Munich Cancer Registry

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ICD-10 D32: Meninges neoplasm

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	3,872
Diseases	3,877
Creation date	12/21/2021
Database export	12/20/2021
Population	4.95 m

Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
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Marchioninistr. 15
Munich, 81377
Germany

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

https://www.tumorregister-muenchen.de/en/facts/base/bD32__E-ICD-10-D32-Meninges-neoplasm-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, December 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.

ICD-10 codes (ICD-10 2015) used for specifying cancer site

Code	Description
D32.-	Benign neoplasm of meninges
D32.0	Benign neoplasm of cerebral meninges
D32.1	Benign neoplasm of spinal meninges
D32.9	Benign neoplasm of meninges, unspecified

INCIDENCE

Table 1

Cases by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (ALL PATIENTS)

Year of diagnosis	All cases n	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	26	19.2	16.7	42.3	100.0
1999	34	18.3	16.5	44.1	91.2
2000	67	13.4	16.4	40.3	95.5
2001	131	12.8	16.2	42.0	93.9
2002	202	12.2	16.0	40.6	95.5 #
2003	194	12.7	15.9	38.1	92.8
2004	166	12.8	15.6	27.7	90.4
2005	175	12.8	15.4	29.1	89.7
2006	179	12.5	15.2	24.0	91.1
2007	238	13.8	15.1	30.7	79.0 #
2008	251	15.2	14.7	33.5	96.4
2009	237	15.9	14.4	30.8	95.8
2010	268	16.1	14.2	29.9	94.8
2011	271	16.8	13.7	28.4	95.6
2012	248	17.2	13.7	23.4	95.2
2013	182	18.0	14.2	29.7	90.1
2014	191	18.5	14.0	31.4	96.3
2015	167	19.1	11.7	21.0	90.4
2016	160	19.8	11.5	25.6	96.3
2017	189	20.4	9.9	20.1	95.8
2018	141	20.6	7.6	12.8	92.9
2019	92	21.0	5.8	19.6	97.8
2020	68	21.5	4.5	13.2	98.5 ##
1998-2020	3877	21.5	16.7	28.9	93.2

3,877 cases diagnosed 1998-2020 are related to a total of 3,872 patients. Currently, in 1,365 (35.3 %) of these 3,872 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 984 / 277 / 104 (25.4 % / 7.2 % / 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 retreived from the respective headings.

How to interpret:
In 2018, a subgroup of 141 cases has been diagnosed, of which 20.6 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 7.6 % 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 by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (MALES)

Year of diagnosis	Males n	Males %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %	
1998	4	15.4	25.0	18.9	25.0	100.0	
1999	6	17.6	20.0	18.9	33.3	100.0	
2000	12	17.9	9.1	19.0	41.7	100.0	
2001	36	27.5	12.1	18.8	58.3	94.4	
2002	52	25.7	14.5	18.8	50.0	100.0	#
2003	61	31.4	15.2	18.5	44.3	93.4	
2004	41	24.7	16.5	17.8	26.8	87.8	
2005	49	28.0	14.9	17.5	34.7	89.8	
2006	53	29.6	15.9	17.1	26.4	88.7	
2007	63	26.5	16.2	17.0	36.5	84.1	#
2008	69	27.5	18.2	16.2	40.6	100.0	
2009	63	26.6	18.1	15.3	41.3	93.7	
2010	65	24.3	18.3	14.8	40.0	96.9	
2011	81	29.9	19.1	14.0	32.1	96.3	
2012	64	25.8	19.5	14.0	28.1	96.9	
2013	48	26.4	20.2	15.3	37.5	91.7	
2014	57	29.8	20.4	15.0	42.1	96.5	
2015	46	27.5	21.1	11.7	30.4	89.1	
2016	33	20.6	21.6	11.2	42.4	100.0	
2017	47	24.9	22.1	9.2	17.0	97.9	
2018	36	25.5	22.1	6.9	13.9	100.0	
2019	20	21.7	22.7	7.9	25.0	95.0	
2020	19	27.9	23.0	0.0	15.8	100.0	##
1998-2020	1025	26.4	23.0	18.9	35.3	94.5	

1,025 cases diagnosed 1998-2020 are related to a total of 1,023 patients. Currently, in 396 (38.7 %) of these 1,023 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 278 / 84 / 34 (27.2 % / 8.2 % / 3.3 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 36 cases has been diagnosed, of which 22.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.9 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1b

Cases by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (FEMALES)

Year of diagnosis	Females n	Females %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	22	84.6	18.2	15.9	45.5	100.0
1999	28	82.4	18.0	15.6	46.4	89.3
2000	55	82.1	14.3	15.5	40.0	94.5
2001	95	72.5	13.0	15.3	35.8	93.7
2002	150	74.3	11.4	15.1	37.3	94.0 #
2003	133	68.6	11.8	15.0	35.3	92.5
2004	125	75.3	11.5	14.8	28.0	91.2
2005	126	72.0	12.0	14.6	27.0	89.7
2006	126	70.4	11.3	14.5	23.0	92.1
2007	175	73.5	12.9	14.4	28.6	77.1 #
2008	182	72.5	14.1	14.2	30.8	95.1
2009	174	73.4	15.1	14.1	27.0	96.6
2010	203	75.7	15.3	13.9	26.6	94.1
2011	190	70.1	15.9	13.5	26.8	95.3
2012	184	74.2	16.4	13.5	21.7	94.6
2013	134	73.6	17.1	13.8	26.9	89.6
2014	134	70.2	17.8	13.7	26.9	96.3
2015	121	72.5	18.4	11.7	17.4	90.9
2016	127	79.4	19.1	11.6	21.3	95.3
2017	142	75.1	19.8	10.1	21.1	95.1
2018	105	74.5	20.1	7.9	12.4	90.5
2019	72	78.3	20.4	5.2	18.1	98.6
2020	49	72.1	20.9	6.3	12.2	98.0 ##
1998-2020	2852	73.6	20.9	15.9	26.6	92.8

2,852 cases diagnosed 1998-2020 are related to a total of 2,849 patients. Currently, in 969 (34.0 %) of these 2,849 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 706 / 193 / 70 (24.8 % / 6.8 % / 2.5 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 105 cases has been diagnosed, of which 20.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 7.9 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.94 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	4	22	0.4	1.9	0.3	1.2	0.3	1.5	0.3	1.7
1999	6	28	0.5	2.4	0.3	1.4	0.5	1.9	0.6	2.1
2000	12	55	1.1	4.6	0.7	2.8	0.9	3.7	1.0	4.1
2001	36	95	3.1	7.8	2.1	4.6	2.8	6.3	3.2	7.1
2002	52	150	2.8	7.7	1.7	4.6	2.4	6.4	2.6	7.0
2003	61	133	3.3	6.8	2.1	4.1	2.9	5.5	3.2	6.1
2004	41	125	2.2	6.3	1.4	3.9	1.9	5.1	2.1	5.6
2005	49	126	2.6	6.3	1.6	3.7	2.2	5.1	2.5	5.8
2006	53	126	2.8	6.3	1.7	3.6	2.3	4.9	2.6	5.5
2007	63	175	2.8	7.6	1.7	4.5	2.3	6.1	2.7	6.8
2008	69	182	3.1	7.8	1.8	4.5	2.5	6.0	3.1	6.9
2009	63	174	2.8	7.5	1.6	4.4	2.2	5.9	2.7	6.7
2010	65	203	2.9	8.7	1.6	4.7	2.3	6.4	2.7	7.3
2011	81	190	3.6	8.1	2.0	4.5	2.8	6.2	3.3	7.1
2012	64	184	2.8	7.8	1.7	4.1	2.2	5.6	2.6	6.5
2013	48	134	2.1	5.6	1.0	3.0	1.4	4.1	1.9	4.7
2014	57	134	2.4	5.6	1.3	2.9	1.8	3.9	2.2	4.6
2015	46	121	1.9	5.0	1.1	2.8	1.5	3.8	1.8	4.3
2016	33	127	1.4	5.2	0.7	2.8	1.0	3.9	1.2	4.4
2017	47	142	1.9	5.8	1.1	3.1	1.5	4.2	1.8	4.8
2018	36	105	1.5	4.2	0.7	2.0	1.0	2.8	1.3	3.4
2019	20	72	0.8	2.9	0.4	1.4	0.6	2.0	0.7	2.4
2020	19	49	0.8	2.0	0.4	0.9	0.5	1.3	0.7	1.6
1998–2020	1025	2852	2.2	5.9	1.3	3.3	1.8	4.5	2.1	5.1

