Munich Cancer Registry

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ICD-10 C82-C86: NHL

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	12,649
Diseases	12,818
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/bC8286E-ICD-10-C82-C86-NHL-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 2016) used for specifying cancer site

Code	Description
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

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	325	40	12.3	8.6	12.9	78.2	98.2
1999	328	54	16.5	8.1	12.8	77.4	98.2
2000	292	43	14.7	8.6	12.8	75.0	96.9
2001	331	46	13.9	9.6	12.7	72.2	96.7
2002	540	105	19.4	10.7	12.5	75.4	98.5 #
2003	541	69	12.8	11.6	12.4	69.5	97.2
2004	593	61	10.3	11.8	12.3	67.3	96.6
2005	548	59	10.8	11.9	11.9	66.1	95.3
2006	596	50	8.4	12.3	11.6	66.3	95.6
2007	691	71	10.3	12.7	11.3	66.4	94.1 #
2008	669	47	7.0	13.3	10.8	63.7	98.4
2009	733	44	6.0	13.9	10.3	57.8	98.4
2010	711	52	7.3	14.4	9.9	61.3	97.9
2011	716	64	8.9	14.9	9.3	61.0	98.3
2012	689	41	6.0	15.5	9.0	56.3	98.8
2013	770	44	5.7	16.2	8.3	53.8	97.4
2014	703	39	5.5	16.7	7.7	51.5	96.0
2015	698	45	6.4	17.2	7.2	49.1	97.0
2016	620	51	8.2	17.5	6.0	51.1	99.2
2017	568	45	7.9	17.9	5.5	40.3	99.1
2018	439	25	5.7	18.2	4.6	33.7	98.9
2019	365	3	0.8	18.4	3.0	27.9	98.1
2020	352	1	0.3	18.7	2.0	25.9	99.4 ##
1998–2020	12818	1099	8.6	18.7	12.9	58.4	97.5

12,818 cases diagnosed 1998-2020 are related to a total of 12,649 patients. Currently, in 3,682 (29.1 %) of these 12,649 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 2,706 / 702 / 274 (21.4 % / 5.5 % / 2.2 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 439 cases has been diagnosed, of which 18.2 % 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 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	169	52.0	20	11.8	7.7	13.3	79.9	98.8
1999	166	50.6	25	15.1	7.5	13.3	80.1	98.8
2000	153	52.4	23	15.0	8.6	13.3	75.2	96.1
2001	166	50.2	21	12.7	9.2	13.1	73.5	96.4
2002	282	52.2	50	17.7	11.0	13.0	77.3	98.6 #
2003	264	48.8	37	14.0	12.0	12.8	68.6	96.6
2004	311	52.4	28	9.0	12.4	12.7	66.9	96.8
2005	281	51.3	24	8.5	12.7	12.2	66.5	95.4
2006	334	56.0	27	8.1	12.9	11.9	68.3	96.1
2007	370	53.5	40	10.8	13.2	11.6	68.4	94.1 #
2008	369	55.2	26	7.0	13.9	11.1	64.5	98.4
2009	398	54.3	25	6.3	14.7	10.4	58.3	99.0
2010	375	52.7	28	7.5	15.3	9.9	64.8	98.1
2011	396	55.3	27	6.8	15.8	9.2	62.1	98.2
2012	368	53.4	22	6.0	16.3	8.8	56.8	99.2
2013	415	53.9	27	6.5	17.1	8.0	58.6	97.1
2014	402	57.2	19	4.7	17.5	7.6	53.7	95.5
2015	406	58.2	24	5.9	18.2	6.8	49.8	97.3
2016	370	59.7	31	8.4	18.6	5.2	49.7	98.6
2017	314	55.3	21	6.7	18.9	4.7	40.1	99.4
2018	253	57.6	12	4.7	19.1	3.7	34.4	99.6
2019	201	55.1	2	1.0	19.3	2.5	26.4	98.0
2020	204	58.0			19.5	1.5	25.5	99.5 ##
1998-2020	6967	54.4	559	8.0	19.5	13.3	59.0	97.6

6,967 cases diagnosed 1998-2020 are related to a total of 6,876 patients. Currently, in 2,102 (30.6 %) of these 6,876 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,542 / 400 / 160 (22.4 % / 5.8 % / 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 253 cases has been diagnosed, of which 19.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 3.7 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	156	48.0	20	12.8	9.6	12.4	76.3	97.4	
1999	162	49.4	29	17.9	8.8	12.3	74.7	97.5	
2000	139	47.6	20	14.4	8.5	12.1	74.8	97.8	
2001	165	49.8	25	15.2	10.0	12.1	70.9	97.0	
2002	258	47.8	55	21.3	10.3	11.9	73.3	98.4	#
2003	277	51.2	32	11.6	11.1	11.9	70.4	97.8	
2004	282	47.6	33	11.7	11.3	11.8	67.7	96.5	
2005	267	48.7	35	13.1	11.2	11.6	65.5	95.1	
2006	262	44.0	23	8.8	11.6	11.2	63.7	95.0	
2007	321	46.5	31	9.7	12.3	10.9	64.2	94.1	#
2008	300	44.8	21	7.0	12.5	10.5	62.7	98.3	
2009	335	45.7	19	5.7	13.0	10.2	57.3	97.6	
2010	336	47.3	24	7.1	13.3	9.8	57.4	97.6	
2011	320	44.7	37	11.6	13.8	9.4	59.7	98.4	
2012	321	46.6	19	5.9	14.5	9.3	55.8	98.4	
2013	355	46.1	17	4.8	15.1	8.7	48.2	97.7	
2014	301	42.8	20	6.6	15.8	7.9	48.5	96.7	
2015	292	41.8	21	7.2	16.1	7.8	48.3	96.6	
2016	250	40.3	20	8.0	16.2	6.9	53.2	100.0	
2017	254	44.7	24	9.4	16.7	6.4	40.6	98.8	
2018	186	42.4	13	7.0	17.1	5.8	32.8	97.8	
2019	164	44.9	1	0.6	17.4	3.6	29.9	98.2	
2020	148	42.0	1	0.7	17.8	2.8	26.4	99.3	##
1998-2020	5851	45.6	540	9.2	17.8	12.4	57.6	97.4	

5,851 cases diagnosed 1998-2020 are related to a total of 5,773 patients. Currently, in 1,580 (27.4 %) of these 5,773 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,164 / 302 / 114 (20.2 % / 5.2 % / 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 retreived from the respective headings.

How to interpret:
In 2018, a subgroup of 186 cases has been diagnosed, of which 17.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.8 % 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 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	169	156	15.3	13.3	10.1	6.9	14.0	9.5	17.9	11.7
1999	166	162	14.8	13.7	9.7	6.9	13.4	9.6	16.7	11.9
2000	153	139	13.4	11.6	8.7	5.8	12.1	8.3	15.4	10.4
2001	166	165	14.3	13.6	9.1	6.7	12.8	9.4	16.0	11.6
2002	282	258	15.1	13.2	9.1	6.0	12.8	8.7	16.1	11.0
2003	264	277	14.1	14.1	8.7	7.2	12.1	10.0	15.0	12.1
2004	311	282	16.5	14.3	10.2	6.9	14.1	9.6	16.9	11.9
2005	281	267	14.8	13.4	9.1	6.5	12.4	9.1	15.4	11.2
2006	334	262	17.4	13.0	10.0	6.3	14.1	8.8	17.7	11.0
2007	370	321	16.7	13.9	9.4	6.7	13.4	9.4	16.9	11.6
2008	369	300	16.6	12.9	9.2	6.0	12.8	8.4	16.2	10.5
2009	398	335	17.8	14.4	10.1	6.6	13.8	9.3	17.0	11.6
2010	375	336	16.6	14.4	8.9	6.9	12.7	9.5	15.9	11.6
2011	396	320	17.7	13.7	9.4	6.2	13.2	8.7	16.6	10.7
2012	368	321	16.2	13.6	8.0	6.2	11.6	8.8	15.2	10.8
2013	415	355	18.0	14.9	9.7	7.0	13.4	9.7	16.9	11.9
2014	402	301	17.2	12.5	9.1	5.4	12.8	7.8	15.7	9.8
2015	406	292	17.1	12.0	8.8	5.0	12.4	7.2	15.8	9.3
2016	370	250	15.4	10.2	7.6	4.5	10.9	6.4	13.9	8.0
2017	314	254	13.0	10.3	6.2	4.6	9.1	6.4	11.6	8.0
2018	253	186	10.4	7.5	5.1	3.0	7.4	4.4	9.3	5.6
2019	201	164	8.3	6.6	4.2	2.7	5.9	4.0	7.4	5.0
2020	204	148	8.4	6.0	4.1	2.4	5.9	3.5	7.4	4.5
1998-2020	6967	5851	15.0	12.1	8.2	5.6	11.6	7.9	14.5	9.8

