Munich Cancer Registry

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ICD-10 C83.3: Diff. large B-cell lymphoma

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	4,746
Diseases	4,746
Creation date	12/21/2021
Database export	12/20/2021
Population	4.95 m

Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
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Marchioninistr. 15
Munich, 81377
Germany

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

https://www.tumorregister-muenchen.de/en/facts/base/bC833_E-ICD-10-C83.3-Diff.-large-B-cell-lymphoma-incidence-and-mortality.pdf

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

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

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

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

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

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

Munich Cancer Registry, 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
C83.3	Diffuse large B-cell lymphoma

INCIDENCE

Table 1

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

Year of diagnosis	All cases n	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	73	5.5	10.9	84.9	97.3
1999	68	7.8	10.7	73.5	97.1
2000	84	7.1	10.6	72.6	98.8
2001	111	8.0	10.4	67.6	97.3
2002	159	9.7	10.2	67.3	98.1 #
2003	200	11.5	10.1	71.0	96.5
2004	216	12.3	10.0	66.7	97.2
2005	187	12.5	9.4	67.9	95.2
2006	213	12.9	9.0	68.1	96.7
2007	237	13.2	8.9	71.3	94.5 #
2008	224	13.9	8.4	70.1	98.7
2009	285	14.6	8.1	61.8	98.2
2010	281	14.9	7.5	63.7	97.5
2011	255	15.3	7.1	63.1	99.2
2012	263	16.4	7.0	62.0	99.6
2013	348	17.3	6.2	55.5	97.1
2014	279	18.2	5.7	57.3	96.8
2015	273	19.0	5.5	54.6	97.4
2016	251	19.2	4.0	54.6	99.6
2017	225	19.8	4.0	45.3	99.1
2018	191	20.0	3.7	31.9	99.0
2019	147	20.3	2.5	29.3	98.0
2020	176	20.8	1.7	33.0	99.4 ##
1998–2020	4746	20.8	10.9	59.4	97.8

4,746 cases diagnosed 1998-2020 are related to a total of 4,746 patients. Currently, in 1,428 (30.1 %) of these 4,746 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,045 / 277 / 106 (22.0 % / 5.8 % / 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 191 cases has been diagnosed, of which 20.0 % 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 1a

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

Year of diagnosis	Males n	Males %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %	
1998	32	43.8	3.1	11.4	93.8	100.0	
1999	28	41.2	5.0	11.3	75.0	96.4	
2000	45	53.6	4.8	11.3	80.0	97.8	
2001	49	44.1	7.1	11.0	61.2	98.0	
2002	83	52.2	9.7	10.8	69.9	98.8	#
2003	94	47.0	11.2	10.6	67.0	97.9	
2004	111	51.4	12.0	10.5	64.9	98.2	
2005	96	51.3	13.0	9.9	67.7	94.8	
2006	112	52.6	13.2	9.4	67.0	96.4	
2007	127	53.6	13.6	9.3	68.5	92.9	#
2008	110	49.1	14.4	8.9	72.7	100.0	
2009	150	52.6	15.3	8.5	57.3	99.3	
2010	156	55.5	15.4	8.1	62.8	97.4	
2011	146	57.3	16.1	7.4	64.4	98.6	
2012	131	49.8	16.8	7.1	61.8	99.2	
2013	186	53.4	17.6	6.1	58.1	96.8	
2014	157	56.3	18.3	5.6	62.4	96.8	
2015	152	55.7	19.2	5.0	56.6	97.4	
2016	135	53.8	19.6	3.3	51.9	99.3	
2017	118	52.4	20.0	3.4	43.2	99.2	
2018	111	58.1	20.3	3.0	33.3	100.0	
2019	83	56.5	20.5	2.1	26.5	100.0	
2020	106	60.2	21.0	1.9	33.0	100.0	##
1998-2020	2518	53.1	21.0	11.4	58.9	98.0	

2,518 cases diagnosed 1998-2020 are related to a total of 2,518 patients. Currently, in 784 (31.1 %) of these 2,518 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 578 / 145 / 61 (23.0 % / 5.8 % / 2.4 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 111 cases has been diagnosed, of which 20.3 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 3.0 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1b

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

Year of diagnosis	Females n	Females %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	41	56.2	7.3	10.2	78.0	95.1
1999	40	58.8	9.9	10.1	72.5	97.5
2000	39	46.4	9.2	9.9	64.1	100.0
2001	62	55.9	8.8	9.7	72.6	96.8
2002	76	47.8	9.7	9.6	64.5	97.4 #
2003	106	53.0	11.8	9.5	74.5	95.3
2004	105	48.6	12.6	9.4	68.6	96.2
2005	91	48.7	12.0	8.8	68.1	95.6
2006	101	47.4	12.6	8.5	69.3	97.0
2007	110	46.4	12.7	8.5	74.5	96.4 #
2008	114	50.9	13.4	7.9	67.5	97.4
2009	135	47.4	13.8	7.5	66.7	97.0
2010	125	44.5	14.3	6.7	64.8	97.6
2011	109	42.7	14.5	6.6	61.5	100.0
2012	132	50.2	15.9	6.9	62.1	100.0
2013	162	46.6	16.9	6.4	52.5	97.5
2014	122	43.7	18.1	5.8	50.8	96.7
2015	121	44.3	18.7	6.2	52.1	97.5
2016	116	46.2	18.9	4.9	57.8	100.0
2017	107	47.6	19.5	4.8	47.7	99.1
2018	80	41.9	19.8	4.8	30.0	97.5
2019	64	43.5	20.1	3.1	32.8	95.3
2020	70	39.8	20.5	1.4	32.9	98.6 ##
1998-2020	2228	46.9	20.5	10.2	60.1	97.5

2,228 cases diagnosed 1998-2020 are related to a total of 2,228 patients. Currently, in 644 (28.9 %) of these 2,228 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 467 / 132 / 45 (21.0 % / 5.9 % / 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 80 cases has been diagnosed, of which 19.8 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.8 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis
(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	32	41	2.9	3.5	1.8	1.7	2.5	2.5	3.3	3.1
1999	28	40	2.5	3.4	1.7	1.7	2.3	2.4	3.0	3.0
2000	45	39	4.0	3.2	2.6	1.7	3.6	2.5	4.6	2.9
2001	49	62	4.2	5.1	2.6	2.7	3.7	3.6	4.9	4.5
2002	83	76	4.5	3.9	2.6	1.9	3.8	2.6	4.8	3.3
2003	94	106	5.0	5.4	3.1	2.8	4.3	3.9	5.4	4.6
2004	111	105	5.9	5.3	3.7	2.4	5.1	3.4	6.1	4.4
2005	96	91	5.1	4.6	2.9	2.2	4.2	3.1	5.2	3.9
2006	112	101	5.8	5.0	3.2	2.4	4.6	3.3	5.8	4.2
2007	127	110	5.7	4.8	3.3	2.1	4.7	3.0	5.8	3.9
2008	110	114	4.9	4.9	2.6	2.2	3.7	3.1	4.9	4.0
2009	150	135	6.7	5.8	3.8	2.5	5.3	3.5	6.6	4.7
2010	156	125	6.9	5.3	3.6	2.3	5.1	3.3	6.7	4.2
2011	146	109	6.5	4.7	3.3	2.2	4.7	2.9	6.0	3.7
2012	131	132	5.8	5.6	2.6	2.5	4.0	3.5	5.5	4.4
2013	186	162	8.1	6.8	4.1	3.0	5.8	4.2	7.5	5.4
2014	157	122	6.7	5.1	3.4	2.0	4.9	3.0	6.1	3.9
2015	152	121	6.4	5.0	3.1	2.0	4.5	3.0	5.9	3.8
2016	135	116	5.6	4.7	2.7	2.0	3.9	2.9	5.1	3.7
2017	118	107	4.9	4.3	2.2	1.8	3.3	2.6	4.3	3.4
2018	111	80	4.6	3.2	2.1	1.2	3.1	1.8	4.1	2.4
2019	83	64	3.4	2.6	1.7	1.0	2.4	1.5	3.1	1.9
2020	106	70	4.4	2.8	2.0	1.1	3.0	1.6	3.8	2.1
1998–2020	2518	2228	5.4	4.6	2.9	2.0	4.1	2.9	5.3	3.7