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)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	26	56.1	15.9	20.4	83.3	35.1	43.4	56.2	65.3	81.0
1999	34	60.2	12.5	35.6	83.4	43.4	51.3	60.9	69.0	78.8
2000	67	59.3	12.9	33.3	88.3	41.6	51.6	59.5	67.1	76.8
2001	131	59.8	14.7	24.5	90.5	36.6	49.5	62.3	72.2	75.8
2002	202	61.1	12.2	21.1	88.8	43.9	54.4	61.3	70.0	75.9
2003	194	59.0	13.9	24.3	88.7	40.1	49.4	59.2	68.6	77.8
2004	166	59.5	13.6	24.6	88.4	39.8	50.7	62.3	68.4	75.4
2005	175	61.5	11.7	29.8	84.8	45.8	53.3	62.9	70.2	76.7
2006	179	60.3	14.6	13.2	89.7	39.7	50.6	61.2	71.2	78.5
2007	238	61.5	12.8	28.3	87.4	43.3	52.3	62.2	70.8	78.8
2008	251	62.8	14.4	16.1	90.1	42.9	53.8	62.9	73.3	81.1
2009	237	61.1	14.7	14.9	90.4	42.1	49.9	62.7	72.2	80.1
2010	268	63.4	14.0	18.9	90.8	42.5	53.7	65.9	72.8	80.4
2011	271	63.1	12.8	23.5	89.4	45.1	54.7	63.8	73.0	78.8
2012	248	62.8	14.7	5.5	101	43.5	50.8	65.1	73.6	81.0
2013	182	65.4	13.4	24.2	94.5	47.0	54.3	67.2	74.9	80.3
2014	191	64.7	15.2	7.5	96.4	42.9	53.8	68.7	76.5	81.8
2015	167	62.9	14.3	17.7	93.4	45.0	51.7	63.1	74.0	82.4
2016	160	62.7	13.3	30.3	94.4	46.3	52.3	65.0	72.5	79.6
2017	189	63.9	13.5	22.1	97.2	47.0	53.9	64.9	74.4	80.2
2018	141	67.0	14.2	34.5	93.7	44.7	57.0	71.7	78.2	81.6
2019	92	66.3	13.9	27.3	96.4	48.8	54.9	68.6	76.8	80.6
2020	68	67.4	14.3	32.5	94.0	49.6	56.7	70.8	79.6	83.4
1998-2020	3877	62.4	13.9	5.5	101	43.3	52.6	63.6	73.1	79.5

Table 3a

Age distribution parameters by year of diagnosis (MALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	4	42.3	16.9	20.4	55.7	20.4	29.1	46.6	55.6	55.7
1999	6	60.8	12.2	44.4	77.3	44.4	52.3	59.9	70.9	77.3
2000	12	57.2	15.0	33.3	88.3	38.5	48.8	55.5	64.4	73.3
2001	36	58.7	15.0	24.5	83.9	36.5	48.2	61.9	69.9	74.8
2002	52	60.9	11.5	34.3	88.8	42.5	55.0	61.2	69.2	72.1
2003	61	57.4	13.9	26.0	87.1	40.1	47.5	58.5	66.8	76.1
2004	41	59.2	13.2	24.6	80.6	39.8	52.1	63.2	67.1	74.9
2005	49	61.0	12.2	29.8	79.6	42.7	53.5	63.4	69.7	76.2
2006	53	60.3	14.6	13.2	87.1	40.5	51.8	62.6	71.2	77.2
2007	63	61.3	12.6	35.5	86.3	42.5	50.7	62.8	70.7	78.5
2008	69	63.6	14.0	24.4	84.8	42.2	54.2	64.9	73.8	80.7
2009	63	61.5	16.5	28.0	90.4	39.8	45.6	64.3	73.4	80.7
2010	65	63.3	14.3	28.4	90.8	42.3	53.7	66.1	73.0	81.9
2011	81	63.9	10.9	38.7	84.4	47.0	57.9	63.9	71.4	76.8
2012	64	61.2	16.8	5.5	86.3	36.9	52.6	65.4	73.5	76.8
2013	48	69.6	11.6	37.5	88.5	50.0	63.2	72.8	77.7	82.8
2014	57	65.7	15.5	7.5	88.8	48.2	55.9	71.0	74.7	82.4
2015	46	64.9	16.5	17.7	91.3	40.3	52.6	67.6	79.1	83.5
2016	33	66.8	12.4	39.0	94.4	50.8	58.2	66.7	75.9	80.8
2017	47	64.4	13.4	37.3	97.2	47.0	55.6	63.2	75.7	80.0
2018	36	68.0	12.1	39.0	88.0	50.4	57.7	69.9	78.0	79.0
2019	20	66.4	14.9	27.3	88.1	50.5	55.9	70.4	78.8	81.2
2020	19	68.2	14.2	36.0	82.5	39.8	61.7	71.5	81.2	81.7
1998–2020	1025	62.8	14.2	5.5	97.2	42.7	53.8	64.5	73.4	79.6

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	22	58.6	14.8	30.1	83.3	43.1	46.6	59.7	69.2	81.0
1999	28	60.1	12.8	35.6	83.4	42.4	51.3	60.9	67.9	79.0
2000	55	59.8	12.5	35.8	87.3	41.9	51.6	60.6	69.1	76.8
2001	95	60.2	14.6	28.1	90.5	36.6	50.9	62.3	73.2	76.6
2002	150	61.1	12.4	21.1	86.8	44.2	54.2	61.4	70.9	77.3
2003	133	59.7	13.9	24.3	88.7	40.6	50.0	60.1	69.7	80.5
2004	125	59.7	13.8	24.8	88.4	40.0	49.3	62.3	68.7	75.4
2005	126	61.7	11.5	33.6	84.8	47.2	53.3	62.8	70.3	77.1
2006	126	60.2	14.6	29.5	89.7	39.7	50.4	60.3	71.2	79.6
2007	175	61.5	12.9	28.3	87.4	43.7	53.5	62.1	71.3	79.0
2008	182	62.6	14.6	16.1	90.1	42.9	53.6	62.5	72.7	81.2
2009	174	60.9	14.1	14.9	89.6	43.2	50.6	61.0	71.8	79.8
2010	203	63.4	13.9	18.9	90.2	42.8	53.7	65.9	72.8	79.3
2011	190	62.7	13.6	23.5	89.4	44.4	54.3	63.3	73.6	79.6
2012	184	63.3	13.9	32.1	101	45.4	50.8	64.4	73.6	81.2
2013	134	63.8	13.6	24.2	94.5	45.6	53.4	65.5	73.7	78.5
2014	134	64.3	15.0	28.0	96.4	41.6	53.1	67.3	76.5	81.7
2015	121	62.2	13.3	32.8	93.4	46.2	51.7	61.8	71.9	78.9
2016	127	61.7	13.4	30.3	87.6	44.5	51.7	63.9	71.6	78.0
2017	142	63.7	13.6	22.1	93.5	47.3	53.7	65.4	73.8	80.2
2018	105	66.7	14.9	34.5	93.7	43.7	56.3	71.7	78.4	82.4
2019	72	66.2	13.7	28.2	96.4	48.5	54.9	67.5	76.5	80.5
2020	49	67.1	14.4	32.5	94.0	49.6	55.1	70.2	77.3	84.6
1998-2020	2852	62.3	13.8	14.9	101	43.4	52.3	63.1	72.9	79.4

