

Munich Cancer Registry



- ▶ Survival
- ▶ Selection Matrix
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ICD-10 C81-C96: Systemic neoplasms

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	31,282
Diseases	31,935
Creation date	01/26/2021
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/bC8196E-ICD-10-C81-C96-Systemic-neoplasms-incidence-and-mortality.pdf>

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

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut[#], with a total of 4.69 million inhabitants, account for the frequency of cancer diseases^{##} and the achieved long term results. Additionally, the long term survival evaluated by the Munich Cancer Registry (MCR) is compared with the results of the population-based registry in the USA (SEER), which is useful for checking the consistency of the data on an international level.

In comparing several tables, inconsistent figures may be detected. This is based on the fact that different patient cohorts are included in the base calculation, for example when proportions of multiple tumors or DCO-cases^{###} are concerned. In other cases the individual tumor diagnosis is the basis for calculation, for example with incidence.

The foot notes describe the currentness of the data. The baseline statistics and survival data are updated annually. This yearly analysis comprises the Annual Report of the MCR.

Clinics and physicians have access to essentially more detailed data, with which they can check, compare and in the best case optimize their own data and results.

We would be pleased to receive corrections, critique and useful suggestions. Just send an e-mail to tumor@ibe.med.uni-muenchen.de.

Munich Cancer Registry, January 2021

- [#] Base data has been collected since 1998. An increase in new diseases is apparent, which is an effect of two extensions in the MCR catchment area (from a base population of 2.65 million to 4.10 in 2002, and to 4.69 million in 2007).
- ^{##} Due to the high frequency and good prognosis of non-malignant skin cancer (C44), no systematic ascertainment is performed for this diagnosis. C44 is not designated as a primary, but rather as a secondary tumor.
- ^{###} DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate.

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

Code	Description
C81.-	Hodgkin lymphoma
C82.-	Follicular lymphoma
C83.-	Non-follicular lymphoma
C84.-	Mature T/NK-cell lymphomas
C85.-	Other and unspecified types of non-Hodgkin lymphoma
C86.-	Other specified types of T/NK-cell Lymphoma
C88.-	Malignant immunoproliferative diseases
C90.-	Multiple myeloma and malignant plasma cell neoplasms
C91.-	Lymphoid leukaemia
C92.-	Myeloid leukaemia
C93.-	Monocytic leukaemia
C94.-	Other leukaemias of specified cell type
C95.-	Leukaemia of unspecified cell type
C96.-	Other and unspecified malignant neoplasms of lymphoid, haematopoietic and related tissue

INCIDENCE

Table 1

Cases 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	852	172	20.2	9.0	11.4	76.4	97.3
1999	853	182	21.3	10.0	11.3	76.6	97.9
2000	824	196	23.8	10.0	11.3	76.0	97.6
2001	902	221	24.5	10.6	11.2	75.1	96.3
2002	1478	393	26.6	11.5	11.1	75.7	97.1 #
2003	1505	320	21.3	12.0	11.0	71.2	96.8
2004	1572	321	20.4	12.5	10.9	68.8	96.3
2005	1522	281	18.5	13.1	10.6	68.0	94.9
2006	1576	268	17.0	13.7	10.3	69.2	95.4
2007	1823	301	16.5	14.1	10.0	67.6	94.0 #
2008	1800	278	15.4	14.6	9.7	65.3	98.6
2009	1810	241	13.3	15.1	9.2	61.5	98.1
2010	1876	263	14.0	15.6	8.8	62.3	98.1
2011	1863	267	14.3	16.2	8.4	60.4	97.7
2012	1904	265	13.9	16.8	8.1	57.7	97.8
2013	1915	266	13.9	17.4	7.5	56.3	96.9
2014	1798	280	15.6	18.0	7.0	55.2	96.2
2015	1748	253	14.5	18.3	6.4	54.9	95.7
2016	1533	276	18.0	18.5	5.6	52.8	98.9
2017	1382	250	18.1	18.9	4.8	46.3	99.3
2018	853	54	6.3	19.1	4.5	32.7	98.4
2019	546	21	3.8	19.2	2.5	24.5	76.2 ##
1998-2019	31935	5369	16.8	19.2	11.4	62.0	96.7

31,935 cases diagnosed 1998-2019 are related to a total of 31,282 patients. Currently, in 8,800 (28.1 %) of these 31,282 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 6,709 / 1,566 / 525 (21.4 % / 5.0 % / 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 retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 1,382 cases has been diagnosed, of which 18.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.8 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

Cases 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	465	54.6	89	19.1	9.5	12.6	77.2	97.6
1999	448	52.5	89	19.9	10.1	12.5	78.6	98.9
2000	447	54.2	108	24.2	10.2	12.5	78.1	97.3
2001	460	51.0	102	22.2	10.7	12.4	75.4	96.3
2002	789	53.4	181	22.9	11.8	12.3	75.0	96.7 #
2003	814	54.1	161	19.8	12.3	12.1	70.6	96.4
2004	830	52.8	150	18.1	12.7	11.9	68.0	96.1
2005	816	53.6	136	16.7	13.5	11.6	69.2	95.1
2006	892	56.6	141	15.8	14.2	11.3	69.3	95.5
2007	1006	55.2	160	15.9	14.5	10.9	67.9	93.4 #
2008	1002	55.7	152	15.2	15.1	10.6	64.5	98.7
2009	970	53.6	119	12.3	15.6	10.0	59.9	98.2
2010	1036	55.2	142	13.7	16.2	9.5	64.7	98.2
2011	1021	54.8	117	11.5	16.9	9.0	60.4	98.0
2012	1047	55.0	132	12.6	17.4	8.6	56.5	97.6
2013	1082	56.5	154	14.2	18.2	8.0	57.3	96.8
2014	1040	57.8	143	13.8	18.6	7.5	54.7	96.2
2015	975	55.8	131	13.4	18.9	6.5	54.3	95.8
2016	902	58.8	146	16.2	19.3	5.5	51.3	98.8
2017	759	54.9	118	15.5	19.7	4.6	45.2	99.7
2018	489	57.3	30	6.1	19.9	4.1	35.0	98.8
2019	292	53.5	13	4.5	20.0	1.8	24.0	77.7 ##
1998-2019	17582	55.1	2714	15.4	20.0	12.6	61.9	96.7

17,582 cases diagnosed 1998-2019 are related to a total of 17,202 patients. Currently, in 5,149 (29.9 %) of these 17,202 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 3,871 / 928 / 350 (22.5 % / 5.4 % / 2.0 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 759 cases has been diagnosed, of which 19.7 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.6 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1b

Cases 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	387	45.4	83	21.4	8.5	9.9	75.5	96.9
1999	405	47.5	93	23.0	9.8	9.9	74.3	96.8
2000	377	45.8	88	23.3	9.8	9.8	73.5	97.9
2001	442	49.0	119	26.9	10.6	9.8	74.7	96.4
2002	689	46.6	212	30.8	11.1	9.6	76.5	97.5 #
2003	691	45.9	159	23.0	11.6	9.6	71.8	97.3
2004	742	47.2	171	23.0	12.3	9.6	69.8	96.5
2005	706	46.4	145	20.5	12.6	9.4	66.6	94.8
2006	684	43.4	127	18.6	13.1	9.1	69.2	95.2
2007	817	44.8	141	17.3	13.6	8.8	67.3	94.6 #
2008	798	44.3	126	15.8	13.9	8.5	66.3	98.4
2009	840	46.4	122	14.5	14.4	8.2	63.3	97.9
2010	840	44.8	121	14.4	14.9	8.0	59.4	98.0
2011	842	45.2	150	17.8	15.4	7.7	60.3	97.3
2012	857	45.0	133	15.5	16.1	7.5	59.0	98.1
2013	833	43.5	112	13.4	16.5	6.9	55.0	97.0
2014	758	42.2	137	18.1	17.1	6.3	55.8	96.3
2015	773	44.2	122	15.8	17.6	6.3	55.6	95.5
2016	631	41.2	130	20.6	17.6	5.7	54.8	99.0
2017	623	45.1	132	21.2	17.9	5.1	47.7	98.9
2018	364	42.7	24	6.6	18.1	5.0	29.7	97.8
2019	254	46.5	8	3.1	18.3	3.3	25.2	74.4 ##
1998-2019	14353	44.9	2655	18.5	18.3	9.9	62.2	96.6

