

Munich Cancer Registry



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

ICD-10 C12, C13: Hypopharynx cancer

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	1,668
Diseases	1,668
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/bC1213E-ICD-10-C12-C13-Hypopharynx-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
C12	Malignant neoplasm of piriform sinus
C13.-	Malignant neoplasm of hypopharynx
C13.0	Postcricoid region
C13.1	Aryepiglottic fold, hypopharyngeal aspect
C13.2	Posterior wall of hypopharynx
C13.8	Overlapping lesion of hypopharynx
C13.9	Hypopharynx, unspecified

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	51			9.8	14.0	92.2	98.0
1999	56	5	8.9	13.1	13.9	87.5	96.4
2000	62	2	3.2	10.7	13.7	90.3	96.8
2001	53	4	7.5	13.5	13.6	84.9	96.2
2002	78	4	5.1	12.7	13.8	93.6	97.4 #
2003	86	1	1.2	15.8	13.5	90.7	97.7
2004	73	3	4.1	16.1	13.4	90.4	100.0
2005	107	7	6.5	16.3	13.1	86.0	98.1
2006	85	3	3.5	15.7	12.1	89.4	100.0
2007	103	6	5.8	16.4	12.1	86.4	99.0 #
2008	113	7	6.2	16.8	11.9	88.5	100.0
2009	113	5	4.4	16.7	11.2	82.3	98.2
2010	97	7	7.2	17.2	10.8	79.4	97.9
2011	98	5	5.1	17.9	10.4	80.6	99.0
2012	75	7	9.3	17.9	10.1	81.3	100.0
2013	84	1	1.2	17.9	10.8	70.2	97.6
2014	75	1	1.3	18.5	10.1	68.0	96.0
2015	78	3	3.8	19.0	9.4	75.6	100.0
2016	77	7	9.1	19.1	10.1	75.3	100.0
2017	55	3	5.5	20.0	10.3	56.4	100.0
2018	27	1	3.7	20.0	6.8	29.6	100.0
2019	22			20.1	5.0	22.7	86.4 ##
1998-2019	1668	82	4.9	20.1	14.0	81.1	98.4

1,668 cases diagnosed 1998-2019 are related to a total of 1,668 patients. Currently, in 572 (34.3 %) of these 1,668 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 415 / 116 / 41 (24.9 % / 7.0 % / 2.5 %) 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 55 cases has been diagnosed, of which 20.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 10.3 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	46	90.2			8.7	14.2	91.3	97.8
1999	51	91.1	5	9.8	12.4	14.1	90.2	98.0
2000	54	87.1	2	3.7	9.9	13.9	90.7	98.1
2001	46	86.8	3	6.5	13.2	13.9	84.8	97.8
2002	71	91.0	4	5.6	11.6	14.1	93.0	97.2 #
2003	81	94.2	1	1.2	15.5	13.9	92.6	100.0
2004	64	87.7	3	4.7	16.2	13.8	89.1	100.0
2005	92	86.0	5	5.4	16.0	13.4	87.0	97.8
2006	73	85.9	3	4.1	15.2	12.9	91.8	100.0
2007	87	84.5	5	5.7	15.8	12.8	89.7	100.0 #
2008	96	85.0	6	6.3	16.2	12.6	87.5	100.0
2009	96	85.0	4	4.2	15.9	11.8	82.3	99.0
2010	87	89.7	5	5.7	16.4	11.3	79.3	98.9
2011	85	86.7	3	3.5	17.0	10.6	78.8	98.8
2012	64	85.3	5	7.8	16.8	10.2	81.3	100.0
2013	72	85.7			16.9	10.8	70.8	97.2
2014	62	82.7	1	1.6	17.5	9.9	69.4	96.8
2015	63	80.8	1	1.6	18.1	8.3	74.6	100.0
2016	64	83.1	5	7.8	18.1	9.8	76.6	100.0
2017	49	89.1	3	6.1	18.8	10.7	55.1	100.0
2018	22	81.5	1	4.5	18.9	5.6	31.8	100.0
2019	17	77.3			19.1	6.3	23.5	88.2 ##
1998-2019	1442	86.5	65	4.5	19.1	14.2	81.7	98.8

1,442 cases diagnosed 1998-2019 are related to a total of 1,442 patients. Currently, in 483 (33.5 %) of these 1,442 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 349 / 101 / 33 (24.2 % / 7.0 % / 2.3 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 49 cases has been diagnosed, of which 18.8 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 10.7 % 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	5	9.8			20.0	13.0	100.0	100.0
1999	5	8.9			20.0	12.8	60.0	80.0
2000	8	12.9			16.7	12.6	87.5	87.5
2001	7	13.2	1	14.3	16.0	12.1	85.7	85.7
2002	7	9.0			21.9	11.5	100.0	100.0 #
2003	5	5.8			18.9	11.3	60.0	60.0
2004	9	12.3			15.2	11.0	100.0	100.0
2005	15	14.0	2	13.3	18.0	11.0	80.0	100.0
2006	12	14.1			19.2	7.6	75.0	100.0
2007	16	15.5	1	6.3	21.3	8.1	68.8	93.8 #
2008	17	15.0	1	5.9	21.7	8.3	94.1	100.0
2009	17	15.0	1	5.9	22.8	7.8	82.4	94.1
2010	10	10.3	2	20.0	22.6	8.1	80.0	90.0
2011	13	13.3	2	15.4	24.0	9.0	92.3	100.0
2012	11	14.7	2	18.2	25.5	9.2	81.8	100.0
2013	12	14.3	1	8.3	24.9	10.8	66.7	100.0
2014	13	17.3			25.3	11.1	61.5	92.3
2015	15	19.2	2	13.3	25.4	14.6	80.0	100.0
2016	13	16.9	2	15.4	25.7	11.5	69.2	100.0
2017	6	10.9			27.3	7.7	66.7	100.0
2018	5	18.5			27.1	12.5	20.0	100.0
2019	5	22.7			26.5	0.0	20.0	80.0 ##
1998-2019	226	13.5	17	7.5	26.5	13.0	77.0	95.6

226 cases diagnosed 1998-2019 are related to a total of 226 patients. Currently, in 89 (39.4 %) of these 226 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 66 / 15 / 8 (29.2 % / 6.6 % / 3.5 %) 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 6 cases has been diagnosed, of which 27.3 % 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 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	46	5	4.2	0.4	2.6	0.2	3.6	0.2	3.9	0.3
1999	51	5	4.6	0.4	3.0	0.3	4.2	0.3	4.5	0.4
2000	54	8	4.7	0.7	3.2	0.4	4.5	0.5	4.9	0.6
2001	46	7	4.0	0.6	2.7	0.4	3.5	0.6	3.9	0.6
2002	71	7	3.8	0.4	2.5	0.2	3.4	0.3	3.6	0.3
2003	81	5	4.3	0.3	2.9	0.2	4.0	0.2	4.3	0.2
2004	64	9	3.4	0.5	2.2	0.2	3.0	0.3	3.3	0.4
2005	92	15	4.9	0.8	3.1	0.4	4.2	0.6	4.7	0.7
2006	73	12	3.8	0.6	2.5	0.4	3.4	0.5	3.7	0.5
2007	87	16	3.9	0.7	2.3	0.5	3.3	0.6	3.7	0.6
2008	96	17	4.3	0.7	2.7	0.4	3.7	0.5	4.1	0.6
2009	96	17	4.3	0.7	2.6	0.4	3.5	0.6	3.9	0.6
2010	87	10	3.9	0.4	2.4	0.3	3.3	0.3	3.5	0.4
2011	85	13	3.8	0.6	2.1	0.3	3.0	0.4	3.5	0.5
2012	64	11	2.8	0.5	1.6	0.3	2.2	0.4	2.5	0.4
2013	72	12	3.1	0.5	1.7	0.3	2.4	0.4	2.8	0.4
2014	62	13	2.7	0.5	1.6	0.3	2.1	0.4	2.4	0.5
2015	63	15	2.6	0.6	1.5	0.3	2.1	0.4	2.4	0.5
2016	64	13	2.7	0.5	1.5	0.3	2.2	0.4	2.4	0.4
2017	49	6	2.0	0.2	1.0	0.0	1.4	0.1	1.8	0.2
2018	22	5	0.9	0.2	0.4	0.1	0.6	0.2	0.8	0.2
2019	17	5	0.7	0.2	0.3	0.1	0.5	0.2	0.6	0.2
1998-2019	1442	226	3.3	0.5	2.0	0.3	2.7	0.4	3.0	0.4