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

Table 3

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	325	64.7	17.3	5.9	100	41.9	55.2	67.3	77.7	84.2
1999	328	64.4	17.4	2.8	93.9	41.3	55.4	65.8	77.9	84.7
2000	292	64.7	16.6	3.8	91.6	41.6	56.0	68.0	76.6	82.5
2001	331	64.1	16.7	4.9	98.7	38.5	54.4	66.0	77.0	84.6
2002	540	66.8	15.4	1.2	95.5	44.8	58.6	68.7	78.5	84.5
2003	541	64.8	16.1	10.9	96.3	42.1	55.6	66.9	76.8	82.9
2004	593	65.9	15.5	3.8	97.8	47.1	57.2	67.1	77.1	83.4
2005	548	65.4	16.0	3.4	98.4	44.5	56.9	67.9	77.0	83.4
2006	596	66.2	15.5	1.9	98.5	43.3	59.6	68.8	77.1	82.9
2007	691	66.7	16.0	4.0	101	45.4	57.4	69.3	78.1	84.4
2008	669	67.1	15.9	2.3	96.2	45.1	59.6	69.9	77.8	84.3
2009	733	66.6	15.7	4.3	95.2	45.1	59.4	69.0	77.5	84.4
2010	711	67.4	15.6	0.3	96.7	44.9	59.8	70.3	78.2	84.9
2011	716	67.2	16.0	7.8	99.2	44.3	58.0	70.9	78.0	84.6
2012	689	68.5	14.5	1.5	97.7	48.9	60.7	71.1	78.9	84.5
2013	770	67.1	16.3	1.0	96.3	45.2	59.0	71.0	78.4	84.6
2014	703	68.0	15.2	2.5	97.5	48.0	59.1	71.3	78.3	85.2
2015	698	68.5	15.7	1.5	98.5	47.3	59.6	72.5	79.8	85.5
2016	620	68.5	15.0	5.2	96.4	49.7	59.5	71.8	79.1	84.9
2017	568	69.3	15.2	2.4	104	48.8	60.6	72.2	79.9	86.0
2018	439	69.0	14.5	21.0	94.5	48.2	59.8	72.1	79.4	84.9
2019	365	68.6	14.9	20.3	98.3	46.5	59.8	71.6	79.7	84.3
2020	352	68.9	14.7	23.8	94.7	48.6	58.7	72.3	80.0	85.4
1998–2020	12818	67.1	15.7	0.3	104	45.6	58.4	69.9	78.4	84.4

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	169	62.4	17.5	6.6	91.4	35.0	51.9	65.0	76.3	82.7
1999	166	61.8	17.6	2.8	93.8	37.6	55.1	63.4	74.4	82.8
2000	153	62.6	17.4	3.8	90.0	37.8	55.5	65.3	75.3	81.3
2001	166	62.0	16.3	4.9	90.3	38.0	54.3	64.6	74.7	79.8
2002	282	64.6	15.0	1.2	95.5	44.1	56.9	65.7	74.8	81.9
2003	264	63.1	16.2	19.0	94.3	39.5	54.3	66.2	75.0	81.6
2004	311	63.4	14.9	8.4	97.8	44.7	54.5	64.6	74.1	81.6
2005	281	62.9	16.7	3.4	90.9	41.7	54.6	64.9	75.4	81.2
2006	334	65.1	16.1	1.9	98.5	42.3	58.3	67.8	76.9	80.9
2007	370	65.2	16.0	10.6	94.8	43.0	54.8	68.7	76.8	82.8
2008	369	65.4	16.1	2.3	93.1	43.3	57.5	68.7	76.1	82.3
2009	398	64.3	15.9	6.6	94.8	42.7	53.5	67.9	75.5	81.9
2010	375	66.9	15.4	3.7	92.2	45.1	58.3	69.8	77.9	84.9
2011	396	65.8	15.6	7.8	94.6	44.0	56.7	69.8	77.1	82.7
2012	368	68.0	14.7	1.5	96.0	48.3	58.9	71.3	78.2	83.4
2013	415	66.4	17.0	1.0	96.3	44.8	58.4	70.3	78.4	83.9
2014	402	66.7	15.8	2.5	97.5	46.8	57.3	69.5	77.6	84.1
2015	406	67.0	16.4	7.8	93.1	45.2	58.2	70.7	79.2	84.8
2016	370	68.1	15.0	5.2	93.5	50.4	59.1	71.7	78.4	84.2
2017	314	69.3	14.8	2.4	97.4	49.3	61.5	71.9	79.3	85.5
2018	253	67.6	14.9	21.0	94.2	47.1	58.8	71.4	78.6	83.4
2019	201	67.1	15.6	20.3	98.3	44.8	56.8	70.3	79.1	83.6
2020	204	67.4	14.4	27.4	92.1	48.7	57.0	69.5	79.5	84.3
1998–2020	6967	65.7	15.9	1.0	98.5	44.0	56.7	68.6	77.2	83.1

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	156	67.3	16.6	5.9	100	46.4	58.4	69.3	79.4	85.8
1999	162	67.0	16.9	4.2	93.9	45.0	56.1	71.9	79.3	87.3
2000	139	66.9	15.4	15.7	91.6	48.6	57.2	71.4	78.8	84.4
2001	165	66.3	16.9	27.1	98.7	40.7	55.0	69.1	79.7	86.6
2002	258	69.1	15.5	6.6	94.6	45.6	60.1	72.6	80.2	87.1
2003	277	66.4	15.8	10.9	96.3	45.1	56.9	68.1	78.6	84.6
2004	282	68.6	15.7	3.8	94.2	49.7	62.0	70.2	79.7	84.5
2005	267	68.0	14.9	10.7	98.4	48.8	61.1	69.3	78.5	85.0
2006	262	67.7	14.7	19.9	95.8	46.0	61.1	69.8	77.5	84.8
2007	321	68.4	15.8	4.0	101	47.2	60.2	70.7	79.9	85.7
2008	300	69.2	15.5	5.4	96.2	49.0	62.6	70.8	79.9	85.8
2009	335	69.3	15.1	4.3	95.2	49.9	62.1	70.7	80.3	86.1
2010	336	68.0	15.8	0.3	96.7	44.1	60.8	70.8	79.0	85.3
2011	320	68.9	16.2	14.1	99.2	47.2	60.1	72.0	80.2	87.5
2012	321	69.2	14.3	6.4	97.7	50.2	61.5	71.0	79.9	86.7
2013	355	67.9	15.5	3.3	92.0	46.6	59.5	71.5	78.8	85.2
2014	301	69.8	14.2	15.7	96.9	50.4	61.8	73.5	78.9	85.8
2015	292	70.7	14.5	1.5	98.5	49.0	62.8	74.7	80.4	86.4
2016	250	69.3	15.0	16.6	96.4	49.5	61.0	72.0	80.2	86.0
2017	254	69.3	15.8	19.5	104	48.5	60.0	72.5	80.6	86.5
2018	186	70.9	13.8	32.6	94.5	50.1	62.8	73.4	80.9	85.6
2019	164	70.5	13.8	30.1	97.2	47.9	63.5	73.5	80.8	85.0
2020	148	70.9	14.8	23.8	94.7	48.1	63.7	75.2	80.6	86.0
1998–2020	5851	68.7	15.3	0.3	104	48.1	60.4	71.3	79.7	85.8

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	14	0.2	0.2	9	0.2	0.2	5	0.1	0.1
5-9	15	0.2	0.3	11	0.2	0.4	4	0.1	0.2
10-14	18	0.2	0.5	12	0.2	0.7	6	0.2	0.4
15-19	35	0.4	0.9	19	0.4	1.1	16	0.4	0.8
20-24	57	0.7	1.6	40	0.8	1.9	17	0.4	1.2
25-29	85	1.0	2.6	52	1.1	3.0	33	0.8	2.1
30-34	104	1.2	3.8	64	1.3	4.3	40	1.0	3.1
35-39	180	2.1	5.8	103	2.1	6.4	77	2.0	5.1
40-44	256	2.9	8.8	155	3.2	9.6	101	2.6	7.7
45-49	375	4.3	13.1	241	5.0	14.6	134	3.5	11.2
50-54	518	5.9	19.0	322	6.7	21.2	196	5.0	16.2
55-59	599	6.9	25.9	346	7.1	28.4	253	6.5	22.7
60-64	774	8.9	34.7	428	8.8	37.2	346	8.9	31.6
65-69	1102	12.6	47.4	632	13.1	50.3	470	12.1	43.7
70-74	1358	15.6	62.9	726	15.0	65.3	632	16.3	60.0
75-79	1352	15.5	78.4	767	15.8	81.1	585	15.1	75.1
80-84	1043	12.0	90.4	548	11.3	92.4	495	12.7	87.8
85+	839	9.6	100.0	366	7.6	100.0	473	12.2	100.0
All ages	8724	100.0		4841	100.0		3883	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=304 %	Females DCO rate n=268 %	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0- 4	9	5	0.6	0.3			4.1	2.9
5- 9	11	4	0.7	0.3			9.4	4.0
10-14	12	6	0.8	0.4			8.8	4.7
15-19	19	16	1.1	1.0	5.3		6.0	6.0
20-24	40	17	2.0	0.9			6.4	3.3
25-29	52	33	2.3	1.5			5.5	2.8
30-34	64	40	2.8	1.8	3.1		4.9	1.9
35-39	103	77	4.5	3.4		1.3	5.6	2.2
40-44	154	101	6.2	4.2	0.6		5.5	1.6
45-49	241	134	9.0	5.1	0.4		4.8	1.4
50-54	321	196	12.6	7.8	2.2	1.0	3.8	1.6
55-59	344	253	16.2	11.6	1.5	1.6	2.7	1.9
60-64	427	345	24.2	18.2	3.0	1.7	2.4	2.2
65-69	632	469	38.7	25.9	4.4	3.4	2.6	2.5
70-74	725	631	48.4	36.7	5.8	4.0	2.6	3.2
75-79	765	584	63.2	38.9	7.7	6.5	3.2	3.0
80-84	547	495	75.5	46.5	10.4	12.5	3.6	3.2
85+	366	473	78.4	45.4	24.0	24.1	3.5	2.9
All ages	4832	3879			6.3	6.9	3.1	2.5
Incidence								
Raw			14.8	11.5				
WS			7.8	5.2				
ES			11.0	7.3				
BRD-S			13.8	9.1				

