

Munich Cancer Registry



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

ICD-10 C30, C31: Nasal cavity, middle ear, sinuses cancer

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	778
Diseases	785
Creation date	01/25/2021
Database export	01/07/2021
Population	4.92 m



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

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

<https://www.tumorregister-muenchen.de/en/facts/base/bC3031E-ICD-10-C30-C31-Nasal-cavity-middle-ear-sinuses-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
C30.-	Malignant neoplasm of nasal cavity and middle ear
C30.0	Nasal cavity
C30.1	Middle ear
C31.-	Malignant neoplasm of accessory sinuses
C31.0	Maxillary sinus
C31.1	Ethmoidal sinus
C31.2	Frontal sinus
C31.3	Sphenoidal sinus
C31.8	Overlapping lesion of accessory sinuses
C31.9	Accessory sinus, 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	20	1	5.0	15.0	16.0	75.0	95.0
1999	19	1	5.3	20.5	16.2	84.2	100.0
2000	22	2	9.1	14.8	15.9	77.3	100.0
2001	13	1	7.7	13.5	15.9	76.9	100.0
2002	26	2	7.7	13.0	15.9	88.5	100.0 #
2003	38	2	5.3	12.3	15.9	78.9	97.4
2004	24			13.6	15.6	62.5	95.8
2005	31			14.0	15.4	80.6	100.0
2006	39	3	7.7	16.4	15.2	76.9	100.0
2007	47	3	6.4	15.4	15.3	59.6	95.7 #
2008	42	2	4.8	15.6	14.3	57.1	100.0
2009	49	1	2.0	15.1	14.0	55.1	98.0
2010	54	1	1.9	14.2	13.7	57.4	98.1
2011	52	2	3.8	14.5	12.3	65.4	96.2
2012	57	1	1.8	15.2	11.0	50.9	98.2
2013	46			15.9	9.8	47.8	97.8
2014	63	1	1.6	16.2	9.0	50.8	93.7
2015	51	1	2.0	16.0	9.4	33.3	98.0
2016	29	2	6.9	15.9	10.1	48.3	100.0
2017	24			16.4	9.8	50.0	100.0
2018	24			17.0	10.3	12.5	100.0
2019	15			16.9	13.3	6.7	66.7 ##
1998-2019	785	26	3.3	16.9	16.0	58.0	97.3

785 cases diagnosed 1998-2019 are related to a total of 778 patients. Currently, in 244 (31.4 %) of these 778 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 177 / 46 / 21 (22.8 % / 5.9 % / 2.7 %) 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 retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 24 cases has been diagnosed, of which 16.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 9.8 % 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	14	70.0			14.3	16.8	78.6	92.9
1999	11	57.9			12.0	17.1	72.7	100.0
2000	16	72.7	1	6.3	9.8	17.1	68.8	100.0
2001	8	61.5			8.2	16.8	87.5	100.0
2002	14	53.8	2	14.3	7.9	16.6	92.9	100.0 #
2003	23	60.5	1	4.3	8.1	16.7	87.0	100.0
2004	15	62.5			10.9	16.8	66.7	100.0
2005	20	64.5			11.6	16.4	85.0	100.0
2006	21	53.8	3	14.3	14.8	16.2	81.0	100.0
2007	33	70.2	2	6.1	13.7	16.6	57.6	100.0 #
2008	29	69.0	1	3.4	13.7	15.0	55.2	100.0
2009	29	59.2			13.7	14.0	55.2	100.0
2010	36	66.7			11.9	13.5	58.3	97.2
2011	38	73.1	2	5.3	12.4	12.0	68.4	97.4
2012	29	50.9			14.0	9.9	51.7	96.6
2013	29	63.0			14.5	9.1	48.3	100.0
2014	34	54.0			14.5	7.8	52.9	94.1
2015	33	64.7			14.1	7.3	36.4	100.0
2016	15	51.7	1	6.7	14.1	8.0	40.0	100.0
2017	14	58.3			15.0	8.3	35.7	100.0
2018	16	66.7			15.7	8.3	12.5	100.0
2019	8	53.3			15.5	25.0		75.0 ##
1998-2019	485	61.8	13	2.7	15.5	16.8	58.6	98.4

485 cases diagnosed 1998-2019 are related to a total of 483 patients. Currently, in 150 (31.1 %) of these 483 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 104 / 31 / 15 (21.5 % / 6.4 % / 3.1 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 14 cases has been diagnosed, of which 15.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 8.3 % 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 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	6	30.0	1	16.7	16.7	14.8	66.7	100.0
1999	8	42.1	1	12.5	35.7	14.7	100.0	100.0
2000	6	27.3	1	16.7	25.0	14.1	100.0	100.0
2001	5	38.5	1	20.0	24.0	14.4	60.0	100.0
2002	12	46.2			21.6	14.7	83.3	100.0 #
2003	15	39.5	1	6.7	19.2	14.5	66.7	93.3
2004	9	37.5			18.0	13.6	55.6	88.9
2005	11	35.5			18.1	13.7	72.7	100.0
2006	18	46.2			18.9	13.5	72.2	100.0
2007	14	29.8	1	7.1	18.3	13.2	64.3	85.7 #
2008	13	31.0	1	7.7	18.8	13.2	61.5	100.0
2009	20	40.8	1	5.0	17.5	14.1	55.0	95.0
2010	18	33.3	1	5.6	18.1	13.9	55.6	100.0
2011	14	26.9			18.3	12.8	57.1	92.9
2012	28	49.1	1	3.6	17.3	12.5	50.0	100.0
2013	17	37.0			18.2	10.9	47.1	94.1
2014	29	46.0	1	3.4	18.9	10.5	48.3	93.1
2015	18	35.3	1	5.6	19.2	12.3	27.8	94.4
2016	14	48.3	1	7.1	18.9	12.8	57.1	100.0
2017	10	41.7			18.6	12.0	70.0	100.0
2018	8	33.3			19.1	13.3	12.5	100.0
2019	7	46.7			19.3	0.0	14.3	57.1 ##
1998-2019	300	38.2	13	4.3	19.3	14.8	57.0	95.7

300 cases diagnosed 1998-2019 are related to a total of 295 patients. Currently, in 94 (31.9 %) of these 295 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 73 / 15 / 6 (24.7 % / 5.1 % / 2.0 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 10 cases has been diagnosed, of which 18.6 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 12.0 % 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	14	6	1.3	0.5	0.8	0.3	1.1	0.4	1.5	0.5
1999	11	8	1.0	0.7	0.6	0.2	0.8	0.4	0.9	0.6
2000	16	6	1.4	0.5	0.9	0.3	1.3	0.4	1.6	0.4
2001	8	5	0.7	0.4	0.4	0.2	0.6	0.2	0.9	0.3
2002	14	12	0.8	0.6	0.4	0.3	0.6	0.5	0.8	0.5
2003	23	15	1.2	0.8	0.8	0.4	1.1	0.5	1.3	0.7
2004	15	9	0.8	0.5	0.5	0.3	0.7	0.3	0.9	0.4
2005	20	11	1.1	0.6	0.6	0.2	0.8	0.3	1.0	0.4
2006	21	18	1.1	0.9	0.7	0.5	0.9	0.6	1.1	0.8
2007	33	14	1.5	0.6	0.9	0.3	1.2	0.4	1.5	0.5
2008	29	13	1.3	0.6	0.8	0.3	1.1	0.4	1.2	0.4
2009	29	20	1.3	0.9	0.8	0.4	1.0	0.6	1.3	0.7
2010	36	18	1.6	0.8	1.0	0.3	1.3	0.5	1.5	0.6
2011	38	14	1.7	0.6	0.9	0.3	1.3	0.4	1.5	0.5
2012	29	28	1.3	1.2	0.8	0.6	1.0	0.8	1.2	0.9
2013	29	17	1.3	0.7	0.7	0.4	1.0	0.5	1.1	0.6
2014	34	29	1.5	1.2	0.7	0.6	1.0	0.8	1.4	1.0
2015	33	18	1.4	0.7	0.7	0.3	1.0	0.5	1.2	0.6
2016	15	14	0.6	0.6	0.4	0.3	0.5	0.4	0.6	0.5
2017	14	10	0.6	0.4	0.3	0.2	0.4	0.3	0.5	0.3
2018	16	8	0.7	0.3	0.3	0.2	0.5	0.2	0.6	0.2
2019	8	7	0.3	0.3	0.2	0.1	0.2	0.2	0.3	0.2
1998-2019	485	300	1.1	0.7	0.6	0.3	0.9	0.4	1.1	0.5

