Munich Cancer Registry

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ICD-10 C45-C49: Mesoth. and soft tissue ca.

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	6,130
Diseases	6,154
Creation date	12/21/2021
Database export	12/20/2021
Population	4.95 m

Munich Cancer Registry
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https://www.tumorregister-muenchen.de/en

https://www.tumorregister-muenchen.de/en/facts/base/bC4549E-ICD-10-C45-C49-Mesoth.-and-soft-tissue-ca.-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
C45.-	Mesothelioma
C46.-	Kaposi sarcoma
C47.-	Malignant neoplasm of peripheral nerves and autonomic nervous system
C48.-	Malignant neoplasm of retroperitoneum and peritoneum
C49.-	Malignant neoplasm of other connective and soft tissue

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	154	29	18.8	11.7	8.7	87.0	97.4
1999	152	19	12.5	13.1	8.7	77.0	95.4
2000	165	38	23.0	13.4	8.5	74.5	97.0
2001	144	26	18.1	11.7	8.4	77.8	96.5
2002	227	35	15.4	12.0	8.5	81.1	98.2 #
2003	248	35	14.1	12.6	8.4	81.0	96.4
2004	265	30	11.3	12.8	8.4	74.3	98.9
2005	270	18	6.7	12.6	8.4	74.1	94.1
2006	243	20	8.2	13.4	8.2	73.3	95.9
2007	337	16	4.7	13.7	8.0	72.1	94.4 #
2008	333	17	5.1	13.7	7.7	75.4	99.7
2009	320	14	4.4	14.4	7.6	72.8	97.8
2010	344	19	5.5	15.1	7.1	68.0	96.5
2011	365	16	4.4	16.0	7.0	67.1	97.8
2012	325	17	5.2	16.3	6.4	69.8	99.7
2013	354	18	5.1	17.0	6.1	65.5	99.7
2014	335	19	5.7	17.5	5.4	67.8	97.3
2015	344	13	3.8	18.0	4.7	68.3	96.8
2016	259	12	4.6	18.5	3.9	70.7	100.0
2017	276	23	8.3	18.8	3.4	62.7	99.3
2018	280	13	4.6	19.1	2.7	52.9	99.6
2019	231			19.2	3.0	41.1	99.6
2020	183			19.4	3.3	32.8	100.0 ##
1998-2020	6154	447	7.3	19.4	8.7	68.8	97.8

6,154 cases diagnosed 1998-2020 are related to a total of 6,130 patients. Currently, in 1,674 (27.3 %) of these 6,130 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,305 / 264 / 105 (21.3 % / 4.3 % / 1.7 %) 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 280 cases has been diagnosed, of which 19.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.7 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	88	57.1	19	21.6	10.2	8.6	88.6	97.7
1999	87	57.2	11	12.6	10.9	8.6	86.2	98.9
2000	92	55.8	24	26.1	11.2	8.2	81.5	96.7
2001	71	49.3	14	19.7	10.4	8.2	77.5	95.8
2002	129	56.8	21	16.3	11.3	8.2	82.2	99.2 #
2003	125	50.4	17	13.6	11.8	8.2	81.6	97.6
2004	166	62.6	21	12.7	11.7	8.0	80.1	100.0
2005	152	56.3	9	5.9	11.8	8.1	74.3	94.1
2006	141	58.0	10	7.1	12.5	7.8	77.3	95.7
2007	184	54.6	9	4.9	12.3	7.6	76.1	94.6 #
2008	188	56.5	9	4.8	12.6	7.2	76.1	99.5
2009	175	54.7	8	4.6	13.5	6.9	76.0	98.3
2010	183	53.2	14	7.7	14.4	6.6	69.9	96.7
2011	195	53.4	7	3.6	15.3	6.4	70.8	97.9
2012	178	54.8	8	4.5	15.7	6.0	71.3	100.0
2013	209	59.0	12	5.7	16.3	5.8	65.1	99.5
2014	179	53.4	9	5.0	17.0	5.0	67.6	98.3
2015	199	57.8	8	4.0	17.7	4.8	75.9	99.0
2016	137	52.9	6	4.4	18.3	3.9	70.8	100.0
2017	151	54.7	11	7.3	18.8	3.3	66.9	98.7
2018	144	51.4	12	8.3	19.1	2.3	62.5	100.0
2019	116	50.2			19.2	3.0	43.1	100.0
2020	88	48.1			19.5	3.4	42.0	100.0 ##
1998-2020	3377	54.9	259	7.7	19.5	8.6	72.2	98.2

3,377 cases diagnosed 1998-2020 are related to a total of 3,362 patients. Currently, in 912 (27.1 %) of these 3,362 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 718 / 136 / 58 (21.4 % / 4.0 % / 1.7 %) 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 144 cases has been diagnosed, of which 19.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.3 % 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	66	42.9	10	15.2	13.6	8.9	84.8	97.0	
1999	65	42.8	8	12.3	16.0	8.9	64.6	90.8	
2000	73	44.2	14	19.2	16.2	8.9	65.8	97.3	
2001	73	50.7	12	16.4	13.4	8.8	78.1	97.3	
2002	98	43.2	14	14.3	12.8	8.8	79.6	96.9	#
2003	123	49.6	18	14.6	13.5	8.7	80.5	95.1	
2004	99	37.4	9	9.1	14.1	8.9	64.6	97.0	
2005	118	43.7	9	7.6	13.7	8.8	73.7	94.1	
2006	102	42.0	10	9.8	14.7	8.8	67.6	96.1	
2007	153	45.4	7	4.6	15.4	8.6	67.3	94.1	#
2008	145	43.5	8	5.5	15.0	8.3	74.5	100.0	
2009	145	45.3	6	4.1	15.6	8.4	69.0	97.2	
2010	161	46.8	5	3.1	16.1	7.8	65.8	96.3	
2011	170	46.6	9	5.3	16.8	7.7	62.9	97.6	
2012	147	45.2	9	6.1	17.0	6.9	68.0	99.3	
2013	145	41.0	6	4.1	18.0	6.6	66.2	100.0	
2014	156	46.6	10	6.4	18.1	5.7	67.9	96.2	
2015	145	42.2	5	3.4	18.4	4.7	57.9	93.8	
2016	122	47.1	6	4.9	18.7	4.0	70.5	100.0	
2017	125	45.3	12	9.6	18.8	3.5	57.6	100.0	
2018	136	48.6	1	0.7	19.1	3.0	42.6	99.3	
2019	115	49.8			19.1	2.9	39.1	99.1	
2020	95	51.9			19.2	3.2	24.2	100.0	##
1998-2020	2777	45.1	188	6.8	19.2	8.9	64.6	97.3	

2,777 cases diagnosed 1998-2020 are related to a total of 2,768 patients. Currently, in 762 (27.5 %) of these 2,768 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 587 / 128 / 47 (21.2 % / 4.6 % / 1.7 %) 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 136 cases has been diagnosed, of which 19.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 3.0 % 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 4.94 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	88	66	7.9	5.6	5.5	3.3	7.3	4.2	8.6	5.0
1999	87	65	7.8	5.5	5.2	3.4	7.0	4.4	8.4	5.0
2000	92	73	8.1	6.1	5.6	3.7	7.3	4.6	8.6	5.3
2001	71	73	6.1	6.0	4.2	3.6	5.7	4.7	6.8	5.4
2002	129	98	6.9	5.0	4.8	3.0	6.2	3.8	7.4	4.4
2003	125	123	6.7	6.2	4.4	3.5	5.8	4.5	7.0	5.4
2004	166	99	8.8	5.0	5.6	3.2	7.4	3.9	8.7	4.3
2005	152	118	8.0	5.9	5.8	3.7	7.0	4.5	7.9	5.3
2006	141	102	7.4	5.1	4.5	3.3	6.0	4.0	7.6	4.6
2007	184	153	8.3	6.6	5.1	3.6	6.7	4.7	8.1	5.6
2008	188	145	8.4	6.2	5.0	3.3	6.7	4.4	8.0	5.3
2009	175	145	7.8	6.2	4.3	3.3	6.0	4.5	7.7	5.4
2010	183	161	8.1	6.9	5.0	3.6	6.5	4.7	7.7	5.8
2011	195	170	8.7	7.3	4.8	3.7	6.6	4.9	8.3	5.9
2012	178	147	7.8	6.2	4.3	3.3	5.8	4.3	7.3	5.0
2013	209	145	9.1	6.1	5.4	3.1	7.0	4.0	8.5	4.9
2014	179	156	7.7	6.5	4.0	3.5	5.6	4.4	7.0	5.3
2015	199	145	8.4	6.0	4.0	3.0	5.8	4.0	7.6	4.9
2016	137	122	5.7	5.0	2.5	2.5	3.9	3.3	5.1	3.9
2017	151	125	6.3	5.1	3.0	2.4	4.3	3.3	5.6	4.0
2018	144	136	5.9	5.5	2.8	2.7	4.1	3.7	5.3	4.5
2019	116	115	4.8	4.6	2.3	2.5	3.2	3.3	4.2	3.9
2020	88	95	3.6	3.8	1.7	1.8	2.4	2.5	3.2	3.1
1998-2020	3377	2777	7.3	5.8	4.2	3.1	5.7	4.1	7.0	4.8

