Munich Cancer Registry

- Survival
- Selection Matrix
- Homepage
- *Deutsch*

ICD-10 C81-C96: Systemic neoplasms

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	32,728
Diseases	33,449
Creation date	12/21/2021
Database export	12/20/2021
Population	4.95 m

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

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

Index of figures and tables

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

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

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

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

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

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

Munich Cancer Registry, December 2021

[#] Base data has been collected since 1998. An increase in new diseases is apparent, which is an effect of two extensions in the MCR catchment area (from a base population of 2.65 million to 4.10 in 2002, and to 4.69 million in 2007).

[##] Due to the high frequency and good prognosis of non-malignant skin cancer (C44), no systematic ascertainment is performed for this diagnosis. C44 is not designated as a primary, but rather as a secondary tumor.

[###] DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate.

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

Code	Description
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	851	172	20.2	8.9	11.8	76.9	97.3
1999	854	182	21.3	9.9	11.8	77.3	97.9
2000	825	196	23.8	10.0	11.7	76.8	97.6
2001	903	221	24.5	10.6	11.6	76.5	96.7
2002	1476	392	26.6	11.4	11.5	76.7	97.2 #
2003	1504	320	21.3	11.9	11.4	72.5	97.1
2004	1574	319	20.3	12.5	11.3	69.9	96.6
2005	1526	281	18.4	13.1	11.1	69.8	95.4
2006	1576	269	17.1	13.7	10.7	71.5	95.8
2007	1827	302	16.5	14.1	10.4	69.0	94.5 #
2008	1805	279	15.5	14.6	10.1	66.9	98.8
2009	1819	241	13.2	15.1	9.7	63.4	98.2
2010	1894	264	13.9	15.6	9.3	64.3	98.1
2011	1873	269	14.4	16.2	8.9	62.8	98.0
2012	1913	265	13.9	16.8	8.6	60.5	98.1
2013	1928	267	13.8	17.4	7.9	59.4	97.4
2014	1823	281	15.4	18.0	7.3	58.0	96.4
2015	1785	251	14.1	18.4	6.8	57.9	96.8
2016	1601	267	16.7	18.6	5.9	55.7	99.1
2017	1468	247	16.8	19.0	5.2	48.8	99.2
2018	1049	128	12.2	19.3	4.5	43.9	98.6
2019	787	20	2.5	19.5	3.1	32.5	98.9
2020	788	2	0.3	19.6	2.3	26.8	99.4 ##
1998–2020	33449	5435	16.2	19.6	11.8	63.1	97.4

33,449 cases diagnosed 1998-2020 are related to a total of 32,728 patients. Currently, in 9,407 (28.7 %) of these 32,728 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 7,113 / 1,685 / 609 (21.7 % / 5.1 % / 1.9 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 1,049 cases has been diagnosed, of which 19.3 % 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 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	464	54.5	89	19.2	9.3	12.9	77.2	97.6
1999	448	52.5	89	19.9	10.0	12.9	79.2	98.9
2000	448	54.3	108	24.1	10.1	12.8	78.6	97.3
2001	460	50.9	102	22.2	10.6	12.7	77.2	96.3
2002	788	53.4	180	22.8	11.8	12.6	76.3	97.0 #
2003	814	54.1	161	19.8	12.3	12.4	72.2	96.6
2004	831	52.8	148	17.8	12.7	12.3	69.0	96.5
2005	817	53.5	136	16.6	13.5	12.0	71.2	95.7
2006	890	56.5	141	15.8	14.2	11.7	71.9	96.0
2007	1010	55.3	161	15.9	14.5	11.2	69.1	93.9 #
2008	1004	55.6	152	15.1	15.1	10.9	66.1	98.7
2009	974	53.5	119	12.2	15.6	10.3	62.2	98.3
2010	1045	55.2	142	13.6	16.2	9.8	66.4	98.3
2011	1025	54.7	117	11.4	16.9	9.3	63.0	98.2
2012	1050	54.9	132	12.6	17.5	8.9	59.4	97.8
2013	1088	56.4	155	14.2	18.1	8.2	60.9	97.4
2014	1046	57.4	143	13.7	18.6	7.6	57.6	96.2
2015	999	56.0	130	13.0	19.0	6.8	57.2	96.8
2016	940	58.7	139	14.8	19.3	5.8	53.9	99.0
2017	814	55.4	117	14.4	19.8	5.0	46.9	99.4
2018	605	57.7	71	11.7	20.1	4.1	46.1	98.8
2019	434	55.1	12	2.8	20.2	3.0	32.3	98.8
2020	460	58.4	1	0.2	20.4	2.5	28.0	99.1 ##
1998-2020	18454	55.2	2745	14.9	20.4	12.9	62.9	97.4

18,454 cases diagnosed 1998-2020 are related to a total of 18,039 patients. Currently, in 5,499 (30.5 %) of these 18,039 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 4,094 / 996 / 409 (22.7 % / 5.5 % / 2.3 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 605 cases has been diagnosed, of which 20.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.1 % 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 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	45.5	83	21.4	8.5	10.4	76.5	96.9	
1999	406	47.5	93	22.9	9.8	10.4	75.1	96.8	
2000	377	45.7	88	23.3	9.7	10.3	74.8	97.9	
2001	443	49.1	119	26.9	10.6	10.3	75.8	97.1	
2002	688	46.6	212	30.8	11.0	10.1	77.2	97.4	#
2003	690	45.9	159	23.0	11.6	10.1	72.8	97.7	
2004	743	47.2	171	23.0	12.2	10.1	70.9	96.8	
2005	709	46.5	145	20.5	12.6	9.9	68.1	95.1	
2006	686	43.5	128	18.7	13.1	9.6	71.0	95.6	
2007	817	44.7	141	17.3	13.6	9.3	68.9	95.3	#
2008	801	44.4	127	15.9	13.9	9.1	67.9	99.0	
2009	845	46.5	122	14.4	14.4	8.8	64.7	98.1	
2010	849	44.8	122	14.4	14.9	8.6	61.6	97.9	
2011	848	45.3	152	17.9	15.4	8.4	62.5	97.8	
2012	863	45.1	133	15.4	16.1	8.1	61.8	98.4	
2013	840	43.6	112	13.3	16.5	7.6	57.4	97.4	
2014	777	42.6	138	17.8	17.2	6.9	58.4	96.7	
2015	786	44.0	121	15.4	17.6	6.8	58.9	96.7	
2016	661	41.3	128	19.4	17.7	6.1	58.2	99.2	
2017	654	44.6	130	19.9	18.0	5.6	51.2	98.9	
2018	444	42.3	57	12.8	18.3	4.9	41.0	98.2	
2019	353	44.9	8	2.3	18.5	3.3	32.9	98.9	
2020	328	41.6	1	0.3	18.7	2.2	25.0	99.7	##
1998-2020	14995	44.8	2690	17.9	18.7	10.4	63.3	97.5	

14,995 cases diagnosed 1998-2020 are related to a total of 14,689 patients. Currently, in 3,908 (26.6 %) of these 14,689 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 3,019 / 689 / 200 (20.6 % / 4.7 % / 1.4 %) 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 retreived from the respective headings.

How to interpret:
In 2018, a subgroup of 444 cases has been diagnosed, of which 18.3 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.9 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.94 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	464	387	41.9	32.9	28.9	18.9	38.8	24.4	48.0	29.2
1999	448	406	40.0	34.2	27.0	19.6	36.7	25.1	46.0	30.4
2000	448	377	39.3	31.4	26.6	17.7	36.1	23.2	45.0	28.1
2001	460	443	39.7	36.4	26.3	19.4	35.8	26.0	44.3	31.5
2002	788	688	42.3	35.1	26.9	17.3	36.6	23.7	45.3	29.4
2003	814	690	43.4	35.0	27.5	19.5	37.4	25.4	46.5	30.3
2004	831	743	44.2	37.6	28.3	20.1	37.8	26.3	45.8	32.0
2005	817	709	43.1	35.6	27.6	19.1	36.3	24.9	45.2	30.4
2006	890	686	46.5	34.1	28.2	17.5	38.2	23.1	47.2	28.5
2007	1010	817	45.6	35.4	27.4	18.4	37.2	24.2	46.6	29.4
2008	1004	801	45.1	34.5	27.3	17.4	35.9	23.1	44.5	28.6
2009	974	845	43.6	36.3	24.8	18.1	33.8	24.1	41.9	29.4
2010	1045	849	46.4	36.3	26.6	18.4	36.2	24.2	45.0	29.5
2011	1025	848	45.8	36.3	26.3	18.2	35.2	24.0	43.4	29.0
2012	1050	863	46.3	36.6	25.4	19.3	34.4	24.7	43.7	29.8
2013	1088	840	47.3	35.2	26.2	17.7	35.3	23.5	44.5	28.7
2014	1046	777	44.9	32.3	23.8	14.8	33.1	20.3	41.3	25.5
2015	999	786	42.0	32.3	21.7	14.2	30.4	20.0	38.8	25.3
2016	940	661	39.1	26.9	19.5	12.0	27.7	16.6	35.6	20.8
2017	814	654	33.7	26.5	16.8	11.7	23.9	16.3	30.2	20.5
2018	605	444	24.8	17.9	12.2	7.9	17.4	11.1	22.3	13.9
2019	434	353	17.8	14.2	9.2	6.7	12.8	9.2	16.0	11.3
2020	460	328	18.9	13.2	9.8	6.5	13.6	8.8	16.9	10.7
1998-2020	18454	14995	39.7	31.1	22.9	15.6	31.1	20.8	38.6	25.4

