
45-49	58	11	2.3	0.36	0.5	0.28	4.8	0.8
50-54	139	25	5.9	0.46	1.1	0.40	6.4	1.2
55-59	219	41	11.3	0.55	2.1	0.50	6.2	1.4
60-64	224	36	13.7	0.52	2.1	0.35	4.6	1.0
65-69	238	58	15.7	0.58	3.4	0.60	3.6	1.2
70-74	186	31	13.3	0.60	1.9	0.42	2.3	0.5
75-79	137	35	12.4	0.66	2.5	0.55	1.7	0.5
80-84	84	18	12.8	0.81	1.8	0.53	1.3	0.3
85+	61	36	14.3	1.20	3.7	0.80	1.1	0.4
All ages	1370	299					2.9	0.7
Mortality								
Raw			4.5	0.55	1.0	0.47		
WS			2.5	0.52	0.5	0.42		
ES			3.6	0.53	0.7	0.43		
BRD-S			4.2	0.55	0.8	0.45		
PYLL-70								
per 100,000			35.8		7.3			
ES			30.6		6.2			
AYLL-70			10.5		10.7			

* See corresponding tables with multiple malignancies.

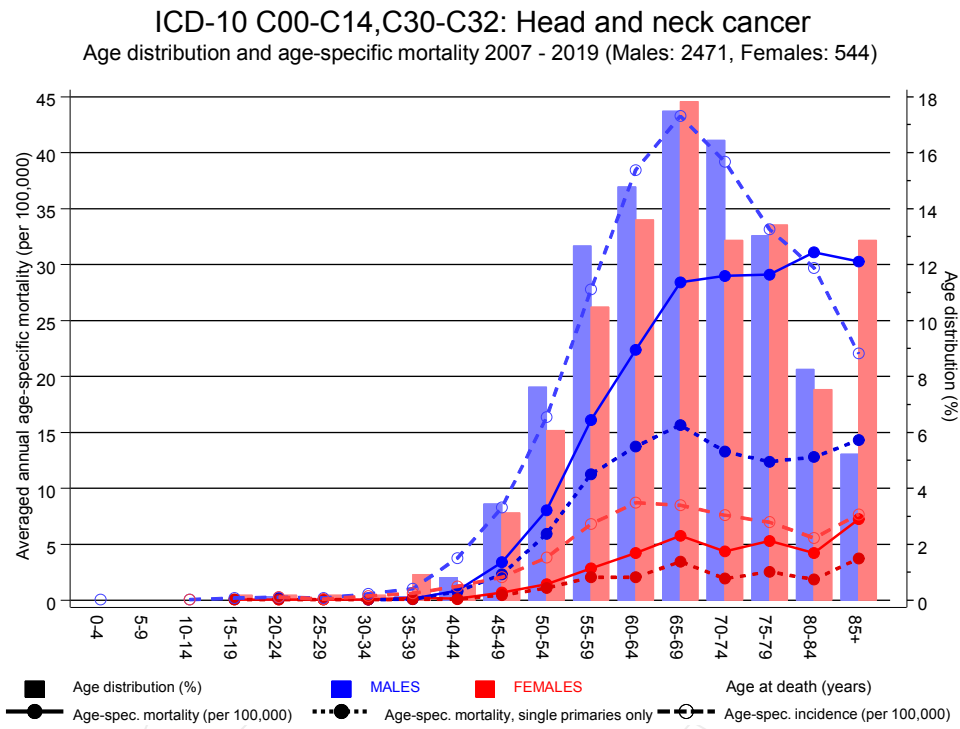
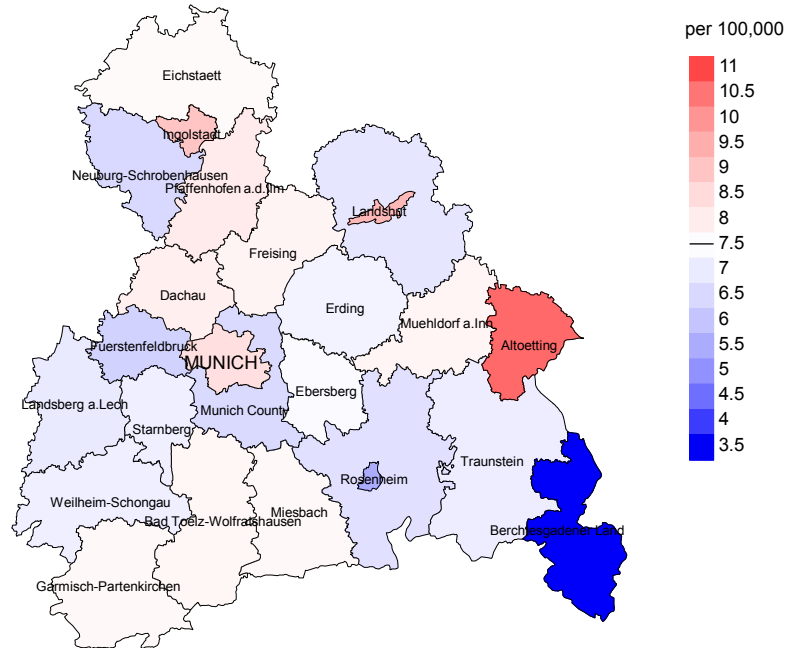


Figure 17. Distribution of age at death (bars; males: mean=63.3 yrs, median=63.5 yrs; females: mean=65.6 yrs, median=65.6 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