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

Table 3

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	154	61.3	20.0	0.4	93.2	33.1	53.1	64.9	75.4	85.0
1999	152	61.7	16.1	2.4	97.4	40.1	52.7	63.8	72.9	78.6
2000	165	60.4	21.8	0.2	97.1	29.2	51.2	62.8	78.0	85.6
2001	144	61.2	16.3	11.8	95.4	39.8	50.9	62.4	72.9	81.9
2002	227	61.4	19.9	0.0	93.0	32.8	51.6	65.3	75.5	82.9
2003	248	63.1	19.3	2.6	92.5	32.4	56.3	67.2	77.0	83.4
2004	265	61.8	18.9	0.0	96.1	36.0	54.0	66.2	73.9	81.9
2005	270	60.0	20.9	0.2	92.0	31.2	50.5	65.0	73.8	82.0
2006	243	62.3	19.7	0.3	103	35.7	54.5	65.9	77.2	82.5
2007	337	63.9	17.8	0.1	96.4	40.9	58.2	67.8	75.3	81.1
2008	333	65.0	17.5	0.0	101	39.9	57.1	68.9	75.9	84.0
2009	320	66.1	16.5	0.2	97.3	42.8	58.8	68.7	77.7	83.6
2010	344	64.0	18.6	0.1	97.3	36.5	55.8	68.8	76.4	82.8
2011	365	66.1	17.3	0.0	96.8	41.9	58.3	70.3	77.9	84.0
2012	325	66.7	18.0	0.4	98.4	43.1	59.9	71.0	78.3	84.7
2013	354	65.2	18.8	0.0	96.7	38.2	56.7	69.9	77.1	84.9
2014	335	66.4	18.4	0.2	97.1	39.4	58.8	71.6	78.4	84.5
2015	344	68.3	16.7	0.0	96.2	46.8	60.4	72.5	78.7	85.4
2016	259	68.8	15.9	0.0	92.9	47.8	60.4	72.8	79.3	85.3
2017	276	68.1	16.6	4.1	101	44.9	58.6	73.5	79.5	85.2
2018	280	68.3	15.3	18.9	101	45.1	60.7	71.8	79.0	85.4
2019	231	65.9	16.9	4.4	98.2	42.1	55.8	69.4	79.5	83.4
2020	183	68.0	15.0	16.8	89.2	49.0	59.8	71.8	79.5	83.6
1998–2020	6154	64.9	18.1	0.0	103	39.5	56.8	68.8	77.3	83.6

Table 3a

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	Median 10%	25%	50%	75%	90%
1998	88	59.8	19.0	0.4	90.8	33.0	51.6	63.5	71.7	82.5
1999	87	61.8	15.5	3.5	97.4	39.9	54.5	62.6	72.1	78.4
2000	92	60.1	21.0	0.2	92.9	31.2	52.8	61.7	77.3	85.3
2001	71	61.6	16.9	11.8	95.4	40.7	51.5	63.7	73.6	79.6
2002	129	60.3	20.8	0.1	92.4	30.5	49.2	65.0	74.7	82.8
2003	125	61.4	19.4	7.6	90.3	31.0	55.4	66.2	74.8	82.7
2004	166	62.4	17.5	0.0	90.7	39.6	56.0	66.8	72.7	79.5
2005	152	58.1	21.1	0.2	90.9	34.7	48.4	63.8	71.6	80.7
2006	141	63.4	18.0	0.3	90.3	38.9	56.2	67.3	76.8	81.9
2007	184	63.3	18.5	0.1	96.4	38.0	58.2	68.1	74.5	79.5
2008	188	64.9	17.0	0.0	95.2	41.8	59.8	68.5	74.6	82.3
2009	175	66.7	17.7	0.2	97.3	41.4	60.3	69.6	79.2	83.8
2010	183	62.7	19.3	0.1	92.7	35.1	53.7	67.6	75.6	82.5
2011	195	65.8	17.3	0.0	95.3	38.6	57.7	70.5	76.7	83.7
2012	178	66.7	17.5	0.4	95.5	44.8	62.4	71.3	76.5	84.1
2013	209	64.0	19.4	0.0	95.9	35.0	55.5	69.3	77.2	82.8
2014	179	67.1	17.0	0.2	88.0	49.5	59.2	72.4	78.1	84.3
2015	199	69.9	15.7	1.6	94.3	46.9	65.2	73.7	78.8	86.4
2016	137	70.9	13.3	29.9	92.9	51.6	63.7	74.3	80.5	85.5
2017	151	68.4	16.6	15.4	92.6	44.6	58.4	74.0	80.3	84.5
2018	144	69.9	15.9	23.9	95.4	45.1	62.1	73.9	81.4	87.5
2019	116	67.5	16.9	20.4	87.8	40.4	56.2	73.5	81.1	83.4
2020	88	69.2	13.9	16.8	87.0	53.3	60.8	73.2	80.1	84.3
1998–2020	3377	64.9	18.0	0.0	97.4	39.3	57.1	68.9	77.1	83.4

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	66	63.3	21.3	3.4	93.2	33.1	54.3	68.2	78.0	85.2
1999	65	61.5	17.0	2.4	88.4	40.1	50.8	64.6	74.1	80.3
2000	73	60.8	22.8	0.4	97.1	28.5	46.9	64.9	78.7	86.3
2001	73	60.8	15.7	21.1	85.9	39.8	50.1	61.3	72.9	82.3
2002	98	63.0	18.7	0.0	93.0	39.0	53.8	66.4	75.9	83.4
2003	123	64.9	19.1	2.6	92.5	38.2	57.3	67.7	78.7	83.6
2004	99	60.8	21.0	0.2	96.1	30.8	48.5	65.5	76.2	84.4
2005	118	62.5	20.6	1.1	92.0	29.0	52.8	68.0	77.6	82.4
2006	102	60.8	21.7	0.5	103	32.5	50.3	63.8	78.1	83.5
2007	153	64.6	16.9	0.3	89.4	42.6	58.2	67.5	76.7	82.1
2008	145	65.1	18.2	6.1	101	36.3	55.0	69.4	78.8	86.2
2009	145	65.4	15.1	2.2	94.3	45.8	57.9	67.5	76.7	83.2
2010	161	65.4	17.8	0.9	97.3	40.1	56.4	70.1	77.3	83.0
2011	170	66.6	17.3	0.0	96.8	42.6	59.0	70.0	78.6	84.9
2012	147	66.5	18.8	0.4	98.4	42.6	59.3	70.8	80.5	85.6
2013	145	66.8	17.7	0.0	96.7	44.1	58.3	70.9	76.9	86.9
2014	156	65.5	19.8	1.7	97.1	37.6	56.0	70.5	79.2	85.7
2015	145	66.1	17.8	0.0	96.2	43.8	57.9	71.2	78.4	84.6
2016	122	66.4	18.2	0.0	91.3	42.3	56.5	71.5	77.8	85.3
2017	125	67.7	16.8	4.1	101	48.0	58.6	71.9	78.4	85.2
2018	136	66.6	14.5	18.9	101	47.4	58.6	69.2	76.6	81.0
2019	115	64.4	16.8	4.4	98.2	43.3	55.3	66.9	76.3	84.0
2020	95	66.8	15.8	21.3	89.2	45.7	59.3	70.7	78.1	83.0
1998-2020	2777	64.9	18.2	0.0	103	39.8	56.2	68.7	77.7	84.0

Table 4

Age distribution by 5-year age group and sex for period 2007-2020
(incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	48	1.1	1.1	29	1.2	1.2	19	1.0	1.0
5-9	10	0.2	1.4	5	0.2	1.5	5	0.3	1.2
10-14	14	0.3	1.7	9	0.4	1.8	5	0.3	1.5
15-19	24	0.6	2.2	13	0.6	2.4	11	0.6	2.0
20-24	39	0.9	3.1	18	0.8	3.2	21	1.1	3.1
25-29	53	1.2	4.4	24	1.0	4.2	29	1.5	4.6
30-34	84	2.0	6.3	49	2.1	6.3	35	1.8	6.4
35-39	105	2.4	8.8	63	2.7	9.0	42	2.1	8.5
40-44	124	2.9	11.7	58	2.5	11.5	66	3.4	11.9
45-49	152	3.5	15.2	70	3.0	14.5	82	4.2	16.1
50-54	224	5.2	20.5	122	5.2	19.8	102	5.2	21.3
55-59	303	7.1	27.5	142	6.1	25.9	161	8.2	29.5
60-64	355	8.3	35.8	183	7.9	33.7	172	8.8	38.3
65-69	567	13.2	49.0	322	13.8	47.6	245	12.5	50.8
70-74	704	16.4	65.5	398	17.1	64.7	306	15.6	66.4
75-79	639	14.9	80.4	362	15.6	80.3	277	14.1	80.5
80-84	479	11.2	91.6	271	11.7	91.9	208	10.6	91.1
85+	362	8.4	100.0	188	8.1	100.0	174	8.9	100.0
All ages	4286	100.0		2326	100.0		1960	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007-2020