14,353 cases diagnosed 1998-2019 are related to a total of 14,080 patients. Currently, in 3,651 (25.9 %) of these 14,080 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 2,838 / 638 / 175 (20.2 % / 4.5 % / 1.2 %) 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 623 cases has been diagnosed, of which 17.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.1 % 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	465	387	42.0	32.9	28.9	18.9	38.9	24.4	48.1	29.2
1999	448	405	40.0	34.1	27.0	19.5	36.7	25.0	46.0	30.3
2000	447	377	39.2	31.4	26.5	17.7	36.0	23.2	44.9	28.1
2001	460	442	39.7	36.3	26.3	19.3	35.8	25.9	44.3	31.4
2002	789	689	42.3	35.2	26.9	17.3	36.7	23.7	45.4	29.5
2003	814	691	43.4	35.1	27.5	19.6	37.4	25.4	46.5	30.4
2004	830	742	44.1	37.5	28.3	20.0	37.8	26.3	45.8	31.9
2005	816	706	43.1	35.5	27.5	19.0	36.3	24.7	45.2	30.3
2006	892	684	46.6	34.0	28.3	17.5	38.3	23.0	47.3	28.4
2007	1006	817	45.4	35.4	27.4	18.4	37.0	24.3	46.4	29.4
2008	1002	798	45.0	34.4	27.2	17.3	35.9	23.0	44.4	28.5
2009	970	840	43.5	36.1	24.7	17.9	33.7	23.9	41.8	29.2
2010	1036	840	46.0	35.9	26.4	18.3	35.8	24.0	44.6	29.2
2011	1021	842	45.6	36.0	26.2	18.0	35.1	23.8	43.3	28.8
2012	1047	857	46.1	36.3	25.4	19.1	34.3	24.5	43.6	29.6
2013	1082	833	47.0	34.9	26.1	17.5	35.1	23.2	44.2	28.4
2014	1040	758	44.6	31.5	23.6	14.4	32.9	19.8	41.0	24.8
2015	975	773	41.0	31.8	21.1	14.0	29.6	19.6	37.8	24.8
2016	902	631	37.5	25.7	18.6	11.4	26.5	15.7	34.1	19.8
2017	759	623	31.5	25.3	15.4	11.1	22.2	15.5	28.1	19.4
2018	489	364	20.1	14.7	10.2	6.7	14.4	9.3	18.2	11.6
2019	292	254	12.0	10.2	6.2	4.7	8.6	6.5	10.8	8.1
1998-2019	17582	14353	39.9	31.3	23.1	15.8	31.4	21.0	39.0	25.7

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	852	62.4	19.7	0.9	100	33.3	53.3	65.0	76.9	85.2
1999	853	63.2	19.5	0.3	104	35.2	54.9	65.8	77.3	84.2
2000	824	63.3	19.2	0.4	97.6	35.5	54.6	67.1	77.1	84.7
2001	902	63.8	18.2	1.4	98.7	37.9	55.8	66.5	76.9	84.3
2002	1478	65.4	18.1	1.0	99.3	39.7	57.8	68.5	78.5	85.1
2003	1505	63.8	18.7	0.3	99.0	37.2	55.0	66.8	77.4	83.7
2004	1572	64.2	18.5	0.4	98.6	38.0	55.9	67.0	77.5	83.9
2005	1522	64.2	19.5	0.6	102	36.4	56.1	68.4	77.8	84.1
2006	1576	65.6	18.5	0.6	98.5	39.7	58.8	69.4	78.0	84.4
2007	1823	65.2	18.4	0.1	101	39.8	56.9	68.9	78.3	84.3
2008	1800	65.6	18.9	0.4	98.1	39.5	58.7	69.6	78.5	84.4
2009	1810	66.1	17.5	1.3	100	42.5	58.4	69.7	78.3	85.1
2010	1876	66.2	18.5	0.3	101	41.5	58.2	70.4	78.8	85.8
2011	1863	65.8	18.7	0.3	101	41.6	56.1	70.4	78.6	85.2
2012	1904	66.0	19.0	0.0	102	40.2	57.5	71.1	79.1	84.8
2013	1915	66.3	18.4	0.1	100	40.1	57.8	71.2	78.8	85.1
2014	1798	67.8	17.2	0.5	99.6	44.6	59.3	72.2	79.5	86.0
2015	1748	68.4	16.7	1.5	98.5	45.4	59.6	73.1	79.9	86.1
2016	1533	68.6	16.6	3.2	101	45.3	59.3	72.7	80.3	86.2
2017	1382	69.1	15.9	2.4	104	47.2	60.7	72.5	80.2	86.5
2018	853	67.6	15.5	17.2	94.2	45.6	58.5	71.6	78.8	84.1
2019	546	66.7	16.9	17.1	98.3	40.7	57.8	71.0	79.4	83.8
1998-2019	31935	65.9	18.2	0.0	104	40.4	57.4	69.9	78.6	85.0

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	465	60.8	19.7	0.9	95.8	33.2	50.1	63.3	75.3	83.9
1999	448	61.5	18.9	0.3	93.8	33.3	54.2	64.0	75.0	82.6
2000	447	62.4	18.9	0.4	97.6	35.9	54.6	65.9	75.4	82.5
2001	460	61.5	17.6	1.4	96.4	37.6	53.4	64.3	74.7	80.1
2002	789	63.0	17.9	1.0	98.3	37.1	55.1	66.1	75.0	81.9
2003	814	62.7	18.1	1.6	99.0	36.1	54.7	66.2	75.8	82.2
2004	830	62.3	18.4	0.4	97.8	36.8	53.9	65.2	74.9	82.4
2005	816	62.7	19.7	0.7	102	34.8	54.8	67.0	76.5	82.7
2006	892	64.2	18.2	1.0	98.5	39.9	57.4	68.1	76.5	81.8
2007	1006	63.6	18.4	0.1	97.8	37.5	53.8	68.2	77.0	82.7
2008	1002	63.9	19.2	0.4	98.1	37.5	56.6	68.8	76.5	82.7
2009	970	64.7	16.9	2.2	97.0	42.2	55.8	68.8	76.0	82.7
2010	1036	65.3	18.2	0.3	101	41.5	56.4	69.6	77.7	84.7
2011	1021	64.5	18.3	2.5	101	40.5	55.0	69.3	77.2	83.5
2012	1047	65.7	18.5	1.5	96.0	41.4	57.1	70.9	78.5	83.9
2013	1082	65.7	18.4	0.5	100	39.8	57.1	70.8	78.3	84.3
2014	1040	67.1	17.3	0.5	99.6	44.5	58.1	71.2	79.1	85.5
2015	975	67.6	16.9	1.8	96.6	45.0	59.2	71.9	79.4	85.4
2016	902	68.0	16.0	5.2	101	46.8	59.0	71.9	79.0	84.5
2017	759	68.6	15.6	2.4	97.4	46.7	59.5	71.7	79.5	85.8
2018	489	67.1	15.5	18.5	94.2	44.3	58.3	71.2	78.4	83.4
2019	292	66.3	16.9	17.1	98.3	40.8	57.8	70.5	79.0	83.1
1998-2019	17582	64.7	18.1	0.1	102	39.6	56.2	68.8	77.4	83.6

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	387	64.3	19.7	1.3	100	33.4	55.2	67.4	78.6	86.3
1999	405	65.0	20.0	1.5	104	39.0	56.1	70.0	78.8	86.7
2000	377	64.3	19.6	2.1	95.1	34.8	54.7	69.3	78.4	85.6
2001	442	66.2	18.5	2.8	98.7	39.1	57.8	69.9	79.6	86.8
2002	689	68.2	17.8	2.9	99.3	42.8	59.8	71.8	80.9	87.9
2003	691	65.1	19.3	0.3	98.9	38.5	55.4	68.1	79.8	85.5
2004	742	66.3	18.5	0.7	98.6	41.0	58.5	69.4	79.6	84.7
2005	706	65.9	19.0	0.6	98.4	38.9	58.0	69.6	79.5	85.0
2006	684	67.3	18.7	0.6	95.8	39.2	60.7	71.3	80.4	85.7
2007	817	67.0	18.3	1.0	101	43.8	59.8	70.1	80.1	86.0
2008	798	67.6	18.4	1.4	97.4	41.4	60.5	70.8	80.3	86.4
2009	840	67.8	18.1	1.3	100	42.7	60.5	70.9	80.9	86.8
2010	840	67.3	18.8	0.3	98.7	41.5	59.5	71.2	80.4	87.0
2011	842	67.3	19.0	0.3	99.2	42.9	57.2	71.7	80.5	87.4
2012	857	66.5	19.6	0.0	102	39.7	57.9	71.6	80.2	86.8
2013	833	67.0	18.4	0.1	97.9	40.2	58.5	71.6	80.0	86.2
2014	758	68.8	17.0	2.7	98.4	44.6	60.9	73.4	80.0	86.7
2015	773	69.5	16.5	1.5	98.5	46.1	60.6	74.1	80.7	87.1
2016	631	69.3	17.4	3.2	96.4	42.9	59.3	73.8	81.9	87.6
2017	623	69.8	16.2	14.3	104	47.2	62.2	73.3	81.0	87.2
2018	364	68.3	15.5	17.2	93.7	46.2	58.5	72.3	80.0	85.0
2019	254	67.3	16.9	20.6	97.2	40.6	57.5	71.9	79.8	84.7
1998-2019	14353	67.2	18.3	0.0	104	41.4	58.8	71.3	80.2	86.4