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



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

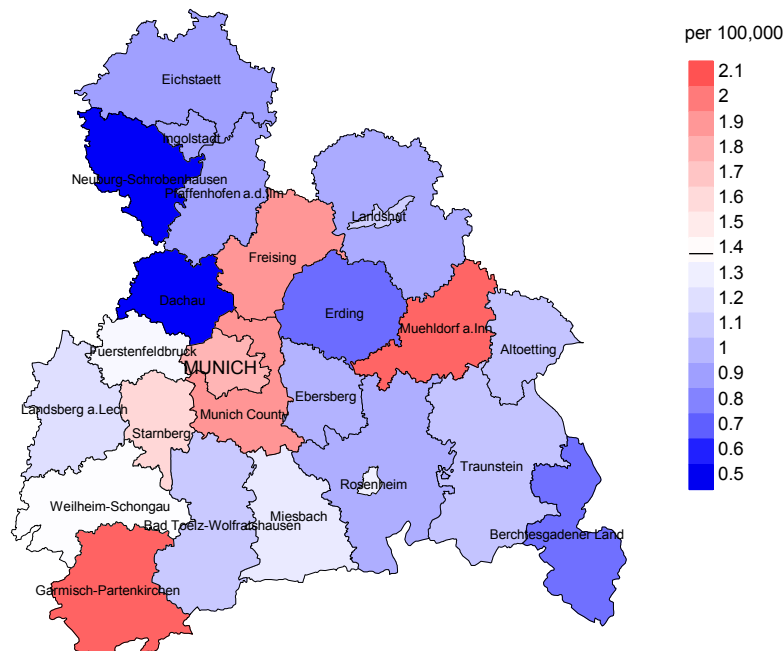
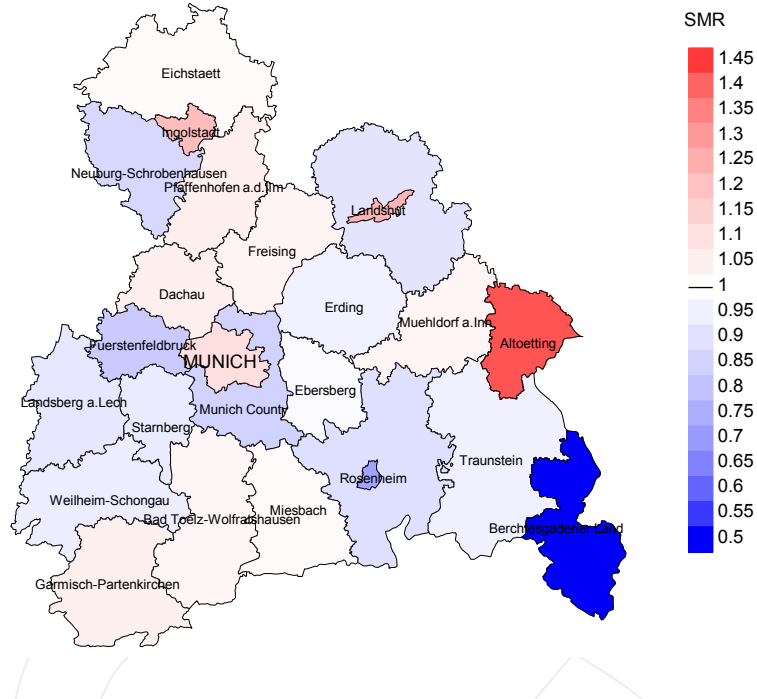


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 7.5/100,000 WS N=2,471, females 1.4/100,000 WS N=544).

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 12 women died from HN cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 1.0/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.4 and 2.1/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

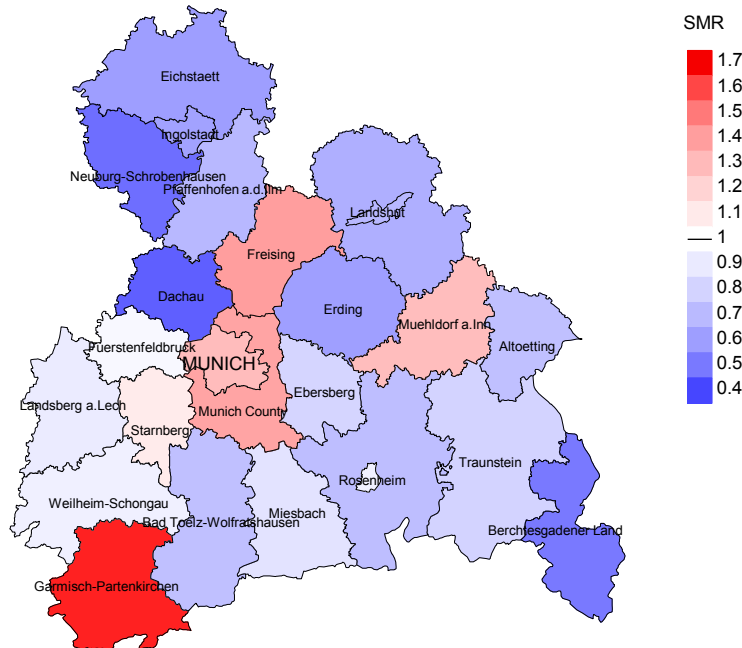


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,471, females N=544).

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 12 women died from HN cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.81. Though, the value of this parameter may vary with an underlying probability of 99% between 0.33 and 1.63, 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

Recommended Citation

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