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

Table 3

Age distribution parameters by year of diagnosis (ALL PATIENTS)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	73	64.5	14.9	27.3	90.5	41.9	55.8	65.3	75.5	82.6
1999	68	64.1	17.1	23.1	90.7	33.5	54.5	66.2	77.1	83.6
2000	84	63.4	15.2	16.4	88.9	43.3	54.0	65.8	75.3	81.5
2001	111	62.7	17.7	25.0	88.8	34.2	50.3	66.7	77.0	83.0
2002	159	65.5	15.9	20.4	89.9	41.3	55.6	68.8	78.8	82.8
2003	200	63.9	16.9	19.8	93.7	39.6	54.2	66.4	77.5	82.5
2004	216	66.3	14.9	17.9	94.2	47.9	57.1	68.2	77.0	83.3
2005	187	66.3	14.9	24.7	98.4	47.4	57.8	67.1	77.3	83.9
2006	213	66.8	15.1	17.6	93.8	43.4	59.6	69.4	77.3	83.2
2007	237	67.4	16.8	10.3	101	43.8	57.4	71.5	79.9	85.8
2008	224	68.3	15.2	5.4	96.2	46.1	63.4	70.8	78.7	84.3
2009	285	67.3	16.1	4.3	95.2	45.6	59.1	69.7	79.3	84.9
2010	281	68.3	15.3	16.4	96.1	44.0	61.0	71.2	78.8	84.8
2011	255	67.6	15.6	14.1	94.8	44.3	60.7	71.2	77.6	84.1
2012	263	70.3	13.8	15.0	97.7	50.4	62.4	73.7	80.5	84.7
2013	348	68.7	15.5	1.0	92.2	46.7	61.1	73.0	80.0	85.4
2014	279	68.9	14.9	6.5	97.5	48.2	59.4	72.5	79.1	86.0
2015	273	69.4	15.2	19.0	96.0	47.1	62.9	73.2	80.3	84.9
2016	251	68.9	15.0	16.5	92.9	48.4	61.6	72.4	79.5	84.8
2017	225	70.4	13.9	26.4	97.8	50.4	63.0	73.6	80.0	84.9
2018	191	69.9	14.8	25.9	94.2	47.1	63.4	74.8	80.2	83.5
2019	147	69.6	15.2	20.3	98.3	45.7	61.7	73.6	79.7	85.4
2020	176	70.3	13.3	27.7	94.7	51.6	61.3	73.0	80.4	85.5
1998–2020	4746	67.9	15.4	1.0	101	45.4	59.5	71.2	79.1	84.5

Table 3a

Age distribution parameters by year of diagnosis (MALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	32	60.6	16.9	27.3	84.7	33.1	48.4	60.8	73.3	81.2
1999	28	60.9	18.2	23.1	90.7	28.6	55.8	62.8	75.1	81.2
2000	45	60.9	17.1	16.4	86.8	37.7	47.1	63.2	75.3	81.5
2001	49	62.3	16.3	25.0	86.3	38.5	54.3	65.8	76.9	80.2
2002	83	64.2	15.4	20.4	89.9	42.1	55.1	66.5	74.8	82.4
2003	94	61.2	17.6	19.8	93.7	36.3	47.0	65.4	75.5	81.0
2004	111	62.8	14.3	17.9	87.7	45.5	54.2	64.4	73.7	81.7
2005	96	63.8	13.7	25.6	87.9	42.8	54.8	64.7	74.6	81.0
2006	112	65.6	14.3	17.6	92.0	42.9	58.9	67.8	76.0	81.1
2007	127	64.4	16.5	21.7	94.8	40.2	52.7	66.1	77.1	85.0
2008	110	66.6	15.7	16.7	91.7	43.1	57.9	69.7	77.7	83.2
2009	150	64.0	16.7	6.6	91.9	41.4	52.8	67.7	76.4	84.1
2010	156	66.8	15.0	16.4	88.3	43.1	60.3	70.4	77.7	83.6
2011	146	67.0	14.0	26.4	92.1	44.5	60.3	70.9	76.7	82.4
2012	131	70.3	13.9	15.0	91.2	50.4	62.8	74.9	79.7	83.4
2013	186	68.2	15.6	1.0	92.2	46.7	60.9	71.5	79.7	84.6
2014	157	67.5	15.6	6.5	97.5	46.3	57.4	71.1	77.6	85.5
2015	152	67.8	16.1	19.0	92.2	41.4	59.4	72.5	80.0	83.9
2016	135	68.1	15.2	16.5	88.0	48.4	59.4	72.3	79.1	84.7
2017	118	70.7	13.1	28.6	91.0	50.6	63.3	74.0	79.9	84.5
2018	111	69.3	14.7	25.9	94.2	47.1	63.2	73.5	79.0	82.8
2019	83	68.4	16.5	20.3	98.3	45.2	59.8	72.7	79.8	84.9
2020	106	69.6	13.1	28.1	92.1	51.6	59.9	71.9	80.0	85.8
1998–2020	2518	66.5	15.5	1.0	98.3	43.7	57.2	70.0	78.0	83.3

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	41	67.6	12.5	28.2	90.5	54.7	61.6	67.3	76.6	82.6
1999	40	66.4	16.2	29.9	88.7	44.1	54.0	69.5	78.7	86.2
2000	39	66.3	12.3	33.3	88.9	50.8	55.4	67.8	75.2	81.8
2001	62	63.1	18.8	27.1	88.8	34.0	45.8	67.9	78.4	84.8
2002	76	66.8	16.3	23.1	89.4	41.1	56.3	71.4	80.0	84.4
2003	106	66.2	15.9	23.8	93.5	42.1	56.7	67.8	78.6	84.0
2004	105	70.0	14.6	25.6	94.2	53.4	64.8	72.0	79.4	84.8
2005	91	68.9	15.7	24.7	98.4	50.2	61.2	69.6	79.3	86.8
2006	101	68.2	15.8	19.9	93.8	44.0	61.0	71.3	78.9	86.0
2007	110	70.9	16.5	10.3	101	50.2	65.2	74.0	80.9	87.0
2008	114	70.0	14.6	5.4	96.2	51.0	65.6	71.9	79.3	85.0
2009	135	71.0	14.6	4.3	95.2	50.3	63.8	73.8	81.7	87.1
2010	125	70.1	15.5	21.3	96.1	44.0	63.6	72.3	80.8	87.0
2011	109	68.5	17.6	14.1	94.8	40.1	63.1	73.1	80.7	87.2
2012	132	70.3	13.6	17.1	97.7	53.6	62.1	72.3	81.0	86.7
2013	162	69.3	15.5	20.6	92.0	48.1	61.1	73.6	80.6	86.3
2014	122	70.8	13.8	30.5	90.9	51.3	61.8	74.4	79.8	87.0
2015	121	71.5	13.7	26.9	96.0	50.4	63.1	74.4	81.3	87.3
2016	116	69.8	14.7	16.6	92.9	46.7	64.6	72.6	79.7	85.3
2017	107	70.2	14.9	26.4	97.8	48.3	63.0	73.2	80.6	85.9
2018	80	70.9	15.0	32.6	93.5	46.9	63.7	76.4	80.8	85.1
2019	64	71.1	13.3	31.8	92.3	54.4	64.8	74.6	79.2	85.4
2020	70	71.4	13.6	27.7	94.7	52.0	62.7	73.6	80.6	85.1
1998–2020	2228	69.4	15.2	4.3	101	48.0	61.8	72.6	80.2	86.0

Table 4

Age distribution by 5-year age group and sex for period 2007-2020

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	2	0.1	0.1	1	0.1	0.1	1	0.1	0.1
5-9	3	0.1	0.1	2	0.1	0.2	1	0.1	0.1
10-14	2	0.1	0.2			0.2	2	0.1	0.3
15-19	10	0.3	0.5	5	0.3	0.4	5	0.3	0.6
20-24	18	0.5	1.0	13	0.7	1.1	5	0.3	0.9
25-29	40	1.2	2.2	27	1.4	2.6	13	0.8	1.7
30-34	46	1.3	3.5	25	1.3	3.9	21	1.3	3.1
35-39	75	2.2	5.7	40	2.1	6.0	35	2.2	5.3
40-44	97	2.8	8.5	58	3.1	9.2	39	2.5	7.8
45-49	139	4.0	12.6	97	5.2	14.3	42	2.7	10.5
50-54	169	4.9	17.5	110	5.9	20.2	59	3.8	14.2
55-59	199	5.8	23.3	113	6.0	26.3	86	5.5	19.7
60-64	296	8.6	31.9	155	8.3	34.6	141	9.0	28.7
65-69	372	10.8	42.7	217	11.6	46.2	155	9.9	38.6
70-74	554	16.1	58.9	285	15.3	61.5	269	17.2	55.8
75-79	605	17.6	76.5	337	18.0	79.5	268	17.1	72.9
80-84	466	13.6	90.0	241	12.9	92.4	225	14.4	87.2
85+	342	10.0	100.0	142	7.6	100.0	200	12.8	100.0
All ages	3435	100.0		1868	100.0		1567	100.0	