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	138	0.7	0.7	81	0.7	0.7	57	0.6	0.6
5–9	103	0.5	1.2	59	0.5	1.2	44	0.5	1.1
10–14	100	0.5	1.6	60	0.5	1.7	40	0.4	1.5
15–19	191	0.9	2.6	112	1.0	2.7	79	0.9	2.4
20–24	255	1.2	3.8	153	1.3	4.0	102	1.1	3.5
25–29	314	1.5	5.3	172	1.5	5.5	142	1.5	5.0
30–34	326	1.6	6.8	181	1.6	7.0	145	1.6	6.6
35–39	424	2.0	8.9	243	2.1	9.1	181	2.0	8.6
40–44	576	2.8	11.6	346	3.0	12.1	230	2.5	11.1
45–49	839	4.0	15.7	520	4.5	16.6	319	3.5	14.5
50–54	1093	5.2	20.9	650	5.6	22.2	443	4.8	19.3
55–59	1336	6.4	27.3	743	6.4	28.6	593	6.4	25.7
60–64	1684	8.1	35.4	939	8.1	36.6	745	8.1	33.8
65–69	2493	12.0	47.3	1478	12.7	49.4	1015	11.0	44.8
70–74	3138	15.0	62.4	1825	15.7	65.1	1313	14.2	59.0
75–79	3147	15.1	77.5	1789	15.4	80.5	1358	14.7	73.7
80–84	2481	11.9	89.4	1304	11.2	91.7	1177	12.8	86.5
85+	2213	10.6	100.0	966	8.3	100.0	1247	13.5	100.0
All ages	20851	100.0		11621	100.0		9230	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=1545 %	Females DCO rate n=1451 %	Males	Females
							Prop.all cancers n=143063 %	Prop.all cancers n=144724 %
0– 4	81	57	5.4	4.0	1.2	3.5	38.4	35.4
5– 9	59	44	4.1	3.2	1.7		51.8	47.3
10–14	60	40	4.0	2.9		2.5	45.1	34.2
15–19	112	79	7.0	5.3	0.9	1.3	37.5	32.0
20–24	152	102	8.2	5.8	1.3	1.0	25.9	21.5
25–29	171	142	8.2	6.8		0.7	19.5	12.8
30–34	179	145	8.4	6.9	2.2	1.4	14.9	7.3
35–39	242	181	11.3	8.6	1.2	2.8	14.2	5.5
40–44	342	230	14.6	10.2	1.5	1.7	13.2	4.0
45–49	517	319	20.6	13.1	1.7	3.1	10.8	3.6
50–54	647	441	27.6	19.1	3.9	2.7	8.2	3.8
55–59	740	592	38.1	29.6	4.6	3.9	6.3	4.8
60–64	936	740	57.4	42.2	5.8	5.0	5.7	5.1
65–69	1469	1007	96.6	59.8	8.7	8.2	6.5	5.7
70–74	1808	1308	129.0	81.4	11.2	9.6	7.0	7.0
75–79	1769	1341	159.8	97.4	16.1	16.2	8.0	7.4
80–84	1293	1166	196.9	119.8	26.3	26.4	9.1	8.2
85+	955	1241	224.0	128.6	47.2	49.8	9.7	8.0
All ages	11532	9175			13.4	15.8	8.1	6.3
Incidence								
Raw			38.3	29.5				
WS			21.0	14.3				
ES			28.7	19.2				
BRD-S			35.9	23.6				

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).

CD-10 C81-C96: Malignant neoplasms of lymphoid, haematopoietic and related tissue
 Age distribution and age-specific incidence 2007 - 2019 (Males: 11532, Females: 9175)

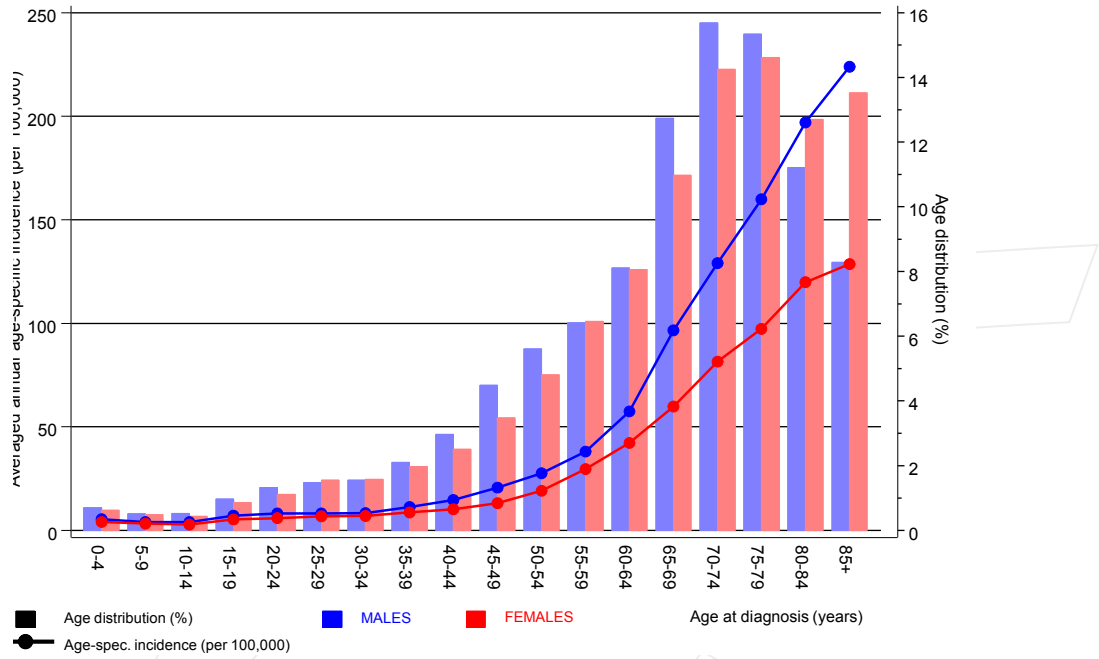


Figure 6. Age distribution (males: mean=65.8 yrs, median=70.1 yrs; females: mean=67.9 yrs, median=72.0 yrs) and age-specific incidence.

CD-10 C81-C96: Malignant neoplasms of lymphoid, haematopoietic and related tissue