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

Table 3

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

Year of diagnosis	Cases n	Std.		Median				Median		
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	20	64.3	13.7	38.0	84.5	38.1	58.3	67.0	73.9	79.4
1999	19	64.6	14.9	33.5	82.4	36.0	59.3	66.8	76.2	80.9
2000	22	65.4	15.8	20.4	90.5	49.6	58.0	67.1	73.7	85.5
2001	13	66.9	18.0	37.4	89.9	44.6	53.0	66.8	83.6	84.7
2002	26	67.3	12.7	41.3	92.7	51.7	59.6	65.7	77.9	83.3
2003	38	65.0	16.1	16.2	91.8	46.1	52.5	67.1	78.9	84.2
2004	24	63.8	17.0	25.9	88.6	43.0	56.4	64.3	78.1	82.7
2005	31	68.6	15.3	31.7	96.1	44.7	58.3	71.1	78.1	83.7
2006	39	64.9	13.4	24.1	91.0	48.9	54.0	64.8	75.1	81.3
2007	47	63.1	15.6	20.2	86.2	39.0	54.4	64.5	77.1	81.4
2008	42	61.2	18.5	14.1	93.9	39.0	46.4	60.3	71.5	90.1
2009	49	65.5	17.8	2.4	95.8	41.2	54.5	69.1	78.9	84.6
2010	54	64.1	17.0	16.6	103	43.0	55.2	66.4	75.0	84.8
2011	52	63.3	14.3	37.7	86.1	46.4	50.6	63.8	76.7	79.4
2012	57	65.3	14.8	18.6	94.9	46.3	55.9	64.6	72.8	87.2
2013	46	63.6	13.7	34.5	90.1	41.8	55.3	65.0	73.7	78.7
2014	63	67.7	14.1	25.6	88.5	44.7	59.5	72.0	78.1	83.9
2015	51	67.0	12.8	41.4	94.1	50.4	56.6	69.2	77.4	82.4
2016	29	63.5	13.4	41.2	89.1	43.8	52.1	64.0	71.1	81.3
2017	24	65.9	13.2	40.4	85.8	44.6	57.1	68.2	76.2	80.8
2018	24	68.6	14.1	41.7	94.4	45.3	58.5	72.5	77.8	82.3
2019	15	70.1	12.2	46.0	86.9	55.2	58.3	70.9	79.6	84.3
1998-2019	785	65.2	15.0	2.4	103	44.6	55.4	66.6	76.6	83.5

Table 3a

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	14	62.4	15.6	38.0	84.5	38.1	53.1	66.4	73.0	82.7
1999	11	56.2	14.1	33.5	72.8	36.0	38.6	60.7	66.3	70.3
2000	16	64.3	15.7	20.4	85.5	44.1	58.3	68.7	73.5	84.2
2001	8	66.7	14.9	51.5	84.7	51.5	53.8	61.7	83.4	84.7
2002	14	69.1	14.7	41.3	92.7	46.6	61.1	69.4	80.8	85.8
2003	23	62.8	13.4	38.2	87.0	46.1	49.8	63.7	71.1	79.6
2004	15	63.3	16.2	25.9	83.4	43.0	54.4	63.3	77.3	82.7
2005	20	63.4	14.1	31.7	78.8	42.5	54.7	68.2	75.2	77.8
2006	21	62.7	11.5	44.7	86.9	48.9	54.0	63.8	68.8	76.9
2007	33	61.8	16.5	20.2	86.2	37.6	54.4	62.3	74.8	81.4
2008	29	58.8	15.8	35.5	93.9	37.9	46.2	58.0	69.4	79.3
2009	29	63.4	19.1	2.4	86.8	39.0	53.7	68.1	78.0	82.0
2010	36	60.3	16.0	16.6	84.8	37.6	51.7	63.4	71.6	76.7
2011	38	62.6	14.0	37.7	85.4	41.6	51.7	62.9	74.9	79.0
2012	29	62.8	15.6	18.6	94.9	45.0	52.9	64.6	72.1	84.3
2013	29	63.4	12.1	37.1	80.9	42.9	55.3	65.1	73.7	76.5
2014	34	69.2	12.2	25.6	85.1	56.2	60.5	72.8	77.6	82.4
2015	33	66.8	11.8	47.3	94.1	51.3	57.5	68.1	75.5	79.5
2016	15	60.1	14.3	41.2	81.3	43.7	44.6	60.2	70.9	80.1
2017	14	67.1	12.0	40.4	84.1	49.7	61.0	68.2	75.8	80.8
2018	16	66.7	13.5	41.7	82.3	45.3	55.2	72.7	77.8	81.6
2019	8	70.1	14.3	46.0	86.9	46.0	60.3	72.8	80.9	86.9
1998-2019	485	63.6	14.6	2.4	94.9	43.1	54.0	64.9	74.9	80.8

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	6	68.6	6.7	58.1	76.2	58.1	64.4	69.0	74.9	76.2
1999	8	76.1	4.8	66.8	82.4	66.8	74.6	76.4	79.0	82.4
2000	6	68.3	17.0	49.6	90.5	49.6	56.9	62.5	87.7	90.5
2001	5	67.0	24.2	37.4	89.9	37.4	44.6	79.5	83.8	89.9
2002	12	65.2	10.3	51.7	83.3	53.9	55.8	64.5	73.3	77.9
2003	15	68.3	19.6	16.2	91.8	48.0	52.5	75.2	80.1	84.2
2004	9	64.8	19.4	25.9	88.6	25.9	58.3	67.0	79.5	88.6
2005	11	78.2	12.9	57.9	96.1	58.3	69.9	80.4	89.8	94.1
2006	18	67.5	15.2	24.1	91.0	49.9	63.7	70.5	77.1	83.4
2007	14	66.1	13.2	39.0	83.6	47.7	62.6	67.9	77.1	79.1
2008	13	66.5	23.3	14.1	93.0	44.6	52.7	65.6	90.1	91.7
2009	20	68.4	15.5	41.2	95.8	50.0	55.1	71.2	81.1	87.9
2010	18	71.7	16.9	36.7	103	52.1	56.3	72.9	85.5	89.7
2011	14	65.0	15.5	46.4	86.1	46.7	48.9	69.9	78.8	81.1
2012	28	67.9	13.7	42.5	92.5	46.5	60.4	65.2	78.0	88.4
2013	17	63.8	16.5	34.5	90.1	37.7	55.8	65.0	70.5	88.9
2014	29	66.0	16.2	34.9	88.5	41.5	57.5	72.0	78.4	84.6
2015	18	67.4	14.8	41.4	92.2	49.4	52.8	69.7	78.6	85.7
2016	14	67.2	11.8	47.2	89.1	51.8	61.7	65.7	73.0	84.7
2017	10	64.1	15.2	41.9	85.8	43.3	54.0	64.5	77.4	82.7
2018	8	72.3	15.5	44.0	94.4	44.0	65.7	72.5	81.7	94.4
2019	7	70.0	10.4	55.2	84.3	55.2	58.3	70.9	77.1	84.3
1998-2019	300	67.8	15.3	14.1	103	47.3	57.7	69.3	79.3	87.0