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

Table 3

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	851	62.4	19.7	0.9	100	33.3	53.2	65.0	77.0	85.2
1999	854	63.1	19.5	0.3	104	35.2	54.9	65.8	77.3	84.2
2000	825	63.3	19.2	0.4	97.6	35.5	54.7	67.1	77.1	84.7
2001	903	63.8	18.2	1.4	98.7	37.9	55.6	66.5	76.9	84.3
2002	1476	65.4	18.1	1.0	99.3	39.7	57.8	68.5	78.5	85.0
2003	1504	63.8	18.7	0.3	99.0	37.2	55.0	66.8	77.4	83.7
2004	1574	64.2	18.5	0.4	98.6	38.0	55.9	67.0	77.5	83.9
2005	1526	64.2	19.4	0.6	102	36.4	56.0	68.3	77.8	84.1
2006	1576	65.6	18.5	0.6	98.5	39.7	58.9	69.4	78.1	84.4
2007	1827	65.2	18.4	0.1	101	39.9	57.0	68.9	78.3	84.3
2008	1805	65.6	18.9	0.4	98.1	39.5	58.7	69.6	78.5	84.4
2009	1819	66.1	17.5	1.3	100	42.2	58.4	69.6	78.2	85.1
2010	1894	66.2	18.4	0.3	101	41.6	58.2	70.4	78.8	85.8
2011	1873	65.8	18.7	0.3	101	41.6	56.1	70.4	78.5	85.2
2012	1913	66.1	19.0	0.0	102	40.2	57.5	71.1	79.0	84.8
2013	1928	66.3	18.4	0.1	100	40.1	57.8	71.2	78.8	85.1
2014	1823	67.7	17.3	0.5	99.6	44.6	59.2	72.1	79.5	86.0
2015	1785	68.3	16.7	1.5	98.5	45.3	59.5	72.9	79.8	86.0
2016	1601	68.4	16.6	3.2	101	45.3	59.1	72.5	80.0	85.9
2017	1468	68.9	16.1	2.4	104	46.4	60.3	72.4	79.9	86.3
2018	1049	68.8	15.4	8.3	96.5	47.1	60.1	72.6	79.7	85.1
2019	787	66.6	16.5	17.1	98.8	42.1	56.6	70.6	78.9	84.0
2020	788	66.2	16.4	18.5	94.7	42.3	56.5	69.8	79.2	83.7
1998–2020	33449	65.9	18.1	0.0	104	40.6	57.4	69.9	78.7	85.0

Table 3a

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	Median 10%	25%	50%	75%	90%
1998	464	60.7	19.7	0.9	95.8	33.2	50.0	63.3	75.4	83.9
1999	448	61.5	18.9	0.3	93.8	33.3	54.2	64.0	75.0	82.6
2000	448	62.4	18.9	0.4	97.6	35.9	54.8	65.9	75.3	82.5
2001	460	61.5	17.6	1.4	96.4	37.6	53.4	64.3	74.7	80.1
2002	788	63.0	17.9	1.0	98.3	37.1	55.0	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	831	62.3	18.4	0.4	97.8	36.9	53.9	65.2	74.9	82.4
2005	817	62.7	19.7	0.7	102	34.8	54.8	67.0	76.5	82.7
2006	890	64.3	18.2	1.0	98.5	39.8	57.4	68.1	76.5	81.8
2007	1010	63.7	18.4	0.1	97.8	37.6	53.9	68.2	77.0	82.6
2008	1004	63.9	19.2	0.4	98.1	37.5	56.6	68.8	76.5	82.7
2009	974	64.6	16.9	2.2	97.0	42.2	55.8	68.8	75.9	82.7
2010	1045	65.3	18.2	0.3	101	41.5	56.5	69.6	77.7	84.7
2011	1025	64.5	18.3	2.5	101	40.5	55.2	69.3	77.1	83.4
2012	1050	65.7	18.5	1.5	96.0	41.5	57.1	71.0	78.6	83.9
2013	1088	65.8	18.4	0.5	100	39.8	57.3	70.8	78.3	84.4
2014	1046	67.0	17.4	0.5	99.6	44.3	58.0	71.1	79.1	85.5
2015	999	67.5	16.9	1.8	96.6	44.9	59.1	71.7	79.3	85.2
2016	940	67.8	16.0	5.2	101	46.3	58.9	71.8	78.9	84.4
2017	814	68.3	15.9	2.4	97.4	46.0	59.2	71.6	79.3	85.5
2018	605	68.3	15.4	8.3	96.5	46.8	59.8	72.2	79.0	84.3
2019	434	66.1	16.3	17.1	98.3	42.8	56.2	70.3	78.7	83.4
2020	460	65.9	15.9	18.5	93.9	42.5	56.3	69.3	78.9	83.1
1998–2020	18454	64.8	18.0	0.1	102	39.8	56.3	68.9	77.5	83.6

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	Median 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	406	65.0	20.0	1.5	104	39.0	56.1	69.9	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	443	66.2	18.5	2.8	98.7	39.1	57.7	69.7	79.6	86.8
2002	688	68.2	17.8	2.9	99.3	42.8	59.8	71.8	80.9	87.9
2003	690	65.1	19.3	0.3	98.9	38.5	55.4	68.1	79.8	85.5
2004	743	66.3	18.5	0.7	98.6	41.0	58.5	69.4	79.6	84.7
2005	709	65.9	19.0	0.6	98.4	38.9	57.9	69.5	79.4	85.0
2006	686	67.3	18.7	0.6	95.8	39.2	60.7	71.3	80.4	85.7
2007	817	67.1	18.3	1.0	101	43.8	59.8	70.1	80.1	86.0
2008	801	67.6	18.3	1.4	97.4	41.9	60.6	70.8	80.1	86.3
2009	845	67.8	18.0	1.3	100	42.6	60.4	70.9	80.9	86.7
2010	849	67.3	18.7	0.3	98.7	41.7	59.6	71.2	80.5	87.0
2011	848	67.2	19.0	0.3	99.2	42.9	57.1	71.7	80.4	87.4
2012	863	66.5	19.5	0.0	102	39.7	57.9	71.5	80.1	86.7
2013	840	67.0	18.3	0.1	97.9	40.3	58.4	71.5	80.0	86.2
2014	777	68.7	17.0	2.7	98.4	44.6	60.9	73.4	79.9	86.7
2015	786	69.4	16.5	1.5	98.5	46.0	60.6	74.1	80.5	87.1
2016	661	69.2	17.4	3.2	96.4	42.9	59.3	73.6	81.5	87.5
2017	654	69.7	16.3	14.3	104	47.0	61.7	73.3	81.0	87.1
2018	444	69.4	15.2	17.2	95.6	48.2	60.7	72.8	80.6	86.1
2019	353	67.1	16.7	20.6	98.8	42.1	57.3	71.1	79.4	85.0
2020	328	66.7	17.1	18.6	94.7	42.0	57.2	70.7	79.5	85.4
1998–2020	14995	67.2	18.3	0.0	104	41.5	58.8	71.3	80.1	86.4

Table 4

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

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	138	0.6	0.6	81	0.6	0.6	57	0.6	0.6
5-9	105	0.5	1.1	61	0.5	1.1	44	0.4	1.0
10-14	100	0.4	1.5	60	0.5	1.6	40	0.4	1.4
15-19	202	0.9	2.4	118	0.9	2.6	84	0.9	2.3
20-24	274	1.2	3.7	159	1.3	3.8	115	1.2	3.4
25-29	341	1.5	5.2	189	1.5	5.3	152	1.5	5.0
30-34	351	1.6	6.8	197	1.6	6.9	154	1.6	6.5
35-39	457	2.0	8.8	264	2.1	9.0	193	2.0	8.5
40-44	623	2.8	11.6	373	3.0	12.0	250	2.5	11.0
45-49	899	4.0	15.6	553	4.4	16.4	346	3.5	14.5
50-54	1189	5.3	20.9	711	5.7	22.1	478	4.8	19.4
55-59	1450	6.5	27.4	815	6.5	28.7	635	6.4	25.8
60-64	1825	8.2	35.6	1023	8.2	36.8	802	8.1	34.0
65-69	2660	11.9	47.5	1571	12.6	49.4	1089	11.0	45.0
70-74	3331	14.9	62.4	1930	15.4	64.9	1401	14.2	59.2
75-79	3394	15.2	77.5	1933	15.5	80.3	1461	14.8	74.0
80-84	2668	11.9	89.5	1428	11.4	91.8	1240	12.6	86.6
85+	2353	10.5	100.0	1028	8.2	100.0	1325	13.4	100.0
All ages	22360	100.0		12494	100.0		9866	100.0	