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

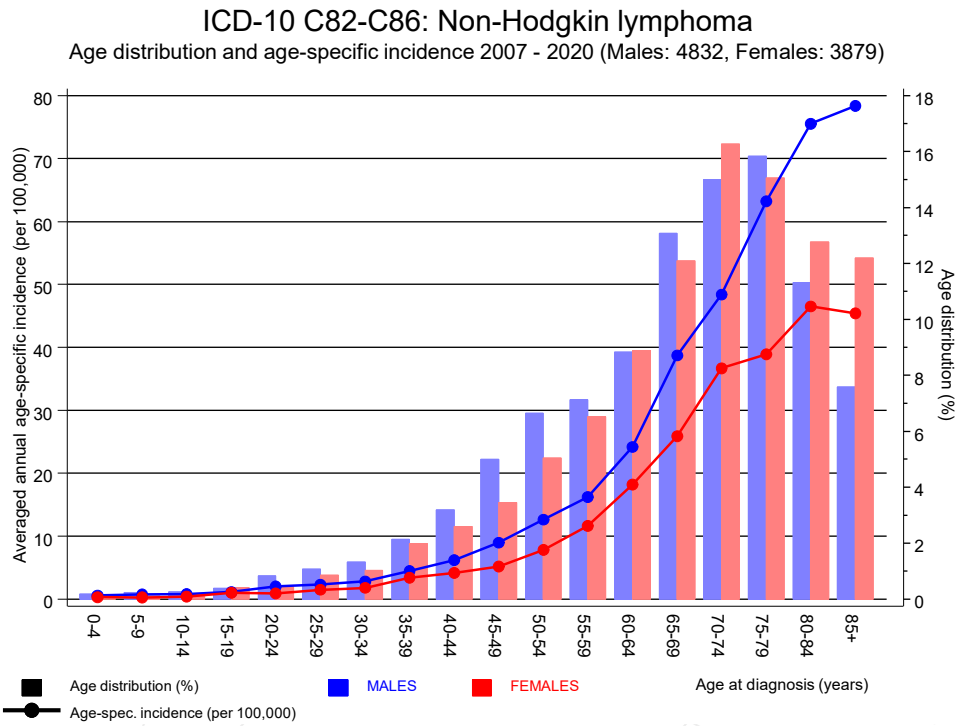


Figure 6. Age distribution (males: mean=66.7 yrs, median=69.9 yrs; females: mean=69.3 yrs, median=72.0 yrs) and age-specific incidence.

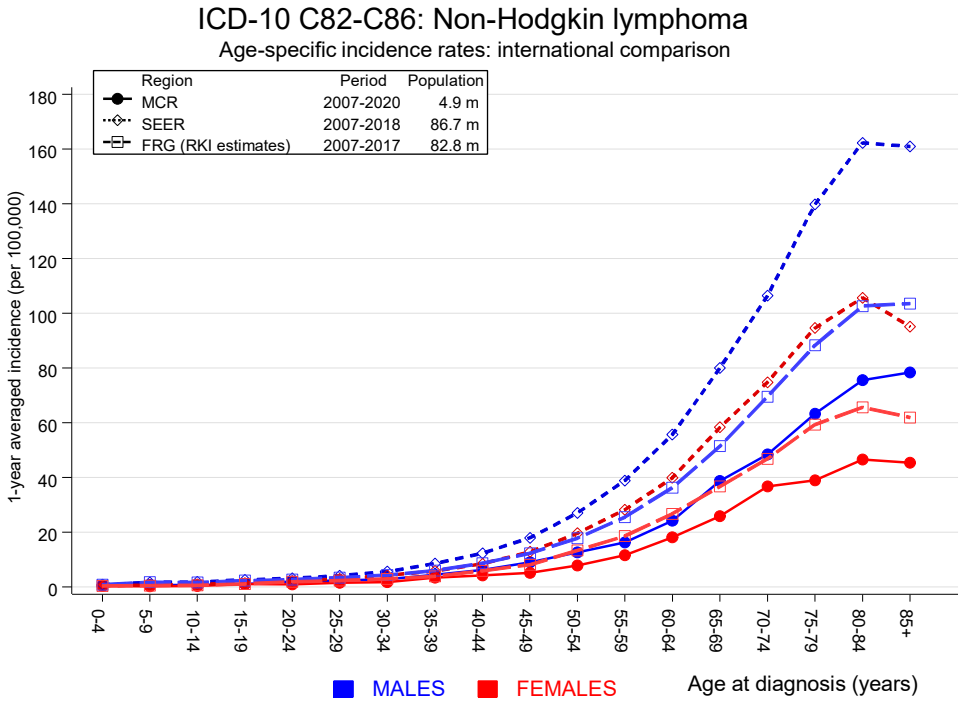


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

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	15	2.8	5.4	3.0	8.9	#	5.2	
C07–C08	Salivary gland	4	0.8	4.8	1.3	12.4	#	1.4	
C09–C10	Oropharynx	6	3.4	1.8	0.7	3.9		1.1	
C14	ENT cancer	2	0.1	24.7	3.0	89.2	#	0.8	50.0
C15	Oesophagus	9	6.7	1.3	0.6	2.5		1.0	
C16	Stomach	25	13.2	1.9	1.2	2.8	#	5.0	4.0
C17	Small intestine	8	2.1	3.8	1.6	7.5	#	2.5	12.5
C18	Colon	56	32.6	1.7	1.3	2.2	#	10.0	3.6
C19–C20	Rectum	33	17.6	1.9	1.3	2.6	#	6.6	3.0
C21	Anus/canal	6	0.8	7.2	2.7	15.7	#	2.2	
C22	Liver	13	9.8	1.3	0.7	2.3		1.3	7.7
C23–C24	Bile	6	3.6	1.6	0.6	3.6		1.0	
C25	Pancreas	21	13.5	1.6	1.0	2.4		3.2	
C32	Larynx	12	3.3	3.7	1.9	6.4	#	3.7	8.3
C33–C34	Lung	114	39.4	2.9	2.4	3.5	#	32.0	6.1
C37	Thymus	3	0.2	14.8	3.1	43.3	#	1.2	
C38,C45	Mesothelioma	7	2.4	3.0	1.2	6.1	#	2.0	
C43	Malign. melanoma	52	15.8	3.3	2.5	4.3	#	15.5	
C44	Skin others	2	0.1	22.4	2.7	81.0	#	0.8	
C46,C49	Soft tissue	13	2.0	6.5	3.5	11.1	#	4.7	
C60	Penis	3	0.9	3.4	0.7	10.1		0.9	
C61	Prostate	175	93.2	1.9	1.6	2.2	#	35.0	3.4
C64	Kidney	40	11.6	3.5	2.5	4.7	#	12.2	
C66	Ureter	8	0.9	8.7	3.7	17.1	#	3.0	
C67	Bladder	34	16.1	2.1	1.5	2.9	#	7.6	
C68	Urethra	3	0.3	8.7	1.8	25.5	#	1.1	
C69	Eye carcinoma	2	0.1	15.9	1.9	57.3	#	0.8	
C69	Eye lymphoma	3	0.1	42.3	8.7	123.6	#	1.3	
C70–C72	CNS cancer	7	4.3	1.6	0.7	3.3		1.2	28.6
C73	Thyroid	4	2.2	1.8	0.5	4.6		0.8	
C76–C79	CUP	14	5.7	2.5	1.3	4.1	#	3.5	
C81	Hodgkin lymphoma	17	0.8	20.1	11.7	32.2	#	6.9	5.9
C82–C85	NHL	105	14.5	7.2	5.9	8.8	#	38.7	1.9
C90	Mult. myeloma	11	4.5	2.5	1.2	4.4	#	2.8	
C91–C96	Leukaemia	38	5.3	7.2	5.1	9.9	#	14.0	10.5
Others, specified		6	5.6	1.1	0.4	2.3		0.2	
Not observed		0	3.7	0.0	0.0	1.0	#	-1.6	
All further malignancies		877	340.1	2.6	2.4	2.8	#	229.9	3.4

Patients	6330
Median age at next malignancy (years)	72.7
Person-years	23358
Mean observation time (years)	3.7
Median observation time (years)	1.9

The occurrence of further specified malignancy is statistically significant.