Table 4

Age distribution by 5-year age group and sex for period 2007-2020

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4									
5-9	2	0.1	0.1	2	0.3	0.3			0.0
10-14	1	0.0	0.1			0.3	1	0.1	0.1
15-19	3	0.1	0.2	1	0.1	0.4	2	0.1	0.2
20-24	8	0.3	0.5	3	0.4	0.8	5	0.3	0.4
25-29	17	0.6	1.1	6	0.8	1.7	11	0.6	1.0
30-34	39	1.4	2.6	7	1.0	2.7	32	1.6	2.6
35-39	73	2.7	5.3	22	3.1	5.8	51	2.6	5.1
40-44	156	5.8	11.1	40	5.6	11.4	116	5.8	10.9
45-49	218	8.1	19.1	38	5.3	16.7	180	9.0	20.0
50-54	258	9.5	28.7	58	8.2	24.9	200	10.0	30.0
55-59	271	10.0	38.7	61	8.6	33.5	210	10.5	40.6
60-64	296	11.0	49.6	89	12.5	46.0	207	10.4	51.0
65-69	351	13.0	62.6	98	13.8	59.8	253	12.7	63.7
70-74	393	14.5	77.2	111	15.6	75.4	282	14.2	77.8
75-79	324	12.0	89.2	87	12.2	87.6	237	11.9	89.7
80-84	193	7.1	96.3	65	9.1	96.8	128	6.4	96.1
85+	100	3.7	100.0	23	3.2	100.0	77	3.9	100.0
All ages	2703	100.0		711	100.0		1992	100.0	

Table 5

Age-specific incidence
for period 2007-2020

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.
0- 4				
5- 9	2		0.1	
10-14		1		0.1
15-19	1	2	0.1	0.1
20-24	3	5	0.1	0.3
25-29	6	11	0.3	0.5
30-34	7	32	0.3	1.4
35-39	22	51	1.0	2.2
40-44	40	116	1.6	4.8
45-49	38	180	1.4	6.9
50-54	58	200	2.3	8.0
55-59	61	210	2.9	9.6
60-64	89	207	5.0	10.9
65-69	98	253	6.0	14.0
70-74	111	281	7.4	16.3
75-79	87	236	7.2	15.7
80-84	65	128	9.0	12.0
85+	23	77	4.9	7.4
All ages	711	1990		
Incidence				
Raw			2.2	5.9
WS			1.2	3.2
ES			1.7	4.4
BRD-S			2.0	5.0

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

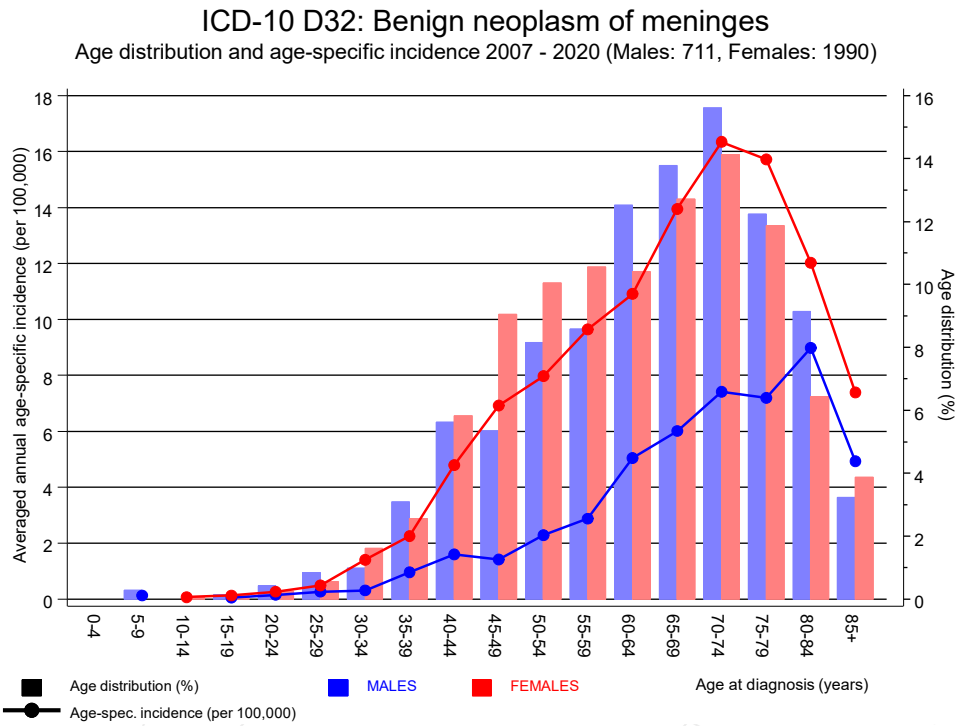


Figure 6. Age distribution (males: mean=64.3 yrs, median=66.6 yrs; females: mean=63.1 yrs, median=64.6 yrs) and age-specific incidence.

Table 7a

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of further malignancies for period 1998–2020

MALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06	Oral cavity	1	0.6	1.8	0.0	9.8		1.0	
C09–C10	Oropharynx	3	0.7	4.2	0.9	12.4		5.2	
C15	Oesophagus	2	1.3	1.5	0.2	5.5		1.6	
C16	Stomach	5	2.4	2.1	0.7	5.0		6.0	
C17	Small intestine	1	0.4	2.5	0.1	14.0		1.4	
C18	Colon	15	5.9	2.6	1.4	4.2	#	20.5	
C19–C20	Rectum	8	3.3	2.4	1.0	4.7	#	10.5	
C22	Liver	6	1.9	3.2	1.2	7.1	#	9.3	33.3
C23–C24	Bile	1	0.7	1.5	0.0	8.5		0.8	
C25	Pancreas	5	2.4	2.0	0.7	4.8		5.7	
C26	GI cancer	1	0.1	16.8	0.4	93.3		2.1	100.0
C32	Larynx	1	0.7	1.5	0.0	8.5		0.8	
C33–C34	Lung	20	7.4	2.7	1.7	4.2	#	28.4	
C38,C45	Mesothelioma	2	0.4	4.5	0.5	16.2		3.5	
C43	Malign. melanoma	12	3.0	4.0	2.1	7.0	#	20.2	
C46,C49	Soft tissue	1	0.4	2.7	0.1	15.1		1.4	
C48	Peritoneal	1	0.1	19.4	0.5	108.2		2.1	
C60	Penis	1	0.2	6.3	0.2	35.0		1.9	
C61	Prostate	51	17.6	2.9	2.2	3.8	#	75.3	3.9
C62	Testis	1	0.2	4.1	0.1	22.9		1.7	
C64	Kidney	13	2.2	5.9	3.1	10.0	#	24.3	
C65	Renal pelvis	3	0.3	10.8	2.2	31.6	#	6.1	
C66	Ureter	1	0.2	5.9	0.2	33.1		1.9	
C67	Bladder	8	2.8	2.8	1.2	5.6	#	11.6	12.5
C69	Eye melanoma	1	0.1	13.6	0.3	75.7		2.1	
C70–C72	CNS cancer	6	0.8	7.2	2.7	15.7	#	11.6	
C73	Thyroid	2	0.5	4.4	0.5	15.9		3.5	
C76–C79	CUP	4	1.0	3.9	1.1	9.9	#	6.7	25.0
C82–C85	NHL	8	2.7	3.0	1.3	5.9	#	12.0	
C90	Mult. myeloma	4	0.8	4.9	1.3	12.5	#	7.2	
C91–C96	Leukaemia	2	0.9	2.1	0.3	7.7		2.4	
Not observed		0	1.7	0.0	0.0	2.2		-3.8	
All further malignancies		190	63.4	3.0	2.6	3.5	#	285.1	3.7

Patients	988
Median age at next malignancy (years)	72.9
Person-years	4440
Mean observation time (years)	4.5
Median observation time (years)	3.0