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.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	51	60.0	9.7	37.3	86.7	47.6	54.8	58.6	65.3	71.0
1999	56	58.6	9.8	44.2	87.0	49.6	51.1	55.9	63.0	73.6
2000	62	58.6	10.5	43.1	88.6	47.1	51.2	56.7	62.6	78.8
2001	53	58.9	9.2	29.2	80.9	48.0	53.3	57.8	65.8	70.1
2002	78	58.6	8.1	39.2	77.5	46.7	53.0	59.2	64.3	68.5
2003	86	59.2	9.0	39.6	81.2	49.8	52.8	57.5	65.6	72.6
2004	73	59.3	9.9	38.5	87.8	47.0	53.1	59.4	64.0	71.4
2005	107	61.4	9.6	45.8	84.8	47.8	53.5	62.7	67.6	72.5
2006	85	60.1	9.4	30.6	86.2	50.5	54.6	58.8	65.5	71.5
2007	103	61.5	10.1	30.1	86.0	49.0	53.2	62.6	67.4	74.7
2008	113	62.8	10.1	35.5	91.4	48.6	57.6	62.1	68.6	74.1
2009	113	62.4	9.8	42.7	87.9	49.6	54.7	62.1	70.1	72.9
2010	97	60.4	11.0	35.1	92.3	45.3	52.5	60.4	68.4	73.6
2011	98	63.7	10.1	40.6	91.6	49.3	56.6	63.7	70.8	75.5
2012	75	65.0	11.1	39.9	91.7	49.2	57.5	64.5	73.2	78.2
2013	84	64.9	9.2	44.9	86.3	52.2	58.7	65.1	72.6	76.6
2014	75	64.1	9.3	44.6	84.8	49.0	58.0	64.5	70.3	74.3
2015	78	65.3	10.3	45.2	95.0	51.9	58.9	64.3	72.0	77.6
2016	77	65.3	10.6	38.8	92.1	54.9	58.1	64.4	72.7	77.1
2017	55	70.4	9.1	45.8	87.0	58.2	62.4	72.0	77.1	80.9
2018	27	64.9	11.1	44.6	82.6	50.1	56.6	64.1	74.8	80.5
2019	22	66.6	10.5	47.7	85.6	55.1	59.4	65.6	73.3	80.5
1998-2019	1668	62.2	10.2	29.2	95.0	49.2	54.7	61.8	69.0	75.6

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	46	58.5	8.2	37.3	76.7	46.9	54.4	57.8	63.7	70.2
1999	51	58.3	9.9	44.2	87.0	49.6	50.7	55.6	63.5	71.3
2000	54	58.2	10.0	45.2	88.6	49.3	51.2	55.6	62.0	70.2
2001	46	59.5	9.7	29.2	80.9	48.0	53.0	60.1	65.9	70.6
2002	71	58.1	7.8	39.2	77.5	47.0	52.4	57.7	63.9	67.2
2003	81	59.2	8.7	39.6	81.2	50.0	52.9	57.4	64.8	71.4
2004	64	58.2	9.5	38.5	83.9	46.2	52.4	58.9	63.8	68.8
2005	92	61.0	9.6	45.8	84.8	47.7	53.4	62.3	67.5	70.5
2006	73	59.6	9.3	30.6	85.0	50.0	54.6	58.6	64.8	70.2
2007	87	62.1	10.1	41.0	86.0	49.1	52.8	64.3	68.1	76.6
2008	96	61.9	9.0	40.7	84.5	48.6	56.4	61.6	68.0	71.8
2009	96	62.2	9.8	42.7	87.9	49.6	54.1	61.7	69.6	72.9
2010	87	60.5	10.6	38.7	92.3	45.3	52.8	60.4	68.4	73.6
2011	85	63.4	10.2	40.6	86.3	49.2	55.2	64.0	70.8	75.4
2012	64	65.1	11.3	39.9	91.7	47.7	57.7	65.6	74.0	78.2
2013	72	65.2	9.2	47.5	86.3	52.2	58.7	65.2	72.8	76.6
2014	62	64.2	9.3	44.6	84.8	49.0	58.2	64.4	70.3	74.3
2015	63	64.7	10.1	45.2	94.6	51.9	58.6	62.9	71.0	77.1
2016	64	65.4	9.7	41.3	91.6	55.4	58.4	64.4	72.3	76.6
2017	49	69.5	9.3	45.8	87.0	57.6	62.3	71.2	76.0	81.0
2018	22	67.3	10.2	47.2	82.6	56.2	58.3	65.6	77.9	80.5
2019	17	68.1	10.6	51.2	85.6	55.1	60.0	67.3	79.4	83.8
1998-2019	1442	61.9	10.0	29.2	94.6	49.1	54.5	61.6	68.9	75.2

Table 3b

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

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	5	73.4	12.9	59.4	86.7	59.4	60.7	75.4	84.9	86.7
1999	5	61.0	9.5	51.2	75.6	51.2	54.2	61.5	62.6	75.6
2000	8	61.7	14.0	43.1	81.3	43.1	51.5	59.7	73.3	81.3
2001	7	55.0	4.1	47.3	60.0	47.3	53.8	55.1	57.5	60.0
2002	7	63.9	9.4	45.5	73.0	45.5	60.5	66.0	71.6	73.0
2003	5	59.6	14.0	43.6	79.8	43.6	50.2	59.0	65.6	79.8
2004	9	66.8	10.1	56.5	87.8	56.5	60.3	62.9	71.4	87.8
2005	15	64.0	9.6	47.8	81.5	51.5	57.6	64.3	68.5	77.5
2006	12	62.8	10.3	51.6	86.2	52.7	54.4	60.8	70.7	71.5
2007	16	57.8	10.1	30.1	68.0	44.6	53.6	60.3	65.0	67.6
2008	17	67.7	14.1	35.5	91.4	46.4	61.1	67.2	74.1	87.7
2009	17	63.7	9.6	46.5	79.9	49.3	57.7	64.7	70.7	74.4
2010	10	59.5	14.4	35.1	82.4	41.9	49.3	60.3	69.0	77.1
2011	13	65.7	10.0	54.5	91.6	57.2	58.6	62.8	67.7	75.7
2012	11	64.3	10.3	52.5	90.6	54.4	57.5	63.1	67.4	71.3
2013	12	63.1	9.4	44.9	78.5	53.4	56.7	64.4	68.8	73.2
2014	13	63.5	10.0	48.3	84.1	51.5	57.5	64.5	69.3	74.1
2015	15	68.1	11.2	51.6	95.0	55.1	61.4	66.9	73.9	84.4
2016	13	65.0	14.9	38.8	92.1	45.7	56.3	63.7	73.3	82.9
2017	6	77.5	1.3	75.5	78.9	75.5	77.0	77.6	78.7	78.9
2018	5	54.4	8.8	44.6	67.0	44.6	50.1	50.8	59.4	67.0
2019	5	61.7	9.5	47.7	73.3	47.7	59.4	61.6	66.3	73.3
1998-2019	226	63.8	11.3	30.1	95.0	49.8	56.9	63.1	70.8	78.7

