Munich Cancer Registry

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ICD-10 C05: Palate cancer

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	473
Diseases	473
Creation date	01/25/2021
Database export	01/07/2021
Population	4.92 m

Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
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https://www.tumorregister-muenchen.de/en

https://www.tumorregister-muenchen.de/en/facts/base/bC05__E-ICD-10-C05-Palate-cancer-incidence-and-mortality.pdf

Index of figures and tables

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
C05.-	Malignant neoplasm of palate
C05.0	Hard palate
C05.1	Soft palate
C05.2	Uvula
C05.8	Overlapping lesion of palate
C05.9	Palate, 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	14			7.1	20.7	78.6	100.0	
1999	14			7.1	20.5	78.6	100.0	
2000	12			5.0	19.7	91.7	100.0	
2001	14	1	7.1	3.7	19.8	78.6	100.0	
2002	17			8.5	19.2	82.4	100.0	#
2003	27			11.2	19.3	81.5	100.0	
2004	30	1	3.3	10.9	18.4	73.3	100.0	
2005	18	1	5.6	9.6	18.3	77.8	100.0	
2006	7			9.8	18.1	42.9	100.0	
2007	26			12.8	17.5	73.1	92.3	#
2008	33			12.7	17.7	57.6	93.9	
2009	32			13.9	15.8	68.8	100.0	
2010	42	1	2.4	15.4	13.8	54.8	95.2	
2011	29	1	3.4	15.9	13.6	58.6	100.0	
2012	31	1	3.2	17.1	12.7	48.4	96.8	
2013	34			17.6	10.0	44.1	100.0	
2014	29	1	3.4	18.8	10.0	41.4	96.6	
2015	28			18.5	14.5	39.3	92.9	
2016	14			19.3	20.6	35.7	100.0	
2017	10	1	10.0	20.6	15.0	50.0	100.0	
2018	10			20.4	9.1	40.0	100.0	
2019	2			20.3	100.0		100.0	##
1998-2019	473	8	1.7	20.3	20.7	60.5	97.9	

473 cases diagnosed 1998-2019 are related to a total of 473 patients. Currently, in 188 (39.7 %) of these 473 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 133 / 40 / 15 (28.1 % / 8.5 % / 3.2 %) 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 retreived from the respective headings.

How to interpret:
In 2017, a subgroup of 10 cases has been diagnosed, of which 20.6 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 15.0 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

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

Year of diagnosis	Males n	Males %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %	
1998	7	50.0			0.0	23.0	71.4	100.0	
1999	8	57.1			6.7	22.5	87.5	100.0	
2000	9	75.0			4.2	22.0	88.9	100.0	
2001	9	64.3			3.0	22.4	88.9	100.0	
2002	14	82.4			8.5	21.6	85.7	100.0	#
2003	19	70.4			12.1	22.0	84.2	100.0	
2004	19	63.3			11.8	20.3	73.7	100.0	
2005	10	55.6			10.5	20.7	80.0	100.0	
2006	4	57.1			11.1	20.9	75.0	100.0	
2007	20	76.9			15.1	20.3	80.0	90.0	#
2008	26	78.8			15.2	20.3	53.8	96.2	
2009	20	62.5			17.0	17.7	70.0	100.0	
2010	29	69.0	1	3.4	19.1	14.4	55.2	96.6	
2011	21	72.4			19.5	13.6	61.9	100.0	
2012	22	71.0	1	4.5	20.3	12.1	63.6	100.0	
2013	19	55.9			19.9	9.0	68.4	100.0	
2014	22	75.9	1	4.5	21.2	8.1	45.5	100.0	
2015	22	78.6			21.0	12.2	40.9	95.5	
2016	9	64.3			22.0	21.1	44.4	100.0	
2017	4	40.0			23.0	10.0	50.0	100.0	
2018	7	70.0			22.8	0.0	57.1	100.0	
2019	1	50.0			22.7			100.0	##
1998-2019	321	67.9	3	0.9	22.7	23.0	65.4	98.4	

321 cases diagnosed 1998-2019 are related to a total of 321 patients. Currently, in 142 (44.2 %) of these 321 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 98 / 32 / 12 (30.5 % / 10.0 % / 3.7 %) 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 retreived from the respective headings.

How to interpret:
In 2017, a subgroup of 4 cases has been diagnosed, of which 23.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 10.0 % 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 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	7	50.0			14.3	16.1	85.7	100.0	
1999	6	42.9			7.7	16.2	66.7	100.0	
2000	3	25.0			6.3	14.7	100.0	100.0	
2001	5	35.7	1	20.0	4.8	14.3	60.0	100.0	
2002	3	17.6			8.3	14.1	66.7	100.0	#
2003	8	29.6			9.4	13.6	75.0	100.0	
2004	11	36.7	1	9.1	9.3	14.5	72.7	100.0	
2005	8	44.4	1	12.5	7.8	13.2	75.0	100.0	
2006	3	42.9			7.4	12.2		100.0	
2007	6	23.1			8.3	11.6	50.0	100.0	#
2008	7	21.2			7.5	12.2	71.4	85.7	
2009	12	37.5			7.6	12.0	66.7	100.0	
2010	13	31.0			7.6	12.7	53.8	92.3	
2011	8	27.6	1	12.5	8.0	13.6	50.0	100.0	
2012	9	29.0			10.1	13.7	11.1	88.9	
2013	15	44.1			12.9	11.9	13.3	100.0	
2014	7	24.1			13.7	14.3	28.6	85.7	
2015	6	21.4			13.1	19.0	33.3	83.3	
2016	5	35.7			13.4	20.0	20.0	100.0	
2017	6	60.0	1	16.7	15.5	20.0	50.0	100.0	
2018	3	30.0			15.2	25.0		100.0	
2019	1	50.0			15.1	100.0		100.0	##
1998-2019	152	32.1	5	3.3	15.1	16.1	50.0	96.7	

152 cases diagnosed 1998-2019 are related to a total of 152 patients. Currently, in 46 (30.3 %) of these 152 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 35 / 8 / 3 (23.0 % / 5.3 % / 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 retreived from the respective headings.

How to interpret:
In 2017, a subgroup of 6 cases has been diagnosed, of which 15.5 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 20.0 % 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	7	7	0.6	0.6	0.4	0.4	0.6	0.5	0.6	0.6
1999	8	6	0.7	0.5	0.5	0.4	0.6	0.5	0.6	0.5
2000	9	3	0.8	0.2	0.5	0.1	0.7	0.1	0.8	0.2
2001	9	5	0.8	0.4	0.5	0.2	0.7	0.3	0.8	0.4
2002	14	3	0.8	0.2	0.5	0.1	0.7	0.1	0.7	0.1
2003	19	8	1.0	0.4	0.7	0.3	0.9	0.3	1.0	0.4
2004	19	11	1.0	0.6	0.7	0.3	0.9	0.4	1.0	0.5
2005	10	8	0.5	0.4	0.3	0.2	0.5	0.3	0.5	0.4
2006	4	3	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.2
2007	20	6	0.9	0.3	0.5	0.2	0.8	0.2	0.9	0.2
2008	26	7	1.2	0.3	0.8	0.2	1.1	0.3	1.1	0.3
2009	20	12	0.9	0.5	0.5	0.3	0.7	0.4	0.8	0.5
2010	29	13	1.3	0.6	0.8	0.3	1.1	0.5	1.2	0.5
2011	21	8	0.9	0.3	0.6	0.2	0.8	0.2	0.8	0.3
2012	22	9	1.0	0.4	0.6	0.2	0.8	0.3	0.9	0.4
2013	19	15	0.8	0.6	0.5	0.3	0.7	0.5	0.8	0.5
2014	22	7	0.9	0.3	0.5	0.2	0.7	0.2	0.8	0.2
2015	22	6	0.9	0.2	0.5	0.2	0.7	0.2	0.8	0.2
2016	9	5	0.4	0.2	0.2	0.1	0.3	0.2	0.3	0.2
2017	4	6	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2
2018	7	3	0.3	0.1	0.2	0.1	0.2	0.1	0.3	0.1
2019	1	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1998-2019	321	152	0.7	0.3	0.4	0.2	0.6	0.3	0.7	0.3