Table 5

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

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=1579 %	Females DCO rate n=1485 %	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0- 4	81	57	5.0	3.7	1.2	3.5	36.8	33.3
5- 9	61	44	3.9	3.0	1.6		52.1	44.0
10-14	60	40	3.8	2.6		2.5	43.8	31.3
15-19	118	84	6.9	5.2	0.8	1.2	37.0	31.7
20-24	158	115	7.8	6.1	1.3	0.9	25.1	22.2
25-29	188	152	8.3	6.8		0.7	19.7	12.8
30-34	195	154	8.4	6.8	2.1	1.3	15.0	7.2
35-39	263	193	11.4	8.5	1.1	2.6	14.4	5.5
40-44	369	250	14.8	10.3	1.4	2.0	13.2	4.1
45-49	549	346	20.4	13.3	1.8	2.9	10.9	3.7
50-54	709	477	27.8	19.0	3.7	2.5	8.4	3.8
55-59	812	634	38.3	29.1	4.1	3.6	6.4	4.8
60-64	1019	797	57.6	42.0	5.4	4.6	5.8	5.1
65-69	1562	1081	95.7	59.6	8.3	8.0	6.4	5.7
70-74	1912	1395	127.5	81.1	10.8	9.0	7.0	7.0
75-79	1911	1444	157.9	96.2	15.1	15.4	8.0	7.4
80-84	1416	1230	195.5	115.5	24.7	25.9	9.2	8.0
85+	1017	1317	217.8	126.3	45.6	48.0	9.7	8.0
All ages	12400	9810			12.7	15.1	8.1	6.3
Incidence								
Raw			38.1	29.2				
WS			20.8	14.2				
ES			28.5	19.0				
BRD-S			35.6	23.3				

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

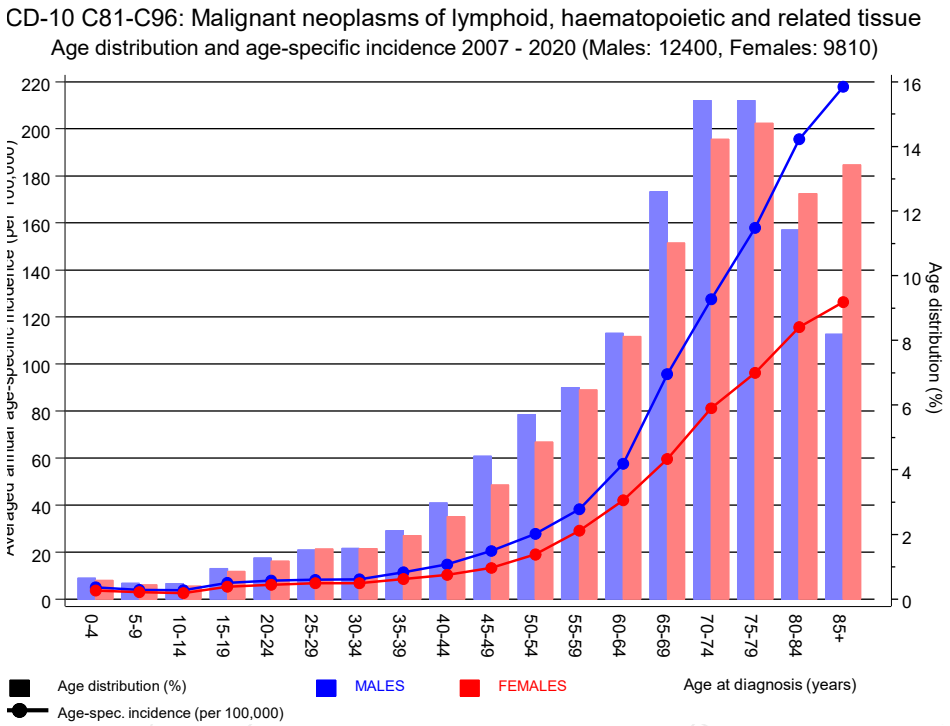

Figure 6. Age distribution (males: mean=65.9 yrs, median=70.1 yrs; females: mean=67.8 yrs, median=71.9 yrs) and age-specific incidence.