Table 4

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

Age at diagnosis Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29									
30-34	1	0.1	0.1			0.0	1	0.7	0.7
35-39	6	0.6	0.7	3	0.3	0.3	3	2.0	2.6
40-44	25	2.5	3.1	22	2.5	2.9	3	2.0	4.6
45-49	69	6.8	9.9	58	6.7	9.6	11	7.2	11.8
50-54	108	10.6	20.6	93	10.8	20.4	15	9.8	21.6
55-59	151	14.8	35.4	133	15.4	35.8	18	11.8	33.3
60-64	188	18.5	53.9	159	18.4	54.2	29	19.0	52.3
65-69	182	17.9	71.8	151	17.5	71.6	31	20.3	72.5
70-74	145	14.3	86.0	125	14.5	86.1	20	13.1	85.6
75-79	86	8.5	94.5	75	8.7	94.8	11	7.2	92.8
80-84	37	3.6	98.1	33	3.8	98.6	4	2.6	95.4
85+	19	1.9	100.0	12	1.4	100.0	7	4.6	100.0
All ages	1017	100.0		864	100.0		153	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=39 %	Females DCO rate n=14 %	Males	Females
							Prop.all cancers n=143063 %	Prop.all cancers n=144724 %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34		1		0.0				0.1
35-39	3	3	0.1	0.1		33.3	0.2	0.1
40-44	22	3	0.9	0.1	4.5		0.8	0.1
45-49	58	11	2.3	0.5	3.4		1.2	0.1
50-54	93	15	4.0	0.6	4.3		1.2	0.1
55-59	133	18	6.8	0.9	4.5	5.6	1.1	0.1
60-64	159	29	9.7	1.7	0.6	10.3	1.0	0.2
65-69	151	31	9.9	1.8	2.0	6.5	0.7	0.2
70-74	125	20	8.9	1.2	6.4	10.0	0.5	0.1
75-79	75	11	6.8	0.8	5.3		0.3	0.1
80-84	33	4	5.0	0.4	9.1	50.0	0.2	0.0
85+	12	7	2.8	0.7	58.3	42.9	0.1	0.0
All ages	864	153			4.5	9.2	0.6	0.1
Incidence								
Raw			2.9	0.5				
WS			1.6	0.3				
ES			2.3	0.4				
BRD-S			2.6	0.4				

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

ICD-10 C12, C13: Malignant neoplasm of hypopharynx incl. piriform sinus

Age distribution and age-specific incidence 2007 - 2019 (Males: 864, Females: 153)

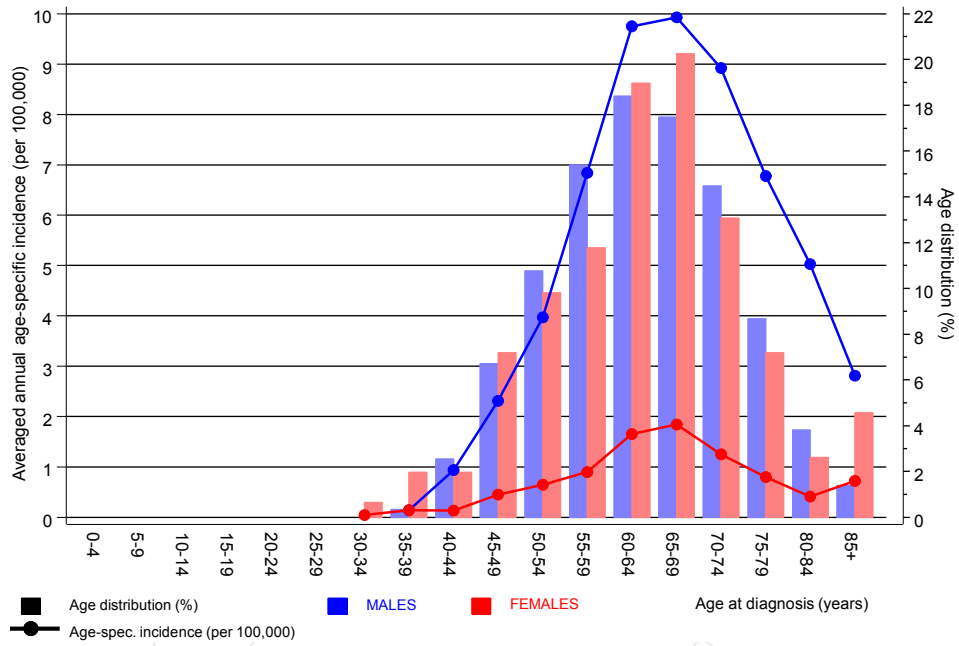


Figure 6. Age distribution (males: mean=63.8 yrs, median=63.9 yrs; females: mean=64.1 yrs, median=64.5 yrs) and age-specific incidence.

