

# Munich Cancer Registry



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## ICD-10 C49: Soft tissue cancer

### Incidence and Mortality

Year of diagnosis	1998-2019
Patients	2,647
Diseases	2,661
Creation date	01/25/2021
Database export	01/07/2021
Population	4.92 m





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

[https://www.tumorregister-muenchen.de/en/facts/base/bC49\\_\\_E-ICD-10-C49-Soft-tissue-cancer-incidence-and-mortality.pdf](https://www.tumorregister-muenchen.de/en/facts/base/bC49__E-ICD-10-C49-Soft-tissue-cancer-incidence-and-mortality.pdf)

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**Global Statements about the statistics on the Internet –  
Baseline Statistics** (grey button ) , **Survival** (red button )

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut<sup>#</sup>, with a total of 4.69 million inhabitants, account for the frequency of cancer diseases<sup>##</sup> 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<sup>###</sup> 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](mailto:tumor@ibe.med.uni-muenchen.de).

Munich Cancer Registry, January 2021

<sup>#</sup> 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).

<sup>##</sup> 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.

<sup>###</sup> 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
C49.-	Malignant neoplasm of other connective and soft tissue
C49.0	Connective and soft tissue of head, face and neck
C49.1	Connective and soft tissue of upper limb, including shoulder
C49.2	Connective and soft tissue of lower limb, including hip
C49.3	Connective and soft tissue of thorax
C49.4	Connective and soft tissue of abdomen
C49.5	Connective and soft tissue of pelvis
C49.6	Connective and soft tissue of trunk, unspecified
C49.8	Overlapping lesion of connective and soft tissue
C49.9	Connective and soft tissue, unspecified

## INCIDENCE

Table 1

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

Year of diagnosis	All cases n	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	82	8	9.8	14.6	10.6	82.9	97.6
1999	84	6	7.1	14.5	10.6	65.5	92.9
2000	88	9	10.2	14.2	10.1	61.4	96.6
2001	69	9	13.0	11.8	9.9	59.4	95.7
2002	112	9	8.0	12.0	9.9	69.6	97.3 #
2003	137	17	12.4	12.4	9.9	67.2	92.7
2004	119	12	10.1	12.4	9.9	61.3	97.5
2005	156	8	5.1	12.2	9.8	61.5	91.0
2006	107	10	9.3	13.3	9.4	61.7	94.4
2007	153	5	3.3	13.2	9.1	52.3	89.5 #
2008	157	6	3.8	13.1	8.8	59.2	99.4
2009	160	8	5.0	14.3	8.5	61.3	96.9
2010	147	5	3.4	14.8	8.1	53.7	95.9
2011	170	9	5.3	16.2	8.3	52.4	98.2
2012	135	10	7.4	16.4	7.5	45.2	98.5
2013	183	8	4.4	17.4	7.6	49.2	98.4
2014	164	5	3.0	17.9	7.3	54.9	97.0
2015	151	8	5.3	18.4	7.2	51.7	93.4
2016	96	7	7.3	18.9	6.0	61.5	99.0
2017	73	9	12.3	19.1	5.3	52.1	100.0
2018	65			19.2	5.2	30.8	100.0
2019	53			19.3	9.6	15.1	75.5 ##
1998-2019	2661	168	6.3	19.3	10.6	56.6	95.7

2,661 cases diagnosed 1998-2019 are related to a total of 2,647 patients. Currently, in 750 (28.3 %) of these 2,647 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 568 / 125 / 57 (21.5 % / 4.7 % / 2.2 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 73 cases has been diagnosed, of which 19.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.3 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

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

Year of diagnosis	Males n	Males %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	42	51.2	4	9.5	11.9	12.7	83.3	97.6
1999	48	57.1	4	8.3	10.0	12.7	77.1	97.9
2000	42	47.7	5	11.9	10.6	11.7	69.0	97.6
2001	31	44.9	5	16.1	9.2	11.8	61.3	96.8
2002	67	59.8	5	7.5	9.6	11.8	71.6	98.5 #
2003	61	44.5	6	9.8	10.0	12.0	60.7	95.1
2004	67	56.3	8	11.9	10.1	11.7	65.7	98.5
2005	81	51.9	3	3.7	10.3	12.0	59.3	91.4
2006	60	56.1	3	5.0	11.0	11.3	66.7	95.0
2007	74	48.4	3	4.1	10.6	11.1	60.8	89.2 #
2008	82	52.2	2	2.4	10.8	10.7	52.4	98.8
2009	85	53.1	4	4.7	12.6	10.1	63.5	96.5
2010	75	51.0	2	2.7	13.0	9.5	52.0	96.0
2011	88	51.8	3	3.4	14.7	9.5	56.8	98.9
2012	69	51.1	3	4.3	14.9	8.8	44.9	98.6
2013	109	59.6	4	3.7	16.1	9.0	45.0	98.2
2014	86	52.4	1	1.2	16.7	8.9	52.3	97.7
2015	82	54.3	5	6.1	17.1	9.1	59.8	98.8
2016	52	54.2	4	7.7	17.8	7.9	61.5	98.1
2017	43	58.9	4	9.3	18.2	6.0	48.8	100.0
2018	32	49.2			18.5	5.2	34.4	100.0
2019	27	50.9			18.5	7.4	14.8	74.1 ##
1998-2019	1403	52.7	78	5.6	18.5	12.7	57.7	96.5

1,403 cases diagnosed 1998-2019 are related to a total of 1,393 patients. Currently, in 409 (29.4 %) of these 1,393 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 306 / 69 / 34 (22.0 % / 5.0 % / 2.4 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 43 cases has been diagnosed, of which 18.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.0 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1b

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

Year of diagnosis	Females n	Females %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	40	48.8	4	10.0	17.5	8.3	82.5	97.5
1999	36	42.9	2	5.6	19.7	8.2	50.0	86.1
2000	46	52.3	4	8.7	18.0	8.2	54.3	95.7
2001	38	55.1	4	10.5	14.4	7.8	57.9	94.7
2002	45	40.2	4	8.9	14.6	7.7	66.7	95.6 #
2003	76	55.5	11	14.5	14.9	7.7	72.4	90.8
2004	52	43.7	4	7.7	15.0	7.8	55.8	96.2
2005	75	48.1	5	6.7	14.2	7.2	64.0	90.7
2006	47	43.9	7	14.9	15.8	7.3	55.3	93.6
2007	79	51.6	2	2.5	15.9	6.8	44.3	89.9 #
2008	75	47.8	4	5.3	15.6	6.6	66.7	100.0
2009	75	46.9	4	5.3	16.2	6.7	58.7	97.3
2010	72	49.0	3	4.2	16.7	6.5	55.6	95.8
2011	82	48.2	6	7.3	17.8	6.9	47.6	97.6
2012	66	48.9	7	10.6	17.9	6.0	45.5	98.5
2013	74	40.4	4	5.4	18.9	6.0	55.4	98.6
2014	78	47.6	4	5.1	19.2	5.4	57.7	96.2
2015	69	45.7	3	4.3	19.8	5.0	42.0	87.0
2016	44	45.8	3	6.8	20.1	3.8	61.4	100.0
2017	30	41.1	5	16.7	20.0	4.5	56.7	100.0
2018	33	50.8			20.1	5.2	27.3	100.0
2019	26	49.1			20.2	12.0	15.4	76.9 ##
1998–2019	1258	47.3	90	7.2	20.2	8.3	55.3	94.8

1,258 cases diagnosed 1998-2019 are related to a total of 1,254 patients. Currently, in 341 (27.2 %) of these 1,254 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 262 / 56 / 23 (20.9 % / 4.5 % / 1.8 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 30 cases has been diagnosed, of which 20.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.5 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis including DCO cases  
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,  
and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	42	40	3.8	3.4	2.8	2.1	3.6	2.5	4.4	2.9
1999	48	36	4.3	3.0	3.0	2.0	3.9	2.6	4.5	2.8
2000	42	46	3.7	3.8	2.7	2.8	3.4	3.2	4.0	3.6
2001	31	38	2.7	3.1	2.1	2.0	2.6	2.6	3.1	2.9
2002	67	45	3.6	2.3	2.7	1.4	3.3	1.7	3.8	2.0
2003	61	76	3.3	3.9	2.4	2.0	3.0	2.7	3.5	3.3
2004	67	52	3.6	2.6	2.5	1.8	3.1	2.1	3.5	2.4
2005	81	75	4.3	3.8	3.7	2.4	4.0	2.9	4.1	3.4
2006	60	47	3.1	2.3	1.8	1.8	2.6	2.0	3.2	2.1
2007	74	79	3.3	3.4	2.1	2.1	2.7	2.6	3.3	2.9
2008	82	75	3.7	3.2	2.4	1.8	3.1	2.3	3.6	2.8
2009	85	75	3.8	3.2	2.1	1.8	3.0	2.4	3.7	2.9
2010	75	72	3.3	3.1	2.2	1.6	2.8	2.2	3.2	2.6
2011	88	82	3.9	3.5	2.2	2.0	3.1	2.5	3.7	2.8
2012	69	66	3.0	2.8	1.8	1.6	2.4	2.0	2.8	2.3
2013	109	74	4.7	3.1	3.0	1.5	3.9	2.0	4.5	2.4
2014	86	78	3.7	3.2	2.0	1.8	2.8	2.3	3.4	2.7
2015	82	69	3.4	2.8	2.0	1.4	2.6	1.9	3.2	2.3
2016	52	44	2.2	1.8	1.0	1.0	1.5	1.3	1.9	1.4
2017	43	30	1.8	1.2	1.1	0.5	1.4	0.7	1.6	0.9
2018	32	33	1.3	1.3	0.7	0.8	0.9	1.0	1.2	1.2
2019	27	26	1.1	1.0	0.5	0.5	0.7	0.7	1.0	0.9
1998-2019	1403	1258	3.2	2.7	2.0	1.6	2.6	2.0	3.1	2.3