Table 4

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

Age at diagnosis Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4	1	0.2	0.2	1	0.3	0.3			0.0
5-9	0	0.0	0.2			0.3			0.0
10-14	1	0.2	0.4			0.3	1	0.5	0.5
15-19	3	0.5	0.9	3	0.9	1.2			0.5
20-24	1	0.2	1.1	1	0.3	1.5			0.5
25-29	1	0.2	1.3	1	0.3	1.7			0.5
30-34	4	0.7	2.0	2	0.6	2.3	2	1.0	1.4
35-39	17	3.1	5.1	13	3.8	6.1	4	1.9	3.3
40-44	34	6.1	11.2	21	6.1	12.2	13	6.2	9.5
45-49	33	6.0	17.2	21	6.1	18.4	12	5.7	15.2
50-54	43	7.8	25.0	29	8.5	26.8	14	6.7	21.9
55-59	63	11.4	36.3	40	11.7	38.5	23	11.0	32.9
60-64	60	10.8	47.2	39	11.4	49.9	21	10.0	42.9
65-69	54	9.8	57.0	33	9.6	59.5	21	10.0	52.9
70-74	81	14.6	71.6	53	15.5	74.9	28	13.3	66.2
75-79	74	13.4	85.0	49	14.3	89.2	25	11.9	78.1
80-84	42	7.6	92.6	25	7.3	96.5	17	8.1	86.2
85+	41	7.4	100.0	12	3.5	100.0	29	13.8	100.0
All ages	553	100.0		343	100.0		210	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=6 %	Females DCO rate n=8 %	Males Prop.all cancers n=143063 %	Females Prop.all cancers n=144724 %
0- 4	1		0.1				0.5	
5- 9								
10-14		1		0.1				0.9
15-19	3		0.2				1.0	
20-24	1		0.1				0.2	
25-29	1		0.0				0.1	
30-34	2	2	0.1	0.1			0.2	0.1
35-39	13	4	0.6	0.2			0.8	0.1
40-44	21	13	0.9	0.6			0.8	0.2
45-49	21	12	0.8	0.5			0.4	0.1
50-54	29	14	1.2	0.6			0.4	0.1
55-59	40	23	2.1	1.2		4.3	0.3	0.2
60-64	39	21	2.4	1.2			0.2	0.1
65-69	33	21	2.2	1.2		4.8	0.1	0.1
70-74	53	27	3.8	1.7	1.9		0.2	0.1
75-79	49	25	4.4	1.8	2.0		0.2	0.1
80-84	25	17	3.8	1.7	4.0		0.2	0.1
85+	12	29	2.8	3.0	25.0	20.7	0.1	0.2
All ages	343	209			1.7	3.8	0.2	0.1
Incidence								
Raw			1.1	0.7				
WS			0.6	0.3				
ES			0.9	0.5				
BRD-S			1.1	0.5				

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 C30, C31: Malign neoplasm of nasal cavity, middle ear and accessory sinuses
Age distribution and age-specific incidence 2007 - 2019 (Males: 343, Females: 209)

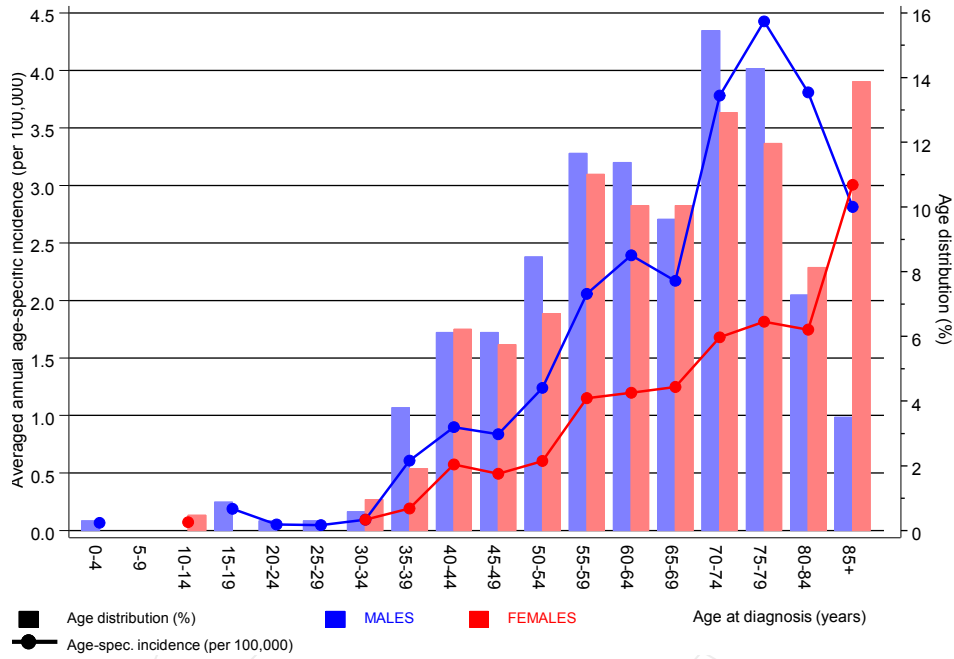


Figure 6. Age distribution (males: mean=63.6 yrs, median=65.1 yrs; females: mean=67.2 yrs, median=68.2 yrs) and age-specific incidence.

CD-10 C30, C31: Malign neoplasm of nasal cavity, middle ear and accessory sinuses