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

Table 7b

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

FEMALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C07–C08	Salivary gland	3	0.4	7.7	1.6	22.6	#	1.2	33.3
C09–C10	Oropharynx	3	1.0	3.2	0.7	9.2		1.0	
C15	Oesophagus	3	1.6	1.9	0.4	5.5		0.7	
C16	Stomach	16	8.0	2.0	1.1	3.2	#	3.7	6.3
C17	Small intestine	6	1.3	4.7	1.7	10.2	#	2.2	
C18	Colon	51	23.1	2.2	1.6	2.9	#	13.0	5.9
C19–C20	Rectum	8	9.3	0.9	0.4	1.7		−0.6	
C21	Anus/canal	5	1.3	3.8	1.2	9.0	#	1.7	
C22	Liver	12	3.0	4.0	2.1	7.0	#	4.2	25.0
C23–C24	Bile	11	3.4	3.2	1.6	5.8	#	3.5	9.1
C25	Pancreas	16	11.4	1.4	0.8	2.3		2.2	6.3
C33–C34	Lung	51	18.1	2.8	2.1	3.7	#	15.4	3.9
C37	Thymus	2	0.1	14.3	1.7	51.5	#	0.9	
C38,C45	Mesothelioma	2	0.4	4.5	0.5	16.1		0.7	
C43	Malign. melanoma	27	9.1	3.0	2.0	4.3	#	8.3	
C46,C49	Soft tissue	6	1.4	4.4	1.6	9.6	#	2.2	
C48	Peritoneal	2	1.0	2.0	0.2	7.2		0.5	
C50	Breast	156	71.6	2.2	1.9	2.5	#	39.4	3.8
C51	Vulva	6	2.6	2.3	0.9	5.1		1.6	
C53	Cervix uteri	7	2.9	2.4	1.0	4.9		1.9	14.3
C54	Corpus uteri	27	13.1	2.1	1.4	3.0	#	6.5	
C56	Ovary	14	9.4	1.5	0.8	2.5		2.1	7.1
C64	Kidney	11	5.5	2.0	1.0	3.5		2.5	
C65	Renal pelvis	2	0.8	2.6	0.3	9.4		0.6	
C67	Bladder	11	4.8	2.3	1.2	4.1	#	2.9	
C70–C72	CNS cancer	3	3.1	1.0	0.2	2.9		−0.0	33.3
C73	Thyroid	15	3.7	4.1	2.3	6.8	#	5.3	6.7
C76–C79	CUP	7	4.4	1.6	0.6	3.3		1.2	
C81	Hodgkin lymphoma	5	0.4	11.5	3.7	26.8	#	2.1	
C82–C85	NHL	91	9.4	9.7	7.8	11.9	#	38.1	
C90	Mult. myeloma	7	2.9	2.4	1.0	4.9		1.9	
C91–C96	Leukaemia	28	3.5	7.9	5.3	11.5	#	11.4	17.9
Others, specified		6	2.1	2.8	1.0	6.1	#	1.8	
Not observed		0	4.0	0.0	0.0	0.9	#	−1.9	
All further malignancies		620	238.0	2.6	2.4	2.8	#	178.1	4.4

Patients	5261
Median age at next malignancy (years)	74.4
Person-years	21444
Mean observation time (years)	4.1
Median observation time (years)	2.3

The occurrence of further specified malignancy is statistically significant.

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

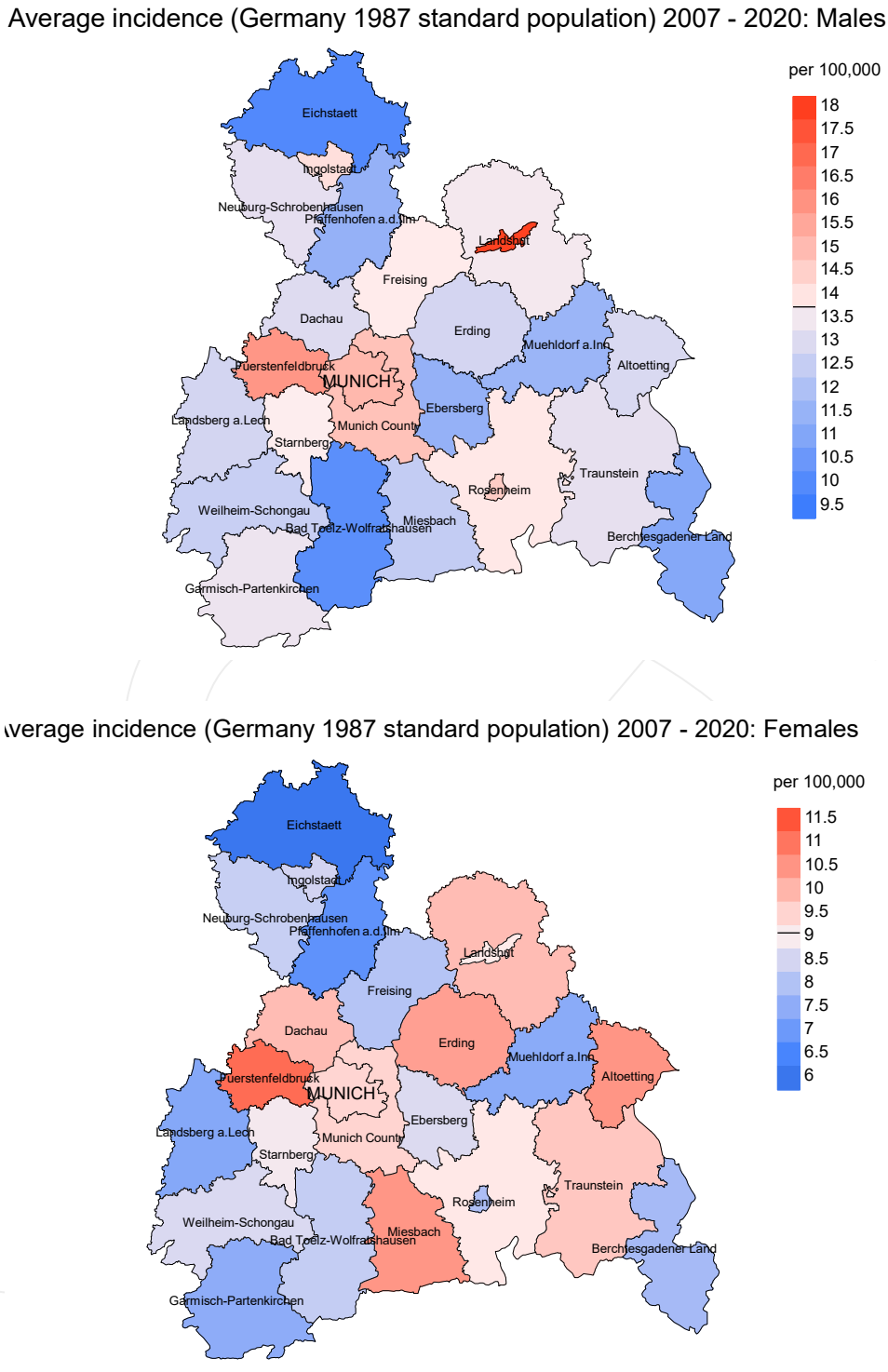


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 13.8/100,000 WS N=4,832, females 9.1/100,000 WS N=3,879).

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 97 women were identified with newly diagnosed NHL. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 8.6/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 6.5 and 11.2/100,000.