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	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	14	58.7	10.6	40.9	82.2	45.5	49.7	60.3	64.8	66.9
1999	14	51.5	9.6	30.7	66.7	40.8	43.9	53.4	58.3	60.5
2000	12	65.3	11.8	47.9	85.1	50.7	56.1	64.4	74.1	79.7
2001	14	58.6	11.5	38.7	75.6	46.3	50.1	58.1	70.7	75.5
2002	17	58.1	12.2	35.8	82.6	42.4	50.5	59.1	62.3	74.5
2003	27	58.1	13.0	32.6	82.1	44.5	50.8	56.5	65.3	79.8
2004	30	60.7	15.5	26.4	97.9	45.4	51.2	61.3	69.3	80.2
2005	18	59.7	11.3	39.8	83.4	44.5	50.3	61.1	68.1	73.9
2006	7	55.1	16.0	22.6	69.2	22.6	50.2	57.8	69.0	69.2
2007	26	63.0	11.6	31.7	86.3	50.2	57.9	63.7	70.3	75.5
2008	33	58.7	8.6	43.5	87.7	49.3	53.4	57.6	64.2	66.8
2009	32	60.8	11.9	40.7	89.3	46.2	53.3	58.4	69.7	72.7
2010	42	63.0	12.0	35.9	91.6	50.2	54.2	62.6	70.2	78.1
2011	29	60.8	13.0	32.8	87.2	43.5	55.8	58.2	69.8	78.8
2012	31	61.7	12.0	21.6	78.8	50.9	57.4	63.8	67.5	76.0
2013	34	63.3	10.9	35.7	83.9	49.3	57.3	65.5	70.5	75.7
2014	29	64.1	12.4	33.5	89.6	48.9	56.8	65.1	72.0	80.1
2015	28	61.0	9.1	45.4	80.8	52.3	55.2	57.8	67.1	76.7
2016	14	62.9	12.5	41.2	82.4	43.2	55.8	63.4	70.9	77.7
2017	10	71.3	12.8	49.8	96.5	57.2	65.8	68.7	74.7	91.9
2018	10	64.0	9.6	46.7	76.8	49.8	59.7	63.9	72.9	76.0
2019	2	62.1	8.8	55.8	68.3	55.8	55.8	62.1	68.3	68.3
1998–2019	473	61.1	12.0	21.6	97.9	46.7	53.4	60.6	68.6	76.0

Table 3a

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	7	54.2	6.9	45.5	62.0	45.5	46.4	56.1	60.3	62.0
1999	8	53.4	7.3	40.8	60.5	40.8	48.5	55.5	58.7	60.5
2000	9	62.4	10.1	47.9	79.7	47.9	54.9	61.6	69.1	79.7
2001	9	55.4	10.8	38.7	75.6	38.7	48.5	56.4	60.6	75.6
2002	14	58.2	9.9	42.4	74.5	42.7	50.5	59.3	62.3	72.1
2003	19	58.6	9.8	44.5	82.1	44.5	51.5	57.6	65.1	72.4
2004	19	58.5	13.4	29.7	88.7	45.2	48.7	59.1	65.1	76.6
2005	10	58.6	10.3	39.8	70.0	43.8	51.4	60.6	68.1	69.4
2006	4	61.0	6.5	54.2	69.2	54.2	56.0	60.3	66.0	69.2
2007	20	62.7	12.7	31.7	86.3	47.5	56.4	63.4	69.9	78.0
2008	26	58.3	9.2	43.5	87.7	46.9	53.4	57.5	64.2	66.7
2009	20	60.6	11.0	40.7	82.3	46.9	51.2	60.6	69.7	70.9
2010	29	63.6	10.4	35.9	87.2	50.7	57.9	64.1	70.2	75.1
2011	21	58.6	10.4	32.8	73.6	47.3	55.3	57.9	67.3	72.3
2012	22	62.0	13.5	21.6	78.8	50.9	58.6	64.4	67.8	77.4
2013	19	61.6	10.8	35.7	82.0	49.3	55.1	63.2	69.9	75.7
2014	22	64.9	11.6	43.0	89.6	49.6	57.8	63.5	72.5	80.1
2015	22	62.2	9.5	45.4	80.8	53.3	56.1	58.6	67.5	76.7
2016	9	66.9	10.6	52.4	82.4	52.4	57.5	69.6	76.0	82.4
2017	4	70.1	3.4	66.6	74.7	66.6	67.7	69.4	72.4	74.7
2018	7	66.1	10.5	46.7	76.8	46.7	59.7	66.9	75.1	76.8
2019	1	68.3		68.3	68.3	68.3	68.3	68.3	68.3	68.3
1998–2019	321	60.9	10.9	21.6	89.6	47.3	53.7	60.2	68.1	75.1

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	7	63.3	12.2	40.9	82.2	40.9	60.4	64.8	66.9	82.2
1999	6	49.0	12.3	30.7	66.7	30.7	40.8	50.2	55.1	66.7
2000	3	73.7	14.5	57.3	85.1	57.3	57.3	78.7	85.1	85.1
2001	5	64.2	11.7	50.1	75.5	50.1	53.2	70.7	71.4	75.5
2002	3	57.7	23.5	35.8	82.6	35.8	35.8	54.9	82.6	82.6
2003	8	56.9	19.5	32.6	81.2	32.6	41.0	52.2	77.3	81.2
2004	11	64.6	18.7	26.4	97.9	48.9	54.6	64.8	77.2	83.1
2005	8	61.2	13.0	44.5	83.4	44.5	50.3	61.1	69.3	83.4
2006	3	47.3	23.3	22.6	69.0	22.6	22.6	50.2	69.0	69.0
2007	6	64.1	7.8	51.0	71.4	51.0	60.3	65.4	70.7	71.4
2008	7	60.0	6.6	51.5	69.0	51.5	53.4	59.7	66.8	69.0
2009	12	61.2	13.7	41.9	89.3	43.1	55.2	58.1	68.3	79.6
2010	13	61.5	15.5	38.5	91.6	47.0	53.1	58.6	65.8	83.9
2011	8	66.7	17.6	34.7	87.2	34.7	56.7	66.4	82.6	87.2
2012	9	61.0	8.0	46.0	75.5	46.0	57.4	60.9	64.3	75.5
2013	15	65.6	10.9	41.3	83.9	44.7	63.2	67.5	70.8	77.4
2014	7	61.9	15.4	33.5	79.5	33.5	53.1	68.3	71.4	79.5
2015	6	56.7	6.4	52.0	69.2	52.0	53.3	54.1	57.7	69.2
2016	5	55.6	13.4	41.2	70.9	41.2	43.2	55.8	66.8	70.9
2017	6	72.1	16.9	49.8	96.5	49.8	64.5	67.2	87.4	96.5
2018	3	59.3	5.6	52.8	63.2	52.8	52.8	61.8	63.2	63.2
2019	1	55.8		55.8	55.8	55.8	55.8	55.8	55.8	55.8
1998–2019	152	61.6	14.0	22.6	97.9	43.2	53.2	61.5	69.8	81.2