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

Table 3

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	82	60.3	23.6	0.4	93.2	28.3	45.4	67.3	77.2	85.7
1999	84	59.8	16.9	3.5	97.4	38.5	49.8	62.0	72.0	78.4
2000	88	56.1	23.2	0.2	97.1	28.1	38.9	60.3	75.4	82.6
2001	69	58.8	18.2	11.8	95.4	37.6	47.3	58.8	72.9	82.0
2002	112	58.7	23.0	0.0	93.0	30.3	43.9	64.2	76.7	83.9
2003	137	61.8	21.0	5.3	92.5	26.6	52.2	66.2	77.7	84.0
2004	119	58.3	21.4	1.3	96.1	25.6	44.2	64.3	74.0	81.9
2005	156	56.1	23.0	0.2	92.0	22.3	43.5	61.6	72.8	81.9
2006	107	60.4	21.7	0.5	103	29.9	47.7	63.0	78.2	83.9
2007	153	61.6	19.7	0.2	96.4	35.9	52.0	66.1	74.2	81.7
2008	157	61.6	19.8	0.3	101	33.7	49.9	64.5	75.9	85.5
2009	160	65.3	17.7	5.2	94.3	39.8	57.6	68.7	78.1	84.6
2010	147	61.6	19.3	3.4	97.3	33.9	49.5	64.8	75.4	82.1
2011	170	63.7	19.1	0.0	96.8	38.9	51.0	67.9	77.9	86.5
2012	135	63.9	19.0	0.7	98.4	38.9	53.7	66.4	78.0	84.7
2013	183	63.8	20.6	0.0	96.7	34.8	52.1	68.8	78.3	86.7
2014	164	64.1	18.5	1.7	97.1	37.6	53.6	67.7	77.9	85.3
2015	151	66.6	18.3	0.9	96.2	46.0	57.9	69.8	80.3	86.4
2016	96	66.7	19.4	0.0	92.9	38.8	56.8	72.1	79.0	87.4
2017	73	66.5	18.4	15.4	101	42.6	57.1	73.5	78.5	86.0
2018	65	63.2	18.3	18.9	92.8	33.3	52.9	67.0	76.3	82.9
2019	53	67.6	15.8	31.6	98.2	44.4	60.1	72.9	80.0	82.0
1998-2019	2661	62.2	20.2	0.0	103	34.2	50.9	66.2	77.0	84.5



Table 3a

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	42	57.5	22.9	0.4	90.8	28.3	40.9	64.0	75.1	84.4
1999	48	59.8	17.6	3.5	97.4	37.2	52.0	61.9	72.0	78.6
2000	42	56.6	23.1	0.2	88.5	28.9	40.2	60.0	71.6	84.3
2001	31	58.5	22.2	11.8	95.4	32.2	47.0	58.1	76.1	87.1
2002	67	56.2	23.6	0.1	92.4	24.5	40.1	62.4	73.6	81.3
2003	61	56.7	22.8	8.1	89.5	21.6	40.4	59.8	75.4	84.0
2004	67	57.8	20.2	1.3	85.8	32.1	44.6	64.3	72.6	78.7
2005	81	50.8	23.5	0.2	90.9	3.8	37.5	57.0	66.8	73.4
2006	60	63.0	17.0	15.9	86.9	37.9	54.4	63.8	77.7	82.6
2007	74	62.4	20.4	0.2	96.4	35.9	54.2	67.9	75.3	80.5
2008	82	59.1	19.4	0.3	95.2	33.7	46.4	61.8	73.2	79.8
2009	85	67.0	19.2	5.2	93.0	36.2	62.6	70.6	79.2	86.9
2010	75	58.9	20.9	3.4	92.7	31.9	47.4	60.0	74.5	82.8
2011	88	63.4	17.7	16.7	95.0	37.2	51.7	67.7	75.9	83.5
2012	69	63.1	18.3	1.3	95.5	32.9	51.5	66.4	75.2	84.4
2013	109	61.0	20.9	0.0	95.9	31.1	48.3	66.1	76.5	84.9
2014	86	65.1	17.0	2.3	87.9	43.6	54.7	67.5	78.4	84.5
2015	82	66.6	20.0	0.9	94.3	43.8	58.9	69.6	80.9	88.5
2016	52	69.5	15.0	29.9	92.9	48.8	60.1	72.7	79.0	87.4
2017	43	63.8	18.5	15.4	86.5	41.2	51.6	67.6	77.5	83.0
2018	32	67.9	16.8	29.3	92.8	45.0	60.6	70.7	79.8	88.5
2019	27	68.4	15.0	32.1	84.5	44.4	60.1	73.7	80.7	82.0
1998-2019	1403	61.3	20.3	0.0	97.4	33.3	50.5	65.7	76.1	83.8

Table 3b

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	40	63.2	24.1	3.4	93.2	28.5	50.4	72.8	78.4	86.3
1999	36	59.7	16.1	17.4	87.7	38.5	49.3	63.2	71.3	78.3
2000	46	55.5	23.6	0.4	97.1	20.6	34.9	60.8	75.8	80.7
2001	38	59.1	14.5	26.1	85.9	39.8	48.6	60.0	70.1	81.0
2002	45	62.6	21.7	0.0	93.0	33.1	49.5	67.8	78.8	85.7
2003	76	65.8	18.6	5.3	92.5	38.2	58.5	68.3	78.9	84.0
2004	52	59.0	22.9	2.4	96.1	21.5	42.0	64.2	74.7	84.4
2005	75	61.8	21.2	1.9	92.0	28.7	52.5	67.3	78.8	82.6
2006	47	57.2	26.3	0.5	103	14.4	39.4	61.7	79.1	86.5
2007	79	60.7	19.1	0.3	88.2	35.5	48.9	65.5	74.1	82.6
2008	75	64.4	19.9	6.1	101	35.3	52.0	66.9	80.0	86.7
2009	75	63.5	15.8	24.9	94.3	41.1	55.8	64.4	75.0	81.9
2010	72	64.3	17.3	21.8	97.3	40.8	52.5	67.6	76.7	81.8
2011	82	64.0	20.6	0.0	96.8	39.7	49.9	68.2	78.6	87.3
2012	66	64.8	19.8	0.7	98.4	40.1	54.7	66.8	80.9	84.9
2013	74	68.0	19.5	0.0	96.7	43.6	56.8	71.8	81.6	88.7
2014	78	63.1	20.2	1.7	97.1	33.4	50.8	67.9	76.7	86.3
2015	69	66.6	16.2	22.0	96.2	46.0	55.4	70.4	79.7	84.8
2016	44	63.3	23.3	0.0	90.7	32.5	45.7	70.6	80.0	86.9
2017	30	70.4	17.9	24.5	101	48.1	58.6	74.5	80.3	88.5
2018	33	58.7	18.9	18.9	86.7	32.2	47.4	63.6	74.0	79.4
2019	26	66.7	16.9	31.6	98.2	43.2	52.3	67.9	79.8	84.3
1998-2019	1258	63.1	20.0	0.0	103	34.8	51.9	66.8	77.9	85.3