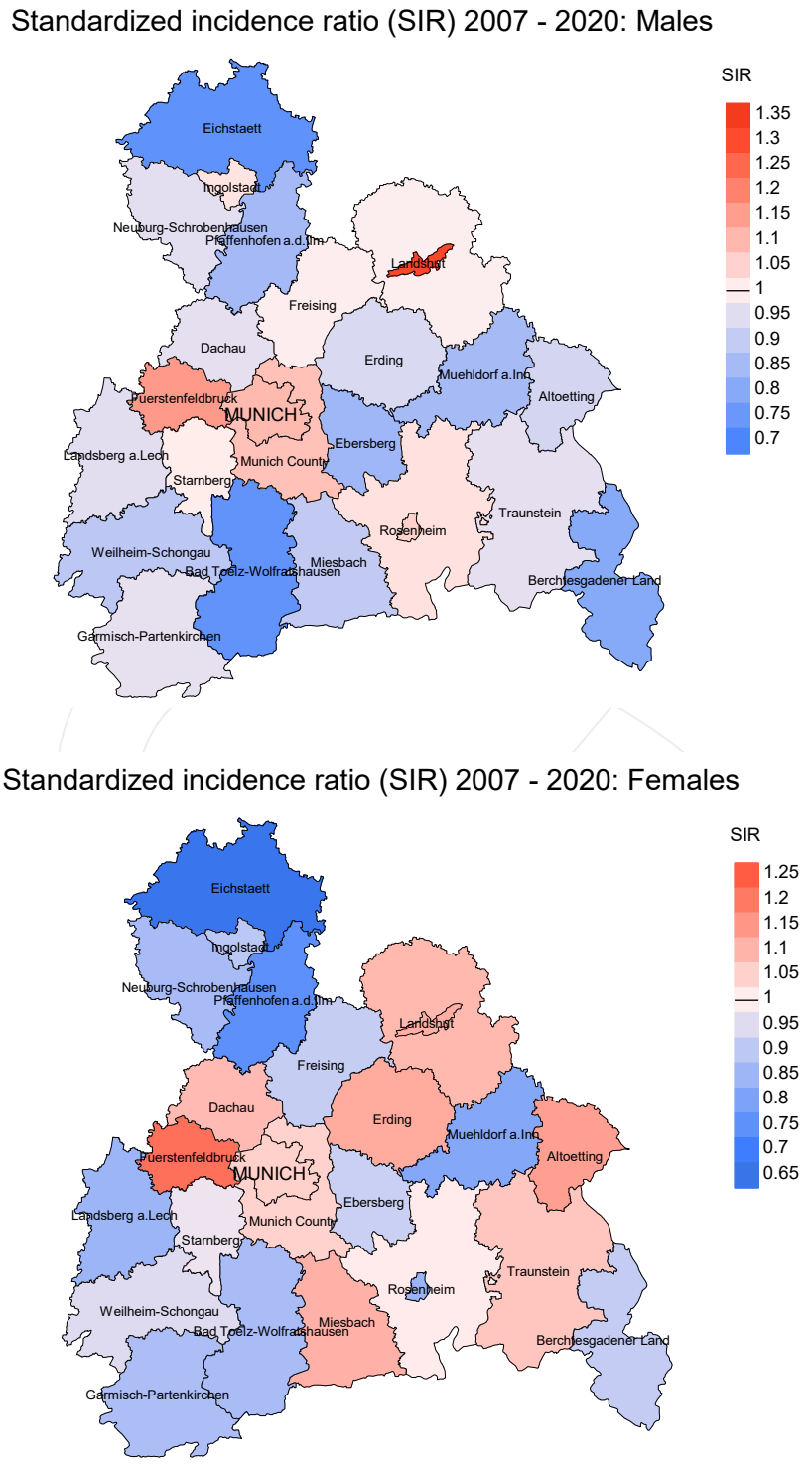


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=4,832, females N=3,879).

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 97 women were identified with newly diagnosed NHL. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.92. Though, the value of this parameter may vary with an underlying probability of 99% between 0.70 and 1.19, 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	325	98.2	12.3	254	78.2	94.5
1999	328	98.2	16.5	254	77.4	94.5
2000	292	96.9	14.7	219	75.0	96.8
2001	331	96.7	13.9	239	72.2	95.4
2002	540	98.5	19.4	407	75.4	95.8
2003	541	97.2	12.8	376	69.5	97.3
2004	593	96.6	10.3	399	67.3	97.2
2005	548	95.3	10.8	362	66.1	95.9
2006	596	95.6	8.4	395	66.3	95.7
2007	691	94.1	10.3	459	66.4	95.0
2008	669	98.4	7.0	426	63.7	95.3
2009	733	98.4	6.0	424	57.8	94.8
2010	711	97.9	7.3	436	61.3	95.0
2011	716	98.3	8.9	437	61.0	94.5
2012	689	98.8	6.0	388	56.3	95.1
2013	770	97.4	5.7	414	53.8	93.5
2014	703	96.0	5.5	362	51.5	93.1
2015	698	97.0	6.4	343	49.1	91.5
2016	620	99.2	8.2	317	51.1	89.9
2017	568	99.1	7.9	229	40.3	90.0
2018	439	98.9	5.7	148	33.7	72.3
2019	365	98.1	0.8	102	27.9	82.4
2020	352	99.4	0.3	91	25.9	92.3
1998-2020	12818	97.5	8.6	7481	58.4	94.0

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	325	190	95.8	75	23.1
1999	328	224	92.9	86	26.2
2000	292	186	96.2	64	21.9
2001	331	208	96.6	74	22.4
2002	540	306	97.1	148	27.4
2003	541	312	98.1	129	23.8
2004	593	335	97.6	128	21.6
2005	548	317	97.2	114	20.8
2006	596	348	98.9	118	19.8
2007	691	397	96.7	161	23.3
2008	669	363	98.1	133	19.9
2009	733	414	97.8	153	20.9
2010	711	390	97.7	134	18.8
2011	716	401	98.0	137	19.1
2012	689	444	98.2	131	19.0
2013	770	449	98.2	135	17.5
2014	703	469	97.7	141	20.1
2015	698	460	98.7	139	19.9
2016	620	453	98.9	142	22.9
2017	568	512	98.2	127	22.4
2018	439	395	72.2	69	15.7
2019	365	336	48.8	46	12.6
2020	352	359	90.5	51	14.5
1998–2020	12818	8268	94.2	2635	20.6

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	190	66.8	33.2	92.3
1999	224	71.4	28.6	92.8
2000	186	81.7	18.3	92.7
2001	208	80.3	19.7	93.0
2002	306	80.4	19.6	91.9
2003	312	81.4	18.6	92.5
2004	335	86.0	14.0	93.6
2005	317	80.1	19.9	92.2
2006	348	80.5	19.5	90.4
2007	397	82.4	17.6	91.7
2008	363	79.6	20.4	89.9
2009	414	77.1	22.9	87.2
2010	390	76.7	23.3	84.0
2011	401	75.6	24.4	86.8
2012	444	76.6	23.4	85.6
2013	449	74.4	25.6	84.4
2014	469	71.0	29.0	87.1
2015	460	74.1	25.9	82.6
2016	453	71.7	28.3	81.5
2017	512	73.8	26.2	84.5
2018	395	57.7	42.3	69.1
2019	336	47.0	53.0	75.6
2020	359	53.2	46.8	76.9
1998-2020	8268	73.7	26.3	86.5

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	92	73.4	71.8	80.2	73.1
1999	125	72.0	67.0	77.0	72.0
2000	97	69.4	68.2	72.5	69.7
2001	94	69.2	67.9	75.6	68.4
2002	161	73.1	72.5	75.7	72.7
2003	159	71.7	69.6	78.9	71.4
2004	175	73.8	73.8	73.9	74.1
2005	171	74.9	74.9	73.8	74.9
2006	183	72.2	71.6	77.3	72.2
2007	216	72.2	72.1	73.9	71.6
2008	191	73.8	73.2	76.5	73.5
2009	229	75.5	74.9	80.3	74.9
2010	217	75.2	73.6	78.0	73.5
2011	221	75.2	73.7	79.6	74.2
2012	237	75.6	75.5	75.9	75.5
2013	256	77.4	76.7	80.2	77.4
2014	265	76.2	75.1	79.3	75.8
2015	253	78.4	76.6	83.5	77.3
2016	254	78.3	76.5	82.1	77.7
2017	281	79.1	77.7	82.8	78.1
2018	227	79.0	79.0	79.1	79.0
2019	185	79.4	78.8	79.7	78.6
2020	197	80.1	80.7	79.7	80.4
1998–2020	4486	75.9	74.8	79.2	75.1

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	98	80.1	74.7	84.6	80.2
1999	99	78.3	76.3	83.7	78.9
2000	89	77.6	76.9	84.5	75.9
2001	114	77.9	77.1	83.5	77.9
2002	145	78.5	77.7	81.3	78.5
2003	153	78.2	76.0	82.9	77.0
2004	160	78.0	77.9	82.6	78.0
2005	146	79.1	76.2	84.6	78.3
2006	165	78.0	77.3	83.3	76.9
2007	181	79.2	78.4	81.7	78.4
2008	172	80.4	77.8	84.6	79.2
2009	185	81.1	80.1	83.9	80.5
2010	173	78.7	76.7	84.1	77.9
2011	180	78.9	77.9	83.0	77.9
2012	207	79.5	78.4	84.5	78.8
2013	193	78.7	76.5	83.0	77.4
2014	204	78.4	77.6	82.0	78.2
2015	207	79.2	78.8	81.8	79.0
2016	199	80.5	80.0	82.1	80.0
2017	231	81.1	79.1	85.3	79.3
2018	168	81.8	82.1	81.4	82.6
2019	151	81.7	79.8	83.0	78.8
2020	162	81.8	79.7	85.2	81.0
1998–2020	3782	79.5	78.1	83.3	78.7