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 1998–2020
FEMALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C09–C10	Oropharynx	2	0.6	3.4	0.4	12.4		1.1	
C15	Oesophagus	4	0.9	4.6	1.3	11.9	#	2.5	
C16	Stomach	14	3.8	3.7	2.0	6.2	#	8.0	7.1
C17	Small intestine	2	0.7	2.8	0.3	10.1		1.0	
C18	Colon	21	11.2	1.9	1.2	2.9	#	7.8	
C19–C20	Rectum	13	4.7	2.7	1.5	4.7	#	6.5	
C21	Anus/canal	2	0.7	2.8	0.3	10.0		1.0	
C22	Liver	4	1.5	2.7	0.7	6.8		2.0	25.0
C23–C24	Bile	5	1.6	3.1	1.0	7.2	#	2.7	
C25	Pancreas	17	5.5	3.1	1.8	4.9	#	9.0	
C26	GI cancer	1	0.2	6.0	0.2	33.7		0.7	100.0
C30	Middle/inner ear	1	0.0	246.3	6.2	1373	#	0.8	
C32	Larynx	2	0.2	8.2	1.0	29.4		1.4	
C33–C34	Lung	57	9.9	5.7	4.3	7.4	#	37.1	5.3
C38,C45	Mesothelioma	2	0.2	8.8	1.1	31.8	#	1.4	
C43	Malign. melanoma	20	5.2	3.9	2.4	6.0	#	11.7	
C46,C49	Soft tissue	3	0.7	4.2	0.9	12.2		1.8	33.3
C48	Peritoneal	2	0.6	3.6	0.4	13.1		1.1	
C50	Breast	146	40.7	3.6	3.0	4.2	#	83.0	2.7
C51	Vulva	5	1.3	3.9	1.3	9.1	#	2.9	
C53	Cervix uteri	4	1.8	2.2	0.6	5.7		1.7	
C54	Corpus uteri	12	7.2	1.7	0.9	2.9		3.8	
C55,C57	Fem. genitals un	1	0.2	4.9	0.1	27.3		0.6	100.0
C56	Ovary	10	5.0	2.0	1.0	3.7		3.9	10.0
C64	Kidney	11	2.9	3.8	1.9	6.8	#	6.4	9.1
C67	Bladder	7	2.2	3.1	1.3	6.4	#	3.7	
C69	Eye melanoma	1	0.2	6.5	0.2	36.0		0.7	
C70–C72	CNS cancer	12	1.6	7.3	3.8	12.7	#	8.2	
C73	Thyroid	10	2.3	4.3	2.0	7.9	#	6.0	
C74–C80	Cancer others	1	0.3	2.9	0.1	16.4		0.5	
C76–C79	CUP	7	2.1	3.4	1.4	6.9	#	3.9	
C82–C85	NHL	23	4.8	4.8	3.0	7.2	#	14.3	
C90	Mult. myeloma	4	1.5	2.7	0.7	6.9		2.0	25.0
C91–C96	Leukaemia	11	1.8	6.2	3.1	11.1	#	7.3	18.2
Not observed		0	2.9	0.0	0.0	1.3		-2.3	
All further malignancies		437	127.1	3.4	3.1	3.8	#	244.4	3.9

Patients	2736
Median age at next malignancy (years)	72.1
Person-years	12681
Mean observation time (years)	4.6
Median observation time (years)	3.2

The occurrence of further specified malignancy is statistically significant.

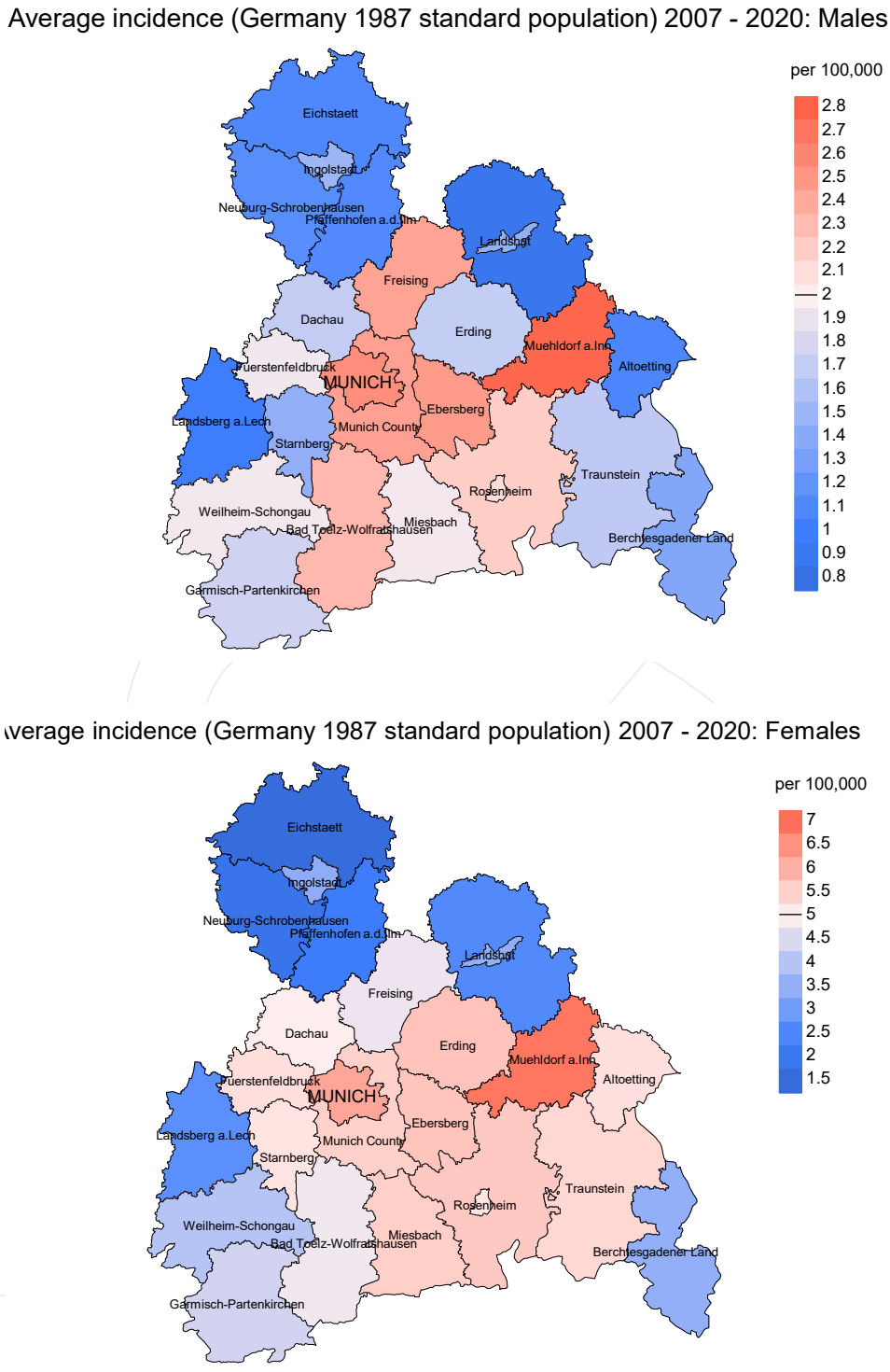
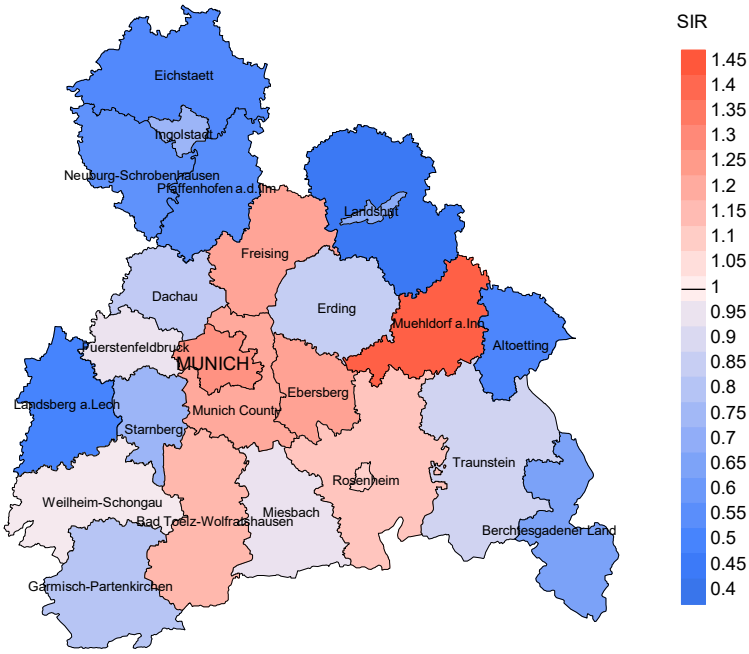