Table 4

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

Age at diagnosis Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0–4	19	1.1	1.1	11	1.2	1.2	8	1.0	1.0
5–9	5	0.3	1.4	3	0.3	1.5	2	0.2	1.2
10–14	9	0.5	1.9	6	0.7	2.2	3	0.4	1.6
15–19	19	1.1	3.0	12	1.3	3.5	7	0.9	2.5
20–24	23	1.3	4.4	11	1.2	4.8	12	1.5	4.0
25–29	21	1.2	5.6	9	1.0	5.8	12	1.5	5.5
30–34	53	3.1	8.7	30	3.3	9.1	23	2.9	8.3
35–39	61	3.6	12.3	36	4.0	13.1	25	3.1	11.5
40–44	74	4.3	16.6	34	3.8	16.8	40	5.0	16.4
45–49	79	4.6	21.3	35	3.9	20.7	44	5.5	21.9
50–54	101	5.9	27.2	59	6.5	27.2	42	5.2	27.1
55–59	130	7.6	34.8	68	7.5	34.7	62	7.7	34.9
60–64	144	8.4	43.2	74	8.2	42.9	70	8.7	43.6
65–69	201	11.8	55.0	114	12.6	55.5	87	10.8	54.4
70–74	222	13.0	68.0	121	13.4	68.9	101	12.6	67.0
75–79	211	12.4	80.4	117	12.9	81.9	94	11.7	78.7
80–84	160	9.4	89.7	81	9.0	90.8	79	9.8	88.5
85+	175	10.3	100.0	83	9.2	100.0	92	11.5	100.0
All ages	1707	100.0		904	100.0		803	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers for period 2007–2019

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males DCO rate n=35 %	Females DCO rate n=45 %	Males Prop.all cancers n=143063 %	Females Prop.all cancers n=144724 %
0- 4	11	8	0.7	0.6		12.5	5.2	5.0
5- 9	3	2	0.2	0.1			2.6	2.2
10-14	6	3	0.4	0.2			4.5	2.6
15-19	12	7	0.8	0.5			4.0	2.8
20-24	11	12	0.6	0.7			1.9	2.5
25-29	9	12	0.4	0.6			1.0	1.1
30-34	30	23	1.4	1.1			2.5	1.2
35-39	36	25	1.7	1.2		4.0	2.1	0.8
40-44	34	40	1.5	1.8		2.5	1.3	0.7
45-49	35	44	1.4	1.8		2.3	0.7	0.5
50-54	59	42	2.5	1.8	3.4		0.8	0.4
55-59	67	62	3.4	3.1	1.5	1.6	0.6	0.5
60-64	73	70	4.5	4.0	2.7	1.4	0.4	0.5
65-69	113	87	7.4	5.2	3.5		0.5	0.5
70-74	121	101	8.6	6.3	5.0	5.9	0.5	0.5
75-79	117	93	10.6	6.8	5.1	3.2	0.5	0.5
80-84	81	79	12.3	8.1	7.4	7.6	0.6	0.6
85+	81	92	19.0	9.5	9.9	26.1	0.8	0.6
All ages	899	802			3.9	5.6	0.6	0.6
Incidence								
Raw			3.0	2.6				
WS			1.8	1.4				
ES			2.3	1.8				
BRD-S			2.8	2.1				

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

ICD-10 C49: Malignant neoplasm of other connective and soft tissue

Age distribution and age-specific incidence 2007 - 2019 (Males: 899, Females: 802)

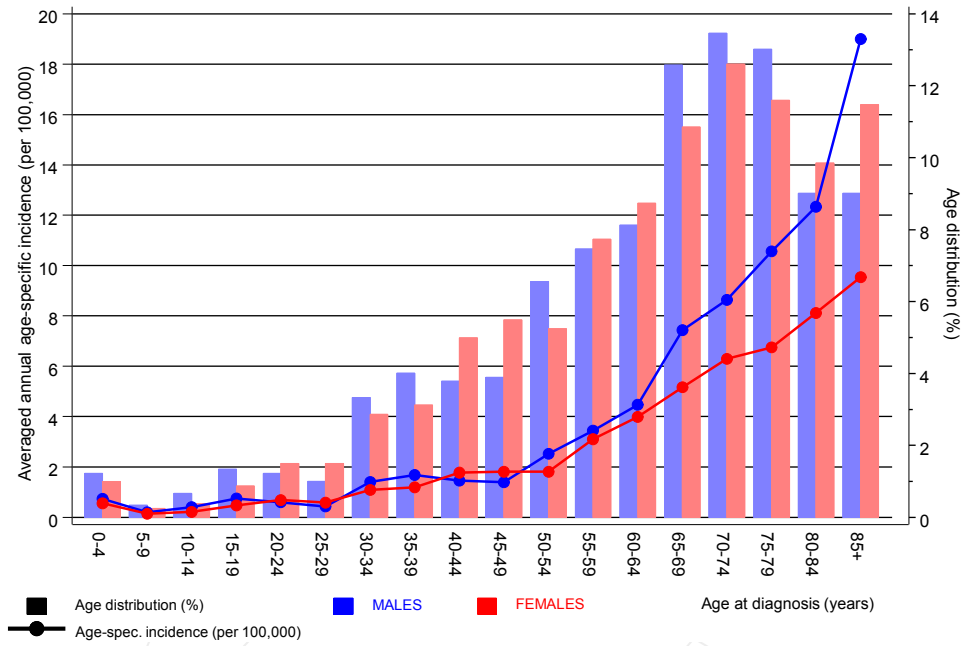
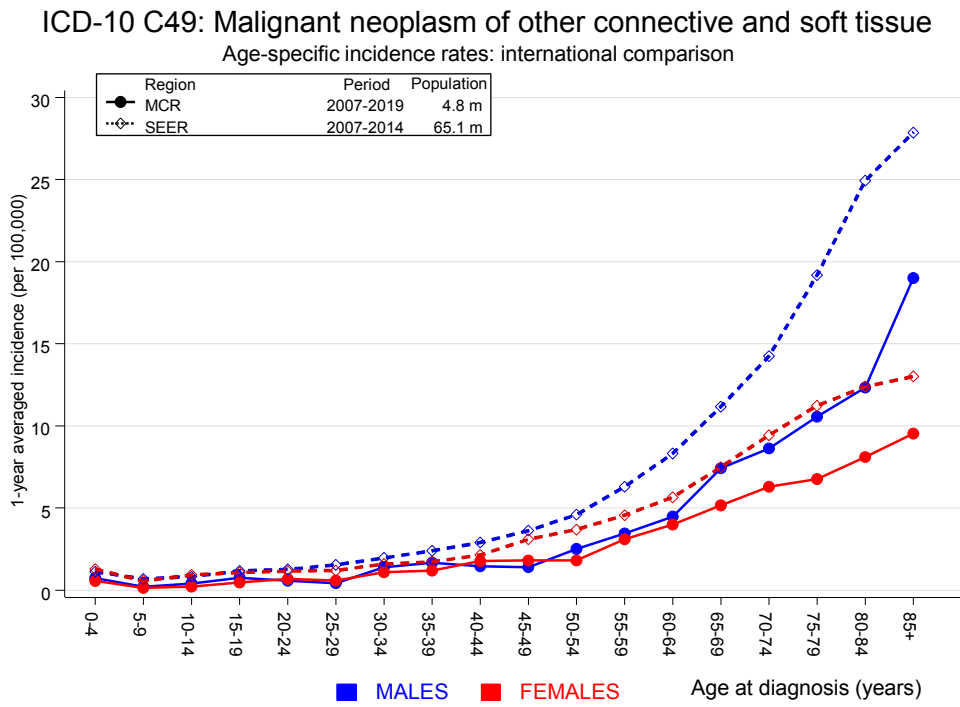


Figure 6. Age distribution (males: mean=63.6 yrs, median=67.8 yrs; females: mean=64.3 yrs, median=67.9 yrs) and age-specific incidence.



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

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER\*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2019, based on the November 2018 submission. <http://www.seer.cancer.gov>.

Table 7a

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

## MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	2	0.5	3.9	0.5	14.0	3.1	
C09-C10 Oropharynx	2	0.6	3.2	0.4	11.6	2.9	
C15 Oesophagus	5	1.2	4.2	1.4	9.8 #	8.0	20.0
C16 Stomach	6	2.6	2.3	0.8	4.9	7.0	
C17 Small intestine	6	0.4	16.1	5.9	35.1 #	11.8	
C18 Colon	10	6.3	1.6	0.8	2.9	7.7	
C19-C20 Rectum	3	3.3	0.9	0.2	2.6	-0.7	
C22 Liver	3	1.8	1.7	0.3	4.9	2.5	
C23-C24 Bile	2	0.7	3.0	0.4	10.8	2.8	
C25 Pancreas	2	2.5	0.8	0.1	2.9	-1.1	50.0
C30-C31 Sinuses	2	0.1	17.2	2.1	62.3 #	3.9	
C32 Larynx	1	0.6	1.6	0.0	9.1	0.8	
C33-C34 Lung	19	7.3	2.6	1.6	4.0 #	24.4	10.5
C38,C45 Mesothelioma	2	0.4	4.7	0.6	16.9	3.3	
C40-C41 Bone	1	0.1	17.9	0.5	99.9	2.0	
C43 Malign. melanoma	12	2.8	4.2	2.2	7.4 #	19.2	
C46,C49 Soft tissue	10	0.4	25.8	12.4	47.5 #	20.1	
C50 Breast	1	0.2	5.7	0.1	31.9	1.7	
C61 Prostate	36	17.6	2.0	1.4	2.8 #	38.4	2.8
C62 Testis	2	0.3	6.7	0.8	24.2	3.6	
C64 Kidney	14	2.2	6.5	3.5	10.9 #	24.8	
C65 Renal pelvis	1	0.3	3.6	0.1	19.8	1.5	
C66 Ureter	1	0.2	6.1	0.2	34.1	1.8	
C67 Bladder	10	3.1	3.2	1.5	5.9 #	14.4	10.0
C69 Eye melanoma	1	0.1	14.6	0.4	81.2	1.9	
C70-C72 CNS cancer	1	0.8	1.2	0.0	6.8	0.4	100.0
C73 Thyroid	1	0.4	2.3	0.1	13.0	1.2	
C74-C80 Cancer others	1	0.2	5.9	0.1	32.9	1.7	
C76-C79 CUP	1	1.1	0.9	0.0	5.0	-0.2	
C82-C85 NHL	13	2.8	4.7	2.5	8.1 #	21.4	7.7
C90 Mult. myeloma	1	0.8	1.2	0.0	6.6	0.3	100.0
C91-C96 Leukaemia	8	1.0	7.7	3.3	15.1 #	14.6	
Not observed	0	1.5	0.0	0.0	2.5	-3.1	
All further malignancies	180	64.3	2.8	2.4	3.2 #	242.2	5.0