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	59	5.3	0.35	3.3	0.32	5.0	0.35	6.9	0.39
1999	91	8.1	0.55	4.9	0.51	7.3	0.55	9.2	0.55
2000	79	6.9	0.52	4.2	0.49	6.2	0.51	8.1	0.52
2001	76	6.6	0.46	4.0	0.44	5.9	0.46	7.6	0.47
2002	134	7.2	0.48	4.0	0.44	6.1	0.48	8.3	0.52
2003	135	7.2	0.51	4.0	0.47	6.0	0.50	8.0	0.53
2004	147	7.8	0.47	4.0	0.40	6.3	0.45	8.8	0.52
2005	143	7.5	0.51	3.6	0.39	5.8	0.47	8.4	0.54
2006	146	7.6	0.44	3.8	0.38	5.9	0.42	7.9	0.45
2007	178	8.0	0.48	4.2	0.45	6.3	0.47	8.5	0.50
2008	156	7.0	0.42	3.4	0.37	5.2	0.41	7.2	0.44
2009	173	7.8	0.43	3.6	0.35	5.6	0.40	7.8	0.46
2010	175	7.8	0.47	3.5	0.40	5.4	0.43	7.6	0.48
2011	161	7.2	0.41	3.4	0.36	5.1	0.39	6.9	0.42
2012	175	7.7	0.48	3.3	0.42	5.2	0.45	7.4	0.49
2013	189	8.2	0.46	3.3	0.34	5.4	0.41	7.6	0.46
2014	195	8.4	0.49	3.6	0.39	5.6	0.44	7.5	0.48
2015	184	7.7	0.45	3.3	0.37	5.1	0.41	7.0	0.44
2016	176	7.3	0.48	3.0	0.40	4.7	0.43	6.5	0.47
2017	216	9.0	0.69	3.5	0.56	5.6	0.62	7.7	0.67
2018	131	5.4	0.52	1.9	0.38	3.2	0.43	4.6	0.49
2019	89	3.7	0.45	1.5	0.35	2.3	0.39	3.1	0.43
2020	103	4.2	0.50	1.3	0.32	2.3	0.39	3.6	0.48
1998-2020	3311	7.1	0.48	3.3	0.40	5.1	0.44	7.0	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	68	5.8	0.44	2.5	0.36	3.7	0.39	4.9	0.42
1999	69	5.8	0.43	2.3	0.33	3.6	0.38	5.0	0.42
2000	73	6.1	0.53	2.3	0.40	3.7	0.44	4.9	0.47
2001	91	7.5	0.55	3.0	0.45	4.6	0.49	6.3	0.54
2002	112	5.7	0.44	2.1	0.35	3.2	0.37	4.5	0.41
2003	119	6.0	0.43	2.4	0.34	3.6	0.36	4.8	0.40
2004	141	7.1	0.50	2.7	0.39	4.1	0.43	5.8	0.49
2005	111	5.6	0.42	2.1	0.32	3.2	0.35	4.3	0.38
2006	134	6.7	0.51	2.4	0.39	3.8	0.43	5.2	0.47
2007	149	6.5	0.46	2.3	0.34	3.6	0.38	4.8	0.42
2008	133	5.7	0.44	2.0	0.33	3.1	0.36	4.2	0.40
2009	146	6.3	0.44	1.9	0.28	3.1	0.33	4.5	0.39
2010	126	5.4	0.38	1.9	0.27	2.9	0.31	4.0	0.35
2011	142	6.1	0.45	2.0	0.33	3.1	0.36	4.4	0.41
2012	165	7.0	0.51	2.2	0.36	3.5	0.40	4.8	0.45
2013	145	6.1	0.41	2.0	0.29	3.2	0.33	4.5	0.38
2014	138	5.7	0.46	1.8	0.33	2.9	0.37	4.0	0.42
2015	157	6.5	0.54	2.1	0.42	3.2	0.45	4.5	0.49
2016	151	6.2	0.60	1.8	0.39	2.9	0.46	4.1	0.51
2017	163	6.6	0.64	1.9	0.42	3.1	0.48	4.5	0.56
2018	101	4.1	0.54	1.0	0.32	1.7	0.38	2.5	0.44
2019	69	2.8	0.42	0.8	0.28	1.3	0.32	1.8	0.37
2020	90	3.6	0.61	1.1	0.44	1.7	0.49	2.4	0.53
1998-2020	2793	5.8	0.48	1.9	0.35	3.0	0.39	4.2	0.43

Table 12

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

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4									
5-9	2	0.0	0.0	2	0.1	0.1			0.0
10-14	4	0.1	0.1	2	0.1	0.2	2	0.1	0.1
15-19	6	0.1	0.3	5	0.2	0.4	1	0.1	0.2
20-24	4	0.1	0.4	4	0.2	0.6			0.2
25-29	10	0.2	0.6	4	0.2	0.7	6	0.3	0.5
30-34	14	0.3	1.0	9	0.4	1.1	5	0.3	0.7
35-39	18	0.4	1.4	12	0.5	1.7	6	0.3	1.1
40-44	40	1.0	2.3	30	1.3	3.0	10	0.5	1.6
45-49	82	2.0	4.3	61	2.7	5.6	21	1.1	2.7
50-54	121	2.9	7.2	74	3.2	8.8	47	2.5	5.2
55-59	158	3.8	11.0	105	4.6	13.4	53	2.8	8.1
60-64	260	6.2	17.2	162	7.0	20.4	98	5.2	13.3
65-69	401	9.6	26.8	245	10.6	31.1	156	8.3	21.6
70-74	619	14.8	41.6	346	15.0	46.1	273	14.6	36.2
75-79	827	19.8	61.4	473	20.6	66.7	354	18.9	55.0
80-84	779	18.7	80.1	403	17.5	84.2	376	20.1	75.1
85+	831	19.9	100.0	364	15.8	100.0	467	24.9	100.0
All ages	4176	100.0		2301	100.0		1875	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								
5- 9	2		0.1	0.18			7.1	
10-14	2	2	0.1	0.17	0.1	0.33	7.1	8.7
15-19	5	1	0.3	0.26	0.1	0.06	10.4	4.0
20-24	4		0.2	0.10			5.5	
25-29	4	6	0.2	0.08	0.3	0.18	4.3	6.1
30-34	9	5	0.4	0.14	0.2	0.13	6.3	2.8
35-39	12	6	0.5	0.12	0.3	0.08	4.5	1.5
40-44	30	10	1.2	0.19	0.4	0.10	5.0	1.2
45-49	61	21	2.3	0.25	0.8	0.16	4.3	1.3
50-54	74	47	2.9	0.23	1.9	0.24	2.8	1.8
55-59	105	53	4.9	0.31	2.4	0.21	2.4	1.4
60-64	162	98	9.2	0.38	5.2	0.28	2.5	2.0
65-69	245	156	15.0	0.39	8.6	0.33	2.7	2.2
70-74	346	273	23.1	0.48	15.9	0.43	2.9	3.1
75-79	473	354	39.1	0.62	23.6	0.61	3.8	3.6
80-84	403	376	55.7	0.74	35.3	0.76	3.8	4.0
85+	364	467	77.9	0.99	44.8	0.99	4.0	3.9
All ages	2301	1875					3.3	3.0
Mortality								
Raw			7.1	0.48	5.6	0.48		
WS			3.0	0.39	1.8	0.34		
ES			4.7	0.43	2.8	0.38		
BRD-S			6.6	0.48	3.9	0.43		
PYLL-70								
per 100,000			28.7		14.7			
ES			25.4		12.6			
AYLL-70			11.5		10.3			

Table 14a

Further malignancies in deaths in period 1998–2020
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C00	Lip	6	0.4	3	50.0			3	50.0
C03–C06	Oral cavity	13	0.9	3	23.1	3	23.1	7	53.8
C07–C08	Salivary gland	7	0.5	2	28.6	1	14.3	4	57.1
C09–C10	Oropharynx	10	0.7	6	60.0			4	40.0
C15	Oesophagus	11	0.7	2	18.2	1	9.1	8	72.7
C16	Stomach	42	2.8	12	28.6	7	16.7	23	54.8
C17	Small intestine	11	0.7	5	45.5			6	54.5
C18	Colon	98	6.6	45	45.9	18	18.4	35	35.7
C19–C20	Rectum	55	3.7	25	45.5	5	9.1	25	45.5
C22	Liver	20	1.3	3	15.0	2	10.0	15	75.0
C23–C24	Bile	7	0.5	2	28.6			5	71.4
C25	Pancreas	26	1.7	2	7.7	3	11.5	21	80.8
C30–C31	Sinuses	3	0.2	2	66.7			1	33.3
C32	Larynx	19	1.3	10	52.6	3	15.8	6	31.6
C33–C34	Lung	132	8.9	20	15.2	12	9.1	100	75.8
C38,C45	Mesothelioma	10	0.7	2	20.0	3	30.0	5	50.0
C43	Malign. melanoma	63	4.2	26	41.3	3	4.8	34	54.0
C44	Skin others	232	15.6	75	32.3	16	6.9	141	60.8
C46,C49	Soft tissue	16	1.1	10	62.5	2	12.5	4	25.0
C48	Peritoneal	3	0.2	1	33.3			2	66.7
C50	Breast	3	0.2	2	66.7			1	33.3
C60	Penis	6	0.4	3	50.0	2	33.3	1	16.7
C61	Prostate	271	18.2	181	66.8	27	10.0	63	23.2
C62	Testis	8	0.5	5	62.5	1	12.5	2	25.0
C64	Kidney	42	2.8	28	66.7	7	16.7	7	16.7
C65	Renal pelvis	3	0.2	1	33.3	1	33.3	1	33.3
C66	Ureter	7	0.5	1	14.3	1	14.3	5	71.4
C67	Bladder	50	3.4	21	42.0	6	12.0	23	46.0
C68	Urethra	4	0.3	2	50.0	1	25.0	1	25.0
C70–C72	CNS cancer	10	0.7	2	20.0	1	10.0	7	70.0
C73	Thyroid	11	0.7	9	81.8			2	18.2
C76–C79	CUP	28	1.9	5	17.9	2	7.1	21	75.0
C81	Hodgkin lymphoma	33	2.2	19	57.6	2	6.1	12	36.4
C82–C85	NHL	129	8.7	3	2.3	4	3.1	122	94.6
C90	Mult. myeloma	32	2.1	16	50.0	9	28.1	7	21.9
C91–C96	Leukaemia	53	3.6	15	28.3	8	15.1	30	56.6
Others, specified		15	1.0	6	40.0	2	13.3	7	46.7
All further malignancies		1489	100.0	575	38.6	153	10.3	761	51.1