Age-specific incidence rates: international comparison

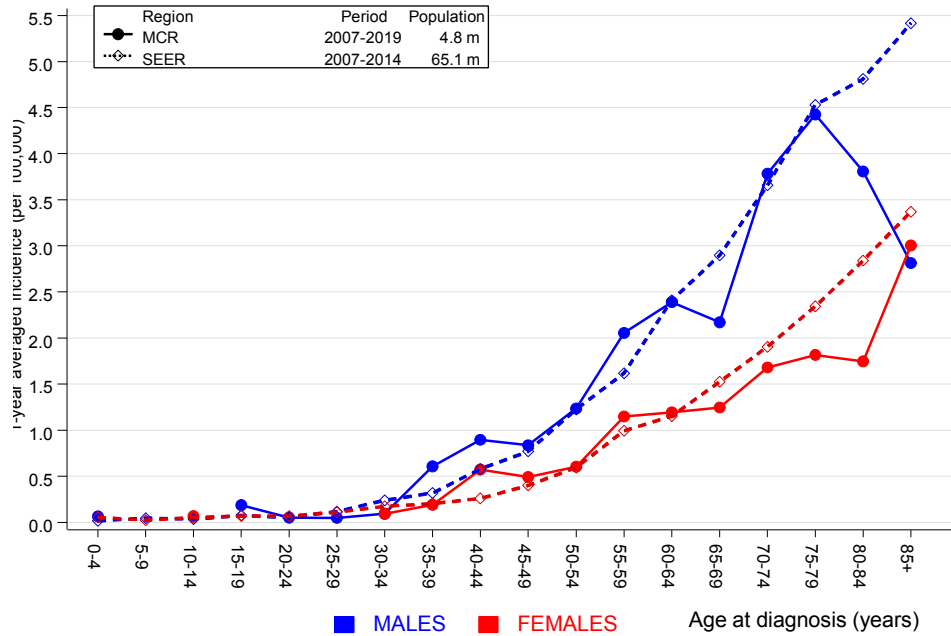


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

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	40.7	1.0	226.9 #	5.8	
C03–C06 Oral cavity	3	0.2	14.7	3.0	43.0 #	16.6	
C07–C08 Salivary gland	1	0.1	19.3	0.5	107.3	5.6	
C09–C10 Oropharynx	3	0.3	11.9	2.4	34.7 #	16.4	33.3
C11 Nasopharynx	3	0.0	169.0	34.8	493.8 #	17.8	33.3
C12–C13 Hypopharynx	1	0.1	7.4	0.2	41.0	5.1	
C14 ENT cancer	1	0.0	173.0	4.4	964.1 #	5.9	100.0
C15 Oesophagus	4	0.5	8.5	2.3	21.8 #	21.0	
C16 Stomach	4	0.9	4.5	1.2	11.6 #	18.5	
C17 Small intestine	2	0.1	14.1	1.7	50.8 #	11.1	
C18 Colon	6	2.2	2.8	1.0	6.0 #	22.8	16.7
C19–C20 Rectum	5	1.2	4.1	1.3	9.5 #	22.5	
C22 Liver	1	0.7	1.5	0.0	8.1	1.9	
C23–C24 Bile	2	0.2	8.3	1.0	30.0 #	10.5	
C25 Pancreas	4	0.9	4.4	1.2	11.3 #	18.4	
C26 GI cancer	1	0.0	42.6	1.1	237.5 #	5.8	
C30–C31 Sinuses	2	0.0	43.5	5.3	157.2 #	11.6	50.0
C33–C34 Lung	14	2.8	5.1	2.8	8.5 #	66.9	7.1
C38,C45 Mesothelioma	1	0.2	6.2	0.2	34.7	5.0	
C43 Malign. melanoma	5	1.1	4.6	1.5	10.8 #	23.4	60.0
C46,C49 Soft tissue	1	0.1	7.7	0.2	42.7	5.2	
C61 Prostate	3	6.4	0.5	0.1	1.4	-20.4	
C64 Kidney	2	0.8	2.5	0.3	8.9	7.1	
C70–C72 CNS cancer	1	0.3	3.3	0.1	18.5	4.2	100.0
C73 Thyroid	1	0.2	6.0	0.2	33.3	5.0	
C76–C79 CUP	5	0.4	13.0	4.2	30.4 #	27.5	
C81 Hodgkin lymphoma	1	0.1	16.6	0.4	92.4	5.6	
C82–C85 NHL	2	1.0	2.1	0.2	7.4	6.1	
C90 Mult. myeloma	1	0.3	3.3	0.1	18.3	4.1	
C91–C96 Leukaemia	2	0.4	5.7	0.7	20.6	9.8	
Not observed	0	1.9	0.0	0.0	1.9	-11.4	
All further malignancies	83	23.3	3.6	2.8	4.4 #	355.4	12.0
Patients		469					
Median age at next malignancy (years)		70.9					
Person-years		1680					
Mean observation time (years)		3.6					
Median observation time (years)		2.4					

The occurrence of further specified malignancy is statistically significant.

Table 7b

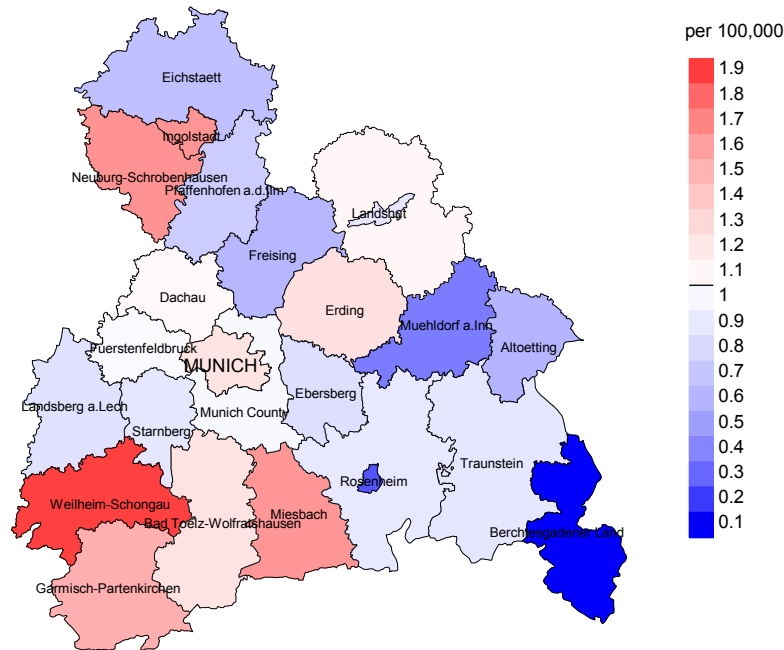
Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998–2019

FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03–C06 Oral cavity	3	0.1	49.7	10.3	145.4 #	31.2	
C07–C08 Salivary gland	1	0.0	56.3	1.4	313.6 #	10.4	
C11 Nasopharynx	2	0.0	552.9	67.0	1997 #	21.2	50.0
C14 ENT cancer	1	0.0	470.9	11.9	2624 #	10.6	100.0
C16 Stomach	1	0.4	2.5	0.1	14.2	6.4	
C18 Colon	1	1.1	0.9	0.0	5.1	-1.1	
C19–C20 Rectum	1	0.4	2.3	0.1	12.9	6.0	
C22 Liver	1	0.1	7.3	0.2	40.7	9.2	
C25 Pancreas	4	0.5	7.6	2.1	19.5 #	36.9	50.0
C30–C31 Sinuses	5	0.0	303.5	98.5	708.2 #	52.9	20.0
C33–C34 Lung	3	0.8	3.9	0.8	11.4	23.6	
C43 Malign. melanoma	5	0.4	12.8	4.2	30.0 #	48.9	40.0
C50 Breast	1	3.1	0.3	0.0	1.8	-22.6	
C51 Vulva	1	0.1	8.2	0.2	45.8	9.3	
C54 Corpus uteri	1	0.6	1.8	0.0	9.9	4.6	
C56 Ovary	1	0.4	2.4	0.1	13.3	6.2	
C67 Bladder	1	0.2	4.3	0.1	24.0	8.2	
C70–C72 CNS cancer	2	0.1	15.1	1.8	54.6 #	19.8	50.0
C73 Thyroid	1	0.2	6.3	0.2	35.0	8.9	100.0
C82–C85 NHL	2	0.4	4.8	0.6	17.2	16.8	
C91–C96 Leukaemia	1	0.2	6.0	0.2	33.7	8.9	100.0
Not observed	0	1.5	0.0	0.0	2.4	-16.0	
All further malignancies	39	10.7	3.6	2.6	5.0 #	300.2	25.6
Patients		285					
Median age at next malignancy (years)		74.0					
Person-years		943					
Mean observation time (years)		3.3					
Median observation time (years)		1.8					

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

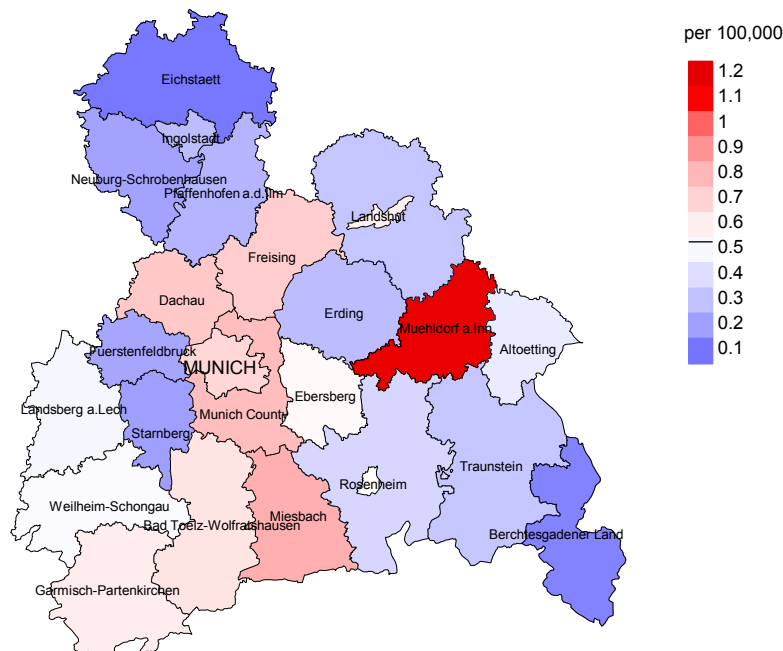
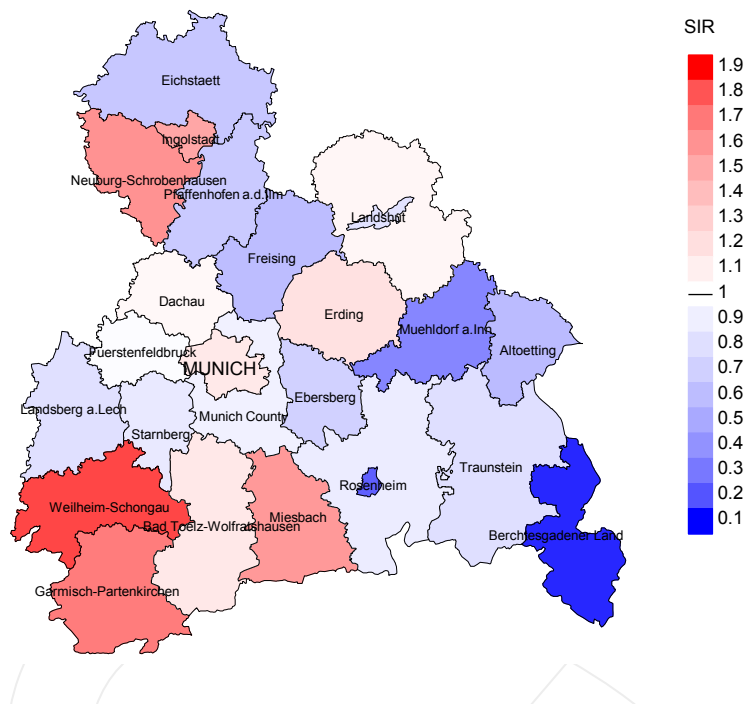