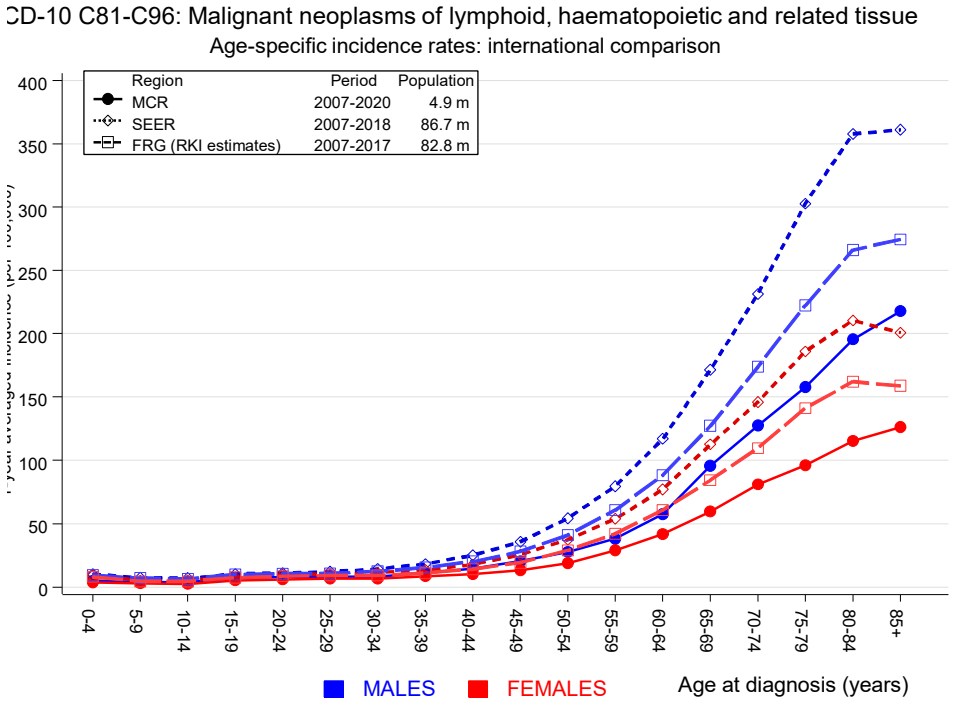

Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

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

Table 7a

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

MALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06	Oral cavity	23	6.9	3.3	2.1	5.0	#	2.7	4.3
C07–C08	Salivary gland	14	2.0	7.1	3.9	11.9	#	2.0	
C09–C10	Oropharynx	16	8.4	1.9	1.1	3.1	#	1.3	
C12–C13	Hypopharynx	6	4.5	1.3	0.5	2.9		0.2	
C15	Oesophagus	29	16.4	1.8	1.2	2.5	#	2.1	6.9
C16	Stomach	69	31.9	2.2	1.7	2.7	#	6.2	1.4
C17	Small intestine	19	5.1	3.8	2.3	5.9	#	2.3	5.3
C18	Colon	148	78.8	1.9	1.6	2.2	#	11.6	2.0
C19–C20	Rectum	83	43.1	1.9	1.5	2.4	#	6.7	1.2
C21	Anus/canal	7	2.0	3.5	1.4	7.1	#	0.8	
C22	Liver	43	24.0	1.8	1.3	2.4	#	3.2	11.6
C23–C24	Bile	13	8.8	1.5	0.8	2.5		0.7	7.7
C25	Pancreas	61	32.4	1.9	1.4	2.4	#	4.8	4.9
C32	Larynx	18	8.1	2.2	1.3	3.5	#	1.7	11.1
C33–C34	Lung	262	96.1	2.7	2.4	3.1	#	27.7	6.5
C37	Thymus	6	0.5	12.1	4.5	26.4	#	0.9	
C38,C45	Mesothelioma	16	5.8	2.8	1.6	4.5	#	1.7	6.3
C43	Malign. melanoma	133	38.5	3.5	2.9	4.1	#	15.8	
C46,C49	Soft tissue	26	4.8	5.4	3.5	7.9	#	3.5	
C50	Breast	7	2.3	3.1	1.2	6.4	#	0.8	
C60	Penis	9	2.1	4.3	2.0	8.2	#	1.2	
C61	Prostate	450	229.4	2.0	1.8	2.2	#	36.9	4.2
C62	Testis	7	3.4	2.1	0.8	4.3		0.6	
C64	Kidney	92	28.4	3.2	2.6	4.0	#	10.6	1.1
C65	Renal pelvis	6	3.7	1.6	0.6	3.5		0.4	
C66	Ureter	9	2.2	4.1	1.9	7.7	#	1.1	
C67	Bladder	73	38.5	1.9	1.5	2.4	#	5.8	1.4
C70–C72	CNS cancer	28	10.6	2.6	1.7	3.8	#	2.9	17.9
C73	Thyroid	19	5.6	3.4	2.1	5.3	#	2.2	
C76–C79	CUP	38	13.7	2.8	2.0	3.8	#	4.1	
C81	Hodgkin lymphoma	26	2.2	12.1	7.9	17.7	#	4.0	3.8
C82–C85	NHL	237	35.1	6.7	5.9	7.7	#	33.7	3.0
C90	Mult. myeloma	21	10.8	1.9	1.2	3.0	#	1.7	4.8
C91–C96	Leukaemia	108	12.7	8.5	7.0	10.3	#	15.9	13.0
	Others, specified	33	8.3	4.0	2.8	5.6	#	4.1	6.1
	Not observed	0	2.5	0.0	0.0	1.5		-0.4	
	All further malignancies	2155	829.4	2.6	2.5	2.7	#	221.5	4.1

Patients	15789
Median age at next malignancy (years)	72.4
Person-years	59834
Mean observation time (years)	3.8
Median observation time (years)	2.0

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 1998–2020
FEMALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C00	Lip	3	0.3	9.0	1.9	26.3	#	0.6	
C03–C06	Oral cavity	6	2.8	2.2	0.8	4.7		0.7	
C07–C08	Salivary gland	5	0.8	6.3	2.0	14.6	#	0.9	20.0
C09–C10	Oropharynx	9	2.0	4.6	2.1	8.6	#	1.5	
C15	Oesophagus	10	3.2	3.1	1.5	5.7	#	1.4	
C16	Stomach	37	16.1	2.3	1.6	3.2	#	4.3	2.7
C17	Small intestine	6	2.6	2.3	0.8	5.0		0.7	
C18	Colon	100	46.4	2.2	1.8	2.6	#	11.1	7.0
C19–C20	Rectum	22	18.9	1.2	0.7	1.8		0.6	4.5
C21	Anus/canal	14	2.7	5.2	2.8	8.7	#	2.3	7.1
C22	Liver	23	6.1	3.8	2.4	5.7	#	3.5	21.7
C23–C24	Bile	15	6.8	2.2	1.2	3.6	#	1.7	6.7
C25	Pancreas	43	22.7	1.9	1.4	2.5	#	4.2	16.3
C33–C34	Lung	119	37.1	3.2	2.7	3.8	#	16.9	4.2
C38,C45	Mesothelioma	3	0.9	3.3	0.7	9.6		0.4	
C43	Malign. melanoma	59	19.0	3.1	2.4	4.0	#	8.3	3.4
C46,C49	Soft tissue	9	2.8	3.2	1.5	6.1	#	1.3	
C48	Peritoneal	7	2.1	3.4	1.4	7.0	#	1.0	
C50	Breast	324	148.2	2.2	2.0	2.4	#	36.4	3.1
C51	Vulva	13	5.2	2.5	1.3	4.3	#	1.6	
C53	Cervix uteri	16	6.3	2.5	1.4	4.1	#	2.0	18.8
C54	Corpus uteri	52	26.9	1.9	1.4	2.5	#	5.2	
C56	Ovary	34	19.3	1.8	1.2	2.5	#	3.0	5.9
C64	Kidney	23	11.4	2.0	1.3	3.0	#	2.4	4.3
C65	Renal pelvis	4	1.5	2.6	0.7	6.6		0.5	
C67	Bladder	16	9.5	1.7	1.0	2.7		1.4	6.3
C69	Eye lymphoma	5	0.1	34.7	11.3	81.1	#	1.0	
C70–C72	CNS cancer	8	6.3	1.3	0.5	2.5		0.3	25.0
C73	Thyroid	30	8.0	3.7	2.5	5.3	#	4.5	3.3
C76–C79	CUP	17	8.7	2.0	1.1	3.1	#	1.7	
C81	Hodgkin lymphoma	5	1.0	5.0	1.6	11.7	#	0.8	
C82–C85	NHL	191	19.0	10.0	8.7	11.6	#	35.6	2.6
C90	Mult. myeloma	21	6.0	3.5	2.2	5.4	#	3.1	4.8
C91–C96	Leukaemia	67	7.2	9.3	7.2	11.8	#	12.4	16.4
Others, specified		13	5.0	2.6	1.4	4.5	#	1.7	23.1
Not observed		0	4.5	0.0	0.0	0.8	#	−0.9	
All further malignancies		1329	487.5	2.7	2.6	2.9	#	174.0	5.3

Patients	12450
Median age at next malignancy (years)	73.3
Person-years	48352
Mean observation time (years)	3.9
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”.

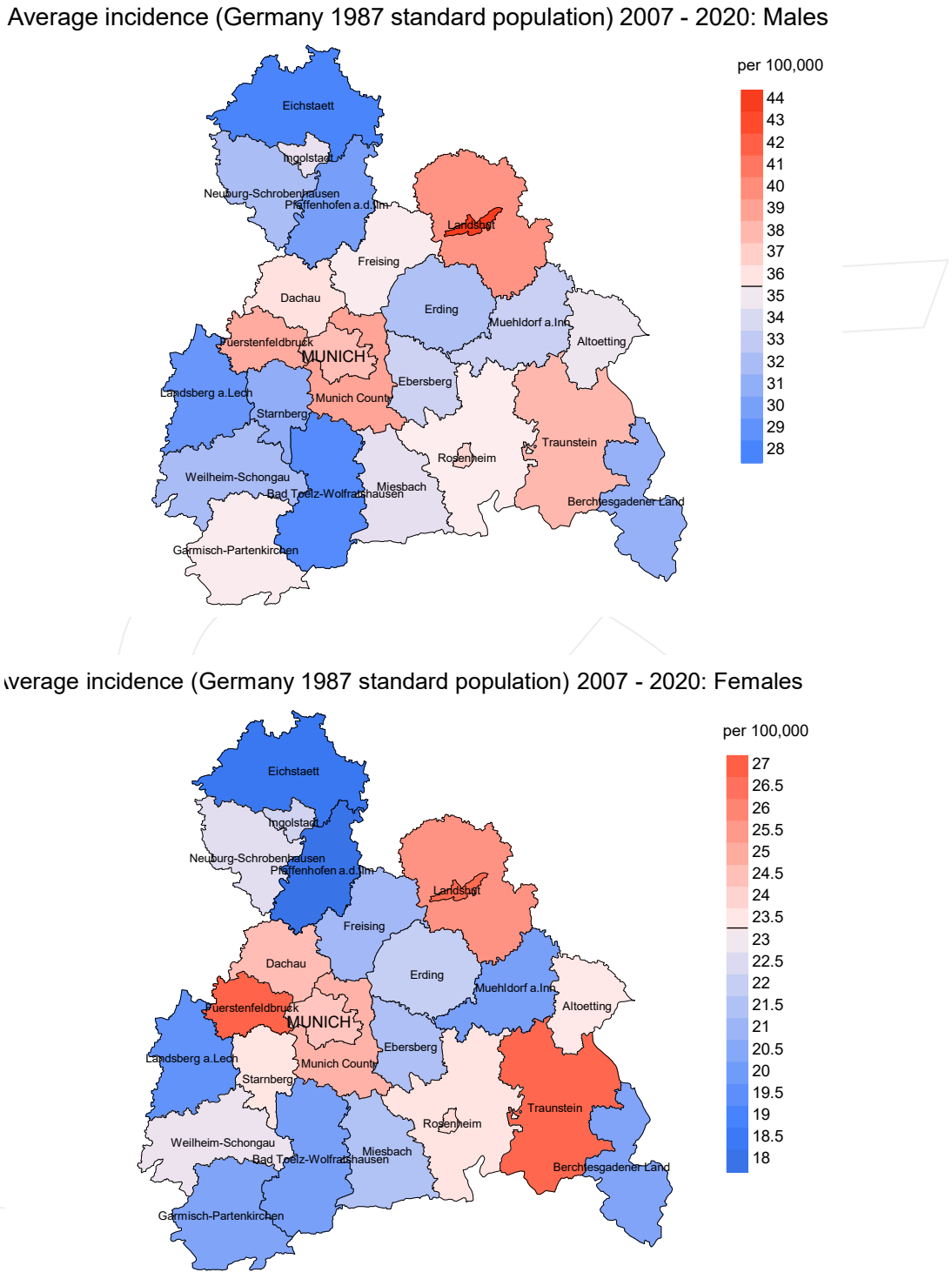

Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 35.6/100,000 WS N=12,400, females 23.3/100,000 WS N=9,810).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,727 female residents (averaged) in the period from 2007 to 2020 a total of 243 women were identified with newly diagnosed systemic neoplasms. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 21.5/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 18.0 and 25.4/100,000.