Figure 8a. Map of cancer incidence (german standard population) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 2.0/100,000 WS N=711, females 5.0/100,000 WS N=1,990).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,727 female residents (averaged) in the period from 2007 to 2020 a total of 64 women were identified with newly diagnosed meninges neoplasm. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 5.7/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 4.0 and 7.8/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

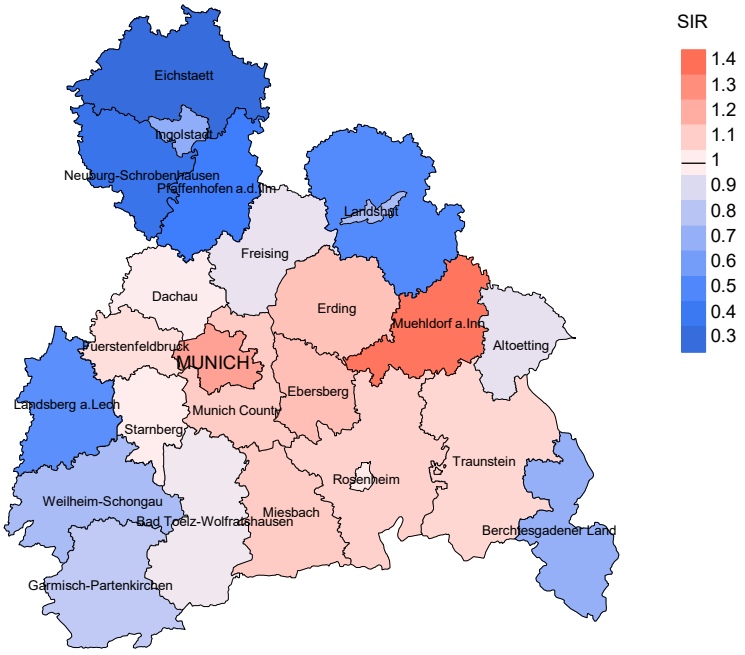


Figure 8b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=711, females N=1,990).

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 2020 a total of 64 women were identified with newly diagnosed meninges neoplasm. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.15. Though, the value of this parameter may vary with an underlying probability of 99% between 0.81 and 1.57, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status,
and deaths among the annual cohorts

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.94 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	26	100.0	11	42.3	100.0
1999	34	91.2	15	44.1	93.3
2000	67	95.5	27	40.3	96.3
2001	131	93.9	55	42.0	89.1
2002	202	95.5	82	40.6	90.2
2003	194	92.8	74	38.1	89.2
2004	166	90.4	46	27.7	93.5
2005	175	89.7	51	29.1	94.1
2006	179	91.1	43	24.0	86.0
2007	238	79.0	73	30.7	87.7
2008	251	96.4	84	33.5	90.5
2009	237	95.8	73	30.8	93.2
2010	268	94.8	80	29.9	85.0
2011	271	95.6	77	28.4	84.4
2012	248	95.2	58	23.4	93.1
2013	182	90.1	54	29.7	85.2
2014	191	96.3	60	31.4	88.3
2015	167	90.4	35	21.0	77.1
2016	160	96.3	41	25.6	90.2
2017	189	95.8	38	20.1	86.8
2018	141	92.9	18	12.8	50.0
2019	92	97.8	18	19.6	83.3
2020	68	98.5	9	13.2	77.8
1998-2020	3877	93.2	1122	28.9	88.2

Table 9b

Annual cohorts of incident cancers and deaths,
and cases deceased within the same year of being diagnosed with cancer

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.94 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Deaths in same year n	Prop. deaths in same year %
1998	26	1		
1999	34	4	1	2.9
2000	67	7	3	4.5
2001	131	9	5	3.8
2002	202	19	10	5.0
2003	194	24	9	4.6
2004	166	19	4	2.4
2005	175	36	8	4.6
2006	179	32	4	2.2
2007	238	28	5	2.1
2008	251	56	14	5.6
2009	237	49	13	5.5
2010	268	71	10	3.7
2011	271	72	13	4.8
2012	248	89	18	7.3
2013	182	74	11	6.0
2014	191	90	16	8.4
2015	167	80	8	4.8
2016	160	82	12	7.5
2017	189	103	7	3.7
2018	141	89	5	3.5
2019	92	73	4	4.3
2020	68	100	4	5.9
1998–2020	3877	1207	184	4.7

Table 9c

Annual cohorts of deaths, and proportion of cancer-related and non-cancer-related deaths

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.94 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	1		100.0	100.0
1999	4	50.0	50.0	100.0
2000	7	71.4	28.6	100.0
2001	9	44.4	55.6	87.5
2002	19	68.4	31.6	94.7
2003	24	58.3	41.7	87.5
2004	19	52.6	47.4	63.2
2005	36	61.1	38.9	80.6
2006	32	65.6	34.4	82.1
2007	28	67.9	32.1	75.0
2008	56	62.5	37.5	76.9
2009	49	67.3	32.7	71.4
2010	71	66.2	33.8	73.2
2011	72	63.9	36.1	75.7
2012	89	60.7	39.3	67.8
2013	74	63.5	36.5	69.4
2014	90	57.8	42.2	68.2
2015	80	56.3	43.8	67.9
2016	82	51.2	48.8	58.0
2017	103	53.4	46.6	63.1
2018	89	48.3	51.7	59.1
2019	73	28.8	71.2	80.6
2020	100	30.0	70.0	87.3
1998-2020	1207	54.7	45.3	71.4

Table 10a

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998					
1999					
2000	2	73.2	73.7	72.6	73.2
2001	3	74.6	73.9	77.0	74.6
2002	7	70.5	69.6	70.5	69.5
2003	4	72.4	70.1	77.5	77.3
2004	6	77.6	81.6	77.4	81.6
2005	10	73.8	74.7	73.0	74.7
2006	10	75.0	75.0	74.3	75.5
2007	8	77.5	77.6	76.1	77.6
2008	18	79.0	77.6	79.0	79.0
2009	20	71.6	71.6	72.9	74.9
2010	27	76.8	76.8	79.7	77.1
2011	17	72.5	68.6	81.9	70.7
2012	32	73.9	74.4	73.6	73.6
2013	31	76.5	76.5	75.6	76.5
2014	24	79.9	77.4	80.5	77.2
2015	30	77.5	75.8	78.4	77.3
2016	24	77.7	70.4	80.6	77.5
2017	32	81.4	81.0	82.1	81.4
2018	34	80.1	78.5	80.4	74.6
2019	24	79.2	81.1	78.7	81.1
2020	23	81.7	82.1	81.7	81.2
1998-2020	386	77.4	76.3	79.0	76.8

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	1	54.6		54.6	54.6
1999	4	82.6	86.9	77.2	82.6
2000	5	79.4	79.8	79.4	79.4
2001	6	78.3	71.8	89.2	76.3
2002	12	75.1	73.5	78.9	75.1
2003	20	71.3	69.2	79.5	70.9
2004	13	74.6	77.0	74.6	74.5
2005	26	76.0	75.4	78.2	75.4
2006	22	72.7	71.7	76.3	73.6
2007	20	75.5	72.4	81.2	72.9
2008	38	79.4	73.2	79.8	73.2
2009	29	77.7	75.8	78.3	76.8
2010	44	77.6	73.2	82.5	73.7
2011	55	79.9	76.6	86.9	77.9
2012	57	79.0	75.8	85.8	75.8
2013	43	76.3	74.5	82.8	75.1
2014	66	79.1	78.2	79.7	77.9
2015	50	78.0	77.7	81.0	77.7
2016	58	79.3	75.0	83.3	75.4
2017	71	77.5	76.0	83.4	76.6
2018	55	79.3	78.1	81.5	79.2
2019	49	78.3	81.8	76.8	80.0
2020	77	83.8	76.0	85.3	77.2
1998-2020	821	78.7	76.1	81.8	76.6