Patients	1305
Median age at next malignancy (years)	72.2
Person-years	4779
Mean observation time (years)	3.7
Median observation time (years)	1.9

# The occurrence of further specified malignancy is statistically significant.

Table 7b

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

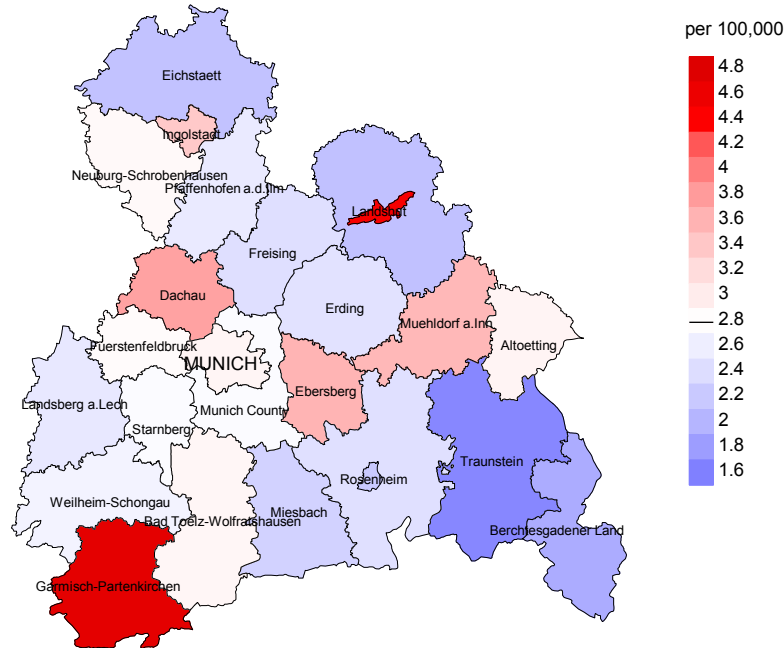
## FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C16 Stomach	1	1.4	0.7	0.0	3.9	-1.0	
C18 Colon	6	4.0	1.5	0.6	3.3	4.7	
C19-C20 Rectum	6	1.6	3.7	1.3	8.0 #	10.2	
C21 Anus/canal	1	0.2	4.5	0.1	24.8	1.8	
C23-C24 Bile	3	0.6	5.2	1.1	15.2 #	5.7	33.3
C25 Pancreas	2	1.9	1.1	0.1	3.8	0.3	50.0
C33-C34 Lung	8	3.0	2.6	1.1	5.2 #	11.6	
C40-C41 Bone	2	0.0	49.3	6.0	178.2 #	4.6	50.0
C43 Malign. melanoma	6	1.6	3.8	1.4	8.3 #	10.3	16.7
C46,C49 Soft tissue	4	0.2	16.5	4.5	42.3 #	8.8	
C48 Peritoneal	1	0.2	6.3	0.2	35.1	2.0	
C50 Breast	24	12.5	1.9	1.2	2.8 #	26.8	4.2
C52 Vagina	1	0.1	13.0	0.3	72.6	2.2	
C53 Cervix uteri	2	0.6	3.4	0.4	12.4	3.3	
C54 Corpus uteri	4	2.2	1.8	0.5	4.6	4.2	
C56 Ovary	1	1.6	0.6	0.0	3.4	-1.5	
C64 Kidney	6	0.9	6.3	2.3	13.7 #	11.8	16.7
C67 Bladder	3	0.8	3.8	0.8	11.0	5.2	33.3
C69 Eye melanoma	1	0.1	19.6	0.5	109.4	2.2	
C70-C72 CNS cancer	2	0.5	3.7	0.4	13.3	3.4	
C73 Thyroid	5	0.7	6.8	2.2	15.8 #	10.0	
C74-C80 Cancer others	1	0.2	6.4	0.2	35.4	2.0	
C82-C85 NHL	7	1.6	4.4	1.8	9.1 #	12.7	
C91-C96 Leukaemia	2	0.6	3.3	0.4	11.8	3.3	
Not observed	0	4.0	0.0	0.0	0.9 #	-9.3	
All further malignancies	99	41.2	2.4	2.0	2.9 #	135.2	7.1
Patients		1149					
Median age at next malignancy (years)		74.6					
Person-years		4274					
Mean observation time (years)		3.7					
Median observation time (years)		2.1					

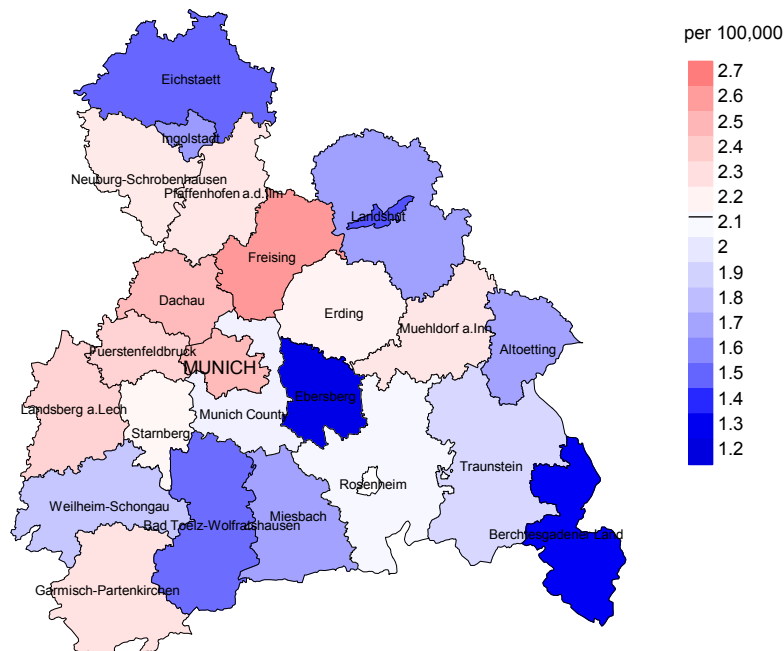
# The occurrence of further specified malignancy is statistically significant.



Average incidence (Germany 1987 standard population) 2007 - 2019: Males



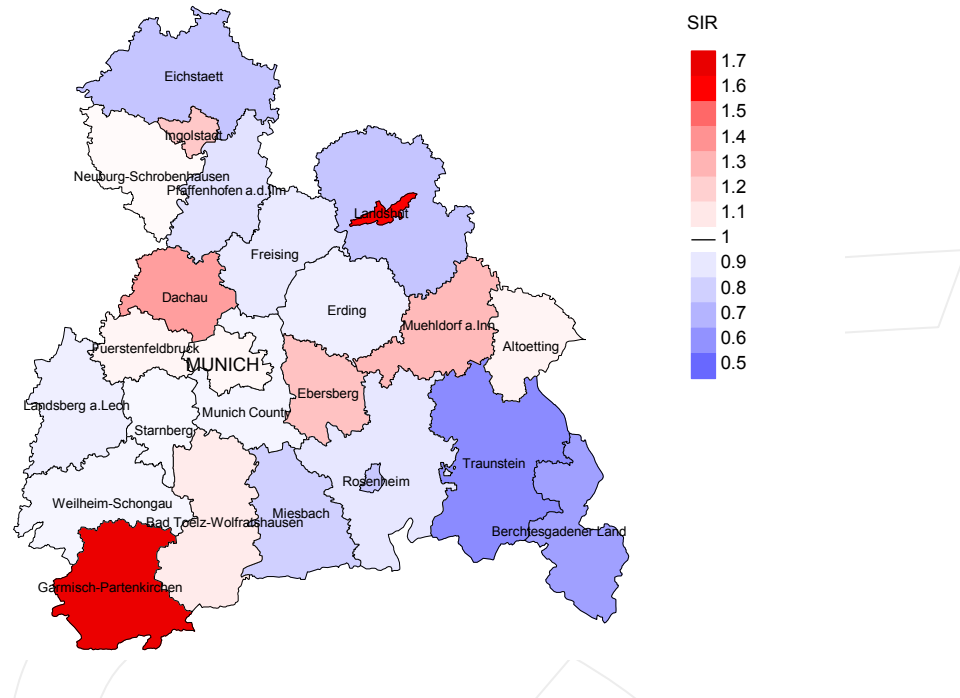
Average incidence (Germany 1987 standard population) 2007 - 2019: Females