ICD-10 C12, C13: Malignant neoplasm of hypopharynx incl. piriform sinus

Age-specific incidence rates: international comparison

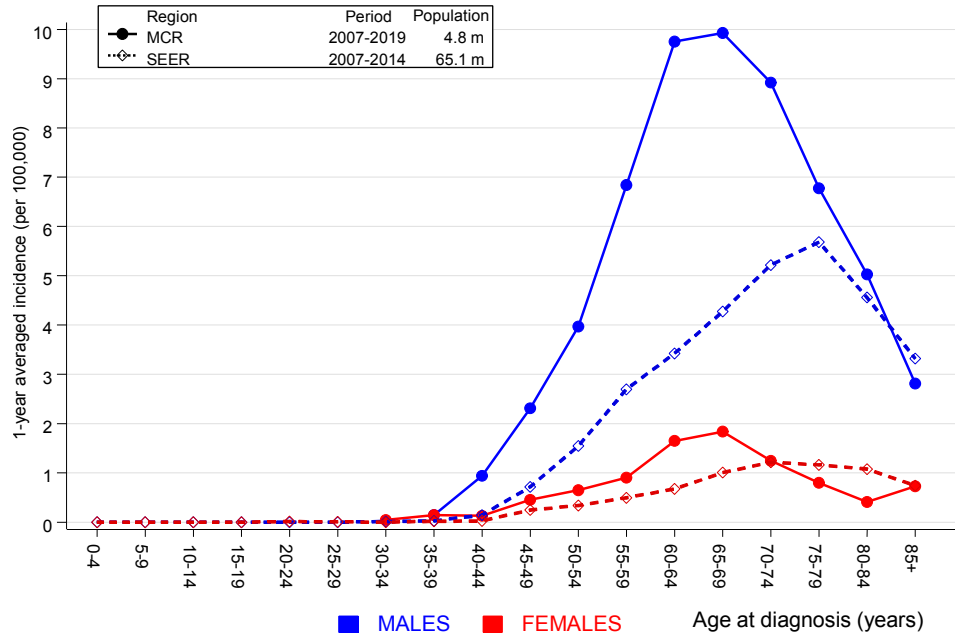


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

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	1	0.0	21.7	0.5	120.8	2.4	
C03-C06 Oral cavity	21	0.6	36.8	22.8	56.3 #	52.1	14.3
C09-C10 Oropharynx	34	0.7	45.8	31.7	64.0 #	84.9	
C11 Nasopharynx	1	0.0	21.1	0.5	117.7	2.4	
C14 ENT cancer	2	0.0	165.5	20.0	597.7 #	5.1	100.0
C15 Oesophagus	45	1.1	40.8	29.7	54.5 #	112.0	8.9
C16 Stomach	6	1.7	3.6	1.3	7.8 #	11.0	
C17 Small intestine	1	0.3	3.3	0.1	18.6	1.8	100.0
C18 Colon	8	4.1	1.9	0.8	3.8	9.9	12.5
C19-C20 Rectum	7	2.7	2.6	1.0	5.3 #	10.9	
C21 Anus/canal	1	0.1	7.7	0.2	43.2	2.2	
C22 Liver	10	1.4	7.0	3.4	12.9 #	21.9	
C25 Pancreas	7	1.7	4.0	1.6	8.3 #	13.4	28.6
C26 GI cancer	1	0.0	28.9	0.7	160.8	2.5	
C32 Larynx	8	0.6	13.5	5.8	26.5 #	18.9	
C33-C34 Lung	70	5.9	11.8	9.2	15.0 #	163.6	11.4
C43 Malign. melanoma	5	2.3	2.2	0.7	5.1	7.0	40.0
C46,C49 Soft tissue	1	0.3	3.8	0.1	21.2	1.9	
C60 Penis	1	0.1	8.6	0.2	48.0	2.3	
C61 Prostate	17	13.7	1.2	0.7	2.0	8.5	5.9
C64 Kidney	5	1.8	2.8	0.9	6.5	8.2	40.0
C65 Renal pelvis	1	0.2	5.4	0.1	30.1	2.1	
C67 Bladder	9	1.8	4.9	2.3	9.4 #	18.3	11.1
C73 Thyroid	3	0.4	7.0	1.4	20.3 #	6.6	33.3
C76-C79 CUP	4	0.8	5.3	1.4	13.5 #	8.3	
C82-C85 NHL	3	1.9	1.6	0.3	4.6	2.8	
Not observed	0	4.2	0.0	0.0	0.9 #	-10.6	
All further malignancies	272	48.6	5.6	5.0	6.3 #	570.3	10.3
Patients		1402					
Median age at next malignancy (years)		66.1					
Person-years		3918					
Mean observation time (years)		2.8					
Median observation time (years)		1.5					

The occurrence of further specified malignancy is statistically significant.

Table 7b

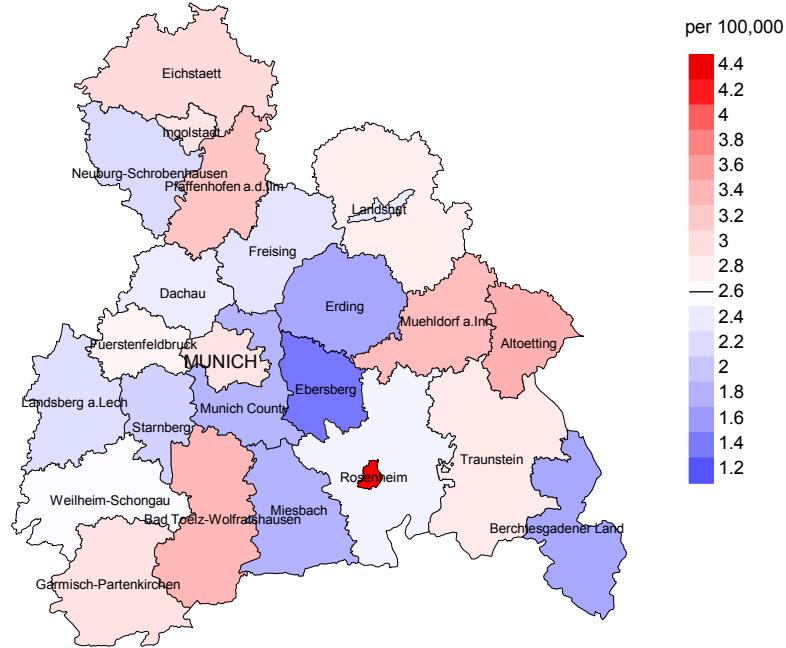
Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998–2019

FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03–C06 Oral cavity	3	0.0	75.0	15.5	219.3 #	46.2	
C09–C10 Oropharynx	10	0.0	276.8	132.8	509.1 #	155.6	
C11 Nasopharynx	1	0.0	464.0	11.7	2585 #	15.6	
C15 Oesophagus	7	0.0	160.9	64.7	331.6 #	108.7	
C18 Colon	1	0.4	2.3	0.1	12.9	8.9	
C22 Liver	2	0.1	31.8	3.8	114.8 #	30.3	
C25 Pancreas	1	0.2	4.8	0.1	26.7	12.4	
C33–C34 Lung	9	0.5	18.0	8.2	34.1 #	132.8	22.2
C50 Breast	6	2.1	2.8	1.0	6.2 #	60.8	
C51 Vulva	2	0.0	41.2	5.0	148.7 #	30.5	
C53 Cervix uteri	1	0.1	11.0	0.3	61.2	14.2	
C70–C72 CNS cancer	1	0.1	13.0	0.3	72.2	14.4	100.0
C73 Thyroid	1	0.1	7.4	0.2	41.2	13.5	
C91–C96 Leukaemia	2	0.1	29.0	3.5	104.6 #	30.2	50.0
Not observed	0	2.1	0.0	0.0	1.8	-32.4	
All further malignancies	47	5.9	7.9	5.8	10.5 #	641.5	8.5
Patients		214					
Median age at next malignancy (years)		67.0					
Person-years		640					
Mean observation time (years)		3.0					
Median observation time (years)		1.2					

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

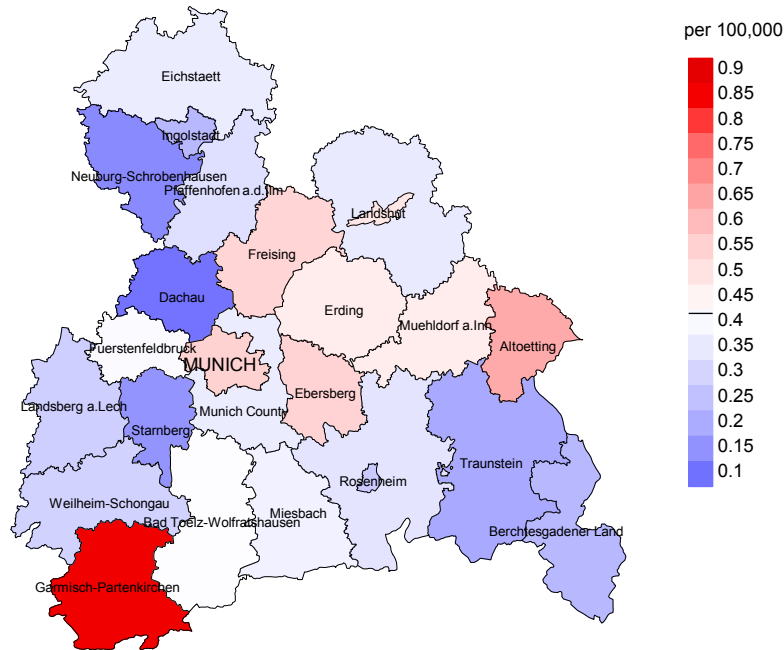
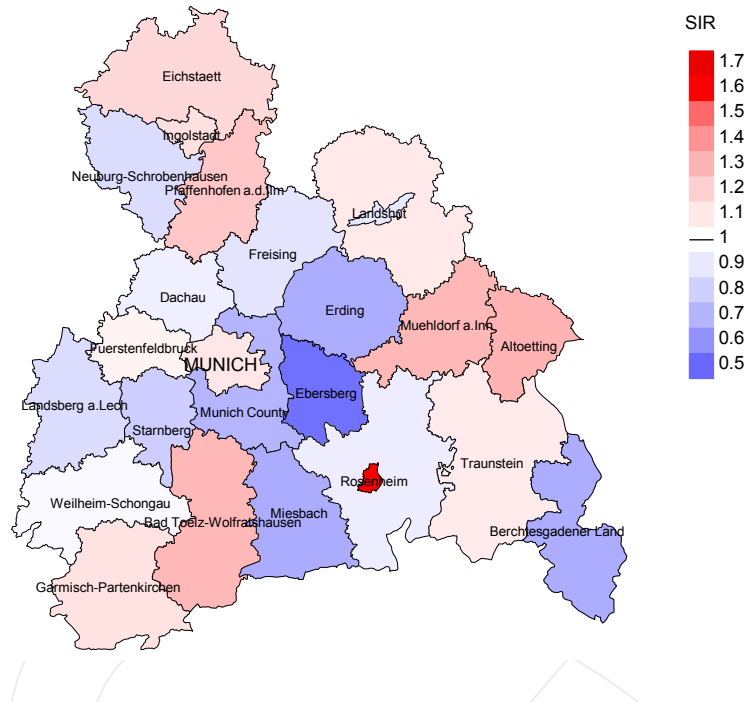


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 2.6/100,000 WS N=864, females 0.4/100,000 WS N=153).