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=113 %	Females DCO rate n=83 %	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0- 4	29	19	1.8	1.2		5.3	13.2	11.1
5- 9	5	5	0.3	0.3			4.3	5.0
10-14	9	5	0.6	0.3			6.6	3.9
15-19	13	11	0.8	0.7			4.1	4.2
20-24	18	21	0.9	1.1			2.9	4.1
25-29	24	29	1.1	1.3			2.5	2.4
30-34	49	35	2.1	1.5			3.8	1.6
35-39	63	42	2.7	1.8	1.6	2.4	3.4	1.2
40-44	58	66	2.3	2.7		3.0	2.1	1.1
45-49	70	82	2.6	3.1	1.4	1.2	1.4	0.9
50-54	122	102	4.8	4.1	2.5		1.4	0.8
55-59	141	161	6.6	7.4	0.7	0.6	1.1	1.2
60-64	182	172	10.3	9.1	2.7	1.2	1.0	1.1
65-69	321	245	19.7	13.5	3.1	0.4	1.3	1.3
70-74	397	305	26.5	17.7	4.3	3.6	1.4	1.5
75-79	362	276	29.9	18.4	5.5	2.2	1.5	1.4
80-84	271	208	37.4	19.5	10.0	7.7	1.8	1.3
85+	187	174	40.0	16.7	15.0	23.6	1.8	1.1
All ages	2321	1958			4.9	4.2	1.5	1.3
Incidence								
Raw			7.1	5.8				
WS			3.8	3.0				
ES			5.3	4.0				
BRD-S			6.6	4.8				

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).

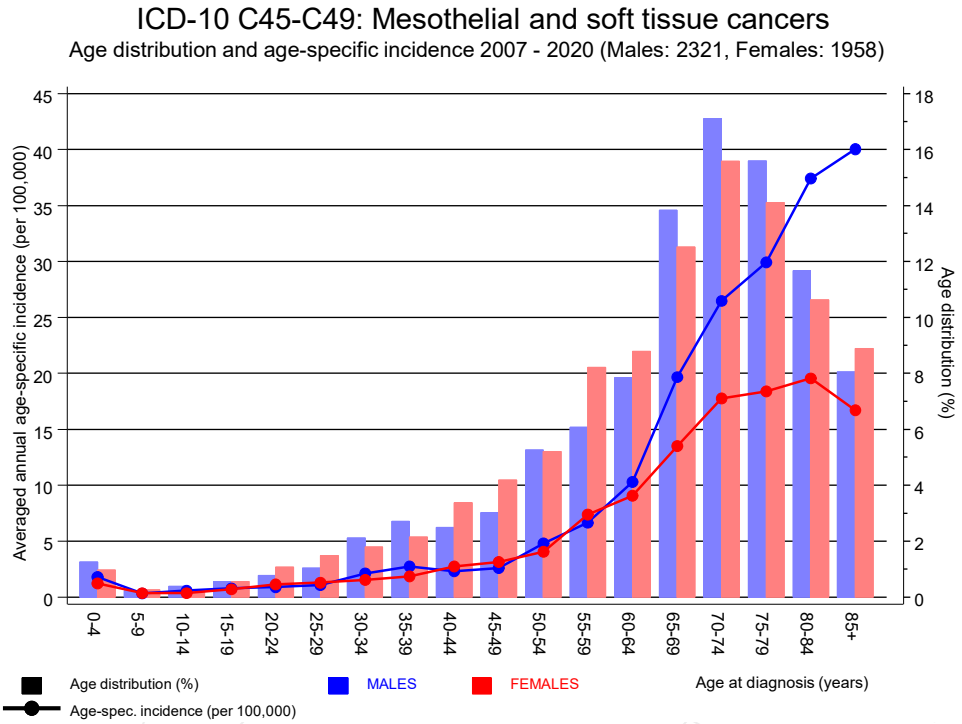


Figure 6. Age distribution (males: mean=66.7 yrs, median=70.9 yrs; females: mean=66.0 yrs, median=69.7 yrs) and age-specific incidence.

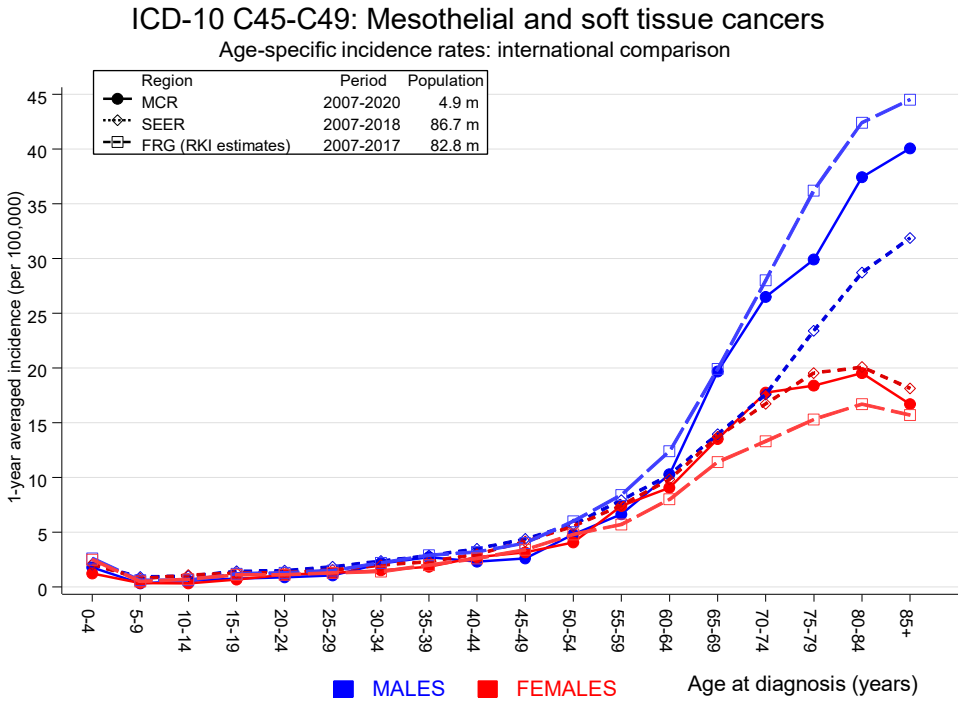


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Estimated age-specific patient population of Germany, latest update: 16 March 2021. German Centre for Cancer Registry Data, Robert Koch Institute (RKI), based on data of the population based cancer registries. http://www.krebsdaten.de. Last access: 08/17/2021
Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 21 Regs Research Data, released April 2021, based on the November 2020 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 1998–2020
MALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06	Oral cavity	4	1.0	4.2	1.1	10.6	#	3.4	
C09–C10	Oropharynx	2	1.2	1.7	0.2	6.2		0.9	
C15	Oesophagus	5	2.4	2.1	0.7	5.0		3.0	20.0
C16	Stomach	12	4.8	2.5	1.3	4.3	#	8.1	8.3
C17	Small intestine	8	0.7	10.9	4.7	21.5	#	8.2	
C18	Colon	19	11.8	1.6	1.0	2.5		8.1	
C19–C20	Rectum	12	6.3	1.9	1.0	3.3		6.4	
C22	Liver	8	3.5	2.3	1.0	4.5		5.1	25.0
C23–C24	Bile	3	1.3	2.3	0.5	6.7		1.9	
C25	Pancreas	5	4.8	1.0	0.3	2.4		0.2	60.0
C30–C31	Sinuses	2	0.2	9.0	1.1	32.6	#	2.0	
C32	Larynx	2	1.2	1.7	0.2	6.3		1.0	
C33–C34	Lung	42	14.0	3.0	2.2	4.1	#	31.7	31.0
C38,C45	Mesothelioma	5	0.8	5.9	1.9	13.8	#	4.7	
C43	Malign. melanoma	21	5.6	3.8	2.3	5.7	#	17.4	4.8
C46,C49	Soft tissue	9	0.7	12.3	5.6	23.4	#	9.4	
C61	Prostate	49	33.7	1.5	1.1	1.9	#	17.3	8.2
C62	Testis	6	0.5	12.0	4.4	26.1	#	6.2	16.7
C64	Kidney	19	4.1	4.6	2.8	7.2	#	16.8	5.3
C67	Bladder	11	5.8	1.9	0.9	3.4		5.8	9.1
C70–C72	CNS cancer	2	1.5	1.3	0.2	4.7		0.5	50.0
C73	Thyroid	5	0.8	6.3	2.1	14.8	#	4.8	20.0
C76–C79	CUP	3	2.0	1.5	0.3	4.3		1.1	
C82–C85	NHL	22	5.2	4.3	2.7	6.4	#	19.0	13.6
C90	Mult. myeloma	2	1.6	1.3	0.2	4.6		0.5	50.0
C91–C96	Leukaemia	14	1.9	7.3	4.0	12.3	#	13.7	7.1
Others, specified		11	2.9	3.8	1.9	6.8	#	9.2	
Not observed		0	1.6	0.0	0.0	2.2		−1.9	
All further malignancies		303	122.0	2.5	2.2	2.8	#	204.7	11.6

Patients	3153
Median age at next malignancy (years)	72.4
Person-years	8842
Mean observation time (years)	2.8
Median observation time (years)	1.3

The occurrence of further specified malignancy is statistically significant.