Table 4

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

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0–4									
5–9									
10–14									
15–19									
20–24	1	0.3	0.3	1	0.5	0.5			0.0
25–29	0	0.0	0.3			0.5			0.0
30–34	4	1.3	1.6	2	0.9	1.4	2	2.0	2.0
35–39	4	1.3	2.8	3	1.4	2.7	1	1.0	3.1
40–44	11	3.4	6.3	5	2.3	5.0	6	6.1	9.2
45–49	17	5.3	11.6	13	5.9	10.8	4	4.1	13.3
50–54	39	12.2	23.8	27	12.2	23.0	12	12.2	25.5
55–59	71	22.2	45.9	51	23.0	45.9	20	20.4	45.9
60–64	40	12.5	58.4	27	12.2	58.1	13	13.3	59.2
65–69	57	17.8	76.3	40	18.0	76.1	17	17.3	76.5
70–74	34	10.6	86.9	25	11.3	87.4	9	9.2	85.7
75–79	21	6.6	93.4	16	7.2	94.6	5	5.1	90.8
80–84	11	3.4	96.9	8	3.6	98.2	3	3.1	93.9
85+	10	3.1	100.0	4	1.8	100.0	6	6.1	100.0
All ages	320	100.0		222	100.0		98	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=3 %	Females DCO rate n=2 %	Males Prop.all cancers n=143063 %	Females Prop.all cancers n=144724 %
0- 4								
5- 9								
10-14								
15-19								
20-24	1		0.1				0.2	
25-29								
30-34	2	2	0.1	0.1			0.2	0.1
35-39	3	1	0.1	0.0			0.2	0.0
40-44	5	6	0.2	0.3			0.2	0.1
45-49	13	4	0.5	0.2			0.3	0.0
50-54	27	12	1.2	0.5			0.3	0.1
55-59	51	20	2.6	1.0			0.4	0.2
60-64	27	13	1.7	0.7			0.2	0.1
65-69	40	17	2.6	1.0			0.2	0.1
70-74	25	9	1.8	0.6			0.1	0.0
75-79	16	5	1.4	0.4	6.3		0.1	0.0
80-84	8	3	1.2	0.3	12.5		0.1	0.0
85+	4	6	0.9	0.6	25.0	33.3	0.0	0.0
All ages	222	98			1.4	2.0	0.2	0.1
Incidence								
Raw			0.7	0.3				
WS			0.4	0.2				
ES			0.6	0.2				
BRD-S			0.7	0.3				

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).

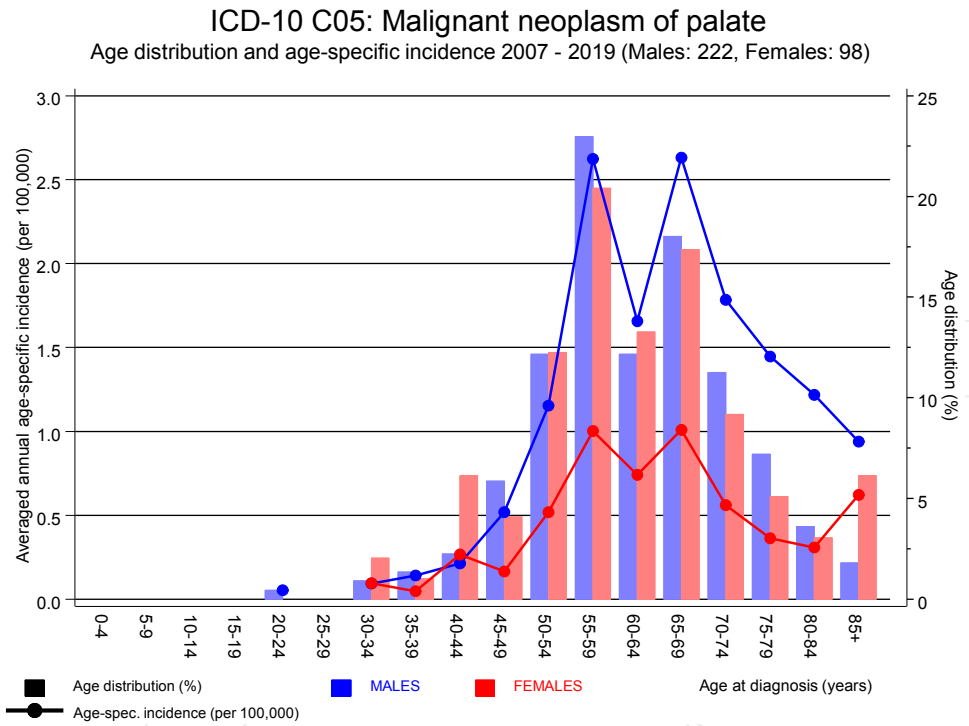


Figure 6. Age distribution (males: mean=62.2 yrs, median=62.0 yrs; females: mean=62.5 yrs, median=62.1 yrs) and age-specific incidence.