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 1.1/100,000 WS N=343, females 0.5/100,000 WS N=209).

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 nasal cavity, middle ear, sinuses cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.6/100,000 (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

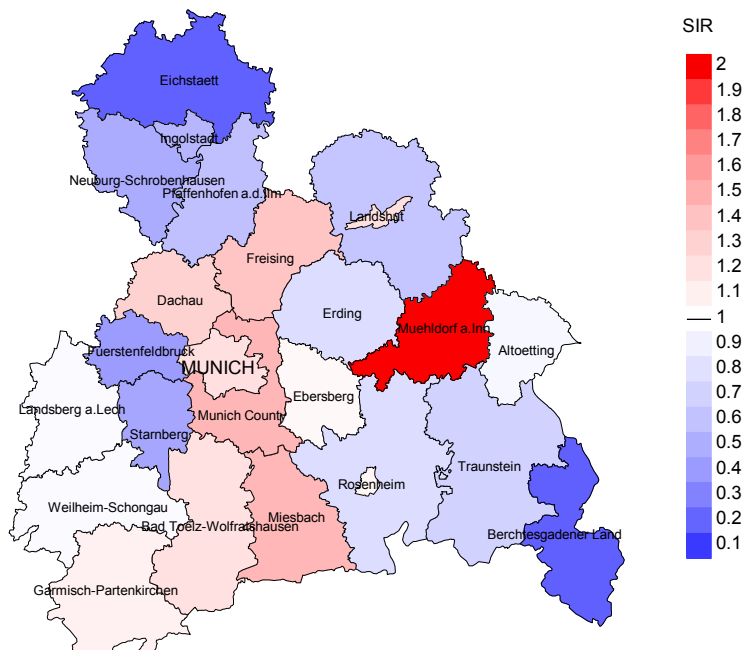


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=343, females N=209).

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 nasal cavity, middle ear, sinuses cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.04. Though, the value of this parameter may vary with an underlying probability of 99% between 0.27 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	20	95.0	5.0	15	75.0	93.3
1999	19	100.0	5.3	16	84.2	87.5
2000	22	100.0	9.1	17	77.3	100.0
2001	13	100.0	7.7	10	76.9	100.0
2002	26	100.0	7.7	23	88.5	91.3
2003	38	97.4	5.3	30	78.9	93.3
2004	24	95.8		15	62.5	100.0
2005	31	100.0		25	80.6	100.0
2006	39	100.0	7.7	30	76.9	100.0
2007	47	95.7	6.4	28	59.6	96.4
2008	42	100.0	4.8	24	57.1	95.8
2009	49	98.0	2.0	27	55.1	100.0
2010	54	98.1	1.9	31	57.4	90.3
2011	52	96.2	3.8	34	65.4	94.1
2012	57	98.2	1.8	29	50.9	96.6
2013	46	97.8		22	47.8	86.4
2014	63	93.7	1.6	32	50.8	87.5
2015	51	98.0	2.0	17	33.3	94.1
2016	29	100.0	6.9	14	48.3	92.9
2017	24	100.0		12	50.0	91.7
2018	24	100.0		3	12.5	100.0
2019	15	66.7		1	6.7	100.0
1998-2019	785	97.3	3.3	455	58.0	94.5

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	20	12	83.3	3	15.0
1999	19	9	77.8	3	15.8
2000	22	20	100.0	2	9.1
2001	13	16	93.8	3	23.1
2002	26	21	100.0	3	11.5
2003	38	24	100.0	7	18.4
2004	24	22	90.9	1	4.2
2005	31	25	96.0	5	16.1
2006	39	28	100.0	6	15.4
2007	47	23	95.7	7	14.9
2008	42	26	100.0	7	16.7
2009	49	22	100.0	1	2.0
2010	54	28	100.0	2	3.7
2011	52	28	96.4	6	11.5
2012	57	32	96.9	4	7.0
2013	46	38	100.0	3	6.5
2014	63	34	100.0	10	15.9
2015	51	25	96.0	4	7.8
2016	29	48	97.9	4	13.8
2017	24	29	100.0	5	20.8
2018	24	22	45.5		
2019	15	15	60.0		
1998–2019	785	547	94.3	86	11.0

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	12	58.3	41.7	90.0
1999	9	55.6	44.4	100.0
2000	20	80.0	20.0	85.0
2001	16	75.0	25.0	100.0
2002	21	52.4	47.6	71.4
2003	24	70.8	29.2	79.2
2004	22	54.5	45.5	65.0
2005	25	84.0	16.0	91.7
2006	28	89.3	10.7	89.3
2007	23	73.9	26.1	90.9
2008	26	76.9	23.1	84.6
2009	22	77.3	22.7	95.5
2010	28	67.9	32.1	78.6
2011	28	78.6	21.4	85.2
2012	32	65.6	34.4	74.2
2013	38	65.8	34.2	73.7
2014	34	67.6	32.4	79.4
2015	25	72.0	28.0	87.5
2016	48	72.9	27.1	83.0
2017	29	65.5	34.5	72.4
2018	22	59.1	40.9	90.0
2019	15	13.3	86.7	66.7
1998–2019	547	68.9	31.1	82.2

Table 10a

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	6	64.9	64.9	66.6	71.1
1999	4	64.1	59.5	68.8	68.8
2000	15	69.2	69.2	70.0	68.6
2001	12	71.2	63.2	74.7	70.6
2002	15	81.1	82.9	78.0	78.4
2003	14	70.2	65.1	77.2	65.7
2004	16	75.0	68.1	78.2	67.6
2005	14	70.2	68.9	74.8	69.6
2006	14	74.9	74.4	90.4	74.3
2007	14	78.5	78.7	72.1	78.5
2008	18	68.7	67.2	80.5	67.2
2009	16	73.6	69.7	80.5	72.5
2010	14	77.9	71.0	83.6	71.3
2011	15	71.9	74.0	62.3	72.9
2012	23	73.2	72.4	80.4	72.4
2013	27	78.9	72.6	85.2	75.3
2014	21	75.1	73.9	84.5	74.9
2015	19	68.0	68.1	68.0	70.9
2016	28	76.6	72.5	77.8	72.1
2017	16	77.6	77.5	80.8	76.7
2018	12	74.0	74.5	73.5	74.5
2019	14	79.9	74.2	81.2	78.8
1998-2019	347	74.8	71.2	79.6	71.9