Table 5

Age-specific incidence 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 Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0- 4	1	1	0.1	0.1	0.5	0.6
5- 9	2	1	0.1	0.1	1.7	1.0
10-14		2		0.1		1.6
15-19	5	5	0.3	0.3	1.6	1.9
20-24	13	5	0.6	0.3	2.1	1.0
25-29	27	13	1.2	0.6	2.8	1.1
30-34	25	21	1.1	0.9	1.9	1.0
35-39	40	35	1.7	1.5	2.2	1.0
40-44	58	39	2.3	1.6	2.1	0.6
45-49	97	42	3.6	1.6	1.9	0.4
50-54	110	59	4.3	2.3	1.3	0.5
55-59	113	86	5.3	3.9	0.9	0.6
60-64	155	141	8.8	7.4	0.9	0.9
65-69	217	155	13.3	8.5	0.9	0.8
70-74	285	269	19.0	15.6	1.0	1.4
75-79	337	268	27.9	17.8	1.4	1.4
80-84	241	225	33.3	21.1	1.6	1.5
85+	142	200	30.4	19.2	1.4	1.2
All ages	1868	1567			1.2	1.0
Incidence						
Raw			5.7	4.7		
WS			2.9	2.0		
ES			4.1	2.8		
BRD-S			5.3	3.6		

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

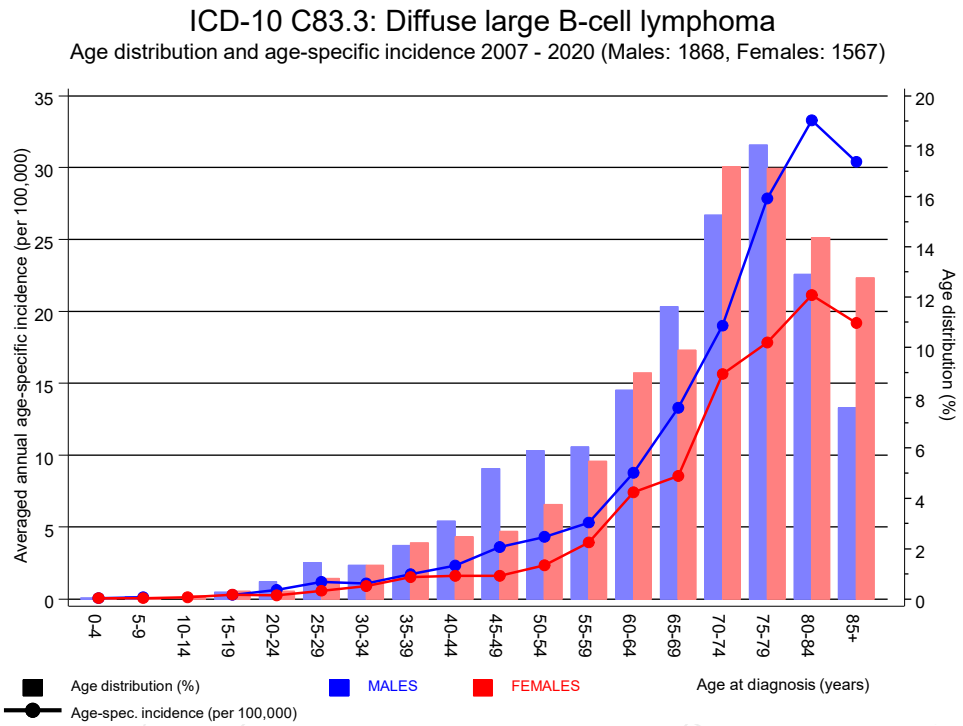


Figure 6. Age distribution (males: mean=67.7 yrs, median=71.2 yrs; females: mean=70.3 yrs, median=73.5 yrs) and age-specific incidence.

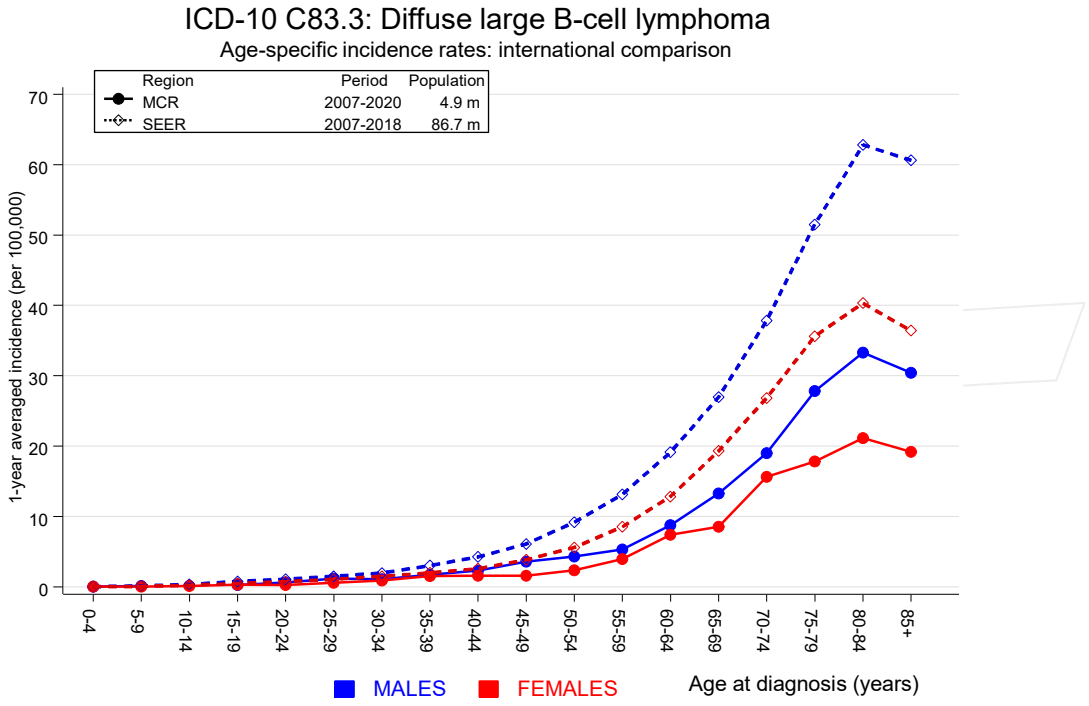


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:
Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 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	5	0.9	5.4	1.8	12.7	#	5.1	
C07–C08	Salivary gland	3	0.3	10.1	2.1	29.6	#	3.4	
C09–C10	Oropharynx	1	1.1	0.9	0.0	5.0		−0.1	
C14	ENT cancer	1	0.0	35.8	0.9	199.7		1.2	100.0
C15	Oesophagus	4	2.3	1.7	0.5	4.5		2.1	
C16	Stomach	10	4.7	2.1	1.0	3.9	#	6.6	
C17	Small intestine	2	0.7	2.7	0.3	9.8		1.6	50.0
C18	Colon	23	11.5	2.0	1.3	3.0	#	14.4	
C19–C20	Rectum	11	6.0	1.8	0.9	3.3		6.3	9.1
C21	Anus/canal	5	0.3	17.4	5.6	40.5	#	5.9	
C22	Liver	4	3.4	1.2	0.3	3.0		0.8	
C23–C24	Bile	2	1.3	1.5	0.2	5.6		0.9	
C25	Pancreas	8	4.8	1.7	0.7	3.3		4.0	
C30–C31	Sinuses	1	0.2	4.6	0.1	25.4		1.0	
C32	Larynx	5	1.1	4.7	1.5	10.9	#	4.9	
C33–C34	Lung	30	13.5	2.2	1.5	3.2	#	20.7	3.3
C37	Thymus	1	0.1	14.6	0.4	81.4		1.2	
C38,C45	Mesothelioma	2	0.8	2.4	0.3	8.7		1.5	
C43	Malign. melanoma	15	5.5	2.7	1.5	4.5	#	11.9	
C44	Skin others	1	0.0	32.1	0.8	179.0		1.2	
C46,C49	Soft tissue	7	0.7	10.0	4.0	20.5	#	7.9	
C60	Penis	1	0.3	3.2	0.1	17.9		0.9	
C61	Prostate	68	31.6	2.2	1.7	2.7	#	45.6	4.4
C64	Kidney	8	3.9	2.0	0.9	4.0		5.1	
C65	Renal pelvis	1	0.6	1.8	0.0	10.1		0.6	
C66	Ureter	4	0.3	12.1	3.3	31.1	#	4.6	
C67	Bladder	12	5.9	2.1	1.1	3.6	#	7.7	
C68	Urethra	1	0.1	8.0	0.2	44.8		1.1	
C69	Eye carcinoma	1	0.0	22.2	0.6	123.7		1.2	
C70–C72	CNS cancer	2	1.5	1.4	0.2	4.9		0.7	50.0
C73	Thyroid	2	0.7	2.7	0.3	9.6		1.6	
C76–C79	CUP	7	2.0	3.4	1.4	7.1	#	6.2	
C81	Hodgkin lymphoma	6	0.3	20.9	7.7	45.5	#	7.2	
C82–C85	NHL	16	5.1	3.1	1.8	5.1	#	13.7	6.3
C90	Mult. myeloma	2	1.6	1.3	0.2	4.6		0.5	
C91–C96	Leukaemia	10	1.9	5.3	2.5	9.8	#	10.2	10.0
Not observed		0	2.5	0.0	0.0	1.5		−3.1	
All further malignancies		282	117.5	2.4	2.1	2.7	#	206.1	3.5

Patients	2486
Median age at next malignancy (years)	73.3
Person-years	7981
Mean observation time (years)	3.2
Median observation time (years)	1.3

The occurrence of further specified malignancy is statistically significant.