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 6 women were identified with newly diagnosed hypopharynx cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.5/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.1 and 1.5/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

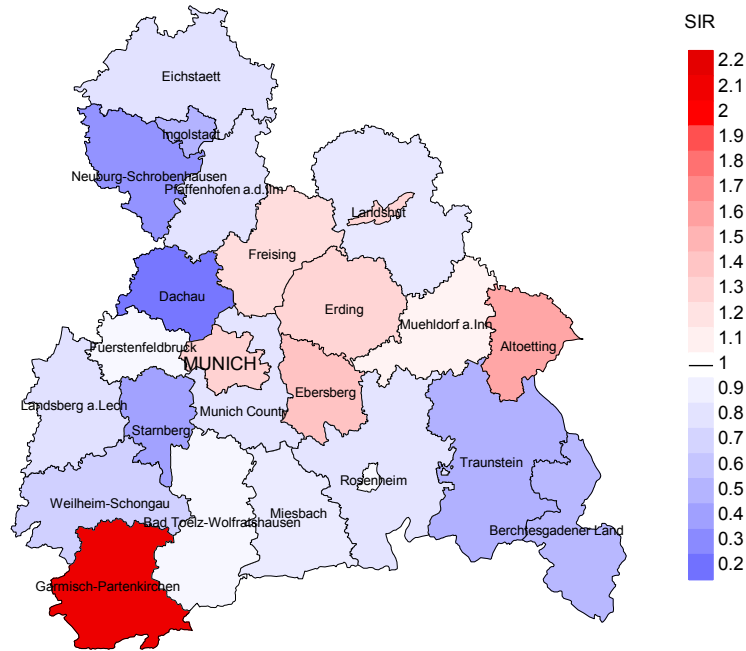


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=864, females N=153).

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 6 women were identified with newly diagnosed hypopharynx cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.41. Though, the value of this parameter may vary with an underlying probability of 99% between 0.36 and 3.68, 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	51	98.0		47	92.2	97.9
1999	56	96.4	8.9	49	87.5	95.9
2000	62	96.8	3.2	56	90.3	89.3
2001	53	96.2	7.5	45	84.9	97.8
2002	78	97.4	5.1	73	93.6	93.2
2003	86	97.7	1.2	78	90.7	96.2
2004	73	100.0	4.1	66	90.4	90.9
2005	107	98.1	6.5	92	86.0	96.7
2006	85	100.0	3.5	76	89.4	90.8
2007	103	99.0	5.8	89	86.4	94.4
2008	113	100.0	6.2	100	88.5	96.0
2009	113	98.2	4.4	93	82.3	94.6
2010	97	97.9	7.2	77	79.4	97.4
2011	98	99.0	5.1	79	80.6	92.4
2012	75	100.0	9.3	61	81.3	95.1
2013	84	97.6	1.2	59	70.2	94.9
2014	75	96.0	1.3	51	68.0	92.2
2015	78	100.0	3.8	59	75.6	84.7
2016	77	100.0	9.1	58	75.3	81.0
2017	55	100.0	5.5	31	56.4	67.7
2018	27	100.0	3.7	8	29.6	62.5
2019	22	86.4		5	22.7	60.0
1998-2019	1668	98.4	4.9	1352	81.1	92.5

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 4.92 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	51	40	87.5	12	23.5
1999	56	49	89.8	14	25.0
2000	62	46	95.7	9	14.5
2001	53	50	88.0	10	18.9
2002	78	54	98.1	14	17.9
2003	86	67	95.5	10	11.6
2004	73	71	94.4	16	21.9
2005	107	54	94.4	19	17.8
2006	85	84	97.6	22	25.9
2007	103	106	99.1	26	25.2
2008	113	82	97.6	24	21.2
2009	113	84	98.8	19	16.8
2010	97	91	98.9	22	22.7
2011	98	83	96.4	21	21.4
2012	75	96	95.8	22	29.3
2013	84	74	98.6	15	17.9
2014	75	80	97.5	16	21.3
2015	78	77	97.4	17	21.8
2016	77	71	98.6	24	31.2
2017	55	69	97.1	11	20.0
2018	27	48	29.2	3	11.1
2019	22	51	43.1	4	18.2
1998–2019	1668	1527	92.5	350	21.0

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	40	77.5	22.5	94.3
1999	49	79.6	20.4	97.7
2000	46	80.4	19.6	93.2
2001	50	82.0	18.0	90.9
2002	54	85.2	14.8	98.1
2003	67	86.6	13.4	96.9
2004	71	81.7	18.3	92.5
2005	54	90.7	9.3	94.1
2006	84	88.1	11.9	95.1
2007	106	85.8	14.2	93.3
2008	82	92.7	7.3	97.5
2009	84	82.1	17.9	96.4
2010	91	87.9	12.1	94.4
2011	83	80.7	19.3	86.3
2012	96	85.4	14.6	94.6
2013	74	86.5	13.5	93.2
2014	80	80.0	20.0	89.7
2015	77	83.1	16.9	93.3
2016	71	78.9	21.1	90.0
2017	69	82.6	17.4	91.0
2018	48	45.8	54.2	78.6
2019	51	33.3	66.7	90.9
1998–2019	1527	81.3	18.7	93.3

Table 10a

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	35	57.2	56.2	63.2	57.9
1999	43	58.9	58.3	59.0	58.3
2000	43	59.1	58.8	64.0	59.1
2001	42	57.0	54.8	68.9	56.5
2002	49	58.7	58.5	59.2	58.7
2003	60	63.8	63.7	66.8	63.7
2004	64	60.2	59.9	62.7	60.1
2005	52	62.2	62.7	54.1	62.7
2006	74	62.7	61.9	66.8	62.6
2007	89	63.3	62.7	64.4	63.1
2008	69	62.8	62.8	63.7	63.5
2009	69	64.5	65.0	60.9	64.8
2010	84	62.9	61.3	72.3	62.3
2011	73	65.4	65.0	68.2	65.4
2012	87	66.0	65.8	71.4	65.8
2013	61	67.2	67.2	69.2	67.2
2014	70	67.9	67.0	69.9	67.6
2015	62	66.2	66.5	63.9	66.2
2016	60	67.9	67.2	70.4	68.0
2017	61	70.6	70.5	75.8	71.0
2018	41	69.2	66.6	73.4	63.4
2019	41	68.9	77.0	68.2	68.9
1998-2019	1329	64.0	63.2	67.1	63.6