Age-specific incidence rates: international comparison

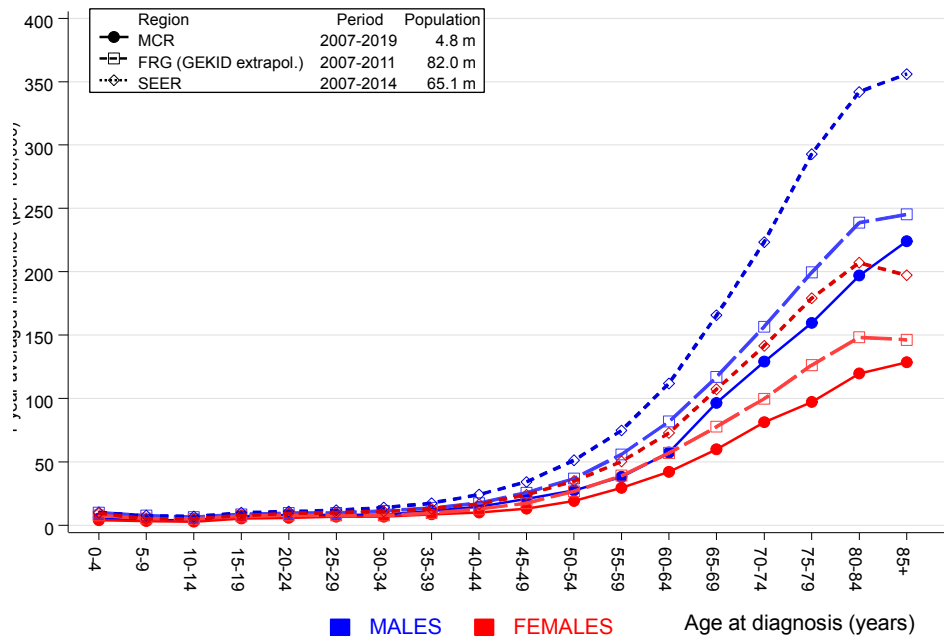


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, GEKID extrapolation) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Extrapolated age-specific patient population of Germany, data status middle of 2010. Association of Population-based Cancer Registries in Germany (GEKID e.V.). Berlin, 2014. <http://www.gekid.de>. Last access: 02/11/2015
 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	22	6.3	3.5	2.2	5.3 #	2.9	4.5
C07-C08 Salivary gland	12	1.7	7.0	3.6	12.3 #	1.9	
C09-C10 Oropharynx	13	7.7	1.7	0.9	2.9	1.0	
C12-C13 Hypopharynx	6	4.2	1.4	0.5	3.1	0.3	
C15 Oesophagus	28	14.6	1.9	1.3	2.8 #	2.5	7.1
C16 Stomach	63	29.3	2.2	1.7	2.8 #	6.3	1.6
C17 Small intestine	15	4.5	3.4	1.9	5.5 #	2.0	
C18 Colon	140	71.4	2.0	1.6	2.3 #	12.8	2.1
C19-C20 Rectum	76	39.4	1.9	1.5	2.4 #	6.8	1.3
C21 Anus/canal	6	1.8	3.3	1.2	7.3 #	0.8	
C22 Liver	39	21.7	1.8	1.3	2.5 #	3.2	12.8
C23-C24 Bile	12	7.8	1.5	0.8	2.7	0.8	
C25 Pancreas	57	29.1	2.0	1.5	2.5 #	5.2	5.3
C32 Larynx	17	7.5	2.3	1.3	3.7 #	1.8	11.8
C33-C34 Lung	239	88.1	2.7	2.4	3.1 #	28.2	6.3
C38,C45 Mesothelioma	13	5.2	2.5	1.3	4.3 #	1.5	7.7
C43 Malign. melanoma	121	33.9	3.6	3.0	4.3 #	16.3	
C46,C49 Soft tissue	24	4.3	5.6	3.6	8.4 #	3.7	
C50 Breast	6	2.0	3.0	1.1	6.4 #	0.7	
C60 Penis	8	1.9	4.2	1.8	8.3 #	1.1	
C61 Prostate	415	209.3	2.0	1.8	2.2 #	38.4	4.6
C62 Testis	7	3.1	2.3	0.9	4.7	0.7	
C64 Kidney	88	25.9	3.4	2.7	4.2 #	11.6	1.1
C65 Renal pelvis	6	3.3	1.8	0.7	3.9	0.5	
C66 Ureter	9	1.9	4.7	2.1	8.8 #	1.3	
C67 Bladder	70	34.5	2.0	1.6	2.6 #	6.6	1.4
C70-C72 CNS cancer	27	9.7	2.8	1.8	4.1 #	3.2	18.5
C73 Thyroid	18	5.1	3.5	2.1	5.6 #	2.4	
C76-C79 CUP	33	12.6	2.6	1.8	3.7 #	3.8	
C81 Hodgkin lymphoma	24	1.9	12.3	7.9	18.3 #	4.1	4.2
C82-C85 NHL	211	31.9	6.6	5.8	7.6 #	33.5	3.3
C90 Mult. myeloma	17	9.9	1.7	1.0	2.7 #	1.3	5.9
C91-C96 Leukaemia	104	11.5	9.0	7.4	10.9 #	17.3	15.4
Others, specified	37	7.9	4.7	3.3	6.5 #	5.4	5.4
Not observed	0	2.3	0.0	0.0	1.6	-0.4	
All further malignancies	1983	753.0	2.6	2.5	2.8 #	229.8	4.4
Patients		14875					
Median age at next malignancy (years)		72.2					
Person-years		53516					
Mean observation time (years)		3.6					
Median observation time (years)		1.9					

The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 to 5 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 1998–2019

FEMALES

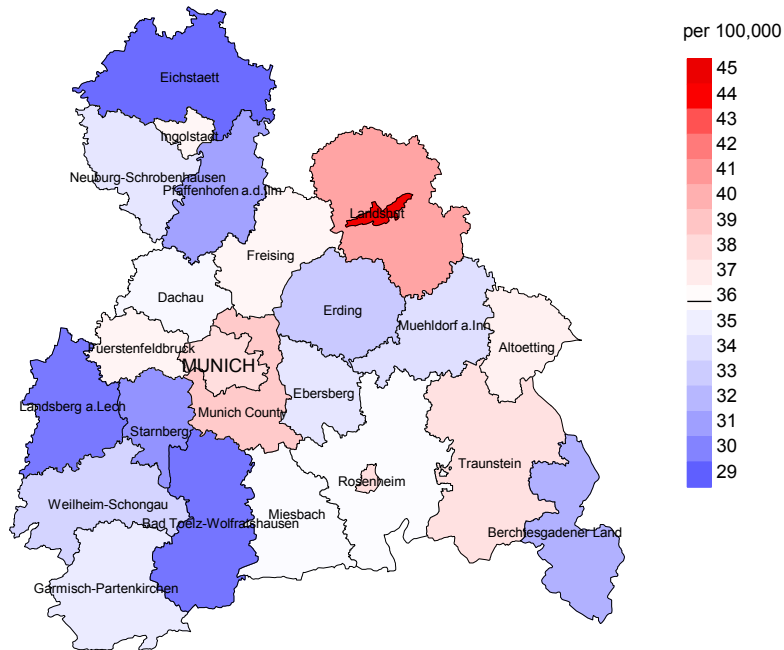
Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C00 Lip	3	0.3	9.7	2.0	28.2 #	0.6	
C03–C06 Oral cavity	6	2.5	2.4	0.9	5.1	0.8	
C07–C08 Salivary gland	5	0.7	6.9	2.2	16.2 #	1.0	20.0
C09–C10 Oropharynx	9	1.8	5.0	2.3	9.6 #	1.7	
C15 Oesophagus	9	2.9	3.2	1.4	6.0 #	1.4	
C16 Stomach	34	14.8	2.3	1.6	3.2 #	4.4	2.9
C17 Small intestine	6	2.4	2.5	0.9	5.5	0.8	
C18 Colon	94	42.3	2.2	1.8	2.7 #	11.9	7.4
C19–C20 Rectum	20	17.4	1.1	0.7	1.8	0.6	5.0
C21 Anus/canal	12	2.4	5.0	2.6	8.7 #	2.2	8.3
C22 Liver	21	5.5	3.8	2.4	5.9 #	3.6	23.8
C23–C24 Bile	14	6.2	2.3	1.2	3.8 #	1.8	7.1
C25 Pancreas	38	20.5	1.9	1.3	2.5 #	4.0	18.4
C33–C34 Lung	103	33.5	3.1	2.5	3.7 #	16.0	4.9
C38,C45 Mesothelioma	3	0.8	3.6	0.7	10.5	0.5	
C43 Malign. melanoma	50	16.9	3.0	2.2	3.9 #	7.6	
C46,C49 Soft tissue	8	2.5	3.2	1.4	6.2 #	1.3	
C48 Peritoneal	7	1.8	3.9	1.5	7.9 #	1.2	
C50 Breast	300	134.4	2.2	2.0	2.5 #	38.1	3.3
C51 Vulva	12	4.6	2.6	1.3	4.5 #	1.7	
C53 Cervix uteri	13	5.8	2.2	1.2	3.8 #	1.7	23.1
C54 Corpus uteri	47	24.6	1.9	1.4	2.5 #	5.2	
C56 Ovary	32	17.8	1.8	1.2	2.5 #	3.3	6.3
C64 Kidney	23	10.5	2.2	1.4	3.3 #	2.9	4.3
C65 Renal pelvis	3	1.4	2.1	0.4	6.2	0.4	
C67 Bladder	13	8.5	1.5	0.8	2.6	1.0	7.7
C69 Eye lymphoma	5	0.1	37.5	12.2	87.6 #	1.1	
C70–C72 CNS cancer	7	5.8	1.2	0.5	2.5	0.3	28.6
C73 Thyroid	28	7.4	3.8	2.5	5.4 #	4.7	3.6
C76–C79 CUP	14	8.0	1.8	1.0	2.9	1.4	
C81 Hodgkin lymphoma	5	0.9	5.5	1.8	12.8 #	0.9	
C82–C85 NHL	167	17.4	9.6	8.2	11.2 #	34.5	3.0
C90 Mult. myeloma	19	5.5	3.4	2.1	5.4 #	3.1	5.3
C91–C96 Leukaemia	59	6.6	9.0	6.8	11.6 #	12.1	15.3
Others, specified	13	4.6	2.8	1.5	4.8 #	1.9	23.1
Not observed	0	4.1	0.0	0.0	0.9 #	-0.9	
All further malignancies	1202	443.4	2.7	2.6	2.9 #	174.8	5.6

Patients	11759
Median age at next malignancy (years)	73.2
Person-years	43406
Mean observation time (years)	3.7
Median observation time (years)	2.0

The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 to 2 are pooled in category "Others, specified".

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



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

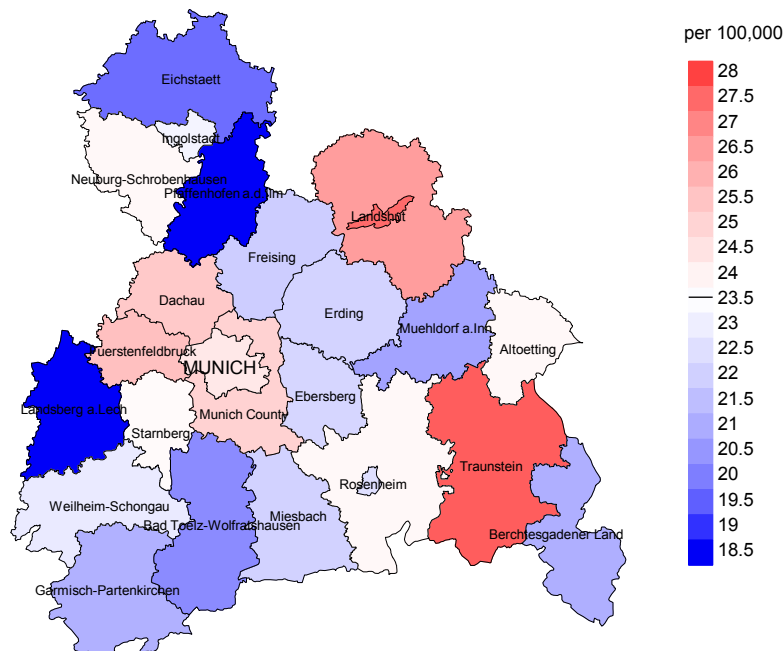
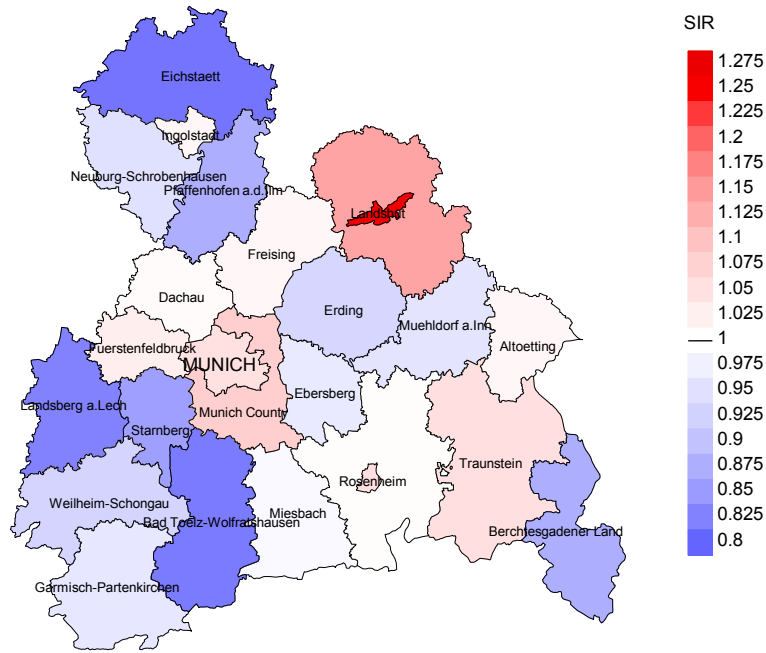