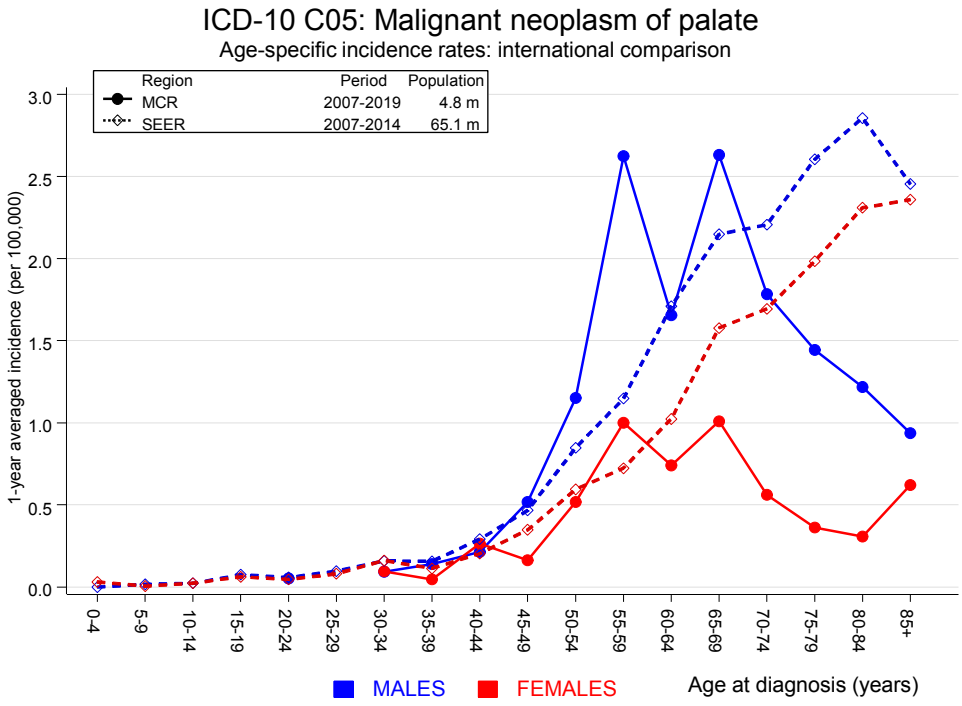


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

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 %
C03–C06	Oral cavity	12	0.2	70.5	36.4	123.1	#	97.3	
C09–C10	Oropharynx	8	0.2	36.0	15.5	70.8	#	64.0	
C11	Nasopharynx	1	0.0	67.9	1.7	378.5	#	8.1	
C12–C13	Hypopharynx	7	0.1	58.7	23.6	120.9	#	56.6	
C15	Oesophagus	14	0.3	41.8	22.8	70.1	#	112.4	7.1
C16	Stomach	4	0.5	8.2	2.2	21.1	#	28.9	50.0
C18	Colon	4	1.2	3.4	0.9	8.6		23.1	
C19–C20	Rectum	2	0.8	2.5	0.3	9.1		9.9	
C21	Anus/canal	1	0.0	25.6	0.6	142.5		7.9	
C22	Liver	2	0.4	4.7	0.6	17.0		13.0	
C23–C24	Bile	1	0.1	7.6	0.2	42.1		7.1	100.0
C25	Pancreas	1	0.5	1.9	0.0	10.8		4.0	
C30–C31	Sinuses	1	0.0	34.2	0.9	190.6		8.0	
C32	Larynx	5	0.2	28.7	9.3	67.0	#	39.7	
C33–C34	Lung	23	1.7	13.3	8.4	20.0	#	175.0	4.3
C46,C49	Soft tissue	1	0.1	12.8	0.3	71.2		7.6	
C50	Breast	1	0.0	26.3	0.7	146.3		7.9	
C61	Prostate	4	4.0	1.0	0.3	2.6		0.2	
C76–C79	CUP	2	0.2	9.0	1.1	32.5	#	14.6	
C82–C85	NHL	4	0.6	7.1	1.9	18.2	#	28.3	50.0
C91–C96	Leukaemia	1	0.2	5.4	0.1	30.0		6.7	
Not observed		0	2.8	0.0	0.0	1.3		-23.2	
All further malignancies		99	14.3	6.9	5.6	8.5	#	697.2	7.1

Patients	320
Median age at next malignancy (years)	63.2
Person-years	1215
Mean observation time (years)	3.8
Median observation time (years)	2.4

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	1	0.0	28.1	0.7	156.5		15.7	
C12–C13	Hypopharynx	1	0.0	140.5	3.6	783.1	#	16.2	
C14	ENT cancer	1	0.0	1283	32.5	7150	#	16.3	100.0
C15	Oesophagus	2	0.0	54.5	6.6	196.9	#	32.1	
C16	Stomach	2	0.2	11.8	1.4	42.5	#	29.9	
C22	Liver	2	0.1	31.8	3.8	114.8	#	31.6	
C25	Pancreas	1	0.2	4.4	0.1	24.6		12.6	
C30–C31	Sinuses	2	0.0	250.0	30.3	903.3	#	32.5	
C33–C34	Lung	2	0.4	4.5	0.5	16.3		25.4	
C50	Breast	3	1.8	1.6	0.3	4.8		18.9	
C64	Kidney	1	0.1	8.1	0.2	45.0		14.3	
C67	Bladder	1	0.1	10.6	0.3	59.0		14.8	
C70–C72	CNS cancer	1	0.1	13.4	0.3	74.8		15.1	100.0
C73	Thyroid	2	0.1	16.8	2.0	60.6	#	30.7	
C76–C79	CUP	2	0.1	22.0	2.7	79.3	#	31.2	
C82–C85	NHL	1	0.2	4.9	0.1	27.4		13.0	
Not observed		0	2.1	0.0	0.0	1.8		−34.3	
All further malignancies		25	5.6	4.4	2.9	6.5	#	316.1	8.0

Patients	146
Median age at next malignancy (years)	66.3
Person-years	613
Mean observation time (years)	4.2
Median observation time (years)	2.7

The occurrence of further specified malignancy is statistically significant.

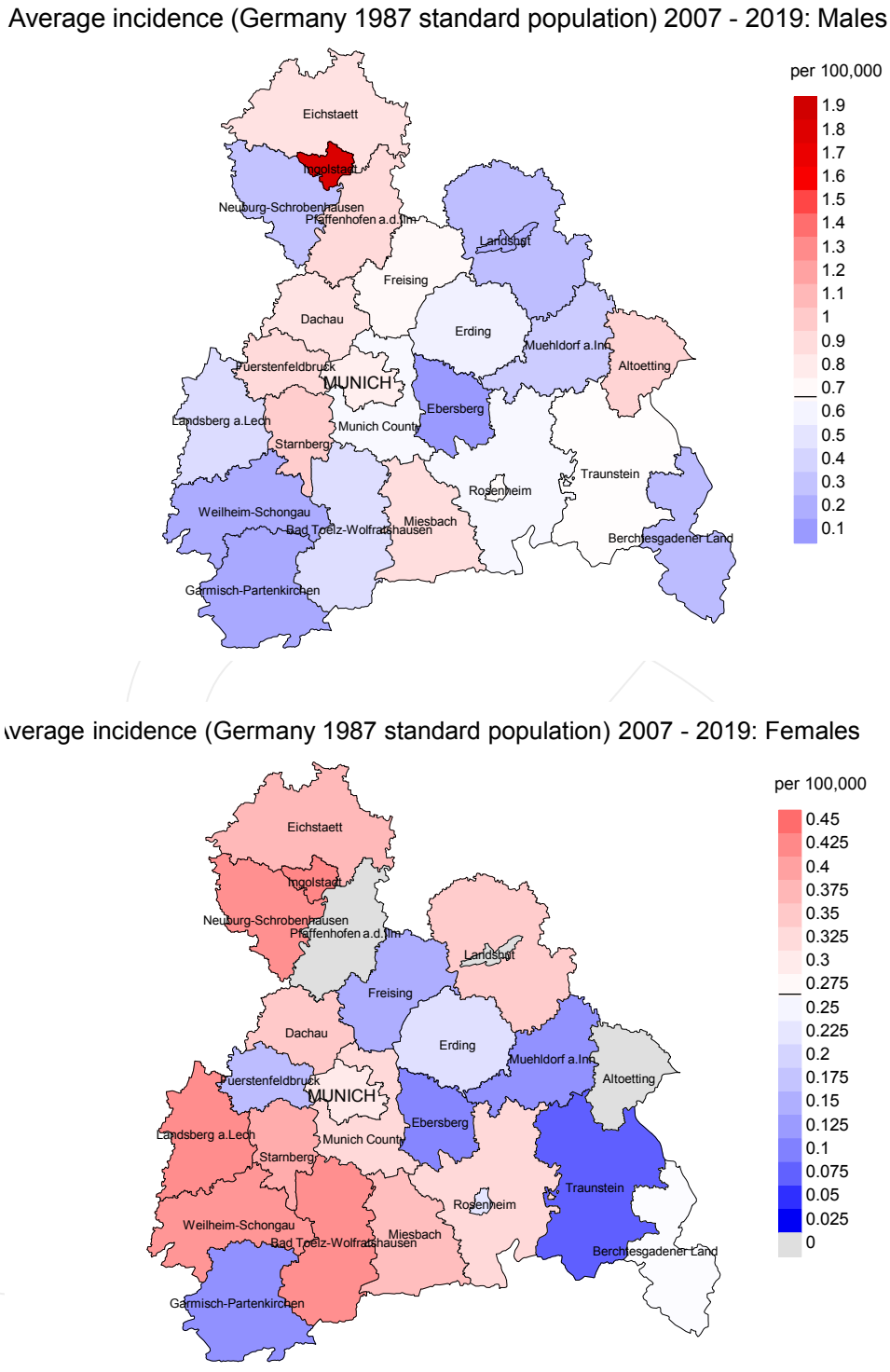
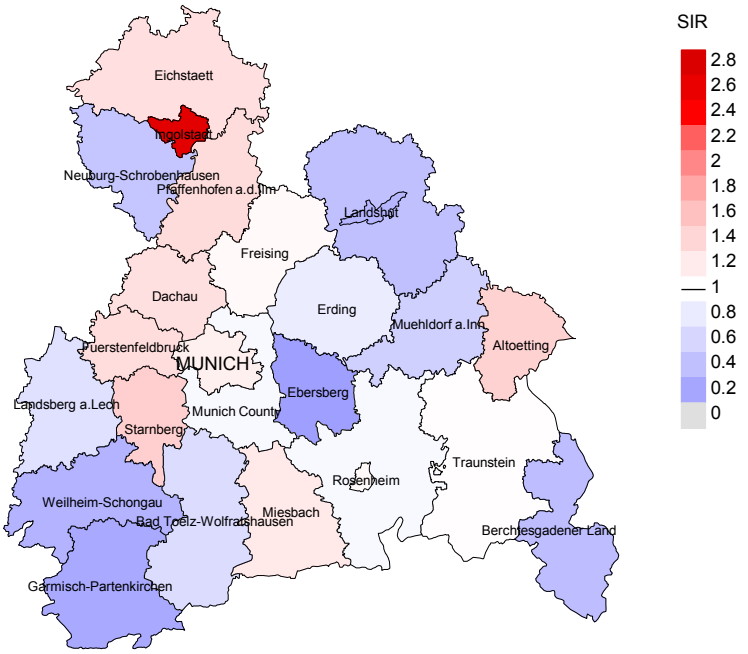