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	5	67.9	62.2	85.2	67.9
1999	6	62.6	62.9	52.5	62.9
2000	3	60.2	60.3	60.2	60.3
2001	8	61.5	60.9	63.2	61.4
2002	5	71.0	68.6	73.8	71.0
2003	7	59.9	59.9		59.9
2004	7	74.7	75.7	63.2	76.6
2005	2	60.0	60.0		69.3
2006	10	65.6	65.6		65.9
2007	17	67.0	63.1	71.0	67.0
2008	13	68.0	68.0		68.0
2009	15	68.7	68.6	70.2	69.5
2010	7	62.0	61.2	81.5	62.0
2011	10	62.1	62.1	65.3	60.9
2012	9	69.0	69.0		69.0
2013	13	68.1	68.1	71.4	68.1
2014	10	68.9	70.5	61.2	69.5
2015	15	65.8	65.8	65.8	66.6
2016	11	75.4	75.4	75.0	75.4
2017	8	65.7	67.4	63.1	67.4
2018	7	74.3	78.4	73.6	78.4
2019	10	69.2	66.6	69.7	66.6
1998-2019	198	67.7	67.6	67.9	67.9

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	27	2.4	0.59	1.5	0.57	2.1	0.59	2.4	0.61
1999	34	3.0	0.67	1.9	0.64	2.7	0.64	3.0	0.66
2000	35	3.1	0.65	2.0	0.62	2.9	0.64	3.4	0.68
2001	35	3.0	0.76	2.1	0.78	2.9	0.81	3.1	0.79
2002	42	2.3	0.59	1.5	0.58	2.0	0.59	2.2	0.61
2003	51	2.7	0.63	1.7	0.57	2.3	0.57	2.6	0.60
2004	52	2.8	0.81	1.8	0.80	2.5	0.82	2.6	0.80
2005	47	2.5	0.51	1.5	0.49	2.1	0.50	2.4	0.51
2006	64	3.3	0.88	2.1	0.85	2.9	0.86	3.3	0.88
2007	76	3.4	0.87	2.1	0.88	2.9	0.89	3.2	0.88
2008	63	2.8	0.66	1.7	0.62	2.3	0.64	2.7	0.66
2009	59	2.6	0.61	1.5	0.59	2.1	0.60	2.5	0.64
2010	74	3.3	0.85	2.0	0.83	2.8	0.85	3.1	0.87
2011	59	2.6	0.69	1.5	0.70	2.1	0.70	2.4	0.68
2012	73	3.2	1.14	1.7	1.10	2.5	1.13	3.0	1.16
2013	53	2.3	0.74	1.2	0.70	1.7	0.71	2.0	0.72
2014	58	2.5	0.94	1.3	0.86	1.9	0.88	2.3	0.94
2015	52	2.2	0.83	1.2	0.78	1.7	0.80	2.0	0.82
2016	47	2.0	0.73	1.1	0.73	1.6	0.73	1.8	0.75
2017	50	2.1	1.02	1.0	1.03	1.5	1.03	1.9	1.02
2018	20	0.8	0.91	0.5	1.04	0.6	0.99	0.8	0.95
2019	14	0.6	0.82	0.2	0.67	0.4	0.74	0.5	0.81
1998-2019	1085	2.5	0.75	1.4	0.72	2.0	0.74	2.3	0.76

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	4	0.3	0.80	0.2	1.05	0.2	0.98	0.3	0.75
1999	5	0.4	1.00	0.2	0.75	0.3	0.80	0.4	0.93
2000	2	0.2	0.25	0.1	0.23	0.1	0.23	0.1	0.24
2001	6	0.5	0.86	0.3	0.63	0.3	0.62	0.4	0.79
2002	4	0.2	0.57	0.1	0.53	0.2	0.58	0.2	0.58
2003	7	0.4	1.40	0.2	1.41	0.3	1.45	0.3	1.45
2004	6	0.3	0.67	0.1	0.57	0.2	0.58	0.2	0.65
2005	2	0.1	0.13	0.1	0.15	0.1	0.15	0.1	0.13
2006	10	0.5	0.83	0.3	0.69	0.4	0.68	0.4	0.72
2007	15	0.6	0.94	0.4	0.79	0.5	0.85	0.6	0.93
2008	13	0.6	0.76	0.3	0.81	0.4	0.80	0.4	0.78
2009	10	0.4	0.59	0.2	0.47	0.3	0.48	0.3	0.50
2010	6	0.3	0.60	0.2	0.70	0.2	0.70	0.2	0.65
2011	8	0.3	0.62	0.2	0.68	0.3	0.66	0.3	0.64
2012	9	0.4	0.82	0.2	0.65	0.3	0.70	0.3	0.71
2013	11	0.5	0.92	0.3	0.91	0.4	0.91	0.4	0.92
2014	6	0.2	0.46	0.1	0.36	0.2	0.38	0.2	0.42
2015	12	0.5	0.80	0.2	0.75	0.3	0.76	0.4	0.76
2016	9	0.4	0.69	0.1	0.48	0.2	0.54	0.3	0.62
2017	7	0.3	1.17	0.1	2.90	0.2	2.10	0.2	1.35
2018	2	0.1	0.40	0.0	0.12	0.0	0.18	0.1	0.34
2019	3	0.1	0.60	0.1	0.47	0.1	0.49	0.1	0.54
1998-2019	157	0.3	0.69	0.2	0.63	0.2	0.65	0.3	0.67

Table 12

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

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29									
30-34									
35-39	3	0.4	0.4	1	0.1	0.1	2	1.8	1.8
40-44	8	1.0	1.4	8	1.1	1.3			1.8
45-49	35	4.3	5.7	34	4.9	6.2	1	0.9	2.7
50-54	73	9.0	14.7	65	9.3	15.5	8	7.2	9.9
55-59	123	15.2	29.9	110	15.8	31.2	13	11.7	21.6
60-64	142	17.6	47.5	121	17.3	48.6	21	18.9	40.5
65-69	153	18.9	66.4	124	17.8	66.3	29	26.1	66.7
70-74	126	15.6	82.0	112	16.0	82.4	14	12.6	79.3
75-79	86	10.6	92.6	76	10.9	93.3	10	9.0	88.3
80-84	39	4.8	97.4	34	4.9	98.1	5	4.5	92.8
85+	21	2.6	100.0	13	1.9	100.0	8	7.2	100.0
All ages	809	100.0		698	100.0		111	100.0	

Table 13

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

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34								
35-39	1	2	0.0	0.33	0.1	0.67	0.4	0.5
40-44	8		0.3	0.36			1.4	
45-49	34	1	1.4	0.59	0.0	0.09	2.5	0.1
50-54	65	8	2.8	0.70	0.3	0.53	2.6	0.3
55-59	110	13	5.7	0.83	0.7	0.72	2.7	0.4
60-64	121	21	7.4	0.76	1.2	0.72	2.0	0.5
65-69	124	29	8.2	0.82	1.7	0.94	1.4	0.4
70-74	112	14	8.0	0.90	0.9	0.70	1.0	0.2
75-79	76	10	6.9	1.01	0.7	0.91	0.7	0.1
80-84	34	5	5.2	1.03	0.5	1.25	0.4	0.1
85+	13	8	3.0	1.08	0.8	1.14	0.2	0.1
All ages	698	111					1.1	0.2
Mortality								
Raw			2.3	0.81	0.4	0.73		
WS			1.3	0.78	0.2	0.66		
ES			1.8	0.79	0.3	0.68		
BRD-S			2.1	0.81	0.3	0.70		
PYLL-70								
per 100,000			17.9		2.4			
ES			15.2		1.9			
AYLL-70			10.3		8.4			