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 35.9/100,000 WS N=11,532, females 23.6/100,000 WS N=9,175).

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 233 women were identified with newly diagnosed systemic neoplasms. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 22.2/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 18.6 and 26.4/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

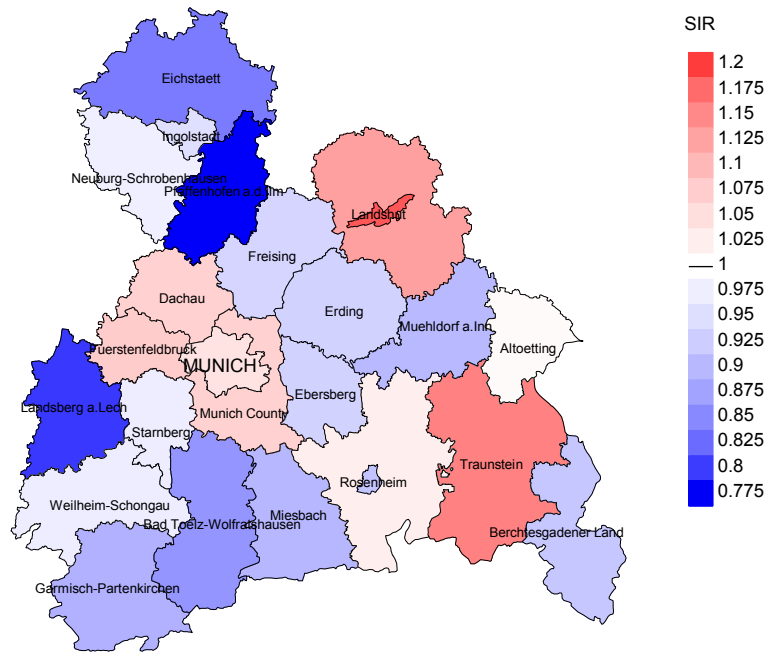


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=11,532, females N=9,175).

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 233 women were identified with newly diagnosed systemic neoplasms. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.93. Though, the value of this parameter may vary with an underlying probability of 99% between 0.78 and 1.10, 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	852	97.3	20.2	651	76.4	95.4
1999	853	97.9	21.3	653	76.6	95.6
2000	824	97.6	23.8	626	76.0	96.3
2001	902	96.3	24.5	677	75.1	96.6
2002	1478	97.1	26.6	1119	75.7	96.2
2003	1505	96.8	21.3	1071	71.2	97.3
2004	1572	96.3	20.4	1082	68.8	97.0
2005	1522	94.9	18.5	1035	68.0	96.4
2006	1576	95.4	17.0	1091	69.2	96.7
2007	1823	94.0	16.5	1233	67.6	95.7
2008	1800	98.6	15.4	1175	65.3	95.6
2009	1810	98.1	13.3	1113	61.5	95.1
2010	1876	98.1	14.0	1169	62.3	95.1
2011	1863	97.7	14.3	1125	60.4	94.8
2012	1904	97.8	13.9	1098	57.7	95.0
2013	1915	96.9	13.9	1078	56.3	91.8
2014	1798	96.2	15.6	992	55.2	92.4
2015	1748	95.7	14.5	959	54.9	91.7
2016	1533	98.9	18.0	809	52.8	90.9
2017	1382	99.3	18.1	640	46.3	82.2
2018	853	98.4	6.3	279	32.7	55.2
2019	546	76.2	3.8	134	24.5	75.4
1998-2019	31935	96.7	16.8	19809	62.0	93.9

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	852	512	95.9	235	27.6
1999	853	547	94.9	237	27.8
2000	824	532	95.5	238	28.9
2001	902	592	96.5	256	28.4
2002	1478	819	97.6	472	31.9
2003	1505	824	98.3	440	29.2
2004	1572	872	98.3	428	27.2
2005	1522	877	98.3	404	26.5
2006	1576	901	98.3	420	26.6
2007	1823	1016	97.9	474	26.0
2008	1800	1008	98.0	438	24.3
2009	1810	1037	98.1	444	24.5
2010	1876	1085	98.2	463	24.7
2011	1863	1123	98.2	445	23.9
2012	1904	1158	98.3	451	23.7
2013	1915	1201	98.4	472	24.6
2014	1798	1238	98.1	489	27.2
2015	1748	1236	98.9	489	28.0
2016	1533	1167	98.9	472	30.8
2017	1382	1254	97.7	428	31.0
2018	853	845	35.6	154	18.1
2019	546	678	51.2	92	16.8
1998–2019	31935	20522	93.8	8441	26.4

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	512	62.7	37.3	94.1
1999	547	70.4	29.6	94.2
2000	532	74.4	25.6	95.9
2001	592	71.8	28.2	94.9
2002	819	80.1	19.9	94.9
2003	824	80.7	19.3	94.8
2004	872	85.1	14.9	94.6
2005	877	83.0	17.0	95.1
2006	901	82.4	17.6	93.2
2007	1016	82.6	17.4	92.8
2008	1008	81.1	18.9	90.7
2009	1037	81.2	18.8	91.6
2010	1085	79.5	20.5	89.8
2011	1123	78.4	21.6	89.2
2012	1158	79.9	20.1	89.9
2013	1201	76.9	23.1	88.2
2014	1238	75.0	25.0	89.4
2015	1236	76.6	23.4	86.4
2016	1167	74.1	25.9	87.0
2017	1254	73.8	26.2	86.1
2018	845	43.9	56.1	75.7
2019	678	48.7	51.3	77.8
1998–2019	20522	75.6	24.4	90.5

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	254	71.7	68.4	76.6	71.9
1999	305	71.7	70.0	76.9	71.6
2000	297	71.0	70.1	74.7	71.4
2001	279	71.9	71.2	75.2	71.9
2002	424	73.0	72.6	74.2	73.1
2003	440	71.7	71.0	74.2	71.7
2004	464	73.7	73.5	75.4	74.1
2005	468	74.3	73.9	76.6	74.2
2006	497	73.2	72.3	77.4	72.7
2007	542	73.2	72.9	77.5	72.9
2008	556	73.3	72.8	78.0	73.1
2009	563	74.9	74.2	78.9	74.6
2010	601	75.1	74.1	78.0	74.6
2011	626	75.3	74.6	78.4	75.0
2012	636	75.8	75.4	77.7	75.6
2013	700	76.5	75.5	79.3	76.0
2014	690	76.7	75.8	79.3	76.5
2015	675	77.3	76.4	81.1	76.6
2016	657	77.8	77.3	80.4	77.5
2017	686	77.9	77.1	81.1	77.0
2018	511	76.9	76.6	76.9	77.1
2019	394	78.6	78.0	79.4	78.4
1998-2019	11265	75.3	74.4	78.2	74.9

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

Table 10b

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	258	77.0	72.9	81.7	77.4
1999	242	77.3	76.1	81.4	77.1
2000	235	77.3	76.1	83.9	76.9
2001	313	77.4	76.2	80.5	77.0
2002	395	77.9	75.2	83.2	77.9
2003	384	76.8	75.2	82.8	76.0
2004	408	76.9	76.0	82.2	76.9
2005	409	77.9	76.0	84.6	77.6
2006	404	77.8	77.3	80.5	77.3
2007	474	77.9	76.4	81.8	77.4
2008	452	78.4	76.4	84.2	77.3
2009	474	78.4	77.4	82.5	77.9
2010	484	78.5	77.6	83.5	78.1
2011	497	77.5	75.7	83.3	76.5
2012	522	77.7	76.9	81.6	77.1
2013	501	78.7	77.3	81.7	78.0
2014	548	78.3	76.9	82.1	78.2
2015	561	78.6	77.8	81.8	78.2
2016	510	79.9	78.6	82.0	79.0
2017	568	79.5	78.3	83.3	78.7
2018	334	80.4	79.3	81.1	80.2
2019	284	80.1	79.4	81.2	78.7
1998-2019	9257	78.3	77.0	82.3	77.7