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
1999									
2000	1	0.1	0.08	0.1	0.08	0.1	0.09	0.1	0.10
2001	1	0.1	0.03	0.1	0.02	0.1	0.03	0.1	0.03
2002	4	0.2	0.08	0.1	0.06	0.2	0.08	0.3	0.10
2003	2	0.1	0.03	0.1	0.02	0.1	0.03	0.1	0.04
2004	2	0.1	0.05	0.0	0.03	0.1	0.05	0.1	0.07
2005	3	0.2	0.06	0.1	0.05	0.1	0.05	0.2	0.06
2006	8	0.4	0.15	0.2	0.12	0.3	0.15	0.4	0.17
2007	7	0.3	0.11	0.1	0.08	0.2	0.11	0.4	0.14
2008	10	0.4	0.14	0.2	0.11	0.3	0.13	0.5	0.16
2009	16	0.7	0.25	0.4	0.22	0.6	0.25	0.8	0.28
2010	21	0.9	0.32	0.4	0.24	0.7	0.30	0.9	0.34
2011	8	0.4	0.10	0.2	0.09	0.3	0.09	0.3	0.10
2012	18	0.8	0.28	0.3	0.19	0.5	0.23	0.8	0.30
2013	20	0.9	0.42	0.3	0.34	0.6	0.39	0.8	0.43
2014	12	0.5	0.21	0.2	0.14	0.3	0.16	0.5	0.22
2015	15	0.6	0.33	0.3	0.24	0.4	0.28	0.6	0.31
2016	9	0.4	0.27	0.2	0.22	0.2	0.24	0.3	0.28
2017	16	0.7	0.34	0.2	0.22	0.4	0.27	0.6	0.32
2018	17	0.7	0.47	0.3	0.41	0.4	0.43	0.6	0.45
2019	7	0.3	0.35	0.1	0.30	0.2	0.31	0.3	0.36
2020	8	0.3	0.42	0.1	0.27	0.2	0.34	0.3	0.38
1999-2020	205	0.5	0.20	0.2	0.15	0.3	0.18	0.4	0.21

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
1999	2	0.2	0.07	0.0	0.02	0.1	0.04	0.1	0.06
2000	4	0.3	0.07	0.1	0.03	0.1	0.04	0.3	0.07
2001	3	0.2	0.03	0.1	0.02	0.2	0.03	0.2	0.03
2002	9	0.5	0.06	0.2	0.05	0.3	0.05	0.4	0.06
2003	12	0.6	0.09	0.3	0.07	0.4	0.08	0.5	0.09
2004	8	0.4	0.06	0.1	0.04	0.2	0.05	0.3	0.06
2005	19	1.0	0.15	0.4	0.10	0.6	0.11	0.8	0.14
2006	13	0.6	0.10	0.3	0.07	0.4	0.08	0.5	0.09
2007	12	0.5	0.07	0.2	0.05	0.3	0.05	0.4	0.06
2008	25	1.1	0.14	0.4	0.09	0.6	0.10	0.8	0.11
2009	17	0.7	0.10	0.3	0.06	0.4	0.07	0.6	0.08
2010	26	1.1	0.13	0.4	0.09	0.6	0.10	0.8	0.11
2011	38	1.6	0.20	0.6	0.13	0.9	0.15	1.2	0.17
2012	36	1.5	0.20	0.5	0.13	0.8	0.15	1.2	0.18
2013	27	1.1	0.20	0.4	0.14	0.6	0.16	0.8	0.17
2014	40	1.7	0.30	0.5	0.18	0.8	0.21	1.2	0.25
2015	30	1.2	0.25	0.4	0.13	0.6	0.16	0.9	0.20
2016	33	1.3	0.26	0.5	0.18	0.8	0.20	1.0	0.23
2017	39	1.6	0.27	0.6	0.19	0.9	0.21	1.2	0.25
2018	26	1.0	0.25	0.3	0.17	0.5	0.19	0.8	0.22
2019	14	0.6	0.19	0.1	0.08	0.2	0.11	0.3	0.15
2020	22	0.9	0.45	0.3	0.33	0.5	0.37	0.6	0.39
1999-2020	455	1.0	0.16	0.3	0.11	0.5	0.12	0.7	0.14

Table 12

Age distribution of age at death (cancer-related) for period 2007-2020
(**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	1	0.2	0.2	1	0.5	0.5			0.0
35-39	1	0.2	0.4			0.5	1	0.3	0.3
40-44	3	0.5	0.9	2	1.1	1.6	1	0.3	0.5
45-49	9	1.6	2.5	4	2.2	3.8	5	1.3	1.8
50-54	20	3.5	6.0	6	3.3	7.1	14	3.6	5.5
55-59	29	5.1	11.1	10	5.4	12.5	19	4.9	10.4
60-64	45	7.9	19.0	13	7.1	19.6	32	8.3	18.7
65-69	55	9.7	28.6	15	8.2	27.7	40	10.4	29.1
70-74	90	15.8	44.5	29	15.8	43.5	61	15.8	44.9
75-79	108	19.0	63.4	36	19.6	63.0	72	18.7	63.6
80-84	107	18.8	82.2	37	20.1	83.2	70	18.2	81.8
85+	101	17.8	100.0	31	16.8	100.0	70	18.2	100.0
All ages	569	100.0		184	100.0		385	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2020
(**incl. multiple malignancies**)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index
0- 4						
5- 9						
10-14						
15-19						
20-24						
25-29						
30-34	1		0.0	0.14		
35-39		1			0.0	0.02
40-44	2	1	0.1	0.05	0.0	0.01
45-49	4	5	0.1	0.11	0.2	0.03
50-54	6	14	0.2	0.10	0.6	0.07
55-59	10	19	0.5	0.16	0.9	0.09
60-64	13	32	0.7	0.15	1.7	0.15
65-69	15	40	0.9	0.15	2.2	0.16
70-74	29	61	1.9	0.26	3.5	0.22
75-79	36	72	3.0	0.41	4.8	0.31
80-84	37	70	5.1	0.57	6.6	0.55
85+	31	70	6.6	1.35	6.7	0.91
All ages	184	385				
Mortality						
Raw			0.6	0.26	1.1	0.19
WS			0.2	0.19	0.4	0.12
ES			0.4	0.22	0.6	0.14
BRD-S			0.5	0.26	0.8	0.17
PYLL-70						
per 100,000			1.9		3.5	
ES			1.6		2.9	
AYLL-70			10.7		8.9	

Table 14a

Further malignancies in deaths in period 1999-2020
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C00	Lip	1	0.5	1	100.0				
C03-C06	Oral cavity	2	1.0	1	50.0			1	50.0
C09-C10	Oropharynx	2	1.0					2	100.0
C11	Nasopharynx	1	0.5	1	100.0				
C15	Oesophagus	2	1.0			1	50.0	1	50.0
C16	Stomach	7	3.4			1	14.3	6	85.7
C17	Small intestine	1	0.5					1	100.0
C18	Colon	17	8.2	5	29.4			12	70.6
C19-C20	Rectum	10	4.8	2	20.0	1	10.0	7	70.0
C21	Anus/canal	1	0.5			1	100.0		
C22	Liver	9	4.3	2	22.2			7	77.8
C23-C24	Bile	1	0.5	1	100.0				
C25	Pancreas	5	2.4	1	20.0			4	80.0
C26	GI cancer	1	0.5					1	100.0
C32	Larynx	1	0.5			1	100.0		
C33-C34	Lung	29	13.9	8	27.6	6	20.7	15	51.7
C38,C45	Mesothelioma	2	1.0			1	50.0	1	50.0
C43	Malign. melanoma	11	5.3	9	81.8			2	18.2
C44	Skin others	14	6.7	2	14.3	2	14.3	10	71.4
C46,C49	Soft tissue	1	0.5					1	100.0
C48	Peritoneal	1	0.5			1	100.0		
C61	Prostate	36	17.3	23	63.9			13	36.1
C62	Testis	1	0.5					1	100.0
C64	Kidney	11	5.3	6	54.5			5	45.5
C65	Renal pelvis	2	1.0					2	100.0
C66	Ureter	1	0.5					1	100.0
C67	Bladder	8	3.8	3	37.5	1	12.5	4	50.0
C70-C72	CNS cancer	4	1.9					4	100.0
C73	Thyroid	2	1.0	2	100.0				
C76-C79	CUP	9	4.3	3	33.3	1	11.1	5	55.6
C81	Hodgkin lymphoma	2	1.0	2	100.0				
C82-C85	NHL	6	2.9	3	50.0			3	50.0
C90	Mult. myeloma	5	2.4	1	20.0	1	20.0	3	60.0
C91-C96	Leukaemia	2	1.0	1	50.0	1	50.0		
All further malignancies		208	100.0	77	37.0	19	9.1	112	53.8