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

Table 7b

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

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C15	Oesophagus	1	0.5	1.9	0.0	10.5		0.6	
C16	Stomach	5	2.5	2.0	0.6	4.6		3.0	20.0
C17	Small intestine	4	0.4	9.3	2.5	23.8	#	4.3	
C18	Colon	13	7.2	1.8	1.0	3.1		7.0	15.4
C19–C20	Rectum	7	3.0	2.3	0.9	4.8		4.8	
C21	Anus/canal	1	0.4	2.3	0.1	12.6		0.7	
C22	Liver	1	1.0	1.0	0.0	5.8		0.1	
C23–C24	Bile	3	1.1	2.9	0.6	8.3		2.3	33.3
C25	Pancreas	8	3.5	2.3	1.0	4.4		5.4	37.5
C26	GI cancer	1	0.1	8.5	0.2	47.5		1.1	100.0
C33–C34	Lung	15	6.0	2.5	1.4	4.1	#	10.8	13.3
C40–C41	Bone	3	0.1	37.7	7.8	110.1	#	3.5	33.3
C43	Malign. melanoma	9	3.1	2.9	1.3	5.5	#	7.1	11.1
C46,C49	Soft tissue	7	0.5	15.5	6.2	31.9	#	7.9	14.3
C48	Peritoneal	1	0.3	2.9	0.1	16.4		0.8	
C50	Breast	44	24.6	1.8	1.3	2.4	#	23.3	6.8
C51	Vulva	1	0.8	1.2	0.0	6.8		0.2	
C52	Vagina	1	0.1	6.9	0.2	38.4		1.0	
C53	Cervix uteri	5	1.1	4.5	1.5	10.5	#	4.7	
C54	Corpus uteri	17	4.3	3.9	2.3	6.3	#	15.3	
C56	Ovary	65	3.1	20.9	16.1	26.6	#	74.6	76.9
C64	Kidney	9	1.8	5.1	2.3	9.7	#	8.7	11.1
C67	Bladder	4	1.5	2.7	0.7	7.0		3.0	25.0
C69	Eye melanoma	1	0.1	10.9	0.3	60.6		1.1	
C70–C72	CNS cancer	3	1.0	3.0	0.6	8.7		2.4	
C73	Thyroid	6	1.4	4.3	1.6	9.4	#	5.6	
C74–C80	Cancer others	2	0.3	8.0	1.0	28.7		2.1	
C82–C85	NHL	13	3.0	4.4	2.3	7.5	#	12.1	
C90	Mult. myeloma	2	0.9	2.2	0.3	7.9		1.3	
C91–C96	Leukaemia	8	1.1	7.1	3.1	14.0	#	8.3	25.0
Not observed		0	3.7	0.0	0.0	1.0		-4.4	
All further malignancies		260	78.6	3.3	2.9	3.7	#	218.5	26.9

Patients	2600
Median age at next malignancy (years)	73.9
Person-years	8299
Mean observation time (years)	3.2
Median observation time (years)	1.7

The occurrence of further specified malignancy is statistically significant.

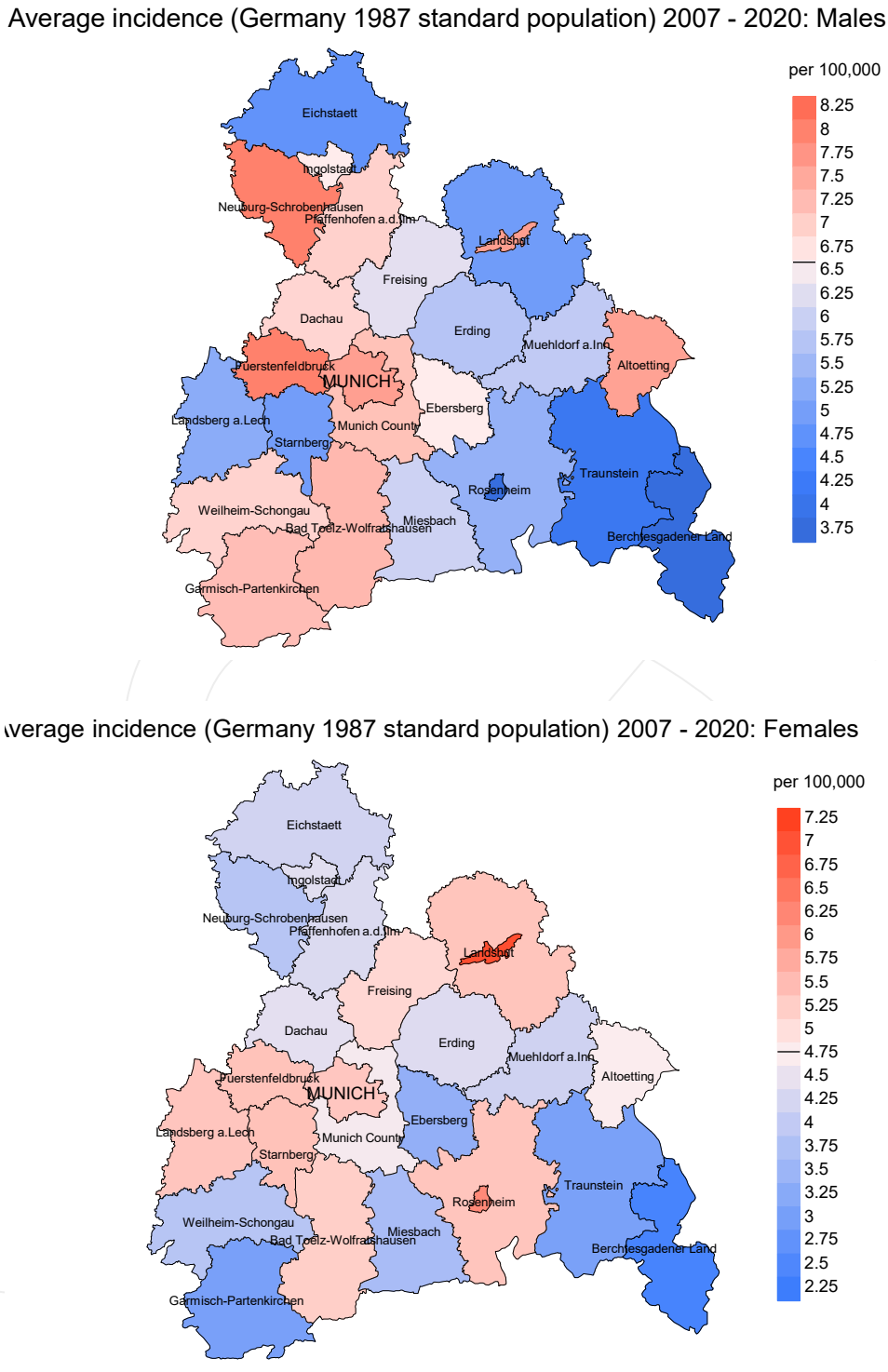


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 6.6/100,000 WS N=2,321, females 4.8/100,000 WS N=1,958).

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 39 women were identified with newly diagnosed mesoth. and soft tissue ca.. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 3.4/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 2.1 and 5.1/100,000.