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	1	0.2					1	100.0
C03–C06 Oral cavity	69	13.1	37	53.6	8	11.6	24	34.8
C07–C08 Salivary gland	1	0.2					1	100.0
C09–C10 Oropharynx	61	11.6	15	24.6	26	42.6	20	32.8
C11 Nasopharynx	2	0.4	2	100.0				
C12–C13 Hypopharynx	1	0.2					1	100.0
C14 ENT cancer	1	0.2			1	100.0		
C15 Oesophagus	66	12.5	13	19.7	13	19.7	40	60.6
C16 Stomach	7	1.3	1	14.3			6	85.7
C17 Small intestine	3	0.6	3	100.0				
C18 Colon	15	2.8	10	66.7			5	33.3
C19–C20 Rectum	9	1.7	4	44.4	2	22.2	3	33.3
C21 Anus/canal	1	0.2	1	100.0				
C22 Liver	14	2.7	1	7.1	2	14.3	11	78.6
C23–C24 Bile	1	0.2	1	100.0				
C25 Pancreas	7	1.3	1	14.3	1	14.3	5	71.4
C26 GI cancer	1	0.2			1	100.0		
C30–C31 Sinuses	2	0.4	1	50.0			1	50.0
C32 Larynx	31	5.9	23	74.2	5	16.1	3	9.7
C33–C34 Lung	96	18.2	12	12.5	17	17.7	67	69.8
C38,C45 Mesothelioma	1	0.2					1	100.0
C43 Malign. melanoma	5	0.9	2	40.0	1	20.0	2	40.0
C44 Skin others	32	6.1	11	34.4	3	9.4	18	56.3
C46,C49 Soft tissue	2	0.4	1	50.0			1	50.0
C50 Breast	1	0.2	1	100.0				
C61 Prostate	35	6.6	23	65.7	2	5.7	10	28.6
C62 Testis	2	0.4	2	100.0				
C64 Kidney	10	1.9	5	50.0	1	10.0	4	40.0
C65 Renal pelvis	2	0.4					2	100.0
C66 Ureter	2	0.4	1	50.0			1	50.0
C67 Bladder	15	2.8	5	33.3			10	66.7
C73 Thyroid	3	0.6			2	66.7	1	33.3
C76–C79 CUP	18	3.4	12	66.7	1	5.6	5	27.8
C81 Hodgkin lymphoma	1	0.2	1	100.0				
C82–C85 NHL	5	0.9	3	60.0	2	40.0		
C90 Mult. myeloma	1	0.2	1	100.0				
C91–C96 Leukaemia	3	0.6	2	66.7			1	33.3
All further malignancies	527	100.0	195	37.0	88	16.7	244	46.3

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 ←%
C03-C06 Oral cavity	11	11.7	10	90.9	1	9.1		
C07-C08 Salivary gland	1	1.1	1	100.0				
C09-C10 Oropharynx	11	11.7	4	36.4	5	45.5	2	18.2
C11 Nasopharynx	1	1.1			1	100.0		
C15 Oesophagus	9	9.6			4	44.4	5	55.6
C16 Stomach	3	3.2	1	33.3	1	33.3	1	33.3
C18 Colon	2	2.1	1	50.0			1	50.0
C19-C20 Rectum	1	1.1					1	100.0
C22 Liver	1	1.1			1	100.0		
C30-C31 Sinuses	1	1.1					1	100.0
C32 Larynx	3	3.2	2	66.7	1	33.3		
C33-C34 Lung	14	14.9			2	14.3	12	85.7
C44 Skin others	4	4.3					4	100.0
C50 Breast	15	16.0	9	60.0	3	20.0	3	20.0
C51 Vulva	2	2.1					2	100.0
C53 Cervix uteri	3	3.2	2	66.7			1	33.3
C54 Corpus uteri	4	4.3	2	50.0			2	50.0
C56 Ovary	1	1.1	1	100.0				
C64 Kidney	1	1.1	1	100.0				
C70-C72 CNS cancer	1	1.1			1	100.0		
C73 Thyroid	2	2.1	1	50.0			1	50.0
C82-C85 NHL	1	1.1	1	100.0				
C91-C96 Leukaemia	2	2.1					2	100.0
All further malignancies	94	100.0	36	38.3	20	21.3	38	40.4

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								
20-24								
25-29								
30-34								
35-39								
40-44	8		0.3	0.40			1.5	
45-49	26	1	1.0	0.59	0.0	0.11	2.1	0.1
50-54	55	5	2.3	0.69	0.2	0.42	2.5	0.2
55-59	90	12	4.6	0.87	0.6	0.75	2.5	0.4
60-64	91	11	5.6	0.73	0.6	0.61	1.8	0.3
65-69	94	23	6.2	0.88	1.4	1.00	1.4	0.4
70-74	82	9	5.9	0.94	0.6	0.69	1.0	0.1
75-79	53	5	4.8	1.06	0.4	1.67	0.6	0.1
80-84	21	4	3.2	1.11	0.4	1.33	0.3	0.1
85+	11	5	2.6	1.38	0.5	1.25	0.2	0.1
All ages	531	75					1.1	0.2
Mortality								
Raw			1.8	0.82	0.2	0.72		
WS			1.0	0.78	0.1	0.64		
ES			1.4	0.80	0.2	0.66		
BRD-S			1.6	0.82	0.2	0.69		
PYLL-70								
per 100,000			14.4		1.5			
ES			12.2		1.2			
AYLL-70			10.5		7.7			

* 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		Females		Males		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								
20-24								
25-29								
30-34								
35-39								
40-44	6		0.3	0.43			1.1	
45-49	22		0.9	0.54			1.8	
50-54	47	4	2.0	0.66	0.2	0.40	2.2	0.2
55-59	78	12	4.0	0.83	0.6	0.86	2.2	0.4
60-64	75	9	4.6	0.68	0.5	0.50	1.5	0.2
65-69	70	18	4.6	0.78	1.1	0.82	1.0	0.4
70-74	57	7	4.1	0.81	0.4	0.58	0.7	0.1
75-79	34	2	3.1	0.81	0.1	0.67	0.4	0.0
80-84	15	4	2.3	0.79	0.4	1.33	0.2	0.1
85+	8	4	1.9	1.00	0.4	1.00	0.1	0.0
All ages	412	60					0.9	0.1
Mortality								
Raw			1.4	0.73	0.2	0.63		
WS			0.8	0.72	0.1	0.57		
ES			1.1	0.73	0.1	0.59		
BRD-S			1.2	0.73	0.2	0.60		
PYLL-70								
per 100,000			12.0		1.3			
ES			10.2		1.0			
AYLL-70			10.7		7.7			

* See corresponding tables with multiple malignancies.

ICD-10 C12, C13: Malignant neoplasm of hypopharynx incl. piriform sinus
 Age distribution and age-specific mortality 2007 - 2019 (Males: 698, Females: 111)