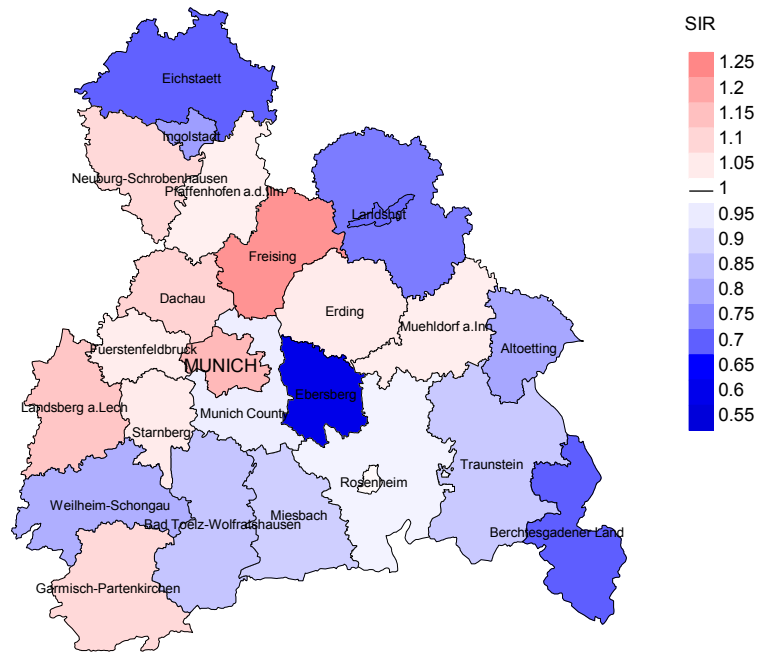
**Figure 8a.** Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 2.8/100,000 WS N=899, females 2.1/100,000 WS N=802).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 13 women were identified with newly diagnosed soft tissue cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 1.2/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.5 and 2.5/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females



**Figure 8b.** Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=899, females N=802).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 13 women were identified with newly diagnosed soft tissue cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.59. Though, the value of this parameter may vary with an underlying probability of 99% between 0.25 and 1.16, and is therefore not statistically striking.

## MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	82	97.6	9.8	68	82.9	94.1
1999	84	92.9	7.1	55	65.5	89.1
2000	88	96.6	10.2	54	61.4	100.0
2001	69	95.7	13.0	41	59.4	97.6
2002	112	97.3	8.0	78	69.6	93.6
2003	137	92.7	12.4	92	67.2	96.7
2004	119	97.5	10.1	73	61.3	100.0
2005	156	91.0	5.1	96	61.5	95.8
2006	107	94.4	9.3	66	61.7	100.0
2007	153	89.5	3.3	80	52.3	95.0
2008	157	99.4	3.8	93	59.2	95.7
2009	160	96.9	5.0	98	61.3	94.9
2010	147	95.9	3.4	79	53.7	97.5
2011	170	98.2	5.3	89	52.4	95.5
2012	135	98.5	7.4	61	45.2	96.7
2013	183	98.4	4.4	90	49.2	93.3
2014	164	97.0	3.0	90	54.9	92.2
2015	151	93.4	5.3	78	51.7	84.6
2016	96	99.0	7.3	59	61.5	83.1
2017	73	100.0	12.3	38	52.1	73.7
2018	65	100.0		20	30.8	50.0
2019	53	75.5		8	15.1	100.0
1998-2019	2661	95.7	6.3	1506	56.6	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 4.92 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	82	52	94.2	13	15.9
1999	84	48	91.7	12	14.3
2000	88	46	93.5	15	17.0
2001	69	38	97.4	12	17.4
2002	112	66	95.5	22	19.6
2003	137	68	95.6	31	22.6
2004	119	74	97.3	25	21.0
2005	156	82	98.8	21	13.5
2006	107	83	95.2	20	18.7
2007	153	84	98.8	20	13.1
2008	157	73	97.3	22	14.0
2009	160	106	98.1	30	18.8
2010	147	95	98.9	22	15.0
2011	170	94	98.9	31	18.2
2012	135	91	98.9	21	15.6
2013	183	95	98.9	30	16.4
2014	164	88	97.7	22	13.4
2015	151	123	100.0	31	20.5
2016	96	105	98.1	23	24.0
2017	73	113	97.3	22	30.1
2018	65	64	35.9	6	9.2
2019	53	60	45.0	4	7.5
1998–2019	2661	1748	93.5	455	17.1

Table 9c

Annual cohorts of deaths, proportion of cancer-related and non-cancer-related deaths, and cancer recorded on death certificates  
(incl. DCO)

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,  
and from 4.10 to 4.92 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	52	73.1	26.9	91.8
1999	48	81.3	18.8	93.2
2000	46	78.3	21.7	93.0
2001	38	89.5	10.5	94.6
2002	66	77.3	22.7	85.7
2003	68	86.8	13.2	89.2
2004	74	79.7	20.3	87.5
2005	82	84.1	15.9	90.1
2006	83	78.3	21.7	82.3
2007	84	84.5	15.5	91.6
2008	73	79.5	20.5	81.7
2009	106	80.2	19.8	83.7
2010	95	81.1	18.9	84.0
2011	94	77.7	22.3	83.9
2012	91	76.9	23.1	88.9
2013	95	81.1	18.9	88.3
2014	88	69.3	30.7	70.9
2015	123	77.2	22.8	78.9
2016	105	71.4	28.6	80.6
2017	113	77.0	23.0	80.0
2018	64	50.0	50.0	56.5
2019	60	51.7	48.3	70.4
1998–2019	1748	76.8	23.2	84.2

Table 10a

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	28	71.4	70.3	82.3	72.4
1999	27	64.8	56.9	71.8	64.8
2000	25	63.8	63.3	79.9	63.3
2001	21	62.4	51.6	80.4	61.8
2002	35	73.7	68.8	85.5	73.0
2003	28	74.1	68.4	90.7	68.4
2004	40	71.4	70.6	83.0	71.3
2005	47	67.7	67.3	69.6	67.7
2006	40	69.6	68.2	71.4	69.1
2007	52	70.4	68.5	81.8	68.7
2008	35	77.1	74.8	89.9	73.9
2009	59	74.5	74.0	87.1	74.2
2010	53	73.9	73.2	78.0	73.2
2011	45	75.9	75.0	84.8	75.0
2012	44	78.0	74.3	86.0	75.5
2013	54	74.6	72.6	86.1	72.9
2014	46	80.6	79.6	88.3	80.1
2015	69	76.1	73.3	87.3	74.0
2016	59	76.4	74.9	79.7	75.1
2017	53	76.2	74.6	87.6	75.6
2018	43	76.7	74.6	80.2	72.6
2019	35	82.0	78.9	84.6	79.0
1998-2019	938	74.3	71.5	82.9	72.3

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	24	70.5	65.2	85.4	69.0
1999	21	73.2	73.2	72.5	73.2
2000	21	77.2	76.8	77.2	76.3
2001	17	69.7	69.7		69.7
2002	31	70.5	62.9	81.3	70.5
2003	40	75.6	74.0	87.0	75.5
2004	34	75.0	72.4	84.3	73.2
2005	35	73.5	73.0	76.9	73.3
2006	43	77.9	74.1	83.4	74.9
2007	32	75.2	72.2	88.4	73.7
2008	38	81.6	73.9	89.3	76.7
2009	47	74.4	73.3	86.2	73.3
2010	42	74.9	69.9	87.7	69.9
2011	49	79.5	76.0	84.8	76.9
2012	47	79.0	74.0	85.6	78.1
2013	41	79.0	72.7	93.7	75.5
2014	42	82.9	78.4	86.5	77.4
2015	54	77.4	75.4	92.6	75.6
2016	46	79.9	76.8	84.7	77.2
2017	60	79.1	75.4	91.4	77.0
2018	21	78.7	78.1	86.1	78.2
2019	25	74.9	65.2	79.5	73.7
1998-2019	810	76.6	73.8	86.1	75.1