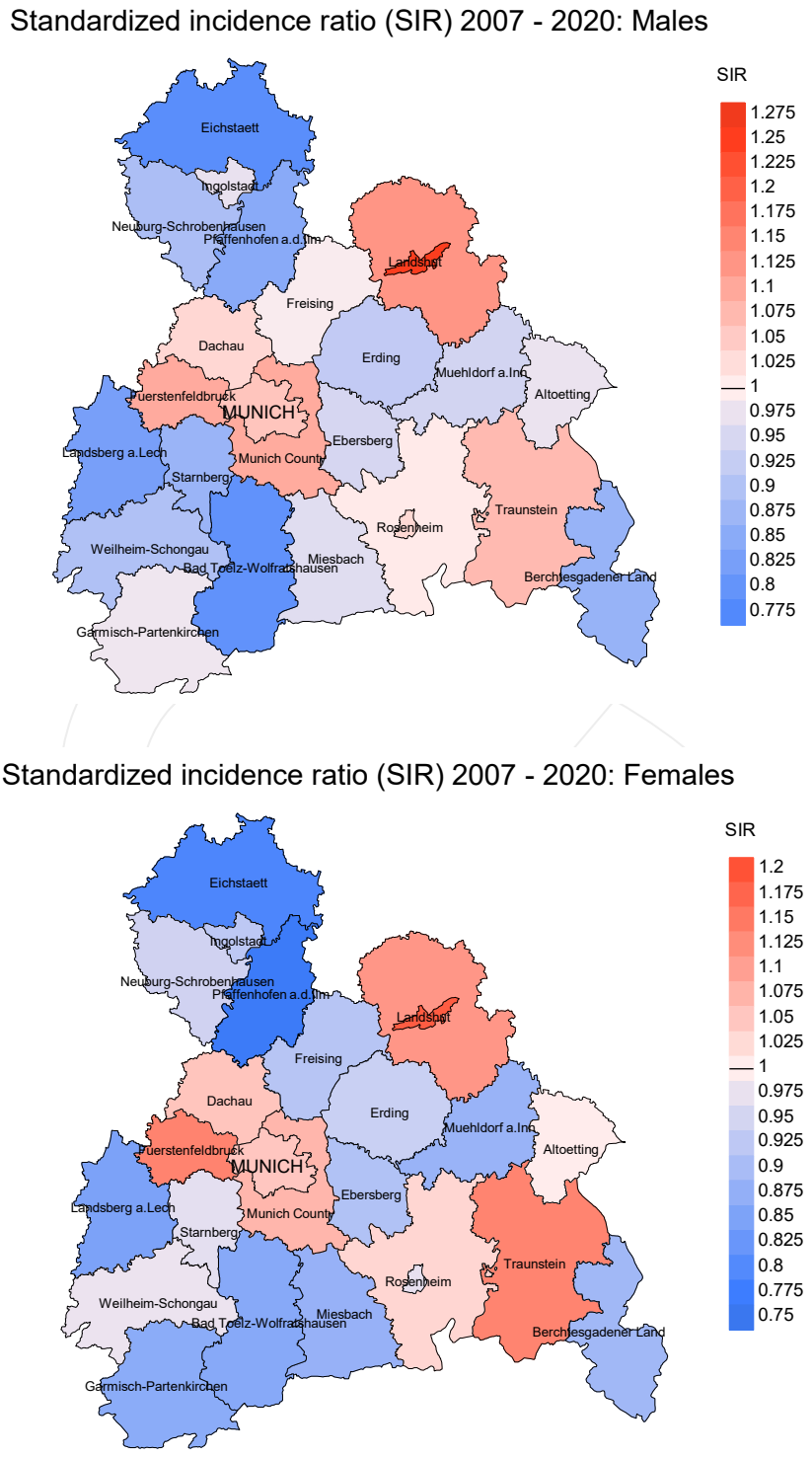

Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=12,400, females N=9,810).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2020 a total of 243 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 0.91. Though, the value of this parameter may vary with an underlying probability of 99% between 0.77 and 1.07, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.94 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	851	97.3	20.2	654	76.9	95.4
1999	854	97.9	21.3	660	77.3	95.3
2000	825	97.6	23.8	634	76.8	96.1
2001	903	96.7	24.5	691	76.5	96.5
2002	1476	97.2	26.6	1132	76.7	96.7
2003	1504	97.1	21.3	1090	72.5	97.3
2004	1574	96.6	20.3	1100	69.9	97.4
2005	1526	95.4	18.4	1065	69.8	96.6
2006	1576	95.8	17.1	1127	71.5	96.5
2007	1827	94.5	16.5	1261	69.0	95.9
2008	1805	98.8	15.5	1208	66.9	96.5
2009	1819	98.2	13.2	1153	63.4	95.2
2010	1894	98.1	13.9	1217	64.3	96.1
2011	1873	98.0	14.4	1176	62.8	94.9
2012	1913	98.1	13.9	1157	60.5	95.4
2013	1928	97.4	13.8	1145	59.4	93.3
2014	1823	96.4	15.4	1057	58.0	93.9
2015	1785	96.8	14.1	1034	57.9	92.1
2016	1601	99.1	16.7	892	55.7	93.2
2017	1468	99.2	16.8	717	48.8	89.3
2018	1049	98.6	12.2	461	43.9	76.1
2019	787	98.9	2.5	256	32.5	80.5
2020	788	99.4	0.3	211	26.8	92.9
1998-2020	33449	97.4	16.2	21098	63.1	94.7

Table 9b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased within the same year of being diagnosed with cancer (incl. DCO)
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.94 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	851	512	95.9	235	27.6
1999	854	547	94.9	237	27.8
2000	825	533	95.5	238	28.8
2001	903	592	96.5	256	28.3
2002	1476	819	97.6	471	31.9
2003	1504	824	98.3	440	29.3
2004	1574	872	98.3	427	27.1
2005	1526	878	98.2	404	26.5
2006	1576	901	98.3	419	26.6
2007	1827	1016	97.9	474	25.9
2008	1805	1009	97.9	438	24.3
2009	1819	1037	98.1	444	24.4
2010	1894	1085	98.2	463	24.4
2011	1873	1123	98.2	445	23.8
2012	1913	1158	98.3	451	23.6
2013	1928	1200	98.4	471	24.4
2014	1823	1240	98.1	491	26.9
2015	1785	1238	98.8	491	27.5
2016	1601	1174	99.0	475	29.7
2017	1468	1270	97.8	434	29.6
2018	1049	994	71.4	248	23.6
2019	787	829	45.4	116	14.7
2020	788	879	92.0	123	15.6
1998–2020	33449	21730	94.5	8691	26.0

Table 9c

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

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	512	62.7	37.3	94.1
1999	547	70.4	29.6	94.2
2000	533	74.5	25.5	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	878	82.9	17.1	95.1
2006	901	82.4	17.6	93.2
2007	1016	82.6	17.4	92.8
2008	1009	81.0	19.0	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	1200	76.8	23.2	88.2
2014	1240	75.1	24.9	89.4
2015	1238	76.7	23.3	86.5
2016	1174	74.4	25.6	87.1
2017	1270	73.9	26.1	86.2
2018	994	61.2	38.8	70.7
2019	829	46.1	53.9	77.9
2020	879	59.3	40.7	73.9
1998-2020	21730	75.3	24.7	89.3

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	298	71.0	70.1	74.7	71.3
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	691	76.7	75.8	79.3	76.6
2015	677	77.3	76.4	81.1	76.6
2016	662	77.8	77.3	80.4	77.6
2017	694	77.9	77.2	81.1	77.2
2018	593	77.0	76.8	77.7	77.1
2019	478	78.3	77.9	79.0	78.6
2020	516	78.5	77.8	79.8	78.0
1998–2020	11964	75.5	74.6	78.5	75.0