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 1999–2020
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03–C06	Oral cavity	5	1.2	3	60.0	1	20.0	1	20.0
C07–C08	Salivary gland	1	0.2	1	100.0				
C09–C10	Oropharynx	1	0.2					1	100.0
C15	Oesophagus	3	0.7					3	100.0
C16	Stomach	17	3.9	5	29.4	4	23.5	8	47.1
C17	Small intestine	1	0.2					1	100.0
C18	Colon	24	5.6	8	33.3	2	8.3	14	58.3
C19–C20	Rectum	9	2.1	3	33.3	2	22.2	4	44.4
C21	Anus/canal	1	0.2			1	100.0		
C22	Liver	6	1.4			1	16.7	5	83.3
C23–C24	Bile	4	0.9					4	100.0
C25	Pancreas	13	3.0	1	7.7	1	7.7	11	84.6
C26	GI cancer	1	0.2					1	100.0
C30–C31	Sinuses	1	0.2			1	100.0		
C32	Larynx	2	0.5	1	50.0			1	50.0
C33–C34	Lung	73	16.9	16	21.9	16	21.9	41	56.2
C38,C45	Mesothelioma	2	0.5	1	50.0			1	50.0
C43	Malign. melanoma	5	1.2			1	20.0	4	80.0
C44	Skin others	12	2.8	9	75.0			3	25.0
C46,C49	Soft tissue	5	1.2	1	20.0	1	20.0	3	60.0
C48	Peritoneal	1	0.2					1	100.0
C50	Breast	121	28.1	69	57.0	9	7.4	43	35.5
C51	Vulva	4	0.9			1	25.0	3	75.0
C52	Vagina	1	0.2			1	100.0		
C53	Cervix uteri	6	1.4	2	33.3	1	16.7	3	50.0
C54	Corpus uteri	12	2.8	8	66.7			4	33.3
C55,C57	Fem. genitals un	1	0.2					1	100.0
C56	Ovary	14	3.2	9	64.3	1	7.1	4	28.6
C64	Kidney	17	3.9	9	52.9	1	5.9	7	41.2
C67	Bladder	5	1.2	3	60.0			2	40.0
C70–C72	CNS cancer	9	2.1			1	11.1	8	88.9
C73	Thyroid	10	2.3	6	60.0	2	20.0	2	20.0
C74–C80	Cancer others	2	0.5	1	50.0			1	50.0
C76–C79	CUP	6	1.4	2	33.3	3	50.0	1	16.7
C81	Hodgkin lymphoma	1	0.2					1	100.0
C82–C85	NHL	18	4.2	6	33.3	3	16.7	9	50.0
C90	Mult. myeloma	6	1.4			1	16.7	5	83.3
C91–C96	Leukaemia	11	2.6	3	27.3	2	18.2	6	54.5
All further malignancies		431	100.0	167	38.7	57	13.2	207	48.0

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 2007-2020
(**First primaries only** *)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index
0- 4						
5- 9						
10-14						
15-19						
20-24						
25-29						
30-34	1		0.0	0.14		
35-39						
40-44	2	1	0.1	0.05	0.0	0.01
45-49	3		0.1	0.10		
50-54	4	6	0.2	0.08	0.2	0.04
55-59	7	12	0.3	0.13	0.6	0.07
60-64	11	15	0.6	0.15	0.8	0.09
65-69	9	15	0.6	0.13	0.8	0.09
70-74	16	29	1.1	0.22	1.7	0.15
75-79	21	39	1.7	0.39	2.6	0.27
80-84	20	39	2.8	0.67	3.7	0.46
85+	17	44	3.6	1.89	4.2	1.00
All ages	111	200				
Mortality						
Raw			0.3	0.22	0.6	0.14
WS			0.1	0.16	0.2	0.08
ES			0.2	0.18	0.3	0.09
BRD-S			0.3	0.22	0.4	0.11
PYLL-70						
per 100,000			1.5		1.5	
ES			1.3		1.3	
AYLL-70			11.4		8.8	

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2020
(**Single primaries only** *)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index
0- 4						
5- 9						
10-14						
15-19						
20-24						
25-29						
30-34	1		0.0	0.14		
35-39						
40-44	2	1	0.1	0.05	0.0	0.01
45-49	3		0.1	0.10		
50-54	2	4	0.1	0.05	0.2	0.03
55-59	6	6	0.3	0.13	0.3	0.04
60-64	2	5	0.1	0.04	0.3	0.03
65-69	1	3	0.1	0.02	0.2	0.02
70-74	7	10	0.5	0.13	0.6	0.07
75-79	7	12	0.6	0.17	0.8	0.11
80-84	8	22	1.1	0.40	2.1	0.34
85+	7	27	1.5	1.17	2.6	0.79
All ages	46	90				
Mortality						
Raw			0.1	0.11	0.3	0.07
WS			0.1	0.08	0.1	0.04
ES			0.1	0.09	0.1	0.04
BRD-S			0.1	0.11	0.2	0.06
PYLL-70						
per 100,000			1.0		0.8	
ES			0.9		0.6	
AYLL-70			16.9		11.4	

* See corresponding tables with multiple malignancies.

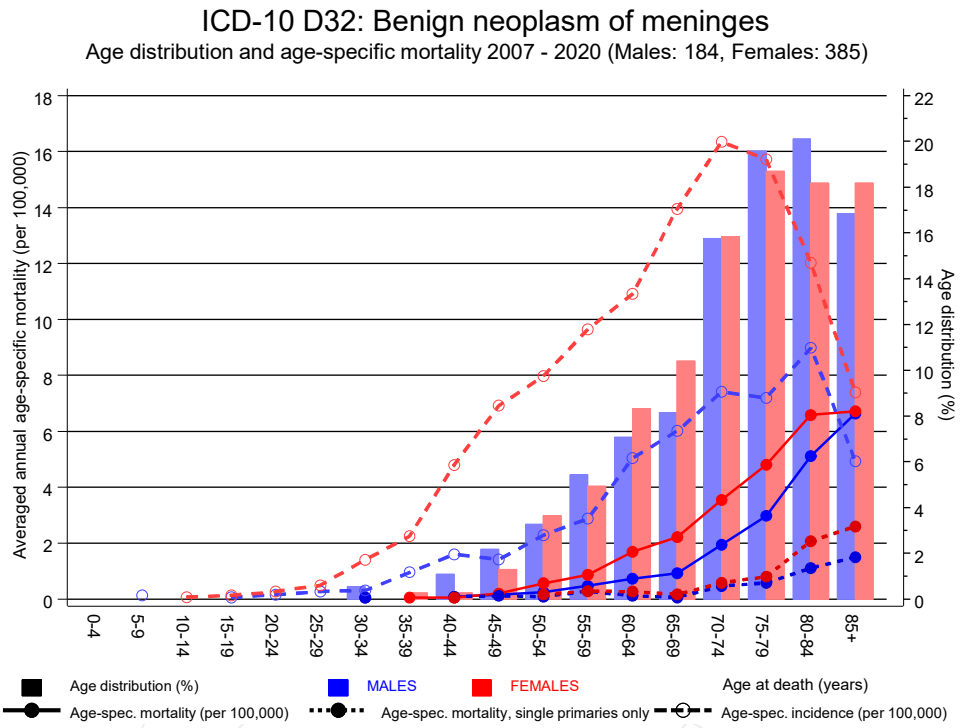


Figure 17. Distribution of age at death (bars; males: mean=66.9 yrs, median=69.9 yrs; females: mean=67.4 yrs, median=69.2 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