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	20	1.8	0.48	1.2	0.44	1.7	0.47	2.1	0.48
1999	22	2.0	0.46	1.5	0.51	1.9	0.49	2.1	0.48
2000	20	1.8	0.48	1.2	0.46	1.6	0.47	1.8	0.46
2001	17	1.5	0.55	1.1	0.55	1.4	0.52	1.5	0.48
2002	25	1.3	0.37	0.8	0.30	1.2	0.35	1.5	0.40
2003	23	1.2	0.38	0.8	0.32	1.1	0.36	1.4	0.40
2004	32	1.7	0.48	1.1	0.42	1.4	0.46	1.9	0.54
2005	38	2.0	0.47	1.3	0.36	1.7	0.42	2.0	0.49
2006	31	1.6	0.52	1.1	0.58	1.4	0.53	1.6	0.49
2007	46	2.1	0.62	1.2	0.59	1.7	0.63	2.1	0.63
2008	28	1.3	0.34	0.6	0.26	1.0	0.31	1.3	0.37
2009	45	2.0	0.53	1.0	0.47	1.5	0.50	2.0	0.53
2010	40	1.8	0.53	0.8	0.37	1.2	0.44	1.7	0.52
2011	36	1.6	0.41	0.8	0.36	1.2	0.39	1.6	0.44
2012	36	1.6	0.52	0.8	0.44	1.2	0.49	1.6	0.55
2013	44	1.9	0.41	1.2	0.39	1.5	0.39	1.8	0.41
2014	34	1.5	0.40	0.6	0.31	1.0	0.35	1.4	0.41
2015	49	2.1	0.60	1.0	0.51	1.5	0.57	1.9	0.59
2016	41	1.7	0.79	0.9	0.89	1.2	0.80	1.6	0.82
2017	42	1.7	0.98	0.8	0.77	1.2	0.87	1.5	0.93
2018	24	1.0	0.77	0.5	0.71	0.7	0.74	0.9	0.76
2019	17	0.7	0.63	0.3	0.57	0.4	0.62	0.6	0.61
1998-2019	710	1.6	0.51	0.9	0.44	1.3	0.48	1.6	0.52



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	18	1.5	0.45	1.0	0.48	1.2	0.49	1.4	0.48
1999	17	1.4	0.47	0.8	0.42	1.1	0.41	1.3	0.46
2000	16	1.3	0.35	0.5	0.19	0.8	0.25	1.1	0.31
2001	17	1.4	0.45	0.9	0.44	1.1	0.41	1.2	0.43
2002	26	1.3	0.58	0.9	0.62	1.0	0.60	1.2	0.59
2003	36	1.8	0.47	0.9	0.45	1.2	0.43	1.4	0.43
2004	27	1.4	0.52	0.7	0.36	0.9	0.43	1.2	0.49
2005	31	1.6	0.41	0.7	0.29	1.0	0.34	1.2	0.36
2006	34	1.7	0.72	0.8	0.43	1.1	0.55	1.4	0.66
2007	25	1.1	0.32	0.5	0.22	0.7	0.26	0.9	0.30
2008	30	1.3	0.41	0.6	0.31	0.8	0.33	1.0	0.35
2009	40	1.7	0.53	0.7	0.41	1.1	0.44	1.4	0.47
2010	37	1.6	0.51	0.8	0.52	1.1	0.52	1.4	0.53
2011	37	1.6	0.45	0.6	0.30	0.9	0.35	1.2	0.41
2012	34	1.4	0.52	0.6	0.40	0.9	0.44	1.1	0.46
2013	33	1.4	0.45	0.6	0.37	0.8	0.42	1.0	0.43
2014	27	1.1	0.35	0.4	0.20	0.6	0.24	0.7	0.28
2015	46	1.9	0.67	0.8	0.55	1.1	0.57	1.4	0.62
2016	34	1.4	0.77	0.7	0.65	0.8	0.66	1.0	0.69
2017	45	1.8	1.50	0.7	1.40	1.1	1.43	1.3	1.45
2018	8	0.3	0.24	0.1	0.14	0.2	0.17	0.2	0.20
2019	14	0.6	0.54	0.3	0.66	0.4	0.61	0.5	0.58
1998-2019	632	1.4	0.50	0.6	0.40	0.9	0.43	1.1	0.47

Table 12

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

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4	5	0.6	0.6	3	0.6	0.6	2	0.5	0.5
5-9	2	0.2	0.8			0.6	2	0.5	1.0
10-14	1	0.1	0.9			0.6	1	0.2	1.2
15-19	5	0.6	1.5	3	0.6	1.2	2	0.5	1.7
20-24	10	1.1	2.6	7	1.5	2.7	3	0.7	2.4
25-29	9	1.0	3.6	5	1.0	3.7	4	1.0	3.4
30-34	16	1.8	5.4	10	2.1	5.8	6	1.5	4.9
35-39	12	1.3	6.7	9	1.9	7.7	3	0.7	5.6
40-44	20	2.2	9.0	12	2.5	10.2	8	2.0	7.6
45-49	29	3.3	12.2	15	3.1	13.3	14	3.4	11.0
50-54	33	3.7	15.9	21	4.4	17.6	12	2.9	13.9
55-59	43	4.8	20.7	22	4.6	22.2	21	5.1	19.0
60-64	74	8.3	29.0	40	8.3	30.5	34	8.3	27.3
65-69	91	10.2	39.2	48	10.0	40.5	43	10.5	37.8
70-74	121	13.6	52.8	70	14.5	55.0	51	12.4	50.2
75-79	138	15.5	68.3	71	14.7	69.7	67	16.3	66.6
80-84	117	13.1	81.4	66	13.7	83.4	51	12.4	79.0
85+	166	18.6	100.0	80	16.6	100.0	86	21.0	100.0
All ages	892	100.0		482	100.0		410	100.0	

Table 13

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

Age at death Years	Males		Females		Males		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4	3	2	0.2	0.27	0.1	0.25	15.8	12.5
5- 9		2			0.1	1.00		8.7
10-14		1			0.1	0.33		4.3
15-19	3	2	0.2	0.25	0.1	0.29	6.4	8.0
20-24	7	3	0.4	0.64	0.2	0.25	10.4	7.7
25-29	5	4	0.2	0.56	0.2	0.33	5.9	4.3
30-34	10	6	0.5	0.33	0.3	0.26	7.8	3.8
35-39	9	3	0.4	0.25	0.1	0.12	3.7	0.8
40-44	12	8	0.5	0.35	0.4	0.20	2.1	1.0
45-49	15	14	0.6	0.43	0.6	0.32	1.1	0.9
50-54	21	12	0.9	0.36	0.5	0.29	0.8	0.5
55-59	22	21	1.1	0.33	1.1	0.34	0.5	0.6
60-64	40	34	2.5	0.55	1.9	0.49	0.7	0.7
65-69	48	43	3.2	0.42	2.6	0.49	0.6	0.7
70-74	70	51	5.0	0.58	3.2	0.50	0.6	0.6
75-79	71	67	6.4	0.61	4.9	0.72	0.6	0.7
80-84	66	51	10.1	0.81	5.2	0.65	0.7	0.6
85+	80	86	18.8	0.99	8.9	0.93	1.0	0.8
All ages	482	410					0.8	0.7
Mortality								
Raw			1.6	0.54	1.3	0.51		
WS			0.8	0.46	0.6	0.40		
ES			1.2	0.50	0.8	0.43		
BRD-S			1.5	0.54	1.0	0.47		
PYLL-70								
per 100,000			12.4		9.3			
ES			11.9		9.0			
AYLL-70			16.9		15.7			