Further malignancies with number of cases 1 to 2 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	8	0.8	6	75.0	1	12.5	1	12.5
C07–C08	Salivary gland	6	0.6	4	66.7			2	33.3
C09–C10	Oropharynx	4	0.4	2	50.0	1	25.0	1	25.0
C15	Oesophagus	5	0.5					5	100.0
C16	Stomach	34	3.2	10	29.4	5	14.7	19	55.9
C17	Small intestine	5	0.5	3	60.0	1	20.0	1	20.0
C18	Colon	79	7.5	30	38.0	9	11.4	40	50.6
C19–C20	Rectum	27	2.6	14	51.9	5	18.5	8	29.6
C21	Anus/canal	9	0.9	4	44.4			5	55.6
C22	Liver	11	1.0			2	18.2	9	81.8
C23–C24	Bile	15	1.4	1	6.7	1	6.7	13	86.7
C25	Pancreas	17	1.6	1	5.9	2	11.8	14	82.4
C30–C31	Sinuses	2	0.2	1	50.0			1	50.0
C32	Larynx	3	0.3	2	66.7			1	33.3
C33–C34	Lung	58	5.5	6	10.3	3	5.2	49	84.5
C38,C45	Mesothelioma	2	0.2					2	100.0
C43	Malign. melanoma	31	3.0	13	41.9	2	6.5	16	51.6
C44	Skin others	112	10.7	37	33.0	3	2.7	72	64.3
C46,C49	Soft tissue	7	0.7			3	42.9	4	57.1
C48	Peritoneal	2	0.2			2	100.0		
C50	Breast	241	23.0	144	59.8	22	9.1	75	31.1
C51	Vulva	10	1.0	5	50.0			5	50.0
C53	Cervix uteri	17	1.6	10	58.8	1	5.9	6	35.3
C54	Corpus uteri	34	3.2	24	70.6	1	2.9	9	26.5
C55,C57	Fem. genitals un	7	0.7	7	100.0				
C56	Ovary	29	2.8	9	31.0	3	10.3	17	58.6
C64	Kidney	24	2.3	12	50.0	3	12.5	9	37.5
C65	Renal pelvis	2	0.2	1	50.0			1	50.0
C67	Bladder	16	1.5	6	37.5			10	62.5
C70–C72	CNS cancer	10	1.0	5	50.0	1	10.0	4	40.0
C73	Thyroid	14	1.3	11	78.6			3	21.4
C76–C79	CUP	16	1.5	5	31.3	1	6.3	10	62.5
C81	Hodgkin lymphoma	15	1.4	11	73.3	1	6.7	3	20.0
C82–C85	NHL	114	10.9	2	1.8	1	0.9	111	97.4
C90	Mult. myeloma	20	1.9	9	45.0	6	30.0	5	25.0
C91–C96	Leukaemia	34	3.2	4	11.8	4	11.8	26	76.5
Others, specified		8	0.8	2	25.0	1	12.5	5	62.5
All further malignancies		1048	100.0	401	38.3	85	8.1	562	53.6

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

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

Table 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.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9	2		0.1	0.18			7.4	
10-14	2	2	0.1	0.17	0.1	0.33	7.1	10.5
15-19	5	1	0.3	0.28	0.1	0.07	10.9	4.3
20-24	3		0.1	0.08			4.5	
25-29	4	5	0.2	0.08	0.2	0.17	4.7	5.5
30-34	9	4	0.4	0.14	0.2	0.10	6.5	2.5
35-39	11	5	0.5	0.12	0.2	0.07	4.4	1.4
40-44	21	9	0.8	0.15	0.4	0.10	3.8	1.2
45-49	57	19	2.1	0.26	0.7	0.15	4.4	1.3
50-54	62	36	2.4	0.22	1.4	0.21	2.6	1.6
55-59	84	45	4.0	0.28	2.1	0.21	2.2	1.4
60-64	133	77	7.5	0.39	4.1	0.29	2.5	1.9
65-69	191	110	11.7	0.39	6.1	0.31	2.6	2.0
70-74	258	214	17.2	0.49	12.4	0.48	2.8	3.2
75-79	355	278	29.3	0.70	18.5	0.64	3.9	3.7
80-84	287	293	39.6	0.80	27.5	0.79	3.9	4.1
85+	238	368	51.0	1.03	35.3	1.01	3.7	3.9
All ages	1722	1466					3.2	3.0
Mortality								
Raw			5.3	0.47	4.4	0.49		
WS			2.3	0.37	1.4	0.33		
ES			3.6	0.42	2.2	0.37		
BRD-S			4.9	0.47	3.1	0.43		
PYLL-70								
per 100,000			24.3		12.1			
ES			21.7		10.4			
AYLL-70			12.0		10.9			

* 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.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9	2		0.1	0.18			7.4	
10-14	2	1	0.1	0.17	0.1	0.17	7.1	5.3
15-19	5	1	0.3	0.29	0.1	0.07	10.9	4.5
20-24	3		0.1	0.08			4.5	
25-29	4	4	0.2	0.09	0.2	0.14	4.7	4.5
30-34	8	4	0.3	0.13	0.2	0.11	5.8	2.5
35-39	11	4	0.5	0.12	0.2	0.06	4.4	1.1
40-44	21	7	0.8	0.16	0.3	0.08	3.8	0.9
45-49	53	18	2.0	0.25	0.7	0.16	4.1	1.3
50-54	53	31	2.1	0.20	1.2	0.20	2.3	1.4
55-59	75	35	3.5	0.29	1.6	0.19	2.0	1.1
60-64	105	59	5.9	0.35	3.1	0.26	2.0	1.5
65-69	158	84	9.7	0.40	4.6	0.27	2.2	1.6
70-74	198	175	13.2	0.45	10.2	0.45	2.3	2.7
75-79	279	225	23.1	0.63	15.0	0.58	3.2	3.1
80-84	232	245	32.0	0.74	23.0	0.72	3.3	3.5
85+	184	314	39.4	0.83	30.1	0.90	3.1	3.5
All ages	1393	1207					2.7	2.5
Mortality								
Raw			4.3	0.43	3.6	0.44		
WS			1.9	0.34	1.1	0.29		
ES			2.9	0.38	1.8	0.34		
BRD-S			4.0	0.43	2.5	0.39		
PYLL-70								
per 100,000			21.9		9.9			
ES			19.6		8.5			
AYLL-70			12.6		11.3			

* See corresponding tables with multiple malignancies.