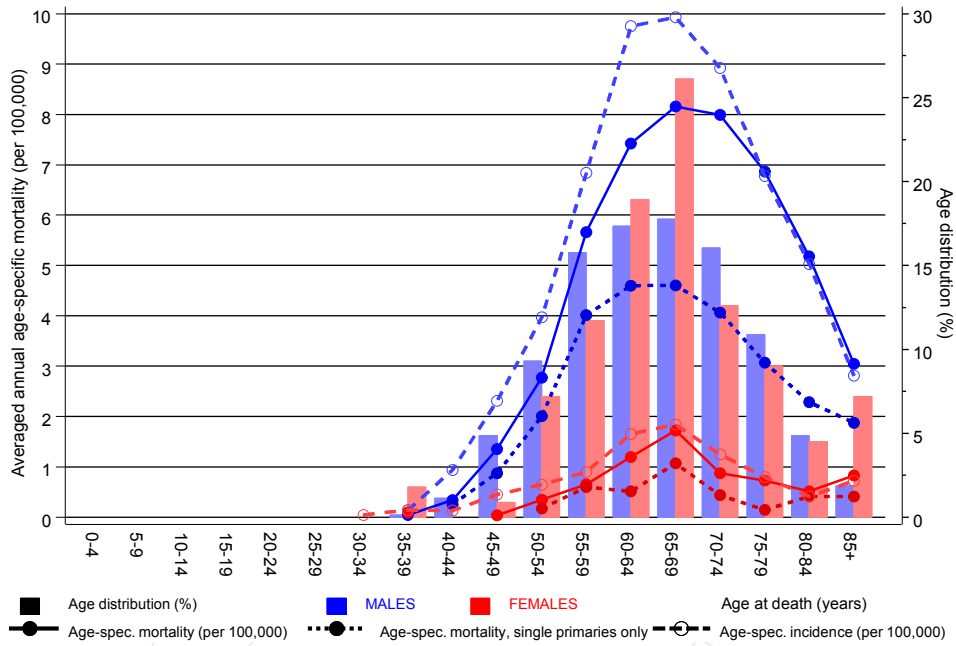
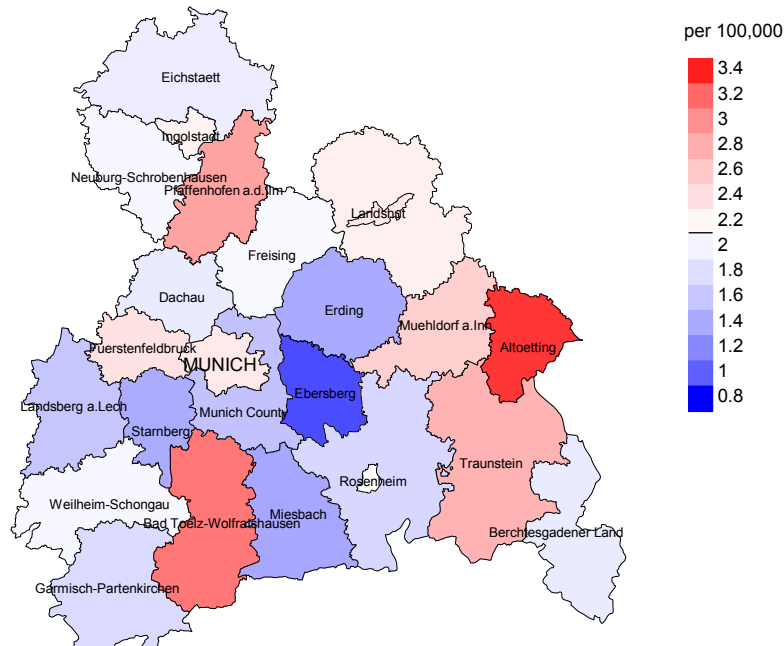


Figure 17. Distribution of age at death (bars; males: mean=62.1 yrs, median=61.9 yrs; females: mean=65.0 yrs, median=64.7 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at hypopharynx 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

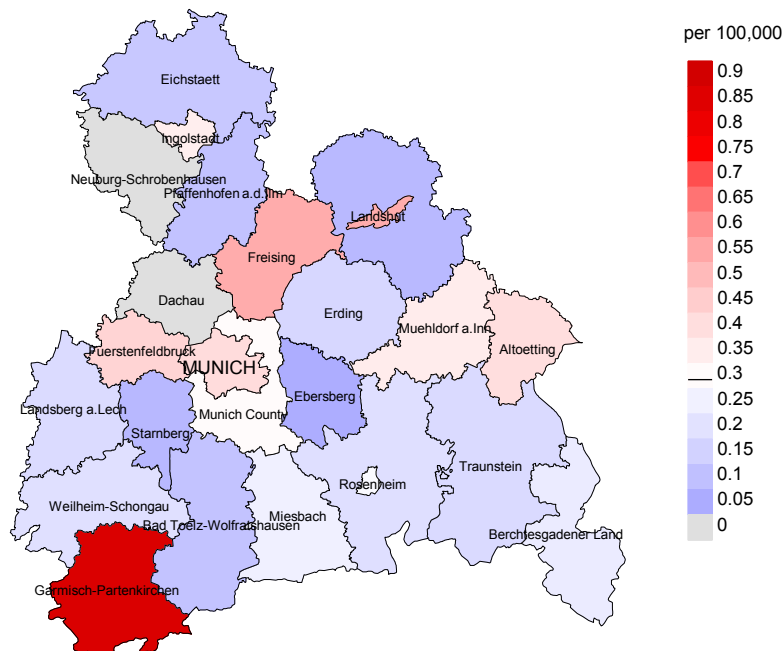
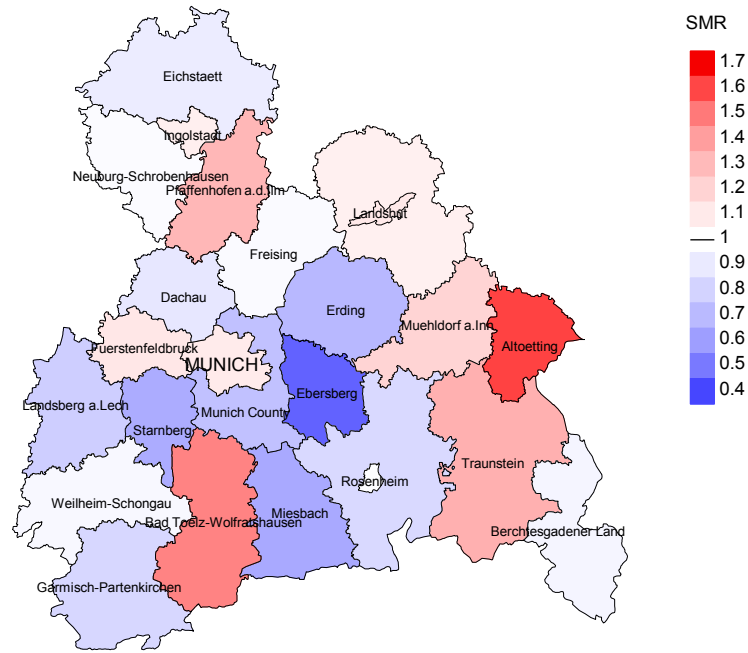


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 2.1/100,000 WS N=698, females 0.3/100,000 WS N=111).

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 1 women died from hypopharynx cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.1/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 0.7/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

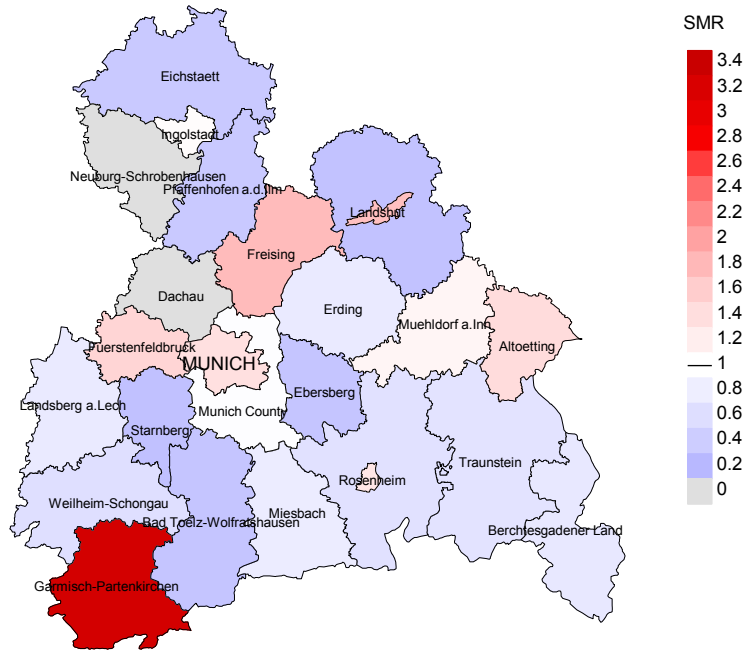


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=698, females N=111).

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 1 women died from hypopharynx cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.33. Though, the value of this parameter may vary with an underlying probability of 99% between 0.00 and 2.45, and is therefore not statistically striking.

Statistical Notes

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

1. All multiple primaries included

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

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

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

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

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

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

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

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

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

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

Shortcuts

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

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