Table 14a

Further malignancies in deaths in period 1998-2019  
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C00 Lip	2	0.7					2	100.0
C03-C06 Oral cavity	4	1.3	2	50.0			2	50.0
C07-C08 Salivary gland	2	0.7	2	100.0				
C09-C10 Oropharynx	4	1.3	1	25.0			3	75.0
C12-C13 Hypopharynx	2	0.7	1	50.0			1	50.0
C15 Oesophagus	7	2.4	1	14.3			6	85.7
C16 Stomach	5	1.7	1	20.0	1	20.0	3	60.0
C17 Small intestine	2	0.7	1	50.0			1	50.0
C18 Colon	19	6.4	12	63.2	1	5.3	6	31.6
C19-C20 Rectum	10	3.4	9	90.0			1	10.0
C21 Anus/canal	1	0.3	1	100.0				
C22 Liver	4	1.3			1	25.0	3	75.0
C23-C24 Bile	2	0.7					2	100.0
C25 Pancreas	6	2.0	2	33.3	1	16.7	3	50.0
C30-C31 Sinuses	3	1.0	2	66.7			1	33.3
C32 Larynx	2	0.7	1	50.0			1	50.0
C33-C34 Lung	22	7.4	5	22.7	3	13.6	14	63.6
C38,C45 Mesothelioma	2	0.7					2	100.0
C40-C41 Bone	4	1.3	1	25.0			3	75.0
C43 Malign. melanoma	23	7.7	15	65.2	2	8.7	6	26.1
C44 Skin others	37	12.5	20	54.1	1	2.7	16	43.2
C46,C49 Soft tissue	7	2.4			2	28.6	5	71.4
C50 Breast	1	0.3	1	100.0				
C60 Penis	1	0.3	1	100.0				
C61 Prostate	41	13.8	28	68.3	1	2.4	12	29.3
C62 Testis	6	2.0	4	66.7			2	33.3
C64 Kidney	16	5.4	9	56.3	1	6.3	6	37.5
C65 Renal pelvis	1	0.3	1	100.0				
C66 Ureter	2	0.7					2	100.0
C67 Bladder	10	3.4	4	40.0	1	10.0	5	50.0
C69 Eye sarcoma	2	0.7	2	100.0				
C70-C72 CNS cancer	4	1.3	2	50.0			2	50.0
C73 Thyroid	4	1.3	3	75.0			1	25.0
C76-C79 CUP	4	1.3			2	50.0	2	50.0
C81 Hodgkin lymphoma	1	0.3	1	100.0				
C82-C85 NHL	22	7.4	11	50.0	2	9.1	9	40.9
C90 Mult. myeloma	3	1.0	2	66.7	1	33.3		
C91-C96 Leukaemia	9	3.0	4	44.4	1	11.1	4	44.4
All further malignancies	297	100.0	150	50.5	21	7.1	126	42.4

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

Table 14b

Further malignancies in deaths in period 1998-2019  
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	1	0.4	1	100.0				
C16 Stomach	3	1.2	1	33.3			2	66.7
C17 Small intestine	1	0.4			1	100.0		
C18 Colon	12	4.9	4	33.3			8	66.7
C19-C20 Rectum	6	2.4	2	33.3	2	33.3	2	33.3
C21 Anus/canal	1	0.4	1	100.0				
C23-C24 Bile	4	1.6					4	100.0
C25 Pancreas	3	1.2					3	100.0
C33-C34 Lung	10	4.1	1	10.0	2	20.0	7	70.0
C40-C41 Bone	2	0.8	1	50.0			1	50.0
C43 Malign. melanoma	17	6.9	12	70.6	2	11.8	3	17.6
C44 Skin others	11	4.5	4	36.4	1	9.1	6	54.5
C46,C49 Soft tissue	5	2.0					5	100.0
C48 Peritoneal	2	0.8			1	50.0	1	50.0
C50 Breast	95	38.6	73	76.8			22	23.2
C51 Vulva	4	1.6	2	50.0	1	25.0	1	25.0
C53 Cervix uteri	9	3.7	8	88.9			1	11.1
C54 Corpus uteri	11	4.5	7	63.6	1	9.1	3	27.3
C55,C57 Fem. genitals un	2	0.8	2	100.0				
C56 Ovary	6	2.4	4	66.7	1	16.7	1	16.7
C64 Kidney	7	2.8	3	42.9	1	14.3	3	42.9
C65 Renal pelvis	2	0.8	2	100.0				
C67 Bladder	4	1.6	1	25.0	1	25.0	2	50.0
C69 Eye melanoma	1	0.4					1	100.0
C70-C72 CNS cancer	6	2.4	3	50.0			3	50.0
C73 Thyroid	5	2.0	4	80.0			1	20.0
C74-C80 Cancer others	2	0.8	1	50.0	1	50.0		
C76-C79 CUP	1	0.4	1	100.0				
C82-C85 NHL	8	3.3	5	62.5	2	25.0	1	12.5
C90 Mult. myeloma	2	0.8	2	100.0				
C91-C96 Leukaemia	3	1.2	2	66.7			1	33.3
All further malignancies	246	100.0	147	59.8	17	6.9	82	33.3

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

Table 15

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

Age at death Years	Males		Males		Females		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4	3	1	0.2	0.27	0.1	0.14	15.8	6.7
5- 9		2			0.1	1.00		8.7
10-14								
15-19	3	2	0.2	0.25	0.1	0.29	6.7	8.7
20-24	6	3	0.3	0.60	0.2	0.25	10.0	8.1
25-29	5	4	0.2	0.63	0.2	0.33	6.5	4.7
30-34	8	5	0.4	0.28	0.2	0.23	6.5	3.6
35-39	8	2	0.4	0.24	0.1	0.09	3.5	0.6
40-44	12	7	0.5	0.41	0.3	0.20	2.3	1.0
45-49	14	12	0.6	0.47	0.5	0.32	1.1	0.9
50-54	16	11	0.7	0.33	0.5	0.39	0.7	0.5
55-59	20	13	1.0	0.36	0.7	0.27	0.6	0.4
60-64	30	25	1.8	0.52	1.4	0.45	0.6	0.7
65-69	37	31	2.4	0.44	1.8	0.48	0.5	0.6
70-74	50	39	3.6	0.59	2.4	0.53	0.6	0.6
75-79	48	45	4.3	0.67	3.3	0.79	0.6	0.7
80-84	47	36	7.2	0.81	3.7	0.67	0.7	0.5
85+	58	66	13.6	1.07	6.8	0.89	1.0	0.8
All ages	365	304					0.7	0.7
Mortality								
Raw			1.2	0.53	1.0	0.50		
WS			0.6	0.44	0.4	0.38		
ES			0.9	0.49	0.6	0.41		
BRD-S			1.1	0.53	0.7	0.45		
PYLL-70								
per 100,000			11.0		7.4			
ES			10.5		7.2			
AYLL-70			18.0		16.5			

\* See corresponding tables with multiple malignancies.

Table 16

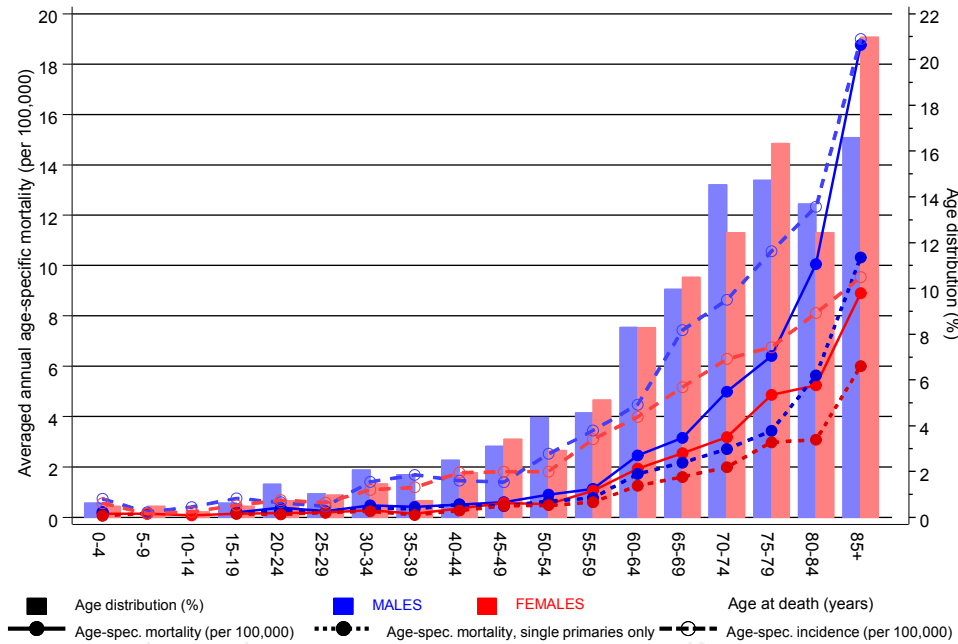
Age-specific mortality (cancer-related) and proportion of all cancers  
for period 2007-2019  
(**Single primaries only** \*)

Age at death Years	Males		Males		Females		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4	3	1	0.2	0.27	0.1	0.17	15.8	6.7
5- 9		2			0.1	1.00		8.7
10-14								
15-19	3	2	0.2	0.25	0.1	0.29	6.7	9.1
20-24	5	2	0.3	0.50	0.1	0.17	8.3	5.6
25-29	5	4	0.2	0.71	0.2	0.33	6.5	4.8
30-34	8	5	0.4	0.29	0.2	0.25	6.5	3.6
35-39	7	2	0.3	0.21	0.1	0.10	3.1	0.6
40-44	12	6	0.5	0.46	0.3	0.20	2.3	0.9
45-49	11	11	0.4	0.39	0.5	0.30	0.9	0.8
50-54	15	11	0.6	0.36	0.5	0.41	0.7	0.5
55-59	15	12	0.8	0.29	0.6	0.28	0.4	0.4
60-64	28	22	1.7	0.55	1.3	0.43	0.6	0.6
65-69	33	27	2.2	0.46	1.6	0.45	0.5	0.5
70-74	38	32	2.7	0.52	2.0	0.47	0.5	0.5
75-79	38	41	3.4	0.58	3.0	0.80	0.5	0.6
80-84	37	30	5.6	0.69	3.1	0.59	0.6	0.5
85+	44	58	10.3	0.92	6.0	0.81	0.8	0.7
All ages	302	268					0.6	0.6
Mortality								
Raw			1.0	0.49	0.9	0.47		
WS			0.5	0.42	0.4	0.36		
ES			0.8	0.45	0.5	0.39		
BRD-S			0.9	0.49	0.7	0.43		
PYLL-70								
per 100,000			10.0		6.9			
ES			9.7		6.7			
AYLL-70			18.3		16.8			

\* See corresponding tables with multiple malignancies.