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.7/100,000 WS N=222, females 0.3/100,000 WS N=98).

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 were identified with newly diagnosed palate cancer. Therefore, the mean incidence 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 0.8/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

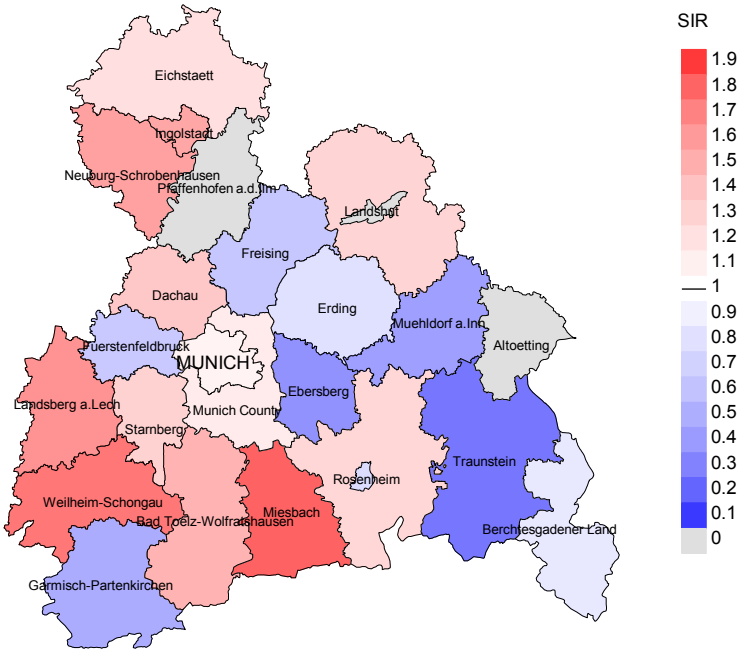


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=222, females N=98).

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 were identified with newly diagnosed palate cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.37. Though, the value of this parameter may vary with an underlying probability of 99% between 0.00 and 2.72, 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	14	100.0		11	78.6	81.8
1999	14	100.0		11	78.6	90.9
2000	12	100.0		11	91.7	90.9
2001	14	100.0	7.1	11	78.6	100.0
2002	17	100.0		14	82.4	85.7
2003	27	100.0		22	81.5	90.9
2004	30	100.0	3.3	22	73.3	100.0
2005	18	100.0	5.6	14	77.8	100.0
2006	7	100.0		3	42.9	100.0
2007	26	92.3		19	73.1	89.5
2008	33	93.9		19	57.6	100.0
2009	32	100.0		22	68.8	81.8
2010	42	95.2	2.4	23	54.8	95.7
2011	29	100.0	3.4	17	58.6	88.2
2012	31	96.8	3.2	15	48.4	100.0
2013	34	100.0		15	44.1	93.3
2014	29	96.6	3.4	12	41.4	91.7
2015	28	92.9		11	39.3	81.8
2016	14	100.0		5	35.7	60.0
2017	10	100.0	10.0	5	50.0	40.0
2018	10	100.0		4	40.0	75.0
2019	2	100.0				
1998-2019	473	97.9	1.7	286	60.5	90.6

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	14	9	100.0	1	7.1
1999	14	5	100.0		
2000	12	7	85.7		
2001	14	12	91.7	1	7.1
2002	17	14	100.0	2	11.8
2003	27	19	100.0	5	18.5
2004	30	20	85.0	5	16.7
2005	18	17	94.1	4	22.2
2006	7	22	95.5	2	28.6
2007	26	13	100.0	1	3.8
2008	33	7	100.0	3	9.1
2009	32	25	96.0	3	9.4
2010	42	20	100.0	4	9.5
2011	29	23	91.3	3	10.3
2012	31	13	100.0	2	6.5
2013	34	21	100.0	3	8.8
2014	29	24	100.0	7	24.1
2015	28	20	95.0	1	3.6
2016	14	18	100.0		
2017	10	26	88.5	3	30.0
2018	10	13	38.5	1	10.0
2019	2	13	46.2		
1998–2019	473	361	92.0	51	10.8

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	9	77.8	22.2	88.9
1999	5	60.0	40.0	80.0
2000	7	71.4	28.6	83.3
2001	12	66.7	33.3	72.7
2002	14	78.6	21.4	100.0
2003	19	73.7	26.3	89.5
2004	20	60.0	40.0	88.2
2005	17	94.1	5.9	100.0
2006	22	68.2	31.8	85.7
2007	13	84.6	15.4	92.3
2008	7	85.7	14.3	100.0
2009	25	76.0	24.0	87.5
2010	20	75.0	25.0	75.0
2011	23	73.9	26.1	90.5
2012	13	46.2	53.8	53.8
2013	21	76.2	23.8	90.5
2014	24	66.7	33.3	79.2
2015	20	50.0	50.0	73.7
2016	18	61.1	38.9	66.7
2017	26	76.9	23.1	87.0
2018	13	61.5	38.5	100.0
2019	13	53.8	46.2	100.0
1998-2019	361	70.1	29.9	84.6

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	6	55.0	50.8	59.6	51.5
1999	5	59.4	49.5	77.3	54.5
2000	5	75.3	76.1	61.6	76.1
2001	9	63.8	65.9	55.8	65.9
2002	9	62.3	65.4	61.6	62.3
2003	10	62.3	63.4	56.1	63.4
2004	15	63.8	63.8	60.3	64.5
2005	8	67.0	66.6	74.6	66.6
2006	15	63.1	63.5	61.4	63.5
2007	11	66.5	64.4	86.3	65.4
2008	4	55.8	55.8		55.8
2009	22	66.9	67.8	66.0	66.9
2010	16	64.5	60.3	77.5	60.3
2011	14	68.2	66.8	70.5	65.4
2012	9	73.5	69.8	74.5	70.6
2013	17	64.7	62.9	64.8	62.9
2014	22	66.8	67.9	63.9	66.2
2015	15	66.0	68.7	66.0	65.8
2016	11	67.1	63.8	76.8	63.8
2017	21	69.8	70.1	69.6	69.4
2018	10	72.1	72.1	71.4	73.8
2019	10	74.9	69.2	77.9	72.9
1998–2019	264	65.6	65.4	66.5	65.1