Table 7b

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

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C07–C08	Salivary gland	2	0.1	13.4	1.6	48.2	#	2.4	50.0
C09–C10	Oropharynx	2	0.3	6.1	0.7	22.1		2.2	
C15	Oesophagus	2	0.6	3.4	0.4	12.2		1.8	
C16	Stomach	7	3.2	2.2	0.9	4.5		4.9	
C17	Small intestine	1	0.5	2.1	0.1	11.7		0.7	
C18	Colon	20	9.2	2.2	1.3	3.4	#	14.0	15.0
C19–C20	Rectum	3	3.6	0.8	0.2	2.4		−0.7	
C21	Anus/canal	2	0.5	4.1	0.5	14.9		2.0	
C22	Liver	5	1.2	4.3	1.4	10.0	#	4.9	40.0
C23–C24	Bile	3	1.3	2.2	0.5	6.5		2.1	
C25	Pancreas	8	4.5	1.8	0.8	3.5		4.5	12.5
C33–C34	Lung	18	6.6	2.7	1.6	4.3	#	14.6	5.6
C37	Thymus	1	0.1	19.4	0.5	108.0		1.2	
C43	Malign. melanoma	13	3.4	3.8	2.0	6.6	#	12.4	
C44	Skin others	1	0.0	80.3	2.0	447.5	#	1.3	
C46,C49	Soft tissue	1	0.5	1.9	0.0	10.7		0.6	
C50	Breast	47	26.2	1.8	1.3	2.4	#	26.8	4.3
C51	Vulva	4	1.0	3.9	1.1	10.1	#	3.8	
C53	Cervix uteri	4	1.1	3.7	1.0	9.5	#	3.8	
C54	Corpus uteri	7	4.8	1.5	0.6	3.0		2.8	
C56	Ovary	4	3.5	1.1	0.3	2.9		0.6	
C64	Kidney	5	2.1	2.4	0.8	5.5		3.7	
C65	Renal pelvis	2	0.3	6.7	0.8	24.1		2.2	
C67	Bladder	7	1.9	3.7	1.5	7.5	#	6.5	
C70–C72	CNS cancer	1	1.1	0.9	0.0	4.9		−0.2	
C73	Thyroid	3	1.3	2.3	0.5	6.9		2.2	
C76–C79	CUP	4	1.8	2.3	0.6	5.8		2.9	
C81	Hodgkin lymphoma	3	0.2	18.5	3.8	54.1	#	3.7	
C82–C85	NHL	12	3.6	3.3	1.7	5.8	#	10.8	
C90	Mult. myeloma	4	1.1	3.5	1.0	9.1		3.7	
C91–C96	Leukaemia	11	1.4	7.9	4.0	14.2	#	12.4	
Not observed		0	2.9	0.0	0.0	1.3		−3.8	
All further malignancies		207	89.9	2.3	2.0	2.6	#	150.7	4.8

Patients	2202
Median age at next malignancy (years)	76.5
Person-years	7772
Mean observation time (years)	3.5
Median observation time (years)	1.5

The occurrence of further specified malignancy is statistically significant.

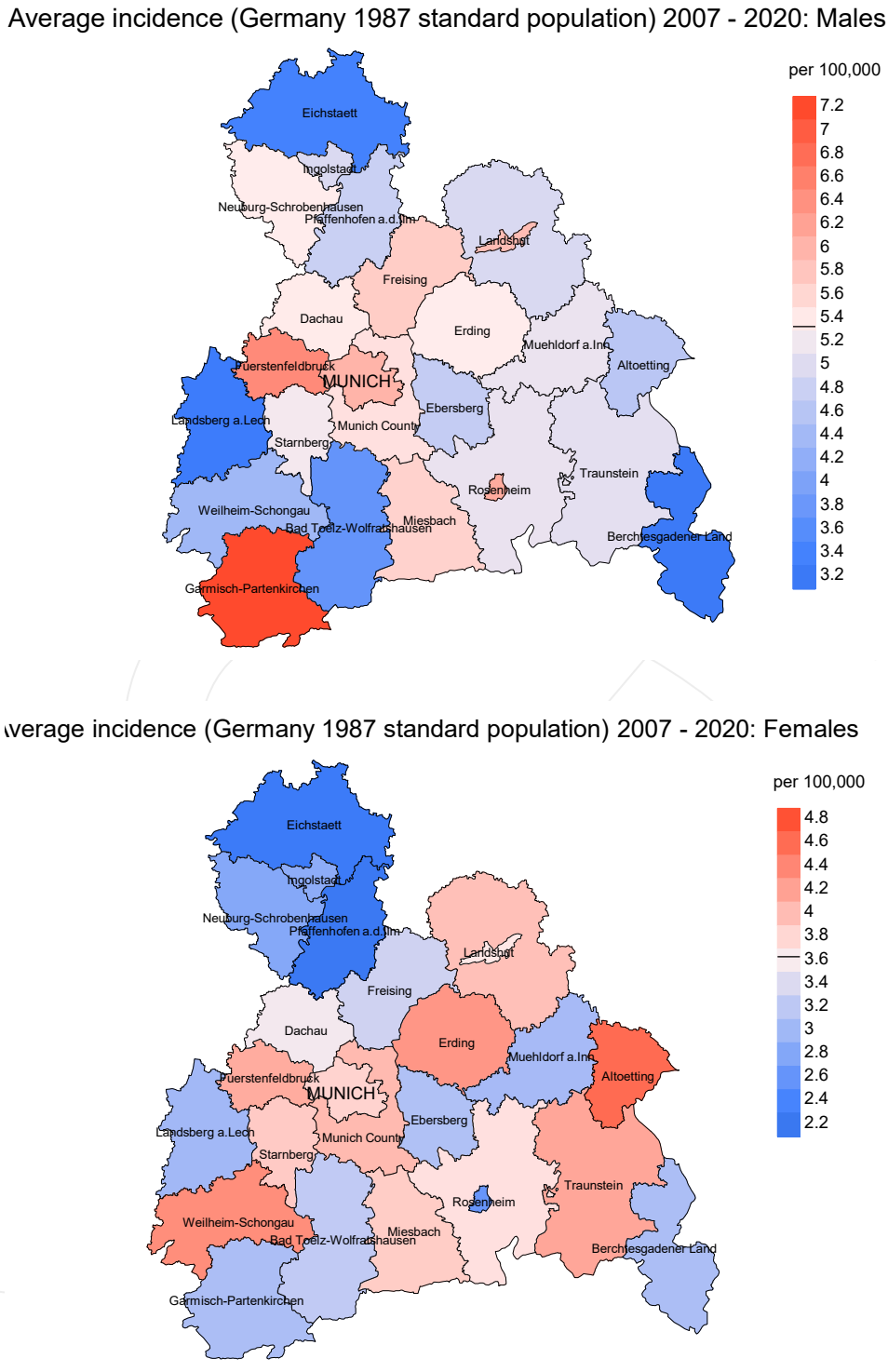
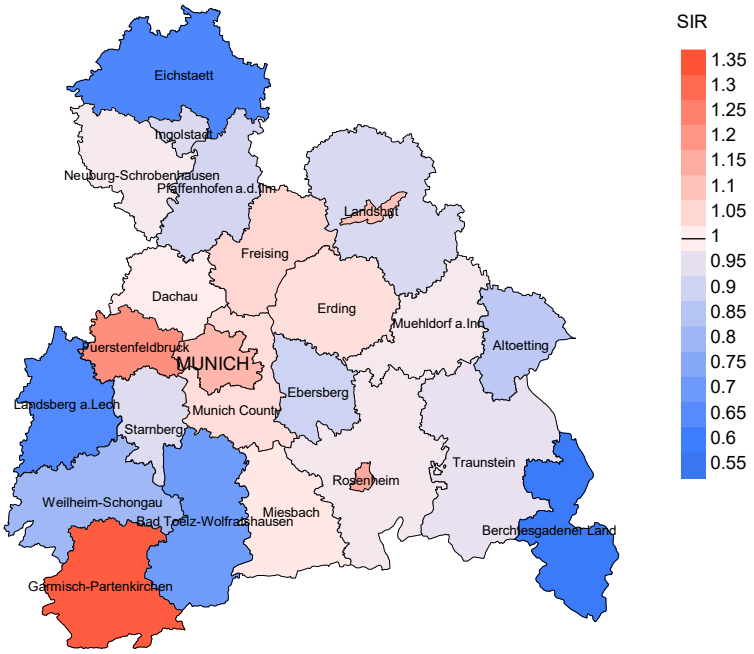


Figure 8a. Map of cancer incidence (german standard population) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 5.3/100,000 WS N=1,868, females 3.6/100,000 WS N=1,567).