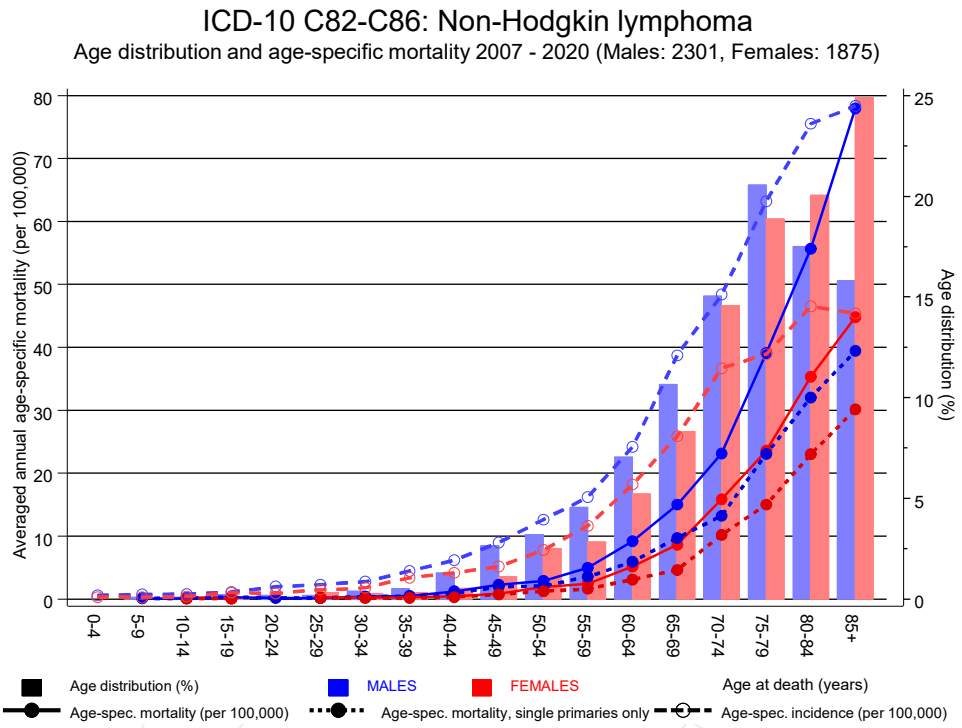


Figure 17. Distribution of age at death (bars; males: mean=69.3 yrs, median=71.6 yrs; females: mean=72.4 yrs, median=74.5 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

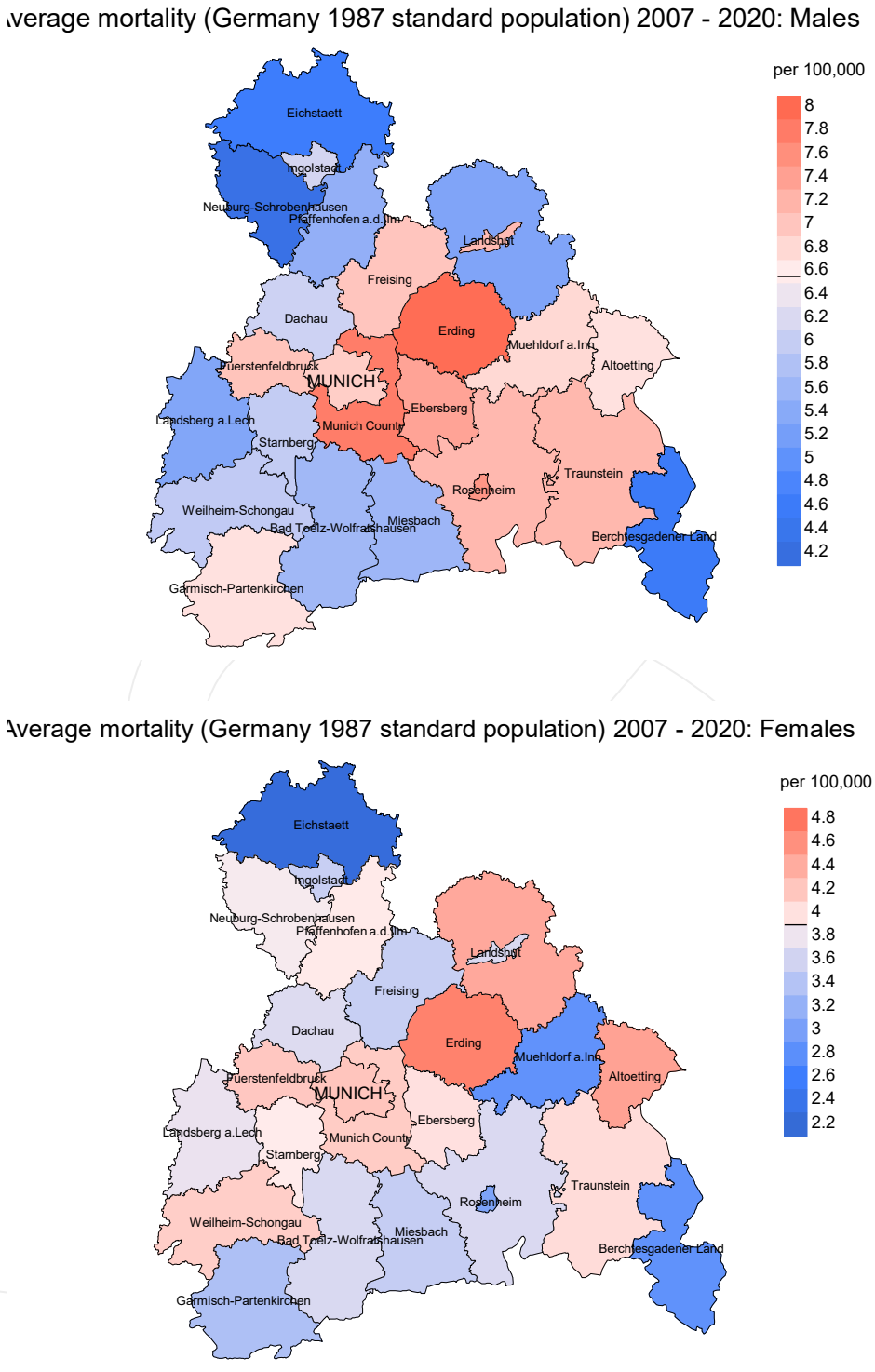
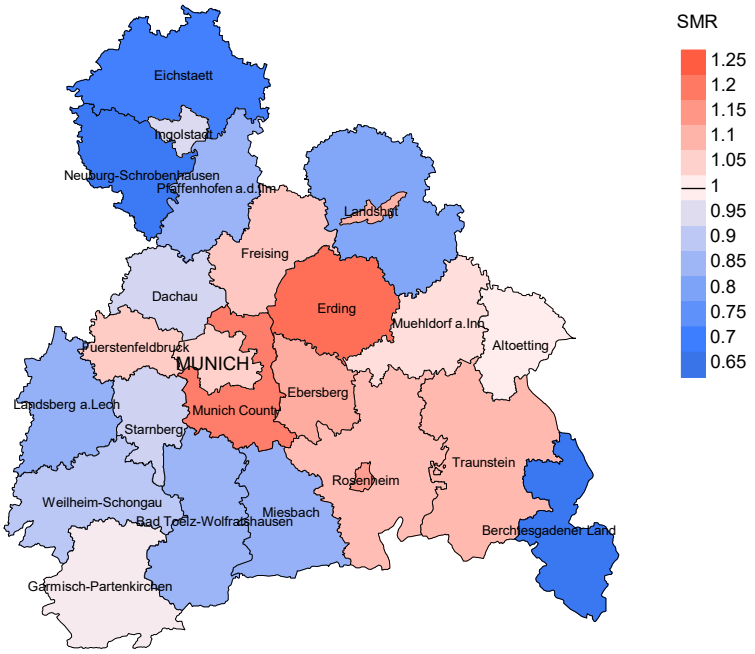


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 6.6/100,000 WS N=2,301, females 3.9/100,000 WS N=1,875).

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 51 women died from NHL. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 4.0/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 2.7 and 5.8/100,000.

Standardized mortality ratio (SMR) 2007 - 2020: Males



Standardized mortality ratio (SMR) 2007 - 2020: Females

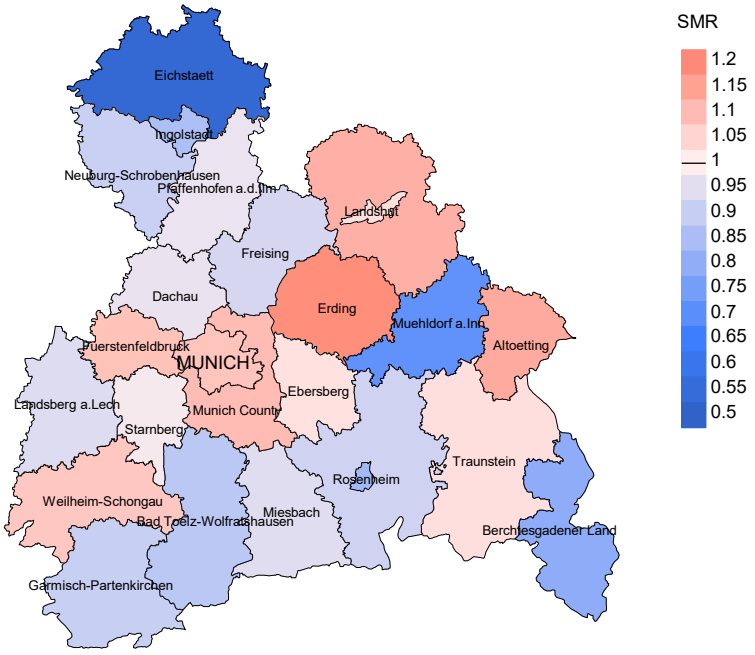


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,301, females N=1,875).

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 51 women died from NHL. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.02. Though, the value of this parameter may vary with an underlying probability of 99% between 0.69 and 1.45, and is therefore not statistically striking.

Statistical Notes

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

1. **All multiple primaries included**

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

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

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

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

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

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

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

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

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

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

Shortcuts

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

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