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	3	60.6	60.6		60.6
1999					
2000	2	54.0	55.6	52.4	55.6
2001	3	75.5	71.9	85.4	71.9
2002	5	81.1	82.6	53.9	81.1
2003	9	60.2	54.6	82.4	60.2
2004	5	65.1	62.5	71.4	62.5
2005	9	63.7	63.7		63.7
2006	7	78.6	75.3	78.6	82.1
2007	2	66.2	66.2		66.2
2008	3	63.1	58.5	72.3	63.1
2009	3	87.0	76.4	87.0	87.0
2010	4	83.9	76.9	83.9	76.9
2011	9	60.6	60.6	73.9	60.5
2012	4	80.0	73.1	80.5	73.1
2013	4	74.3	68.2	83.9	74.3
2014	2	77.4	77.4		77.4
2015	5	60.8	68.5	60.8	68.5
2016	7	75.2	70.9	81.6	75.2
2017	5	70.8	69.8	102.7	69.8
2018	3	72.8	80.4	58.3	72.8
2019	3	73.6	98.2	70.2	98.2
1998-2019	97	70.5	68.2	78.1	68.2

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	4	0.4	0.57	0.3	0.57	0.3	0.61	0.3	0.56
1999	3	0.3	0.38	0.2	0.44	0.3	0.44	0.4	0.61
2000	4	0.4	0.44	0.2	0.32	0.3	0.43	0.5	0.65
2001	6	0.5	0.67	0.4	0.70	0.5	0.68	0.5	0.66
2002	8	0.4	0.57	0.3	0.53	0.4	0.55	0.4	0.59
2003	8	0.4	0.42	0.2	0.37	0.3	0.39	0.4	0.43
2004	9	0.5	0.47	0.3	0.43	0.4	0.44	0.4	0.42
2005	7	0.4	0.70	0.2	0.62	0.3	0.63	0.3	0.63
2006	11	0.6	2.75	0.4	2.70	0.5	2.75	0.6	2.90
2007	9	0.4	0.45	0.2	0.45	0.3	0.43	0.4	0.44
2008	4	0.2	0.15	0.1	0.17	0.2	0.16	0.2	0.16
2009	17	0.8	0.85	0.4	0.81	0.6	0.84	0.7	0.88
2010	13	0.6	0.45	0.3	0.42	0.5	0.44	0.5	0.45
2011	10	0.4	0.48	0.2	0.43	0.4	0.44	0.4	0.50
2012	5	0.2	0.23	0.1	0.21	0.2	0.22	0.2	0.21
2013	13	0.6	0.68	0.3	0.67	0.4	0.65	0.5	0.68
2014	14	0.6	0.64	0.3	0.60	0.5	0.63	0.6	0.66
2015	8	0.3	0.36	0.2	0.34	0.3	0.34	0.3	0.37
2016	7	0.3	0.78	0.2	0.93	0.2	0.84	0.3	0.83
2017	16	0.7	4.00	0.4	3.75	0.5	3.80	0.6	3.96
2018	6	0.2	0.86	0.1	0.85	0.2	0.86	0.2	0.86
2019	6	0.2	6.00	0.1	4.50	0.2	5.04	0.2	5.58
1998-2019	188	0.4	0.59	0.2	0.54	0.3	0.56	0.4	0.59

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	3	0.3	0.43	0.1	0.31	0.2	0.35	0.2	0.40
1999									
2000	1	0.1	0.33	0.0	0.58	0.1	0.51	0.1	0.39
2001	2	0.2	0.40	0.1	0.32	0.1	0.33	0.2	0.38
2002	3	0.2	1.00	0.0	0.32	0.1	0.46	0.1	0.76
2003	6	0.3	0.75	0.2	0.80	0.3	0.78	0.3	0.76
2004	3	0.2	0.27	0.1	0.23	0.1	0.25	0.1	0.27
2005	9	0.5	1.13	0.2	0.98	0.4	1.06	0.4	1.09
2006	4	0.2	1.33	0.1	0.53	0.1	0.74	0.2	0.92
2007	2	0.1	0.33	0.0	0.26	0.1	0.32	0.1	0.37
2008	2	0.1	0.29	0.1	0.33	0.1	0.31	0.1	0.32
2009	2	0.1	0.17	0.0	0.13	0.1	0.12	0.1	0.13
2010	2	0.1	0.15	0.0	0.11	0.1	0.11	0.1	0.12
2011	7	0.3	0.88	0.2	0.99	0.2	0.88	0.2	0.81
2012	1	0.0	0.11	0.0	0.06	0.0	0.07	0.0	0.08
2013	3	0.1	0.20	0.1	0.17	0.1	0.19	0.1	0.21
2014	2	0.1	0.29	0.0	0.20	0.0	0.21	0.1	0.22
2015	2	0.1	0.33	0.0	0.21	0.1	0.24	0.1	0.33
2016	4	0.2	0.80	0.1	0.43	0.1	0.52	0.1	0.63
2017	4	0.2	0.67	0.1	0.67	0.1	0.71	0.1	0.73
2018	2	0.1	0.67	0.0	0.30	0.0	0.38	0.0	0.46
2019	1	0.0	1.00	0.0	0.29	0.0	0.39	0.0	0.50
1998-2019	65	0.1	0.43	0.1	0.34	0.1	0.36	0.1	0.39

Table 12

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

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29									
30-34									
35-39									
40-44	3	1.9	1.9	1	0.8	0.8	2	5.9	5.9
45-49	3	1.9	3.7	3	2.3	3.1			5.9
50-54	11	6.8	10.5	10	7.8	10.9	1	2.9	8.8
55-59	20	12.3	22.8	16	12.5	23.4	4	11.8	20.6
60-64	33	20.4	43.2	27	21.1	44.5	6	17.6	38.2
65-69	27	16.7	59.9	22	17.2	61.7	5	14.7	52.9
70-74	29	17.9	77.8	25	19.5	81.3	4	11.8	64.7
75-79	20	12.3	90.1	18	14.1	95.3	2	5.9	70.6
80-84	5	3.1	93.2	3	2.3	97.7	2	5.9	76.5
85+	11	6.8	100.0	3	2.3	100.0	8	23.5	100.0
All ages	162	100.0		128	100.0		34	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								
40-44	1	2	0.0	0.20	0.1	0.33	0.2	0.2
45-49	3		0.1	0.23			0.2	
50-54	10	1	0.4	0.37	0.0	0.08	0.4	0.0
55-59	16	4	0.8	0.31	0.2	0.20	0.4	0.1
60-64	27	6	1.7	1.00	0.3	0.46	0.5	0.1
65-69	22	5	1.4	0.55	0.3	0.29	0.3	0.1
70-74	25	4	1.8	1.00	0.2	0.44	0.2	0.0
75-79	18	2	1.6	1.13	0.1	0.40	0.2	0.0
80-84	3	2	0.5	0.38	0.2	0.67	0.0	0.0
85+	3	8	0.7	0.75	0.8	1.33	0.0	0.1
All ages	128	34					0.2	0.1
Mortality								
Raw			0.4	0.58	0.1	0.35		
WS			0.2	0.54	0.0	0.28		
ES			0.3	0.55	0.1	0.29		
BRD-S			0.4	0.58	0.1	0.31		
PYLL-70								
per 100,000			2.7		0.7			
ES			2.3		0.6			
AYLL-70			9.2		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 ←%
C03–C06	Oral cavity	16	10.2	6	37.5	3	18.8	7	43.8
C09–C10	Oropharynx	12	7.6	5	41.7			7	58.3
C11	Nasopharynx	1	0.6	1	100.0				
C12–C13	Hypopharynx	8	5.1	2	25.0	2	25.0	4	50.0
C15	Oesophagus	22	14.0	4	18.2	5	22.7	13	59.1
C16	Stomach	4	2.5					4	100.0
C17	Small intestine	2	1.3	1	50.0			1	50.0
C18	Colon	8	5.1	4	50.0			4	50.0
C19–C20	Rectum	6	3.8	1	16.7			5	83.3
C21	Anus/canal	1	0.6	1	100.0				
C22	Liver	4	2.5					4	100.0
C23–C24	Bile	1	0.6					1	100.0
C25	Pancreas	1	0.6					1	100.0
C30–C31	Sinuses	1	0.6					1	100.0
C32	Larynx	8	5.1	3	37.5	4	50.0	1	12.5
C33–C34	Lung	28	17.8	7	25.0	4	14.3	17	60.7
C38,C45	Mesothelioma	1	0.6	1	100.0				
C44	Skin others	12	7.6	5	41.7	4	33.3	3	25.0
C50	Breast	1	0.6	1	100.0				
C61	Prostate	6	3.8	4	66.7			2	33.3
C64	Kidney	1	0.6	1	100.0				
C67	Bladder	2	1.3	2	100.0				
C73	Thyroid	1	0.6	1	100.0				
C76–C79	CUP	3	1.9	1	33.3	1	33.3	1	33.3
C82–C85	NHL	5	3.2	2	40.0	1	20.0	2	40.0
C91–C96	Leukaemia	2	1.3	1	50.0	1	50.0		
All further malignancies		157	100.0	54	34.4	25	15.9	78	49.7