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 35 women were identified with newly diagnosed diff. large B-cell lymphoma. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 3.1/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.9 and 4.8/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

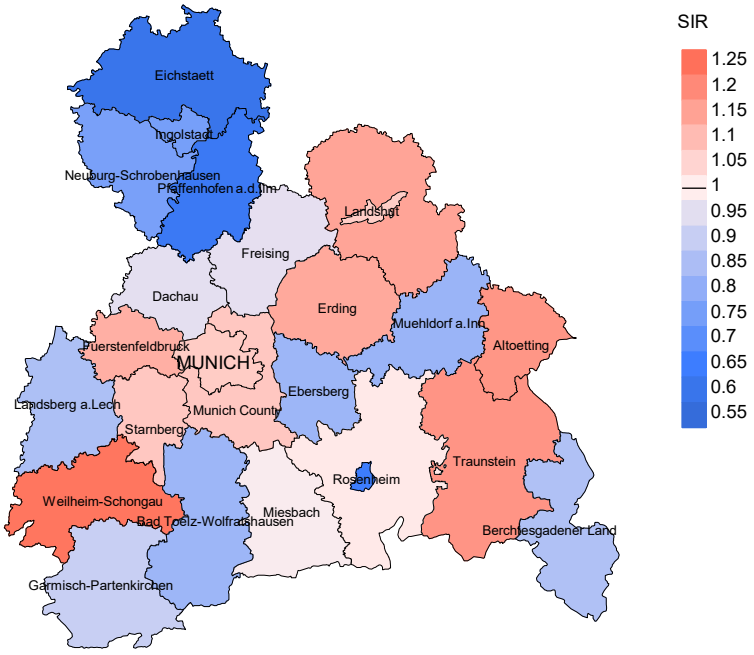


Figure 8b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=1,868, females N=1,567).

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 35 women were identified with newly diagnosed diff. large B-cell lymphoma. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.82. Though, the value of this parameter may vary with an underlying probability of 99% between 0.51 and 1.25, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status,
and deaths among the annual cohorts

(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 %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	73	97.3	62	84.9	93.5
1999	68	97.1	50	73.5	92.0
2000	84	98.8	61	72.6	93.4
2001	111	97.3	75	67.6	93.3
2002	159	98.1	107	67.3	96.3
2003	200	96.5	142	71.0	98.6
2004	216	97.2	144	66.7	95.8
2005	187	95.2	127	67.9	93.7
2006	213	96.7	145	68.1	93.8
2007	237	94.5	169	71.3	95.3
2008	224	98.7	157	70.1	96.2
2009	285	98.2	176	61.8	94.9
2010	281	97.5	179	63.7	97.2
2011	255	99.2	161	63.1	92.5
2012	263	99.6	163	62.0	95.1
2013	348	97.1	193	55.5	94.3
2014	279	96.8	160	57.3	95.0
2015	273	97.4	149	54.6	89.3
2016	251	99.6	137	54.6	89.8
2017	225	99.1	102	45.3	88.2
2018	191	99.0	61	31.9	67.2
2019	147	98.0	43	29.3	83.7
2020	176	99.4	58	33.0	91.4
1998–2020	4746	97.8	2821	59.4	93.4

Table 9b

Annual cohorts of incident cancers and deaths,
and cases deceased within the same year of being diagnosed with cancer

(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	Deaths in same year n	Prop. deaths in same year %
1998	73	38	11	15.1
1999	68	36	9	13.2
2000	84	43	9	10.7
2001	111	45	17	15.3
2002	159	75	23	14.5
2003	200	97	41	20.5
2004	216	113	37	17.1
2005	187	101	28	15.0
2006	213	119	40	18.8
2007	237	154	59	24.9
2008	224	126	44	19.6
2009	285	165	60	21.1
2010	281	163	51	18.1
2011	255	141	36	14.1
2012	263	172	49	18.6
2013	348	207	61	17.5
2014	279	210	64	22.9
2015	273	193	55	20.1
2016	251	200	52	20.7
2017	225	226	53	23.6
2018	191	167	25	13.1
2019	147	153	22	15.0
2020	176	148	36	20.5
1998–2020	4746	3092	882	18.6

Table 9c

Annual cohorts of deaths, and proportion of cancer-related and non-cancer-related deaths

(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	38	81.6	18.4	97.2
1999	36	83.3	16.7	96.9
2000	43	81.4	18.6	90.5
2001	45	84.4	15.6	100.0
2002	75	82.7	17.3	91.7
2003	97	83.5	16.5	90.5
2004	113	87.6	12.4	95.5
2005	101	84.2	15.8	91.8
2006	119	83.2	16.8	90.5
2007	154	85.7	14.3	93.9
2008	126	82.5	17.5	90.2
2009	165	81.2	18.8	93.2
2010	163	76.1	23.9	81.5
2011	141	75.2	24.8	83.6
2012	172	76.7	23.3	84.8
2013	207	74.4	25.6	83.8
2014	210	72.4	27.6	86.8
2015	193	74.6	25.4	83.2
2016	200	68.0	32.0	77.8
2017	226	77.9	22.1	86.8
2018	167	52.7	47.3	70.5
2019	153	47.1	52.9	76.5
2020	148	53.4	46.6	75.9
1998-2020	3092	74.2	25.8	86.0

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	13	71.8	71.8	78.0	72.6
1999	12	61.3	61.3	54.0	62.9
2000	21	70.1	70.9	67.9	71.6
2001	17	66.5	64.7	71.0	66.5
2002	45	72.5	72.5	71.5	72.5
2003	47	74.7	73.7	77.0	73.7
2004	63	72.0	72.2	70.1	72.2
2005	49	73.9	74.9	63.6	74.8
2006	63	71.0	70.0	78.4	71.1
2007	82	73.0	73.0	66.5	72.3
2008	63	73.7	73.7	73.9	73.1
2009	83	77.1	75.5	83.5	75.6
2010	94	76.4	75.9	76.8	75.9
2011	81	72.5	70.3	80.2	71.7
2012	76	76.2	76.4	76.1	77.4
2013	113	78.7	78.2	82.5	78.3
2014	108	77.0	76.8	79.6	76.8
2015	103	78.1	76.6	81.6	77.4
2016	101	78.4	77.8	79.9	78.0
2017	119	78.9	77.7	84.1	78.1
2018	89	79.1	78.1	80.5	77.8
2019	79	79.6	80.5	78.3	79.4
2020	81	80.8	80.9	80.3	80.9
1998-2020	1602	76.6	75.6	79.5	75.9

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

Table 10b

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	25	71.3	66.8	78.0	75.9
1999	24	76.1	76.1	73.8	77.9
2000	22	76.3	74.9	86.3	74.9
2001	28	76.0	76.1	63.2	76.2
2002	30	78.5	79.7	74.0	79.1
2003	50	78.9	79.7	74.8	78.9
2004	50	73.3	75.5	68.7	75.5
2005	52	79.9	77.7	90.8	79.2
2006	56	77.8	77.3	85.5	77.3
2007	72	79.2	78.6	79.7	78.4
2008	63	81.5	78.8	84.7	80.5
2009	82	78.6	77.4	80.4	78.8
2010	69	79.1	77.3	85.0	78.9
2011	60	79.4	78.9	84.4	78.9
2012	96	80.9	80.7	81.3	80.7
2013	94	77.1	75.2	83.4	76.2
2014	102	78.5	77.9	82.1	77.9
2015	90	78.6	77.9	86.8	78.2
2016	99	80.2	79.0	83.8	79.0
2017	107	79.5	78.7	84.8	78.8
2018	78	81.8	81.6	82.1	81.1
2019	74	81.7	78.8	82.9	81.4
2020	67	82.5	78.8	88.9	80.3
1998–2020	1490	79.3	78.1	83.4	78.5