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	166	15.0	0.36	9.9	0.34	14.0	0.36	18.0	0.37
1999	214	19.1	0.48	12.1	0.45	17.5	0.48	22.4	0.49
2000	222	19.5	0.50	12.1	0.45	17.6	0.49	23.5	0.52
2001	207	17.9	0.45	10.4	0.40	15.8	0.44	21.6	0.49
2002	343	18.4	0.44	10.2	0.38	15.7	0.43	21.4	0.47
2003	365	19.5	0.45	10.7	0.39	16.2	0.43	21.7	0.47
2004	391	20.8	0.47	10.8	0.38	16.8	0.45	23.4	0.51
2005	391	20.6	0.48	10.4	0.38	16.2	0.45	22.6	0.50
2006	406	21.2	0.46	10.5	0.38	16.2	0.43	22.1	0.47
2007	457	20.6	0.46	10.6	0.39	15.9	0.43	21.8	0.47
2008	460	20.7	0.46	10.0	0.37	15.4	0.43	20.8	0.47
2009	453	20.3	0.47	9.4	0.38	14.6	0.43	20.3	0.49
2010	477	21.2	0.46	9.5	0.36	14.8	0.41	20.7	0.46
2011	496	22.2	0.49	10.1	0.39	15.5	0.45	21.5	0.50
2012	490	21.6	0.47	9.4	0.37	14.6	0.43	20.5	0.47
2013	528	22.9	0.49	9.4	0.37	15.0	0.43	21.2	0.49
2014	525	22.5	0.51	9.3	0.40	14.7	0.45	20.4	0.50
2015	516	21.7	0.53	9.2	0.44	14.2	0.48	19.7	0.52
2016	484	20.1	0.54	8.0	0.43	12.7	0.48	18.0	0.53
2017	515	21.3	0.68	8.4	0.55	13.4	0.61	18.6	0.67
2018	219	9.0	0.46	3.7	0.37	5.8	0.41	7.8	0.44
2019	191	7.8	0.66	3.1	0.51	4.9	0.58	6.8	0.64
1998-2019	8516	19.3	0.49	9.1	0.40	14.0	0.45	19.2	0.49

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	155	13.2	0.40	6.7	0.35	9.0	0.37	11.3	0.39
1999	171	14.4	0.42	6.0	0.31	9.0	0.36	12.3	0.41
2000	175	14.6	0.46	6.1	0.35	9.1	0.39	12.0	0.43
2001	218	17.9	0.50	7.4	0.38	11.2	0.43	15.2	0.49
2002	313	16.0	0.46	6.5	0.38	9.6	0.41	12.9	0.44
2003	300	15.2	0.44	6.2	0.32	9.2	0.36	12.3	0.41
2004	352	17.8	0.48	7.1	0.35	10.6	0.40	14.4	0.45
2005	338	17.0	0.48	6.6	0.35	10.0	0.40	13.2	0.44
2006	336	16.7	0.49	6.2	0.35	9.5	0.41	13.2	0.47
2007	382	16.5	0.47	6.3	0.35	9.5	0.39	12.7	0.44
2008	360	15.5	0.45	5.8	0.34	8.8	0.38	11.8	0.41
2009	389	16.7	0.46	6.0	0.34	9.2	0.39	12.6	0.43
2010	388	16.6	0.46	5.8	0.32	8.8	0.37	12.2	0.42
2011	384	16.4	0.46	6.1	0.34	9.2	0.39	12.3	0.43
2012	435	18.4	0.51	6.5	0.34	9.9	0.41	13.4	0.46
2013	396	16.6	0.48	5.8	0.33	8.8	0.38	12.2	0.43
2014	407	16.9	0.54	5.7	0.40	8.8	0.45	12.1	0.49
2015	432	17.8	0.56	6.0	0.43	9.2	0.47	12.8	0.52
2016	386	15.7	0.61	5.3	0.46	8.0	0.51	10.8	0.55
2017	412	16.7	0.66	5.3	0.48	8.3	0.54	11.5	0.60
2018	160	6.4	0.44	2.1	0.31	3.2	0.35	4.4	0.39
2019	143	5.8	0.57	1.7	0.37	2.7	0.42	3.9	0.49
1998-2019	7032	15.4	0.49	5.6	0.36	8.5	0.41	11.6	0.45

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	4	0.0	0.0	1	0.0	0.0	3	0.1	0.1
5-9	12	0.1	0.2	6	0.1	0.1	6	0.1	0.2
10-14	20	0.2	0.3	6	0.1	0.2	14	0.3	0.5
15-19	22	0.2	0.6	14	0.2	0.5	8	0.2	0.7
20-24	29	0.3	0.8	21	0.4	0.8	8	0.2	0.8
25-29	38	0.4	1.2	25	0.4	1.3	13	0.3	1.1
30-34	45	0.4	1.6	23	0.4	1.7	22	0.5	1.6
35-39	64	0.6	2.2	37	0.6	2.3	27	0.6	2.2
40-44	114	1.1	3.3	70	1.2	3.5	44	0.9	3.1
45-49	205	2.0	5.3	128	2.2	5.7	77	1.6	4.7
50-54	299	2.9	8.1	186	3.2	8.9	113	2.4	7.2
55-59	433	4.1	12.3	242	4.2	13.1	191	4.1	11.3
60-64	643	6.1	18.4	389	6.7	19.8	254	5.4	16.7
65-69	1113	10.6	29.0	665	11.4	31.2	448	9.6	26.3
70-74	1719	16.4	45.4	988	17.0	48.2	731	15.6	41.9
75-79	2054	19.6	65.0	1204	20.7	68.9	850	18.2	60.1
80-84	1821	17.4	82.4	952	16.4	85.3	869	18.6	78.7
85+	1850	17.6	100.0	854	14.7	100.0	996	21.3	100.0
All ages	10485	100.0		5811	100.0		4674	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		Males		Females		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4	1	3	0.1	0.01	0.2	0.05	5.3	18.8
5- 9	6	6	0.4	0.10	0.4	0.14	24.0	26.1
10-14	6	14	0.4	0.10	1.0	0.35	22.2	60.9
15-19	14	8	0.9	0.13	0.5	0.10	29.8	32.0
20-24	21	8	1.1	0.14	0.5	0.08	31.3	20.5
25-29	25	13	1.2	0.15	0.6	0.09	29.4	14.0
30-34	23	22	1.1	0.13	1.0	0.15	18.0	13.8
35-39	37	27	1.7	0.15	1.3	0.15	15.2	7.4
40-44	70	44	3.0	0.20	1.9	0.19	12.2	5.5
45-49	128	77	5.1	0.25	3.2	0.24	9.5	4.9
50-54	186	113	7.9	0.29	4.9	0.26	7.4	4.6
55-59	242	191	12.4	0.33	9.6	0.32	5.9	5.4
60-64	389	254	23.9	0.42	14.5	0.34	6.5	5.5
65-69	665	448	43.7	0.45	26.6	0.44	7.7	6.9
70-74	988	731	70.5	0.55	45.5	0.56	8.9	8.9
75-79	1204	850	108.7	0.68	61.7	0.63	10.5	9.4
80-84	952	869	145.0	0.74	89.3	0.75	10.1	10.2
85+	854	996	200.3	0.89	103.2	0.80	10.4	9.0
All ages	5811	4674					9.1	8.2
Mortality								
Raw			19.3	0.50	15.0	0.51		
WS			8.4	0.40	5.2	0.37		
ES			13.0	0.45	8.0	0.42		
BRD-S			18.0	0.50	10.9	0.46		
PYLL-70								
per 100,000			80.3		56.4			
ES			72.3		51.7			
AYLL-70			11.8		12.0			