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	3	10.3			1	33.3	2	66.7
C12–C13 Hypopharynx	1	3.4			1	100.0		
C14 ENT cancer	2	6.9			1	50.0	1	50.0
C15 Oesophagus	5	17.2	1	20.0	1	20.0	3	60.0
C16 Stomach	1	3.4					1	100.0
C18 Colon	2	6.9					2	100.0
C21 Anus/canal	1	3.4					1	100.0
C22 Liver	2	6.9	1	50.0			1	50.0
C30–C31 Sinuses	3	10.3	1	33.3			2	66.7
C33–C34 Lung	2	6.9					2	100.0
C50 Breast	3	10.3	2	66.7	1	33.3		
C56 Ovary	1	3.4					1	100.0
C70–C72 CNS cancer	1	3.4					1	100.0
C76–C79 CUP	1	3.4					1	100.0
C82–C85 NHL	1	3.4			1	100.0		
All further malignancies	29	100.0	5	17.2	6	20.7	18	62.1

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

Table 15

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	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								
40-44	1	2	0.0	0.20	0.1	0.33	0.2	0.3
45-49	2		0.1	0.17			0.2	
50-54	6	1	0.3	0.33	0.0	0.10	0.3	0.0
55-59	15	3	0.8	0.43	0.2	0.19	0.4	0.1
60-64	16	5	1.0	0.84	0.3	0.50	0.3	0.1
65-69	16	4	1.1	0.62	0.2	0.36	0.2	0.1
70-74	15	2	1.1	1.00	0.1	0.29	0.2	0.0
75-79	9	2	0.8	0.90	0.1	0.67	0.1	0.0
80-84	2	1	0.3	0.67	0.1	0.33	0.0	0.0
85+	1	6	0.2	0.50	0.6	1.50	0.0	0.1
All ages	83	26					0.2	0.1
Mortality								
Raw			0.3	0.55	0.1	0.34		
WS			0.2	0.51	0.0	0.27		
ES			0.2	0.52	0.1	0.28		
BRD-S			0.3	0.55	0.1	0.30		
PYLL-70								
per 100,000			2.0		0.6			
ES			1.7		0.5			
AYLL-70			9.4		10.5			

* See corresponding tables with multiple malignancies.

Table 16

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34								
35-39								
40-44		2			0.1	0.31		0.3
45-49	2		0.1	0.23			0.2	
50-54	3	1	0.1	0.20	0.0	0.10	0.1	0.0
55-59	11	2	0.6	0.33	0.1	0.15	0.3	0.1
60-64	8	4	0.5	0.46	0.2	0.41	0.2	0.1
65-69	12	4	0.8	0.51	0.2	0.41	0.2	0.1
70-74	9	2	0.6	0.93	0.1	0.27	0.1	0.0
75-79	4	1	0.4	0.45	0.1	0.45	0.1	0.0
80-84	1	1	0.2	0.30	0.1	0.30	0.0	0.0
85+	1	6	0.2	0.45	0.6	1.38	0.0	0.1
All ages	51	23					0.1	0.1
Mortality								
Raw			0.2	0.39	0.1	0.31		
WS			0.1	0.36	0.0	0.25		
ES			0.1	0.37	0.0	0.26		
BRD-S			0.2	0.38	0.1	0.27		
PYLL-70								
per 100,000			1.2		0.5			
ES			1.0		0.4			
AYLL-70			9.0		10.6			

* See corresponding tables with multiple malignancies.

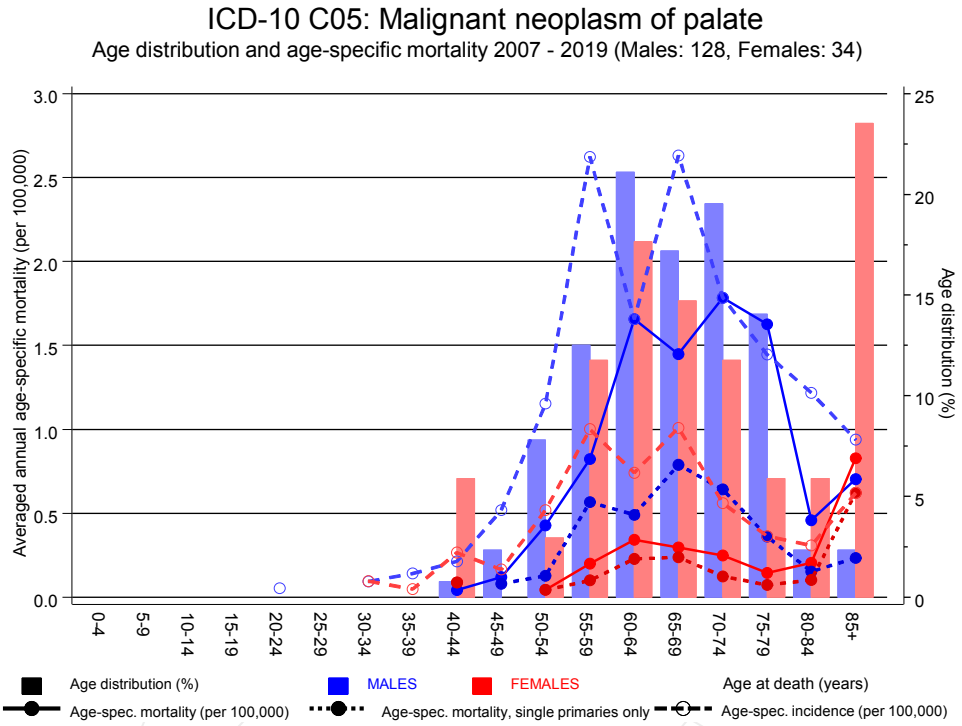


Figure 17. Distribution of age at death (bars; males: mean=61.5 yrs, median=60.8 yrs; females: mean=65.0 yrs, median=64.4 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