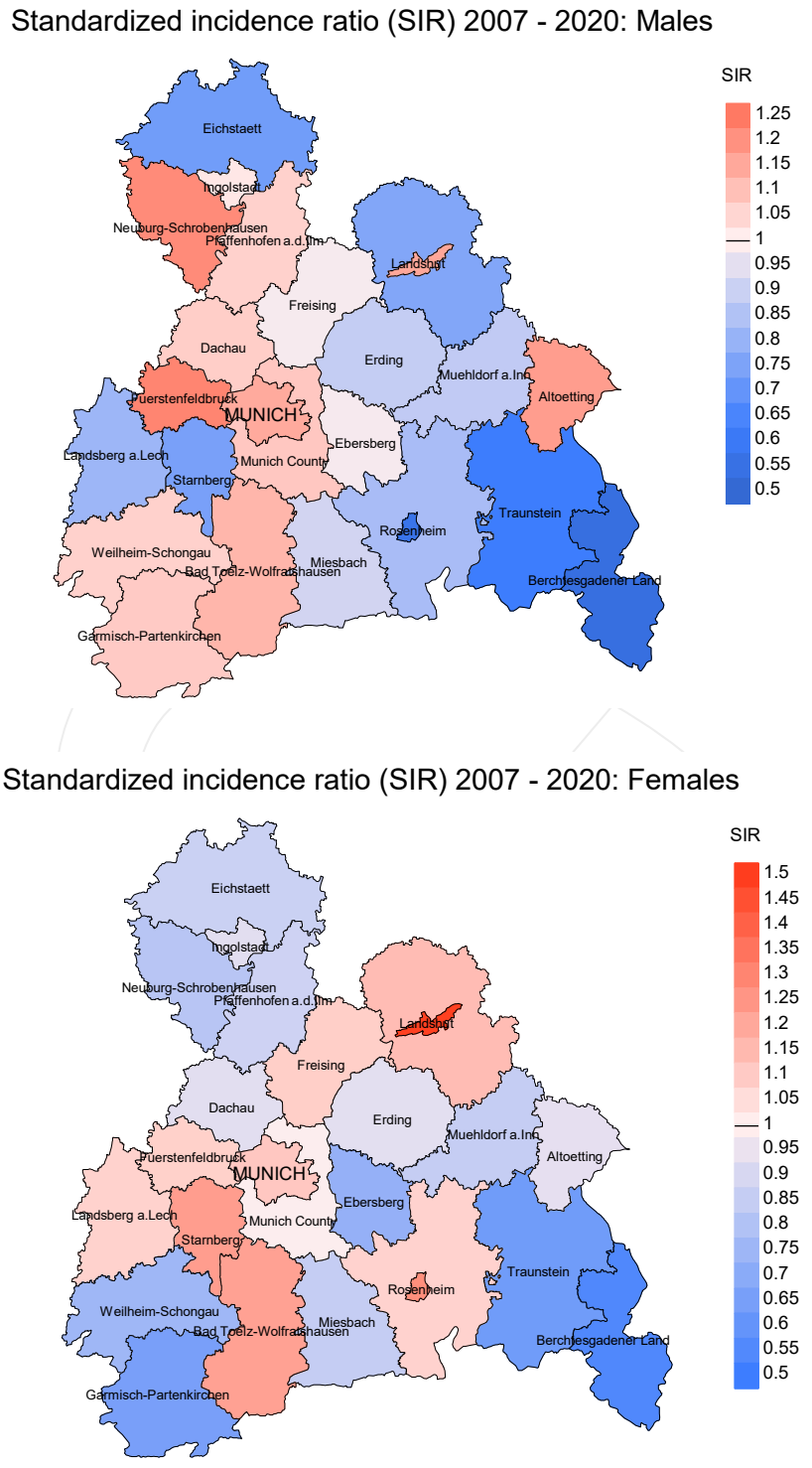


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,321, females N=1,958).

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 39 women were identified with newly diagnosed mesoth. and soft tissue ca.. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.73. Though, the value of this parameter may vary with an underlying probability of 99% between 0.46 and 1.08, 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 4.94 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	154	97.4	18.8	134	87.0	93.3
1999	152	95.4	12.5	117	77.0	90.6
2000	165	97.0	23.0	123	74.5	96.7
2001	144	96.5	18.1	112	77.8	94.6
2002	227	98.2	15.4	184	81.1	94.6
2003	248	96.4	14.1	201	81.0	95.5
2004	265	98.9	11.3	197	74.3	97.5
2005	270	94.1	6.7	200	74.1	97.0
2006	243	95.9	8.2	178	73.3	97.8
2007	337	94.4	4.7	243	72.1	96.7
2008	333	99.7	5.1	251	75.4	97.6
2009	320	97.8	4.4	233	72.8	95.7
2010	344	96.5	5.5	234	68.0	97.9
2011	365	97.8	4.4	245	67.1	94.7
2012	325	99.7	5.2	227	69.8	93.8
2013	354	99.7	5.1	232	65.5	95.3
2014	335	97.3	5.7	227	67.8	91.6
2015	344	96.8	3.8	235	68.3	90.2
2016	259	100.0	4.6	183	70.7	88.0
2017	276	99.3	8.3	173	62.7	85.5
2018	280	99.6	4.6	148	52.9	68.9
2019	231	99.6		95	41.1	90.5
2020	183	100.0		60	32.8	95.0
1998-2020	6154	97.8	7.3	4232	68.8	93.4

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 4.94 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	154	109	94.5	46	29.9
1999	152	94	90.4	33	21.7
2000	165	109	94.5	42	25.5
2001	144	102	94.1	41	28.5
2002	227	147	96.6	65	28.6
2003	248	133	93.2	63	25.4
2004	265	167	96.4	60	22.6
2005	270	177	97.7	55	20.4
2006	243	179	96.6	50	20.6
2007	337	196	97.4	59	17.5
2008	333	200	98.5	67	20.1
2009	320	230	97.8	61	19.1
2010	344	236	98.3	63	18.3
2011	365	243	98.8	77	21.1
2012	325	247	99.2	65	20.0
2013	354	242	97.5	72	20.3
2014	335	242	97.9	65	19.4
2015	344	252	99.2	71	20.6
2016	259	250	98.8	54	20.8
2017	276	275	98.5	69	25.0
2018	280	200	71.5	42	15.0
2019	231	226	44.7	32	13.9
2020	183	216	92.6	30	16.4
1998–2020	6154	4472	93.4	1282	20.8

Table 9c

Annual cohorts of deaths, proportion of cancer-related and non-cancer-related deaths, and cancer recorded on death certificates (incl. DCO)
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.94 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	109	77.1	22.9	94.2
1999	94	84.0	16.0	96.5
2000	109	87.2	12.8	97.1
2001	102	90.2	9.8	97.9
2002	147	85.7	14.3	93.7
2003	133	88.7	11.3	91.9
2004	167	87.4	12.6	93.2
2005	177	90.4	9.6	93.1
2006	179	88.3	11.7	91.3
2007	196	88.3	11.7	95.3
2008	200	90.5	9.5	92.9
2009	230	86.5	13.5	90.2
2010	236	88.6	11.4	91.4
2011	243	87.2	12.8	91.7
2012	247	86.6	13.4	92.7
2013	242	89.7	10.3	94.5
2014	242	83.9	16.1	86.9
2015	252	86.1	13.9	88.0
2016	250	84.4	15.6	90.3
2017	275	88.0	12.0	90.4
2018	200	76.0	24.0	86.0
2019	226	57.1	42.9	89.1
2020	216	69.9	30.1	84.5
1998-2020	4472	84.3	15.7	91.4

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	66	68.6	69.1	67.5	69.1
1999	60	68.2	66.5	74.0	68.1
2000	63	66.8	66.3	78.8	66.3
2001	55	65.6	65.1	77.7	65.7
2002	87	68.3	68.3	70.7	67.7
2003	73	69.7	67.4	88.3	68.0
2004	97	70.7	69.9	82.2	70.7
2005	108	69.1	69.1	69.6	69.1
2006	102	71.5	72.1	71.1	72.2
2007	130	69.6	69.2	72.7	69.4
2008	121	71.6	71.3	79.7	71.1
2009	134	71.9	71.1	79.1	71.4
2010	136	74.2	73.5	76.6	73.9
2011	139	75.0	74.3	80.7	74.4
2012	138	74.2	73.5	80.4	73.6
2013	137	74.0	73.4	85.0	73.6
2014	133	74.9	73.9	83.8	74.4
2015	140	76.1	75.4	86.1	75.6
2016	149	76.7	76.1	79.7	76.2
2017	142	76.3	76.1	83.3	76.2
2018	114	78.0	76.5	80.7	77.8
2019	117	79.4	75.3	82.7	78.8
2020	122	79.4	75.7	83.8	78.1
1998–2020	2563	73.6	72.5	81.3	72.8

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	43	74.5	70.4	85.4	74.3
1999	34	68.9	67.7	70.2	70.6
2000	46	77.7	78.5	76.2	78.1
2001	47	70.1	70.3	60.9	70.5
2002	60	68.1	66.0	80.3	67.8
2003	60	74.0	70.9	82.5	72.5
2004	70	73.2	71.9	84.1	72.4
2005	69	73.0	71.9	76.9	72.5
2006	77	75.1	74.2	83.0	75.0
2007	66	74.6	73.9	79.0	73.9
2008	79	75.9	71.7	89.3	71.9
2009	96	74.0	72.9	86.2	73.7
2010	100	74.9	74.2	88.9	74.2
2011	104	77.3	75.8	84.9	76.0
2012	109	77.4	75.5	85.6	75.8
2013	105	75.2	73.2	93.3	73.7
2014	109	74.9	74.4	86.1	74.4
2015	112	75.4	73.7	91.5	73.9
2016	101	77.2	76.3	84.6	76.7
2017	133	75.7	74.2	91.0	74.2
2018	86	76.7	74.6	81.0	75.9
2019	109	75.5	72.9	78.6	75.8
2020	94	76.8	72.1	81.9	73.6
1998–2020	1909	75.3	73.6	84.0	74.4