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	6	83.4	70.9	84.9	83.4
1999	5	76.7	60.0	77.1	72.6
2000	5	77.4	77.4		79.5
2001	4	78.1	78.1		78.1
2002	6	79.5	87.8	78.1	80.8
2003	10	79.2	78.6	94.4	78.6
2004	6	78.5	76.2	78.5	76.2
2005	11	73.3	73.3	77.7	73.3
2006	14	78.4	78.0	97.1	78.4
2007	9	67.2	66.9	93.7	67.0
2008	8	78.0	81.1	75.0	81.1
2009	6	83.9	83.9		83.9
2010	14	71.3	74.2	68.5	68.5
2011	13	74.1	69.5	86.8	69.5
2012	9	89.0	87.6	95.3	87.6
2013	11	80.4	67.6	91.4	77.6
2014	13	84.4	81.4	86.4	81.4
2015	6	83.2	82.0	83.4	83.2
2016	20	80.0	72.2	91.8	78.2
2017	13	72.2	67.1	89.9	69.9
2018	10	68.8	54.9	80.1	47.4
2019	1	80.2		80.2	
1998-2019	200	78.4	73.9	84.2	77.4

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

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

Table 11a

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

MALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	4	0.4	0.29	0.3	0.37	0.4	0.31	0.4	0.29
1999	3	0.3	0.27	0.1	0.24	0.2	0.27	0.2	0.27
2000	11	1.0	0.69	0.6	0.65	0.9	0.68	1.0	0.67
2001	8	0.7	1.00	0.4	1.00	0.6	0.90	0.8	0.95
2002	8	0.4	0.57	0.2	0.50	0.4	0.59	0.6	0.67
2003	10	0.5	0.43	0.3	0.41	0.5	0.44	0.6	0.46
2004	10	0.5	0.67	0.3	0.58	0.4	0.61	0.6	0.65
2005	12	0.6	0.60	0.3	0.59	0.5	0.59	0.7	0.64
2006	12	0.6	0.57	0.3	0.43	0.5	0.48	0.6	0.58
2007	10	0.5	0.30	0.2	0.24	0.3	0.28	0.5	0.34
2008	17	0.8	0.59	0.4	0.52	0.6	0.60	0.8	0.67
2009	11	0.5	0.38	0.3	0.33	0.4	0.36	0.5	0.36
2010	10	0.4	0.28	0.2	0.21	0.3	0.24	0.4	0.29
2011	12	0.5	0.32	0.2	0.25	0.4	0.29	0.5	0.34
2012	16	0.7	0.55	0.4	0.48	0.5	0.49	0.7	0.58
2013	18	0.8	0.62	0.4	0.55	0.6	0.59	0.8	0.66
2014	15	0.6	0.44	0.3	0.41	0.4	0.42	0.6	0.43
2015	14	0.6	0.42	0.3	0.42	0.4	0.43	0.5	0.43
2016	21	0.9	1.40	0.4	1.03	0.6	1.13	0.8	1.40
2017	11	0.5	0.79	0.2	0.67	0.3	0.72	0.4	0.74
2018	7	0.3	0.44	0.1	0.38	0.2	0.40	0.2	0.43
2019	2	0.1	0.25	0.0	0.24	0.1	0.25	0.1	0.25
1998-2019	242	0.5	0.50	0.3	0.44	0.4	0.47	0.5	0.51

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	0.50	0.1	0.42	0.2	0.45	0.2	0.53
1999	2	0.2	0.29	0.1	0.61	0.2	0.49	0.2	0.30
2000	5	0.4	0.83	0.2	0.81	0.3	0.79	0.4	1.08
2001	4	0.3	0.80	0.1	0.76	0.2	0.80	0.2	0.71
2002	3	0.2	0.25	0.1	0.16	0.1	0.19	0.1	0.18
2003	7	0.4	0.47	0.1	0.35	0.2	0.42	0.3	0.42
2004	2	0.1	0.22	0.0	0.14	0.1	0.16	0.1	0.15
2005	9	0.5	0.82	0.2	1.18	0.3	1.00	0.4	0.91
2006	13	0.6	0.72	0.2	0.45	0.4	0.55	0.5	0.65
2007	7	0.3	0.50	0.2	0.53	0.2	0.54	0.3	0.52
2008	3	0.1	0.23	0.0	0.11	0.1	0.14	0.1	0.19
2009	6	0.3	0.30	0.1	0.18	0.1	0.19	0.2	0.24
2010	9	0.4	0.50	0.2	0.49	0.2	0.47	0.3	0.49
2011	10	0.4	0.71	0.3	0.96	0.3	0.78	0.4	0.71
2012	5	0.2	0.18	0.1	0.10	0.1	0.13	0.1	0.14
2013	7	0.3	0.44	0.1	0.36	0.2	0.39	0.3	0.46
2014	8	0.3	0.28	0.1	0.15	0.2	0.19	0.2	0.21
2015	4	0.2	0.22	0.0	0.11	0.1	0.14	0.1	0.16
2016	14	0.6	1.00	0.2	0.82	0.3	0.86	0.4	0.93
2017	8	0.3	0.80	0.2	0.87	0.2	0.83	0.3	0.89
2018	6	0.2	0.75	0.2	1.07	0.2	0.95	0.2	0.90
2019									
1998-2019	135	0.3	0.45	0.1	0.40	0.2	0.41	0.2	0.43

Table 12

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

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19	1	0.4	0.4			0.0	1	1.1	1.1
20-24	2	0.8	1.2	2	1.2	1.2			1.1
25-29	1	0.4	1.6			1.2	1	1.1	2.3
30-34	1	0.4	2.0	1	0.6	1.8			2.3
35-39	2	0.8	2.8	2	1.2	3.0			2.3
40-44	5	2.0	4.8	3	1.8	4.9	2	2.3	4.6
45-49	7	2.8	7.6	3	1.8	6.7	4	4.6	9.2
50-54	16	6.4	13.9	12	7.3	14.0	4	4.6	13.8
55-59	21	8.4	22.3	17	10.4	24.4	4	4.6	18.4
60-64	21	8.4	30.7	11	6.7	31.1	10	11.5	29.9
65-69	36	14.3	45.0	22	13.4	44.5	14	16.1	46.0
70-74	29	11.6	56.6	21	12.8	57.3	8	9.2	55.2
75-79	43	17.1	73.7	32	19.5	76.8	11	12.6	67.8
80-84	37	14.7	88.4	26	15.9	92.7	11	12.6	80.5
85+	29	11.6	100.0	12	7.3	100.0	17	19.5	100.0
All ages	251	100.0		164	100.0		87	100.0	

Table 13

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

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19		1			0.1	1.00		4.0
20-24	2		0.1	2.00			3.0	
25-29		1			0.0	1.00		1.1
30-34	1		0.0	0.50			0.8	
35-39	2		0.1	0.15			0.8	
40-44	3	2	0.1	0.14	0.1	0.15	0.5	0.2
45-49	3	4	0.1	0.14	0.2	0.33	0.2	0.3
50-54	12	4	0.5	0.41	0.2	0.29	0.5	0.2
55-59	17	4	0.9	0.43	0.2	0.17	0.4	0.1
60-64	11	10	0.7	0.28	0.6	0.48	0.2	0.2
65-69	22	14	1.4	0.67	0.8	0.67	0.3	0.2
70-74	21	8	1.5	0.40	0.5	0.30	0.2	0.1
75-79	32	11	2.9	0.65	0.8	0.44	0.3	0.1
80-84	26	11	4.0	1.04	1.1	0.65	0.3	0.1
85+	12	17	2.8	1.00	1.8	0.59	0.1	0.2
All ages	164	87					0.3	0.2
Mortality								
Raw			0.5	0.48	0.3	0.42		
WS			0.3	0.40	0.1	0.38		
ES			0.4	0.44	0.2	0.38		
BRD-S			0.5	0.48	0.2	0.40		
PYLL-70								
per 100,000			3.4		1.8			
ES			3.0		1.6			
AYLL-70			12.4		11.8			