Table 14a

Further malignancies in deaths in period 1998-2019
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	32	0.9	10	31.3	5	15.6	17	53.1
C07-C08 Salivary gland	15	0.4	4	26.7	2	13.3	9	60.0
C09-C10 Oropharynx	23	0.6	12	52.2	1	4.3	10	43.5
C12-C13 Hypopharynx	9	0.2			2	22.2	7	77.8
C15 Oesophagus	50	1.3	11	22.0	4	8.0	35	70.0
C16 Stomach	102	2.7	34	33.3	16	15.7	52	51.0
C17 Small intestine	18	0.5	8	44.4	2	11.1	8	44.4
C18 Colon	249	6.6	121	48.6	33	13.3	95	38.2
C19-C20 Rectum	143	3.8	70	49.0	15	10.5	58	40.6
C22 Liver	50	1.3	9	18.0	5	10.0	36	72.0
C23-C24 Bile	16	0.4	4	25.0			12	75.0
C25 Pancreas	77	2.0	5	6.5	10	13.0	62	80.5
C30-C31 Sinuses	9	0.2	6	66.7			3	33.3
C32 Larynx	34	0.9	21	61.8	4	11.8	9	26.5
C33-C34 Lung	345	9.2	59	17.1	47	13.6	239	69.3
C38,C45 Mesothelioma	20	0.5	3	15.0	5	25.0	12	60.0
C40-C41 Bone	11	0.3	3	27.3	1	9.1	7	63.6
C43 Malign. melanoma	157	4.2	79	50.3	10	6.4	68	43.3
C44 Skin others	620	16.5	158	25.5	42	6.8	420	67.7
C46,C49 Soft tissue	44	1.2	19	43.2	4	9.1	21	47.7
C60 Penis	9	0.2	2	22.2	2	22.2	5	55.6
C61 Prostate	728	19.4	486	66.8	61	8.4	181	24.9
C62 Testis	20	0.5	15	75.0	2	10.0	3	15.0
C64 Kidney	122	3.2	73	59.8	14	11.5	35	28.7
C65 Renal pelvis	8	0.2	2	25.0	1	12.5	5	62.5
C66 Ureter	9	0.2	2	22.2	2	22.2	5	55.6
C67 Bladder	114	3.0	53	46.5	11	9.6	50	43.9
C70-C72 CNS cancer	36	1.0	6	16.7	5	13.9	25	69.4
C73 Thyroid	20	0.5	16	80.0			4	20.0
C76-C79 CUP	56	1.5	8	14.3	6	10.7	42	75.0
C81 Hodgkin lymphoma	36	1.0	28	77.8	4	11.1	4	11.1
C82-C85 NHL	205	5.5	72	35.1	15	7.3	118	57.6
C90 Mult. myeloma	83	2.2	26	31.3	9	10.8	48	57.8
C91-C96 Leukaemia	241	6.4	18	7.5	69	28.6	154	63.9
Others, specified	46	1.2	20	43.5	5	10.9	21	45.7
All further malignancies	3757	100.0	1463	38.9	414	11.0	1880	50.0

Further malignancies with number of cases 1 to 6 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 1998-2019
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	14	0.6	9	64.3	1	7.1	4	28.6
C07-C08 Salivary gland	12	0.5	8	66.7			4	33.3
C09-C10 Oropharynx	8	0.3	3	37.5	1	12.5	4	50.0
C15 Oesophagus	8	0.3			1	12.5	7	87.5
C16 Stomach	66	2.7	20	30.3	12	18.2	34	51.5
C17 Small intestine	7	0.3	3	42.9	1	14.3	3	42.9
C18 Colon	169	6.8	75	44.4	20	11.8	74	43.8
C19-C20 Rectum	74	3.0	43	58.1	9	12.2	22	29.7
C21 Anus/canal	21	0.8	10	47.6			11	52.4
C22 Liver	23	0.9	1	4.3	2	8.7	20	87.0
C23-C24 Bile	21	0.8	5	23.8	2	9.5	14	66.7
C25 Pancreas	53	2.1	2	3.8	9	17.0	42	79.2
C33-C34 Lung	138	5.5	17	12.3	15	10.9	106	76.8
C38,C45 Mesothelioma	5	0.2					5	100.0
C43 Malign. melanoma	93	3.7	52	55.9	3	3.2	38	40.9
C44 Skin others	235	9.4	89	37.9	11	4.7	135	57.4
C46,C49 Soft tissue	15	0.6	3	20.0	3	20.0	9	60.0
C48 Peritoneal	13	0.5	5	38.5	3	23.1	5	38.5
C50 Breast	616	24.8	415	67.4	45	7.3	156	25.3
C51 Vulva	22	0.9	13	59.1			9	40.9
C53 Cervix uteri	41	1.6	31	75.6	3	7.3	7	17.1
C54 Corpus uteri	97	3.9	72	74.2	5	5.2	20	20.6
C55,C57 Fem. genitals un	10	0.4	8	80.0	1	10.0	1	10.0
C56 Ovary	60	2.4	23	38.3	10	16.7	27	45.0
C64 Kidney	55	2.2	29	52.7	10	18.2	16	29.1
C65 Renal pelvis	6	0.2	2	33.3			4	66.7
C67 Bladder	31	1.2	13	41.9	3	9.7	15	48.4
C70-C72 CNS cancer	30	1.2	11	36.7	4	13.3	15	50.0
C73 Thyroid	38	1.5	30	78.9	1	2.6	7	18.4
C76-C79 CUP	40	1.6	11	27.5	4	10.0	25	62.5
C81 Hodgkin lymphoma	23	0.9	21	91.3	2	8.7		
C82-C85 NHL	160	6.4	40	25.0	9	5.6	111	69.4
C90 Mult. myeloma	58	2.3	13	22.4	5	8.6	40	69.0
C91-C96 Leukaemia	192	7.7	7	3.6	50	26.0	135	70.3
Others, specified	33	1.3	20	60.6	2	6.1	11	33.3
All further malignancies	2487	100.0	1104	44.4	247	9.9	1136	45.7

Further malignancies with number of cases 1 to 4 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 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	1	3	0.1	0.01	0.2	0.05	5.3	20.0
5- 9	6	6	0.4	0.10	0.4	0.14	25.0	26.1
10-14	6	12	0.4	0.10	0.9	0.31	22.2	63.2
15-19	14	7	0.9	0.13	0.5	0.09	31.1	30.4
20-24	18	7	1.0	0.12	0.4	0.07	30.0	18.9
25-29	23	11	1.1	0.14	0.5	0.08	29.9	12.8
30-34	23	19	1.1	0.13	0.9	0.14	18.5	13.7
35-39	33	26	1.5	0.14	1.2	0.15	14.5	7.9
40-44	58	38	2.5	0.18	1.7	0.19	11.0	5.4
45-49	116	62	4.6	0.25	2.5	0.22	9.5	4.6
50-54	160	92	6.8	0.28	4.0	0.25	7.2	4.4
55-59	210	154	10.8	0.33	7.7	0.32	5.8	5.2
60-64	308	199	18.9	0.41	11.3	0.35	6.2	5.3
65-69	503	322	33.1	0.45	19.1	0.42	7.3	6.3
70-74	730	542	52.1	0.57	33.7	0.58	8.6	8.6
75-79	870	628	78.6	0.76	45.6	0.65	10.4	9.1
80-84	670	666	102.1	0.81	68.4	0.77	9.9	10.1
85+	564	769	132.3	0.92	79.7	0.80	9.5	8.8
All ages	4313	3563					8.7	7.9
Mortality								
Raw			14.3	0.49	11.5	0.50		
WS			6.4	0.37	4.0	0.34		
ES			9.8	0.43	6.1	0.40		
BRD-S			13.4	0.49	8.3	0.45		
PYLL-70								
per 100,000			69.7		46.8			
ES			63.2		43.4			
AYLL-70			12.5		12.8			

* 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	1	3	0.1	0.01	0.2	0.05	5.3	20.0
5- 9	6	6	0.4	0.10	0.4	0.15	25.0	26.1
10-14	6	10	0.4	0.11	0.7	0.26	22.2	52.6
15-19	14	6	0.9	0.13	0.4	0.08	31.1	27.3
20-24	17	6	0.9	0.12	0.3	0.06	28.3	16.7
25-29	20	10	1.0	0.12	0.5	0.08	26.0	11.9
30-34	22	18	1.0	0.13	0.9	0.14	17.9	13.1
35-39	29	20	1.4	0.13	1.0	0.12	12.9	6.1
40-44	52	28	2.2	0.17	1.2	0.14	9.9	4.0
45-49	99	49	3.9	0.22	2.0	0.19	8.2	3.7
50-54	133	75	5.7	0.26	3.2	0.22	6.1	3.7
55-59	173	130	8.9	0.30	6.5	0.30	4.9	4.5
60-64	242	164	14.8	0.37	9.3	0.33	4.9	4.4
65-69	412	267	27.1	0.44	15.8	0.40	6.2	5.3
70-74	581	465	41.5	0.54	29.0	0.56	7.1	7.6
75-79	681	526	61.5	0.68	38.2	0.60	8.5	7.9
80-84	550	573	83.8	0.74	58.9	0.71	8.7	9.1
85+	450	681	105.5	0.77	70.5	0.74	8.3	8.2
All ages	3488	3037					7.3	6.9
Mortality								
Raw			11.6	0.45	9.8	0.46		
WS			5.3	0.34	3.4	0.31		
ES			8.0	0.39	5.2	0.37		
BRD-S			10.8	0.44	7.0	0.41		
PYLL-70								
per 100,000			60.1		39.0			
ES			54.9		36.4			
AYLL-70			13.0		12.9			

* See corresponding tables with multiple malignancies.