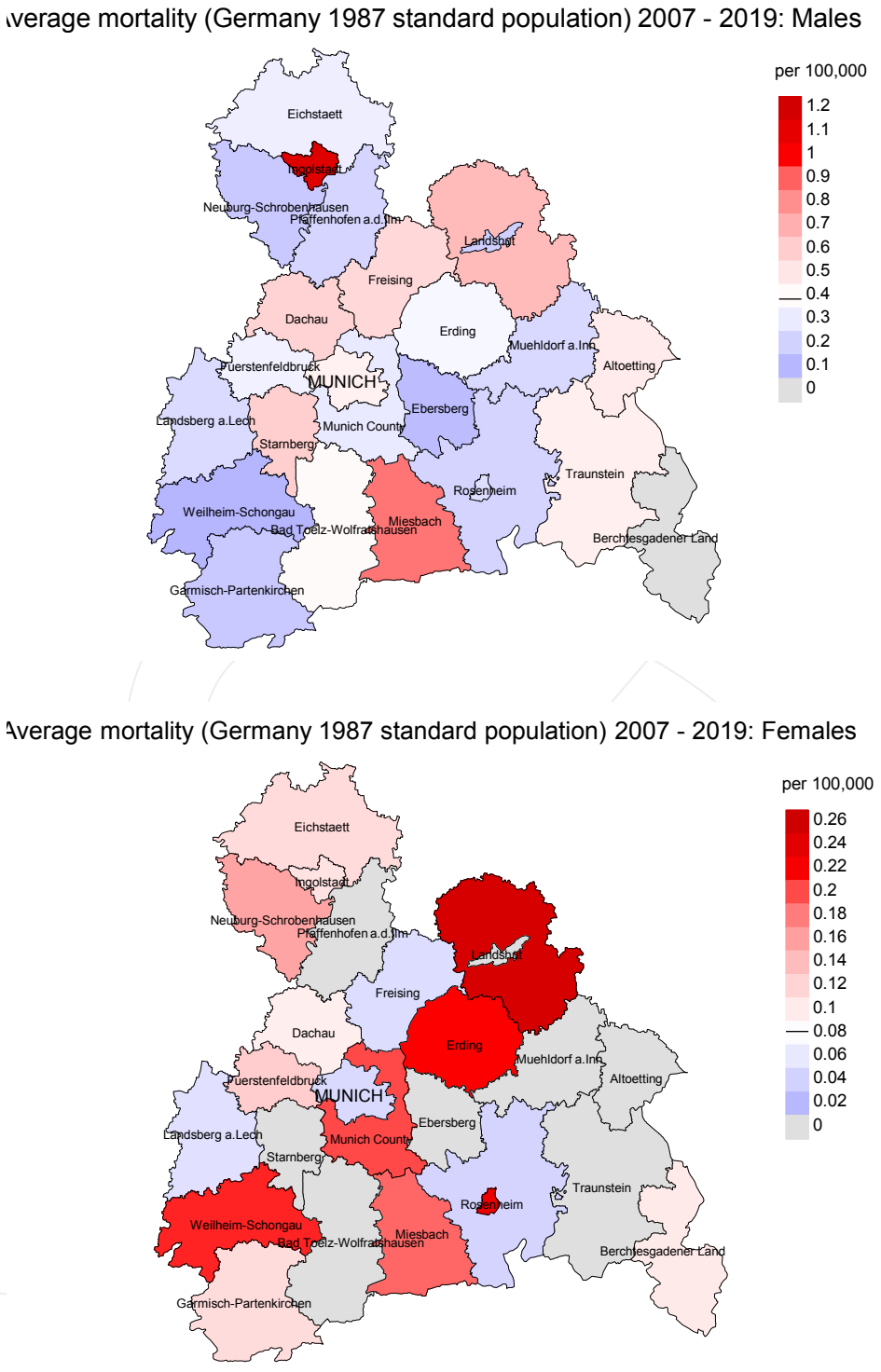
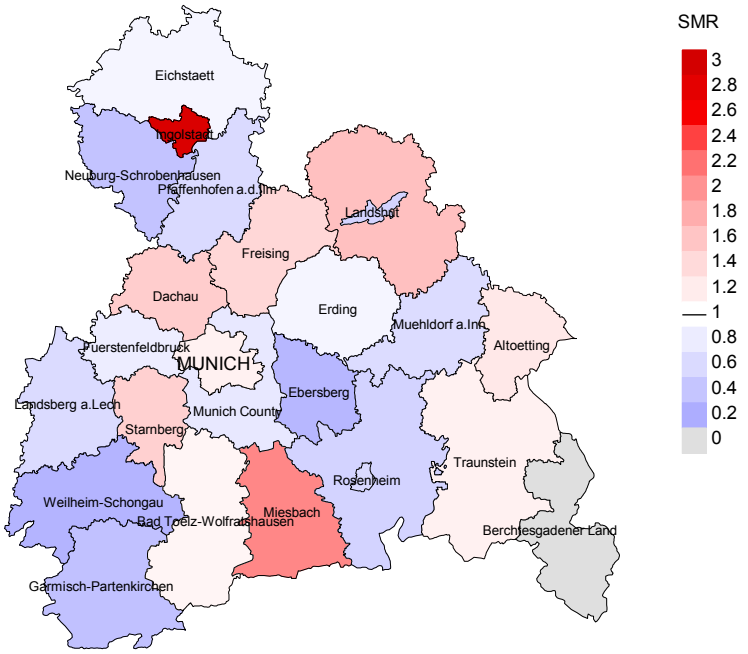


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.4/100,000 WS N=128, females 0.1/100,000 WS N=34).

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

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

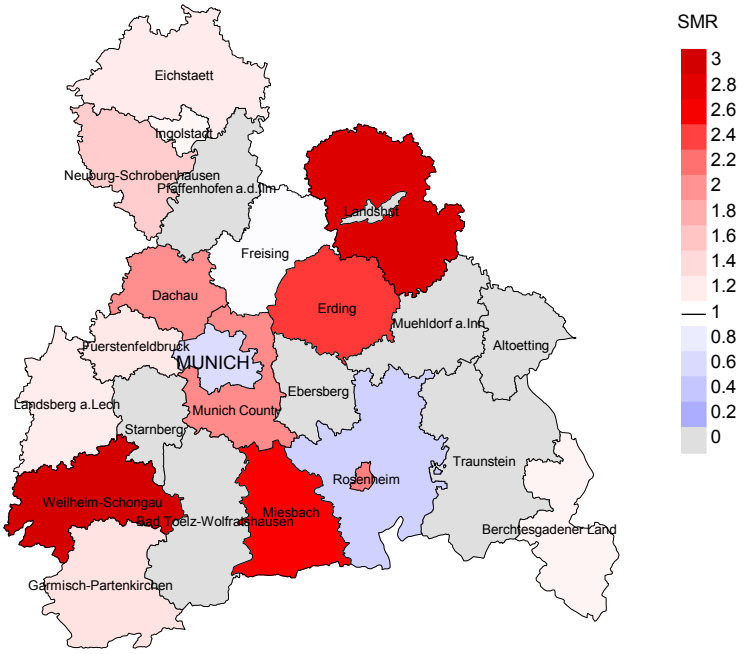


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=128, females N=34).

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 0 women died from palate cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.00. Though, the value of this parameter may vary with an underlying probability of 99% between 0.00 and 5.78, 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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