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	410	77.9	76.0	84.5	77.6
2006	404	77.8	77.3	80.5	77.3
2007	474	77.9	76.4	81.8	77.4
2008	453	78.4	76.4	84.1	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	500	78.6	77.3	81.7	77.9
2014	549	78.3	76.9	82.1	78.2
2015	561	78.6	77.8	81.9	78.2
2016	512	79.9	78.6	81.9	79.1
2017	576	79.4	78.2	83.3	78.6
2018	401	80.5	79.4	81.4	79.4
2019	351	80.0	78.8	81.3	78.6
2020	363	80.5	78.0	84.8	79.3
1998–2020	9766	78.4	77.0	82.5	77.8

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	223	19.6	0.50	12.1	0.46	17.7	0.49	23.6	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	0.45	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	0.48
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	0.44	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	0.36	15.0	0.43	21.2	0.48
2014	526	22.6	0.51	9.3	0.39	14.8	0.45	20.4	0.50
2015	518	21.8	0.52	9.2	0.43	14.2	0.47	19.8	0.51
2016	489	20.3	0.52	8.1	0.42	12.9	0.47	18.2	0.51
2017	523	21.7	0.65	8.5	0.51	13.6	0.57	18.9	0.63
2018	359	14.7	0.60	6.1	0.50	9.4	0.55	12.8	0.58
2019	223	9.2	0.52	3.7	0.41	5.7	0.45	7.9	0.50
2020	289	11.9	0.64	4.5	0.46	7.1	0.53	10.3	0.62
1998-2020	8994	19.3	0.49	9.0	0.40	13.9	0.45	19.1	0.50

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	0.49	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	0.47	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	0.46
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	0.33	9.2	0.38	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	0.38	12.3	0.43
2012	435	18.4	0.51	6.5	0.34	9.9	0.40	13.4	0.45
2013	395	16.6	0.47	5.8	0.33	8.8	0.38	12.1	0.42
2014	408	16.9	0.53	5.7	0.39	8.8	0.44	12.1	0.48
2015	433	17.8	0.55	6.0	0.42	9.3	0.47	12.8	0.51
2016	389	15.8	0.59	5.3	0.44	8.1	0.49	10.9	0.52
2017	418	17.0	0.64	5.4	0.47	8.5	0.52	11.7	0.58
2018	257	10.4	0.58	3.1	0.40	4.9	0.45	7.0	0.51
2019	164	6.6	0.47	2.1	0.31	3.2	0.35	4.5	0.40
2020	234	9.4	0.72	3.0	0.46	4.7	0.54	6.5	0.61
1998-2020	7394	15.3	0.50	5.6	0.36	8.5	0.41	11.5	0.45

Table 12

Age distribution of age at death (cancer-related) for period 2007-2020
(**incl. multiple malignancies**)

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	4	0.0	0.0	1	0.0	0.0	3	0.1	0.1
5-9	14	0.1	0.2	8	0.1	0.1	6	0.1	0.2
10-14	21	0.2	0.3	7	0.1	0.3	14	0.3	0.5
15-19	23	0.2	0.5	15	0.2	0.5	8	0.2	0.6
20-24	33	0.3	0.8	24	0.4	0.9	9	0.2	0.8
25-29	40	0.4	1.2	26	0.4	1.3	14	0.3	1.1
30-34	47	0.4	1.6	24	0.4	1.7	23	0.5	1.5
35-39	69	0.6	2.2	40	0.6	2.3	29	0.6	2.1
40-44	121	1.1	3.3	73	1.2	3.5	48	1.0	3.1
45-49	215	1.9	5.2	132	2.1	5.6	83	1.6	4.7
50-54	320	2.8	8.0	193	3.1	8.6	127	2.5	7.2
55-59	465	4.1	12.1	262	4.2	12.8	203	4.0	11.3
60-64	689	6.1	18.2	413	6.6	19.4	276	5.5	16.7
65-69	1168	10.3	28.5	697	11.1	30.5	471	9.4	26.1
70-74	1838	16.2	44.7	1068	17.0	47.4	770	15.3	41.4
75-79	2252	19.9	64.6	1320	21.0	68.4	932	18.5	59.9
80-84	2011	17.8	82.4	1062	16.9	85.3	949	18.8	78.7
85+	1994	17.6	100.0	923	14.7	100.0	1071	21.3	100.0
All ages	11324	100.0		6288	100.0		5036	100.0	

Table 13

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	1	3	0.1	0.01	0.2	0.05	5.3	18.8
5- 9	8	6	0.5	0.13	0.4	0.14	28.6	24.0
10-14	7	14	0.4	0.12	0.9	0.35	25.0	60.9
15-19	15	8	0.9	0.13	0.5	0.10	31.3	32.0
20-24	24	9	1.2	0.15	0.5	0.08	32.9	20.9
25-29	26	14	1.1	0.14	0.6	0.09	28.0	14.1
30-34	24	23	1.0	0.12	1.0	0.15	16.8	12.7
35-39	40	29	1.7	0.15	1.3	0.15	15.0	7.1
40-44	73	48	2.9	0.20	2.0	0.19	12.0	5.6
45-49	132	83	4.9	0.24	3.2	0.24	9.3	5.0
50-54	193	127	7.6	0.27	5.1	0.27	7.3	4.8
55-59	262	203	12.3	0.32	9.3	0.32	5.9	5.3
60-64	413	276	23.4	0.41	14.5	0.35	6.4	5.5
65-69	697	471	42.7	0.45	26.0	0.44	7.6	6.8
70-74	1068	770	71.2	0.56	44.8	0.55	9.0	8.8
75-79	1320	932	109.1	0.69	62.1	0.65	10.6	9.5
80-84	1062	949	146.7	0.75	89.1	0.77	10.1	10.1
85+	923	1071	197.6	0.91	102.7	0.81	10.1	9.0
All ages	6288	5036					9.1	8.2
Mortality								
Raw			19.3	0.51	15.0	0.51		
WS			8.3	0.40	5.2	0.37		
ES			12.9	0.45	7.9	0.42		
BRD-S			17.9	0.50	10.8	0.46		
PYLL-70								
per 100,000			79.1		56.0			
ES			71.5		51.0			
AYLL-70			11.8		12.0			

Table 14a

Further malignancies in deaths in period 1998–2020
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03–C06	Oral cavity	34	0.8	10	29.4	6	17.6	18	52.9
C07–C08	Salivary gland	16	0.4	4	25.0	3	18.8	9	56.3
C09–C10	Oropharynx	25	0.6	12	48.0	1	4.0	12	48.0
C12–C13	Hypopharynx	9	0.2			2	22.2	7	77.8
C15	Oesophagus	53	1.3	12	22.6	4	7.5	37	69.8
C16	Stomach	104	2.6	35	33.7	16	15.4	53	51.0
C17	Small intestine	21	0.5	9	42.9	2	9.5	10	47.6
C18	Colon	267	6.6	131	49.1	35	13.1	101	37.8
C19–C20	Rectum	159	3.9	75	47.2	16	10.1	68	42.8
C22	Liver	54	1.3	9	16.7	5	9.3	40	74.1
C23–C24	Bile	19	0.5	5	26.3			14	73.7
C25	Pancreas	81	2.0	5	6.2	10	12.3	66	81.5
C30–C31	Sinuses	9	0.2	6	66.7			3	33.3
C32	Larynx	38	0.9	23	60.5	5	13.2	10	26.3
C33–C34	Lung	365	9.0	60	16.4	52	14.2	253	69.3
C38,C45	Mesothelioma	21	0.5	3	14.3	6	28.6	12	57.1
C40–C41	Bone	11	0.3	3	27.3	1	9.1	7	63.6
C43	Malign. melanoma	176	4.3	89	50.6	11	6.3	76	43.2
C44	Skin others	671	16.5	181	27.0	43	6.4	447	66.6
C46,C49	Soft tissue	46	1.1	21	45.7	4	8.7	21	45.7
C50	Breast	8	0.2	4	50.0			4	50.0
C60	Penis	11	0.3	3	27.3	3	27.3	5	45.5
C61	Prostate	801	19.7	537	67.0	64	8.0	200	25.0
C62	Testis	23	0.6	18	78.3	2	8.7	3	13.0
C64	Kidney	129	3.2	78	60.5	14	10.9	37	28.7
C65	Renal pelvis	8	0.2	2	25.0	1	12.5	5	62.5
C66	Ureter	10	0.2	2	20.0	2	20.0	6	60.0
C67	Bladder	123	3.0	59	48.0	11	8.9	53	43.1
C70–C72	CNS cancer	38	0.9	6	15.8	5	13.2	27	71.1
C73	Thyroid	24	0.6	19	79.2			5	20.8
C76–C79	CUP	59	1.5	8	13.6	7	11.9	44	74.6
C81	Hodgkin lymphoma	36	0.9	29	80.6	4	11.1	3	8.3
C82–C85	NHL	225	5.5	78	34.7	14	6.2	133	59.1
C90	Mult. myeloma	89	2.2	28	31.5	10	11.2	51	57.3
C91–C96	Leukaemia	261	6.4	19	7.3	70	26.8	172	65.9
Others, specified		43	1.1	19	44.2	5	11.6	19	44.2
All further malignancies		4067	100.0	1602	39.4	434	10.7	2031	49.9