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	11	1.0	0.34	0.6	0.36	0.9	0.37	1.2	0.38
1999	10	0.9	0.36	0.5	0.32	0.8	0.34	0.9	0.31
2000	18	1.6	0.40	0.9	0.35	1.4	0.39	2.0	0.43
2001	14	1.2	0.29	0.9	0.34	1.2	0.31	1.4	0.29
2002	36	1.9	0.43	1.1	0.40	1.6	0.43	2.2	0.47
2003	40	2.1	0.43	1.1	0.36	1.8	0.41	2.5	0.47
2004	55	2.9	0.50	1.5	0.42	2.4	0.46	3.2	0.53
2005	42	2.2	0.44	1.0	0.36	1.7	0.41	2.5	0.48
2006	51	2.7	0.46	1.4	0.43	2.1	0.45	2.6	0.45
2007	71	3.2	0.56	1.6	0.50	2.5	0.54	3.5	0.59
2008	57	2.6	0.52	1.2	0.47	1.9	0.50	2.6	0.54
2009	66	3.0	0.44	1.3	0.35	2.1	0.40	3.1	0.46
2010	75	3.3	0.48	1.5	0.41	2.3	0.45	3.3	0.50
2011	54	2.4	0.37	1.2	0.37	1.8	0.38	2.3	0.39
2012	55	2.4	0.42	1.0	0.38	1.6	0.40	2.3	0.42
2013	86	3.7	0.46	1.4	0.36	2.4	0.41	3.5	0.46
2014	74	3.2	0.47	1.3	0.39	2.1	0.43	2.8	0.47
2015	73	3.1	0.48	1.3	0.42	2.1	0.46	2.8	0.47
2016	64	2.7	0.47	1.0	0.38	1.6	0.42	2.4	0.47
2017	97	4.0	0.82	1.6	0.74	2.6	0.78	3.5	0.80
2018	44	1.8	0.40	0.6	0.30	1.1	0.34	1.5	0.38
2019	37	1.5	0.45	0.5	0.31	0.9	0.36	1.3	0.42
2020	45	1.8	0.42	0.5	0.27	1.0	0.32	1.5	0.41
1998-2020	1175	2.5	0.47	1.1	0.40	1.8	0.44	2.5	0.48

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	20	1.7	0.49	0.9	0.50	1.2	0.49	1.5	0.49
1999	20	1.7	0.50	0.7	0.39	1.0	0.43	1.5	0.49
2000	17	1.4	0.44	0.6	0.34	0.9	0.36	1.2	0.42
2001	24	2.0	0.39	0.7	0.27	1.2	0.33	1.7	0.38
2002	26	1.3	0.34	0.5	0.25	0.7	0.27	1.0	0.30
2003	41	2.1	0.39	0.7	0.24	1.1	0.28	1.6	0.33
2004	44	2.2	0.42	0.9	0.39	1.4	0.40	1.9	0.42
2005	43	2.2	0.47	0.8	0.34	1.2	0.38	1.6	0.42
2006	48	2.4	0.48	0.8	0.35	1.3	0.40	1.8	0.44
2007	61	2.6	0.55	0.9	0.44	1.5	0.49	2.0	0.52
2008	47	2.0	0.41	0.7	0.32	1.1	0.35	1.4	0.36
2009	68	2.9	0.50	0.9	0.37	1.5	0.43	2.2	0.47
2010	49	2.1	0.39	0.7	0.31	1.1	0.34	1.6	0.38
2011	52	2.2	0.48	0.8	0.35	1.1	0.39	1.6	0.44
2012	77	3.3	0.58	0.9	0.38	1.5	0.44	2.2	0.51
2013	68	2.9	0.42	1.0	0.33	1.5	0.36	2.0	0.38
2014	78	3.2	0.64	1.0	0.47	1.6	0.52	2.3	0.59
2015	71	2.9	0.59	1.0	0.49	1.5	0.51	2.1	0.55
2016	72	2.9	0.62	0.9	0.45	1.5	0.50	2.0	0.54
2017	79	3.2	0.74	1.0	0.55	1.6	0.60	2.2	0.67
2018	44	1.8	0.55	0.5	0.39	0.8	0.43	1.1	0.46
2019	35	1.4	0.55	0.4	0.38	0.6	0.42	0.9	0.47
2020	34	1.4	0.49	0.3	0.31	0.6	0.36	0.9	0.43
1998-2020	1118	2.3	0.50	0.8	0.37	1.2	0.41	1.7	0.46

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									
10-14	2	0.1	0.1			0.0	2	0.2	0.2
15-19	3	0.2	0.3	2	0.2	0.2	1	0.1	0.4
20-24	2	0.1	0.4	2	0.2	0.4			0.4
25-29	1	0.1	0.5			0.4	1	0.1	0.5
30-34	5	0.3	0.8	5	0.6	1.0			0.5
35-39	7	0.4	1.2	5	0.6	1.6	2	0.2	0.7
40-44	19	1.1	2.3	14	1.6	3.1	5	0.6	1.3
45-49	35	2.0	4.3	28	3.1	6.2	7	0.8	2.2
50-54	48	2.8	7.0	24	2.7	8.9	24	2.9	5.0
55-59	59	3.4	10.4	37	4.1	13.0	22	2.6	7.7
60-64	103	5.9	16.4	58	6.5	19.5	45	5.4	13.1
65-69	149	8.6	25.0	84	9.4	28.8	65	7.8	20.8
70-74	253	14.6	39.6	123	13.7	42.5	130	15.6	36.4
75-79	364	21.0	60.6	195	21.7	64.3	169	20.2	56.6
80-84	329	19.0	79.6	166	18.5	82.7	163	19.5	76.2
85+	354	20.4	100.0	155	17.3	100.0	199	23.8	100.0
All ages	1733	100.0		898	100.0		835	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.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14		2			0.1	1.00		8.7
15-19	2	1	0.1	0.40	0.1	0.20	4.2	4.0
20-24	2		0.1	0.15			2.7	
25-29		1			0.0	0.08		1.0
30-34	5		0.2	0.20			3.5	
35-39	5	2	0.2	0.13	0.1	0.06	1.9	0.5
40-44	14	5	0.6	0.24	0.2	0.13	2.3	0.6
45-49	28	7	1.0	0.29	0.3	0.17	2.0	0.4
50-54	24	24	0.9	0.22	1.0	0.41	0.9	0.9
55-59	37	22	1.7	0.33	1.0	0.26	0.8	0.6
60-64	58	45	3.3	0.37	2.4	0.32	0.9	0.9
65-69	84	65	5.1	0.39	3.6	0.42	0.9	0.9
70-74	123	130	8.2	0.43	7.6	0.48	1.0	1.5
75-79	195	169	16.1	0.58	11.3	0.63	1.6	1.7
80-84	166	163	22.9	0.69	15.3	0.72	1.6	1.7
85+	155	199	33.2	1.09	19.1	1.00	1.7	1.7
All ages	898	835					1.3	1.4
Mortality								
Raw			2.8	0.48	2.5	0.53		
WS			1.1	0.40	0.8	0.39		
ES			1.8	0.44	1.2	0.44		
BRD-S			2.6	0.48	1.7	0.48		
PYLL-70								
per 100,000			10.8		6.2			
ES			9.4		5.5			
AYLL-70			11.9		10.1			

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	3	0.5	2	66.7			1	33.3
C03–C06	Oral cavity	3	0.5			1	33.3	2	66.7
C07–C08	Salivary gland	4	0.7	1	25.0			3	75.0
C09–C10	Oropharynx	4	0.7	2	50.0			2	50.0
C14	ENT cancer	1	0.2					1	100.0
C15	Oesophagus	2	0.4					2	100.0
C16	Stomach	12	2.2	4	33.3	2	16.7	6	50.0
C17	Small intestine	7	1.3	4	57.1			3	42.9
C18	Colon	31	5.6	16	51.6	3	9.7	12	38.7
C19–C20	Rectum	18	3.2	9	50.0	2	11.1	7	38.9
C21	Anus/canal	1	0.2					1	100.0
C22	Liver	6	1.1	1	16.7			5	83.3
C23–C24	Bile	1	0.2					1	100.0
C25	Pancreas	10	1.8	1	10.0			9	90.0
C30–C31	Sinuses	1	0.2					1	100.0
C32	Larynx	6	1.1	4	66.7			2	33.3
C33–C34	Lung	38	6.9	9	23.7	4	10.5	25	65.8
C38,C45	Mesothelioma	3	0.5			1	33.3	2	66.7
C43	Malign. melanoma	12	2.2	9	75.0	1	8.3	2	16.7
C44	Skin others	81	14.6	36	44.4	5	6.2	40	49.4
C46,C49	Soft tissue	5	0.9	2	40.0	1	20.0	2	40.0
C61	Prostate	102	18.4	73	71.6	10	9.8	19	18.6
C62	Testis	4	0.7	2	50.0	1	25.0	1	25.0
C64	Kidney	16	2.9	11	68.8	3	18.8	2	12.5
C65	Renal pelvis	1	0.2					1	100.0
C66	Ureter	4	0.7			1	25.0	3	75.0
C67	Bladder	14	2.5	3	21.4	2	14.3	9	64.3
C68	Urethra	2	0.4	1	50.0			1	50.0
C68	Urinary org.	1	0.2					1	100.0
C69	Eye carcinoma	1	0.2					1	100.0
C69	Eye lymphoma	1	0.2	1	100.0				
C69	Eye melanoma	2	0.4	2	100.0				
C70–C72	CNS cancer	3	0.5	1	33.3			2	66.7
C73	Thyroid	2	0.4	1	50.0			1	50.0
C76–C79	CUP	11	2.0	1	9.1	1	9.1	9	81.8
C81	Hodgkin lymphoma	17	3.1	13	76.5	1	5.9	3	17.6
C82–C85	NHL	88	15.9			2	2.3	86	97.7
C90	Mult. myeloma	15	2.7	10	66.7	3	20.0	2	13.3
C91–C96	Leukaemia	21	3.8	10	47.6			11	52.4
All further malignancies		554	100.0	229	41.3	44	7.9	281	50.7