CD-10 C81-C96: Malignant neoplasms of lymphoid, haematopoietic and related tissue
 Age distribution and age-specific mortality 2007 - 2019 (Males: 5811, Females: 4674)

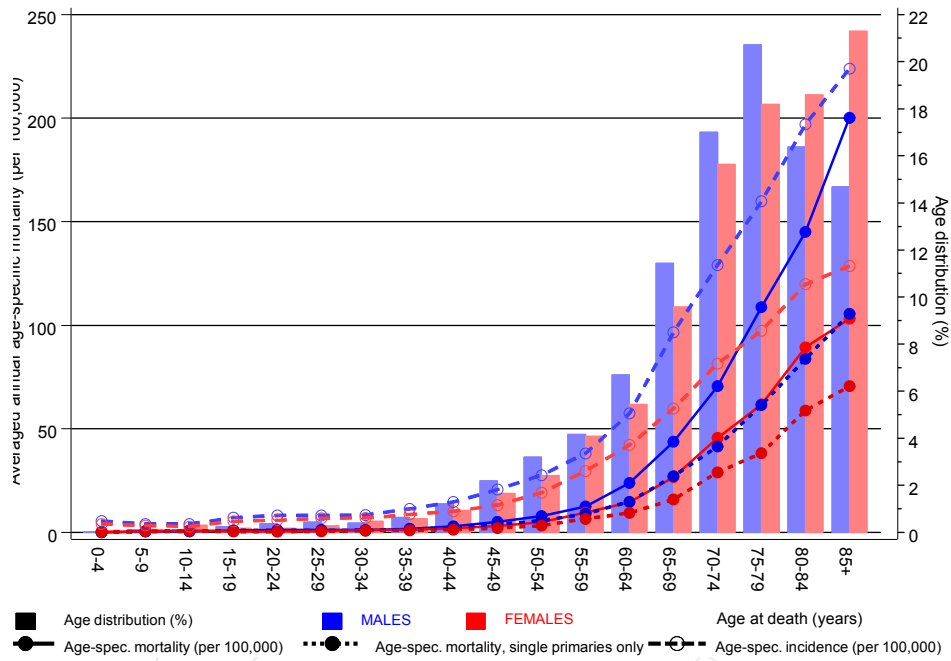
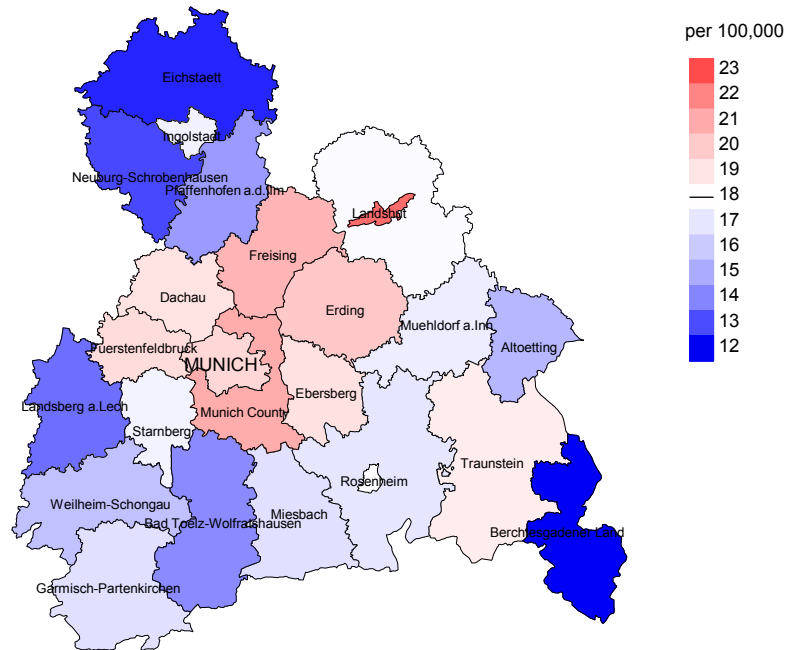


Figure 17. Distribution of age at death (bars; males: mean=68.9 yrs, median=71.4 yrs; females: mean=71.0 yrs, median=73.6 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at systemic neoplasms-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

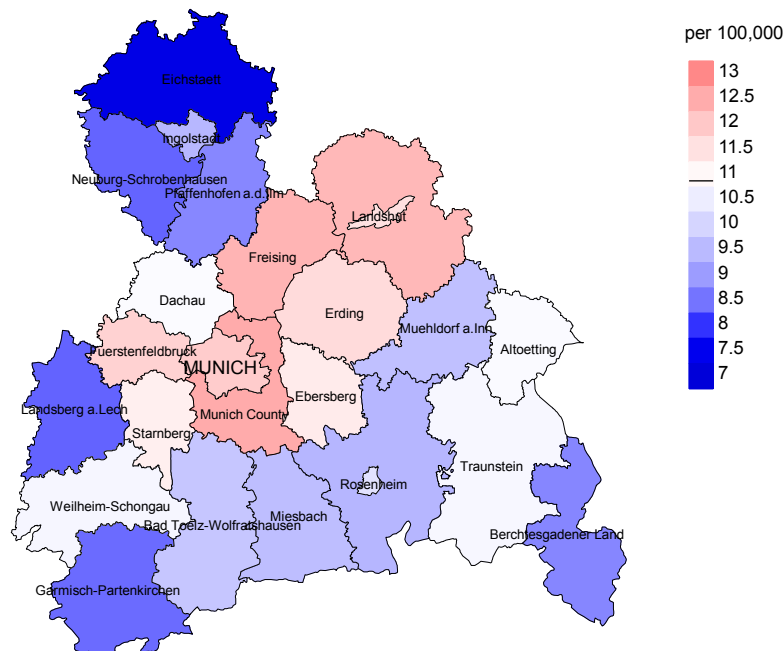
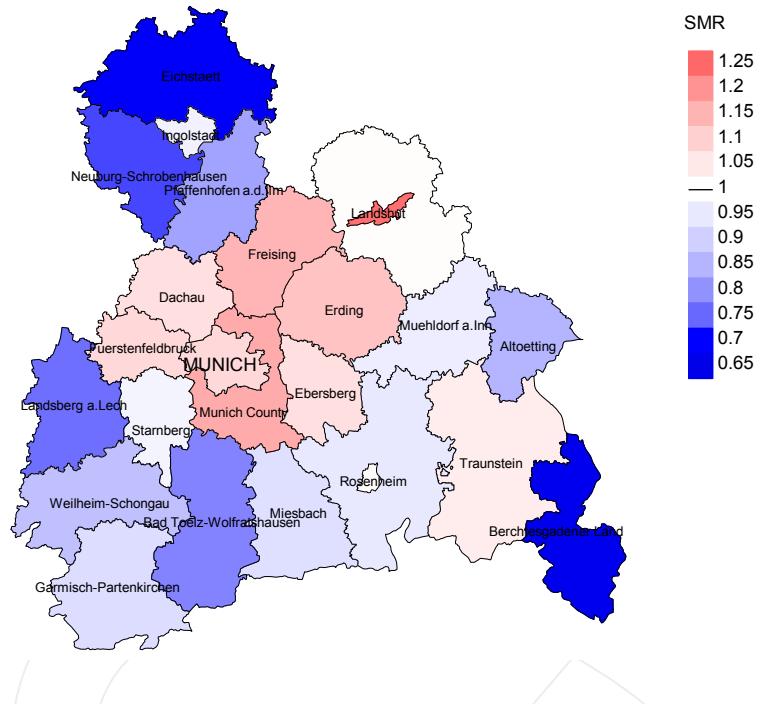


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 18.0/100,000 WS N=5,811, females 10.9/100,000 WS N=4,674).

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 130 women died from systemic neoplasms. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 11.3/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 8.9 and 14.2/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

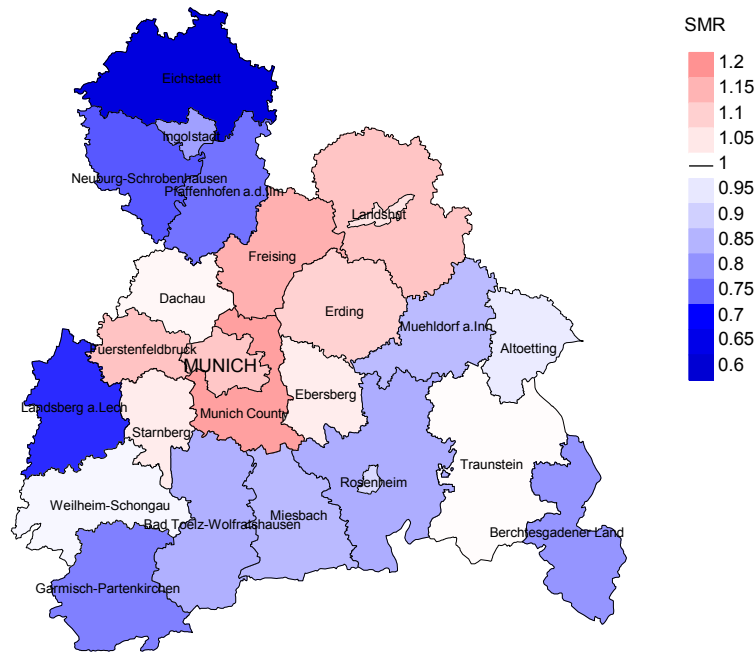


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=5,811, females N=4,674).

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 130 women died from systemic neoplasms. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.04. Though, the value of this parameter may vary with an underlying probability of 99% between 0.82 and 1.30, and is therefore not statistically striking.

Statistical Notes

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

1. All multiple primaries included

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

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

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

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

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

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

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

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

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

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

Shortcuts

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

Recommended Citation

Munich Cancer Registry. ICD-10 C81-C96: Systemic neoplasms - Incidence and Mortality [Internet]. 2021 [updated 2021 Jan 26; cited 2021 Mar 1]. Available from: <https://www.tumorregister-muenchen.de/en/facts/base/bC8196E-ICD-10-C81-C96-Systemic-neoplasms-incidence-and-mortality.pdf>

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