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 1998–2020
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03–C06	Oral cavity	15	0.6	9	60.0	1	6.7	5	33.3
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	10	0.4			1	10.0	9	90.0
C16	Stomach	67	2.5	20	29.9	12	17.9	35	52.2
C17	Small intestine	8	0.3	4	50.0	1	12.5	3	37.5
C18	Colon	175	6.6	78	44.6	20	11.4	77	44.0
C19–C20	Rectum	78	2.9	45	57.7	9	11.5	24	30.8
C21	Anus/canal	23	0.9	12	52.2			11	47.8
C22	Liver	23	0.9	1	4.3	2	8.7	20	87.0
C23–C24	Bile	24	0.9	6	25.0	2	8.3	16	66.7
C25	Pancreas	56	2.1	4	7.1	9	16.1	43	76.8
C33–C34	Lung	153	5.8	22	14.4	16	10.5	115	75.2
C38,C45	Mesothelioma	5	0.2					5	100.0
C43	Malign. melanoma	104	3.9	57	54.8	3	2.9	44	42.3
C44	Skin others	255	9.6	93	36.5	11	4.3	151	59.2
C46,C49	Soft tissue	16	0.6	4	25.0	3	18.8	9	56.3
C48	Peritoneal	13	0.5	5	38.5	3	23.1	5	38.5
C50	Breast	657	24.7	440	67.0	46	7.0	171	26.0
C51	Vulva	23	0.9	13	56.5			10	43.5
C53	Cervix uteri	44	1.7	32	72.7	3	6.8	9	20.5
C54	Corpus uteri	103	3.9	74	71.8	5	4.9	24	23.3
C55,C57	Fem. genitals un	10	0.4	8	80.0	1	10.0	1	10.0
C56	Ovary	64	2.4	23	35.9	10	15.6	31	48.4
C64	Kidney	55	2.1	29	52.7	10	18.2	16	29.1
C65	Renal pelvis	6	0.2	2	33.3			4	66.7
C67	Bladder	34	1.3	16	47.1	3	8.8	15	44.1
C70–C72	CNS cancer	32	1.2	13	40.6	4	12.5	15	46.9
C73	Thyroid	43	1.6	33	76.7	1	2.3	9	20.9
C76–C79	CUP	43	1.6	11	25.6	6	14.0	26	60.5
C81	Hodgkin lymphoma	24	0.9	22	91.7	2	8.3		
C82–C85	NHL	173	6.5	45	26.0	8	4.6	120	69.4
C90	Mult. myeloma	62	2.3	14	22.6	5	8.1	43	69.4
C91–C96	Leukaemia	206	7.8	8	3.9	51	24.8	147	71.4
Others, specified		34	1.3	21	61.8	2	5.9	11	32.4
All further malignancies		2658	100.0	1175	44.2	251	9.4	1232	46.4

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	1	3	0.1	0.01	0.2	0.05	5.3	20.0
5- 9	8	6	0.5	0.13	0.4	0.14	29.6	24.0
10-14	7	12	0.4	0.12	0.8	0.31	25.0	63.2
15-19	15	7	0.9	0.13	0.4	0.09	32.6	30.4
20-24	21	8	1.0	0.14	0.4	0.07	31.8	19.5
25-29	24	11	1.1	0.13	0.5	0.08	28.2	12.1
30-34	23	20	1.0	0.12	0.9	0.14	16.7	12.6
35-39	36	28	1.6	0.14	1.2	0.15	14.5	7.6
40-44	60	42	2.4	0.17	1.7	0.19	10.7	5.6
45-49	119	68	4.4	0.24	2.6	0.22	9.2	4.7
50-54	165	102	6.5	0.26	4.1	0.26	7.0	4.5
55-59	228	163	10.7	0.32	7.5	0.32	5.9	5.1
60-64	329	216	18.6	0.40	11.4	0.35	6.1	5.3
65-69	526	338	32.2	0.44	18.6	0.42	7.2	6.1
70-74	792	568	52.8	0.58	33.0	0.57	8.7	8.4
75-79	940	690	77.7	0.76	46.0	0.67	10.3	9.2
80-84	729	731	100.7	0.82	68.7	0.80	9.8	10.1
85+	598	825	128.1	0.93	79.1	0.82	9.2	8.8
All ages	4621	3838					8.6	7.8
Mortality								
Raw			14.2	0.49	11.4	0.50		
WS			6.3	0.37	4.0	0.34		
ES			9.7	0.43	6.1	0.40		
BRD-S			13.2	0.49	8.3	0.45		
PYLL-70								
per 100,000			68.6		46.4			
ES			62.5		42.8			
AYLL-70			12.6		12.8			

* See corresponding tables with multiple malignancies.

Table 16

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	1	3	0.1	0.01	0.2	0.05	5.3	20.0
5- 9	8	6	0.5	0.13	0.4	0.15	29.6	24.0
10-14	7	10	0.4	0.12	0.7	0.26	25.0	52.6
15-19	15	6	0.9	0.14	0.4	0.08	32.6	27.3
20-24	20	7	1.0	0.13	0.4	0.06	30.3	17.5
25-29	21	10	0.9	0.12	0.4	0.07	24.7	11.4
30-34	22	19	1.0	0.12	0.8	0.14	16.1	12.1
35-39	32	22	1.4	0.13	1.0	0.13	12.9	6.0
40-44	54	32	2.2	0.16	1.3	0.15	9.7	4.3
45-49	102	55	3.8	0.21	2.1	0.20	8.0	3.9
50-54	136	83	5.3	0.24	3.3	0.23	5.9	3.8
55-59	188	135	8.9	0.30	6.2	0.29	4.9	4.3
60-64	256	178	14.5	0.36	9.4	0.33	4.9	4.5
65-69	432	280	26.5	0.45	15.4	0.40	6.0	5.2
70-74	625	484	41.7	0.55	28.1	0.56	7.2	7.4
75-79	733	577	60.6	0.68	38.4	0.62	8.4	7.9
80-84	594	627	82.0	0.75	58.9	0.74	8.5	9.0
85+	472	726	101.1	0.77	69.6	0.75	7.9	8.1
All ages	3718	3260					7.2	6.9
Mortality								
Raw			11.4	0.45	9.7	0.47		
WS			5.2	0.34	3.4	0.32		
ES			7.8	0.39	5.1	0.37		
BRD-S			10.6	0.44	7.0	0.42		
PYLL-70								
per 100,000			59.2		38.7			
ES			54.5		35.9			
AYLL-70			13.1		12.9			

* See corresponding tables with multiple malignancies.

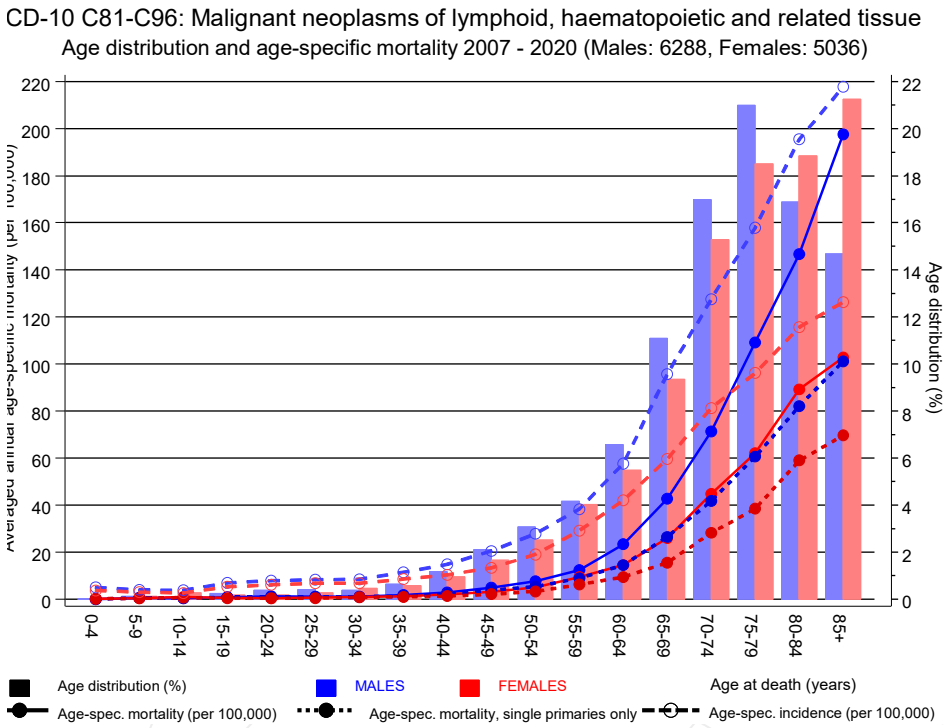

Figure 17. Distribution of age at death (bars; males: mean=68.9 yrs, median=71.4 yrs; females: mean=70.8 yrs, median=73.6 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