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	3	0.7	3	100.0				
C07–C08	Salivary gland	5	1.1	3	60.0			2	40.0
C09–C10	Oropharynx	3	0.7	1	33.3	1	33.3	1	33.3
C12–C13	Hypopharynx	1	0.2					1	100.0
C15	Oesophagus	2	0.5					2	100.0
C16	Stomach	9	2.0	3	33.3	1	11.1	5	55.6
C17	Small intestine	3	0.7	3	100.0				
C18	Colon	27	6.1	11	40.7	2	7.4	14	51.9
C19–C20	Rectum	14	3.2	6	42.9	3	21.4	5	35.7
C21	Anus/canal	4	0.9	3	75.0			1	25.0
C22	Liver	4	0.9					4	100.0
C23–C24	Bile	6	1.4	1	16.7			5	83.3
C25	Pancreas	8	1.8	1	12.5	2	25.0	5	62.5
C32	Larynx	1	0.2	1	100.0				
C33–C34	Lung	17	3.9	1	5.9			16	94.1
C43	Malign. melanoma	11	2.5	6	54.5	1	9.1	4	36.4
C44	Skin others	49	11.1	21	42.9	1	2.0	27	55.1
C46,C49	Soft tissue	2	0.5			1	50.0	1	50.0
C50	Breast	91	20.7	58	63.7	10	11.0	23	25.3
C51	Vulva	6	1.4	2	33.3			4	66.7
C53	Cervix uteri	8	1.8	6	75.0			2	25.0
C54	Corpus uteri	13	3.0	12	92.3			1	7.7
C55,C57	Fem. genitals un	2	0.5	2	100.0				
C56	Ovary	6	1.4	4	66.7			2	33.3
C64	Kidney	13	3.0	9	69.2	1	7.7	3	23.1
C65	Renal pelvis	1	0.2					1	100.0
C67	Bladder	6	1.4	1	16.7			5	83.3
C69	Eye lymphoma	1	0.2			1	100.0		
C70–C72	CNS cancer	1	0.2	1	100.0				
C73	Thyroid	7	1.6	5	71.4			2	28.6
C76–C79	CUP	9	2.0	5	55.6	1	11.1	3	33.3
C81	Hodgkin lymphoma	5	1.1	4	80.0			1	20.0
C82–C85	NHL	80	18.2	1	1.3	1	1.3	78	97.5
C90	Mult. myeloma	10	2.3	5	50.0	3	30.0	2	20.0
C91–C96	Leukaemia	11	2.5	2	18.2	1	9.1	8	72.7
C96	Systemic	1	0.2	1	100.0				
All further malignancies		440	100.0	182	41.4	30	6.8	228	51.8

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								
10-14		2			0.1	1.00		10.5
15-19	2	1	0.1	0.40	0.1	0.25	4.3	4.3
20-24	2		0.1	0.17			3.0	
25-29		1			0.0	0.08		1.1
30-34	5		0.2	0.20			3.6	
35-39	4	2	0.2	0.12	0.1	0.06	1.6	0.5
40-44	9	4	0.4	0.18	0.2	0.11	1.6	0.5
45-49	26	6	1.0	0.30	0.2	0.15	2.0	0.4
50-54	20	18	0.8	0.21	0.7	0.38	0.9	0.8
55-59	29	18	1.4	0.31	0.8	0.27	0.8	0.6
60-64	44	32	2.5	0.35	1.7	0.31	0.8	0.8
65-69	60	40	3.7	0.37	2.2	0.36	0.8	0.7
70-74	88	101	5.9	0.41	5.9	0.55	1.0	1.5
75-79	133	123	11.0	0.59	8.2	0.65	1.5	1.6
80-84	112	124	15.5	0.71	11.6	0.76	1.5	1.7
85+	95	156	20.3	1.09	15.0	0.99	1.5	1.7
All ages	629	628					1.2	1.3
Mortality								
Raw			1.9	0.45	1.9	0.53		
WS			0.8	0.37	0.6	0.38		
ES			1.3	0.41	0.9	0.43		
BRD-S			1.8	0.45	1.3	0.48		
PYLL-70								
per 100,000			8.9		5.0			
ES			7.8		4.4			
AYLL-70			12.6		11.3			

* 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								
10-14		1			0.1	0.50		5.3
15-19	2	1	0.1	0.40	0.1	0.25	4.3	4.5
20-24	2		0.1	0.17			3.0	
25-29								
30-34	5		0.2	0.20			3.6	
35-39	4	2	0.2	0.12	0.1	0.06	1.6	0.5
40-44	9	2	0.4	0.18	0.1	0.06	1.6	0.3
45-49	25	6	0.9	0.30	0.2	0.16	2.0	0.4
50-54	16	16	0.6	0.18	0.6	0.36	0.7	0.7
55-59	27	15	1.3	0.33	0.7	0.24	0.7	0.5
60-64	37	29	2.1	0.32	1.5	0.31	0.7	0.7
65-69	51	33	3.1	0.37	1.8	0.33	0.7	0.6
70-74	75	87	5.0	0.39	5.1	0.51	0.9	1.3
75-79	111	105	9.2	0.56	7.0	0.61	1.3	1.4
80-84	96	104	13.3	0.69	9.8	0.70	1.4	1.5
85+	81	137	17.3	0.98	13.1	0.91	1.4	1.5
All ages	541	538					1.1	1.1
Mortality								
Raw			1.7	0.43	1.6	0.49		
WS			0.7	0.35	0.5	0.35		
ES			1.1	0.39	0.8	0.39		
BRD-S			1.6	0.43	1.1	0.44		
PYLL-70								
per 100,000			8.2		4.0			
ES			7.2		3.5			
AYLL-70			13.2		10.8			

* See corresponding tables with multiple malignancies.

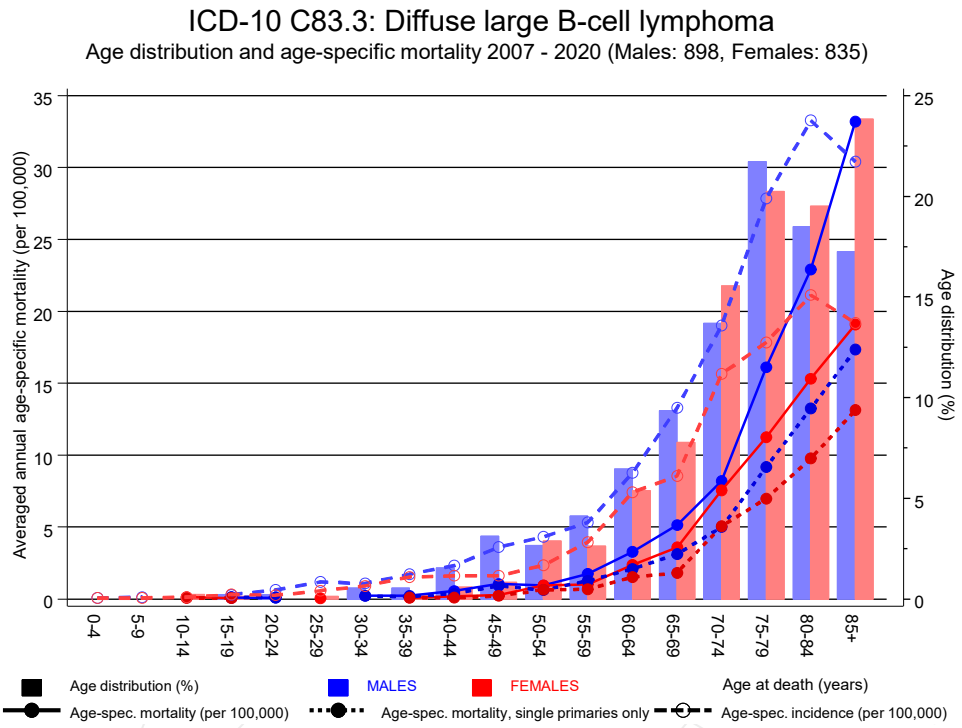
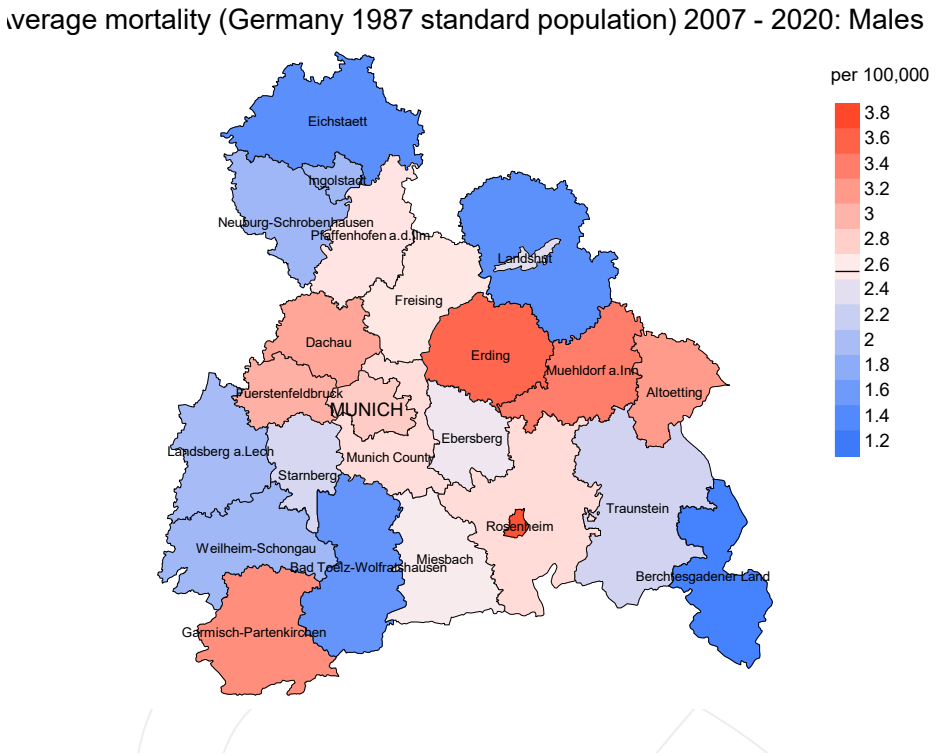