ICD-10 C49: Malignant neoplasm of other connective and soft tissue

Age distribution and age-specific mortality 2007 - 2019 (Males: 482, Females: 410)

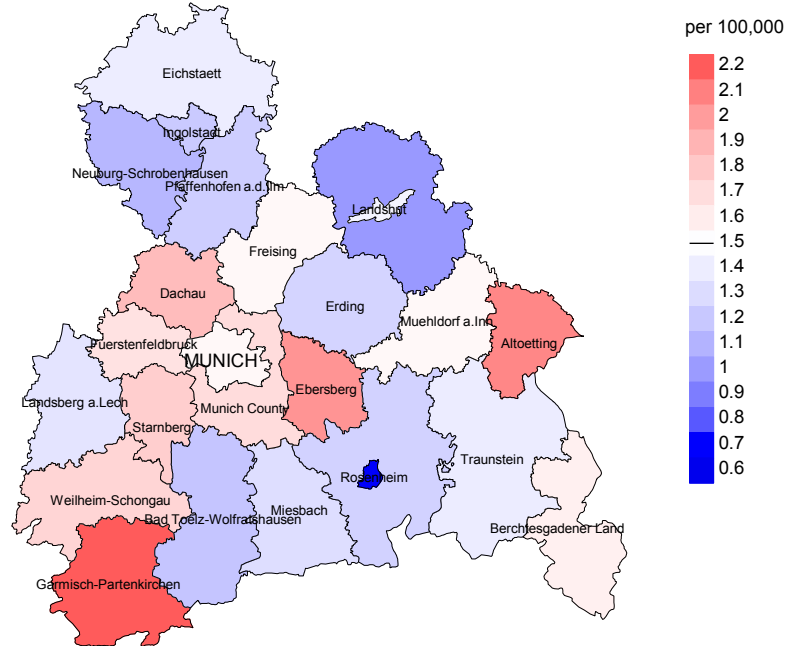


**Figure 17.** Distribution of age at death (bars; males: mean=65.4 yrs, median=69.5 yrs; females: mean=67.2 yrs, median=70.4 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

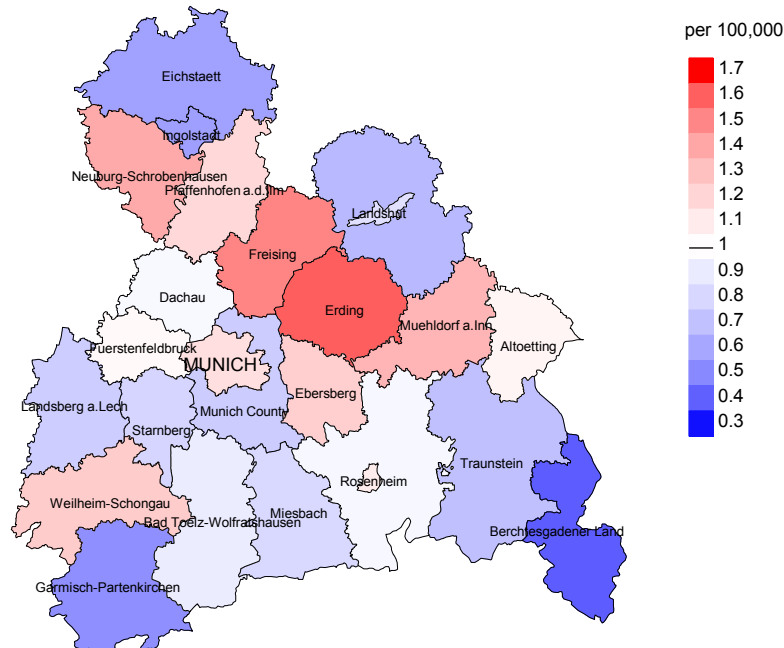
The difference between age at diagnosis (Table 3) and age at soft tissue cancer-related death (see Table 10) should be considered.



Average mortality (Germany 1987 standard population) 2007 - 2019: Males



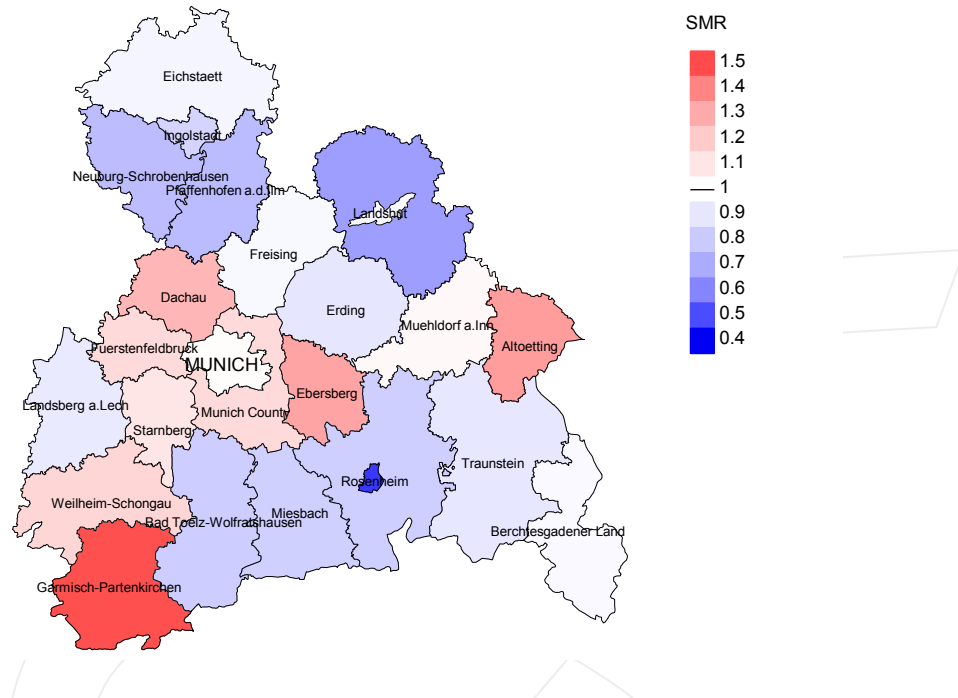
Average mortality (Germany 1987 standard population) 2007 - 2019: Females



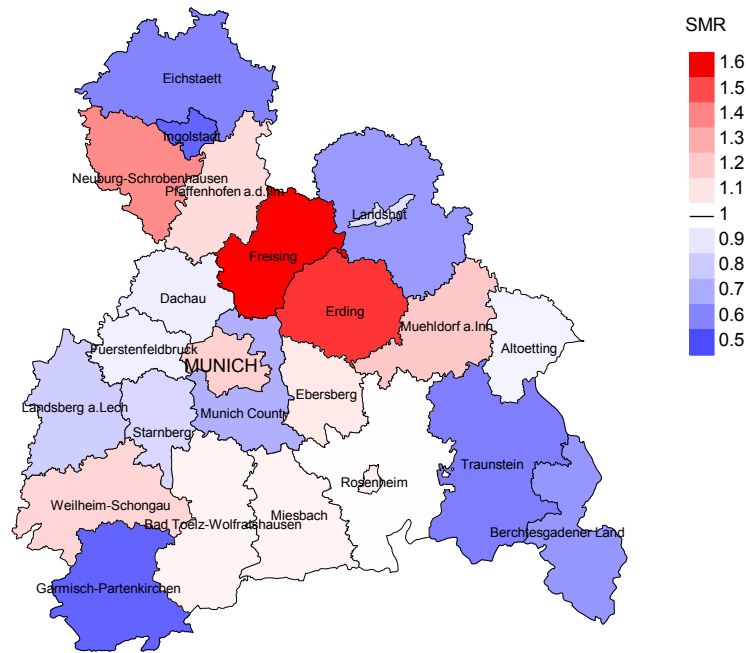
**Figure 18a.** Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 1.5/100,000 WS N=482, females 1.0/100,000 WS N=410).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 12 women died from soft tissue cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 1.2/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.5 and 2.6/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females



**Figure 18b.** Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=482, females N=410).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 12 women died from soft tissue cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.09. Though, the value of this parameter may vary with an underlying probability of 99% between 0.45 and 2.19, 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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