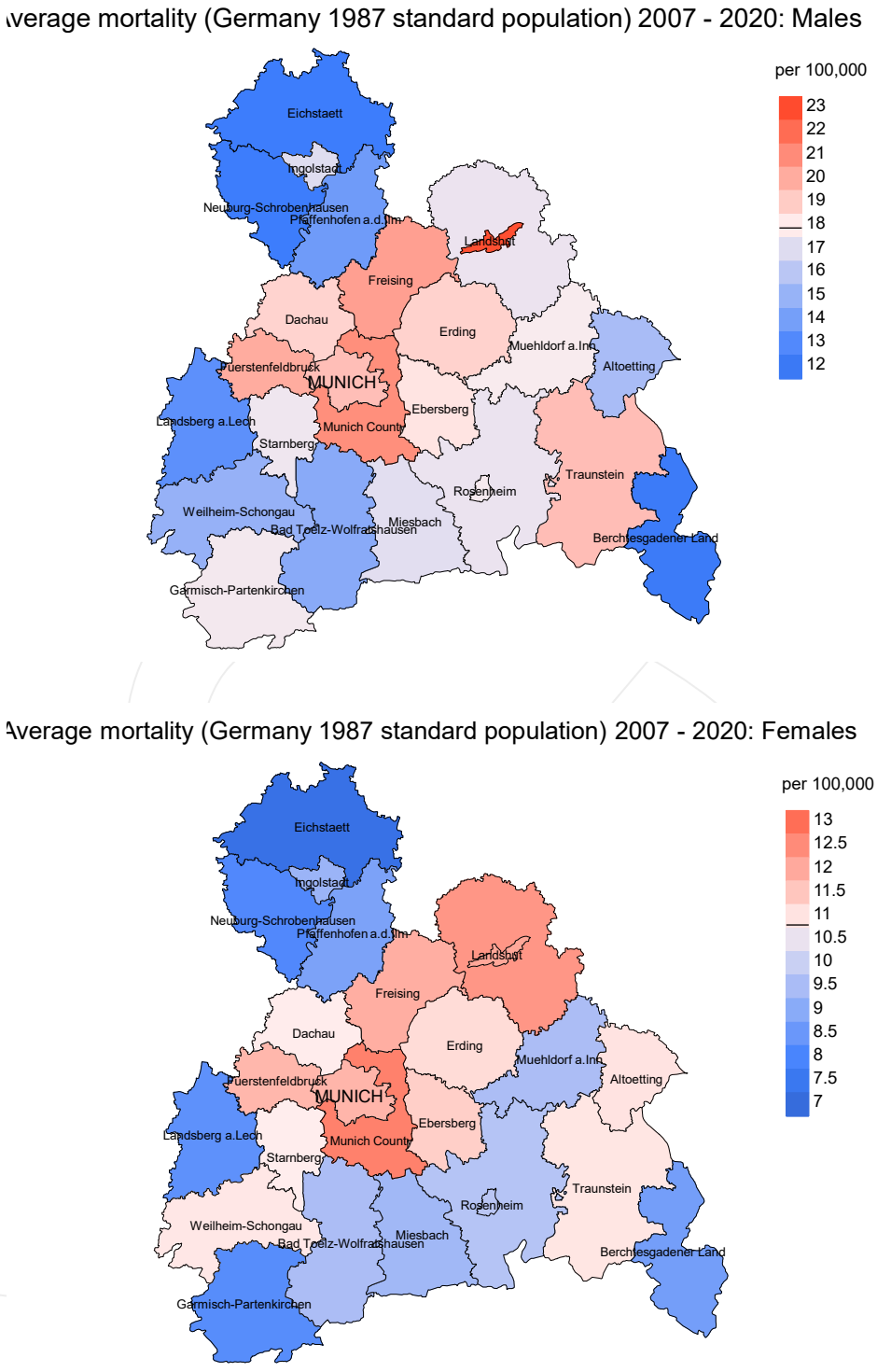

Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 17.9/100,000 WS N=6,288, females 10.8/100,000 WS N=5,036).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,727 female residents (averaged) in the period from 2007 to 2020 a total of 142 women died from systemic neoplasms. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 11.4/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 9.0 and 14.2/100,000.

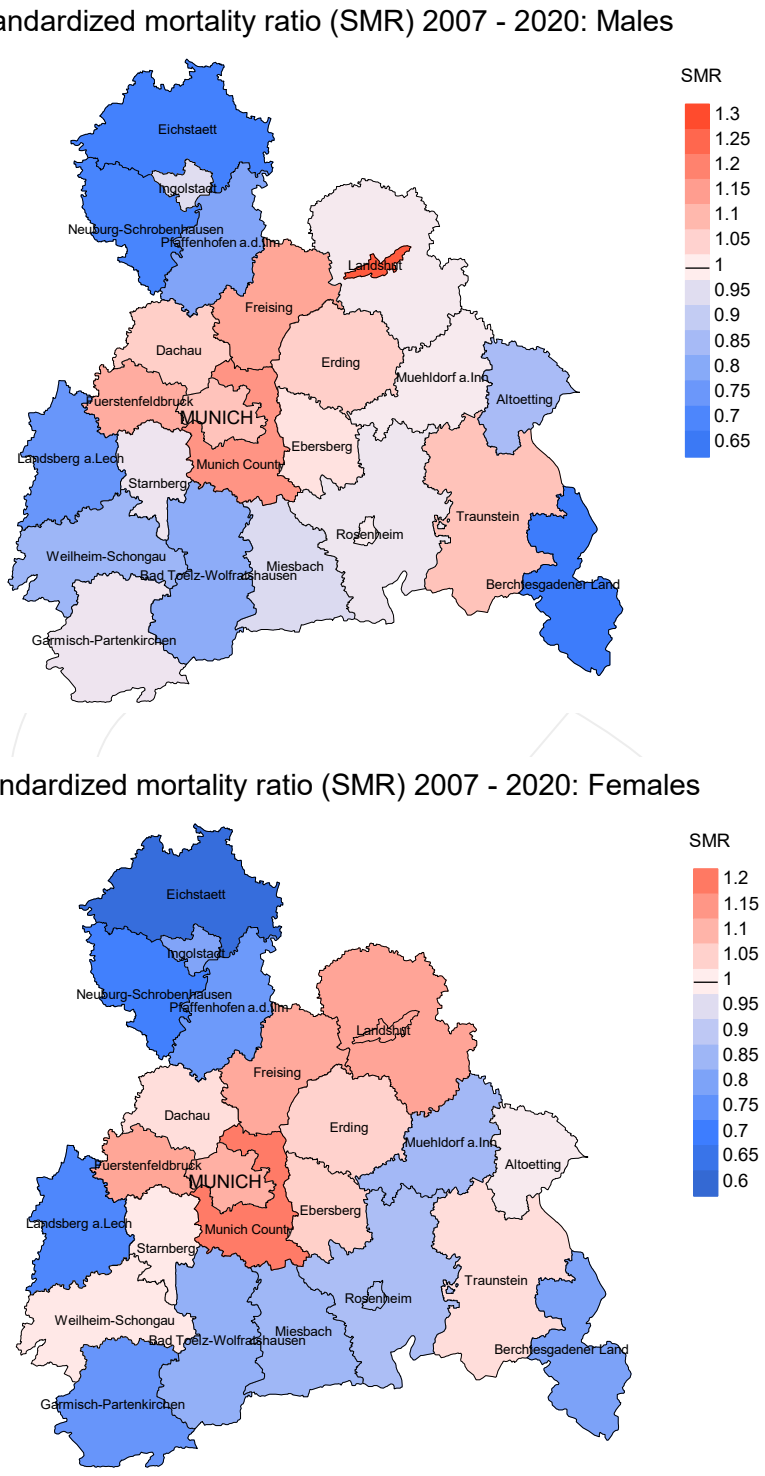

Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=6,288, females N=5,036).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2020 a total of 142 women died from systemic neoplasms. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.05. Though, the value of this parameter may vary with an underlying probability of 99% between 0.84 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 Dec 21; cited 2022 Feb 1]. Available from: https://www.tumorregister-muenchen.de/en/facts/base/bC8196E-ICD-10-C81-C96-Systemic-neoplasms-incidence-and-mortality.pdf

Copyright

Disclaimer