Figure 17. Distribution of age at death (bars; males: mean=71.1 yrs, median=74.0 yrs; females: mean=73.8 yrs, median=75.7 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at diff. large B-cell lymphoma-related death (see Table 10) should be considered.



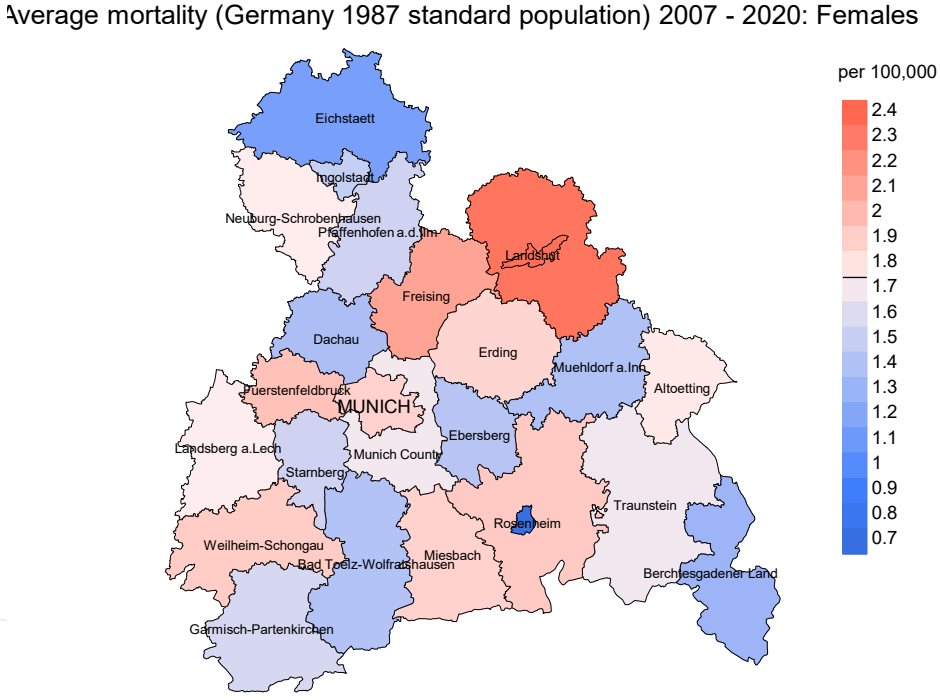


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 2.6/100,000 WS N=898, females 1.7/100,000 WS N=835).

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 18 women died from diff. large B-cell lymphoma. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 1.4/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.7 and 2.6/100,000.

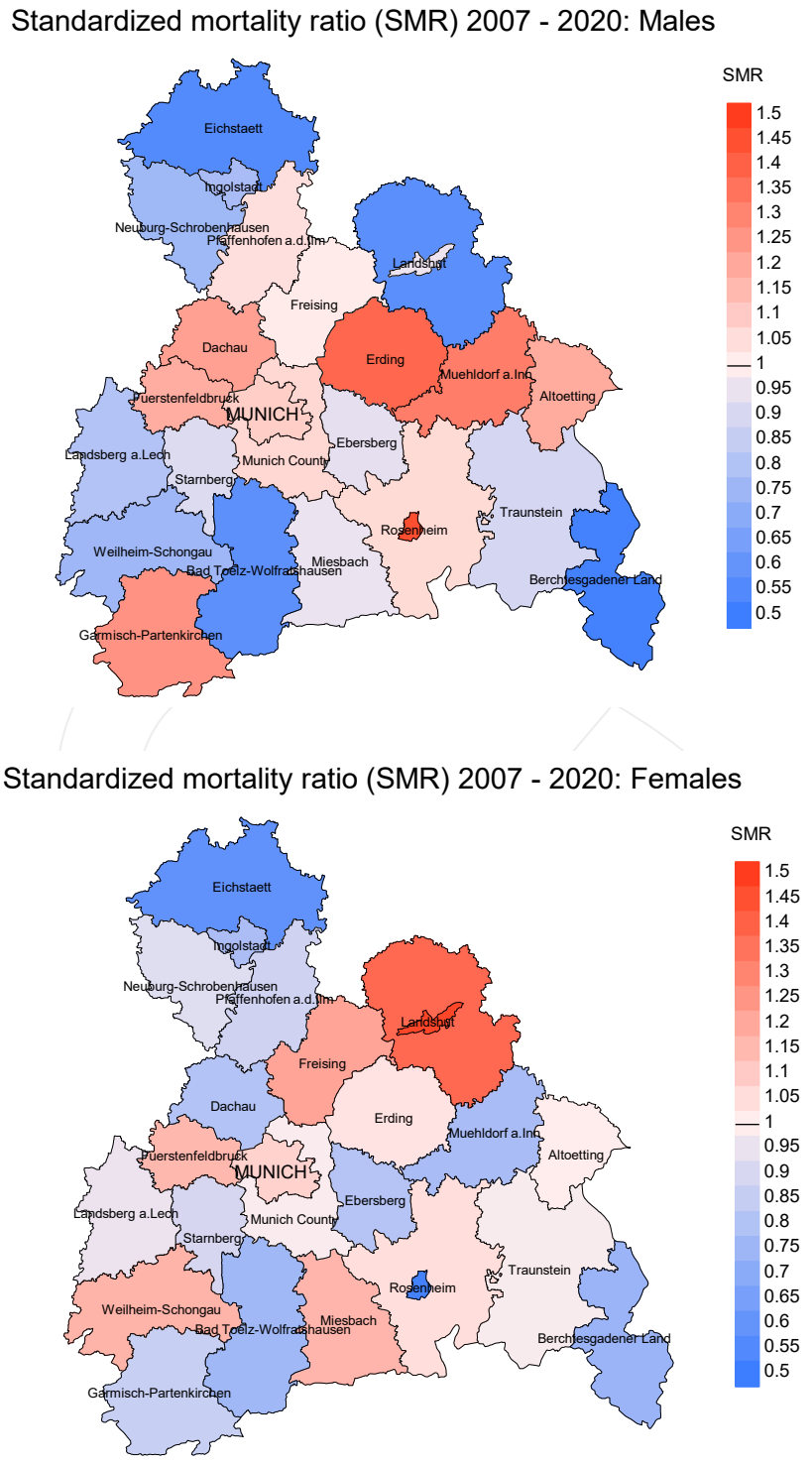


Figure 18b. Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=898, females N=835).

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 18 women died from diff. large B-cell lymphoma. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.81. Though, the value of this parameter may vary with an underlying probability of 99% between 0.40 and 1.44, 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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