Table 14a

Further malignancies in deaths in period 1998–2019
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C00 Lip	1	0.7					1	100.0
C03–C06 Oral cavity	11	7.2	7	63.6			4	36.4
C07–C08 Salivary gland	3	2.0	1	33.3			2	66.7
C09–C10 Oropharynx	5	3.3	3	60.0			2	40.0
C11 Nasopharynx	2	1.3			1	50.0	1	50.0
C12–C13 Hypopharynx	2	1.3	1	50.0			1	50.0
C14 ENT cancer	1	0.7					1	100.0
C15 Oesophagus	3	2.0					3	100.0
C16 Stomach	5	3.3	2	40.0			3	60.0
C18 Colon	8	5.3	3	37.5			5	62.5
C19–C20 Rectum	3	2.0					3	100.0
C22 Liver	1	0.7			1	100.0		
C23–C24 Bile	3	2.0					3	100.0
C25 Pancreas	3	2.0					3	100.0
C26 GI cancer	1	0.7					1	100.0
C30 Middle/inner ear	1	0.7					1	100.0
C30–C31 Sinuses	2	1.3					2	100.0
C32 Larynx	6	3.9	6	100.0				
C33–C34 Lung	18	11.8					18	100.0
C38,C45 Mesothelioma	1	0.7					1	100.0
C43 Malign. melanoma	4	2.6	1	25.0			3	75.0
C44 Skin others	24	15.8	7	29.2	4	16.7	13	54.2
C46,C49 Soft tissue	3	2.0	1	33.3			2	66.7
C50 Breast	1	0.7					1	100.0
C61 Prostate	17	11.2	8	47.1	1	5.9	8	47.1
C64 Kidney	2	1.3	2	100.0				
C67 Bladder	3	2.0	1	33.3			2	66.7
C69 Eye sarcoma	1	0.7	1	100.0				
C70–C72 CNS cancer	3	2.0	1	33.3	1	33.3	1	33.3
C76–C79 CUP	5	3.3	1	20.0	1	20.0	3	60.0
C82–C85 NHL	5	3.3	2	40.0			3	60.0
C90 Mult. myeloma	3	2.0	1	33.3			2	66.7
C91–C96 Leukaemia	1	0.7					1	100.0
All further malignancies	152	100.0	49	32.2	9	5.9	94	61.8

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

Table 14b

Further malignancies in deaths in period 1998-2019
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C00 Lip	1	1.5	1	100.0				
C03-C06 Oral cavity	5	7.5	3	60.0			2	40.0
C09-C10 Oropharynx	3	4.5	3	100.0				
C11 Nasopharynx	3	4.5	1	33.3			2	66.7
C12-C13 Hypopharynx	1	1.5	1	100.0				
C14 ENT cancer	1	1.5					1	100.0
C16 Stomach	1	1.5					1	100.0
C18 Colon	2	3.0	2	100.0				
C22 Liver	1	1.5					1	100.0
C25 Pancreas	4	6.0					4	100.0
C30-C31 Sinuses	2	3.0			1	50.0	1	50.0
C32 Larynx	1	1.5	1	100.0				
C33-C34 Lung	4	6.0	1	25.0			3	75.0
C43 Malign. melanoma	6	9.0	2	33.3	2	33.3	2	33.3
C44 Skin others	6	9.0			2	33.3	4	66.7
C50 Breast	13	19.4	11	84.6			2	15.4
C51 Vulva	1	1.5	1	100.0				
C53 Cervix uteri	1	1.5	1	100.0				
C54 Corpus uteri	2	3.0	2	100.0				
C56 Ovary	2	3.0					2	100.0
C67 Bladder	1	1.5					1	100.0
C70-C72 CNS cancer	1	1.5					1	100.0
C76-C79 CUP	1	1.5	1	100.0				
C82-C85 NHL	2	3.0	1	50.0			1	50.0
C90 Mult. myeloma	1	1.5					1	100.0
C91-C96 Leukaemia	1	1.5					1	100.0
All further malignancies	67	100.0	32	47.8	5	7.5	30	44.8

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 2007-2018
(First primaries only *)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	MI-index	Females Age- spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19		1			0.1	1.00		4.3
20-24	2		0.1	2.18			3.3	
25-29		1			0.1	1.00		1.2
30-34	1		0.1	1.09			0.8	
35-39	2		0.1	0.17			0.9	
40-44	3	2	0.1	0.16	0.1	0.20	0.6	0.3
45-49	2	2	0.1	0.11	0.1	0.22	0.2	0.1
50-54	11	4	0.5	0.45	0.2	0.34	0.5	0.2
55-59	17	3	1.0	0.55	0.2	0.19	0.5	0.1
60-64	9	7	0.6	0.28	0.4	0.42	0.2	0.2
65-69	20	9	1.4	0.86	0.6	0.70	0.3	0.2
70-74	16	5	1.2	0.51	0.3	0.23	0.2	0.1
75-79	22	10	2.2	0.64	0.8	0.50	0.3	0.1
80-84	21	7	3.6	1.38	0.8	0.64	0.3	0.1
85+	9	12	2.3	0.99	1.4	0.69	0.2	0.1
All ages	135	63					0.3	0.1
Mortality								
Raw			0.5	0.53	0.2	0.41		
WS			0.2	0.44	0.1	0.37		
ES			0.4	0.48	0.1	0.37		
BRD-S			0.5	0.53	0.2	0.40		
PYLL-70								
per 100,000			3.5		1.6			
ES			3.1		1.4			
AYLL-70			12.6		13.0			

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2018
(**Single primaries only** *)

Age at death Years	Males n	Females n	Males Age- spec. mortal. MI-index	Females Age- spec. mortal. MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4						
5- 9						
10-14						
15-19		1		0.1	1.00	4.5
20-24	2		0.1	2.18	3.3	
25-29		1		0.1	1.00	1.2
30-34	1		0.1	1.09	0.8	
35-39	2		0.1	0.18	0.9	
40-44	3	1	0.1	0.19	0.6	0.1
45-49		1		0.0	0.11	0.1
50-54	9	4	0.4	0.38	0.2	0.2
55-59	15	3	0.8	0.55	0.2	0.1
60-64	6	6	0.4	0.25	0.4	0.2
65-69	14	7	1.0	0.76	0.4	0.1
70-74	10	3	0.8	0.40	0.2	0.0
75-79	16	9	1.6	0.53	0.7	0.1
80-84	10	3	1.7	0.86	0.3	0.0
85+	5	6	1.3	0.79	0.7	0.1
All ages	93	45			0.2	0.1
Mortality						
Raw			0.3	0.43	0.2	0.34
WS			0.2	0.38	0.1	0.33
ES			0.3	0.41	0.1	0.33
BRD-S			0.3	0.43	0.1	0.34
PYLL-70						
per 100,000			2.9		1.3	
ES			2.6		1.2	
AYLL-70			13.6		13.1	

* See corresponding tables with multiple malignancies.

ICD-10 C30, C31: Malign neoplasm of nasal cavity, middle ear and accessory sinuses
Age distribution and age-specific mortality 2007 - 2018 (Males: 164, Females: 87)