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	51	4.6	0.58	3.0	0.53	4.2	0.57	5.0	0.58
1999	52	4.6	0.60	3.2	0.61	4.3	0.61	5.2	0.62
2000	55	4.8	0.60	3.1	0.55	4.3	0.59	5.2	0.60
2001	48	4.1	0.68	2.7	0.65	3.6	0.64	4.4	0.64
2002	73	3.9	0.57	2.3	0.47	3.3	0.54	4.2	0.57
2003	64	3.4	0.51	2.0	0.46	2.8	0.49	3.7	0.52
2004	84	4.5	0.51	2.7	0.48	3.7	0.50	4.8	0.55
2005	97	5.1	0.64	3.0	0.51	4.1	0.58	5.2	0.66
2006	91	4.8	0.65	2.5	0.56	3.7	0.61	4.9	0.64
2007	117	5.3	0.64	2.9	0.57	4.2	0.62	5.3	0.65
2008	110	4.9	0.59	2.5	0.50	3.7	0.56	4.9	0.61
2009	112	5.0	0.64	2.4	0.56	3.6	0.60	4.7	0.61
2010	116	5.1	0.63	2.3	0.47	3.6	0.55	5.0	0.64
2011	121	5.4	0.62	2.5	0.53	3.8	0.58	5.3	0.64
2012	122	5.4	0.69	2.5	0.59	3.8	0.65	5.1	0.70
2013	122	5.3	0.59	2.6	0.49	3.7	0.54	4.9	0.58
2014	114	4.9	0.64	2.3	0.56	3.3	0.60	4.5	0.64
2015	117	4.9	0.59	2.2	0.55	3.3	0.56	4.4	0.58
2016	125	5.2	0.91	2.3	0.89	3.4	0.88	4.7	0.92
2017	127	5.3	0.84	2.1	0.70	3.3	0.76	4.6	0.82
2018	86	3.5	0.60	1.5	0.53	2.2	0.55	3.1	0.59
2019	62	2.5	0.53	1.0	0.46	1.6	0.49	2.2	0.53
2020	85	3.5	0.97	1.5	0.89	2.3	0.94	3.1	0.97
1998-2020	2151	4.6	0.64	2.3	0.55	3.4	0.60	4.5	0.64

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	33	2.8	0.50	1.6	0.47	2.1	0.49	2.6	0.52
1999	27	2.3	0.42	1.4	0.40	1.7	0.39	2.0	0.41
2000	40	3.3	0.55	1.3	0.34	2.0	0.43	2.7	0.51
2001	44	3.6	0.60	1.9	0.53	2.5	0.54	3.1	0.58
2002	53	2.7	0.54	1.6	0.53	2.0	0.53	2.4	0.54
2003	54	2.7	0.44	1.4	0.42	1.8	0.40	2.2	0.41
2004	62	3.1	0.63	1.5	0.46	2.1	0.55	2.7	0.62
2005	63	3.2	0.53	1.4	0.38	2.0	0.45	2.6	0.49
2006	67	3.3	0.66	1.5	0.46	2.1	0.53	2.8	0.61
2007	56	2.4	0.37	0.9	0.26	1.4	0.30	2.0	0.35
2008	71	3.1	0.49	1.3	0.38	1.8	0.41	2.3	0.45
2009	87	3.7	0.60	1.6	0.48	2.3	0.51	3.0	0.55
2010	93	4.0	0.58	1.7	0.48	2.5	0.52	3.2	0.56
2011	91	3.9	0.54	1.4	0.39	2.2	0.44	3.0	0.50
2012	92	3.9	0.63	1.6	0.48	2.3	0.54	3.0	0.61
2013	95	4.0	0.66	1.6	0.53	2.4	0.58	3.0	0.62
2014	89	3.7	0.57	1.4	0.41	2.1	0.47	2.7	0.51
2015	100	4.1	0.69	1.7	0.55	2.4	0.60	3.2	0.65
2016	86	3.5	0.70	1.4	0.57	2.0	0.60	2.6	0.65
2017	115	4.7	0.92	1.9	0.78	2.8	0.83	3.5	0.88
2018	66	2.7	0.49	1.1	0.41	1.6	0.43	2.0	0.45
2019	67	2.7	0.58	1.2	0.49	1.7	0.51	2.1	0.55
2020	66	2.7	0.69	1.2	0.68	1.7	0.67	2.1	0.66
1998-2020	1617	3.3	0.58	1.5	0.47	2.1	0.51	2.7	0.55

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	0.2	0.2	3	0.2	0.2	2	0.2	0.2
5-9	8	0.3	0.5	4	0.3	0.5	4	0.3	0.5
10-14	1	0.0	0.5			0.5	1	0.1	0.6
15-19	8	0.3	0.8	4	0.3	0.7	4	0.3	0.9
20-24	15	0.6	1.4	9	0.6	1.3	6	0.5	1.4
25-29	16	0.6	2.0	9	0.6	1.9	7	0.6	2.0
30-34	22	0.8	2.8	13	0.8	2.7	9	0.8	2.8
35-39	22	0.8	3.6	10	0.7	3.4	12	1.0	3.8
40-44	32	1.2	4.8	15	1.0	4.4	17	1.4	5.3
45-49	67	2.5	7.2	40	2.6	7.0	27	2.3	7.6
50-54	87	3.2	10.4	50	3.3	10.2	37	3.2	10.7
55-59	137	5.1	15.5	67	4.4	14.6	70	6.0	16.7
60-64	200	7.4	22.9	112	7.3	21.9	88	7.5	24.2
65-69	366	13.5	36.4	217	14.1	36.0	149	12.7	36.9
70-74	479	17.7	54.1	293	19.1	55.1	186	15.8	52.7
75-79	500	18.5	72.5	281	18.3	73.4	219	18.7	71.4
80-84	409	15.1	87.6	238	15.5	88.9	171	14.6	85.9
85+	336	12.4	100.0	171	11.1	100.0	165	14.1	100.0
All ages	2710	100.0		1536	100.0		1174	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	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	3	2	0.2	0.10	0.1	0.11	15.8	12.5
5- 9	4	4	0.3	0.80	0.3	0.80	14.3	16.0
10-14		1			0.1	0.20		4.3
15-19	4	4	0.2	0.31	0.2	0.36	8.3	16.0
20-24	9	6	0.4	0.50	0.3	0.29	12.3	14.0
25-29	9	7	0.4	0.38	0.3	0.24	9.7	7.1
30-34	13	9	0.6	0.27	0.4	0.26	9.1	5.0
35-39	10	12	0.4	0.16	0.5	0.29	3.7	2.9
40-44	15	17	0.6	0.26	0.7	0.26	2.5	2.0
45-49	40	27	1.5	0.57	1.0	0.33	2.8	1.6
50-54	50	37	2.0	0.41	1.5	0.36	1.9	1.4
55-59	67	70	3.2	0.48	3.2	0.43	1.5	1.8
60-64	112	88	6.3	0.62	4.6	0.51	1.7	1.8
65-69	217	149	13.3	0.68	8.2	0.61	2.4	2.1
70-74	293	186	19.5	0.74	10.8	0.61	2.5	2.1
75-79	281	219	23.2	0.78	14.6	0.79	2.2	2.2
80-84	238	171	32.9	0.88	16.1	0.82	2.3	1.8
85+	171	165	36.6	0.91	15.8	0.95	1.9	1.4
All ages	1536	1174					2.2	1.9
Mortality								
Raw			4.7	0.66	3.5	0.60		
WS			2.2	0.57	1.4	0.48		
ES			3.2	0.61	2.1	0.52		
BRD-S			4.4	0.66	2.7	0.56		
PYLL-70								
per 100,000			23.3		19.8			
ES			21.6		18.3			
AYLL-70			12.1		12.9			

Table 14a

Further malignancies in deaths in period 1998–2020
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C00	Lip	2	0.3					2	100.0
C03–C06	Oral cavity	6	0.8	3	50.0			3	50.0
C07–C08	Salivary gland	4	0.5	3	75.0			1	25.0
C09–C10	Oropharynx	6	0.8	3	50.0			3	50.0
C12–C13	Hypopharynx	3	0.4	2	66.7			1	33.3
C15	Oesophagus	8	1.1	2	25.0			6	75.0
C16	Stomach	19	2.6	11	57.9	2	10.5	6	31.6
C17	Small intestine	6	0.8	4	66.7			2	33.3
C18	Colon	49	6.7	34	69.4	5	10.2	10	20.4
C19–C20	Rectum	34	4.6	26	76.5	2	5.9	6	17.6
C22	Liver	9	1.2	2	22.2	4	44.4	3	33.3
C23–C24	Bile	4	0.5	1	25.0	1	25.0	2	50.0
C25	Pancreas	12	1.6	2	16.7	5	41.7	5	41.7
C30–C31	Sinuses	4	0.5	3	75.0			1	25.0
C32	Larynx	4	0.5	2	50.0			2	50.0
C33–C34	Lung	51	6.9	11	21.6	11	21.6	29	56.9
C38,C45	Mesothelioma	6	0.8	2	33.3	1	16.7	3	50.0
C40–C41	Bone	4	0.5	1	25.0			3	75.0
C43	Malign. melanoma	55	7.5	40	72.7	4	7.3	11	20.0
C44	Skin others	89	12.1	51	57.3	7	7.9	31	34.8
C46,C49	Soft tissue	9	1.2	2	22.2	2	22.2	5	55.6
C61	Prostate	162	22.0	134	82.7	6	3.7	22	13.6
C62	Testis	13	1.8	10	76.9	1	7.7	2	15.4
C64	Kidney	41	5.6	27	65.9	3	7.3	11	26.8
C66	Ureter	2	0.3					2	100.0
C67	Bladder	24	3.3	14	58.3	2	8.3	8	33.3
C69	Eye sarcoma	2	0.3	2	100.0				
C70–C72	CNS cancer	9	1.2	2	22.2			7	77.8
C73	Thyroid	9	1.2	6	66.7	1	11.1	2	22.2
C76–C79	CUP	9	1.2	4	44.4	2	22.2	3	33.3
C81	Hodgkin lymphoma	4	0.5	4	100.0				
C82–C85	NHL	50	6.8	24	48.0	8	16.0	18	36.0
C90	Mult. myeloma	5	0.7	4	80.0	1	20.0		
C91–C96	Leukaemia	15	2.0	5	33.3	2	13.3	8	53.3
Others, specified		6	0.8	4	66.7	1	16.7	1	16.7
All further malignancies		735	100.0	445	60.5	71	9.7	219	29.8

Further malignancies with number of cases 1 are pooled in category “Others, specified”.