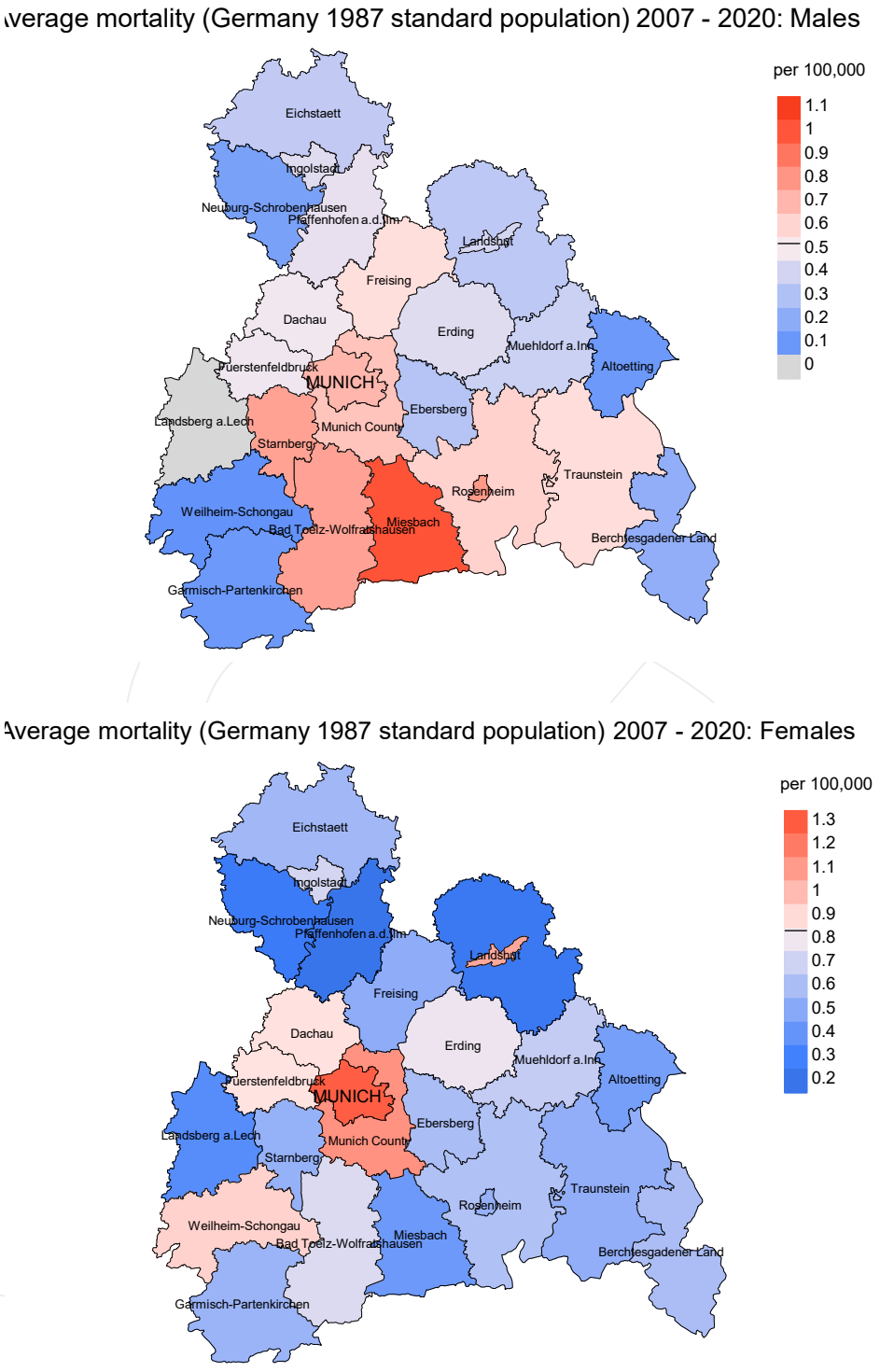
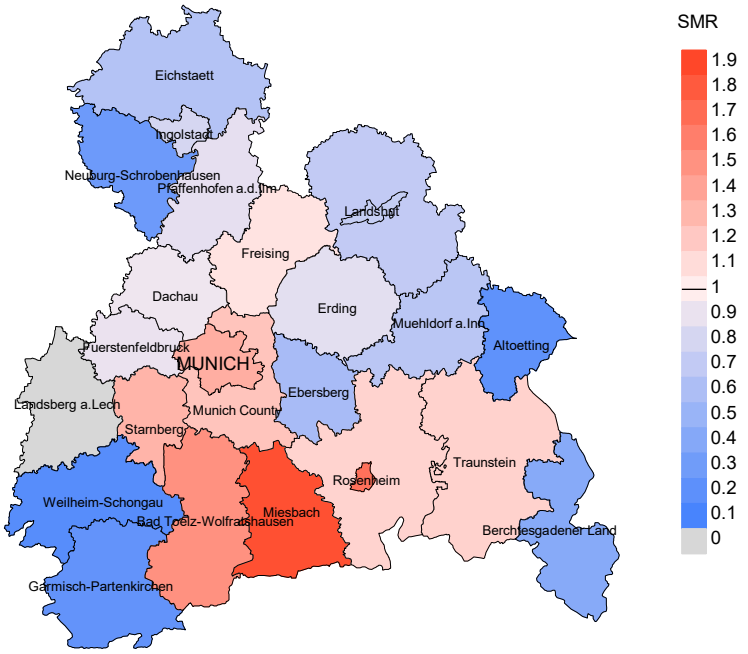


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.5/100,000 WS N=184, females 0.8/100,000 WS N=385).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,727 female residents (averaged) in the period from 2007 to 2020 a total of 7 women died from meninges neoplasm. Therefore, the mean mortality 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 0.2 and 1.5/100,000.

Standardized mortality ratio (SMR) 2007 - 2020: Males



Standardized mortality ratio (SMR) 2007 - 2020: Females

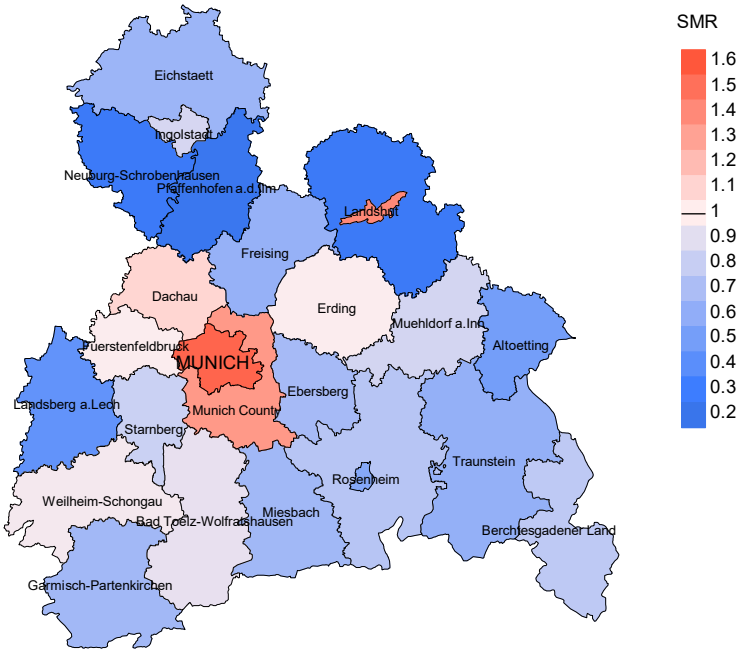


Figure 18b. Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=184, females N=385).

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 2020 a total of 7 women died from meninges neoplasm. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.68. Though, the value of this parameter may vary with an underlying probability of 99% between 0.20 and 1.66, 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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