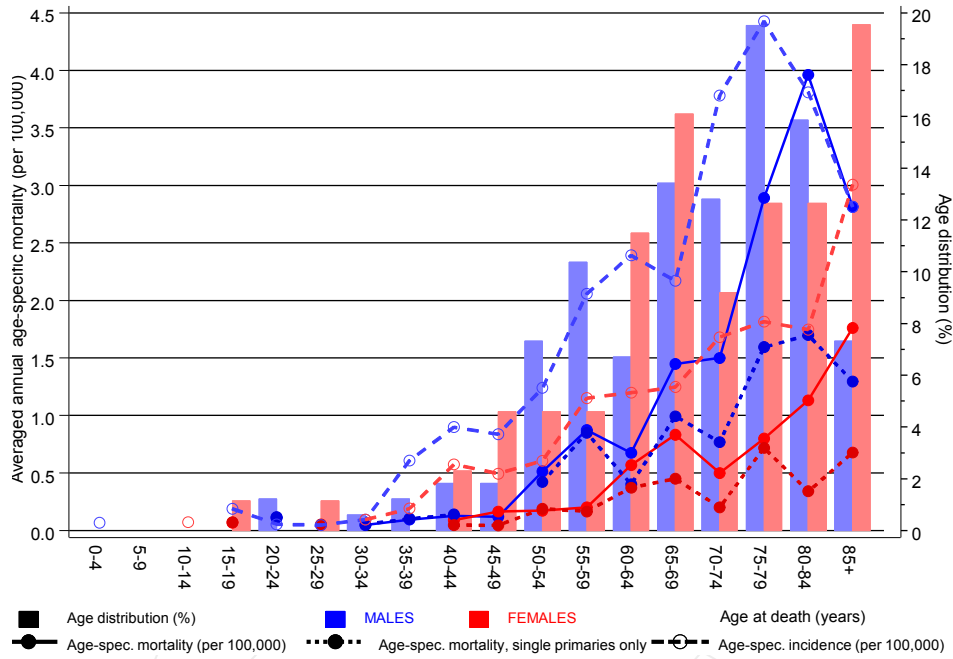
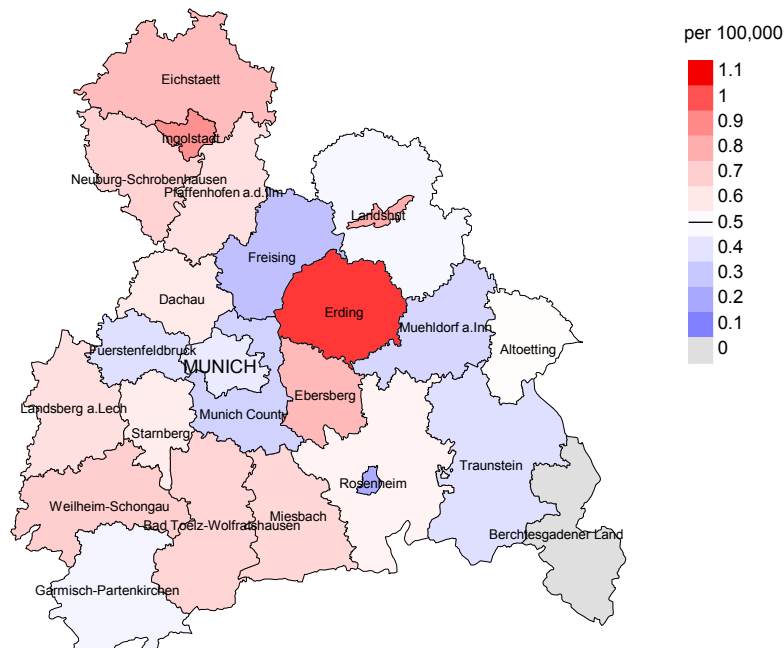


Figure 17. Distribution of age at death (bars; males: mean=64.8 yrs, median=68.1 yrs; females: mean=67.2 yrs, median=68.2 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at nasal cavity, middle ear, sinuses 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

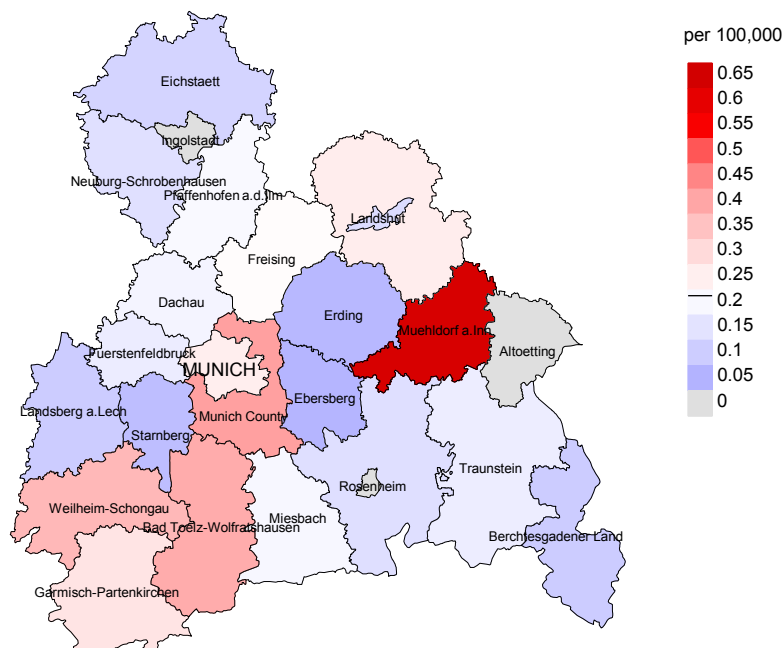
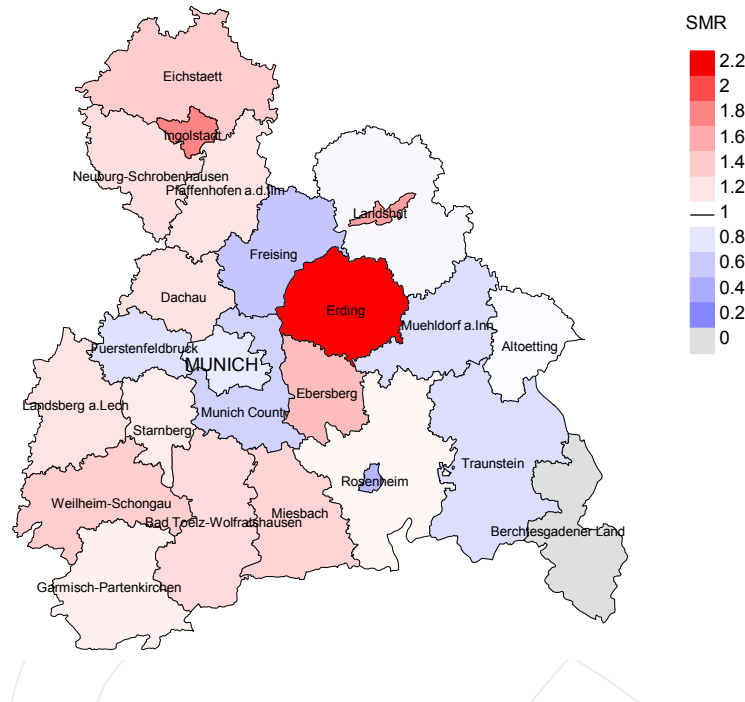


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.5/100,000 WS N=164, females 0.2/100,000 WS N=87).

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 nasal cavity, middle ear, sinuses 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

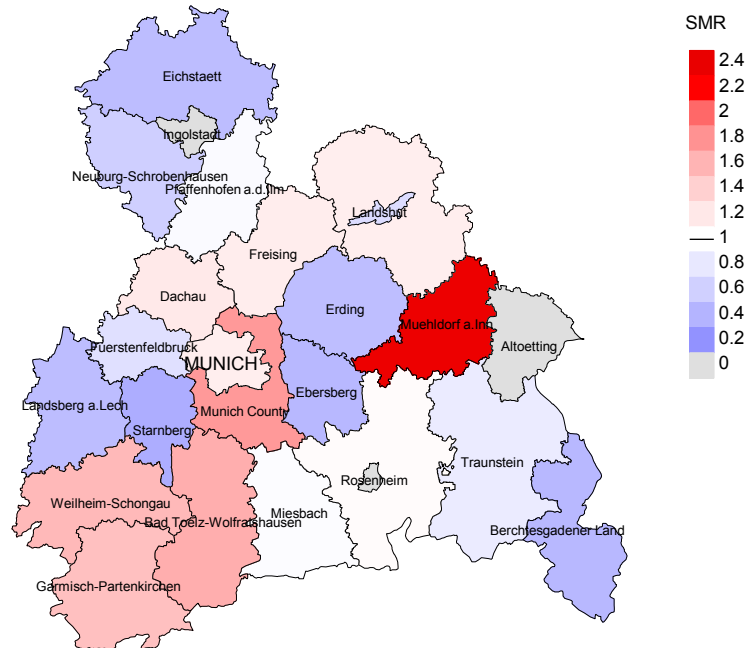


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=164, females N=87).

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 nasal cavity, middle ear, sinuses cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.43. Though, the value of this parameter may vary with an underlying probability of 99% between 0.00 and 3.16, and is therefore not statistically striking.

Statistical Notes

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

1. All multiple primaries included

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

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

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

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

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

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

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

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

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

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

Shortcuts

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

Recommended Citation

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