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

Table 14b

Further malignancies in deaths in period 1998–2020
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03–C06	Oral cavity	1	0.2	1	100.0				
C15	Oesophagus	1	0.2					1	100.0
C16	Stomach	9	1.5	4	44.4	1	11.1	4	44.4
C17	Small intestine	4	0.7			3	75.0	1	25.0
C18	Colon	35	5.8	16	45.7	7	20.0	12	34.3
C19–C20	Rectum	8	1.3	4	50.0	2	25.0	2	25.0
C21	Anus/canal	2	0.3	2	100.0				
C22	Liver	2	0.3			1	50.0	1	50.0
C23–C24	Bile	5	0.8					5	100.0
C25	Pancreas	8	1.3			1	12.5	7	87.5
C26	GI cancer	1	0.2					1	100.0
C33–C34	Lung	21	3.5	5	23.8	3	14.3	13	61.9
C38,C45	Mesothelioma	1	0.2	1	100.0				
C40–C41	Bone	2	0.3	1	50.0			1	50.0
C43	Malign. melanoma	32	5.3	25	78.1	2	6.3	5	15.6
C44	Skin others	38	6.3	25	65.8	4	10.5	9	23.7
C46,C49	Soft tissue	7	1.2	2	28.6			5	71.4
C48	Peritoneal	2	0.3			1	50.0	1	50.0
C50	Breast	175	29.1	137	78.3	5	2.9	33	18.9
C51	Vulva	5	0.8	2	40.0	1	20.0	2	40.0
C52	Vagina	1	0.2					1	100.0
C53	Cervix uteri	17	2.8	15	88.2	1	5.9	1	5.9
C54	Corpus uteri	40	6.6	25	62.5	9	22.5	6	15.0
C55,C57	Fem. genitals un	2	0.3	2	100.0				
C56	Ovary	89	14.8	18	20.2	13	14.6	58	65.2
C64	Kidney	13	2.2	7	53.8	2	15.4	4	30.8
C65	Renal pelvis	2	0.3	2	100.0				
C66	Ureter	1	0.2					1	100.0
C67	Bladder	8	1.3	4	50.0	1	12.5	3	37.5
C69	Eye melanoma	1	0.2					1	100.0
C70–C72	CNS cancer	9	1.5	4	44.4	1	11.1	4	44.4
C73	Thyroid	14	2.3	12	85.7			2	14.3
C74–C80	Cancer others	2	0.3	1	50.0	1	50.0		
C76–C79	CUP	6	1.0	4	66.7	2	33.3		
C81	Hodgkin lymphoma	3	0.5	3	100.0				
C82–C85	NHL	20	3.3	11	55.0	6	30.0	3	15.0
C90	Mult. myeloma	8	1.3	5	62.5	1	12.5	2	25.0
C91–C96	Leukaemia	7	1.2	2	28.6			5	71.4
All further malignancies		602	100.0	340	56.5	68	11.3	194	32.2

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	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	3	1	0.2	0.11	0.1	0.06	15.8	6.7
5- 9	4	4	0.3	0.80	0.3	0.80	14.8	16.0
10-14								
15-19	4	3	0.2	0.31	0.2	0.30	8.7	13.0
20-24	8	5	0.4	0.47	0.3	0.25	12.1	12.2
25-29	8	7	0.4	0.40	0.3	0.25	9.4	7.7
30-34	11	8	0.5	0.24	0.4	0.25	8.0	5.0
35-39	9	8	0.4	0.15	0.4	0.22	3.6	2.2
40-44	14	14	0.6	0.27	0.6	0.26	2.5	1.9
45-49	38	24	1.4	0.59	0.9	0.36	2.9	1.7
50-54	40	30	1.6	0.38	1.2	0.37	1.7	1.3
55-59	61	50	2.9	0.48	2.3	0.39	1.6	1.6
60-64	91	71	5.1	0.63	3.7	0.53	1.7	1.7
65-69	178	107	10.9	0.73	5.9	0.58	2.4	1.9
70-74	221	148	14.7	0.75	8.6	0.64	2.4	2.2
75-79	195	162	16.1	0.81	10.8	0.85	2.1	2.2
80-84	165	126	22.8	0.90	11.8	0.85	2.2	1.7
85+	114	128	24.4	0.94	12.3	0.93	1.8	1.4
All ages	1164	896					2.2	1.8
Mortality								
Raw			3.6	0.66	2.7	0.59		
WS			1.7	0.55	1.1	0.46		
ES			2.5	0.60	1.6	0.51		
BRD-S			3.3	0.66	2.1	0.55		
PYLL-70								
per 100,000			20.6		15.7			
ES			19.2		14.5			
AYLL-70			12.6		13.4			

* 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	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	3	1	0.2	0.11	0.1	0.06	15.8	6.7
5- 9	4	4	0.3	0.80	0.3	0.80	14.8	16.0
10-14								
15-19	4	3	0.2	0.31	0.2	0.30	8.7	13.6
20-24	7	5	0.3	0.41	0.3	0.25	10.6	12.5
25-29	8	7	0.4	0.44	0.3	0.25	9.4	8.0
30-34	11	8	0.5	0.26	0.4	0.27	8.0	5.1
35-39	8	8	0.3	0.14	0.4	0.24	3.2	2.2
40-44	13	12	0.5	0.29	0.5	0.26	2.3	1.6
45-49	34	23	1.3	0.58	0.9	0.35	2.7	1.6
50-54	38	27	1.5	0.40	1.1	0.38	1.6	1.2
55-59	53	44	2.5	0.45	2.0	0.38	1.4	1.4
60-64	89	65	5.0	0.66	3.4	0.54	1.7	1.6
65-69	164	86	10.0	0.73	4.7	0.53	2.3	1.6
70-74	197	122	13.1	0.74	7.1	0.60	2.3	1.9
75-79	176	142	14.5	0.78	9.5	0.80	2.0	2.0
80-84	147	109	20.3	0.83	10.2	0.80	2.1	1.6
85+	95	114	20.3	0.87	10.9	0.86	1.6	1.3
All ages	1051	780					2.0	1.6
Mortality								
Raw			3.2	0.64	2.3	0.56		
WS			1.6	0.54	1.0	0.44		
ES			2.3	0.59	1.4	0.48		
BRD-S			3.0	0.63	1.8	0.53		
PYLL-70								
per 100,000			19.3		14.7			
ES			18.1		13.6			
AYLL-70			12.7		14.1			

* See corresponding tables with multiple malignancies.

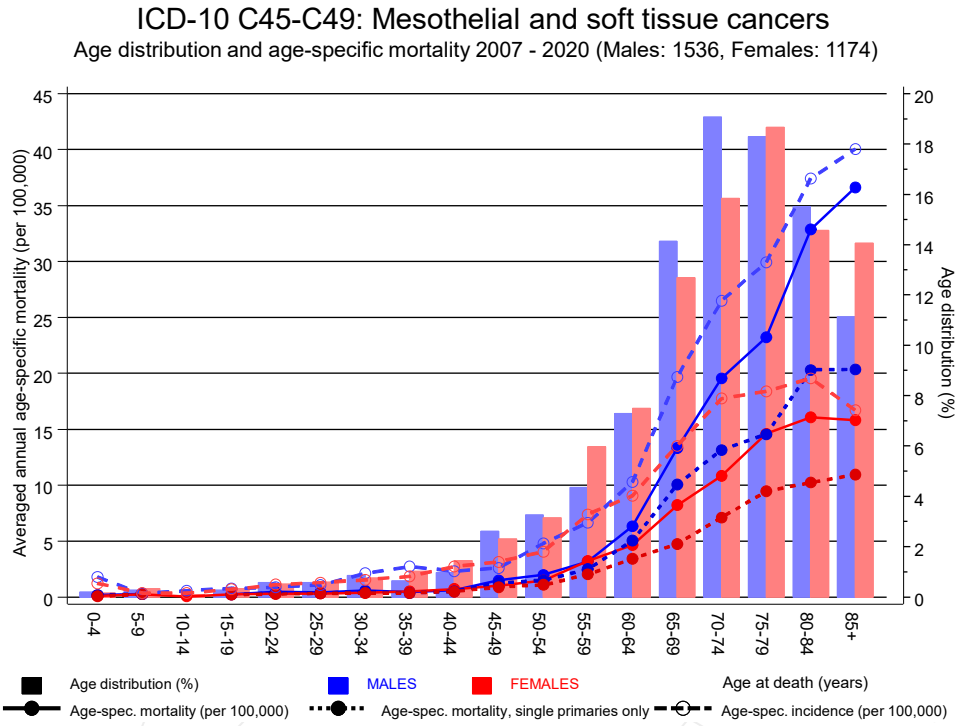
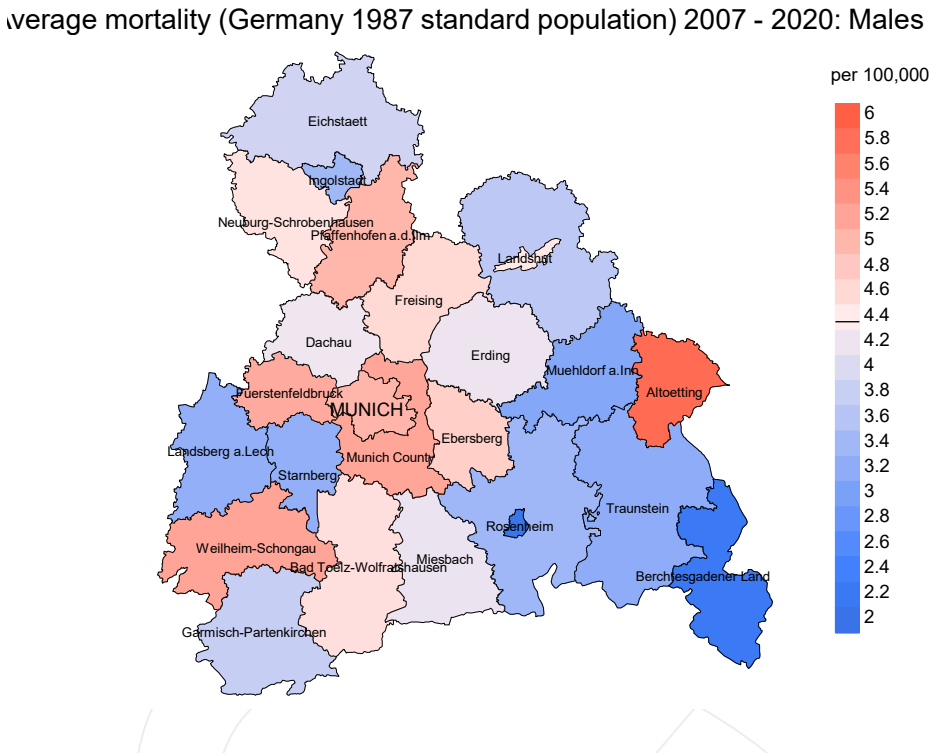


Figure 17. Distribution of age at death (bars; males: mean=68.9 yrs, median=71.6 yrs; females: mean=68.5 yrs, median=71.1 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at mesoth. and soft tissue ca.-related death (see Table 10) should be considered.



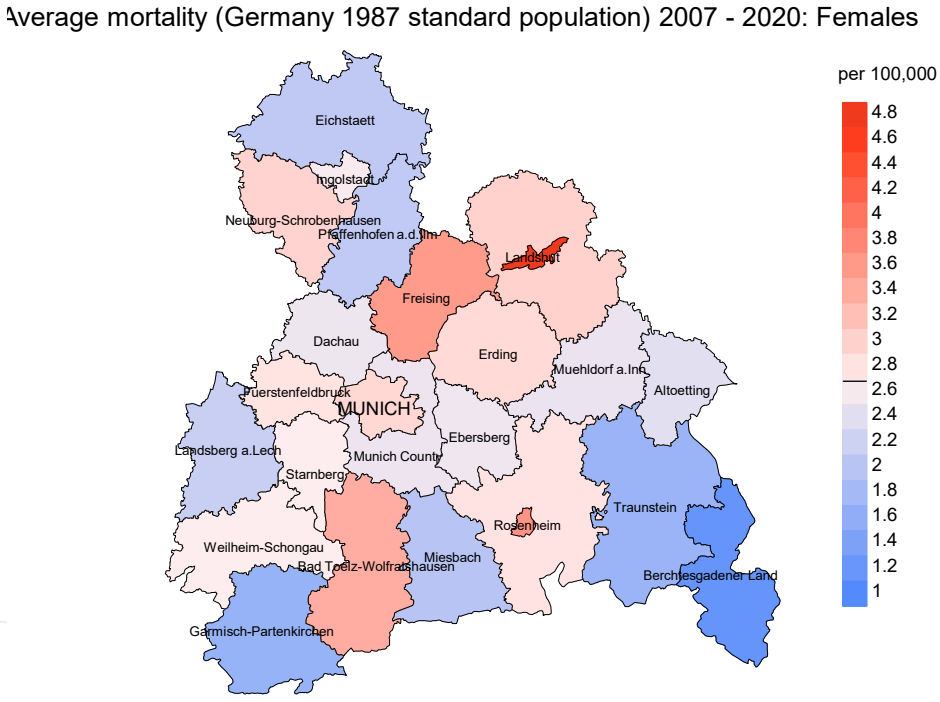
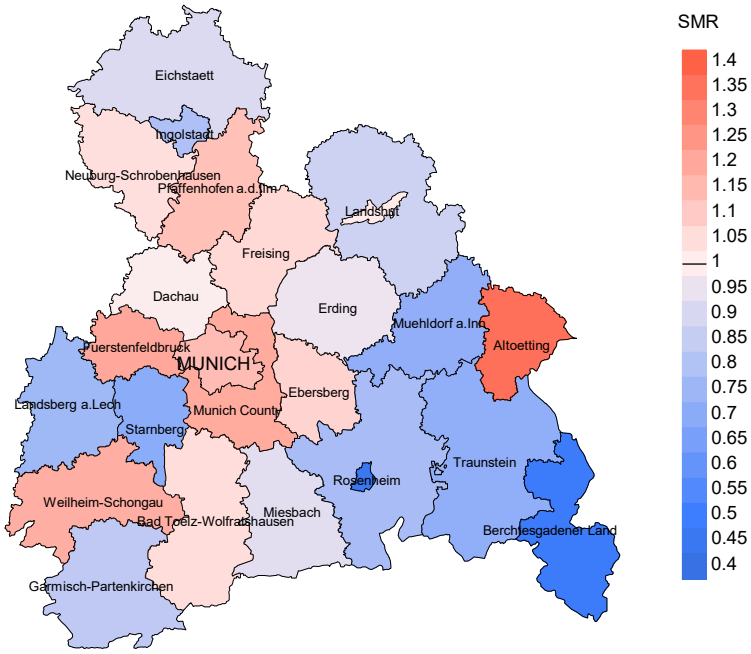


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 4.4/100,000 WS N=1,536, females 2.7/100,000 WS N=1,174).

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 28 women died from mesoth. and soft tissue ca.. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 2.5/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.4 and 4.2/100,000.

Standardized mortality ratio (SMR) 2007 - 2020: Males



Standardized mortality ratio (SMR) 2007 - 2020: Females

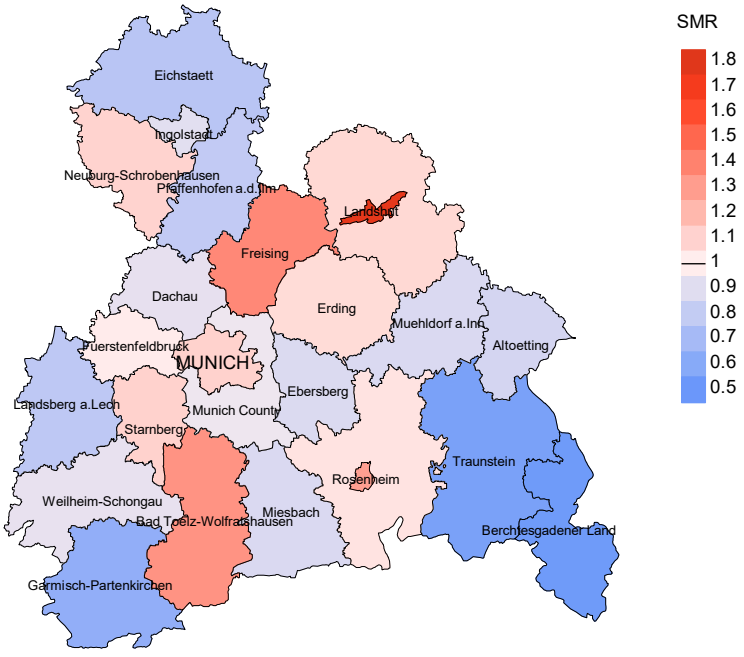


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=1,536, females N=1,174).

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 28 women died from mesoth. and soft tissue ca.. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.88. Though, the value of this parameter may vary with an underlying probability of 99% between 0.51 and 1.41, 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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